Somerset County Roadway Safety Study
Subregional Project

ROAD SAFETY AUDIT REPORT

SOMERSET STREET IN RARITAN BOROUGH

November 2021

Executive Summary

As part of the North Jersey Transportation Planning Authority (NJTPA)'s subregional studies grant program, Somerset County (the County) has conducted the Somerset County Roadway Corridor Safety Analysis study. The study will advance the County's efforts to address pedestrian, bicycle, and intersection safety. Five (5) County roadway corridors have been selected to go through a comprehensive safety analysis following the Federal Highway Administration's Road Safety Audit (RSA) process to identify vehicle, pedestrian, and bicyclist safety issues and to develop safety improvement recommendations. This RSA report has been prepared for the Somerset Street corridor (Somerset County Route 626, CR 626), from First Avenue (CRs 567 and 625) at MP 0.0 to US Route 206 (Route 206) at MP 0.67, in Raritan Borough. According to the compiled crash data, 144 crashes occurred on the 1-mile segment analysis area during the 3-year vehicle and 5-year pedestrian crash analysis period.

The pre-audit meeting was held at 10:00 AM via video conferencing on Thursday, April 1st, 2021 on the morning of the in-field review meeting to introduce the audit team, cover the activities to complete the RSA, define the RSA process, cover existing conditions data, present safety measures under consideration, summarize crash data collected for the corridor, and go over ground rules for conducting the in-field portion of the audit safely. The in-field component of the RSA was conducted at 2:00 PM on the same day as the pre-audit meeting. Participants were paired off with each other to walk halves of the corridor. Utilizing aerial mapping, prompt lists, photography, and video, participants recorded their observations of the corridor, as well as safety measures to address potential safety concerns. On the following week (Monday, April 5th, 2021), the RSA team reconvened via video conferencing to view photos gathered during the in-field audit to discuss each potential safety concern, elaborate on potential ideas to mitigate, cover questions on travel pertaining to the overall corridor, and summarize next steps for this study.

Discussions from the RSA process helped to form the basis of the Implementation Matrix in the **Identified Issues & Observations** section of this report, which serves as a record of items discussed during the post-audit meeting. Major findings (or recommendations) from these discussions included:

- Mountable curbs at First Avenue to slow car turning movements while allowing for truck turning radii;
- Placemaking improvements, such as parklets and overhead gateway lighting to slow vehicle speeds;
- Speed humps on Nevius Street to slow cut-through traffic diverting around First Avenue intersection;
- Leading Pedestrian Intervals (LPIs) and additional crosswalk at Thompson Street intersection;
- Curb ramp improvements and paver resetting west of Frederick Street to improve downtown walkability;
- Push-button actuated crossings at Borough Public Library for pedestrian visibility; and,
- Changes in signal phasing/timing and crosswalk striping at Route 206 to improve pedestrian safety.

A key recommendation from this RSA is to build off of the complete streets improvements proposed for Somerset Street as part of Transportation Alternatives - Set Aside Program, or TAP grant, for which the Borough has applied, received funding, and currently designing new streetscaping. It is proposed that changes in side street circulation from two-way to one-way flow for this project provide opportunity for ample curb extensions, integrated with Green Stormwater Infrastructure to provide for a more resilient design to better receive and filter future stormwater. Additionally, it is also proposed that ergonomic (or flared) crosswalks be striped between these intersection corner curb extensions to better reflect the pedestrian paths of travel that take place at downtown intersections.

Please note that recommendations cited in the Implementation Matrix are to reflect feedback received during the RSA process, and are meant to be a record of ideas discussed. As these recommendations are considered for advancement into either a Concept Development (CD) study, or incorporation into an overlapping County or municipal project, the recommendations herein should be thoroughly evaluated for feasibility and practicability and designed as appropriate by the roadway owner and/or a professional engineer for conformance to all applicable codes, standards, and best practices.

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I. Introduction

As part of the North Jersey Transportation Planning Authority (NJTPA)'s subregional studies grant program, Somerset County (the County) has begun the Somerset County Roadway Corridor Safety Analysis. The Somerset County Roadway Corridor Safety Analysis will advance New Jersey's efforts to address pedestrian/bicycle and intersection safety. Five (5) County roadway corridors have been selected to go through a comprehensive safety analysis following the Federal Highway Administration's Road Safety Audit (RSA) process to identify vehicle, pedestrian, and bicyclist safety issues and to develop safety improvement recommendations. One of the locations that have been selected is the Somerset Street corridor (Somerset County Route 626, CR 626), from First Avenue (CRs 567 and 625) at MP 0.0 to US Route 206 (Route 206) at MP 0.67, in Raritan Borough.

The purpose of this RSA Report is to detail the site selection, road/multimodal inventory, land use investigation, crash data collection, crash analysis efforts. post/pre-audit meetings, and in-field RSA investigation conducted for the Somerset Street corridor. Flowing from this RSA is a list of potential recommendations proposed to improve safety. These recommendations were based on the investigated crash data and during the in-field RSA and post-audit meeting. This introduction serves to provide background on selection of the investigated corridor and covers the logistics of the RSA process that was performed. This RSA report also seeks to provide sample figures of improvements and crash countermeasures that could be considered as the County, or municipality, seeks to move forward on its Concept Development (CD) and/or Local Safety Program grant (or other funding) application. Please note, in applying these ideas to the corridor, design of such improvements, conceptual or otherwise, is the responsibility of the designated jurisdiction as is standard RSA practice.

A. Site Selection

Selection of the Somerset Street corridor was based on a rigorous process which started with a list of top crash segments for the County from NJTPA's Network Screening Lists (NSL)[1] and used supporting collision data, equity data, recommendations from prior studies, and public/stakeholder input to develop a shortlist of top crash segments. Segments with recently-constructed safety improvements or locations undergoing study/design were identified through discussions with County Engineering and removed from this shortlist to target segments not currently being considered. The remaining locations were further prioritized and ranked with more recent crash severity and frequency data (old crash data from NSL superseded with more recent crash data from Safety Voyager), traffic volume data from NJTPA's regional travel demand model (NJRTM-E), and environmental justice data from NJTPA.

Input on these top crash locations was obtained through the Public Involvement Plan for this project, which included gathering information from the public via a virtual mapping tool and project email address and gathering information from a Technical Advisory Committee (TAC)[2] via an initial virtual meeting conducted in August 2020. Based upon public and stakeholder input, the following (5) segment locations (including the segment being studied in this report) were selected to be advanced for RSA review:

1. Finderne Avenue/Main Street (CR 533) in Raritan Borough, MP 29.60-30.60
2. Franklin Boulevard (CR 617) in Franklin Township, MP 0.00-1.00
3. Somerset Street (CR 626) in Raritan Borough, MP 0.00-0.67
4. Greenbrook Road (CR 636) in North Plainfield Borough, MP 0.70-1.97
5. Main Street (CR 533) in Millstone Borough, MP 25.14-25.87

[1] https://www.njtpa.org/Projects-Programs/Local-Programs/Local-Safety-Rural-Roads/Local-Safety-Program/Network-Screening-Lists.aspx Top crash segment lists on this webpage are based upon a programmatic analysis of statewide locations utilizing 2014-2018 crash data.
[2] Stakeholders on the TAC include NJDOT, NJ TRANSIT, FHWA, RideWise, AARP, Vorhees Transportation Center, and various County advocates.

Somerset Street was selected based on the relatively high crash frequency on this corridor, public feedback data, and pedestrian/cyclist crash frequency. Furthermore, this location was identified within the *Somerset County Regional Center Pedestrian, Bicycle & Greenways Systems Connection Plan* (2009) and *Supporting Priority Investment in Somerset County, Phase III* (2017) studies (amongst other studies), which proposed improved pedestrian/cyclist access to the NJ TRANSIT Raritan Train Station, Raritan Mall, and Raritan River Greenway via improved sidewalks and dedicated bicycle space. **Table 1** shows the selected segment, or intersections, that qualified as one of the top 100 crash locations[1] in the County based on either overall crash data for the years of 2016 through 2018 or pedestrian/cyclist crash data for the years of 2014 through 2018 as listed on the NSLs.

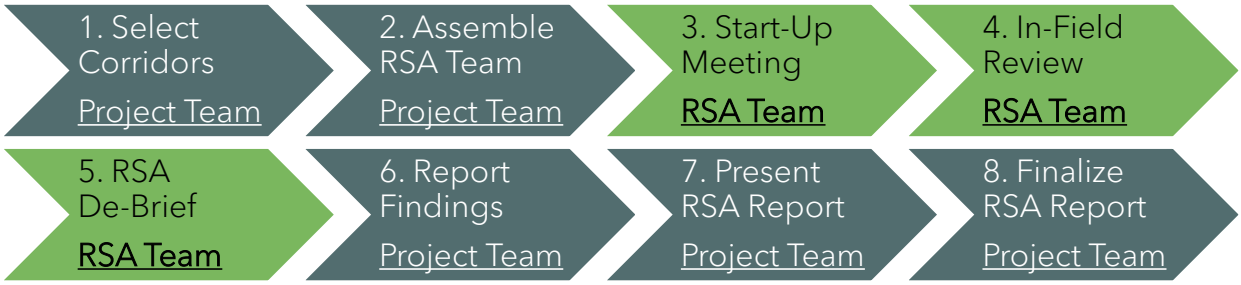
Table 1 – Somerset Street NJTPA 2019 NSL Rankings for Somerset County

Corridor Segments Overall Crash Data	Corridor Segments Ped/Bike Crash Data	Intersection Locations Overall Crash Data	Intersection Locations Ped/Bike Crash Data
#23, MP 0.0-0.67	#4, MP 0.11-0.67	None	First Avenue (#13)
			Frederick Street (#76)

B. What is a Road Safety Audit (RSA)?

An RSA is a formal safety performance examination of an existing or future road or intersection by a multi-disciplinary audit team, including public works, law enforcement, emergency medical services, engineering, planning, and advocacy staff. It qualitatively estimates and reports on existing and potential road safety issues and identifies opportunities for improvements in safety for all road users. RSAs can be used on any size project, from minor maintenance to mega-projects, and can be conducted on facilities with a history of crashes or during the design phase of a new roadway or planned upgrade. RSAs consider all road users, account for human factors and road user capabilities, are documented in a formal report, and require a formal response from the road owner. **Figure 1** shows the steps employed by the County to complete the RSA, as informed by the Federal Highway Administration's (FHWA's) RSA process. The steps that traditionally consist of an in-field review of conditions with an RSA team are highlighted in green in **Figure 1**.

Figure 1 – Eight-Step RSA Process as Adopted from FHWA RSA Process



The RSA program is conducted to identify potential countermeasures for roadway segments demonstrating a history of, or potential for, a high frequency of crashes, or an identifiable pattern of crash types. Recommendations range from low-cost, quick-turnaround safety improvements to more complex strategies, which are all codified in this report within an Implementation Matrix, categorizing improvements by timeline, cost, and jurisdiction. Implementation of improvement strategies identified through this process may be eligible for Local Federal Aid Safety Funds. Because the RSA process is adaptable to local needs and conditions, recommendations can be implemented incrementally as time and resources permit. Please note that the RSA process does not include the design or thorough evaluation of improvements that are being considered, conceptual or otherwise. Following the eighth and final step of the RSA process, it will be incumbent for the designated jurisdiction for each improvement proposed in the Implementation Matrix to start to evaluate and design the ideas presented herein as is standard RSA practice.

At the request of NJTPA, RSAs originally planned for Fall 2020 were postponed to Spring 2021 due to the COVID-19 pandemic. In addition to postponement, the County took additional steps to safely conduct this RSA. Both the start-up meeting and RSA de-brief (steps #3 and #5 shown in **Figure 1**), which are traditionally conducted in-person, were conducted virtually via video conferencing to reduce the exposure and potential risk of disease transmission. Furthermore, the essential step of in-field review was conducted in a socially-distanced manner with participants paired off in groups spaced more than six feet apart from each other. All in-field RSA participants were masked for the entire duration of the field visit to further reduce disease transmission. Through this process, the post-audit "de-brief" meeting benefitted from being held virtually after the day on which the in-field review was conducted.

Some notable benefits produced by a virtual post-audit included:

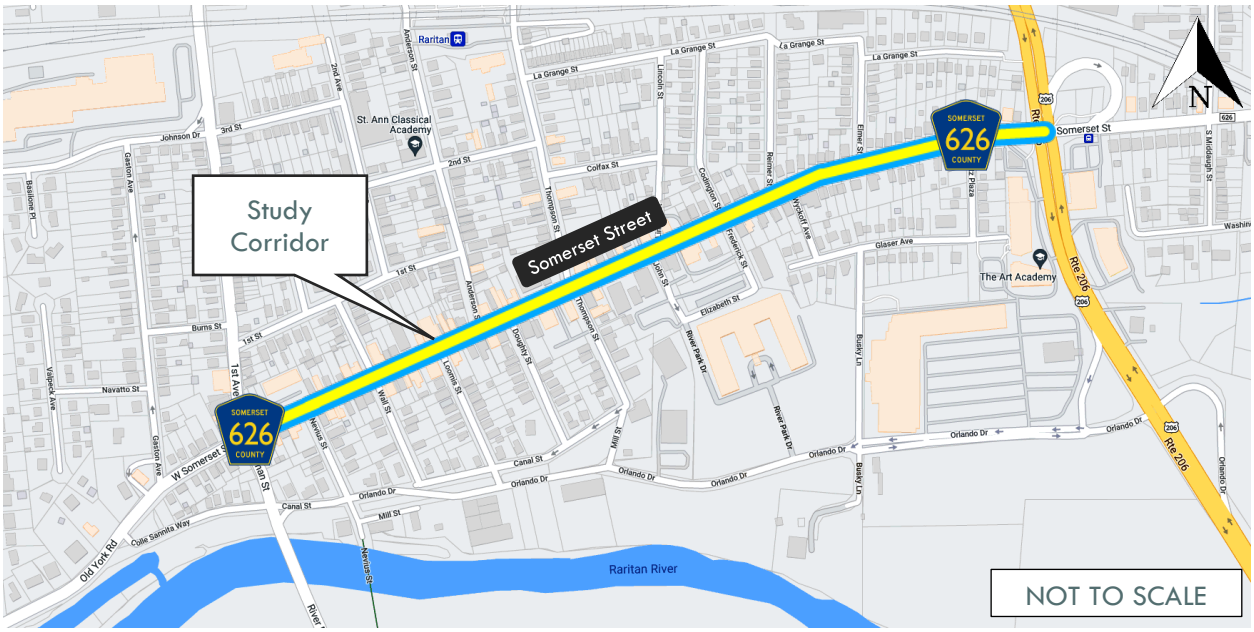
- Additional time for participants to share photos, videos, and scans of their observations;
- Available screensharing for quick review and consensus of RSA observations;
- An involved discussion of the observations and recommendations was well established by the wide audience of stakeholders;
- Additional time for participants to process their observations and organize their thoughts for discussion.

II. Corridor Description & Analysis

A. *Study Location*

The study area consists of 0.67 miles of CR 626 (Somerset Street), extending from the intersection with First Avenue (CR 567)/Lyman Street (CR 625) at MP 0.0 to the Somerville Borough municipal border at the intersection with Route 206 at MP 0.67 (**Figure 2**). A straight line diagram of the corridor is provided in **Appendix A**. The corridor segment is located in the Borough of Raritan in the County of Somerset. Land adjacent to Somerset Street is zoned as "Central Business" from First Avenue on the west end of the corridor to Codington Street, and buildings that line the street tend to be mixed-use in nature ranging from one-story to three-stories in height. Other uses include churches and retail buildings. Due to the density of businesses in this segment of the corridor, on-street parking (striped on both sides of the street) is heavily utilized, particularly during weekday midday, weekday PM peak, and weekend midday periods. East of Codington Street, the land use context is single-family detached residential in nature with less parking activity and larger setbacks from the street.

Figure 2 – Study Area Location Map



Vehicle and pedestrian trip generators on this corridor tend to be evenly distributed along with the "main street" retail between First Avenue and Codington Street. However, the QuickChek at First Avenue, the USPS Post Office at John Street, and the churches in between can become significant individual trip generators depending on the time of the day and day of the week. The area surrounding the corridor segment has been designated by the County as a Priority Growth Investment Area (PGIA) by the County in its 2017 *Supporting Priority Investment in Somerset County, Phase III* study.

B. *Roadway and Intersection Characteristics*

Somerset Street is classified by the New Jersey Department of Transportation (NJDOT) as an urban minor arterial and has a posted speed of 25 mph. The corridor consists of two 11-12' travel lanes (one in each direction) undivided with 8-9' parking on either side where parking is striped. The road has an average cartway width of 40'. There are three signalized and 12 unsignalized intersections along the corridor. Left-turn bays are provided at either end of the corridor at intersections with First Avenue and Route 206.

C. *Existing Bicycle/Pedestrian Accommodations*

Sidewalk coverage is provided along both sides of the road along the entire length of the corridor, varying in width from 4-12' and consisting of more narrow concrete sidewalks on the eastern end of the corridor and wider paver sidewalks on the western end of the corridor. Except at sidewalk locations with pavers towards the western end of the segment and at crossings where paving was recently done, curb ramps tend to have detectable warning surfaces and connecting continental crosswalks. Daylighting[3] areas are designated on Somerset Street at cross-street locations, which helps with pedestrian visibility and clarity of pedestrian-vehicle sightlines. Crosswalks traversing Somerset Street are provided at approximately 200' intervals, with the exception of the eastern end of the segment, which has a 700' crosswalk gap. Currently, no street space is dedicated to cyclists despite nearby recreational destinations, such as Nevius Street Sitting Bridge, Raritan Valley Park, Duke Island Park, and Duke Farms. However, due to relatively low posted speeds, Somerset Street was classified as having a Bicycle Level of Traffic Stress of 2 in the recent WalkBikeHike (2019) study, which is representative of cycling travel conditions that are comfortable to most adult cyclists.

D. *Traffic Volumes*

According to traffic data available from NJDOT[4] count station #111827, Average Annual Daily Traffic (AADT) on Somerset Street is approximately 10,000 vehicles per day. Supporting count data from NJDOT is provided in **Appendix B**. This figure is supported by traffic volume estimates from NJTPA's NJRTM-E travel demand model, which provides an AADT estimate of 10, 000 based upon 2020 pre-COVID-19 conditions.

E. *Transit Service*

Somerset Street is not directly served by NJ TRANSIT bus or rail. The NJ TRANSIT Raritan Train Station with Raritan Valley Line service is located approximately ¼-mile north of the corridor from intersections with Anderson Street and Thompson Street. NJ TRANSIT bus routes 114, 117, and 65 serve Somerset Street at Route 28 approximately ½ mile east of the project limits. The corridor is more directly served by the County's CAT 1R bus service (which runs from New Brunswick to Branchburg/Raritan Valley Community College, while also running through Somerville, Bound Brook, South Bound Brook, and Franklin) and CAT 3R bus service (which runs between Bridgewater Commons and the Branchburg Shop-Rite, traveling through Raritan and Somerville in between). While CAT 3R operates one scheduled round trip ride during the weekday AM peak period, CAT 1R operates more frequently with one- to two-hour headways during weekday AM and PM peak period conditions. Bus stops for these services do not appear to be signed on the corridor; however, RideWise lists scheduled stops at the Somerset Street intersections with First Avenue and Route 206. CAT 1R travels along the Somerset Street corridor and may permit stop requests for intermediate locations. CAT 3R travels along the parallel Orlando Drive corridor between First Avenue and Route 206 but turns north at both streets to service Somerset Street.

F. *Community Profile*

Population and income characteristics from the American Community Survey (ACS), an update to the 2010 Census performed by the U.S. Census Bureau, were used to identify Environmental Justice populations. The latest ACS for this study area is a five-year estimate from 2015 through 2019 for County Census Tract 505. A summary of the demographics is listed in **Table 2.** Limited English Proficiency populations are twice the County average in the vicinity of the study corridor. While public transit commuting was noted to be below the County average, zero-vehicle households are a substantial portion of the nearby population (approximately three times the County average), perhaps due to the walkability of this downtown location.

[3] Daylighting is the act of restricting parked or standing vehicles through striping or curbing to improve sight distance at crosswalks or intersections.
[4] AADT data obtained from https://www.njtms.org/map/.

Table 2 – Somerset Street RSA Study Area Demographics

Characteristic		Census Tract Average	County Average
Below Poverty Level[5]		7.9%	5.1%
Race/ Ethnicity[6]	White	73.9%	66.3%
	Asian American	17.7%	17.7%
	Black or African American	1.5%	9.7%
	American Indian/Alaskan	0.4%	0.3%
	Other	6.5%	6.0%
	Hispanic/Latino (Ethnicity)	22.7%	14.7%
Limited English Proficiency (LEP)[7]		9.5%	4.4%
Use Public Transportation[8]		2.6%	5.3%
Zero Vehicle Households[7]		6.5%	2.1%

G. Redevelopment

The area surrounding the corridor segment has been designated by the County as a Priority Growth Investment Area (PGIA) by the County in its 2017 *Supporting Priority Investment in Somerset County, Phase III* study. Additionally, the County and NJTPA are investing in the future of the Borough with the Raritan Sustainable Economic Development Plan study, which is being conducted concurrently with this study. The primary goal of the Economic Development Plan is to develop a vision for economic development that revitalizes the downtown and promotes an integrated community that incorporates new developments into the downtown consistent with the vision. The vision will also leverage existing transportation assets, such as the Raritan Train Station, to attract development. Since mobility, parking, TOD zoning, pedestrian infrastructure, and pedestrian infrastructure recommendations are a key part of this study, the Project Team for the Somerset County Roadway Corridor Safety Analysis is coordinating with the Project Team for the Raritan Sustainable Economic Development Plan to share initial crash data findings from this report, discuss a wide range of crash countermeasures that also support the Borough's goals, and develop recommendations that are compatible. This concurrent study is anticipated to be completed by mid-2021. Redevelopment on Somerset Street has mainly consisted of "change of use" applications to mixed-use buildings on the western end of the corridor and conversion of single-family residential housing to medical office space towards the eastern end of the corridor. There are no major applications currently pending along Somerset Street, according to data delivered by County Planning. However, there is a nearby transit-oriented development (most notably, Crossings at Raritan Station on First Avenue) that will stimulate economic growth and activity not only in the vicinity of the train station but also downtown along Somerset Street.

H. Proposed Improvements from Previous Studies

The following six studies have prescribed various engineering, education, and enforcement strategies to improve the safety of those using the Somerset Street corridor:

- *Supporting Priority Investment in Somerset County, Phase III*, dated 2017
- *Raritan Borough Master Plan Updated*, dated 2003
- *Regional Center Pedestrian, Bicycle & Greenways Systems Connection Plan*, dated 2009
- *Raritan Borough Street Smart Pedestrian Safety Campaign*, dated 2019
- *WalkBikeHike*, dated 2019
- *Circulation Plan Element & Bicycle and Pedestrian Safety Plan, dated 2020*

[5] 2019: ACS 5-Year Estimates Data Profiles, TableID S1701, "Poverty Status in the Last 12 Months"
[6] 2019: ACS 5-Year Estimates Data Profiles, TableID DP05, "ACS Demographic and Housing Estimates"
[7] 2019: ACS 5-Year Estimates Data Profiles, TableID S1602, "Limited English Speaking Households"
[8] 2019: ACS 5-Year Estimates Data Profiles, TableID S0802, "Means of Transportation to Work by Selected Characteristics"

Pertinent excerpts from these studies, and associated improvements, are provided in **Appendix C.**

Supporting Priority Investment in Somerset County, Phase III
Raritan Borough is located within the Regional Center Priority Growth Investment Area (PGIA) designated by the County. As such, the Phase III Study recommended improvements for pedestrian and cycling mobility, not only throughout the Borough but along Somerset Street, as shown in **Figure 3**. Recommended bike infrastructure improvements included shared lane markings on Somerset Street to make travel by bike more prevalent through the downtown area. The connecting streets of Nevius Street and Elmer Street would also have provisions for cyclist traffic, whether via bicycle boulevard or shared lane markings. Bike lanes were proposed on Thompson Street to better connect the downtown area and the Raritan Train Station, although parking would need to be eliminated on one side of the street to accommodate bike lanes in both directions.

This study also recommended that downtown streetscaping be updated, particularly along Somerset Street, to replace brick pavers with traditional concrete sidewalks or textured pavement for a more ADA-compliant walking surface. Streetscaping towards the western end of Somerset Street was also recommended to be extended eastward as development occurs. Finally, pedestrian access and roadway connectivity improvements were recommended via Somerset Street and Orlando Drive towards Raritan Mall to incentivize economic activity during the redevelopment of this retail space.

Figure 3 – Transportation Planning Recommendations from Phase III Study

Raritan Borough Master Plan Updated
Recommendations from this study, although limited, include possible pedestrianization of a north-south street between Somerset Street and Orlando Drive to improve north-south pedestrian and cyclist access to riverside destinations and implementation of curb extensions at intersections along Somerset Street to improve pedestrian safety.

Regional Center Pedestrian, Bicycle & Greenways Systems Connection Plan
This study proposed many recommendations for improved traffic safety and mobility in the Borough of Raritan, including the following on Somerset Street:

- Redesign Somerset Street and Orlando Drive as a one-way eastbound and westbound pair
- Re-stripe Somerset Street to accommodate cyclists via sharrow markings
- Provide pedestrian and cyclist linkage from Somerset Street to Raritan Mall
- Implement signal timing and intersection improvements at Route 206 & Somerset Street:
    - Install median refuge
    - Implement high-visibility crosswalks
    - Install countdown pedestrian signal heads (has since been installed)
    - Reconfigure intersection to eliminate eastbound and westbound double lefts to improve signal phasing
    - Investigate pedestrian crossing alerts and pushbuttons for elderly and disabled

Raritan Borough Street Smart Safety Campaign
RideWise, the Transportation Management Association for the County, provided a report summarizing the Street Smart campaign held in the Borough. The campaign was conducted with the support and assistance of local businesses. Raritan Borough Police provided ongoing community policing and pedestrian and driver enforcement. Before and after the campaign, RideWise staff conducted observations on Somerset Street at its unsignalized intersections with Loomis Street and Anderson Street. The evaluations showed that the Street Smart campaign in Raritan resulted in an increase in awareness of the Street Smart messages, enforcement efforts, and an emphasis on pedestrian safety throughout the community. The intersection observations showed a reduction in the prevalence of some non-compliant behavior by drivers and pedestrians. This study recommended that ongoing pedestrian, driver and cyclist education and enforcement be regularly conducted along Somerset Street, in the community and in the schools to address pedestrian safety concerns in Raritan Borough.

WalkBikeHike
This study recommended improved east-west bicycle connectivity through the Borough via shared bike lanes on Somerset Street. Additionally, bike lanes were proposed for the intersecting streets of Anderson Street and Thompson Street as depicted on a bike network recommendations map.

Circulation Plan Element & Bicycle and Pedestrian Safety Plan
This circulation plan element was issued recently in 2020 by the Borough and summarizes the future traffic impact to Raritan Borough based on current land use and traffic data. It also proposes a set of recommended road improvements that may be needed to serve anticipated future traffic volumes. Recommendations from this study include the following, including many traffic safety recommendations:

- Where possible throughout the entire town: Install sidewalks, crosswalks and ADA compliant curb ramps where they are currently missing; repair uneven sidewalks.
- Where possible throughout the entire town: Install traffic calming techniques as a tool to increase pedestrian safety and access.
- Update the Borough's Complete Streets Policy to follow the State's Policy and create design guidelines for individual roadway types.
- Update the proposed cross-section for each roadway, including the number and width of traffic lanes and the requirements for shoulders and sidewalks, bike lanes and biofitration facilities.

- Educate homeowners about property maintenance of landscaping so as not to impede on the public right-of-way.
- Prepare a 5-year road improvement plan. This plan should study areas identified in the Borough's Circulation Plan Element and prioritize the recommended improvements for all road infrastructure improvements that fall under municipal jurisdiction.
- Provide short-and/or long-term bicycle parking in all commercial districts, in employment centers and multifamily developments, at schools, in industrial developments, at special events, in recreational areas, and transit facilities.
- Coordinate proposed bike and pedestrian connections with the Borough's Open Space and Recreation Plan and the Borough's Land Use Plan.
- Ensure that all projects in Raritan Borough conform to the NJDOT Pedestrian guidelines.
- Identify existing or future roadway features that are unsafe or limit the passage of trucks.
- Increase enforcement of motor vehicle violations by trucks and other large vehicles.
- Borough government should sponsor walk and bike to work days as an annual event.
- The NJ Transit bus service (Route 114) should be extended into Raritan.
- Develop benchmarks, standards, or measurements which the community can gauge current and future compliance and noncompliance with overall plan goals.

I. Public Meeting #1

On Thursday, November 12, 2020, the first public meeting for this project was held via Zoom conferencing to obtain feedback from the public on the five locations selected for RSA review; Email blasts, advertisements, and social media notifications were provided in advance of the meeting. This meeting introduced the project team, who provided an overview of the study, stating the purpose and need. Statistics of crashes on County jurisdiction roadways were reviewed, showing a steady increase of crashes over the past ten years. The Consultant Team explained the RSA process and the technical analysis used in the development of the shortlist of corridors. Due to the pandemic, virtual or socially distanced options for conducting the RSA process were discussed.

The Consultant Team then explained the study's Public Involvement Plan (PIP), an iterative process designed to collect feedback and input. The opportunities to collaborate on the PIP were virtual, including public meetings and comments received through the project website and project email. The Consultant Team then explained the process of selecting the five corridors, which was based on County roadway screenings for top crash locations, evaluation of equity data, and public/stakeholder input obtained from the initial virtual mapping outreach conducted in Fall 2020. The virtual mapping tool allowed users to pin comments on areas of concern on a virtual map.

As part of the PIP, the public meeting included an opportunity to hear from attendees on comments specific to each corridor selected for RSA review by splitting the overall meeting into breakout rooms. The group in the Somerset Street breakout room discussed various concerns and suggestions regarding traffic calming and pedestrian safety. Comments received were as follows:

- The intersection of Wall Street & Somerset Street would benefit from a new pedestrian crossing traversing the west leg with accompanying curb extensions or flexible delineators. Queues from the nearby ice cream shop extend into the sidewalk and street during busy periods.
- There should be signage that says to share the road.
- Delivery trucks need spaces so the curb space should be managed better.
- It would be nice to see some landscaping.
- Participant said biking is not safe for children on Somerset Street.
- Turning left onto Somerset Street is difficult because of low visibility and high vehicle speeds. People should not be allowed to park near the intersections. It would be helpful if these locations had daylighting that was hardscaped.

- Participants were interested in exploring Orlando Drive as a potential couplet with Somerset Street.
- If there were better flow on Route 206 and 202, traffic would be reduced on Somerset Street.
- It would be nice if restaurants on Somerset Street could extend their seating into the street for parklets and beer gardens.
- There are concerns about sidewalks that are closed off when there is construction.
- If there was an off-street parking lot, drivers may not need to rely on on-street parking as much.
- There needs to be driver and pedestrian safety education.

J. Technical Advisory Committee Meeting #2

Following an August 2020 meeting with the TAC (Technical Advisory Committee) to select the five corridor locations for further review Somerset County held the second TAC meeting in February 2021. This meeting consisted of a 45-minute presentation followed by interactive breakout rooms with discussion centered around the corridors selected for further review. The presentation included the following topics: project background, summary of selected corridors, description of potential safety measures, and a discussion of demonstration projects.

A breakout room was dedicated solely to the discussion of potential safety measures to be implemented in response to potential safety issues observed on the Somerset Street corridor in Raritan Borough. Participants were asked to review the ten safety measures discussed during the presentation. They were then asked to rate the effectiveness and ease of implementation of each safety measure based on their own opinion/perspective. Participants were also asked to identify specific areas within each corridor that were areas of concern. **Table 3** is a summary of those ratings and discussions. A table of each safety measure rating per corridor is found in each section, along with additional comments made by each group.

Table 3 – Perceived Effectiveness and Ease of Implementation for Various Safety Measures

Safety Measure	Effectiveness (1= not effective; 10= very effective)	Ease of Implementation (1=easy; 10= hard)
Lighting	3	5
Curb Extensions/Bus Bulbs	5	5
Daylighting and Crosswalks	5	5
Walkways for Sidewalk Gaps	8	5
Dedicated Turn Lanes	1	1
Leading Pedestrian Intervals (LPI)	2	1
High Visibility Crosswalks	6	-
Turn Restrictions	5	-
Bike Lanes	5	8
Lane Width Reduction/Road Diet	-	-

Breakout Group Additional Comments:

- Lighting:
  - There have been no complaints about the decorative light poles in the area.
  - It would be nice if some of the side streets had lighting for a more cohesive feel. The town has not been able to replace lightbulbs; there is a need for coordination.
  - Lighting is especially important at crosswalks.
  - There is pushback from homeowners about installing lighting in their neighborhoods.
  - Introducing lighting could have a negative effect.
- Curb Extensions/Bus Bulbs:
  - Curb extensions would be effective; they are becoming more popular.
  - As a demonstration project, look at parklets near a curb extension during an event.
  - Curb extension concerns include:
    - Lack of parking- if there is a loss of parking there will be considerable pushback.

        - Off-street parking lot for business owners didn't quite work.
        - Drainage challenges
        - Strategy for ramping up enforcement is considered to be a challenge
- Daylighting and Crosswalks:
    - Participants agreed that people cross where there is no crosswalk present, and if provided, they would choose the safer option to use the crosswalk.
    - Type of crosswalks are important. Potential for decorative crosswalks? Depends on the funding. (County roads don't allow for decorative crosswalks currently.)
    - County uses continental crosswalks, which cost a bit more money. In some cases, the County straightens the crosswalks to shorten crosswalk.
    - There are sidewalks on both sides. To the west of First Avenue, the sidewalk drops off. There has been a grant to extend that sidewalk.
    - First Avenue and Somerset Street could potentially have refuge islands in the center.
- Leading Pedestrian Intervals (LPI):
    - Participants believed LPI implementation depends on the timing of the plan and are not effective in all cases.
    - Thompson Street, First Avenue, and 206 (County can't implement changes along 206, this could be coordinated with the State)
    - The County would consider LPIs. An analysis would need to be conducted including 206. The crash history should be explored. There was one location that had three pedestrian crashes on the same leg.
- Turn Restrictions:
    - The corridor has no turn on red in some locations. Some have been implemented, more analysis can be done to install more.
    - There are a lot of complaints about the no right turns in Raritan Borough.
- Bike Lanes:
    - For bike lanes, parking would need to be eliminated. There are bike lanes mapped out in other areas around the corridor; side streets are probably better suited for biking.
- Map specific comments include:
    - Intersection of W Somerset Street and First Avenue
        - Could be a location for a pedestrian refuge island
        - Should have longer crossing times or have the crosswalks shifted for a shorter crossing distance
            - There is a slight hill with glare, making it slightly longer for pedestrians to cross and harder for cars to see pedestrians.
        - Look at turning radii
    - Nevius Street could be used as a cut through
    - W Somerset and Thompson Street intersection has a no turn on red in place during the hours of 7am to 7pm.

K. Technical Advisory Committee Meeting #3

Following the RSAs in Spring 2021, and authoring of the draft RSA reports and accompanying recommendations soon thereafter, the County held the third and final TAC meeting for the study in August 2021. The virtual meeting format consisted of a 45-minute presentation with interactive breakout rooms. The presentation included the following topics: project background, project status, identification of needs, and proposed safety measures by corridor.

The meeting was then divided into five breakout rooms, one for each of the selected corridors. Each breakout room discussed a specific set of recommendations pertaining to that corridor. Participants were asked to provide their general reactions to the proposed recommendations and whether they would accomplish the goals of the study. Potential barriers or other ways to accomplish study goals were also discussed. The topic of discussion for the breakout room specific to the Raritan Borough RSA was the conversion of daylighting to

curb extensions proposed for the Somerset Street corridor. Provided below is participant feedback received on this specific proposed safety measure:

- Participants generally thought daylighting and curb extensions would work along the corridor.
- One participant noted that the ongoing economic development plan planned for curb extensions and daylighting.
- There were concerns about compatibility with truck traffic with trucks occasionally on Thompson Street and Anderson Street. The County will need to look at truck turning movements at specific intersections before recommending curb extensions.
- Parklets can create visibility concerns at intersections, so they should be avoided in locations where daylighting is currently an issue. The Borough should determine the locations with greater specificity for parklet recommendations to encourage designs and locations that do not impact visibility.

Additional comments were received during the breakout room (not pertaining to the proposed curb extensions):

- Parklets are also recommended for this corridor. There has a been a parklet on a trial basis at a street festival where the street was closed off. There have been concerns about taking parking spaces away, so there has been a request to put the parklet on Wall Street rather than on Somerset Street. The Borough has been in contact with Jon Dugan at RideWise to coordinate. The Borough would also need to coordinate with the economic development committee. There is support for parklets among businesses.
- Parklets are opportunities to collaborate with community groups. Community groups can offer creativity and engagement opportunities. Other cities have done competitions to decorate parklets.
- Parklets should have a barrier, such as walls or planters, that create a safer space that separates the parklet from the roadway.
- Speeding needs to be addressed through mitigation measures for parklets to feel comfortable.
- There is a request to have the Borough to have a dedicated merchants parking lot (such as where the team met for the road safety audit). This would prevent merchants from parking in on-street spaces that could be used for parklets or visitor parking.
- Participant express support for right turn only at the Quick Check, as well as don't block the box recommendation.
- Participant noted that some recommendations suggest adding signs and some suggest taking away. There is concern about sign clutter. There is also a wayfinding plan as part of the TAP grant, so there could be more signs coming.
- Participant said there should be high visibility crosswalks at the Route 206 intersection. A participant from NJDOT said the State would be amenable to adding high visibility crosswalks.
- A participant requested an LPI at the intersection at First Avenue. County Engineering noted that this had been discussed, but the phasing at this location poses a challenge.
- A participant requested some signal optimization along the corridor. The Borough Engineer said the County has already done some adjustments to timing on First Avenue, and the State is looking into adjustments on Route 206.

L. Public Meeting #2

On Wednesday, September 29, 2021, from 7:00 PM to 9:00 PM, Somerset County held the second and final public meeting for the study. The virtual meeting format consisted of a 45-minute presentation touching on the following topics: project background, project status, identification of needs, and proposed safety measures by corridor.

The meeting was then divided into seven breakout rooms, one for each of the selected corridors, one for county-wide general transportation comments and suggestions, and one for Spanish speakers. Much like at the third TAC meeting, participants were asked to provide their general reactions to the proposed curb

extension recommendations and whether they would accomplish the goals of the study. Potential barriers or other ways to accomplish study goals were also discussed. Provided below is participant feedback received on this specific proposed safety measure:

- Participants favored curb extensions and recommended the space be used for bike racks, benches, landscaping, and green infrastructure.
- The County may wish to consider temporary (e.g., painted) measures if hardscaping of the curb extensions cannot be accomplished in the near term.
- Vast majority of this corridor is uncontrolled; anything that will increase visibility of pedestrians (i.e., crosswalks, better lighting, etc.) is a good thing.
- Parking enforcement is limited on the corridor, and curb extensions would help to act as a barrier for parking in non-permissible areas.
- Reducing the crossing distance can help people cross Somerset Street more quickly.

Additional comments were received during the breakout room (not pertaining to the proposed curb extensions):

- Additional lighting, particularly at the corridor gateways (i.e., First Avenue) should be implemented to create a plaza effect and encourage people to stay downtown.
- Bike signing and sharrows to encourage cyclists are requested.
- There is interest in parklets; mayor is aware of the RideWise parklet. It is important to find the right location. The intersection of Wall Street is the strongest spot for parklet; it has short term use (ice cream) rather than a longer term like a restaurant.
- Explore the potential for a parklet at First Avenue. The area needs lighting. Lighting is shielded and does not extend into the neighborhood at the Veteran's Park.
- The Borough library needs lighting and better crossings. There is need for additional traffic calming in that area. Potentially consider a pedestrian crossing lit with beacons.

III. Crash Findings

The analysis used to support the RSA process incorporated a data-driven effort to utilize reportable crash information resulting in any combination of fatality, injury, or property damage. The datasets used for this analysis are sourced from local law enforcement responses to reported vehicular crashes. These on-scene responses subsequently translate to official law enforcement generated reports. Concurrently, the individual reports are aggregated to render serviceable crash information. To be entirely inclusive in obtaining complete crash information, the data was accumulated using three distinct resources: NJDOT's Safety Voyager[9], New Jersey Division of Highway Traffic Safety (NJDHTS) Numetrics[10], and the NJDOT raw crash tables[11]. The three sources were compared against each of the other obtained sources to allow for duplicate records to be discarded and all distinct records to be included with the goal of producing a complete and comprehensive representation of the crashes within the extents of the corridor.

The datasets were obtained for a three-year analysis period from the beginning of January 2016 through the end of December 2018 for vehicle-vehicle crash incidents and from the beginning of January 2014 through the end of December 2018 for vehicle-pedestrian/cyclist crash incidents. According to the compiled crash data, 144 crashes occurred within the 0.67-mile segment analysis area during the analysis period. The following evaluation breaks down crash attributes as a percentage of the total crashes to achieve a stronger understanding of the localized trends compared to County roadway systems crash performance. Furthermore, all crashes along this segment were mapped onto collision diagrams, which can be found in **Appendix A**, providing a quick spatial overview of crash clustering patterns.

In reviewing the crash data, the following crash clusters and prevailing safety issues were noted:

- At the First Avenue intersection
  - Two (2) crashes involving cyclists perhaps due to nearby recreational destinations
  - Multiple rear end crashes occurring on the NB, SB, and WB approaches
- Struck parked vehicle and sideswipe crashes clustered between Nevius Street and Codington Street
- Pedestrian crashes clustered at Andrerson, Doughty, Thompson, and Codington streets
- Multiple right angle crashes at Thompson Street signalized intersection
- At the Route 206 intersection
  - Multiple crashes involving pedestrians crossing south side of intersection, including one fatal
  - Multiple right-angle crashes, which tend to involve injuries due to high speed on Route 206
  - Multiple right-angle crashes between EB queue and vehicles from strip mall on SW corner
  - Numerous rear end collisions on NB, SB, and EB approaches to intersection, including injuries

A. Temporal Trends

Sorting the crashes by month reveals that the study segment generally conforms to County's trends when considering the percent distribution of crashes by month. During the three (3) months of May, July, and August, the study segment experienced significantly higher crash frequencies than the County-wide average. Notably, July experienced an increase in crashes over the County-wide average (7.9% vs. 14.5%), as shown highlighted in yellow in **Figure 4**.

Figure 5 highlights the crash percent distributions by day of the week. Midday, between 11:00 AM and 4:00 PM, reveals higher crash percentages than the County-wide average, as shown in **Figure 6**, perhaps due to downtown retail activity. More specifically, the 12:00 PM hour has crash frequencies is almost double the County-wide average, 9.2% local distribution versus a 5.1% County-wide distribution.

[9] https://www.njvoyager.org/App/
[10] https://www.numetric.com/
[11] https://www.state.nj.us/transportation/refdata/accident/rawdata01-current.shtm

Figure 4 – Vehicular Crashes, Percent Distribution by Month]

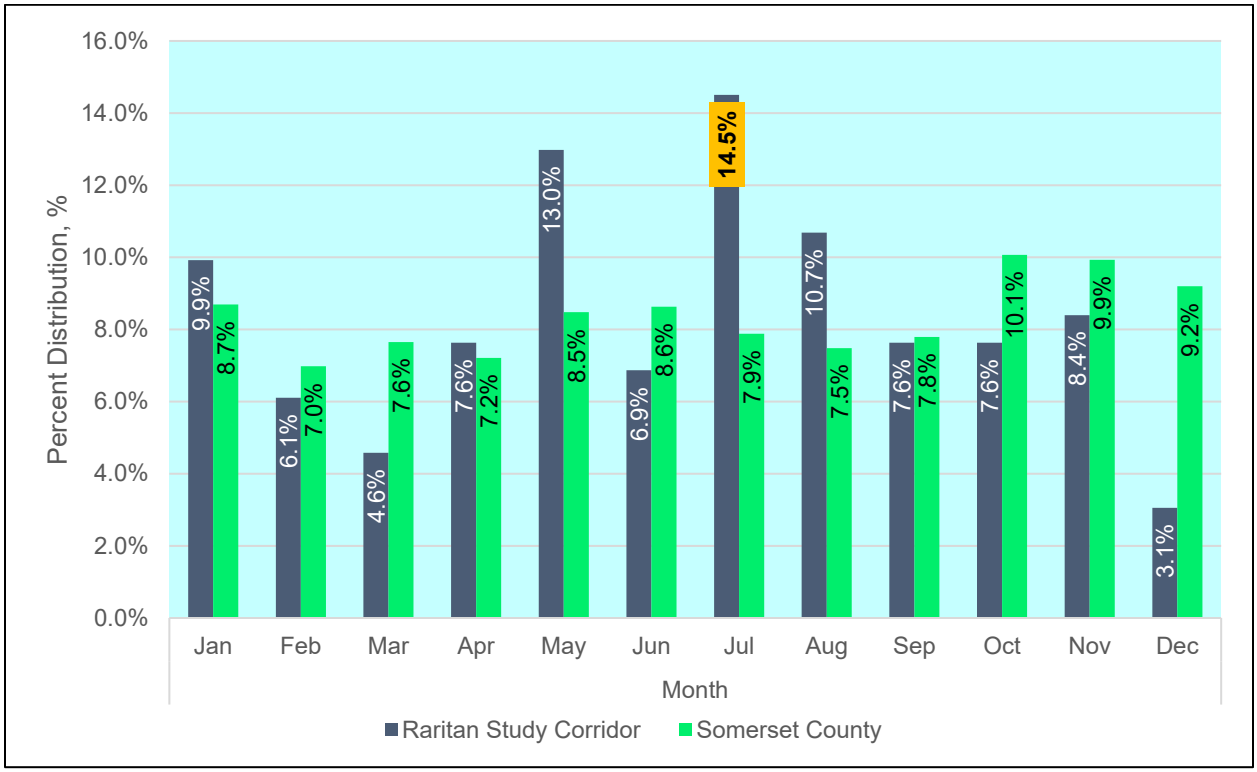


Figure 5 – Vehicular Crashes, Percent Distribution by Day

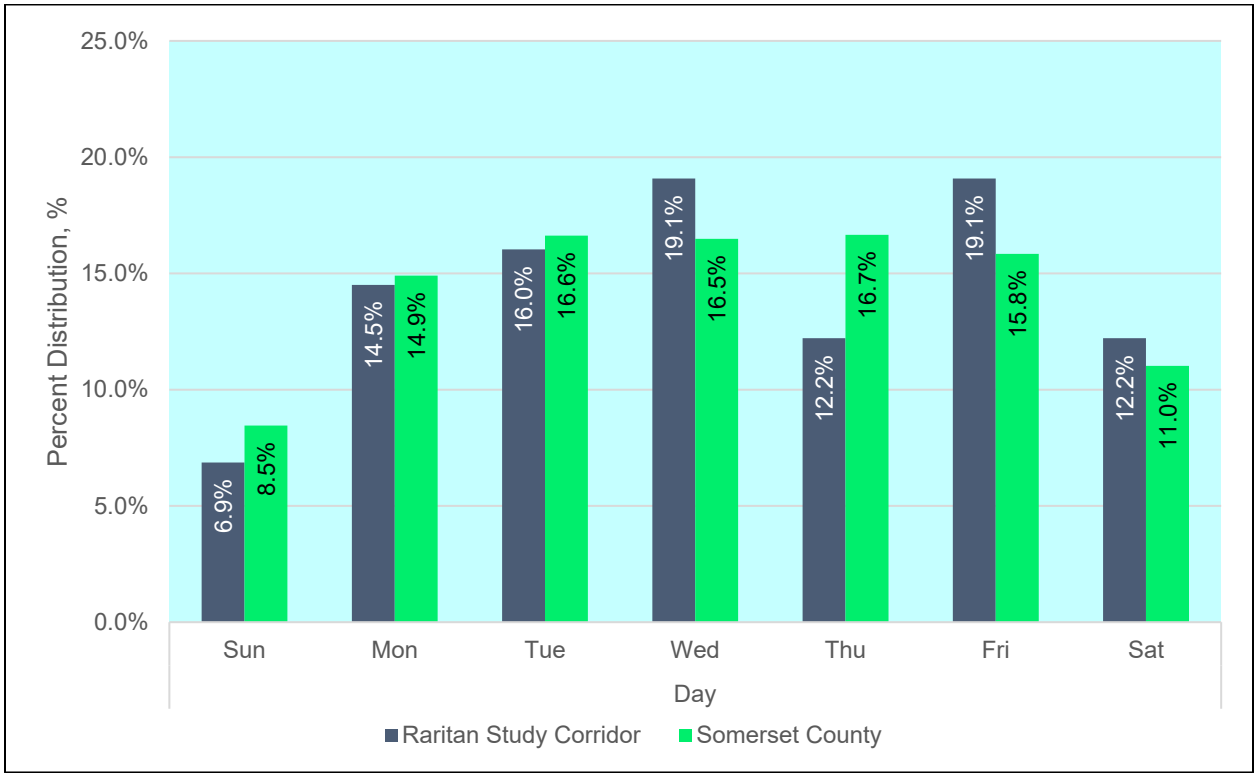
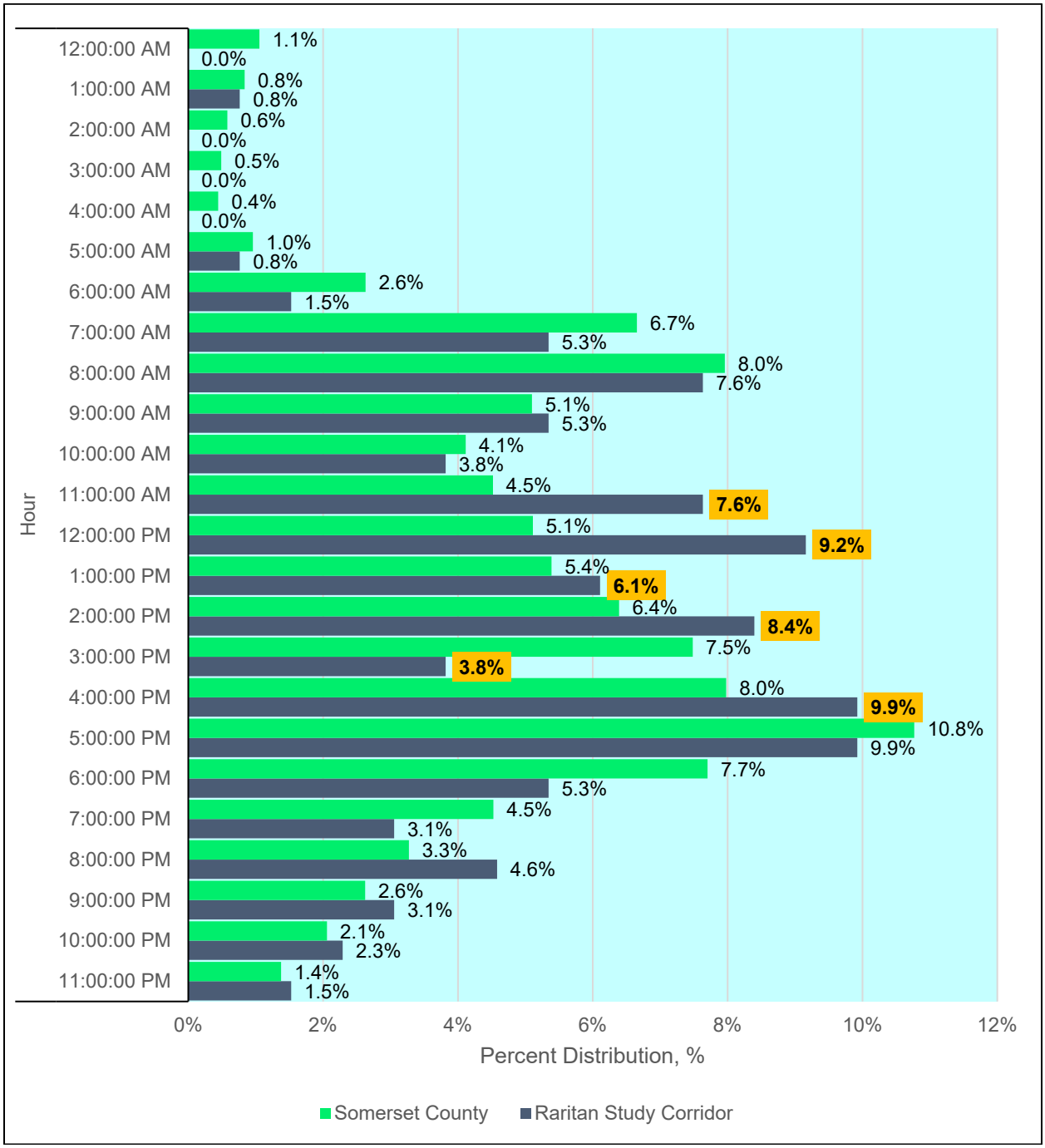


Figure 6 – Vehicular Crashes, Percent Distribution by Hour



B. Collision Types

Fifty-four rear end and 25 right angle crashes make up more than 54% of the crash distribution along the study segment. When compared to the County roadway system, rear end crashes occur less than 4% as frequent. Right angle crashes occur more frequently within the study segment than the County, by approximately 1.5%. However, most notably, vehicular crashes involving parked vehicles are considerably overrepresented on the study corridor compared to the County roadway system. Struck parked vehicle crashes occur 16.0% during the study period compared to only 3.3% County-wide, nearly five times as frequent, as shown highlighted in yellow in **Figure 7**. Additionally, both pedestrian and cyclist crashes are

overrepresented by multiples of approximately five times and two times when compared to the County average (highlighted in yellow in **Figure 7**). A table of crash types is provided in **Table 3.**

Figure 7 – Vehicular Crashes, Percent Distribution by Crash Type

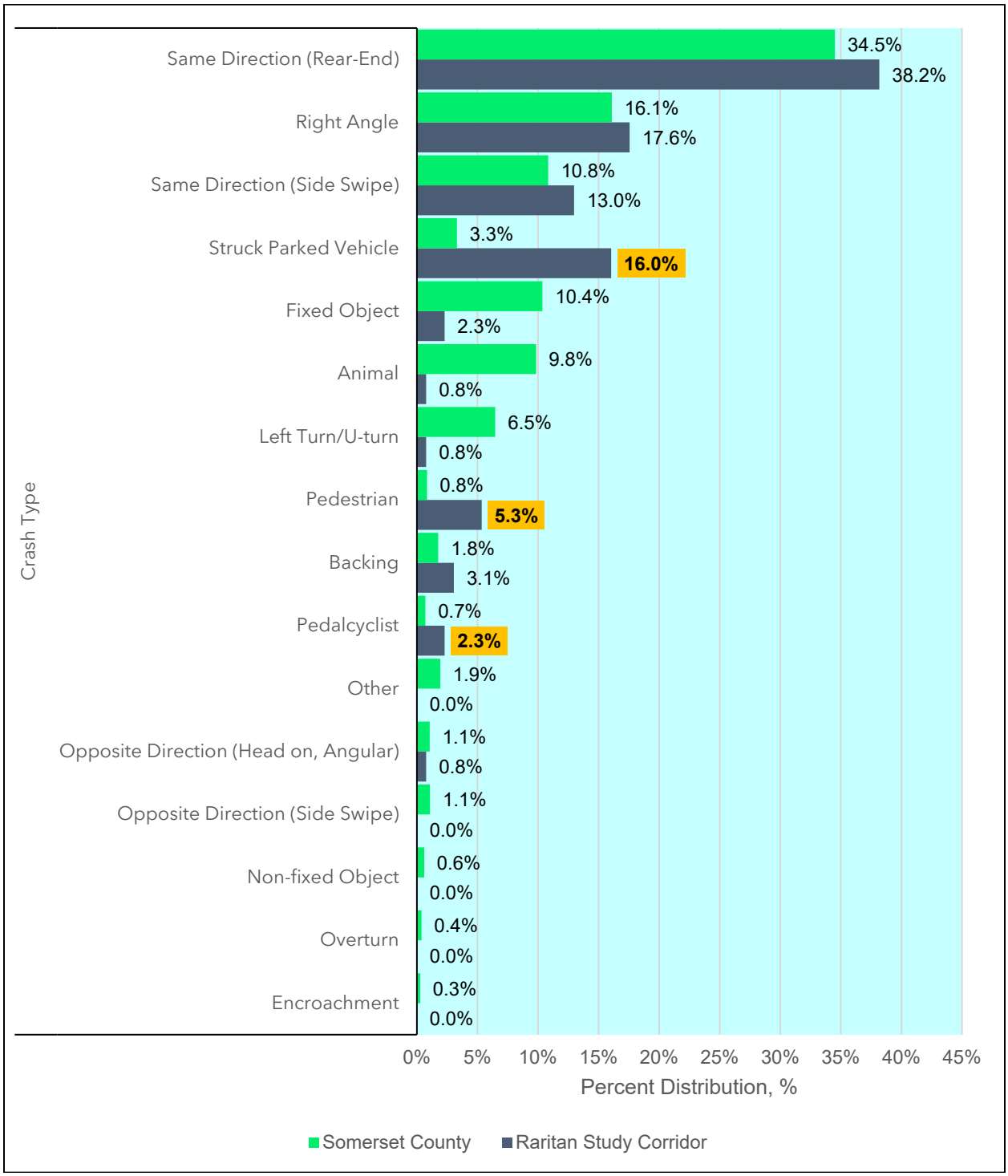


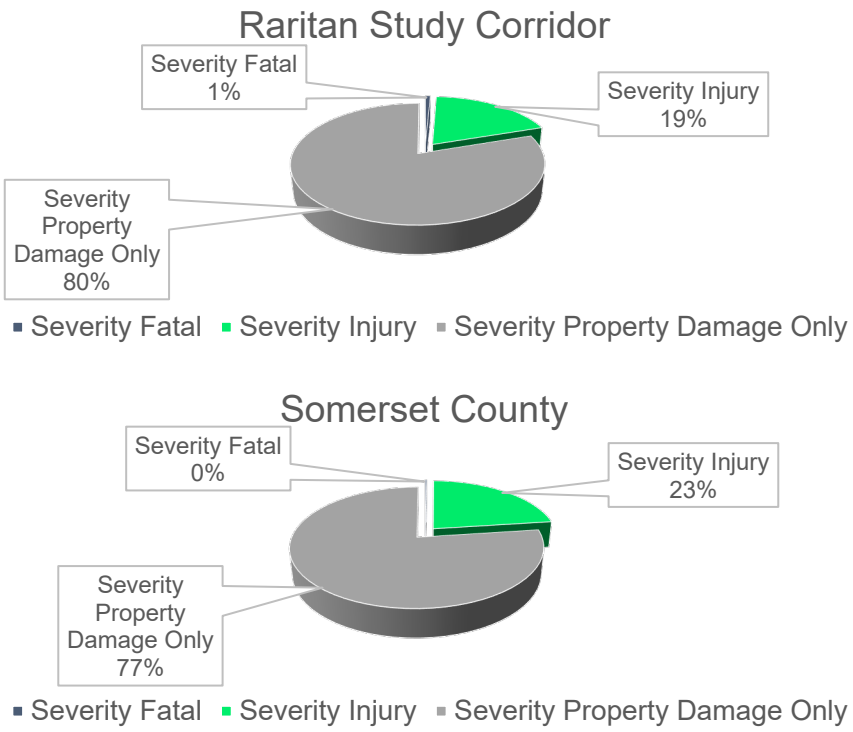
Table 4 – Vehicular Crash Counts by Type

Crash Type	Total
Animal	1
Backing	4
Fixed Object	4
Left Turn/U-turn	1
Opposite Direction (Head on, Angular)	1
Pedalcyclist	3
Pedestrian	9
Right Angle	25
Same Direction (Rear-End)	54
Same Direction (Side Swipe)	20
Struck Parked Vehicle	22
Total	144

C. *Crash Severity*

The study segment generally conforms to County's trends when considering the percent distribution of crash severity. Data shows a slight increase in crashes resulting in injuries rather than property damage only when compared to the County. The analysis period saw one (1) fatality along the selected roadway study segment (Figure 8).

Figure 8 – Crash Severity, Percent Distribution by Classification



D. Roadway Surface & Light Condition

Crashes occurred more frequently during dry driving conditions on the study segment than the County-wide average. Wet road-related crashes are the second most overrepresented roadway surface condition during crashes, 16.0%, which is approximately 0.1% less frequent than the County-wide average, 16.1% (highlighted in yellow in **Figure 9**).

Figure 9 – Vehicular Crashes, Percent Distribution by Surface Condition

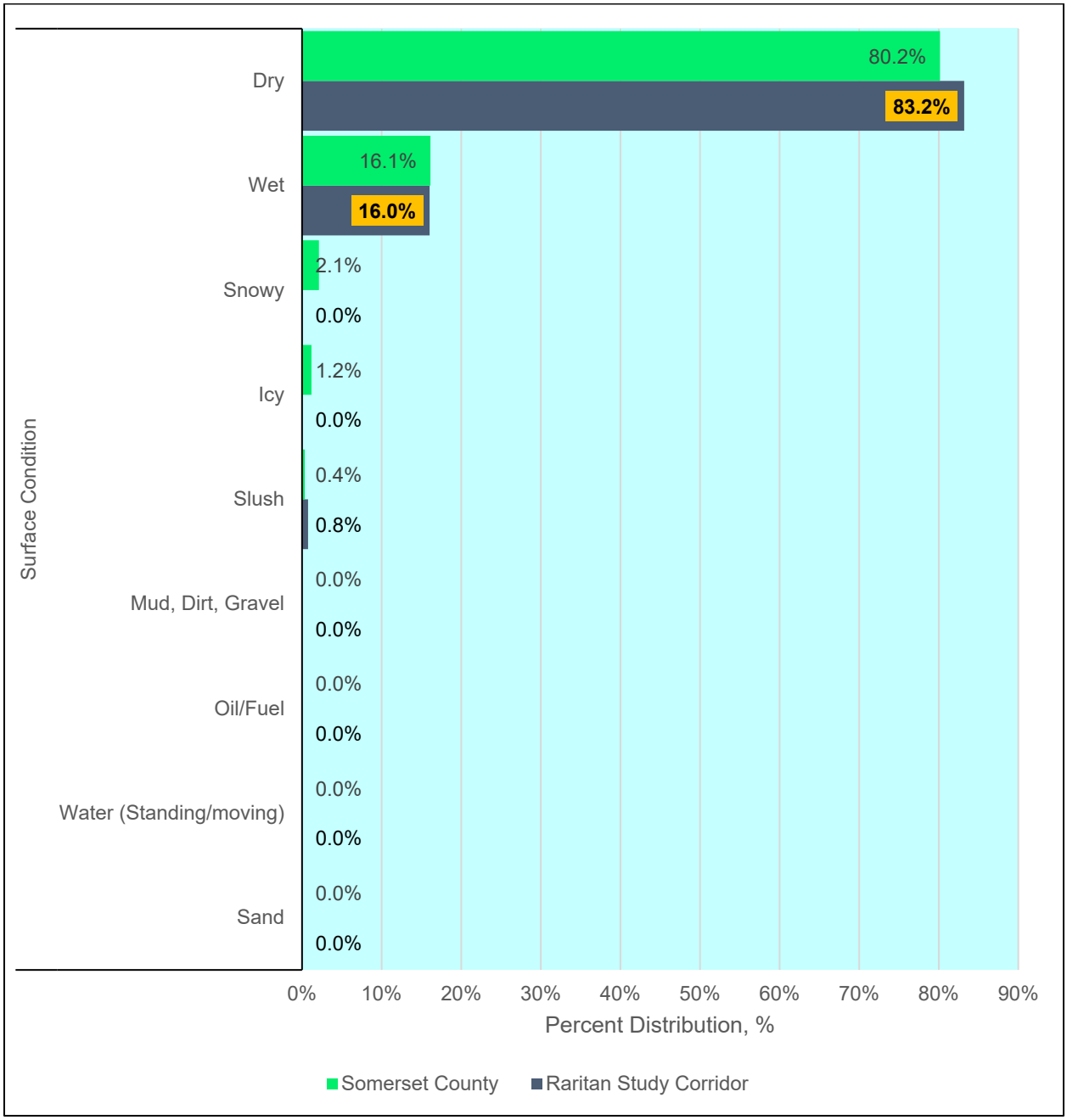
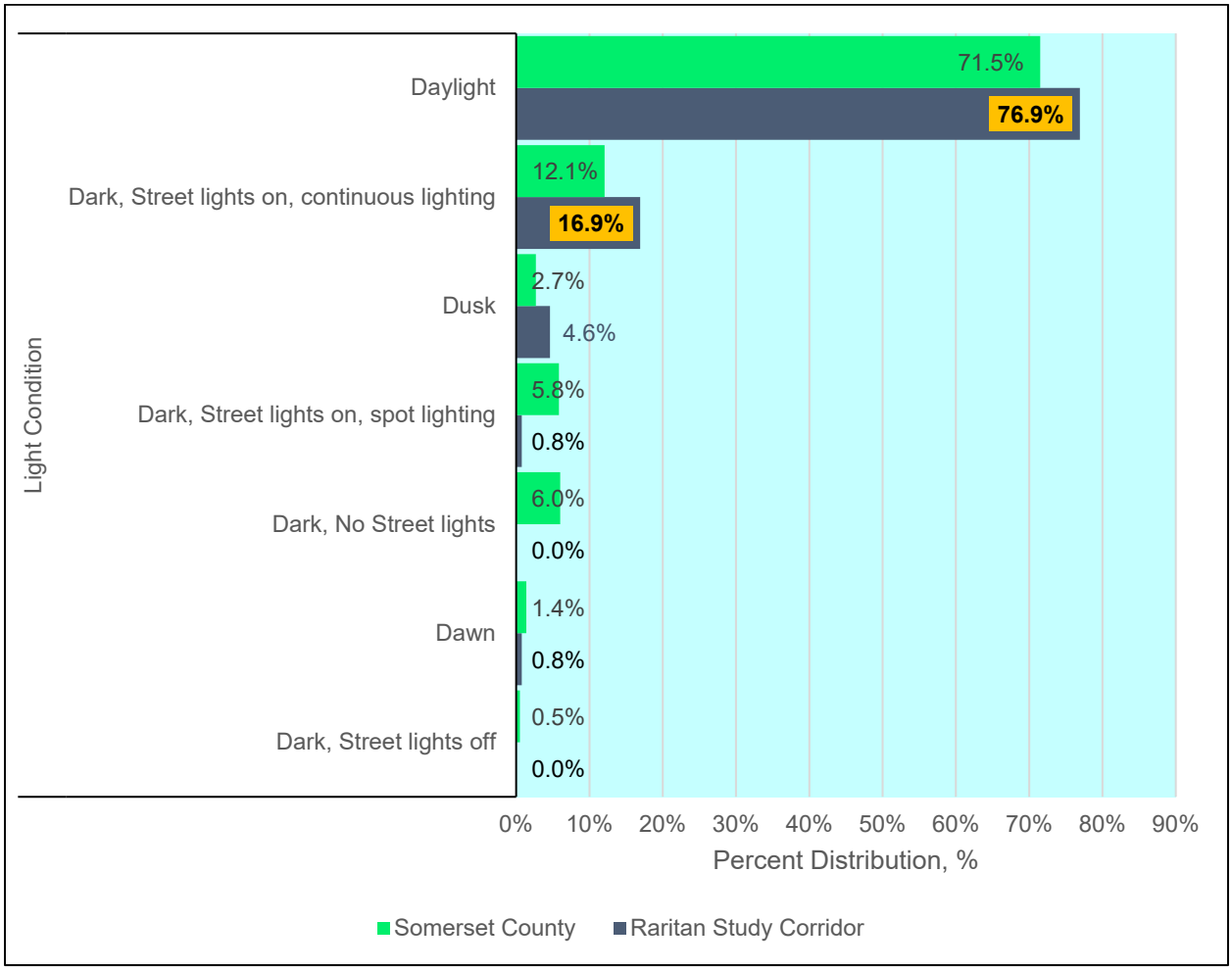


Figure 10 – Vehicular Crashes, Percent Distribution by Light Condition



Approximately 76.9% of crashes on the study segment occurred during daylight conditions. This is slightly higher than the County-wide average of 71.5% (highlighted in yellow in **Figure 10**). Crashes occurring during "Dark, Street lights on, continuous lighting" is higher than the County average, 16.9% on the study segment corridor versus the 12.1% for the County due to the developed nature of the study area (highlighted in yellow in **Figure 10**). An elevated occurrence of dusk condition crashes may suggest westbound sun glare issues (**Figure 10**).

E. Location

Crash visualization using the histogram, grouped in 0.01-mile segments, **Figure 11** indicates that the signalized intersections of US 206 and First Avenue experienced the highest occurrence of crashes along the study segment, as shown highlighted in yellow. These intersections account for nearly half of all crashes. The signalized intersections of First Avenue/Lyman Street and Thompson Street also present high crash totals, 19, and 13, respectively. At unsignalized intersections, Loomis Street had the highest total of 7 crashes (highlighted in yellow in **Figure 11**). A three-dimensional representation of this crash histogram for the 2016 through 2020 timeframe, imposed onto a map of the study area, is shown on **Figure 12**.

Figure 11 – Vehicular Crashes by Milepost

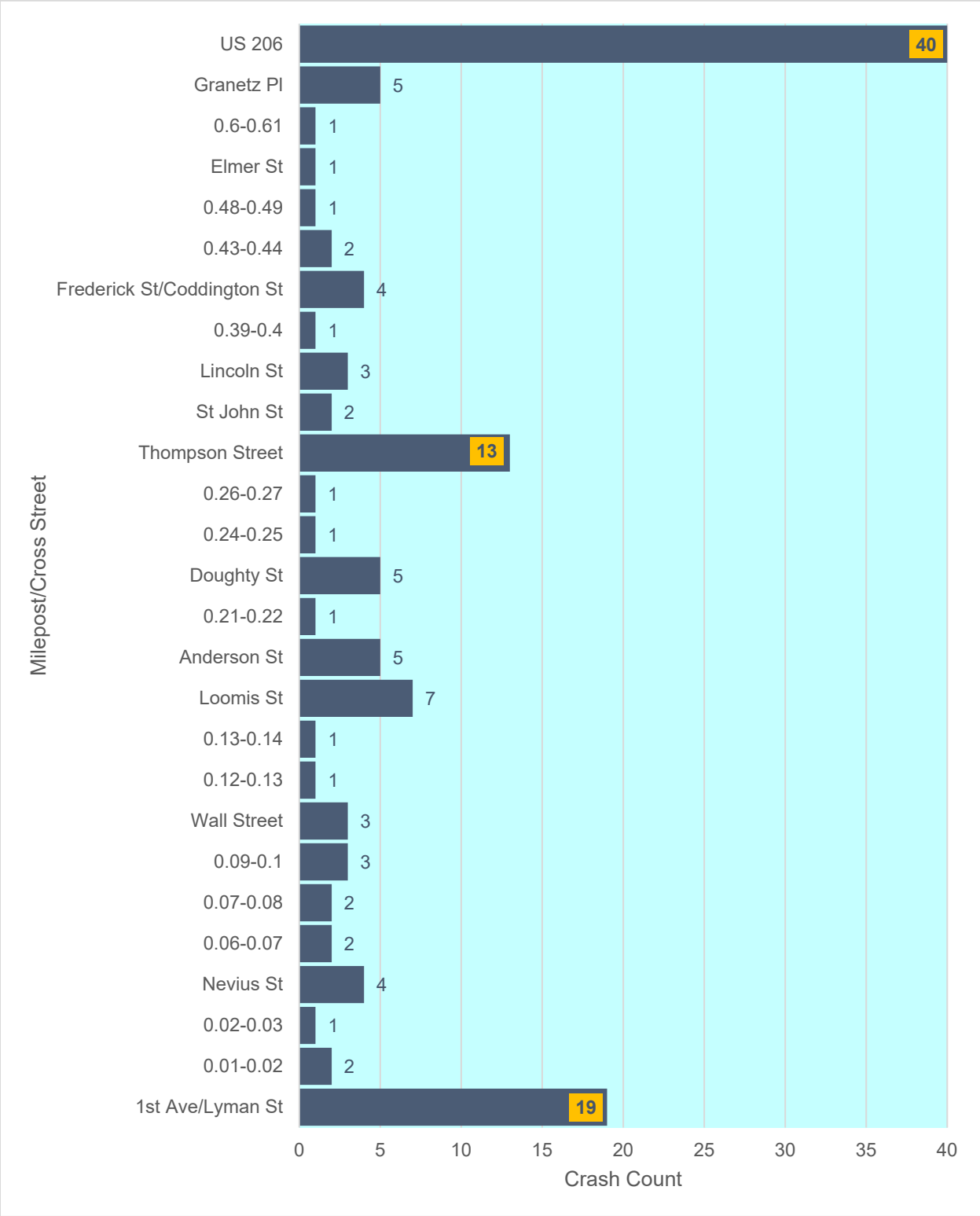
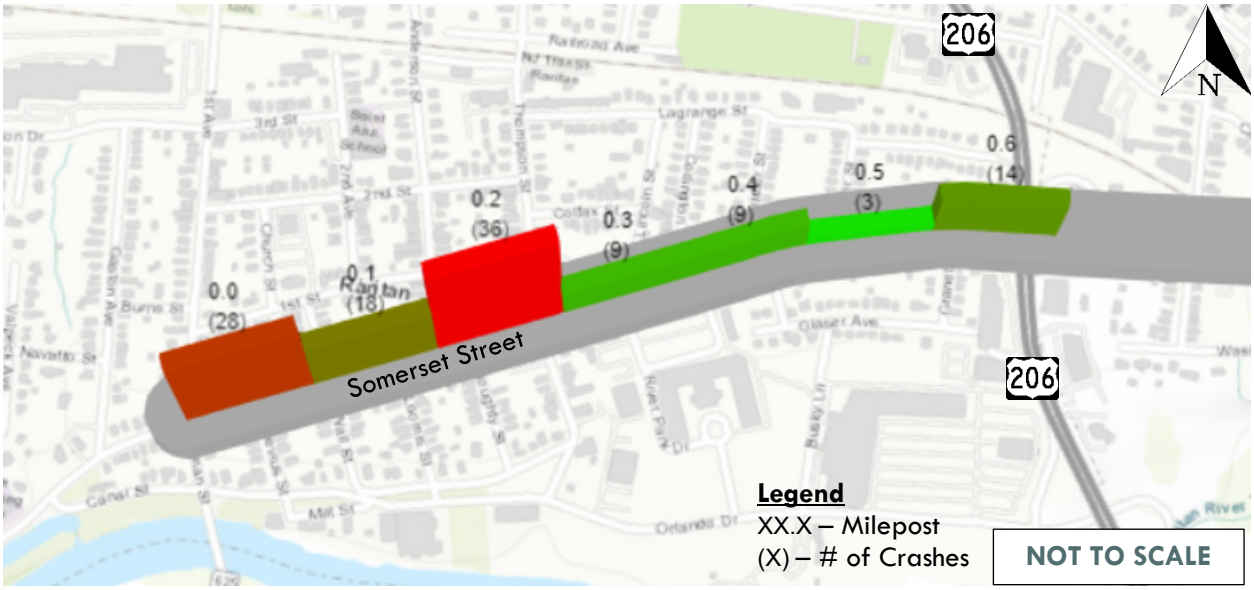


Figure 12 – Visual Estimation of 5-Year (2016 - 2020) Crash History Obtained from Safety Voyager [12]



F. Age of Those Involved

Driver-, occupant-, and pedestrian-involved data was also accessible from the NJDOT crash tables. A normal distribution table was developed (**Figure 13**) utilizing the age data provided by NJDOT. Among the 111 crashes reported, the average person(s) involved age was determined to be approximately 39 years old. Approximately 68% of person(s) involved were between the ages of 21 years old and 57 years old. **Table 5** outlines the percent distribution of the age(s) of those involved in the vehicular crashes, grouped by ten years of age. Data from the table indicates that crashes with drivers between the ages of 26-55 years old occur with a higher frequency on the study segment than the County average for the same age groups. Age group 16-25 account for the highest frequency of those involved at 21.0%. Most notably, the under 16 age group represented 14.3 percent of those involved in vehicular crashes, almost double the County average of 7.9%.

[12] Five-year crash totals shown on histogram from Safety Voyager may vary from crash report data obtained from municipality's police department and do not include crashes recorded as occurring on side street approaches, which are included in the record of analyzed collected crash data.

Figure 13 – Histogram of Age(s) Involved

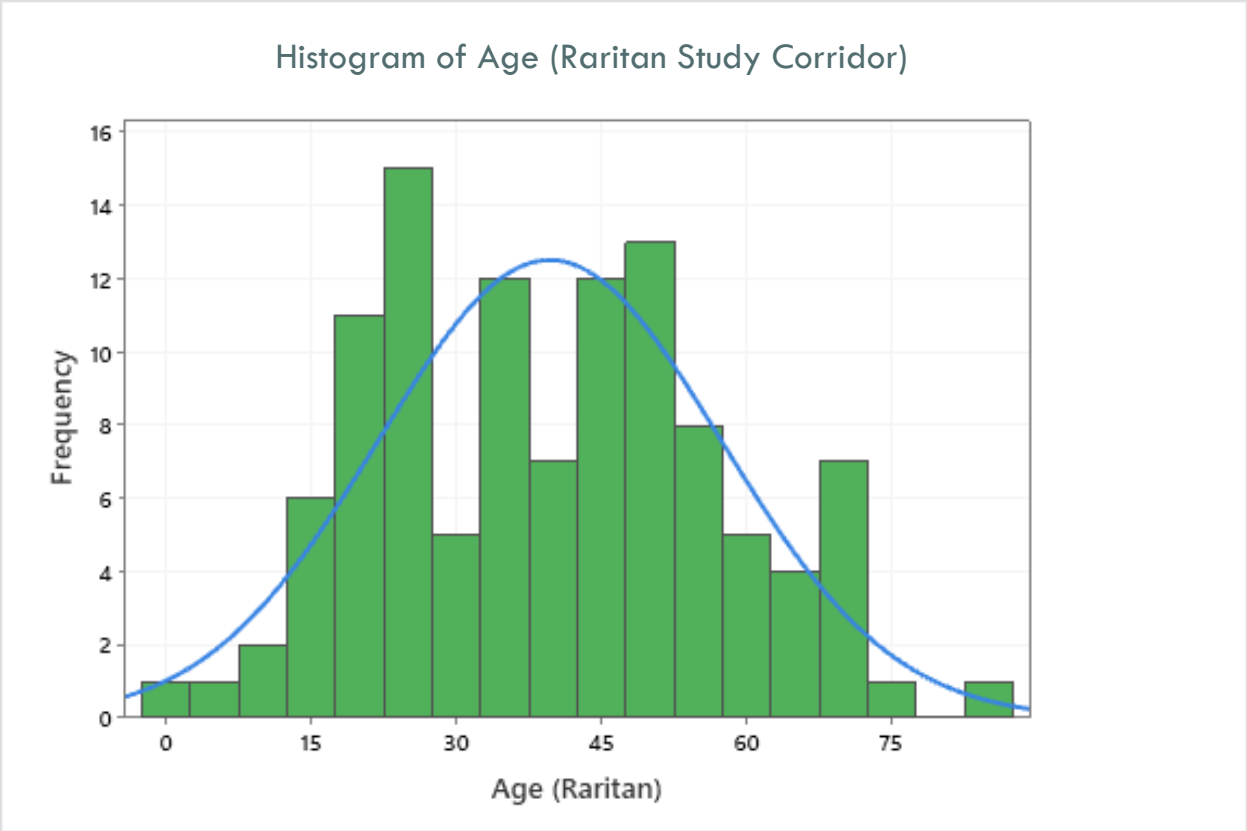


Table 5 – Age(s) Involved, Percent Distribution

Age Involved	Raritan Borough Study Corridor	Somerset County
Under 16	14.3%	7.9%
16-25	21.0%	23.1%
26-35	18.5%	16.9%
36-45	16.0%	15.8%
46-55	17.6%	16.7%
56-65	5.0%	11.3%
66-75	6.7%	5.1%
76-85	0.8%	2.5%
86-95	0.0%	0.7%
96-105	0.0%	0.0%
106-116	0.0%	0.0%

IV. RSA Logistics

All data previously discussed in this report was used to inform the RSA conducted on this corridor. All participants involved in this RSA, whether in attendance during the pre-audit meeting, in-field review, and/or post-audit meeting, are listed in **Appendix E**. The pre-audit meeting was held at 10:00 AM via video conferencing on Thursday, April 1st, 2021 on the morning of the in-field review meeting to introduce the audit team, cover the activities to complete the RSA, define the RSA process, cover existing conditions data, present safety measures under consideration, summarize crash data collected for the corridor, and go over ground rules for conducting the in-field portion of the audit safely. The PowerPoint used to facilitate this discussion is provided in **Appendix F**.

The in-field component of the RSA was conducted at 2:00 PM on the same day as the pre-audit meeting. The audit team met in a social-distanced manner, while masked, in the Municipal Parking Lot at 34 Thompson St in Raritan Borough for a flipbook RSA orientation presentation to reiterate the ground rules of the audit. Upon conclusion of the orientation, participants were paired off with each other to walk halves of the corridor, seeking to pair each Somerset County Roadway Safety Study project team member (whether with the County or Consultant team) with each of the stakeholders. Utilizing aerial mapping, prompt lists, photography, and video, participants recorded their observations of the corridor, as well as potential safety measures to address potential safety concerns. After walking the corridor, the RSA team met back in the parking lot to share overall thoughts on the corridor and fill out a survey on corridor identity, crossings, pedestrian-vehicle interactions, sidewalk and roadway conditions, and streetscape amenities, the answers of which were compiled and are averaged in **Appendix G**. Based on survey results, the corridor had the following perceived concerns:

- Obscured sight lines between pedestrians and vehicles at crossing locations.

The following week, on Monday, April 5th, 2021, the RSA team reconvened via video conferencing to view photos gathered during the in-field audit, some of which are presented in the following section, to discuss each observation, elaborate on potential ideas to mitigate, cover questions on travel pertaining to the overall corridor, and summarize next steps for this study. This discussion helped to form the basis of the Implementation Matrix in the **Identified Issues & Observations** section of this report. The PowerPoint used to facilitate this discussion is provided in **Appendix H**.

V. Identified Issues & Observations

This section depicts a sampling of overall issues identified during the RSA. Please refer to the Implementation Matrix in the following section of the report for a comprehensive listing of identified corridor issues.

Pedestrian & Cyclist	Pedestrian & Cyclist
	
Curb ramps lack ADA compliance and need restriping and pavement repair	Cyclists traverse corridor without dedicated bike lanes
	
Steep driveway pitch that slopes toward street near Thompson Street	Crossing at Frederick Street lacks crosswalk striping and ADA compliance
	
Curb ramps at Route 206 appear to need ADA-compliant upgrades	Lincoln Street lack indication of one-way traffic northbound from Raritan Street

Operations & Visibility	Maintenance
	
Signs are blocked by roadside tree branches.	Ponding near crossings compromises pedestrian crossing areas indicate drainage problems
	
Business driveway access set too close to busy Route 206 intersection causing dangerous vehicular exits	Tree pits that have the ability to be widened if tree grows larger are not addressed properly causing raised grates
	
Stop bar on Route 206 South seems set further than MUTCD guidelines compromising pedestrian safety	Pavement encounters uneven settling after utility work

VI. Findings & Recommendations

This section summarizes the site-specific and corridor-wide safety issues, potential strategies, and recommendations to improve safety. An Implementation Matrix is provided that summarizes the recommendations and provides qualitative information on time frame, cost, and responsible jurisdiction. Please note that recommendations cited in the Implementation Matrix are to reflect feedback received during the RSA process, and are meant to be a record of ideas discussed. Symbols used in the Implementation Matrix are defined in **Table** 6 as follows:

Table 6 – Legend of Symbols in Implementation Matrix

Symbol	Meaning	Definition
$	Low cost	Could be accomplished through maintenance
$$	Medium cost	May require some engineering or design and funding may be readily available
$$$	High cost	Longer term; may require full engineering, ROW acquisition, and new funding
🕐	Short term	Could be accomplished within 1 year
🕐🕐	Medium term	Could be accomplished in 1 to 3 years; may require some engineering
🕐🕐🕐	Long term	Could be accomplished in 3 years or more; may require full engineering

A. Implementation Matrix

The following represents the specific findings and recommendations made by the interdisciplinary RSA team, which were subsequently evaluated via discussions with County Engineering on Wednesday, June 2nd, 2021 and Thursday, June 3rd, 2021. As these recommendations are considered for advancement into either a CD study, or incorporation into an overlapping County or municipal project, the recommendations herein should be thoroughly evaluated for feasibility and practicability and designed as appropriate by the roadway owner and/or a professional engineer for conformance to all applicable codes, standards, and best practices. Corridor-wide recommendations, requiring a review of all important applicable infrastructure along the corridor pertinent to these specific topics, are provided in **Table 7**. Further defined recommendations at specific intersection or mid-block locations are provided in **Table 8**. **Recommendations bolded within the Implementation Matrix below feature one of the twenty Proven Safety Countermeasures from the FHWA[13], which means that the recommendation is shown to have a significant safety benefit as proven by substantial traffic safety research.** These recommendations are tied to Crash Modification Factors (CMFs) showing a substantial reduction in crashes, as well as research documented on the Crash Modification Factor Clearinghouse website that has a high-quality ranking. This high ranking indicates the quality of study design, sample size, statistical methodology, statistical significance, etc. for the research backing each CMF. Mapping of proposed location-specific recommendations is provided in **Appendix I**.

Table 7 – Corridor-Wide Recommendations

No.	Recommendation	Cost	Time Frame	Jurisdiction
KEY STUDY RECOMMENDATION – Entire Somerset Street, Raritan Borough Study Corridor				
1	Consider hardscaping existing daylighting areas with solid curbing and sidewalk. Could also be implemented alongside Green Stormwater Infrastructure to filter stormwater runoff. Look for opportunities to implement with ongoing Borough TAP grant work.	$$$	🕐🕐🕐	Municipality
2	Stripe no parking zones in compliance with Title 39 regulations	$	🕐	Municipality

[13] https://safety.fhwa.dot.gov/provencountermeasures/

No.	Recommendation	Cost	Time Frame	Jurisdiction
Bicycle				
3	Evaluate existing inlets for bicycle-safe grates and replace as necessary.	$$	🕐🕐	County
Maintenance				
4	Coordinate with the Borough to replace and/or maintain tree knock-out grates. Consider raised pits instead.	$	🕐	Municipality
5	Remove DRUG FREE SCHOOL ZONE signs. This area is not a school zone.	$	🕐	County
Operations				
6	Conduct an assessment to determine where daylighting and/or curb extensions should be added, extended, or shortened.	$$	🕐	County
7	Relocate signage so it is not blocked by trees.	$	🕐	County
8	Coordinate with the Borough and PSE&G to upgrade lighting.	$	🕐🕐	Municipality/ Utility company
9	Conduct sign inventory to determine what traffic signs should be upgraded, relocated, removed, and installed to reduce sign clutter.	$	🕐	County
10	Coordinate with ongoing TAP grant design work on corridor, which includes improved sidewalks and crosswalks, and new curb extensions.	$	🕐🕐🕐	County/ Municipality
11	**Conduct speed study along the corridor between Codington Street and US 206 to analyze if posted speed limits are appropriate**	**$$**	🕐	**County**
12	Consider establishing a bicycle wayfinding plan for the intersecting bicycle routes.	$$	🕐🕐🕐	Municipality
13	Consider installing infiltration planters	$$$	🕐🕐	Municipality
Pedestrian				
14	Perform curb ramp assessment to determine the number of curb ramps that need to be replaced, repaired, and constructed.	$$	🕐	County/ Municipality
15	Coordinate with RideWise to install/construct several parklets along the corridor.	$$	🕐🕐	County/ Municipality/ RideWise
16	Conduct a sidewalk assessment to determine the extent of sidewalk that needs to be replaced, repaired, and constructed.	$$	🕐	Municipality
17	Consider implementing flared crosswalks	$	🕐	County/ Municipality

Table 8 – Location-Specific Recommendations

No.	Recommendation	Cost	Time Frame	Jurisdiction
Lyman Street/1st Avenue				
18	Conduct photometrics analysis to determine if intersection lighting meets standards, especially on west side of intersection.	$$	🕐🕐	County
19	**Evaluate existing timing directive to determine if LPIs and 3.5fps flashing don't walk times can be accommodated.**	**$$**	🕐🕐	**County**
20	Coordinate with SCOOT to increase visibility of transit stops near this intersection.	$	🕐🕐	Municipality/ SCOOT

No.	Recommendation	Cost	Time Frame	Jurisdiction
21	Consider adding edge line striping and/or mountable curb to assist with turning movements and keep vehicles from driving over curb.	$	🕐🕐	County
22	**Determine if backplates can be added to signal heads.**	**$**	🕐🕐	**County**
23	Evaluate intersection capacity to determine if NO TURN ON RED signs can be installed on all approaches.	$$	🕐🕐	County
24	Add edge line with gore hatching to reduce width of EB receiving lane so it does not appear as two lanes.	$	🕐🕐	County
25	Consider gateway treatments, such as banners strung between utility poles or buildings	$	🕐	Municipality
26	Consider installing mountable curbs	$$	🕐🕐	Municipality
Quick Check Driveway				
27	Consider installing "DO NOT BLOCK THE BOX/INTERSECTION" signage and striping.	$	🕐	County
28	Consider formalizing daylighting/no on-street parking directly across from the driveway.	$	🕐	Municipality
29	Consider removing dedicated left turn lane on EB Somerset Street so there is one lane approaching the driveway.	$$	🕐	County
30	Restripe stop bar and install stop sign for driveway.	$	🕐	Property Owner
31	Investigate feasibility of restricting driveway to right-in, right-out movements only.	$$	🕐🕐	County/ Property Owner
32	When property is redeveloped, driveway should be realigned with Nevius St during Borough application process.	$$$	🕐🕐🕐	Municipality
Nevius Street				
33	**Consider installing RRFB or LED pedestrian warning sign for crosswalk on Somerset Street.**	**$$**	🕐🕐	**Municipality**
34	Consider installing no pedestrian crossing signs.	$	🕐	County
35	Install speed cushions on Nevius Street to limit bypass traffic around signal during congested periods.	$$$	🕐🕐🕐	Municipality
36	Refresh daylighting, no parking striping, and crosswalks.	$	🕐	County
37	Consider hardscaped curb extensions along with a gateway treatment for downtown Raritan.	$$$	🕐🕐🕐	County/ Municipality
Wall Street				
38	Consider installing no pedestrian crossing signs.	$	🕐	County
39	Explore hardscaping/daylighting areas with curb extensions to increase pedestrian visibility and eliminate parking that is too close to the crosswalks.	$$	🕐🕐	County
40	Perform feasibility study to relocate drainage facilities where conflicting with pedestrian paths of travel.	$$	🕐🕐🕐	County
41	Plant new tree in empty tree pit on NE corner.	$	🕐	Municipality
42	Install parklet in NW corner of intersection to service ice cream business pedestrian overflow.	$$	🕐	Municipality/ RideWise
43	If parklet and/or other hardscaping is installed, consider relocating crosswalk and stop bar on SB approach to improve vehicle sight distance.	$	🕐	County
44	Construct full-height curb to replace depressed curb next to parking spaces approximately 100' east of Wall Street.	$$$	🕐🕐🕐	County/ Municipality

No.	Recommendation	Cost	Time Frame	Jurisdiction
Loomis Street				
45	Consider striping a crosswalk on the west side of the intersection or installing no pedestrian crossing signs.	$	🕐	County
46	Construct hardscaping to replace striped area across from Loomis Street and extend no parking limits. Consider installing in concert with rain garden.	$$	🕐🕐	Municipality
47	Extend no parking area across from Loomis Street with striping.	$	🕐	Municipality
Between Loomis Street and Anderson Street				
48	Implement bike signing and striping on this segment of Somerset Street to connect the planned bike lanes on both intersecting streets.	$$$	🕐🕐🕐	County/ Municipality
Anderson Street				
49	Consider striping a crosswalk on the west side of the intersection or installing no pedestrian crossing signs.	$	🕐	County
50	Opportunity for GSI at NE corner where ponding was observed.	$$$	🕐🕐🕐	Municipality
Doughty Street				
51	Consider installing no pedestrian crossing signs.	$	🕐	County
52	Consider constructing curb extensions, daylighting, or parklet around crosswalk. However, existing utilities would make an ADA compliant crossing difficult.	$$	🕐🕐	County
53	Install wayfinding signage for public parking lots on Thompson Street.	$	🕐	County/ Municipality
Thompson Street				
54	Construct curb extension with rain garden on NW corner. However, existing utilities would make an ADA compliant crossing difficult.	$$	🕐🕐	Municipality
55	Evaluate if existing signal timing can accommodate LPIs.	$$	🕐🕐	County
56	Install gore striping between NO PARKING signs on SB approach to make approach lane narrower.	$	🕐	County
57	Consider NO TURN ON RED (NTOR) on WB approach. Evaluate if existing signal timing can accommodate NTOR signage.	$	🕐🕐	County
58	Consider upgrading push buttons and push button signs.	$	🕐🕐	County
59	Consider removing pedestrian signal heads and push buttons for crossing that no longer exists across EB approach and install no pedestrian crossing signage.	$	🕐🕐	County
60	Consider adding striped daylighting on the north side of the intersection to block parking.	$	🕐	County
61	Consider if backplates can be added to signals.	$$	🕐🕐	County
62	Consider relocating stop bars to be at least 4' from crosswalks.	$	🕐	County
63	Consider investigating if street trees on EB approach can be pruned to remove obstructions for signage or relocate blocked signage.	$	🕐	Municipality
64	Consider utilizing parking available behind nearby bank to supplement the public parking available at 34 Thompson.	$	🕐	Municipality
John Street				
65	Restripe SW curb extension corner to align with curb on John Street.	$	🕐	County
66	Install R9-3 and R9-3bP (no pedestrian crossing) signage on the west side of the intersection.	$	🕐	County

No.	Recommendation	Cost	Time Frame	Jurisdiction
67	Reconstruct corner to reduce curb radii.	$$	🕐🕐	County
Between John Street and Lincoln Street				
68	Stripe dedicated ADA space with blue paint, daylight no parking area, relocate 2-hour parking sign from no parking area to on-street parking east of post office, and reorient mailbox to face post office.	$	🕐	Municipality/ USPS
Lincoln Street				
69	Coordinate with bagel shop business owner to relocate tables and chairs out of the pedestrian walking area.	$	🕐	Municipality/ Property owner
70	Install R9-3 and R9-3bP (no pedestrian crossing) signage on the east side of the intersection.	$	🕐	County
71	Reconstruct NW corner to reduce curb radius.	$$	🕐🕐	County
Codington Street/Frederick Street				
72	**Evaluate gas station for access violations and modify as necessary.**	**$$$**	🕐🕐🕐	**Municipality/ Property owner**
73	Stripe crosswalk and stop bar across Frederick Street.	$	🕐	County/ Municipality
74	Refresh existing crosswalk striping.	$	🕐	County
75	Add landscaping to delineate gas station driveways and provide visual separation from pedestrian space.	$$	🕐🕐	Property Owner
76	Consider GSI treatment in front of gas station to reduce ponding and standing water.	$$$	🕐🕐🕐	Municipality
77	Reconstruct sidewalk through gas station driveways to correct non-ADA-compliant cross slopes.	$$	🕐🕐	Municipality
78	Install R9-3 and R9-3bP (no pedestrian crossing) signage on the west side of the intersection if no crosswalk will be installed.	$	🕐	County
Between Frederick Street and US 206				
79	Stripe missing shoulder line and striping for parking to have more of a traffic calming effect.	$	🕐	County
Reimer Street				
80	Stripe crosswalk across SB approach.	$	🕐	County
81	Stripe stop bar across SB approach.	$	🕐	Municipality
Wycoff Street				
82	Drainage inlets must be relocated from pedestrian ROW or pedestrian ROW must be relocated.	$$$	🕐🕐🕐	County
83	Consider adding painted curb extensions.	$	🕐	County
84	**Consider installing a more visible, actuated crossing such as RRFB, blinking LED sign panels, or in-pavement lights.**	**$$**	🕐🕐	**County/ Municipality**
85	Refresh existing crosswalk striping.	$	🕐	County
86	Install R9-3 and R9-3bP (no pedestrian crossing) signage on the west side of the intersection if no crosswalk will be installed.	$	🕐	County
Elmer Street				
87	Install R9-3 and R9-3bP (no pedestrian crossing) signage on the west side of the intersection if no crosswalk will be installed.	$	🕐	County
88	Extend daylighting striping on NE corner to increase sight distance, which preserves sightlines between vehicles turning out of Elmer Street and through traffic on Somerset Street.	$	🕐	County

No.	Recommendation	Cost	Time Frame	Jurisdiction
Granetz Plaza				
89	Coordinate with utility company to remove guy wire hazard.	$$	🕐🕐	Municipality/ Utility company
90	Add daylighting to prevent parking too close to intersection.	$	🕐	Municipality
91	Construct DO NOT BLOCK BOX/INTERSECTION striping.	$	🕐	County
92	Refresh crosswalk striping.	$	🕐	County
93	Consider removing tree that obstructs view from SW corner.	$	🕐	Municipality/ Property owner
94	Replace brick paver sidewalk transition with concrete on SE corner of intersection.	$$	🕐🕐	Municipality
95	Gateway treatments, e.g., banners between utility poles/buildings	$	🕐	Municipality
US 206				
96	Update crosswalk striping.	$$	🕐🕐🕐	NJDOT
97	**Incorporate LPI in signal timing.**	**$$**	**🕐🕐🕐**	**NJDOT**
98	Update push buttons/signage.	$$	🕐🕐🕐	NJDOT
99	Update signal timing to incorporate 3.5fps flashing don't walk time.	$$	🕐🕐🕐	NJDOT
100	Adjust phasing so EB split phase goes first.	$$	🕐🕐🕐	NJDOT
101	Fix EB approach detection for overnight operations.	$$	🕐🕐🕐	NJDOT
102	Construct striping to help trucks make turns through intersection.	$$	🕐🕐🕐	NJDOT
103	Add more signal heads over receiving lanes.	$$	🕐🕐🕐	NJDOT
104	Relocate SB stop bar.	$$	🕐🕐🕐	NJDOT
105	**Install no left turn signage across from Verizon store and restripe driveway.**	**$**	🕐	**Municipality/ Property owner**

B. Road Owner Response

An essential final step of the RSA process (see **Figure 1**) is a response from the roadway owner, which provides accountability between the funding body and the participating jurisdiction who acknowledges the findings within the RSA and their planned steps to address concerns. In responding to the RSA's findings, the road owner, in this case the County, must weigh the safety benefits posed by the recommendations within this report against the available resources to implement such improvements to make an informed decision. Because the audit process generated a long and wide-ranging list of improvements, the road owner is expected to implement these recommended improvements as time and funds allow in coordination with other projects and priorities.

Somerset County delivered their response following the finalization of the findings and recommendations table (see **Appendix J**). However, while the County has overseen this RSA process, by no means should this report be considered as a commitment to address some or all concerns and implement some or all improvements listed within this report. All potential recommendations must be fully studied. It is acknowledged that some recommendations may not be feasible.

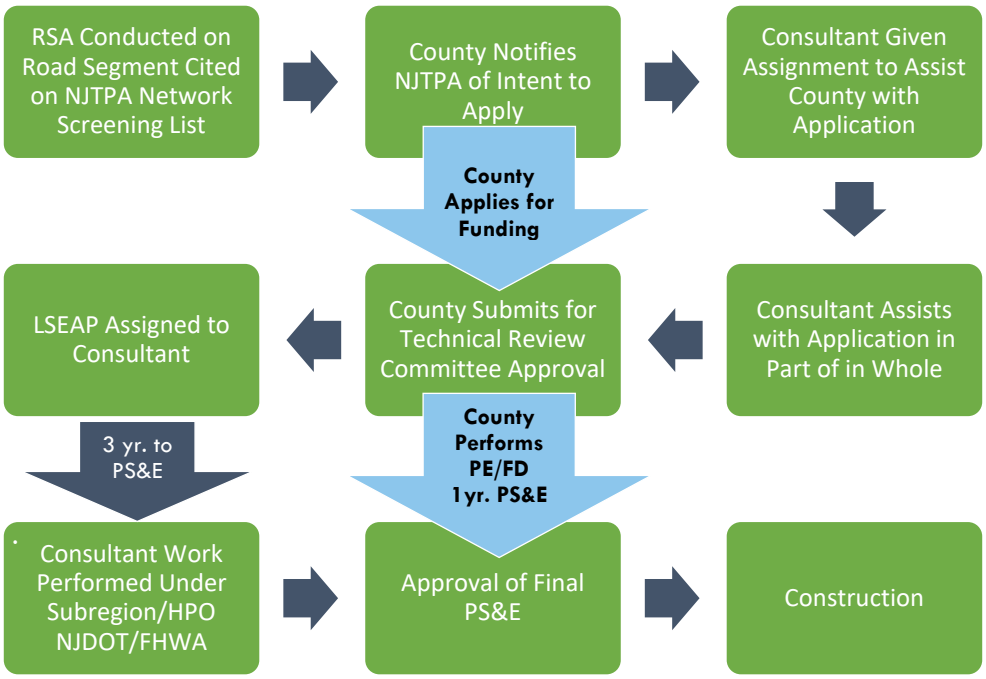
C. Potential External Funding Sources

Local Safety Program

The County has previously used RSAs as a "launching pad" for pursuing funding for corridor safety improvement projects, such as Main Street in Manville and Hamilton Street in Franklin, via the Local Safety Program (LSP) offered through NJTPA. Should the County desire to pursue funding of safety improvements

on this corridor, the RSA can help to scope the specific safety improvements to be conceptualized and designed for eventual funding and construction. The RSA can also be appended to Section 4 of the funding application[14] submitted to NJTPA as a further substantiation and documentation of the understanding of the existing safety issues and proposed safety measures. This application, which also requests information on scope, location ranking, HSM analyses, estimated costs, and environmental impacts, may be filled out by the County itself or with assistance from a consultant designated by NJTPA. Pending determination of eligibility by NJTPA's Technical Review Committee, the County can choose to either perform the Preliminary Engineering and Final Design work in-house or obtain assistance for such work through NJTPA's Local Safety Engineering Assistance Program. It should be noted that implementation of improvements through the LSP often takes around five to six years from corridor selection to construction. A simplified flowchart of this process from RSA to construction is shown in **Figure 14**. If faster implementation is desired, County and municipal operating and capital budgets could be relied upon if internal funding is available.

Figure 14 – Project Development Process for Local Safety Program after RSA Completion



Transportation Alternatives Program

The purpose of the Transportation Alternatives Set-Aside Program (TA Set-Aside) federal grant initiative is to support the construction of "non-traditional" surface transportation projects, which typically involves the designing of infrastructure for active modes such as pedestrians, cyclists, and other non-motorized forms of travel. Supported projects can also have elements that bolster the recreational, historic, cultural, or environmental assets of the project area. Grant funding for a given project can range from $150,000 to $1,000,000. Approximately $12 million in funding was awarded across the state in FY 2020 via this program. The amount of funding is determined on a project-by-project basis with award of prior grant money, and successful execution of prior funded projects, playing a factor. The County would not be prohibited from applying for both Safe Routes to School and TA Set-Aside funding at the same time.

[14] Application for FY 2020 provided here: https://www.njtpa.org/NJTPA/media/Documents/Projects-Programs/Local-Programs/Local-Safety-Rural-Roads/FY-2020-LSHRRRP-Application-Rev_191003.doc?ext=.doc

TA Set-Aside lists the following activities that are eligible for funding under its "Pedestrian/Bicycle Facilities" and "Community Improvement" categories:

- New/reconstructed sidewalks/curb ramps;
- Bike lane striping;
- Wide paved shoulders;
- Bike parking and bus racks;
- New or reconstructed off-road trails;
- Bike/pedestrian bridges and underpasses;
- Lighting;
- Historic sidewalk paving;
- Benches;
- Planting containers;
- Decorative walls; and,
- Walkways.

The recommendations within the Implementation Matrix touch on many of the prior elements listed. To best position itself to attain approval for funding, the applying jurisdiction, whether County or municipal, should pass a resolution of support showing the commitment of maintenance of the proposed complete streets elements. Furthermore, the applicant should have data supporting that the implementation of similar improvements elsewhere within its jurisdiction has resulted in the increase of non-motorized transportation, the stimulus of economic activity, and the improvement in quality of life. A handbook summarizing the process of applying for these funds can be found at NJDOT Local Aid website[15].

D. Demonstration Project

Demonstration projects are where an example improvement is completed for a selected corridor with foresight to prepare for larger rollouts. The improvement(s) should highlight the concept and illustrate the benefits of RSAs and how RSAs may improve the overall level of safety for the road users. The selected demonstration projects should be of strategic importance, and which is representative of the general safety theme suggested for the selected corridor.

Members of the public and participants on the RSA suggested the need for more pedestrian space at the intersection of Somerset Street & Wall Street. The popularity of the local ice cream shop results in these spaces already being used by people eating and waiting for ice cream during popular times. A parklet on Wall Street could offer shelter, seating, and plantings to create a comfortable and attractive space to enjoy ice cream. RideWise (the County's TMA) has supplies for temporary parklets. A painted crosswalk connecting the northwest corner of the intersection to the southwest corner could further establish a crossing used by some pedestrians today. Shown in **Figure 15** is an example temporary parklet established by Somerset County 4-H in nearby Bound Brook Borough just a few years ago.

[15] https://njdotlocalaidrc.com/perch/resources/Uploads/2020-ta-set-aside-handbook-8-12-20.pdf

Figure 15 – Temporary Parklet in Downtown Bound Brook[16]

E. Visualization of Potential Safety Measures

Provided in this section of the report are visualizations of some of the larger reaching proposed safety measures on the corridor in the Implementation Matrix (**Table 7** and **Table 8**). Visualizations of these safety measures, along with accompanying descriptions on how these ideas seek to improve safety for vehicular, pedestrian, and cyclist travel, are adapted from the following publications:

- *New Jersey Pedestrian and Bicycle Resource Center* video library, 2021[17]
- *Cross County Connection TMA* video library, 2021[18]
- *NJDOT Technology Transfer* video library, 2021[19]
- *NJDOT Safe Routes to School* video library, 2021[20]
- *2017 State of New Jersey Complete Streets Design Guide*, NJDOT, 2017
- *Proven Safety Countermeasures*, FHWA, 2017
- *Small Town and Rural Multimodal Networks*, FHWA, 2016
- *Separated Bike Lane Planning and Design Guide*, FHWA, 2015
- *New Jersey School Zone Design Guide*, NJDOT, 2014
- *Urban Bikeway Design Guide 2nd Edition*, National Association of City Transportation Officials, 2014
- *Urban Street Design Guide*, National Association of City Transportation Officials, 2012

Key Study Recommendation – Green Stormwater Infrastructure and Flared Crosswalks for Proposed Curb Extensions

About 20 years ago, the Borough began a corridor-wide daylighting initiative on Somerset Street, cross-hatching areas along the curb near intersections to further reinforce parking restrictions, which helped to improve sight lines between through traffic on Somerset Street and 1) vehicles pulling out from side streets or 2) pedestrians looking to cross Somerset Street. However, as evidenced by faded daylighting striping and vehicles parked in daylighting areas during the RSA, continued enforcement and maintenance is needed to make this current crash countermeasure effective. Curb extensions can be an effective way to entirely preclude vehicles from parking on top of intersections and provide pedestrians with a space to better establish their presence at a roadway crossing location.

In 2016, the Borough received a million-dollar grant for the Pedestrian Improvements from the NJ Transit Rail Station to the Riverfront from the Local Aid/Transportation Alternatives Program. These improvements are currently in design, which includes converting Anderson Street and Thompson Street from bi-directional

[16] Safe Routes NJ. (2020). Bound Brook Youth Engagement. YouTube. Civic Eye Collaborative. https://www.youtube.com/watch?v=aHtUWTjhOMw.
[17] https://www.youtube.com/channel/UCMsSU487ZPfaOAjcC7K8_SQ
[18] https://www.youtube.com/channel/UC5C0fODzuDqT9ycKMYv0C3Q
[19] https://www.youtube.com/channel/UC-L3YfqzFHcuDw6aI7wDrJQ
[20] https://www.youtube.com/channel/UCjlvrPjwNZ97MkX5lRol4ow

traffic into a pair of one-way streets, striping bike lanes and sharrows on various streets in the neighborhood, and constructing hard curb extensions (**Figure 16**) at improved intersections with Somerset Street. These curb extensions reduce crossing distances and pedestrian exposure to vehicular traffic.

As designs of these improvements on Somerset Street move forward, additional treatments that could be implemented alongside curb extensions should be considered, including ergonomic crosswalks (used to better reflect pedestrian circulation at an intersection, **Figure 17**) and infiltration planters (used to act as a receptacle to filter stormwater runoff, details in **Figure 18**).

Figure 16 – Curb Extensions in the City of Hoboken[21]

Figure 17 – Ergonomic Crosswalk in Downtown Union Township[22]

[21] Hoboken / NJTPA. (2019). Hoboken Street Design Guide. Civic Eye Collaborative. https://www.hobokennj.gov/resources/street-design-guide.
[22] NJDOT / FHWA. (2019). Stuyvesant Ave, Union: 2019 CS. YouTube. Civic Eye Collaborative. https://www.youtube.com/watch?v=5sUElycQc78.

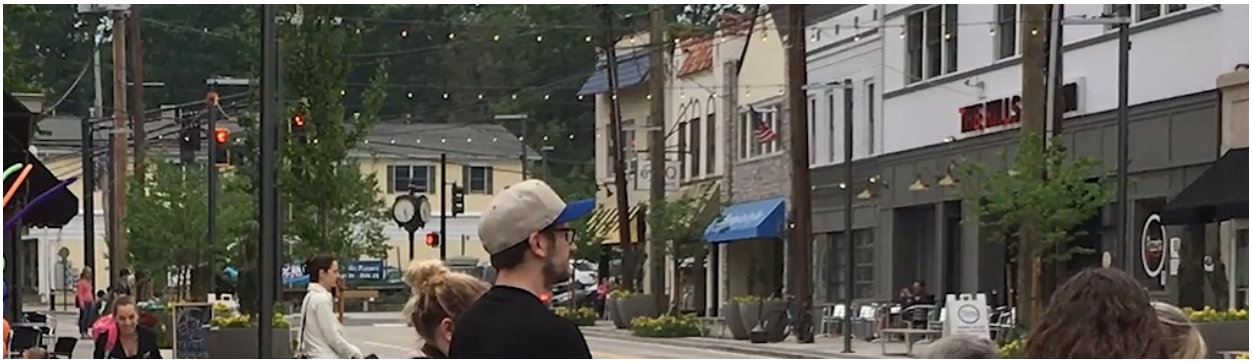
Figure 18 – Millburn Township Curb Extensions with Infiltration Planters, Details Included[23]

[23] NJDOT / FHWA. (2017). Millburn Township,: 2017 CS. YouTube. Civic Eye Collaborative. https://www.youtube.com/watch?v=XjRPx5YhwoU.

Gateway Treatments

RSA participants, particularly from the Borough, highlighted the fact that elevated vehicle speeds can be an issue on entrance to the downtown area, especially during weekend travel periods. Gateway treatments, such as banners strung between utility poles or buildings (as is currently done at the Coddington/Frederick Street intersection), can convey visual queues to drivers of entering a downtown environment with slower speeds. The Borough could also implement a similar gateway treatment for vehicles entering the Borough from the west (Branchburg) and south (Hillsborough) with lights strung overhead at the Nevius Street intersection with Somerset Street, which can also help to add street ambience and incentivize local retail use.

Figure 19 – Example Gateway Treatment with Light Strings in Millburn Township[24]



Mountable Curbs at First Avenue Intersection

The intersection of First Avenue & Somerset Street serves as a conduit of not only vehicular travel, but also pedestrian and cyclist travel to nearby recreational destinations, such as Duke Island Park, Duke Farms, and the Nevius Street Sitting Bridge. However, design of this intersection is vehicular-centric with relatively large turning radii. The County could consider constructing concrete mountable curbs on all corners of the First Avenue intersection to tighten turning radii for general passenger car traffic, slowing turning speeds and mitigating the risk of pedestrian-vehicle conflicts and collisions while accommodating large sweeping truck turning movements. This feature, however, would need to accommodate the pavement loading of the trucks utilizing the feature to preserve the integrity of the mountable curb for crossing pedestrians.

Figure 20 – Mountable Concrete Curbs in Portland Oregon[25]

Speed Cushions on Nevius Street

Cut-through traffic was observed to occur on Nevius Street, with vehicles bypassing peak hour congestion at the First Avenue intersection. Speed cushions (**Figure 21**) could help to discourage this cut-through traffic

[24] NJDOT / FHWA. (2017). Millburn Township,: 2017 CS. YouTube. Civic Eye Collaborative. https://www.youtube.com/watch?v=XjRPx5YhwoU.
[25] NJDOT. (2017). *2017 State of New Jersey Complete Streets Design Guide.*

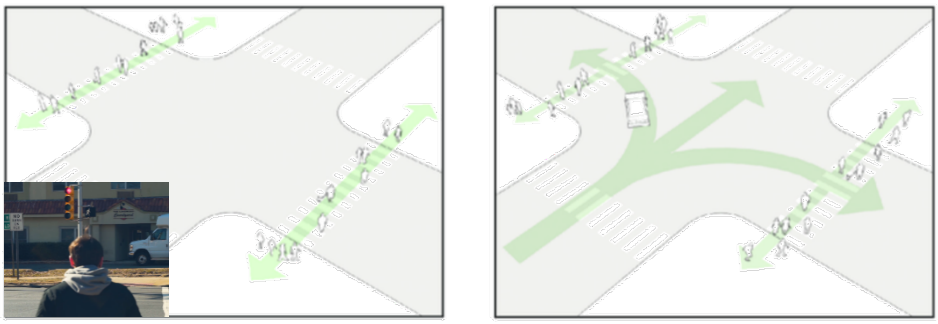
activity. Speed cushions can be designed to slow an average vehicle's wheelbase width yet can also allow for bicyclists and larger emergency vehicles, such as firetrucks, to move along the street unimpeded. The construction of speed humps on two-lane residential streets and on one-way residential streets under county or municipal jurisdiction are permissible on roadways with 1) a posted speed of 30 mph or less and 2) an AADT of 3,000 vehicles per day or less, in accordance with NJDOT law (C.39:4-8.9 Construction of speed humps, traffic calming measures by municipality, county).

Figure 21 – Sample Speed Humps from NACTO[26]

Leading Pedestrian Intervals (LPIs) & Signal Phasing

LPIs are a low-cost, effective way to help pedestrians establish their presence at signalized crossing locations before conflicting vehicles have the right-of-way (**Figure 22**). This is one of FHWA's Proven Safety Countermeasures, boasting an approximate reduction of 13%[27] of pedestrian-vehicle crashes with proper implementation. Vehicular capacity is noted to be a barrier to implementation, which requires intersection capacity analysis before implementation. Thompson Street is a prime candidate for implementation due to relatively low vehicle volumes and two-phase signal timing. Implementation would be difficult at the Route 206 (where NJDOT coordination is needed) and First Avenue (where lead left phasing and congestion may preclude implementation) signals. ADA improvements and phasing adjustment at Route 206 could improve pedestrian safety, by changing the split phasing at the intersection to allow the southern crosswalk phase (which has seen pedestrian collisions, including a fatality) to proceed before the northern crosswalk phase.

Figure 22 – Leading Pedestrian Interval (from NACTO and Lakewood Township)[28]



PHASE 1
Pedestrians are given a minimum head start of 3–7 seconds when entering the intersection.

PHASE 2
Through and turning traffic are given the green light. Turning traffic yields to pedestrians already in the crosswalk.

[26] Figure from National Association of City Transportation Officials. (2012). *Urban Street Design Guide*.
[27] FHWA. (2017). Proven Safety Countermeasures. https://safety.fhwa.dot.gov/provencountermeasures/.
[28] Figure from National Association of City Transportation Officials. (2012). *Urban Street Design Guide*. Photo from NJDOT Technology Transfer. (2019). *What is an LPI?* YouTube. Civic Eye Collaborative. https://www.youtube.com/watch?v=xk8hn7rdHds.

VII. Conclusion

This RSA Report seeks to describe the process undertaken by the County to investigate possible traffic safety improvements along the Somerset Street corridor, extending from the intersection with First Avenue (CR 567)/Lyman Street (CR 625) at MP 0.0 to the Somerville Borough municipal border at the intersection with Route 206 at MP 0.67, located in Raritan Borough. From survey of prior County, municipal, or regional studies to public and stakeholder outreach conducted as part of this study to the crash data that was reviewed report-by-report to the observations made during in-field audits, potential issues were observed and recorded, not only for corridor-wide issues, but for location-specific issues.

In order to address improve traffic safety, discussions were held with the RSA team and County Engineering to develop a list of tasks to improve traffic safety on the corridor, which are codified in the Implementation Matrix (Chapter IV, Subsection A) in this report. In an effort to assist the responsible jurisdictions (whether municipal, County, or separate agency) to schedule and prioritize these improvements, such were classified by anticipated timeline, and cost magnitude. It is encouraged that the improvement recommendations are shared with all responsible jurisdictions to increase the benefits to be seen from the recommendations in this report.

While the recommendations in the Implementation Matrix are centered around the engineering (and associated maintenance) of roadway features, changes to hard infrastructure alone will fall shy of the benefit that would be seen by implementing the 5E's of highway safety[29]:

- Engineering: highway design, traffic, maintenance, operations, and planning professionals;
- Enforcement: State and local law enforcement agencies;
- Education: communication professionals, educators, and citizen advocacy groups;
- Emergency response: first responders, paramedics, fire, and rescue; and,
- Equity: prioritizing the safety of vulnerable roadway users.

This approach recognizes a shared responsibility across numerous professions to see improved benefits in corridor crash performance, beyond the anticipated reduction in crashes with the implementation of proven crash countermeasures. RideWise (the County's TMA), law enforcement, and EMS are encouraged to continue their efforts in educating the local driving population, holding driving behaviors accountable to Title 39, improving the response times to severe crash incidents, and reaching underserved communities with these safety strategies.

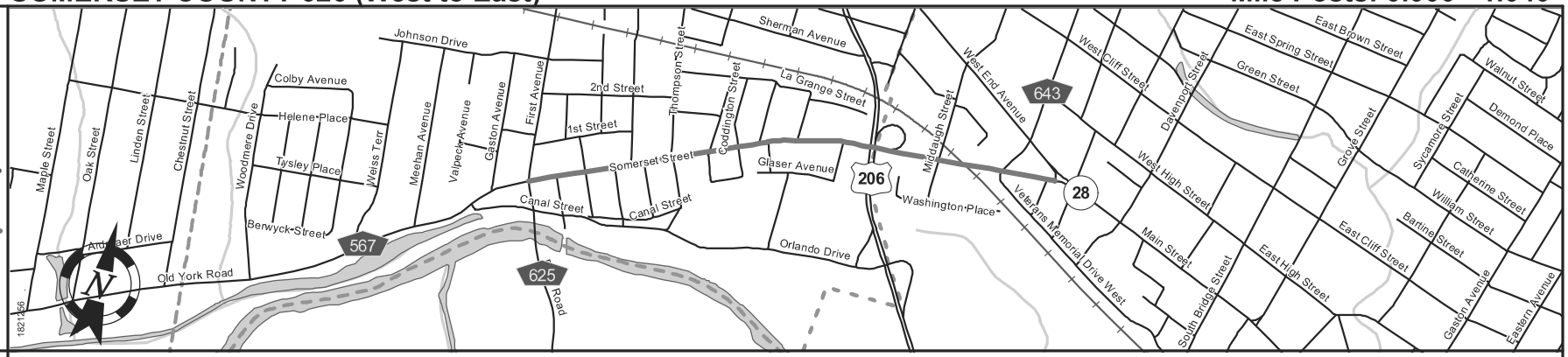
[29] Adapted from FHWA, https://safety.fhwa.dot.gov/hsip/resources/fhwasa1102/flyr3_in.cfm

Appendix A

Straight Line Diagram

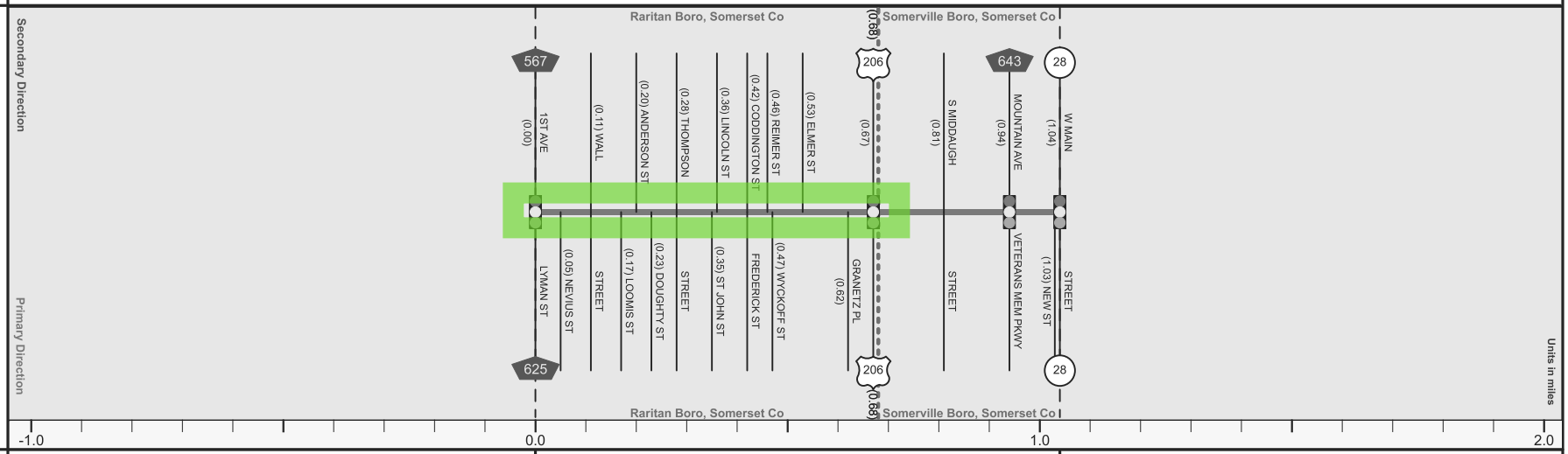
SOMERSET COUNTY 626 (West to East)

Mile Posts: 0.000 - 1.040



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	

Interstate Route 287 | US Route 22 | NJ Route 33 | County Road 689 | Interchange Number 2 | Grade Separated Interchange | Traffic Signal | Traffic Monitoring Sites WIM AVC VOL | Road Underpass | Road Overpass



Street Name		Somerset Street	
Jurisdiction		County	
Functional Class		Urban Minor Arterial	
Federal Aid - NHS Sy		STP	
Control Section			
Speed Limit	NOT POSTED	25	30
Number of Lanes	2	3	2
Med. Type		None	
Med. Width		0	
Pavement	40	36 / 24	40
Shoulder	0	8 / 6	0
Traffic Volume		10,255 (2017)	
Traffic Sta. ID		111827	
Structure No.			
Enlarged Views			

Begin Somerset County 626 MP=0

End Somerset County 626 MP=1.04

Page Created: March, 2019

SRI = 18000626__

Date last inventoried: July 2011

Appendix B

Traffic Data

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 05/02/2017 to 05/08/2017

Site names: 111827,Somerset Street-.54,18000626__
County: SOMERSET
Funct Class: Urban Minor Arterial
Location: BET ELMER ST GRANETZ PL

Seasonal Factor Grp: rg3_4U
Daily Factor Grp: rg3_4U
Axle Factor Grp: rg3_4U
Growth Factor Grp: rg3_4U

	Sun, Apr 30, 2017			Mon, May 1, 2017			Tue, May 2, 2017			Wed, May 3, 2017			Thu, May 4, 2017			Fri, May 5, 2017			Sat, May 6, 2017		
	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W
00:00							48	15	33	63	26	37	45	12	33	49	10	39	94	33	61
01:00							18	8	10	32	8	24	31	9	22	24	7	17	63	21	42
02:00							21	5	16	18	7	11	8	0	8	15	3	12	53	14	39
03:00							22	10	12	25	7	18	27	13	14	16	7	9	29	9	20
04:00							44	21	23	29	14	15	34	13	21	37	14	23	25	13	12
05:00							114	68	46	105	53	52	131	73	58	114	65	49	51	21	30
06:00							400	243	157	423	249	174	433	255	178	364	202	162	151	73	78
07:00							852	523	329	861	512	349	808	474	334	763	458	305	353	199	154
08:00							732	429	303	758	441	317	752	410	342	739	432	307	443	253	190
09:00							644	343	301	584	277	307	662	353	309	602	326	276	656	323	333
10:00							629	295	334	553	252	301	617	312	305	564	281	283	816	396	420
11:00							637	274	363	626	283	343	606	282	324	577	249	328	863	412	451
12:00							660	278	382	708	295	413	714	317	397	666	295	371	799	361	438
13:00							686	290	396	634	255	379	713	319	394	615	270	345	724	287	437
14:00							749	312	437	710	270	440	760	296	464	734	277	457	736	328	408
15:00							840	334	506	849	325	524	855	344	511	823	336	487	724	320	404
16:00							1,023	400	623	938	381	557	1,021	415	606	917	386	531	683	299	384
17:00							1,017	379	638	1,018	384	634	1,014	412	602	938	360	578	621	276	345
18:00							793	306	487	819	298	521	860	354	506	780	342	438	547	238	309
19:00							651	225	426	643	269	374	668	239	429	619	274	345	512	214	298
20:00							484	167	317	535	199	336	484	185	299	471	192	279	448	168	280
21:00							339	123	216	354	117	237	307	102	205	377	119	258	369	135	234
22:00							192	67	125	188	47	141	199	66	133	264	83	181	294	102	192
23:00							102	37	65	106	30	76	107	28	79	179	45	134	152	50	102
Total							11,697	5,152	6,545	11,579	4,999	6,580	11,856	5,283	6,573	11,247	5,033	6,214	10,206	4,545	5,661
AM Peak Vol							852	523	363	861	512	349	808	474	342	763	458	328	863	412	451
AM Peak Fct							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
AM Peak Hr							7: 00	7: 00	11: 00	7: 00	7: 00	7: 00	7: 00	7: 00	8: 00	7: 00	7: 00	11: 00	11: 00	11: 00	11: 00
PM Peak Vol							1,023	400	638	1,018	384	634	1,021	415	606	938	386	578	799	361	438
PM Peak Fct							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PM Peak Hr							16: 00	16: 00	17: 00	17: 00	17: 00	17: 00	16: 00	16: 00	16: 00	17: 00	16: 00	17: 00	12: 00	12: 00	12: 00
Seasonal Fct							.972	.972	.972	.972	.972	.972	.972	.972	.972	.972	.972	.972	.972	.972	.972
Daily Fct							.954	.954	.954	.922	.922	.922	.932	.932	.932	.924	.924	.924	1.131	1.131	1.131
Axle Fct							.486	.486	.486	.486	.486	.486	.486	.486	.486	.486	.486	.486	.486	.486	.486
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000

Created 06/28/2018 10:16 AM

ROAD AADT 10,365 NDIR AADT 5,774 PDIR AADT 4,590

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 05/02/2017 to 05/08/2017

Site names: 111827,Somerset Street-.54,18000626__
County: SOMERSET
Funct Class: Urban Minor Arterial
Location: BET ELMER ST GRANETZ PL

Seasonal Factor Grp: rg3_4U
Daily Factor Grp: rg3_4U
Axle Factor Grp: rg3_4U
Growth Factor Grp: rg3_4U

	Sun, May 7, 2017			Mon, May 8, 2017			Tue, May 9, 2017			Wed, May 10, 2017			Thu, May 11, 2017			Fri, May 12, 2017			Sat, May 13, 2017		
	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W
00:00	115	41	74	32	10	22															
01:00	64	19	45	21	5	16															
02:00	29	8	21	12	7	5															
03:00	6	2	4	17	5	12															
04:00	15	5	10	33	16	17															
05:00	37	15	22	105	57	48															
06:00	77	42	35	410	242	168															
07:00	201	98	103	825	489	336															
08:00	310	159	151	720	405	315															
09:00	468	253	215	593	328	265															
10:00	585	284	301	608	287	321															
11:00	671	331	340	654	311	343															
12:00	644	268	376	732	304	428															
13:00	630	303	327	720	320	400															
14:00	635	283	352	703	288	415															
15:00	590	243	347	830	330	500															
16:00	529	203	326	919	378	541															
17:00	464	194	270	935	358	577															
18:00	510	203	307	779	297	482															
19:00	452	192	260	619	255	364															
20:00	359	150	209	467	142	325															
21:00	253	102	151	353	141	212															
22:00	128	46	82	158	55	103															
23:00	72	31	41	84	25	59															
Total	7,844	3,475	4,369	11,329	5,055	6,274															
AM Peak Vol	671	331	340	825	489	343															
AM Peak Fct	1	1	1	1	1	1															
AM Peak Hr	11: 00	11: 00	11: 00	7: 00	7: 00	11: 00															
PM Peak Vol	644	303	376	935	378	577															
PM Peak Fct	1	1	1	1	1	1															
PM Peak Hr	12: 00	13: 00	12: 00	17: 00	16: 00	17: 00															
Seasonal Fct	.972	.972	.972	.972	.972	.972															
Daily Fct	1.306	1.306	1.306	1.032	1.032	1.032															
Axle Fct	.486	.486	.486	.486	.486	.486															
Pulse Fct	2.000	2.000	2.000	2.000	2.000	2.000															

Appendix C

Excerpts from Prior Studies

Local Bicycle and Pedestrian Improvements

Bicycle and pedestrian improvements within the Borough seek to improve linkages between the focal areas, the train station, and the Raritan River Greenway. Potential improvements include:

- Provide bicycle facility along Thompson Street: This north/south street provides a connection between the train station, the Somerset Street (CR 626) commercial district, and the Nevius Street Bridge and the Greenway via Canal Street or Mill Street. Potential improvements include:
  - Between the rail station and Somerset Street (~42' existing cartway, parking both sides):
    - Alternative 1: Remove on-street parking on one side and install bicycle lanes in both directions. The provision of full bicycle lanes will improve bicyclist comfort for most bicyclists
    - Alternative 2: install a bicycle lane in the northbound direction (uphill) and shared lane markings in the southbound direction
  - Between Somerset Street and Canal Street (~34' existing cartway, parking both sides)
    - Install shared lane markings. The existing cartway width is too narrow to accommodate bicycle lanes without eliminating on-street parking.
  - Mill Street (~31' existing cartway, no parking)
    - Install bicycle lanes in both directions, providing a connection to the proposed Orlando Drive bicycle lanes
- Install bicycle boulevard along La Grange Street and Elmer Street, providing a low stress connection between the focal areas and the train station, and an alternative route to Somerset Street
- Investigate shared-lane markings along Somerset Street. Although it has higher traffic volumes (10,500 ADT) and is less comfortable for the average adult bicyclist, shared-lane markings will assert the legitimacy of bicyclists using the roadway through the downtown
- Investigate shared-lane markings on Tillman Street, Fifth Street, and segments of Sherman Street and Thompson Street. This corridor is an on-street segment of the proposed Regional Greenway Plan, providing a connection to downtown Raritan via the proposed bicycle lanes on Thompson Street, and a connection west to Greenway segments in Bridgewater and Branchburg
- Formalize pedestrian access to the train station from 2nd Avenue. An existing unimproved path is currently used by vehicles and pedestrians. Install a sidewalk connection parallel to the railroad, with a fence separating it from train activity
- Update downtown streetscape to replace rounded brick pavers. Utilize traditional concrete, or textured pavement or pavers with square edges and tight joints to create a more ADA-friendly surface
- Accompanying redevelopment, extend downtown streetscape treatment farther east along East Somerset Street, including wider sidewalks, pedestrian scale lighting, and street trees

Table 6 – Linkage Concept R1 - Raritan Borough

Link	Deficiencies	Recommendations	Time Frame	Cost
A – Somerset Street	• No designated bicycle facilities	• Shared lane markings • Eliminate double-left turn	Short term	Low
B – Somerset Street and Route 206 intersection	• Signal timing • No pedestrian refuge • Long crossing distance • Long vehicle queues	• Install median refuge (via restriping) • High visibility crosswalks • Install countdown pedestrian heads • Install median • Reconfigure intersection to eliminate double left turn lanes & improve signal phasing • Investigate additional street crossing technologies to accommodate senior citizens (i.e. sound, textured pavement, etc.)	Short term Short term Medium term Medium term Medium term Medium term	Low Low Low Medium Medium Medium
C – Route 206	• No sidewalk (southbound) • No designated bicycle facilities	• Construct sidewalk (west) • Connect crosswalk (curb ramp) on southeast corner to provide pedestrians access through the parking area	Long term Short to medium term	Medium Low
D – Granetz Place and Glaser Avenue	• No designated bicycle facilities • Missing sidewalks (Glaser Avenue to Raritan Mall parking area)	• Shared lane markings; route bicycle traffic to Granetz Place and Glaser Avenue through signing and shared lane striping • Provide sidewalks/pathway to Raritan Mall from Glaser Avenue (coordinate with property owner)	Short to medium term Medium term	Low Medium
E – Route 206 and Orlando Drive intersection	• No sidewalk (south or west) • No crosswalks or pedestrian signals with pedestrian heads or timer on 3 of the 4 legs of the intersection	• Install countdown signal • Construct sidewalk (south and west)	Medium term Medium term	Medium Medium
F – Orlando Drive	• No designated bicycle and pedestrian facilities	• Construct sidewalk (north) • Construct designated bike lanes	Medium term Medium term	Medium Medium
G – Orlando Drive and Raritan Mall entrance and exit	• No designated bicycle and pedestrian facilities	• Define crosswalks • Install curb ramps at Raritan Mall entrance and exit; install pedestrian crossing advanced warning signs at the entrance and exit (coordinate w/Landfill development)	Short term Short term	Low Low

Summary of Public Comments	Linkages and Access	Bicyclist	Pedestrian	Greenway
Consider creating a trail along the active NJ Transit Raritan Valley Line, with extensions to the Bridgewater Towne Center and Vanderhaven Farms.	•	•	•	•
Improve bicycle and pedestrian access between Vanderhaven Farms and North Branch Park through existing "cut-through".	•	•	•	
Replace missing bike route signs in Somerville Borough.		•		
There is an existing informal trail between Foothill Road (Bridgewater-Raritan Middle School) and Bridge Street across Vocational Technical High School property.		•	•	•
Consider developing a trail connecting Route 28 and Route 22 through the Ortho Office Park.	•	•	•	•
Trail connection needed to access municipally owned property at the confluence of the Peters Brook and Raritan River - especially for fishing. Consider access east of 5th Street.	•			•
Consider a bridge across Ross Brook from E. Young Street to provide expanded neighborhood access to the Walnut Street Park.	•			•
Bank stabilization improvements needed at the confluence of the Peters Brook and the Ross Brook as there is significant erosion.	•			•
Develop safe pedestrian and bicycle routes connecting Somerville High School and Vanderveer athletic fields. High school students utilize Vanderveer School athletic fields for after school sports but do not have a safe designated path to travel between the two schools.	•	•	•	
Raritan Borough Specific				
Connections to downtown Raritan Borough and transit.	•	•	•	
Hazardous crossings along 1st Avenue/Country Club Road at Route 22, Route 28, Route 202 and Old York Road.		•	•	
Convert Somerset Street and Orlando Drive to one-way traffic, which would allow dedicated bicycle lanes on both streets. Traffic on Somerset Street would travel west to east while traffic on Orlando Drive would travel east to west - forming a loop.	•	•		
Somerset Street is too narrow for bicyclists.		•		

Summary of Public Comments

	Linkages and Access	Bicyclist	Pedestrian	Greenway
Improvements to 1st Avenue/Country Club Road could potentially eliminate the need for hazard/courtesy busing, saving an estimated $58,000.	●	●	●	
Create connections from the general Raritan area to Duke Farms and the rest of the Regional Center.	●			
Sidewalk needed along Route 202 between Country Club Road and the Somerville Circle.			●	
Sidewalk needed along Route 28 between Country Club Road and the Somerville Circle.			●	
Old York Rd. between Bridgewater & Branchburg is very narrow and dangerous for biking/walking.		●	●	
Pave the undeveloped footpath along Raritan River behind golf course between Nevius St and Rt. 206.	●	●	●	●
Add bike lane on Orlando Drive.		●		
Implement signs for bike crossing at Old York Rd by the canal and Duke Park Path.		●		
Raritan neighborhoods need better connections to shopping across Rt. 28.	●	●	●	
Somerset Street is a corridor in need of improvement.	●	●	●	
Bicyclists often use Country Club Rd. to avoid navigating the Rt. 202/206 circle and to reach attractors such as Duke Island.		●		
Develop one continuous trail system that connects attractors in Raritan and other destinations include distinct signage that highlights the different attractors and the trails system.	●			●
Improve pedestrian crossing on First Ave. (currently hard to cross).			●	
Toys R Us to First Ave., there is need for pedestrian safety and connectivity.	●		●	
Provide bicycle and pedestrian access to nursing home.	●	●	●	
Talmage Avenue in Bound Brook unsafe for biking.		●		
Improve pedestrian and bicyclist facilities along Washington Valley Road to access the Village from the west or east	●	●	●	

Corridor/area Capacity Problem

___Need for corridor study
___Possible highway on new alignment
___Possible new transit line
___Need for park and ride development

Describe the problem: This corridor is a proposed link in the Somerset County Regional Center Conceptual Greenway System. A key linkage concept is to connect the downtowns of Raritan and Somerville and the Raritan Mall. Currently, there are no designated bicycle facilities on Route 206. Along the southbound side of Route 206 and westbound Orlando Drive sidewalk does not exist. At the intersection of Route 206 and Orlando Drive, three of the four legs of the intersection are missing crosswalks and pedestrian signals with pedestrian heads/timers. This corridor could be improved to safely accommodate bicycle and pedestrian travel in coordination with NJDOT's current plans to install countdown timers at the intersection of Route 206 and Somerset Street. Intersection improvements including sidewalks, crosswalk striping, and countdown signals are needed at Orlando Drive (see Link E on the attached) for bicycle and pedestrian safety and access in anticipation of future development on the Somerville Landfill site. See attached for potential improvements.

If an outside group actively supports this problem, please identify:
The recommendation described here emerged from the public involvement process that guided the *Somerset County Regional Center Pedestrian, Bicycle and Greenways Systems Connection Plan*. The study was directed by a Steering Committee consisting of:

- *Counties:* Somerset County
- *Municipalities*: Bridgewater Township, Raritan Borough and Somerville Borough
- *State Agencies*: North Jersey Transportation Planning Authority; New Jersey Department of Transportation, New Jersey Transit
- *Other Organizations*: Ridewise Transportation Management Agency

Other comments (if any) by initiator:
This identified segment of Route 206 is part of a larger network aimed at improving bicycle and pedestrian circulation throughout Somerset County's Regional Center (see attached for map of the system). This linkage within the Conceptual Greenways System proposes bicycle and pedestrian accommodations to make connections to the downtowns of Raritan and Somerville and to the Raritan Mall via Somerset Street, Route 206 and Orlando Drive. Two alternative routes for bicycle and pedestrian travel (see Links C and D on the attached) were proposed to mitigate the lack of pedestrian and bicycle access to the Raritan Mall, which may provide short term solutions to facilitate bicycle and pedestrian circulation.

Master Plan/Zoning

The 1989 Raritan Borough Master Plan addresses the Raritan Woolen Mills site in extensive detail and locates it within the Townhouse Density Residential District. The major recommendations are adaptive reuse of the site with multi-family housing and/or townhouses at a density of 8 units per acre with accessory retail or office uses. The recommended use remains appropriate given the transitional nature of the parcel, its underutilization and proximity to the central business district.

Since the publication of the 1989 Raritan Master Plan, the Raritan Woolen Mills site (Block 116, Lot 12) and the adjacent property (Block 116.02, Lot 12.01) have been identified as the only two sites in the Borough to be placed in the new "Planned Downtown Residential Overlay District" (PDRD). The PDRD serves as an overlay to the IRD-3 and M-1 zones that previously regulated the uses on Block 116, Lot 12 and Block 116.02, Lot 12.01, respectively. The PDRD permits multi-family residential housing and provides for the remediation and/or reclamation of former monufacturing sites. Ten percent or more of the total PDRD's site area must be used for the provision of a public amenity, park or recreation facility.

The requirements of the PDRD zone include a maximum density of 13.5 market rate dwelling units per gross acre, exclusive of the manager's apartment. The number of required affordable units to be constructed within the PDRD shall be determined by the COAH. The bulk requirements include a maximum building height of 4 stories over one level of parking or 60 feet above grade, whichever is greater, and a maximum impervious coverage of 80 percent.

Opportunities/Challenges

The Raritan Woolen Mills site offers the following opportunities:

- Adaptive reuse and/or redevelopment of a vacant and underutilized parcel that is strategically located between the central business district and the planned Raritan River Greenway.
- Establishment of a new residential community in a downtown setting that will provide needed multi-family housing, diversify the Borough's housing stock and support the continued revitalization of the central business district.
- Potential for the development of new affordable housing consistent with the Borough's COAH certified fair share/housing plan.
- Creation of a new gateway to the Borough that will create a sense of arrival in the downtown, reinforce community character/design, increase the visibility of the central business district and enhance the visual environment.
- Provision of public access through the site that will connect the central business district to the planned Raritan River Greenway and link adjacent residential neighborhoods.
- Expansion of recreation and open space opportunities by reserving a portion of the parcel for a Borough park facility.
- Strengthening the Somerset Street central business district by extending streetscape improvements along John Street, Elizabeth Street and Frederick Street and coordinating with the development of the vacant Barbieri tract.
- Promoting economic development and strengthening the Borough tax base by providing for residential and accessory commercial uses as well as an appropriate bedroom mix for planned housing so that redevelopment has a positive fiscal impact.

The Raritan Woolen Mills site has the following challenges:

- The feasibility of adaptive reuse for the existing Woolen Mills building is uncertain given its age, structural condition, past industrial use and location within the 100-year flood hazard zone.
- The redevelopment of the site is constrained by environmentally sensitive features such as wetlands and the 100-year flood hazard zone as well as potential contamination.
- The site has limited visibility because it is oriented towards Orlando Drive and is located in a relatively isolated section of the Borough behind the Somerset Street central business district.
- There are established residential neighborhoods to the northeast and west that are located in close proximity to the site and have the potential to be impacted by redevelopment.
- There is limited access to the site from the Somerset Street central business district and most sections of the Borough because of its relatively isolated location, one-way configuration of John Street and distance to the NJ Transit train station.
- The Borough's COAH certified fair share/housing plan designates the site for inclusionary affordable housing.
- Future redevelopment of the site will be impacted by, and should be coordinated with, the development of the vacant Barbieri tract to the north on Elizabeth Street.

Recommendations

- Consult and coordinate with COAH on the Woolen Mills redevelopment process to the extent that it affects the certified fair share/housing plan.
- Encourage the adaptive reuse of the existing Raritan Woolen Mills building through zoning incentives, creative design techniques and historic preservation tax credits. At a minimum, consider the preservation of the front or northern facade of the building to

protect and enhance the historic Elizabeth Avenue streetscape. The development of architectural standards and retention of an architect is recommended if demolition and new construction is required.

- Require the redevelopment of the site to include the following site plan elements: (1) public access through the site linking the Somerset Street central business district to the planned Raritan River Greenway, (2) pedestrian access to Elizabeth Street/Somerset Street and vehicular as well as pedestrian access to Orlando Drive, (3) minimum landscaped buffer width of 10-feet along all property lines and 20-feet where abutting a residential property or zone, (4) minimum usable open space of 2.5 percent including a public park, streetscape improvements along Elizabeth Street, John Street, Frederick Street and Orlando Drive consistent with the design of the Borough's Somerset Street program, (5) historic marker and/or kiosk identifying the site, its history and role in the Borough.
- Require a conceptual site plan, area plan showing off-site improvements, fiscal impact analysis, traffic study and environmental impact statement to be submitted for Borough review prior to redevelopment.
- Promote redevelopment of the vacant parcel immediately to the north across Elizabeth Street. Consider redeveloping the parcel with a public park or townhouses that will complement and balance the Woolen Mills project.
- Incorporate gateway treatment into the site with a strong visual presence on Somerset Street and Orlando Drive.

Redevelopment Principles

- See the following aerial photograph for principles to guide redevelopment.

Federal Steel/Johnson Drive Sites

The Federal Steel/Johnson Drive site is a major potential redevelopment site in the Borough of Raritan and is distinguished by its relatively large size, strategic location, transitional nature and dual character. The Federal Steel/Johnson Drive site is not addressed in the 1999 Somerset County Regional Center Vision Report but was identified as a priority during the public participation process by residents, officials and other stakeholders from the Borough. As a consequence, the importance of the site has resulted in its inclusion in the Issues Report for the Somerset County Regional Center Strategic Master Plan. The Issues Report recommends pursuing "the redevelopment of key sites in the Regional Center including... Federal Steel..."

Existing Conditions

The Federal Steel/Johnson Drive site is a transitional industrial area consisting of multiple properties that span both sides of the NJ Transit Raritan Valley Line. The area has a dual character that reflects the location, use, historical development and neighborhood context of each site. The Federal Steel site consists of two (2) properties with a total area of approximately 23-acres. The site is bordered by Route 202 to the north, the NJ Transit Raritan Valley Line and yard to the south, a residential neighborhood on Raritan Avenue to the east and the Ortho-Clinical Diagnostics facility to the west. The Johnson Drive site consists of three (3) properties bordered by the NJ Transit Raritan Valley Line and yard to the north, residential neighborhoods to the south, First Avenue to the east and John F. Kennedy School and Basilone Park to the west.

The Federal Steel site is a former industrial parcel that has been vacant for an extended period of time and is underutilized in its current condition. The site is contaminated as a result of past manufacturing activity and is characterized by its proximity to an established residential neighborhood and relatively isolated location. It is accessible from Tillman Street, however, the street passes through a residential neighborhood. The existing buildings are aging and deteriorated industrial buildings typical of 19th and early 20th factories. They are obsolete for continued industrial use and their structural condition is unknown, although the original Federal Steel building may be worth saving given its historical role in the Borough and industrial architecture.

The Johnson Drive site is an active industrial area that is used for medical research/laboratories, warehousing/distribution and other light industrial activity. The site pre-dates modern industrial parks and is characterized by its uncoordinated linear design and proximity to an established residential neighborhood and school. It is accessible from Johnson Drive, which connects to First Avenue and Route 202. The existing buildings are generally 50,000 square feet in size and range in condition from the modern, updated LabCorp facility to the marginal structures in the Raritan Valley Industrial Park.

Master Plan/Zoning

The Raritan Borough Master Plan contains a limited discussion of the Federal Steel/Johnson Drive site and does not recommend any changes to the land use plan or zoning ordinance for this area. This reflects the date of the Master Plan, pending litigation at that time and relatively stable uses on Johnson Drive. The conditions in the area have changed over

RARITAN STREET SMART CAMPAIGN

The campaign in Raritan was modeled closely after the pilot programs implemented by the NJTPA and the previous campaigns coordinated by RideWise in North Plainfield, Somerville and Manville. RideWise began discussions with borough representatives in November 2017. After the council approved the coordination of the campaign, two target intersections were identified by the police as priorities for pedestrian safety: Somerset Street and Loomis Street, and Somerset Street and Anderson Street.

TARGET INTERSECTION #1

Somerset Street & Loomis Street

- 3-way intersection
- No traffic control devices
- No pedestrian head signals
- Two crosswalks, one on Loomis St. and one across Somerset St.
- 2 lanes

TARGET INTERSECTION #2

Somerset Street & Anderson Street

- 3-way intersection
- No traffic control devices
- 2 lanes
- No pedestrian head signals
- Driveways leading out into intersection

The campaign consisted of four weeks of education and enforcement activities, concentrated during the month of July, and four weeks of pre- and post-campaign components, including an online survey and intersection observations. While not statistically significant, these quantitative measures

Wallace House & Old Dutch Parsonage Historic Site

Located about eight miles south of the Vanderveer House the Wallace House was built in 1776 by John Wallace a Philadelphia fabric merchant. It was General Washington's headquarters from December 1778 to June 1779 when the Continental Army was stationed at Middlebrook. The House maintains its 18th-century appearance and has been fully restored.

Across the street and built in 1751, the Georgian style Old Dutch Parsonage in Somerville was built for Reverend John Frelinghuysen. Later residing in the parsonage was Reverend Jacob Hardenbergh, who helped establish Queen's College, now known as Rutgers University. Hardenbergh served as the college's first president and also served in the Provincial Congress of New Jersey during the Revolutionary War.

The Wallace House & Old Dutch Parsonage Historic Site is a State-operated historic site and is located on Washington Place, in Somerville. Washington Place is a residential street situated between U.S. 206 and NJ TRANSIT's Raritan Valley Line.

Existing Access to the Wallace House is via Somerset Street (CR 626) or two lightly traveled residential streets, South Middaugh Street and Washington Place. The Wallace House is also a five-minute walk (about one quarter mile) along Somerset Street from the Somerville Train Station. Currently none of these roadways includes existing designated bicycle facilities.

Potential Improvements include several new facilities and amenities to supplement the existing access:

- Sidepath along U.S. 202/206 to provide north-south interconnect to Somerville via Mountain Avenue and Peters Brook trails, and create connections to the Wallace House
- Connections to the west (Raritan Borough) and south via bike lane on Somerset Street (CR 567) and shared use path on the Somerville Landfill redevelopment site
- Regional east-west connectivity includes bike lanes, sidepath, and shared lane segments along Old York Road (Raritan), Somerset Street (Raritan/Somerville), Veterans Memorial Drive (Somerville), and Main Street (Somerville/ Bridgewater) to Talmadge Avenue/Main Street (Bound Brook) to Elizabeth Avenue (South Bound Brook)
- Alternative east-west connectivity would be provided by linking low-stress routes south of Main Street (Somerville) using sidepath segments along local streets and through off-road properties and parks between the Peters Brook Greenway Finderne Avenue, and Van Veghten House
- Extension of the Raritan River Greenway in Somerville, Bridgewater, and Manville would provide additional off-road connections between Raritan, Peters Brook Greenway, and Van Veghten House

Appendix D

Collision Diagrams

Borough of Raritan
Somerset County

Gaston Ave

W Somerset St

SOMERSET 567 COUNTY

1st Ave

SOMERSET 567 COUNTY

E Somerset St

SOMERSET 626 COUNTY

Nevius St

Lyman St

SOMERSET 625 COUNTY

Western Limit of Segment

MATCH LINE A

LEGEND	SYMBOLS	TYPES OF COLLISIONS
CRASH NUMBER SEE EXHIBIT A6-A9 FOR DETAILS	MOVING VEHICLE	REAR END
# PDO	PARKED VEHICLE	SIDE SWIPE
# INJURY	CYCLIST	LEFT TURN/RIGHT ANGLE
# FATAL	PEDESTRIAN	HEAD ON/BACKING
EXISTING SIGNALIZED INTERSECTION	FIXED OBJECT	OUT OF CONTROL
	NON-FIXED OBJECT	
	ANIMAL	

SOMERSET COUNTY ESTABLISHED 1688

CRASH DIAGRAM (1 OF 9)

SOMERSET ST (CR 636) IN RARITAN BOROUGH
1st Avenue to US Route 206

SOMERSET COUNTY ROADWAY SAFETY STUDY

Stantec	Scale: 1"=60'	Exhibit A1

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Borough of Raritan
Somerset County

Wall St
Anderson St
Loomis St
Doughty St
E Somerset St
626
MATCH LINE A
MATCH LINE B

LEGEND

CRASH NUMBER SEE EXHIBIT A6-A9 FOR DETAILS

- # PDO
- # INJURY
- # FATAL
- EXISTING SIGNALIZED INTERSECTION

SYMBOLS

- MOVING VEHICLE
- PARKED VEHICLE
- CYCLIST
- PEDESTRIAN
- FIXED OBJECT
- NON-FIXED OBJECT
- ANIMAL

TYPES OF COLLISIONS

- REAR END
- SIDE SWIPE
- LEFT TURN/RIGHT ANGLE
- HEAD ON/BACKING
- OUT OF CONTROL

SOMERSET COUNTY

CRASH DIAGRAM (2 OF 9)

SOMERSET ST (CR 636) IN RARITAN BOROUGH
1st Avenue to US Route 206

SOMERSET COUNTY ROADWAY SAFETY STUDY

Stantec | Scale: 1"=60' | Exhibit A2

U:\192510854\graphic_design\CrashDiagrams\CR626_Raritan_MP0.00-0.67

Borough of Raritan
Somerset County

Thompson St

ONE WAY

Lincoln St

Codington St

MATCH LINE B

MATCH LINE C

SOMERSET 626 COUNTY

E Somerset St

85

63

72

68

69,71,77

62

73

70

60

61

67

64

65

66

78

74

75

76

79

84

John St

ONE WAY

Frederick St

Thompson St

LEGEND

CRASH NUMBER SEE EXHIBIT A6-A9 FOR DETAILS

- # PDO
- # INJURY
- # FATAL
- EXISTING SIGNALIZED INTERSECTION

SYMBOLS

- MOVING VEHICLE
- PARKED VEHICLE
- CYCLIST
- PEDESTRIAN
- FIXED OBJECT
- NON-FIXED OBJECT
- ANIMAL

TYPES OF COLLISIONS

- REAR END
- SIDE SWIPE
- LEFT TURN/RIGHT ANGLE
- HEAD ON/BACKING
- OUT OF CONTROL

SOMERSET COUNTY

CRASH DIAGRAM (3 OF 9)

SOMERSET ST (CR 636) IN RARITAN BOROUGH
1st Avenue to US Route 206

SOMERSET COUNTY ROADWAY SAFETY STUDY

Stantec | Scale: 1"=60' | Exhibit A3

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Borough of Raritan
Somerset County

Codington St
Reimer St
Elmer St
MATCH LINE C
81
83
80
82
SOMERSET 626 COUNTY
E Somerset St
Frederick St
87
Wycoff Ave
88
SOMERSET 626 COUNTY
E Somerset St
MATCH LINE D

LEGEND	SYMBOLS	TYPES OF COLLISIONS
CRASH NUMBER SEE EXHIBIT A6-A9 FOR DETAILS	MOVING VEHICLE	REAR END
# PDO	PARKED VEHICLE	SIDE SWIPE
# INJURY	CYCLIST	LEFT TURN/RIGHT ANGLE
# FATAL	PEDESTRIAN	HEAD ON/BACKING
EXISTING SIGNALIZED INTERSECTION	FIXED OBJECT	OUT OF CONTROL
	NON-FIXED OBJECT	
	ANIMAL	

CRASH DIAGRAM (4 OF 9)

SOMERSET ST (CR 636) IN RARITAN BOROUGH
1st Avenue to US Route 206

SOMERSET COUNTY ROADWAY SAFETY STUDY

Stantec | Scale: 1"=60' | Exhibit A4

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Borough of Raritan
Somerset County

Somerville Borough
Somerset County

Borough of Raritan

Somerville Borough

206

142 135

129
114
130
113
128 133 112
126 127
136
141
143

131
99
117
105
108
104
103 109
106 138
102

116 115 110 101
95
100
97 96
98 107

90 94
89 92 91 93

MATCH LINE D

SOMERSET 626 COUNTY
E Somerset St

Granetz Plaza

132 139
140
111 137
118
119
120-125
134
144

206

SOMERSET 626 COUNTY
E Somerset St

Eastern Limit of Segment

LEGEND	SYMBOLS	TYPES OF COLLISIONS
CRASH NUMBER SEE EXHIBIT A6-A9 FOR DETAILS	MOVING VEHICLE	REAR END
# PDO	PARKED VEHICLE	SIDE SWIPE
# INJURY	CYCLIST	LEFT TURN/RIGHT ANGLE
# FATAL	PEDESTRIAN	HEAD ON/BACKING
EXISTING SIGNALIZED INTERSECTION	FIXED OBJECT	OUT OF CONTROL
	NON-FIXED OBJECT	
	ANIMAL	

CRASH DIAGRAM (5 OF 9)

SOMERSET ST (CR 636) IN RARITAN BOROUGH
1st Avenue to US Route 206

SOMERSET COUNTY ROADWAY SAFETY STUDY

Stantec | Scale: 1"=60' | Exhibit A5

U:\192510854\graphic_design\CrashDiagrams\CR626_Raritan_MP0.00-0.67

Crash #	Date	Time	Severity	Total Injured	Crash Type	Light Condition	Surface Condition
1	04/01/2016	08:32 PM	Property Damage Only	0	Fixed Object	Dark, Street lights on, continuous lighting	Dry
2	02/05/2018	01:47 PM	Property Damage Only	0	Opposite Direction (Head on, Angular)	Daylight	Dry
3	10/06/2014	10:06 PM	Injury	1	Pedalcyclist	Daylight	Dry
4	08/23/2017	03:50 PM	Property Damage Only	0	Pedalcyclist	Daylight	Dry
5	02/06/2018	04:43 PM	Injury	1	Right Angle	Daylight	Dry
6	08/29/2018	12:20 PM	Property Damage Only	0	Right Angle	Daylight	Dry
7	05/18/2016	08:02 AM	Injury	1	Same Direction (Rear-End)	Daylight	Dry
8	07/17/2016	07:35 PM	Property Damage Only	0	Same Direction (Rear-End)	Dusk	Dry
9	07/19/2017	05:29 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
10	07/14/2018	04:45 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
11	06/30/2017	04:01 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
12	05/08/2016	01:26 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
13	05/05/2018	02:13 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
14	10/30/2018	08:38 AM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
15	02/07/2017	09:50 AM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Wet
16	09/20/2017	08:32 AM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
17	09/22/2017	07:55 AM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
18	06/15/2017	07:26 AM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
19	07/31/2017	05:22 AM	Property Damage Only	0	Same Direction (Side Swipe)	Dawn	Dry
20	03/14/2016	08:43 PM	Property Damage Only	0	Fixed Object	Dark, Street lights on, continuous lighting	Dry
21	08/21/2018	04:26 PM	Property Damage Only	0	Right Angle	Daylight	Dry
22	05/05/2017	12:50 PM	Property Damage Only	0	Right Angle	Daylight	Wet
23	04/04/2018	05:00 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
24	07/12/2017	05:26 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
25	08/24/2016	06:25 AM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
26	05/10/2016	07:09 AM	Property Damage Only	0	Struck Parked Vehicle	-	Dry
27	05/02/2018	06:58 AM	Property Damage Only	0	Animal	Daylight	Dry
28	09/10/2018	03:54 PM	Property Damage Only	0	Right Angle	Daylight	Dry
29	06/20/2017	08:49 AM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
30	10/18/2018	04:11 PM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
31	04/23/2018	04:36 PM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
32	10/10/2017	02:03 PM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
33	10/10/2018	08:52 AM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
34	07/21/2017	08:56 PM	Property Damage Only	0	Backing	Dusk	Dry
35	05/03/2017	06:09 PM	Property Damage Only	0	Right Angle	Daylight	Dry
36	12/03/2016	02:03 PM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
37	06/02/2017	05:28 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
38	07/10/2016	03:49 PM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
39	04/07/2016	04:04 PM	Property Damage Only	0	Backing	Daylight	Wet
40	11/02/2016	09:54 AM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
41	07/28/2017	05:59 PM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
42	11/25/2017	04:50 PM	Property Damage Only	0	Backing	Dark, Street lights on, continuous lighting	Dry
43	09/13/2017	11:53 AM	Injury	1	Pedestrian	Daylight	Dry
44	04/06/2017	02:33 PM	Property Damage Only	0	Right Angle	Daylight	Wet
45	08/05/2017	04:03 PM	Property Damage Only	0	Right Angle	Daylight	Dry

CRASH DIAGRAM (6 OF 9)

SOMERSET ST (CR 636) IN RARITAN BOROUGH
1st Avenue to US Route 206

SOMERSET COUNTY ROADWAY SAFETY STUDY

Stantec | Scale: N.T.S. | Exhibit A6

Crash #	Date	Time	Severity	Total Injured	Crash Type	Light Condition	Surface Condition
46	01/03/2017	02:21 PM	Property Damage Only	0	Right Angle	Daylight	Wet
47	01/20/2018	11:30 AM	Injury	1	Same Direction (Rear-End)	Daylight	Dry
48	01/29/2018	02:00 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
49	05/03/2017	07:21 AM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
50	03/31/2017	07:06 PM	Property Damage Only	0	Struck Parked Vehicle	Dark, Street lights on, continuous lighting	Wet
51	05/26/2017	02:51 PM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
52	06/29/2018	05:06 PM	Property Damage Only	0	Fixed Object	Daylight	Dry
53	11/14/2018	06:25 PM	Injury	3	Same Direction (Rear-End)	Dark, Street lights on, continuous lighting	Dry
54	04/06/2017	09:46 AM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Wet
55	04/24/2017	11:36 AM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
56	06/12/2017	10:41 AM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
57	10/20/2016	08:09 PM	Property Damage Only	0	Struck Parked Vehicle	Dark, Street lights on, continuous lighting	Dry
58	07/09/2016	10:12 AM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Wet
59	07/31/2017	12:44 PM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
60	05/13/2017	09:55 AM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Wet
61	09/04/2016	12:24 PM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
62	09/08/2016	11:50 AM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
63	07/31/2018	05:38 PM	Injury	1	Left Turn/U-turn	Daylight	Dry
64	07/05/2014	11:49 AM	Injury	1	Pedestrian	Daylight	Dry
65	02/01/2017	01:20 PM	Injury	1	Pedestrian	Daylight	Dry
66	04/27/2016	10:01 AM	Injury	1	Pedestrian	Daylight	Dry
67	12/10/2016	11:14 AM	Property Damage Only	0	Right Angle	Daylight	Dry
68	02/13/2018	04:58 PM	Property Damage Only	0	Right Angle	Daylight	Dry
69	08/10/2018	05:25 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
70	12/14/2018	05:44 PM	Property Damage Only	0	Same Direction (Rear-End)	Dark, Street lights on, spot lighting	Wet
71	10/03/2017	05:53 PM	Property Damage Only	0	Same Direction (Rear-End)	Dusk	Dry
72	07/05/2017	04:30 PM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
73	06/19/2018	11:47 AM	Injury	1	Struck Parked Vehicle	Daylight	Dry
74	08/15/2017	02:40 PM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
75	08/31/2018	01:23 PM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
76	05/23/2016	10:46 AM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
77	04/16/2017	01:47 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
78	05/25/2017	09:07 AM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Wet
79	10/26/2017	06:04 PM	Property Damage Only	0	Right Angle	Dusk	Dry
80	09/29/2014	12:34 PM	Injury	1	Pedestrian	Daylight	Dry
81	08/11/2014	01:07 AM	Injury	1	Pedestrian	Dark, Street lights on, continuous lighting	Dry
82	05/16/2018	02:57 PM	Injury	1	Right Angle	Daylight	Wet
83	11/10/2017	05:52 PM	Injury	2	Same Direction (Rear-End)	Dark, Street lights on, continuous lighting	Dry
84	02/23/2018	02:31 PM	Property Damage Only	0	Right Angle	Daylight	Wet
85	02/01/2018	03:27 PM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
86	06/13/2016	08:11 AM	Injury	2	Struck Parked Vehicle	Daylight	Dry
87	06/16/2017	01:15 PM	Property Damage Only	0	Struck Parked Vehicle	Daylight	Dry
88	01/24/2016	11:18 PM	Property Damage Only	0	Right Angle	Dark, Street lights on, continuous lighting	Slush
89	07/13/2018	06:11 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
90	03/31/2016	05:10 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry

CRASH DIAGRAM (7 OF 9)

SOMERSET ST (CR 636) IN RARITAN BOROUGH
1st Avenue to US Route 206

SOMERSET COUNTY ROADWAY SAFETY STUDY

Stantec | Scale: N.T.S. | Exhibit A7

Crash #	Date	Time	Severity	Total Injured	Crash Type	Light Condition	Surface Condition
91	06/28/2016	12:24 PM	Property Damage Only	0	Right Angle	Daylight	Wet
92	03/18/2017	11:48 AM	Property Damage Only	0	Right Angle	Daylight	Dry
93	12/02/2017	05:45 PM	Property Damage Only	0	Same Direction (Rear-End)	Dark, Street lights on, continuous lighting	Dry
94	08/22/2017	08:03 PM	Property Damage Only	0	Same Direction (Side Swipe)	Dark, Street lights on, continuous lighting	Dry
95	09/04/2018	07:42 PM	Injury	1	Backing	Dark, Street lights on, continuous lighting	Dry
96	11/17/2017	12:26 PM	Injury	1	Right Angle	Daylight	Dry
97	05/02/2016	07:04 AM	Property Damage Only	0	Right Angle	Daylight	Wet
98	09/27/2018	06:18 PM	Property Damage Only	0	Right Angle	Daylight	Dry
99	05/31/2017	11:22 AM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
100	01/05/2017	10:23 PM	Property Damage Only	0	Fixed Object	Dark, Street lights on, continuous lighting	Dry
101	11/21/2016	09:41 AM	Injury	1	Pedalcyclist	Daylight	Dry
102	03/20/2017	09:43 PM	Fatal	0	Pedestrian	Dark, Street lights on, continuous lighting	Dry
103	04/02/2018	11:29 AM	Injury	1	Pedestrian	Daylight	Dry
104	05/22/2018	03:56 PM	Injury	1	Pedestrian	Daylight	Wet
105	09/29/2017	08:26 AM	Injury	1	Right Angle	Daylight	Dry
106	04/23/2018	10:59 PM	Injury	1	Right Angle	Dark, Street lights on, continuous lighting	Dry
107	05/10/2018	12:46 PM	Property Damage Only	0	Right Angle	Daylight	Dry
108	01/27/2016	07:42 PM	Property Damage Only	0	Right Angle	Dark, Street lights on, continuous lighting	Dry
109	11/29/2018	06:54 AM	Property Damage Only	0	Right Angle	Daylight	Dry
110	08/04/2016	09:00 PM	Injury	1	Same Direction (Rear-End)	Dark, Street lights on, continuous lighting	Dry
111	11/11/2016	05:52 PM	Injury	2	Same Direction (Rear-End)	Dusk	Dry
112	01/27/2016	06:52 PM	Injury	1	Same Direction (Rear-End)	Dark, Street lights on, continuous lighting	Dry
113	04/12/2016	08:24 AM	Injury	1	Same Direction (Rear-End)	Daylight	Wet
114	08/07/2016	12:21 PM	Injury	1	Same Direction (Rear-End)	Daylight	Dry
115	05/13/2016	04:40 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Wet
116	07/14/2016	09:09 PM	Property Damage Only	0	Same Direction (Rear-End)	Dark, Street lights on, continuous lighting	Dry
117	07/22/2016	11:39 PM	Property Damage Only	0	Same Direction (Rear-End)	Dark, Street lights on, continuous lighting	Dry
118	01/09/2016	10:41 PM	Property Damage Only	0	Same Direction (Rear-End)	Dark, Street lights on, continuous lighting	Wet
119	01/21/2016	12:08 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
120	11/18/2016	07:52 AM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
121	11/23/2016	07:29 AM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
122	02/07/2017	08:03 AM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Wet
123	07/15/2017	11:47 AM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
124	07/03/2018	05:57 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Wet
125	11/28/2018	05:49 PM	Property Damage Only	0	Same Direction (Rear-End)	Dark, Street lights on, continuous lighting	Dry
126	08/22/2016	08:14 AM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
127	11/01/2016	06:09 PM	Property Damage Only	0	Same Direction (Rear-End)	Dusk	Dry
128	11/13/2016	02:25 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
129	01/14/2017	12:12 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
130	07/25/2017	08:48 PM	Property Damage Only	0	Same Direction (Rear-End)	Dark, Street lights on, continuous lighting	Wet
131	02/17/2016	12:50 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
132	06/16/2018	09:38 AM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
133	01/04/2017	10:56 AM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
134	09/18/2018	05:33 PM	Property Damage Only	0	Same Direction (Rear-End)	Daylight	Dry
135	07/25/2017	03:04 PM	Injury	2	Same Direction (Side Swipe)	Daylight	Wet

CRASH DIAGRAM (8 OF 9)

SOMERSET ST (CR 636) IN RARITAN BOROUGH
1st Avenue to US Route 206

SOMERSET COUNTY ROADWAY SAFETY STUDY

Stantec | Scale: N.T.S. | Exhibit A8

Crash #	Date	Time	Severity	Total Injured	Crash Type	Light Condition	Surface Condition
136	01/22/2016	11:36 AM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
137	08/28/2016	01:45 PM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
138	01/27/2017	09:44 PM	Property Damage Only	0	Same Direction (Side Swipe)	Dark, Street lights on, continuous lighting	Dry
139	03/24/2017	01:03 PM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
140	10/30/2017	04:38 PM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
141	10/31/2017	03:10 PM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
142	11/24/2018	02:54 PM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
143	05/20/2018	04:29 PM	Property Damage Only	0	Same Direction (Side Swipe)	Daylight	Dry
144	12/20/2017	05:24 PM	Property Damage Only	0	Same Direction (Rear-End)	Dark, Street lights on, continuous lighting	Dry

CRASH DIAGRAM (9 OF 9)

SOMERSET ST (CR 636) IN RARITAN BOROUGH
1st Avenue to US Route 206

SOMERSET COUNTY ROADWAY SAFETY STUDY

Stantec | Scale: N.T.S. | Exhibit A9

Appendix E

Audit Team

Raritan - April 1st

Group 1 Pairs - Eastern Section

Matthew Maher, Stantec	Robert Fulminate, Public Works Supervisor
Tim Medina, Stantec	Michael Patente, Borough Council Engineering Liaison
Jessica Ortiz, FHI	Virgilio Tan, NJDOT
Adam Bradford, Somerset County	Adam Kardon, Planner
Walter Lane, Somerset County	

Group 2 Pairs - Western Section

Kati DiRaimondo, Stantec	Angela Knowles, Planner
Michael Ahillen, FHI	Stan Shrek, Engineer
Kenneth Wedeen, Somerset County	Jon Dugan, RideWise
Adam Slutsky, Somerset County	Pat Marotto, Somerset County

Appendix F

Pre-Audit Presentation

SOMERSET COUNTY ROADWAY SAFETY STUDY

Roadway Safety Pre-Audit,
Raritan Corridor
March 31, 2021

Raritan Borough Pre-Audit Meeting

Introduction – Audit Team

- ***Funded by NJTPA***
- **Somerset County**
  - **Engineering and Planning**
  - **Board of County Commissioners**
  - **RideWise**
- **Raritan Borough**
  - **Public Works**
  - **Engineering**
  - **Planning**
  - **Borough Council**
- **NJDOT**
- **Stantec Consulting Services, Inc.**
- **FHI Studio**

Agenda: Schedule of Activities

10:00 AM, Today
Project Background
Study Area Crash Data
RSA Orientation

2-4 PM, Tomorrow
In-Field Road Safety Audit

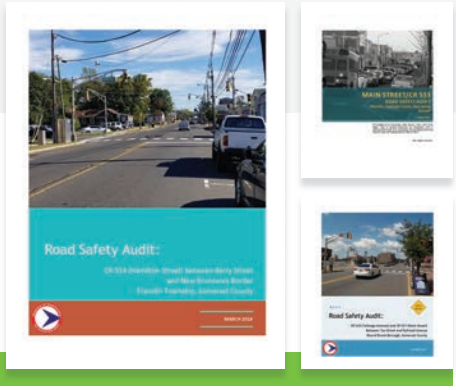
Noon, Monday
Adjourn

11:00 AM, Today
Pre-Audit Meeting Adjourn

10:00 AM, Monday
Share Observations
Discuss Potential Improvements

Project Background

- **County initiatives for traffic safety**
- **Recommendations from RSAs to inform future…**
  - Studies
  - Improvements
  - Applications for funding



What is a Road Safety Audit (RSA)?

EVALUATION BY INDEPENDENT TEAM

IDENTIFIES CRASH TRENDS/CAUSES

PROPOSES POTENTIAL SAFETY IMPROVEMENTS

Steps of an RSA

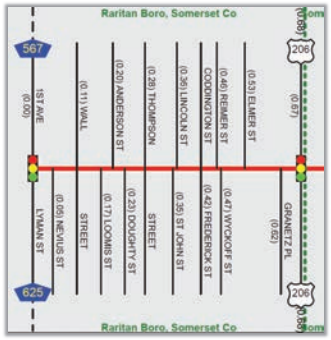
01	02	03	04	05	06	07	08
Select	Assemble	Conduct	Perform	Follow Up	Report	Present	Finalize
•Select Corridors with Stakeholder & Public Input	•Assemble RSA Team for Corridor	•Conduct Start-Up Meeting	•Perform In-Field Review	•Follow-Up on Observations •RSA De-Brief	•Report Findings •Analyze Findings	•Present Report to County	•Finalize RSA Report •County Responds

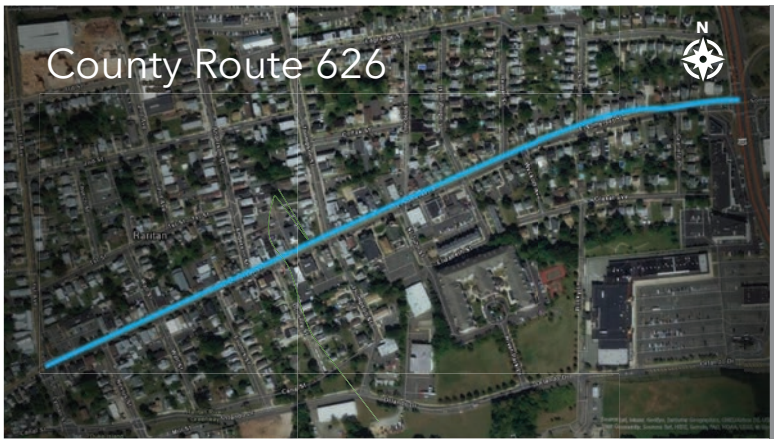
Pre-Audit Site Visit Post-Audit

Existing Conditions Data

Project Area

- Urban minor arterial
- 12' travel lanes, one in each direction
- ~9,000 AADT
- Posted 35 mph speed limit
- Posted advisory 25 mph near schools during session





Land Use

Central Business District

Mixed-use zone (e.g., residential, retail, churches)

Transit

- County Shuttle – North Plainfield to RVCC
- County Shuttle – Bridgewater Commons to Branchburg Shop-Rite

Redevelopment

- Mainly consist of "change of use" applications
- Nearby transit-oriented developments (e.g., Crossings at Raritan Station)

Existing Conditions Feedback

- Lack of driver awareness of cyclists.
- Lack of pedestrian provisions at Wall Street.
- Curb space management issues.
- Desire for adaptive use of street space.
  - Off-street parking options;
  - One-way couplet (Somerset and Orlando);
- Side street sight lines blocked despite daylighting.
- Congestion on Routes 202 or 206 results in cut-through.

Safety Measures

FHWA Proven Safety Measures

Study-Focused Safety Measures

- Lighting
- Leading Pedestrian Intervals (LPI)
- Curb Extensions/ Bus Bulbs
- High Visibility Crosswalks
- Daylighting Crosswalks
- Turn Restrictions

Study-Focused Safety Measures

- Walkways for Sidewalk Gaps
- Bike Lanes
- Green Stormwater Infrastructure
- Dedicated Turn Lanes
- Lane Width Reduction/Road Diet

Safety Measures Feedback

- **Lighting:**
  - No complaints on the decorative light poles in the area.
  - Suggestions for side street lighting for a more cohesive feel.
  - The town has not been able to replace lightbulbs; there is a need for coordination.
  - From Google Street View, it appears there is only one corner light.
  - There is pushback from homeowners about installing lighting.
- **Curb Extensions/Bus Bulbs:**
  - Consider parklets near a curb extension during a closed street event.
  - Potential for painted curb extensions.
  - Curb extension concerns include:
    - Lack of parking;
    - Off-street parking lot for business owners didn't work;
    - Drainage challenges; and,
    - Strategy for ramping up enforcement is challenging.

Safety Measures Feedback, cont'd

- **Daylighting and Crosswalks:**
  - Pedestrians cross where there is no crosswalk present.
  - Daylighting and crosswalks may have the same impact as curb extensions.
  - Potential for decorative crosswalks. (County currently prohibits)
  - To the west of First Avenue, the sidewalk drops off. (grant in to extend)
  - First Avenue and Somerset Street could potentially have refuge islands.
- **Leading Pedestrian Intervals (LPI):**
  - Participants believed LPI implementation depends on the timing of the plan.
  - Suggestions for Thompson Street, First Avenue, and Route 206 (State-owned).
- **Turn Restrictions:**
  - The corridor has No Turn On Red (NTOR) in some locations.
  - Complaints received on NTORs in Raritan Borough.

Safety Measures Feedback, cont'd

- **Bike Lanes:**
  - Parking would need to be eliminated.
  - Borough studies identify side streets for in-street bike right-of-way.

- **Map specific comments include:**
  - Intersection of W Somerset Street & First Avenue:
    - Could be a location for a pedestrian refuge island.
    - Longer crossing times needed.
    - Crosswalks could be shifted for a shorter crossing distance.
    - Glare and grade make visibility difficult for pedestrians and motorists.
    - Redesign turning radii.
  - Nevius Street used as a cut through.
  - W Somerset Street & Thompson Street intersection has NTOR.

Public/ Stakeholder Improvement Feedback

Safety Measure	Effectiveness (1= very effective; 10= not effective)	Ease of Implementation (1=easy; 10= hard)
Lighting	3	5
Curb Extensions/Bus Bulbs	5	5
Daylighting and Crosswalks	5	5
Walkways for Sidewalk Gaps	8	5
Dedicated Turn Lanes	1	1
Leading Pedestrian Intervals (LPI)	2	1
High Visibility Crosswalks	6	-
Turn Restrictions	5	-
Bike Lanes	5	8
Lane Width Reduction/Road Diet	-	-

Crash Data

Crash Data - Statistics

- **All Crashes 2016-2018**
  - **144 Total Crashes**
  - **Overrepresentations:**
    - **Struck Parked Vehicles**
    - **Pedestrian crashes**
    - **1 Fatality**
- **Pedestrian Crashes 2014-2018**
  - **7 Total Crashes**

NJTPA Network Screening List (NSL) Crash Ranking

Overall Crash Data

Intersections
Not Ranked

Corridor Segments
#23rd MP 0.00 – 0.67

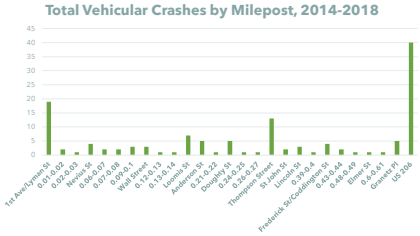
Pedestrian/Bike Crash Data

Intersections
#13th First Avenue
#76th Frederick Street

Corridor Segments
#4th MP 0.11 – 0.67

Raritan Borough - Histogram

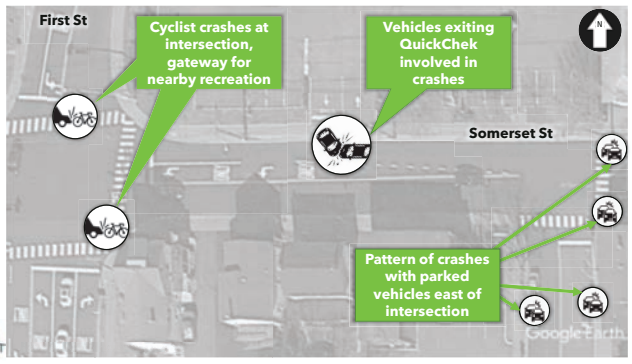
Total Vehicular Crashes by Milepost, 2014-2018



- **Pedestrians 5%** of crashes
- **5x Struck Parked Vehicles**
- **1 Fatality @ US 206** intersection

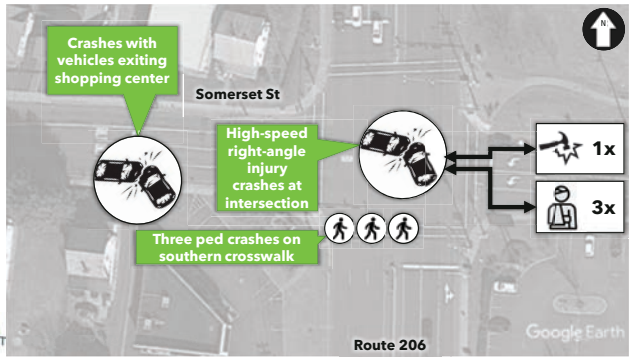
Crash Trends

Somerset Street in Raritan @ First Avenue Intersection



Somerset Street in Raritan @ US Route 206 Intersection

Crash Trends



Conducting the Audit

Guidelines & Safety

Be Observant & Alert
- Vehicles
- Wet Surfaces

Be Seen
- Face Traffic
- Avoid Sudden Movements
- Stick to Sidewalks

Be Respectful
- Traffic (Vehicular, Pedestrian, Cyclist)
- Motorists
- Property

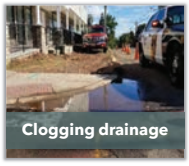
PPE
- High Visibility Vest
- Proper Face Coverings
- Social Distancing (1 occupant/veh.)

What to Bring/Wear to the Field

COMFORTABLE CLOSED SHOES	WEATHER CONSCIOUS	HIGH VISIBILITY VESTS	DOCUMENTING MATERIAL
		• Bring your own	• Smartphone • Pen/Pencil • Paper/notepad

What to Look for - Photos

What to Look for - Photos

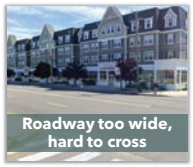


What to Look for - Photos


No curb ramp/crosswalk present


Faded striping/non-compliant curb ramps


Driveway aprons too wide, lack ADA


Roadway too wide, hard to cross


Traffic calming at curve/intersection

How to Record Observations

- Photograph
- Pen/Pencil Paper
- Video
- Mobile Device
- Mental

BE SPECIFIC!!!

Agenda: Schedule of Activities

10:00 AM, Today
Project Background
Study Area Crash Data
RSA Orientation

2-4 PM, Tomorrow
In-Field Road Safety Audit

Noon, Monday
Adjourn

Pre-Audit Meeting Adjourn
11:00 AM, Today

Share Observations
Discuss Potential Improvements
10:00 AM, Monday

Participant	Group
Matthew Maher / Robert Fulminante	E
Tim Medina / Adam Kardon	E
Jessica Ortiz / Adam Bradford	E
	E
Kati DiRaimondo / Stan Shrek	W
Michael Ahillen / Kenneth Wedeen	W
Adam Slutsky / Pat Marotto	W
	W

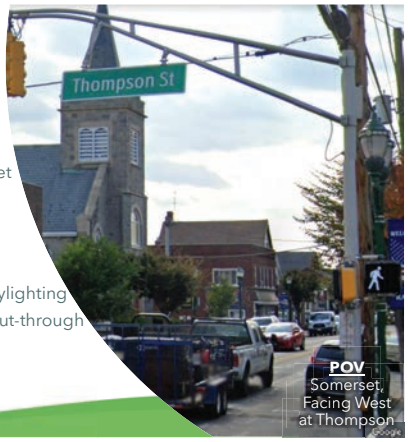
Questions?

Extra Slides

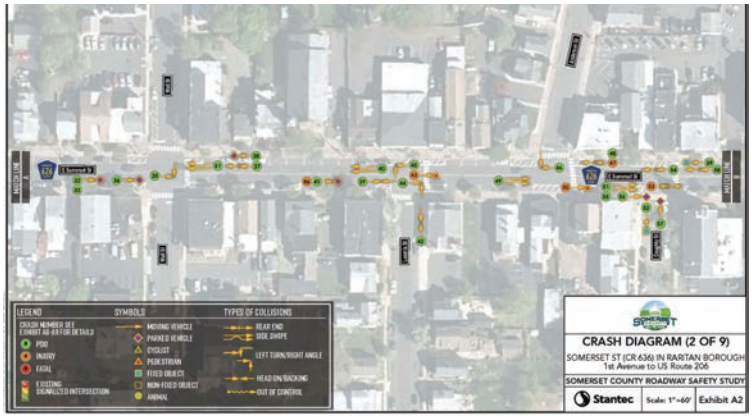
Somerset Street
1st Avenue to RT 206
0.67 miles in Raritan Boro

Summary of Feedback

- Lack of driver awareness of cyclists
- Lack of pedestrian provisions at Wall Street
- Curb space management issues
- Desire for adaptive use of street space
  - Off-street parking options
  - One-way couplet (Somerset and Orlando)
- Side street sight lines blocked despite daylighting
- Congestion on Route 202/206 results in cut-through



POV
Somerset, Facing West at Thompson



Appendix G

Post-Audit Survey

Participant Survey - Average Scores

As you near the end of the audit, rate how the following items impact your level of comfort.
(1: makes me uncomfortable; 4: makes me comfortable; N/A: issue does not exist along this corridor)

Category	Item	Bridgewater	Franklin	Millstone	North Plainfield	Raritan
Corridor Identity	**Average**	**2.3**	**2.4**	**2.7**	**3.2**	**2.7**
Corridor Identity	Activities and uses	2.3	2.6	3.0	3.2	2.5
Corridor Identity	Condition of buildings	2.6	2.3	3.0	3.3	2.5
Corridor Identity	Perception of personal safety	1.9	2.4	2.0	3.0	3.0
Crossings	**Average**	**2.2**	**2.3**	**2.3**	**2.3**	**2.4**
Crossings	Crossing guards	2.5	3.0	-	2.7	3.0
Crossings	Missing or inoperable pedestrian/audible signal	1.9	2.0	2.0	3.0	3.5
Crossings	Pedestrian signal crossing time	2.7	3.0	3.0	2.6	2.6
Crossings	Poorly marked or missing crosswalk	1.7	1.6	1.7	1.7	2.3
Crossings	Presence of curb ramps for strollers/wheelchairs	1.7	1.9	1.0	1.9	2.3
Crossings	View of traffic is blocked	2.0	2.6	2.3	2.1	1.6
Crossings	Wait time for pedestrian signal	2.9	2.8	3.0	2.8	2.4
Pedestrian-Vehicle Interactions	**Average**	**1.6**	**2.1**	**1.9**	**2.8**	**2.5**
Pedestrian-Vehicle Interactions	Amount of traffic	1.7	2.1	2.3	3.0	2.6
Pedestrian-Vehicle Interactions	Bicycling on the sidewalk	1.3	4.0	2.0	2.1	2.9
Pedestrian-Vehicle Interactions	Driver behavior (distracted, did not yield to pedestrians, etc.)	2.1	2.0	2.7	3.0	2.1
Pedestrian-Vehicle Interactions	Noise level due to auto traffic	1.2	2.0	1.3	2.9	2.1
Pedestrian-Vehicle Interactions	Presence of trucks or large vehicles	1.7	2.0	1.7	2.8	2.8
Pedestrian-Vehicle Interactions	Speed of traffic	1.4	2.1	1.3	2.5	2.5
Sidewalk/Roadway Condition	**Average**	**2.3**	**2.7**	**2.6**	**2.6**	**2.9**
Sidewalk/Roadway Condition	Areas on roadway with poor drainage	3.1	2.9	2.5	3.0	2.6
Sidewalk/Roadway Condition	Areas on sidewalk with poor drainage	3.0	2.8	2.0	2.9	2.6
Sidewalk/Roadway Condition	Buffer area between sidewalk and traffic	1.5	2.4	2.3	2.5	3.1
Sidewalk/Roadway Condition	Guide rails/protection systems	2.0	3.3	3.0	2.3	2.5
Sidewalk/Roadway Condition	Intersection configuration	2.1	2.7	3.0	2.8	2.7
Sidewalk/Roadway Condition	Obstacles blocking sidewalk (utilities/trees)	2.9	2.5	3.0	2.6	2.9
Sidewalk/Roadway Condition	Roadway condition	2.8	3.1	2.7	3.0	3.3
Sidewalk/Roadway Condition	Roadway width	2.2	2.8	3.0	3.0	3.3
Sidewalk/Roadway Condition	Sidewalk condition	1.9	2.3	1.7	1.8	2.9
Sidewalk/Roadway Condition	Sidewalk width	2.2	2.6	2.7	2.4	3.1
Streetscape Amenities	**Average**	**2.0**	**2.5**	**3.2**	**2.5**	**3.2**
Streetscape Amenities	Benches or places to rest, trash cans	1.5	2.8	N/A	1.1	3.8
Streetscape Amenities	Lighting (for pedestrians)	1.9	2.0	3.0	2.4	3.7
Streetscape Amenities	Lighting (for vehicles)	2.4	2.5	2.7	2.9	2.7
Streetscape Amenities	Presence of directional/regulatory signage	2.4	2.3	3.7	2.8	2.7
Streetscape Amenities	Street trees and landscaping	1.9	3.0	3.5	2.9	3.2

Appendix H

Post-Audit Presentation

SOMERSET COUNTY ROADWAY SAFETY STUDY

Roadway Safety Post-Audit,
Raritan Corridor
April 1, 2021

Raritan Borough Post-Audit Meeting

Agenda: Schedule of Activities

10:00 AM, Yesterday
Project Background
Study Area Crash Data
RSA Orientation

2:00-4:00 PM, Yesterday
In-Field Road Safety Audit

Noon Today
Adjourn

Pre-Audit Meeting Adjourn
11:00 AM, Yesterday

Share Observations
Discuss Potential Improvements
10:00 AM, Today

Field Photography/Videos

Prompt List Discussion

"What operational/safety issues did you note on the corridor?"

"What makes travel on the corridor difficult ?"

- For drivers?
- For non-drivers?
- For people with disabilities?
- For families with small children?
- For transit riders?

"What pedestrian/cyclist connectivity issues were observed?"

Recommendations Discussion

"WHAT SAFETY IMPROVEMENTS DO YOU PROPOSE FOR REDUCING CRASHES?"

"WHAT IS YOUR VISION FOR THE CORRIDOR? HOW SHOULD IT LOOK IN 10 YEARS?"

"WHAT ARE THE SHORT-TERM CHANGES THAT COULD BE MADE NOW?"

Next Steps

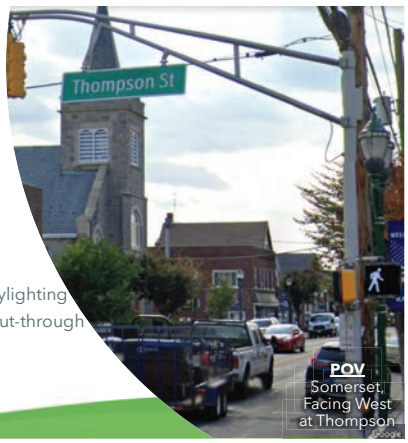
- Produce RSA Reports
- Implementation Matrix
- Final Study Report
- Conduct Follow-Up Public/TAC Meetings

Extra Slides

Somerset St
1st Ave to RT 206
0.67 miles in Raritan Boro

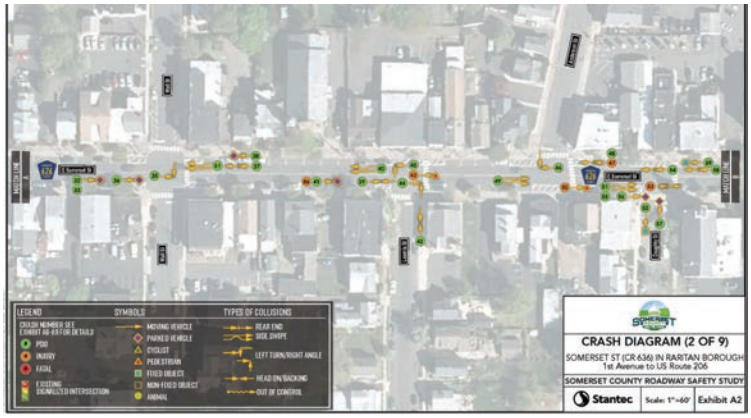
Summary of Feedback

- Lack of driver awareness of cyclists
- Lack of ped provisions at Wall Street
- Curb space management issues
- Desire for adaptive use of street space
  - Off-street parking options
  - One-way couplet (Somerset and Orlando)
- Side street sight lines blocked despite daylighting
- Congestion on Route 202/206 results in cut-through



POV
Somerset, Facing West at Thompson


Western Limit of Segment
LEGEND
SYMBOLS
TYPES OF COLLISIONS
CRASH DIAGRAM (1 OF 9)
SOMERSET ST (CR 636) IN RARITAN BOROUGH
1st Avenue to US Route 206
SOMERSET COUNTY ROADWAY SAFETY STUDY
Stantec
Scale: 1"=60'
Exhibit A1


LEGEND
SYMBOLS
TYPES OF COLLISIONS
CRASH DIAGRAM (2 OF 9)
SOMERSET ST (CR 636) IN RARITAN BOROUGH
1st Avenue to US Route 206
SOMERSET COUNTY ROADWAY SAFETY STUDY
Stantec
Scale: 1"=60'
Exhibit A2


LEGEND
SYMBOLS
TYPES OF COLLISIONS
CRASH DIAGRAM (3 OF 9)
SOMERSET ST (CR 636) IN RARITAN BOROUGH
1st Avenue to US Route 206
SOMERSET COUNTY ROADWAY SAFETY STUDY
Stantec
Scale: 1"=60'
Exhibit A3


LEGEND
SYMBOLS
TYPES OF COLLISIONS
CRASH DIAGRAM (4 OF 9)
SOMERSET ST (CR 636) IN RARITAN BOROUGH
1st Avenue to US Route 206
SOMERSET COUNTY ROADWAY SAFETY STUDY
Stantec
Scale: 1"=60'
Exhibit A4


Eastern Limit of Segment
206
LEGEND
SYMBOLS
TYPES OF COLLISIONS
CRASH DIAGRAM (5 OF 9)
SOMERSET ST (CR 636) IN RARITAN BOROUGH
1st Avenue to US Route 206
SOMERSET COUNTY ROADWAY SAFETY STUDY
Stantec
Scale: 1"=60'
Exhibit A5

Appendix I

Recommendations from Implementation Matrix

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ORIGINAL SHEET - ANSI B

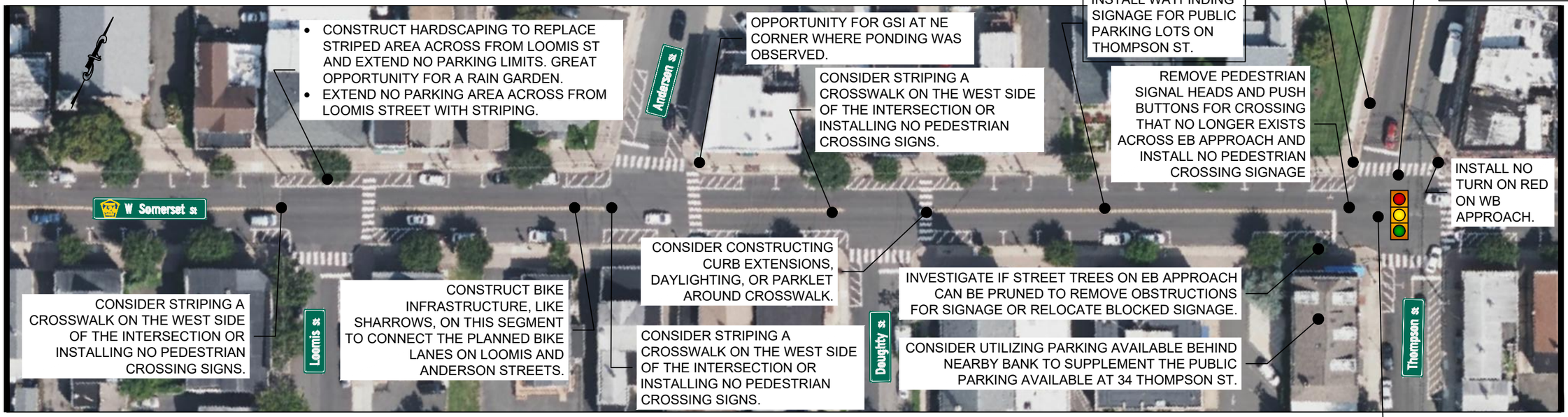
July, 2021
192510854

Stantec
365 West Passaic Street, Suite 175
Rochelle Park, NJ 07662
www.stantec.com

Client/Project
Somerset County/NJTPA
Somerset County Roadway Safety Study
East Somerset Street (CR 626)

Sheet No.
1 of 4

Title
Raritan Borough RSA Recommendations
Scale: 1" = 60'



- CONSTRUCT HARDSCAPING TO REPLACE STRIPED AREA ACROSS FROM LOOMIS ST AND EXTEND NO PARKING LIMITS. GREAT OPPORTUNITY FOR A RAIN GARDEN.
- EXTEND NO PARKING AREA ACROSS FROM LOOMIS STREET WITH STRIPING.

CONSIDER STRIPING A CROSSWALK ON THE WEST SIDE OF THE INTERSECTION OR INSTALLING NO PEDESTRIAN CROSSING SIGNS.

CONSTRUCT BIKE INFRASTRUCTURE, LIKE SHARROWS, ON THIS SEGMENT TO CONNECT THE PLANNED BIKE LANES ON LOOMIS AND ANDERSON STREETS.

OPPORTUNITY FOR GSI AT NE CORNER WHERE PONDING WAS OBSERVED.

CONSIDER STRIPING A CROSSWALK ON THE WEST SIDE OF THE INTERSECTION OR INSTALLING NO PEDESTRIAN CROSSING SIGNS.

CONSIDER CONSTRUCTING CURB EXTENSIONS, DAYLIGHTING, OR PARKLET AROUND CROSSWALK.

CONSIDER STRIPING A CROSSWALK ON THE WEST SIDE OF THE INTERSECTION OR INSTALLING NO PEDESTRIAN CROSSING SIGNS.

INSTALL GORE STRIPING BETWEEN NO PARKING SIGNS ON SB APPROACH TO MAKE APPROACH LANE MORE NARROW.

CONSTRUCT CURB EXTENSION WITH RAIN GARDEN ON NW CORNER.

INSTALL WAYFINDING SIGNAGE FOR PUBLIC PARKING LOTS ON THOMPSON ST.

REMOVE PEDESTRIAN SIGNAL HEADS AND PUSH BUTTONS FOR CROSSING THAT NO LONGER EXISTS ACROSS EB APPROACH AND INSTALL NO PEDESTRIAN CROSSING SIGNAGE

ADD STRIPED DAYLIGHTING ON THE NORTH SIDE OF THE INTERSECTION TO PROHIBIT PARKING.

INSTALL NO TURN ON RED ON WB APPROACH.

INVESTIGATE IF STREET TREES ON EB APPROACH CAN BE PRUNED TO REMOVE OBSTRUCTIONS FOR SIGNAGE OR RELOCATE BLOCKED SIGNAGE.

CONSIDER UTILIZING PARKING AVAILABLE BEHIND NEARBY BANK TO SUPPLEMENT THE PUBLIC PARKING AVAILABLE AT 34 THOMPSON ST.

- EVALUATE IF EXISTING SIGNAL TIMING CAN ACCOMMODATE LPIS.
  - UPGRADE PUSH BUTTONS AND PUSH BUTTON SIGNS.
  - DETERMINE IF BACKPLATES CAN BE ADDED TO SIGNALS.
- RELOCATE STOP BARS TO BE AT LEAST 4' FROM CROSSWALKS.
- EVALUATE IF EXISTING SIGNAL TIMING CAN ACCOMMODATE NO TURN ON RED SIGNAGE.

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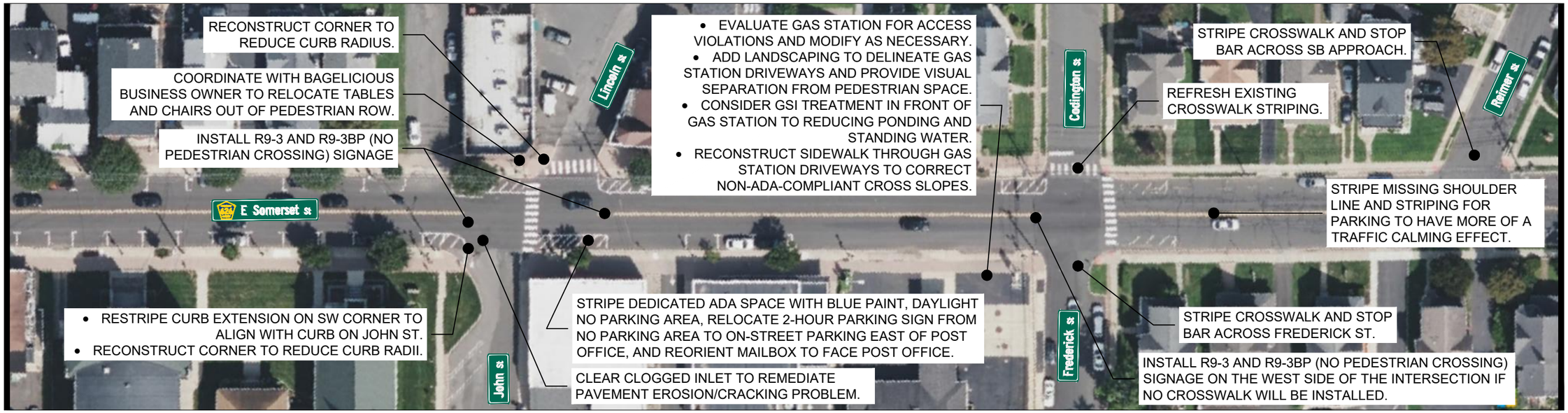
Somerset County Roadway Safety Study
East Somerset Street (CR 626)

Sheet No.
2 of 4

Title
Raritan Borough RSA Recommendations
Scale: 1" = 60'



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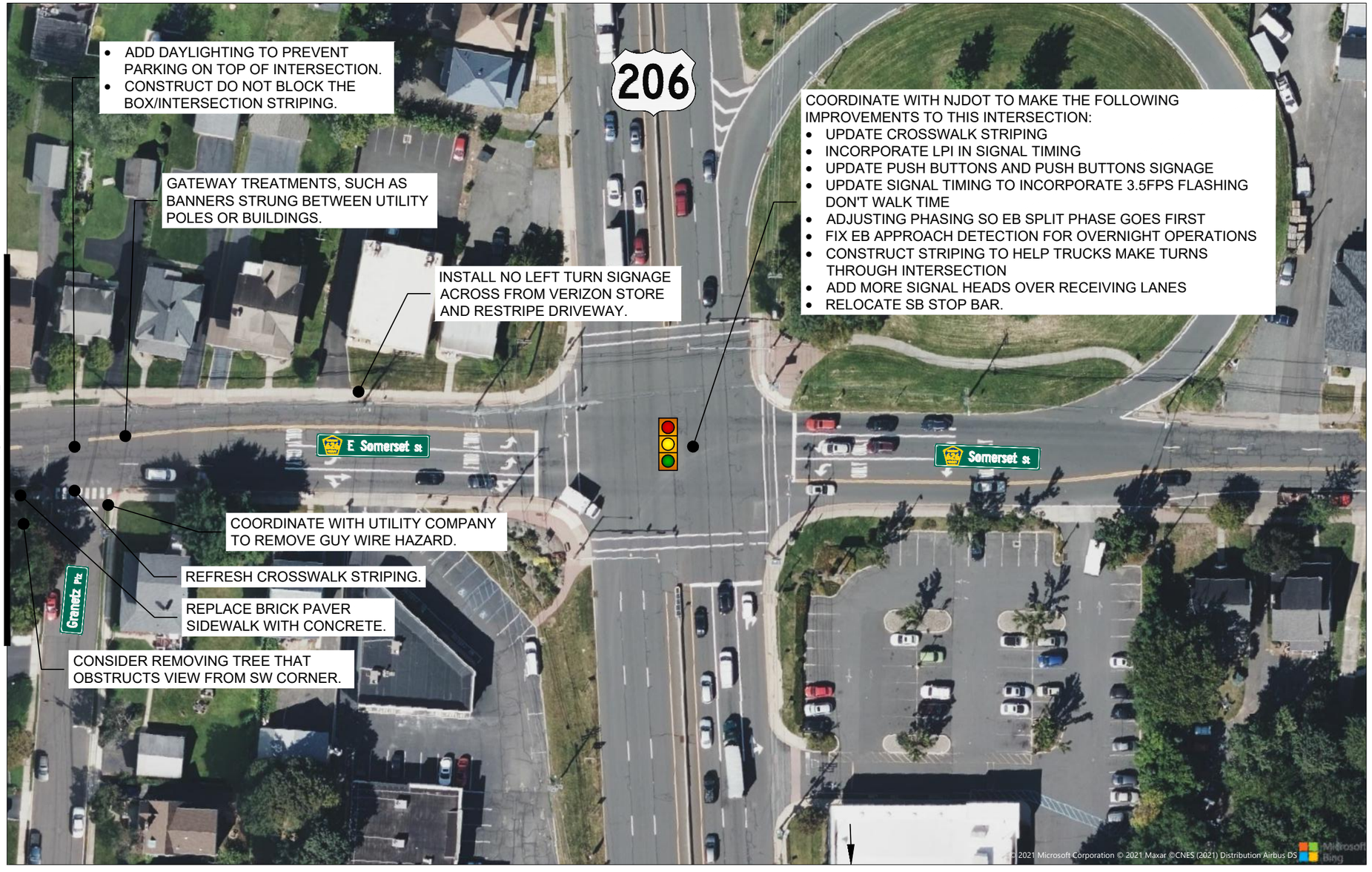
Sheet No.
3 of 4

Title
Raritan Borough RSA Recommendations
Scale: 1" = 60'



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East Somerset Street (CR 626)

Sheet No.
4 of 4

Title
Raritan Borough RSA Recommendations
Scale: 1" = 60'

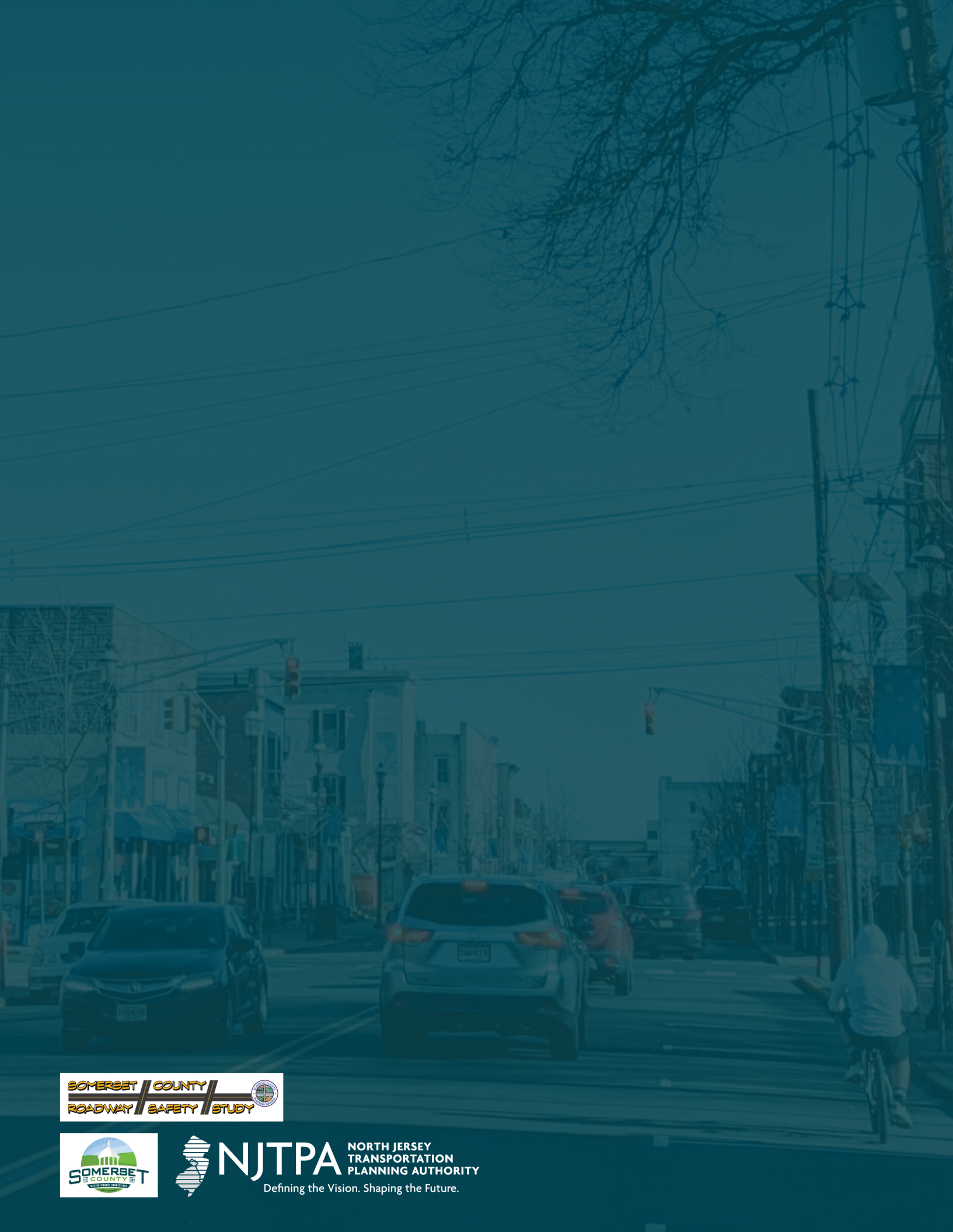
Appendix J

Road Owner Response

Somerset County Response to the Somerset Street (CR 626) in Raritan Borough Road Safety Audit (owner's response)

Somerset County agrees with the recommendations of the Road Safety Audit. The County strives to make our roads safer for all users and is willing to investigate any recommendations that can assist in achieving that goal. Our agreement with the assessment should in no way be perceived as a commitment to the implementation of such suggestions. The following general points should be noted:

- Somerset County does not maintain or inspect sidewalks, street lighting, landscaping, or parking facilities along county roadways. That responsibility lies with the municipality or property owner.
- Some recommendations may not be warranted or feasible due to engineering or fiscal constraints. Additional analysis is necessary.



SOMERSET COUNTY ROADWAY SAFETY STUDY

SOMERSET COUNTY

NJTPA NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

Defining the Vision. Shaping the Future.