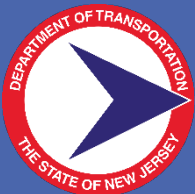




Road Safety Audit

CR 513, Mt. Pleasant Avenue to Union Street
(MP 44.40-45.12)
& CR 644, Wall Street to Jackson Avenue
(MP 0.80-0.96)

Rockaway Borough, Morris County



February 2026

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Executive Summary

This document is the final report of the Road Safety Audit (RSA) conducted along CR 513, Mt. Pleasant Avenue to Union Street (MP 44.40-45.12) & CR 644, Wall Street to Jackson Avenue (MP 0.80-0.96) in Morris County. An RSA is an effective way of identifying crash-causing trends and appropriate countermeasures utilizing a nontraditional approach that promotes transportation safety while maintaining mobility.

The RSA process is one of FHWA's proven safety countermeasures, aligns with the Safe System Approach, and supports the implementation of the Safe System Approach principles. RSAs consider all road users by assessing existing and potential safety concerns on the corridor or intersection for all modes of transportation. RSAs ensure that the built environment adheres to Safe System goals by verifying that roads are designed with safety criteria for all users, from the planning stage through construction and into operation.

The aforementioned roadway section was identified on NJDOT's Network Screening list. According to the NJDOT crash database, there were 74 vehicular crashes from 2020 to 2022 along the study area section of CR 513 & CR 644. There were 4 pedestrian and 3 pedalcyclist crashes from 2018 to 2022.

This RSA was conducted on Thursday, September 25, 2025. The pre-audit meeting was conducted at Rockaway Borough Community Center followed by the audit walk on the project site. Representatives from Morris County, Rockaway Borough, Rockaway Borough Police Department, Rockaway Borough Fire Department, NJDOT, NJTPA, Atlantic Health, and NJ TRANSIT were in attendance during the RSA.

The RSA site and crash history are described in Sections II and III of this report, respectively. Corridor-wide and site-specific issues and recommendations, organized by location, are discussed in Section V. These recommendations addressed pedestrian safety by ensuring ADA compliance, repairing sidewalks, and providing compliant pedestrian signal equipment at traffic signals. Additionally, many suggestions were made to provide access management, provide a shared use path, improve signage, restripe the faded road markings, improve bus stops, signalize intersections and fix the sightline issues at multiple intersections.

The recommendations contained herein were developed collaboratively with the roadway owner and local stakeholders from the RSA Team (Members listed in Appendix A).

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

I. Introduction

A. Site Selection

These sections of CR 513 and CR 644 were identified on NJDOT's Network Screening lists, as shown below. The current Network Screening list rankings are based on 2018-2020 vehicular and 2016-2020 pedestrian crash data, unless noted otherwise.

Table 1 – County Ranking, Top 50 (Corridor)

Location	Ped Corridor	Corridor
CR 513	NA	#3 (MP 44.89-45.89)

Table 2 – County Ranking, Top 50 (Intersection)

Location	Intersections	Pedestrian Intersections
CR 513 & Dock St (MP 44.58)	#23	#2

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. It qualitatively estimates and reports on existing and potential road safety issues, as well as identifies opportunities for improvements in safety for all road users. RSAs can be used on any size project, from minor maintenance to mega-projects, and can be conducted on facilities with a history of crashes, or during the design phase of a new roadway or planned upgrade. RSAs consider all road users, account for human factors and road user capabilities, are documented in a formal report, and require a formal response from the road owner. RSAs focus on evaluating the safety of both pedestrians and bicyclists, which may include looking beyond the roadway to include other paths, connections, and generators.

RSAs are conducted to generate improvement recommendations and countermeasures for roadway segments demonstrating a history of, or potential for, a high frequency of crashes, or an identifiable pattern of crash types. Recommendations range from low-cost, quick-turnaround safety improvements to more complex strategies. Implementation of improvement strategies identified through this process may be eligible for Local Federal Aid Safety Funds. Because the RSA process is adaptable to local needs and conditions, recommendations can be implemented incrementally as time and resources permit. The RSA process, one of FHWA's proven safety countermeasures, is shown below.



C. The RSA Event

This RSA was conducted on Thursday, September 25, 2025. The pre-audit meeting was conducted at Rockaway Borough Community Center followed by the audit walk on the project site. Representatives from Morris County, Rockaway Borough, Rockaway Borough Police Department, Rockaway Borough

Fire Department, NJDOT, NJTPA, Atlantic Health and NJ TRANSIT were in attendance during the RSA. A list of team members can be found in Appendix A. Other organizations that the RSA Team identified that may have an interest in the project area include the local businesses.

II. Corridor Description and Analysis

A. Study Location and Other Studies

The study area consists of approximately 0.68 miles of CR 513, Mt. Pleasant Ave to Union Ave (MP 44.40 -45.12) and 0.16 miles of CR 644, Wall St to Jackson Ave, in Rockaway Borough. The adjacent land use along the corridor is predominantly commercial, with residential properties interspersed throughout. A few commercial buildings along the study corridor are in transition to becoming multi-unit residential buildings. The borough, situated between I-80 and Route 46, encounters specific traffic challenges that are outlined in section G.

B. Roadway and Intersection Characteristics

CR 513 and CR 644 function as urban minor arterials with posted speed limits ranging from 30 to 45 mph. The study corridor consists of an undivided two-lane cross-section, providing one travel lane in each direction. Shoulders are generally absent; however, certain segments feature on-street parking spaces. In total, there are twelve intersections along the corridor, of which two are signalized and ten are unsignalized stop-controlled intersections.

C. Existing Bicycle/Pedestrian Accommodations

Sidewalks are present on both sides of the study corridor; however, their continuity is inconsistent. The missing sidewalks are along the northbound direction between Church Street and Union Street. In several areas, sidewalk widths do not meet ADA compliance standards. Many intersections have skewed crosswalks due to their geometric design. Marked crosswalks along the corridor are typically of the ladder style. Overall, the sidewalks and crosswalks need maintenance. Additionally, many curb ramps at intersections are not ADA compliant. There are no dedicated bicycle lanes or other bicycle infrastructure along the study corridor.

D. Traffic Volumes

The 2024 Average Annual Daily Traffic (AADT) along CR 513 is approximately 7,509 vehicles per day, while along CR 644 it is approximately 6,901 vehicles per day. According to Morris County's data collection, the 2022 AADT on CR 644 was approximately 12,781 vehicles per day. A copy of the available data can be found in Appendix E.

E. Transit Service

NJ TRANSIT bus service is provided along CR 513 and CR 644 via Route 880. Bus stops are located at or near Wall Street and River Park Walkway.

F. Community Profile

The American Community Survey (ACS) estimate, which updates the 2020 Census population and income characteristics, was used to identify minority and low-income populations surrounding the project limits. The latest ACS for this study area is a five-year estimate from 2019 through 2023. A summary of the demographics is listed below. Bold denotes that the percentage is above the Monmouth County average.

Table 3 – Study Area Demographics

Characteristic	Study Area	County Average
Use Public Transportation	1%	2%
Walk/Bike to Work	1.3%	1%
Homes with No Vehicle Available	12%	5%

G. Land Use

The area abutting CR 513 and CR 644 is predominantly commercial, with residential properties interspersed or located adjacent to commercial uses. The study corridor serves the downtown area of Rockaway Borough and, as a result, experiences substantial vehicular and pedestrian activity generated by commercial establishments and nearby residential neighborhoods. Continued commercial and residential development in the vicinity is expected to further increase both vehicular and pedestrian traffic. In addition, these routes are frequently used to bypass I-80 either during congested time periods or when there is an incident on the same and to access Route 46. Motorists frequently choose to bypass a section of Route 46 by traveling on CR 513 and Mt. Pleasant Avenue, using these alternative routes to access either Route 15 or I-80. This diversion leads to oversaturated traffic conditions along CR 513 and Mt. Pleasant Avenue. This was evident during the I-80 sinkhole incident, when congestion in the area was especially pronounced due to increased rerouting. Additional details and features of the project area are illustrated on the map provided in Appendix B.

III. Crash Findings

The analysis used in the RSA was based on reportable crashes found in the NJDOT crash database resulting in fatality, injury and/or property damage. Data was retrieved in April 2025 and 2022 was the most recent certified year available at the time of collection and analysis. Corridor-wide crash characteristics and overrepresentations were compared to the 2022 countywide average for the county road system as further detailed below. All crashes were plotted onto collision diagrams, which can be found in Appendix C and D.

According to the NJDOT crash database, 74 vehicular crashes occurred during the 3-year period between January 1, 2020, and December 31, 2022, along the study area. There were 4 pedestrian and 3 bicyclist crashes over the 5-year period between January 1, 2018, and December 31, 2022. The total number of crashes used for the RSA was 81.

A. Temporal Trends

Total crashes varied (either higher or lower) from the county average except in April, May, June, and August. In general, crashes also varied from the day of week averages except on Sunday and Monday. Collisions with pedestrians and bicyclists were highest on Tuesday and Friday and during June.

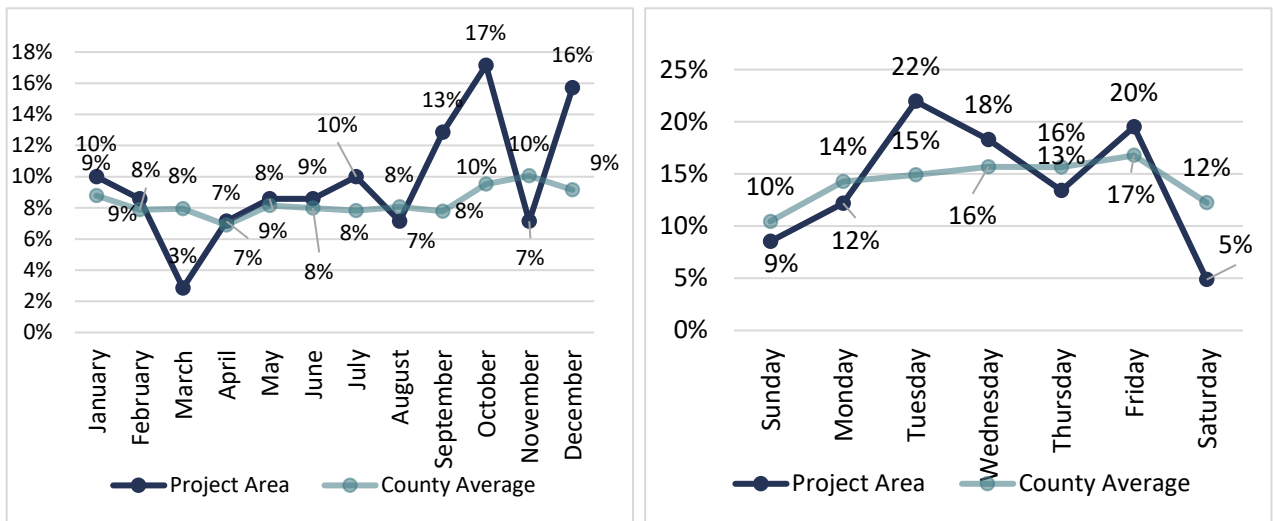


Figure 1 – Total Crashes by Month and Day of Week

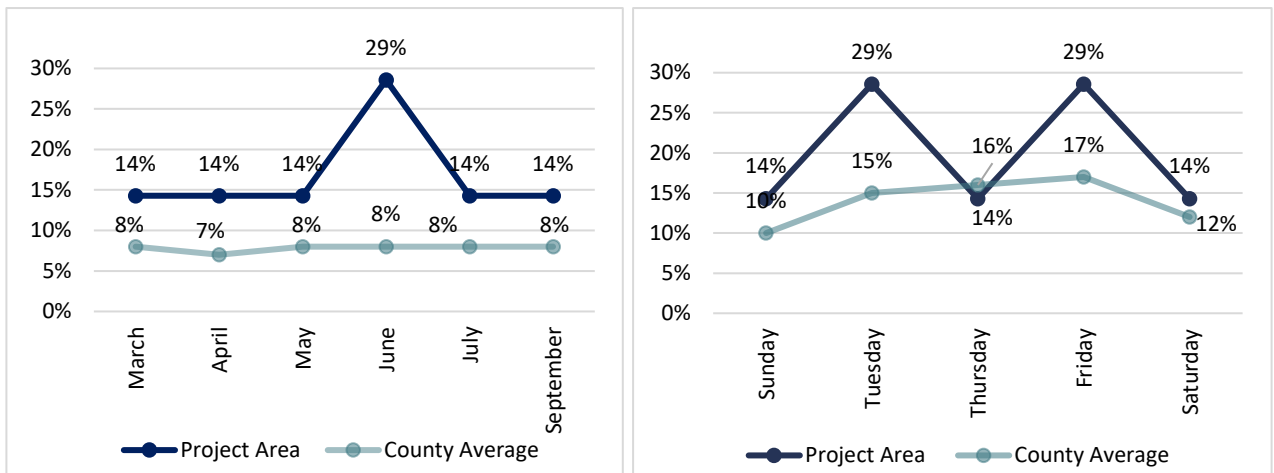


Figure 2 – Pedestrian/Bicyclist Crashes by Month and Day of Week

B. Collision Types

Overrepresented crash types included fixed object, left turn/u turn, opposite direction (head on), pedalcyclist, pedestrian, right angle, same direction – rear end and struck parked vehicle. Same direction – rear end and right angle crashes were the predominant crash types (49% of total).

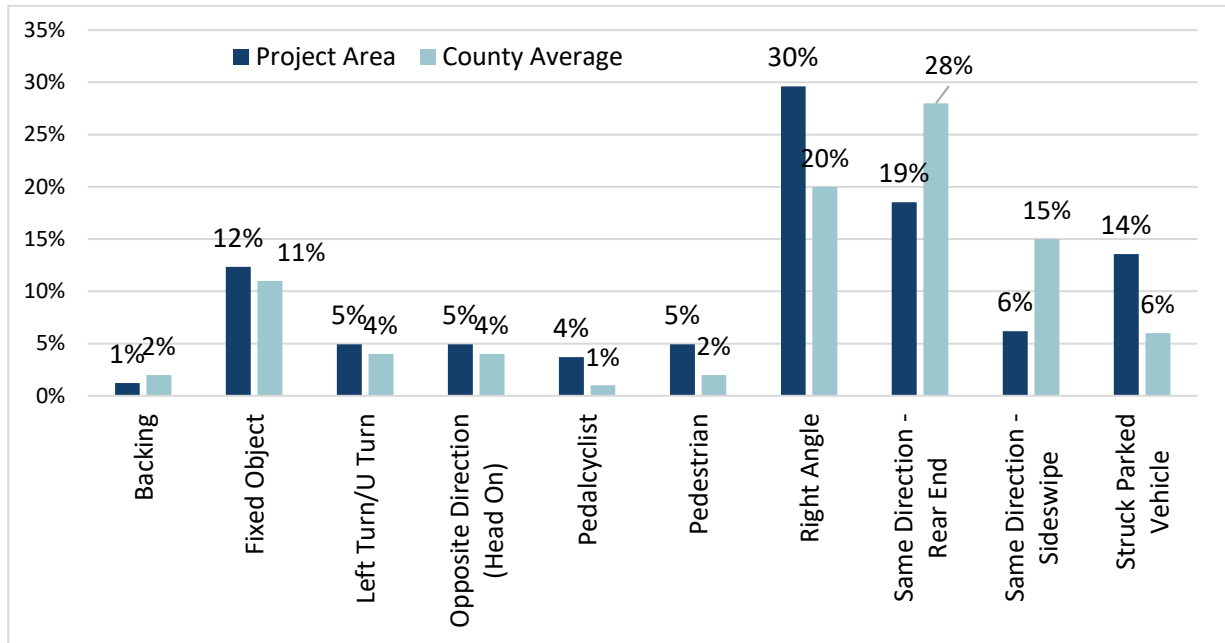


Figure 3 – Crash Type Breakdown

C. Severity

All types of vehicular and pedestrian crashes were identified during the study period. Of these, one (1) crash resulted in a fatal injury, one (1) in a suspected serious injury, one (1) in a suspected minor injury, seven (7) in possible injuries, and sixty-five (65) in no apparent injuries.

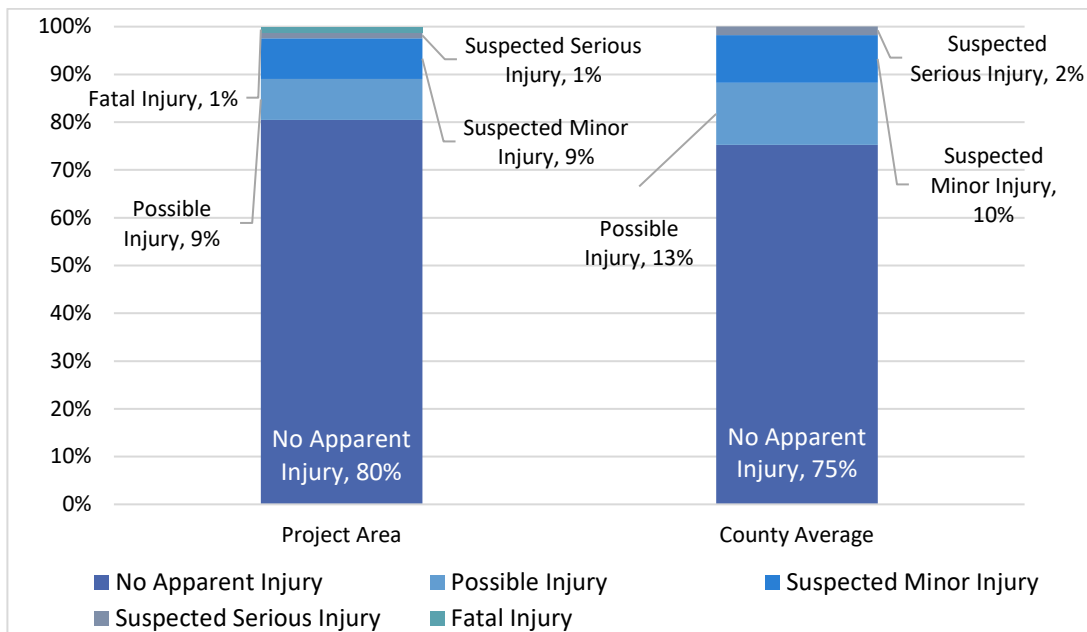


Figure 4 – Severity (All Crashes)

D. Roadway Surface & Light Condition

Most of the crashes happened under dry surface conditions (81%). Additionally, all surface conditions are similar to or underrepresented compared to the county road system.

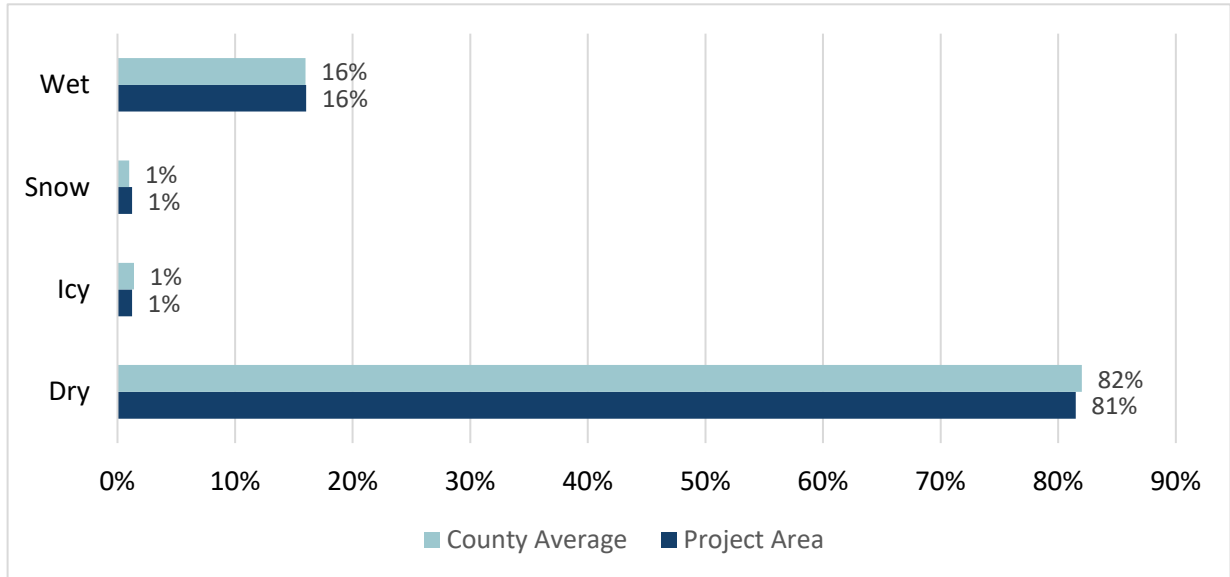


Figure 5 – Surface Conditions (All Crashes)

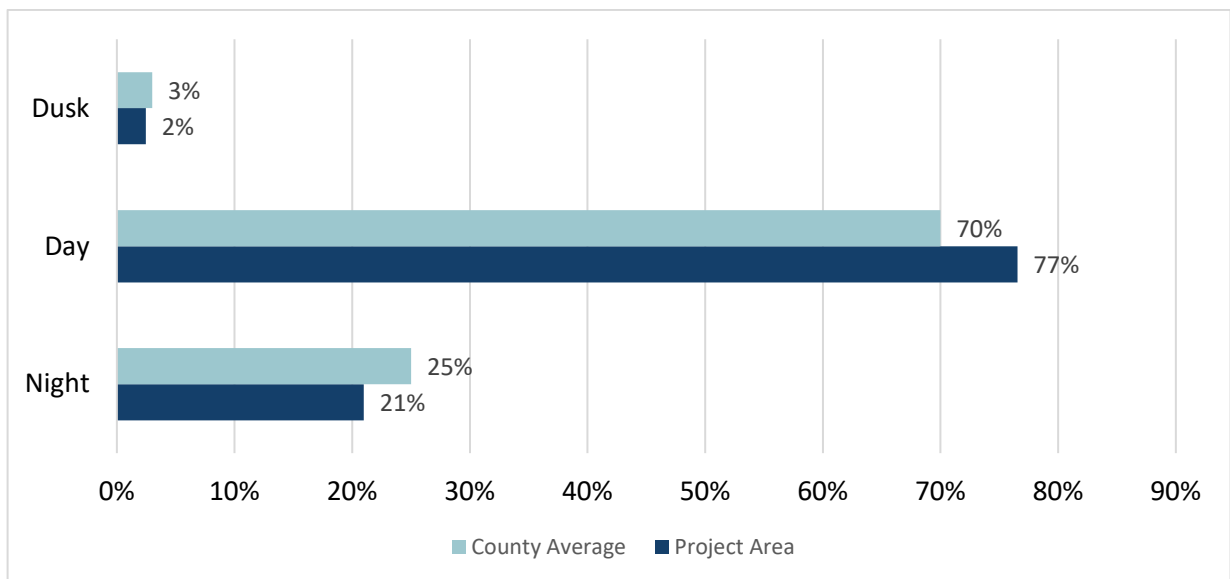


Figure 6 – Light Conditions (All Crashes)

Fifty-seven percent (57%) of pedestrian/bicycle crashes occurred during the day and 86% of the crashes occurred on dry surface.

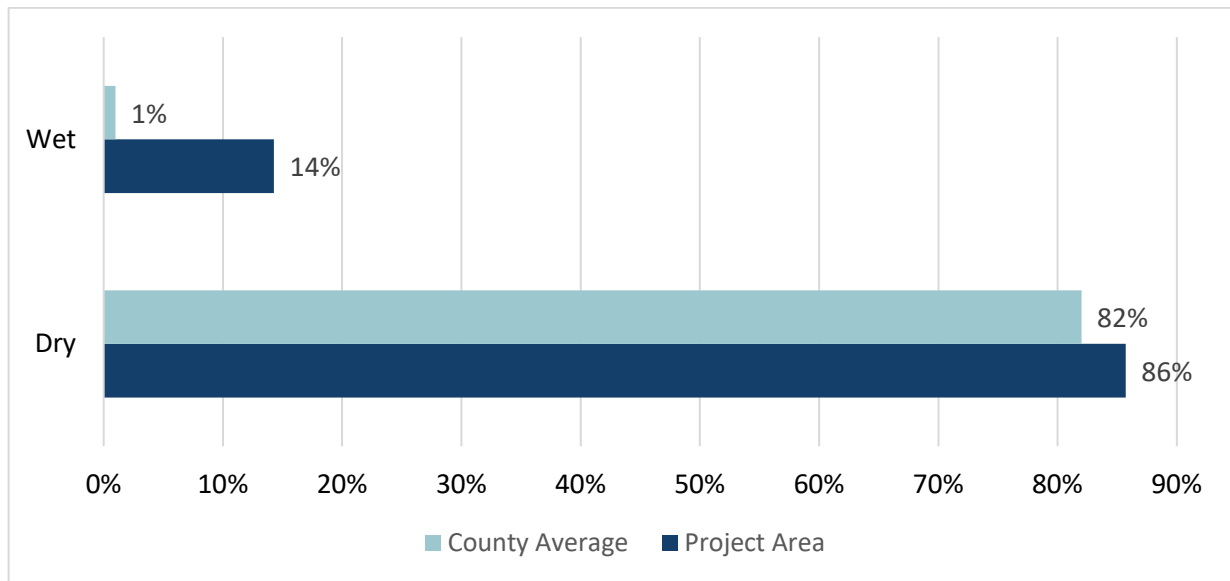


Figure 7 – Surface Conditions (Pedestrian/Bicycle Crashes)

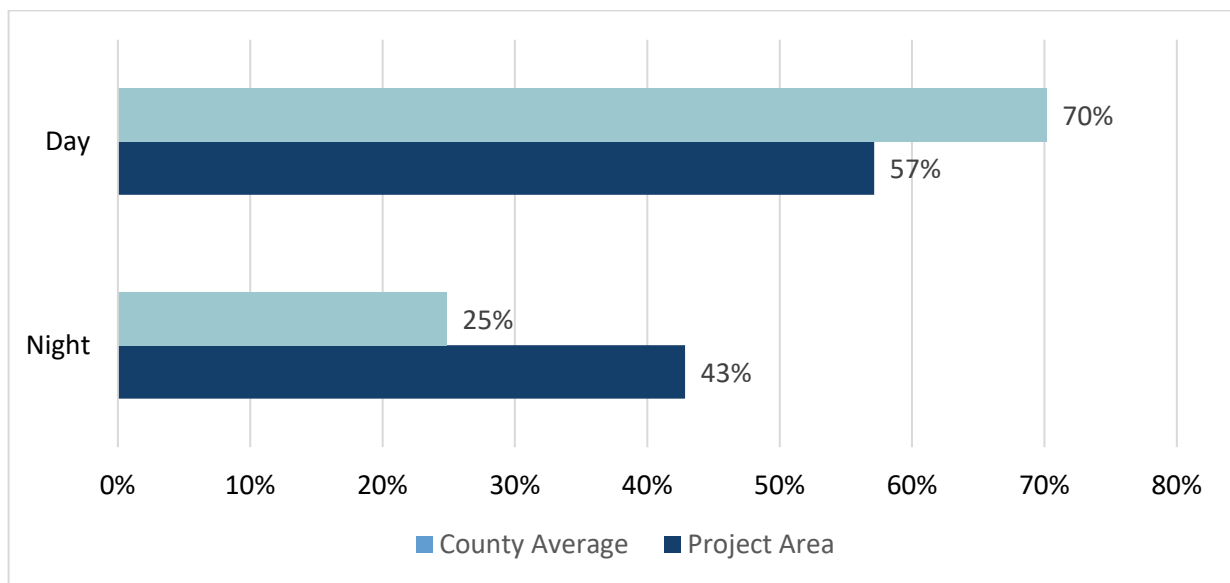


Figure 8 – Light Conditions (Pedestrian/Bicycle Crashes)

E. Location

Seven percent (7%) of crashes occurred at signalized intersections, 45% occurred at unsignalized intersections, and 48% occurred between intersections. In comparison, 14%, 22%, and 64% of crashes on all county roads occur at signalized intersections, unsignalized intersections, and between intersections, respectively. All seven (7) pedestrian/bicyclist crashes occurred at unsignalized intersections.

IV. Identified Issues & Observations

This section summarizes the common corridor-wide safety issues identified during the RSA and are not all inclusive. They are categorized into operations (including visibility) and maintenance issues, and pedestrian and bicyclist issues. Additional site-specific issues and photographs are in Appendix F. The Audit Team also observed the following:

- Vehicles traveling at speeds higher than the posted limit
- Drivers forming two lanes to turn left or right from a single lane
- Old streetlight fixtures
- Sightline obstructions from side streets due to the roadway alignment, placement of signs, utility poles, and/or on-street parking
- Multiple unsignalized intersections
- On-street parking in the downtown area
- Unmarked shoulders and/or crosswalks
- Drainage issues
- Inconsistent sidewalks for pedestrians in one stretch and narrow sidewalks elsewhere
- Worn or faded signing and striping

The Police department representatives and Borough officials also mentioned following issues:

- High volumes of foot traffic and a significant number of young drivers in the area due to the presence of six (6) different schools in close proximity to the study area.

A. Pedestrian/Bicyclist



Observation / Photo Location

Faded road striping and crosswalk markings

The pedestrian sign flashes continuously - may cause confusion among drivers, as it does not clearly indicate when pedestrians are present or intending to cross

CR 513 & W New St



Observation / Photo Location

Non-ADA compliant curb ramp
and faded crosswalk

CR 513 & Dock St



Narrow sidewalk on one side
and missing sidewalk on the
other side

*CR 513 (Between Church St &
Hoagland Ave)*



No dedicated space for bus
stops or bus shelter available

CR 513 & River Park Walkway

B. Operations, Visibility, and Maintenance



Observation / Photo Location

Water accumulation issues

CR 513 (Between Church St & Hoagland Ave)



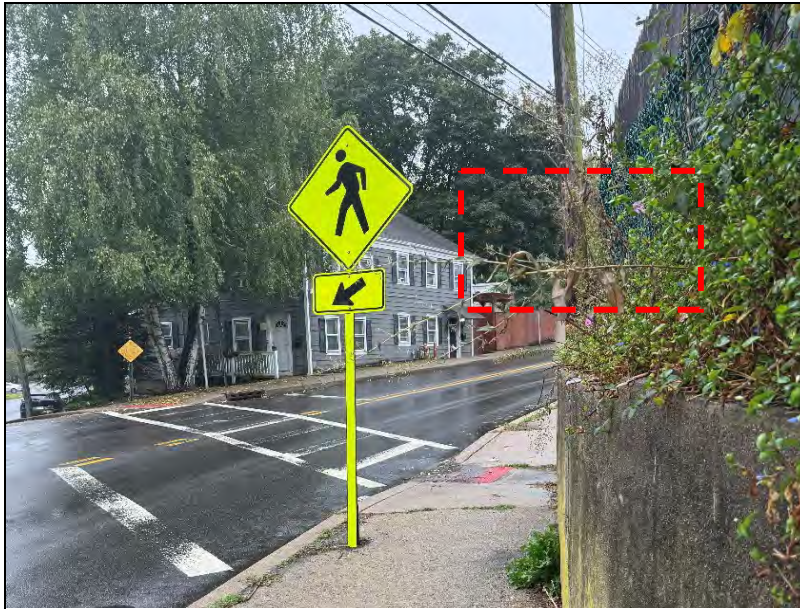
Sightline obstruction due to roadway alignment and landscaping

CR 513 (Wall St) & Church St



Bent, old and illegible signs

CR 513 (Wall St) & Church St



Observation / Photo Location

Overgrown vegetation hindering pedestrian path

CR 513 & Halsey Ave

V. Findings and Recommendations

This section summarizes the site-specific and corridor-wide safety issues, potential strategies, and recommendations to improve the same. The safety benefit, time frame, cost, and jurisdiction are listed alongside each recommendation. The ratings used in the tables are described as follows. N/A indicates safety benefit not determined. Recommendations in ***bold italics*** are FHWA Proven Safety Countermeasures.

Symbol	Meaning	Definition
N/A	Not available	Safety benefit not determined
✓	Low safety benefit potential	May reduce total crashes by 1-25% ¹
✓✓	Low to moderate safety benefit potential	May reduce total crashes by 26-49% ¹
✓✓✓	Moderate safety benefit potential	May reduce total crashes by 50-74% ¹
✓✓✓✓	High safety benefit potential	May reduce total crashes by 75+% ¹
\$	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 and analysis
🕒	Long term	Could be accomplished in 3 years or more; may require full engineering and analysis

¹ Based on existing Crash Modification Factors (CMFs), the Highway Safety Manual (HSM), FHWA Proven Safety Countermeasures and current research, where applicable. All safety benefits are approximate.

A. Recommendations

The following represents the specific findings and recommendations made by the RSA team. All recommendations and designs should be thoroughly evaluated with due diligence and designed as appropriate by the roadway owner and/or a professional engineer for conformance to all applicable codes, standards, and best practices.

Table 4 – Corridor-Wide Recommendations

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
Operations					
1	Consider installing additional signage (speed limit, intersection warning signs, hidden driveways, and updating signage and ensure consistency along corridor	✓	\$	☐	County/ Borough
2	Consider conducting a lighting analysis for the corridor	✓✓✓	\$\$	☐	County/ Borough
3	Review access management for the corridor and consider driveway revisions or consolidation	✓	\$\$\$	☐	County/ Borough
4	Investigate installing wider edge lines and providing shoulders where not present	✓	\$	☐	County/ Borough
5	Consider appropriate and uniform posted speed limit for all road users	✓✓	\$\$	☐	County/ Borough
6	Consider installing dynamic speed feedback signs	✓	\$	☐	County/ Borough
7	Consider clearing sight triangles at intersections	✓✓	\$	☐	County/ Borough
8	Consider reducing the wide curb radii at intersections	✓	\$\$	☐	County
9	Change to right-in right-out operations at stop control intersection and commercial driveways	✓✓	\$\$	☐	County/ Borough
10	Evaluate the configuration of on-street parking	✓	\$	☐	County/ Borough
Bicycle/Pedestrian					
11	Inspect, repair and construct sidewalk/walkway and/or curb ramps in compliance with ADA as needed, including driveway aprons; complete any missing connections	✓✓✓	\$\$	☐	County/ Borough
12	Examine crosswalks status: check placement, alignment, and markings	✓✓	\$	☐	County/ Borough
13	Consider improvements to bus stops to make them ADA compliant	#N/A	\$	☐	Borough/ NJ TRANSIT
14	Consider providing high-visibility crosswalk markings for all intersections throughout corridor	✓✓	\$	☐	County/ Borough
15	Consider side path (formerly shared use path) throughout the corridor	✓	\$	☐	County/ Borough

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
16	Consider installing a Rectangular Rapid Flashing Beacon (RRFB) instead of continuously flashing pedestrian signs at the crosswalk	✓✓	\$	☉	County/ Borough
Maintenance					
17	Inspect existing striping for wear and restripe accordingly	✓✓	\$	☉	County/ Borough
18	Inspect and replace missing, faded, damaged or incorrect/outdated signage as needed (i.e., signs mounted below 7-ft, or signs with confusing instructions)	✓	\$	☉	County/ Borough
19	Inspect and trim foliage/vegetation and relocate retail signs and electric poles to improve sidewalk paths	✓ ²	\$\$	☉	County/ Borough
20	Inspect drainage facilities; ensure they are free of debris	✓ ²	\$\$	☉	County/ Borough
Education					
21	Consider periodic sidewalk, crosswalk, multimodal education campaign and code enforcement	✓ ²	\$	☉	Avenues in Motion TMA/ Borough

The following site-specific recommendations are in addition to the corridor-wide improvements, except if noted otherwise.

Table 5 – Site-Specific Recommendations

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
Mt Pleasant Avenue (Lakeside Drive)/ Chestnut Terrace					
22	Consider corridor-wide recommendations 11, and 12 regarding ADA compliance, sidewalks, and crosswalks	✓✓✓ ²	\$\$\$	☉	County/ Borough
23	Consider adding track marks for turn lanes	✓	\$	☉	County/ Borough
24	Consider corridor-wide recommendation 13 for the bus stop location	#N/A	\$	☉	Borough/ NJ Transit
25	Evaluate advanced intersection warning signs for both roadways	✓	\$	☉	County/ Borough
26	Consider relocating the Chestnut Terrace approach to CR 513 further east to provide separation from Mt Pleasant Avenue (convert the NB direction to two-way and close the SB direction)	✓✓	\$	☉	County/ Borough

² CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
27	Consider realigning the Mt Pleasant Avenue skewed approach at CR 513 (i.e. closer to a perpendicular [approximately 90°] alignment)	✓✓✓ ³	\$\$\$	●	County/Borough
28	Consider closing access to Mt Pleasant Avenue from CR 513	✓	\$	●	County/Borough
29	Consider corridor-wide recommendation 9 for Mt Pleasant Avenue	✓✓	\$\$	●	County/Borough
W New Street					
30	Consider corridor-wide recommendations 11 and 12 regarding ADA compliance, sidewalks, and crosswalks	✓✓✓ ³	\$\$\$	●	County/Borough
31	Consider corridor-wide recommendation 17 for restriping the vehicular lane markings	✓✓	\$	●	County/Borough
32	Consider installing a Rectangular Rapid Flashing Beacon (RRFB) instead of continuously flashing pedestrian signs at the crosswalk	✓✓	\$	●	County
Wall Street					
33	Consider corridor-wide recommendations 11 and 12 regarding ADA compliance, sidewalks, and crosswalks	✓✓✓ ³	\$\$\$	●	County/Borough
34	Consider corridor-wide recommendation 13 for the bus stop location	#N/A	\$	●	Borough/NJ Transit
35	Evaluate a curb extension (bump out) in the northeast corner and relocate the crosswalk closer to the intersection	#N/A	\$\$\$	●	County
36	Consider realigning the street to reduce the existing skew and establish an intersection with CR 644 that is closer to a perpendicular (approximately 90°) alignment	✓✓	\$\$\$	●	County
37	Consider installing a dedicated left turn lane on Wall St for vehicle turning on CR 644 (E Main St)	✓	\$\$	●	County
38	Evaluate a modern or mini roundabout	✓✓✓✓	\$\$\$	●	County
39	Consider corridor-wide recommendation 10 regarding on-street parking	✓	\$	●	County/Borough
40	Evaluate installing a traffic signal if warranted	✓✓	\$\$\$	●	County
Maple Avenue					
41	Consider corridor-wide recommendations 11 and 12 regarding ADA compliance, sidewalks, and crosswalks	✓✓✓ ³	\$\$\$	●	County/Borough

³ CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
42	Consider corridor-wide recommendation 17 for restriping the vehicular lane markings	✓✓	\$	☉	County/ Borough
43	Consider corridor-wide recommendation 9 and install no left turn signs for the commercial complex	✓✓	\$\$	●	County/ Borough
Jackson Avenue/ E New Street					
44	Consider corridor-wide recommendations 11 and 12 regarding ADA compliance, sidewalks, and completing the crosswalk network	✓✓✓ ⁴	\$\$\$	●	County/ Borough
45	Consider installing curb extensions (bump-outs) at the intersection to reduce pedestrian crossing distance	#N/A	\$\$	●	County/ Borough
46	Consider adding track marks for turn lanes	✓	\$	☉	County/ Borough
47	Evaluate installing a traffic signal if warranted	✓✓	\$\$\$	●	County/ Borough
48	Consider restricting vehicles to left-turn-only movements from Jackson Avenue towards CR 644	✓✓✓	\$	☉	County/ Borough
Dock Street					
49	Consider corridor-wide recommendations 11 and 12 regarding ADA compliance, sidewalks, and crosswalks	✓✓✓ ⁴	\$\$\$	●	County/ Borough
50	Evaluate the curb radii to create a more well-defined intersection	✓	\$	●	County/ Borough
Wall Street / Church Street / Dock Street					
51	Consider corridor-wide recommendations 11 and 12 regarding ADA compliance, sidewalks, and completing the crosswalk network	✓✓✓ ⁴	\$\$\$	●	County/ Borough
52	Consider corridor-wide recommendation 10 regarding on-street parking	✓	\$	●	County/ Borough
53	Evaluate realigning the street to reduce the existing skew and establish an intersection with CR 644 that is closer to a perpendicular (approximately 90°) alignment	✓✓	\$	☉	County/ Borough
54	Consider advanced intersection warning sign for Dock Street	✓	\$	☉	County/ Borough
55	Evaluate a curb extension (bump out) on the SB side at the existing crosswalk location	#N/A	\$\$\$	●	County

⁴ CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
Academy Street					
56	Consider corridor-wide recommendations 11 and 12 regarding ADA compliance, sidewalks, and completing the crosswalk network	✓✓✓ ⁵	\$\$\$	●	County/ Borough
57	Consider corridor-wide recommendations 19 and 20 for vegetation management and drainage	✓ ⁵	\$\$	●	County/ Borough
Midblock Crosswalks					
58	Consider installing a Rectangular Rapid Flashing Beacon (RRFB) at each crosswalk	✓✓	\$	●	County
Hill Street					
59	Consider corridor-wide recommendations 11 and 12 regarding ADA compliance, sidewalks, and completing the crosswalk network	✓✓✓ ⁵	\$\$\$	●	County/ Borough
Halsey/ Church Street					
60	Consider corridor-wide recommendations 11 and 12 regarding ADA compliance, sidewalks, and completing the crosswalk network	✓✓✓ ⁵	\$\$\$	●	County/ Borough
61	Evaluate realigning the crosswalk to reduce the crossing distance and remove stop bars on CR 513	✓✓	\$	●	County
62	Consider corridor-wide recommendations 19 and 20 for vegetation management and drainage	✓ ⁵	\$\$	●	County/ Borough
63	Consider realigning the side streets (Halsey/ Church Street) to create one 'T' type intersection with closer to a perpendicular (approximately 90°) alignment	✓✓	\$\$\$	●	County/ Borough
Hibernia Avenue/Hoagland Avenue/White Meadow Avenue					
64	Consider corridor-wide recommendations 11 and 12 regarding ADA compliance, sidewalks, and completing the crosswalk network	✓✓✓ ⁵	\$\$\$	●	County/ Borough
65	Consider signal upgrades (8" to 12" signal heads, install backplates with retroreflective border, evaluate clearance intervals, update to countdown pedestrian signal heads, replace push buttons for ADA compliance, signal timings, lighting, etc.)	✓✓✓	\$\$\$	●	County
66	Investigate providing Leading Pedestrian Interval (LPI) at the intersection	✓✓✓	\$	●	County/ Borough
67	Consider adding track marks through the intersection	✓	\$	●	County/ Borough
68	Evaluate the curb radius in the southwest corner (Hoagland/Halsey), specifically for larger vehicles	✓ ⁵	\$\$	●	County

⁵ CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
69	Consider installing curb extensions (bump-outs) at the intersection to reduce pedestrian crossing distance and tighten the intersection	#N/A	\$\$	●	County/ Borough
70	Consider reducing the width of one-way section of Hoagland Avenue and reallocate the space for shoulder/ side path	✓ ⁶	\$\$	●	County/ Borough
Union Street					
71	Consider corridor-wide recommendations 11 and 12 regarding ADA compliance, sidewalks, and completing the crosswalk network	✓✓✓ ⁶	\$\$\$	●	County/ Borough
72	Consider corridor-wide recommendation 9 and install no left turn signs for vehicles coming out of the gas station	✓✓	\$\$	●	County/ Borough
73	Consider corridor-wide recommendation 7 for improving the sightline issues	✓✓	\$	●	County/ Borough
74	Consider restricting the left turn from CR 513 (Hibernia Ave)	✓✓✓	\$	●	County/ Borough

B. Road Owner Response

An important part of the RSA process is the road owner's response: an acknowledgment of the audit's findings and recommendations, and their planned follow-up. In responding to the RSA's findings, the road owner must bear in mind all the competing objectives involved when implementing the recommendations, and foremost among them is available resources. Because the audit process generated a long and wide-ranging list of improvements, the road owner is expected to implement these recommended improvements as time and funds allow in coordination with other projects and priorities. A copy of the road owner response is provided in Appendix H.

C. Recommendation Visualizations

Examples of some of the site-specific and corridor-wide safety recommendations identified in Tables 4 and 5 are shown below and are based on current practices and standards. Descriptions and images of each treatment are from the *2017 NJ Complete Street Design Guide* (CSDG) and NACTO's *Urban Street Design Guide* (NACTO-US) and *Urban Bikeway Design Guide* (NACTO-UB), including sources contained therein. These examples are meant to be generic and for informational purposes only.

1. Pedestrian Facilities

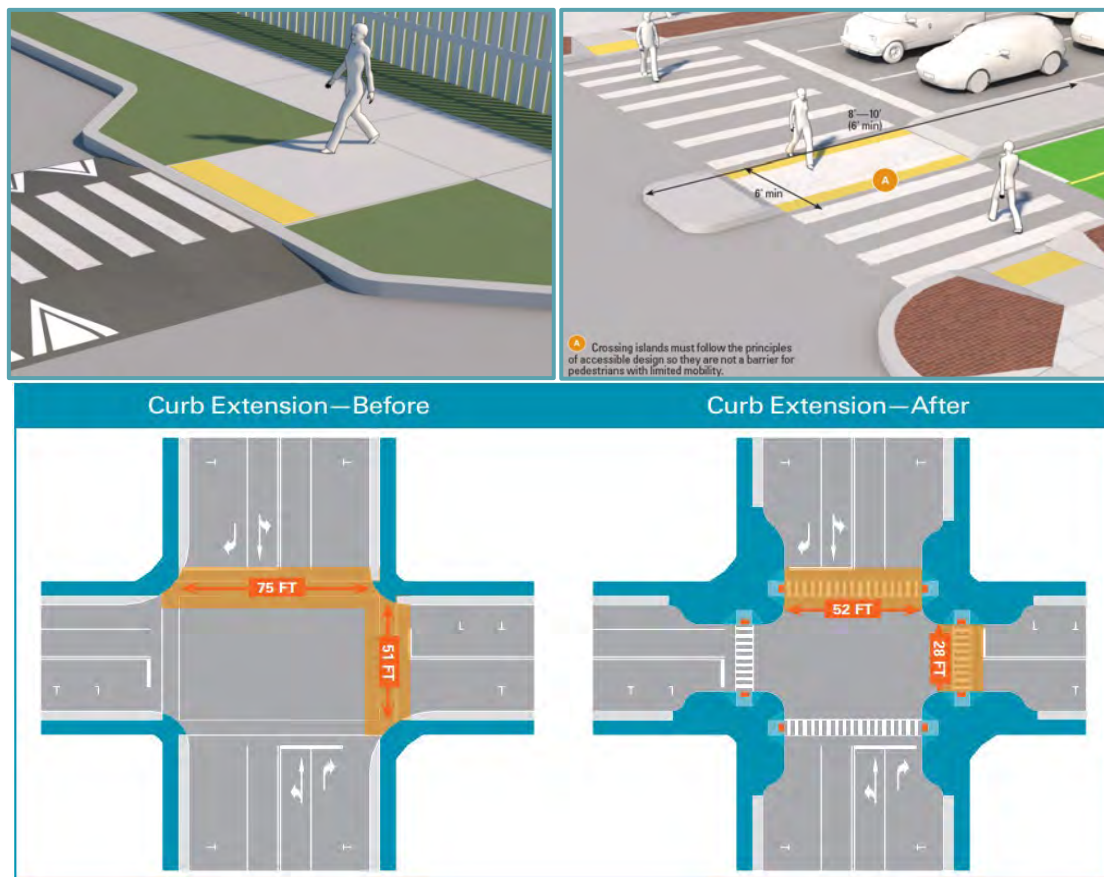
ADA standards specify a minimum 5-foot clear path width to accommodate two wheelchairs passing each other. In addition to providing a more accessible facility, this minimum width also creates a more comfortable environment for pedestrians to walk side by side and pass each other. Sidewalk width should support the surrounding street context, land uses, as well as current and future pedestrian demand.

⁶ CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

Curb extensions physically and visually narrow the roadway at intersections and midblock locations, creating safer and shorter pedestrian crossings, while increasing the available space for streetscape. They increase the overall visibility of pedestrians by aligning them with the shoulder or parking lane and help prohibit vehicles from parking in violation of Title 39.

Crosswalk visibility enhancements, a FHWA Proven Safety Countermeasure, help make crosswalks and the pedestrians, bicyclists, wheelchair and other mobility device users, and transit users using them more visible to drivers. These include high-visibility crosswalks, lighting, and signing and pavement markings. These enhancements can also assist users in deciding where to cross.

The design of driveways should provide a continuous and level pedestrian path across the vehicular zone, encouraging drivers to stop for pedestrians on the sidewalk. Driveways should not be designed where the sidewalk is interrupted by the driveway.



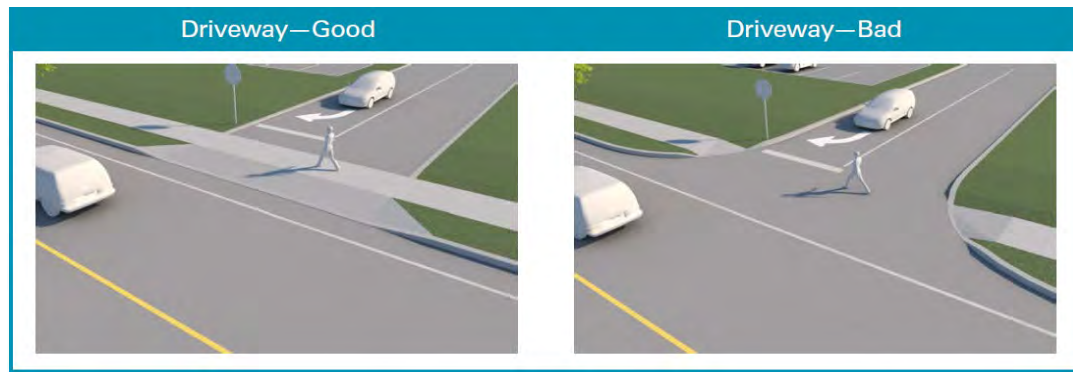


Figure 10 – Sidewalk and Driveways (Source: CSDG)

2. Bicycle Facilities

Side paths (formerly shared-use paths) are facilities that are distinctly separate from the roadway. Located outside of the cartway, they are separated physically from motorized traffic by a buffer. Side paths are typically designed to accommodate two-way travel for all non-motorized users and are paved or concrete. They can help provide low-stress bicycle accommodations in a variety of circumstances: a shortcut through residential neighborhoods, a commuting route from residential to commercial centers, a recreation route in a park or greenway, or as a side path along a roadway in lieu of (or in addition to) an on-road bicycle facility.



Figure 11 – Bicycle Facility Examples

Left: Curbside bicycle lane (Source: NATCO: UBG). Right: Sharrow Markings (Source: Eric Gilliland/Flickr) Bottom: Side Path (Source: CSDG)

3. Bus Stops

In New Jersey, the bus network plays an integral role in the daily transportation needs of residents. Every transit passenger is a pedestrian before and after their transit trip. Safe, comfortable, and convenient pedestrian connections are therefore critical to an effective transit service and encouraging higher ridership. At bus stops, it is important to have an accessible boarding area that must be provided, typically measuring 5 feet long (parallel to the curb) by 8 feet wide (perpendicular to the curb). This includes 5 feet of width for a wheelchair waiting area, plus

additional width to deploy a wheelchair ramp to serve the waiting area.⁷ To reduce conflicts between through traffic and buses at stops, turnouts may be provided. Bus turnouts generally consist of entrance and exit tapers, a stopping area, and length for the bus to accelerate or decelerate.

4. Rectangular Rapid Flashing Beacons

Mid-block pedestrian crossings link people to destinations located between signalized intersections⁸ and discourage unsafe mid-block crossings that occur when marked crosswalks are spaced too far apart. Where no traffic signal is present, the crossing should be highly visible through supplementary warning signs, bright lighting, conspicuous pavement markings, pedestrian-activated beacons such as RRFBs, and speed-reducing elements like raised crosswalks or curb extensions.

To enhance pedestrian conspicuity and increase driver awareness at uncontrolled, marked crosswalks, transportation agencies can install a pedestrian actuated Rectangular Rapid Flashing Beacon (RRFB) to accompany a pedestrian warning sign. RRFBs consist of two rectangular-shaped yellow indications, each with a light-emitting diode (LED)-array-based light source.⁹ RRFBs flash an alternating high frequency when activated to enhance conspicuity of pedestrians at the crossing to drivers. RRFBs can also accompany school or trail crossing warning signs.



Figure 12 – Example of a Rectangular Rapid Flashing Beacon
(Source: NACTO-Urban Bikeway Design Guide)

5. Intersection Design

Intersections are the point where paths cross, where all modes of travel share the same space, often at the same time. Complex intersections can be confusing to all road users and multiphase signals result in long delays. Simple, compact, and well-designed intersections can reduce conflict points, slow traffic, shorten crossing distances for pedestrians, improve visibility and driver/pedestrian awareness, and create predictable driver behavior, reducing confusion.⁹

⁷ NACTO. *Transit Street Design Guide*. April 2016.

⁸ NACTO. *Urban Street Design Guide*. <https://nacto.org/publication/urban-street-design-guide/intersections/>

⁹ FHWA. MUTCD 11th Edition. Chapter 4L. Rectangular Rapid Flashing Beacons. p. 736.

Intersections designed at or near right angles (90°) are widely recognized as the safest and most efficient configuration for vehicle and pedestrian movement.¹⁰ As the angle between intersecting roads decreases, visibility and driver judgment become more difficult, increasing operational complexity and crash risk. Existing reference standards consistently recommend avoiding skewed intersections where practicable and maintaining angles of at least 75° to promote adequate sight distance and operational safety.¹¹ Furthermore, intersection geometry is a key design element highlighted in the FHWA *Handbook for Designing Roadways for the Aging Population* as one of the proven practices to accommodate older road users, who may experience reduced vision and diminished ability to scan for conflicting traffic.¹² These findings reinforce the importance of prioritizing near-right-angle designs to enhance overall safety and mobility for all roadway users.

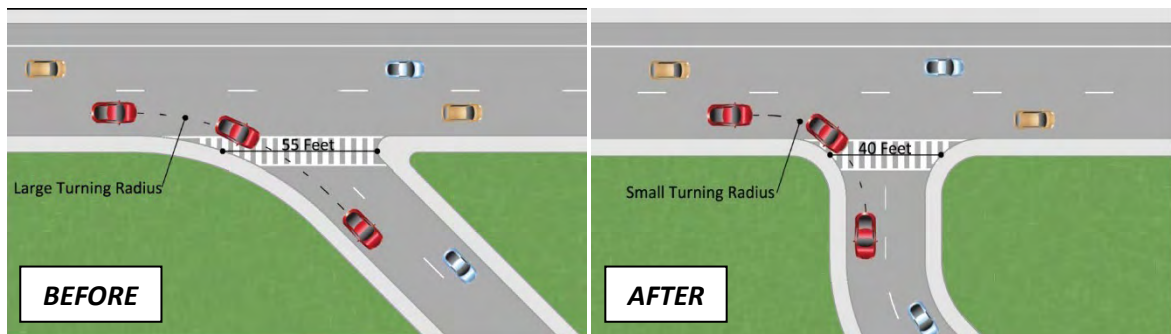


Figure 13 – Example of Redesigned Intersection to Right Angle
(Source: FHWA PEDSAFE [Pedestrian Safety Guide and Countermeasure Selection System])

VI. Conclusions

The CR 513 and CR 644 RSA was conducted to identify safety issues and corresponding countermeasures that compromise the multimodal nature of this roadway. The team identified a thorough list of issues from the field visit, as well as many practical short-, mid- and long-term improvements during the post-audit.

The recommendations documented in this report are designed to improve safety for all road users. Some of the strategies identified can be implemented through routine maintenance; however, all will be constrained by available time and budgetary priorities. The audit process and the resulting final document highlight the safety issues and present the improvements needed by location, organized for systematic implementation by the roadway owner.

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

¹⁰ AASHTO. *A Policy on Geometric Design of Highways and Streets* (Green Book).

¹¹ Institute of Transportation Engineers. *Traffic Engineering Handbook; Subdivision Street Design Guide*.

¹² Federal Highway Administration. *Handbook for Designing Roadways for the Aging Population*, Chapter on Intersections — design elements including intersecting angle (skew).

A. RSA TEAM

Audit Team

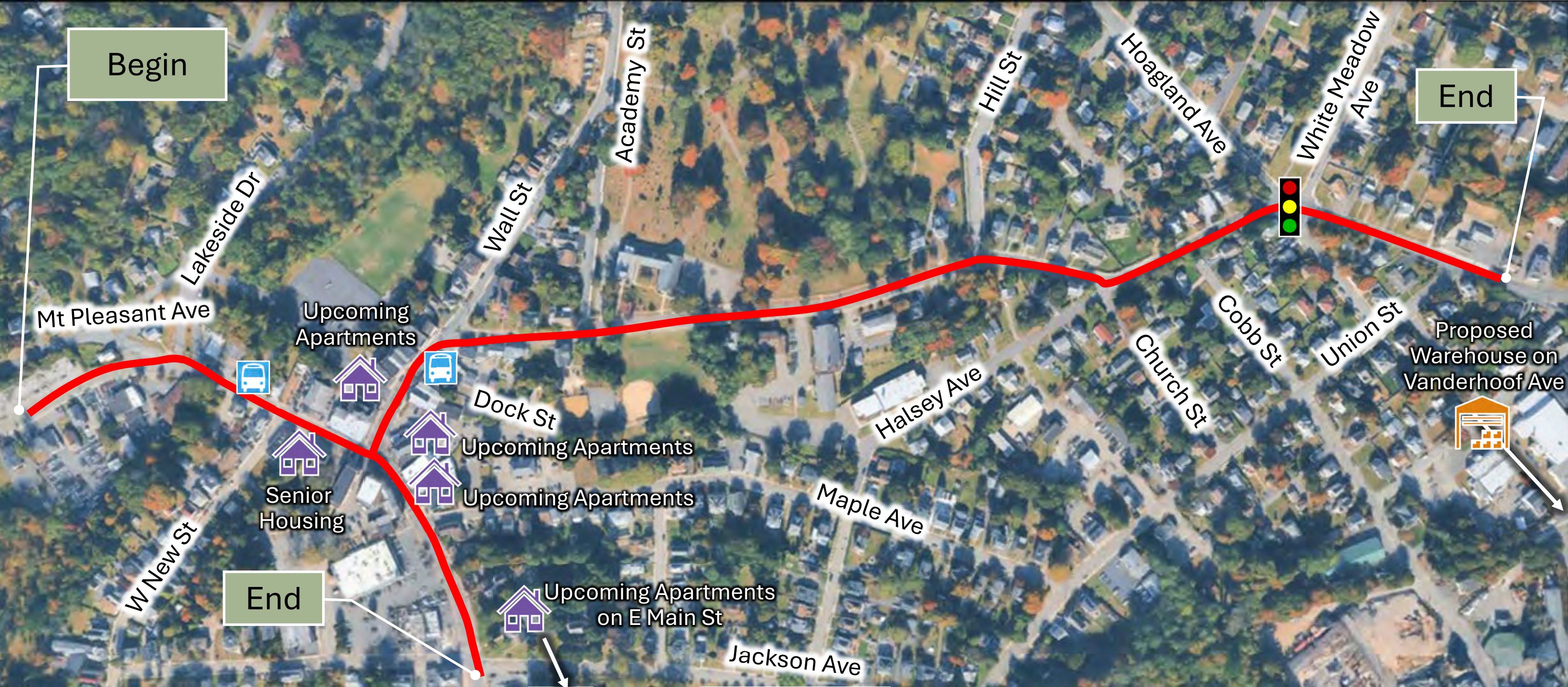
Name	Agency
Debbie Dellagiacoma	Morris County
Kevin Stephens	Morris County
Scott Brody	Morris County
Mayor Tom Mulligan	Rockaway Borough
Robert O' Connor	Rockaway Borough Parks and Recreation Director
Chief Conrad Pepperman	Rockaway Borough Police Department
Thomas Trapasso	Rockaway Borough Fire Marshal
William Hopler	Rockaway Borough Director of Public Works / Fire Department
Richard Musso	Atlantic Health EMS
Peter Boulos	NJDOT Traffic Engineering
Isaac Bonsu	NJ TRANSIT
Adam Iaccheo	NJTPA
Julia Steponanko	Greenman-Pedersen, Inc.
Kruti Barot	Greenman-Pedersen, Inc.
Shilpy Mehta	Greenman-Pedersen, Inc.
Jocelyne Bello	Greenman-Pedersen, Inc.



B. AREA MAP

Project Area

CR 513, Mt. Pleasant Avenue to Union Street;
CR 644, Wall Street to Jackson Avenue



C.PEDESTRIAN / PEDALCYCLIST CRASH DIAGRAMS

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GREENMAN-PEDERSEN, INC.

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MATCH LINE A
SEE SHEET NO. 2 OF 6

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY

INJURIES

FATALITIES

TOTAL NO. OF CRASHES

0

1

0

1

SYMBOLS

MOVING VEHICLE

BACKING VEHICLE

NON-INVOLVED VEHICLE

PEDESTRIAN

PROPERTY DAMAGE ONLY CRASH

INJURY IN CRASH

FIXED OBJECT

NON-FIXED OBJECT

BICYCLIST

FATAL CRASH

ANIMAL

POTHOLE

TYPES OF CRASHES

REAR END

HEAD ON

SIDE SWIPE

OUT OF CONTROL

OVERTURNED

ENCROACHMENT

LEFT TURN

RIGHT ANGLE

STRUCK PARKED VEHICLE

COLORS

PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

COUNTY ROUTES 513 AND 644
FROM MT.PLEASANT AVENUE TO UNION STREET
AND JACKSON AVENUE TO WALL STREET (CR 513)
ROCKAWAY BOROUGH, MORRIS COUNTY

2018-2022 PEDESTRIAN COLLISION DIAGRAMS

GPI

Engineering
Design
Planning
Construction Management

NOT TO SCALE

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6

COLLISION DIAGRAM DATA

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4	21:37	SUN	04-03-22	1	DRY	CLEAR	DARK
7	20:20	FRI	09-09-22	1	DRY	CLEAR	DARK



LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	0
INJURIES	3
FATALITIES	0
TOTAL NO. OF CRASHES	3

SYMBOLS

→	MOVING VEHICLE	→	ENCROACHMENT
↔	BACKING VEHICLE	→	LEFT TURN
- - -	NON-INVOLVED VEHICLE	→	RIGHT ANGLE
x - - -	PEDESTRIAN	→	STRUCK PARKED VEHICLE
- - -	BICYCLIST	→	
⊙	PROPERTY DAMAGE ONLY CRASH	→	
⊙	INJURY IN CRASH	→	
⊙	FATAL CRASH	→	
□	FIXED OBJECT	→	
□	NON-FIXED OBJECT	→	
△	ANIMAL	→	
⊗	POTHOLE	→	

TYPES OF CRASHES

→	REAR END	→	ENCROACHMENT
→	HEAD ON	→	LEFT TURN
→	SIDE SWIPE	→	RIGHT ANGLE
→	OUT OF CONTROL	→	STRUCK PARKED VEHICLE
→	OVERTURNED	→	

COLORS

⊙ PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

COUNTY ROUTES 513 AND 644
FROM MT. PLEASANT AVENUE TO UNION STREET
AND JACKSON AVENUE TO WALL STREET (CR 513)
ROCKAWAY BOROUGH, MORRIS COUNTY

2018-2022 PEDESTRIAN COLLISION DIAGRAMS

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Construction Management

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LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY

INJURIES

FATALITIES

TOTAL NO. OF CRASHES

0

3

0

3

SYMBOLS

MOVING VEHICLE

BACKING VEHICLE

NON-INVOLVED VEHICLE

PEDESTRIAN

PROPERTY DAMAGE ONLY CRASH

INJURY IN CRASH

FIXED OBJECT

NON-FIXED OBJECT

BICYCLIST

FATAL CRASH

ANIMAL

POTHOLE

TYPES OF CRASHES

REAR END

HEAD ON

SIDE SWIPE

OUT OF CONTROL

OVERTURNED

ENCROACHMENT

LEFT TURN

RIGHT ANGLE

STRUCK PARKED VEHICLE

COLORS

PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

COUNTY ROUTES 513 AND 644
FROM MT.PLEASANT AVENUE TO UNION STREET
AND JACKSON AVENUE TO WALL STREET (CR 513)
ROCKAWAY BOROUGH, MORRIS COUNTY

2018-2022 PEDESTRIAN COLLISION DIAGRAMS

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Planning
Construction Management

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3/6

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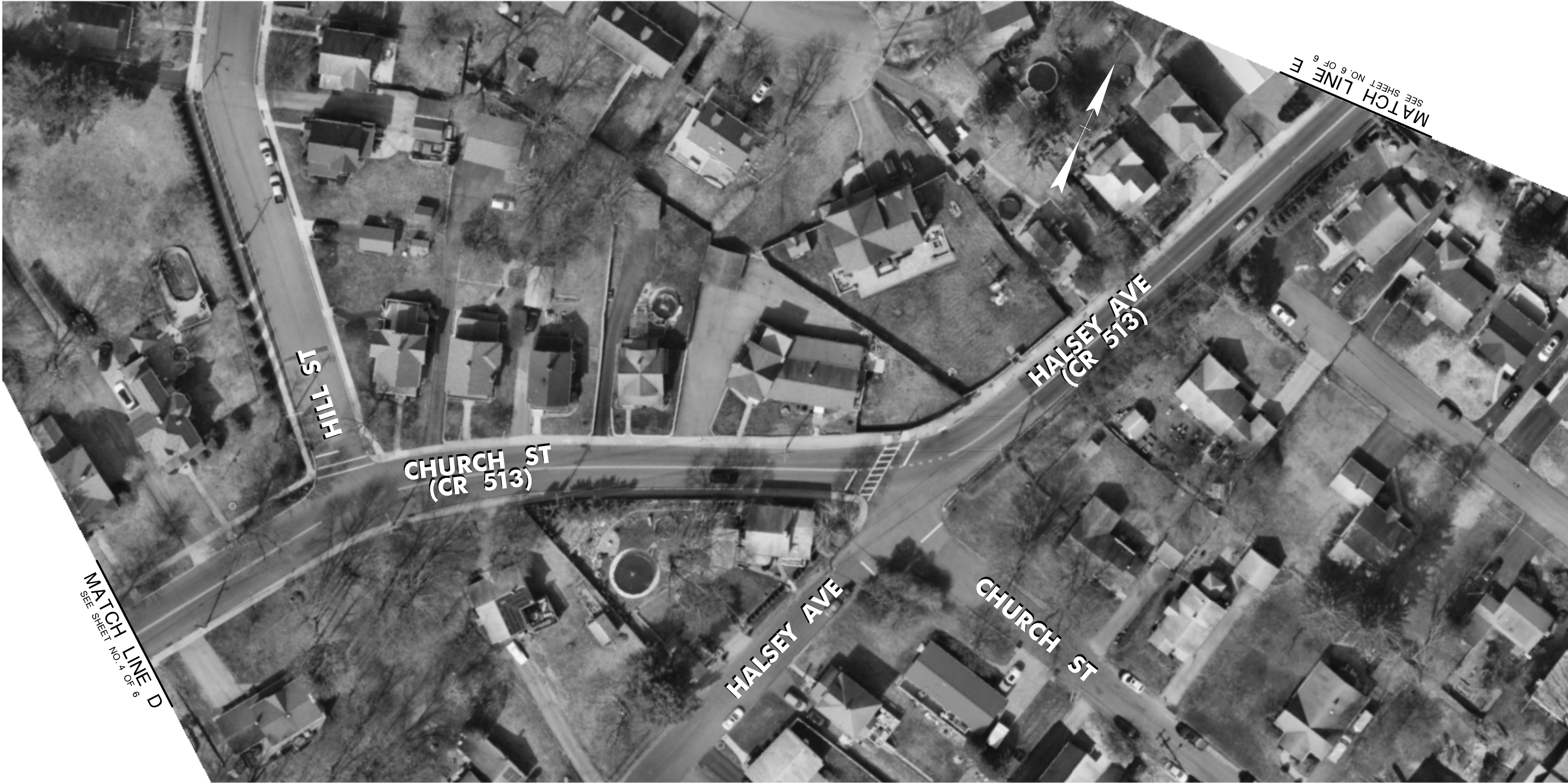
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LEGEND

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INJURIES	0	 NON-INVOLVED VEHICLE	 PEDESTRIAN	 BICYCLIST	 LEFT TURN				
FATALITIES	0	 PROPERTY DAMAGE ONLY CRASH	 FATAL CRASH	 RIGHT ANGLE	 STRUCK PARKED VEHICLE				
TOTAL NO. OF CRASHES	0	 FIXED OBJECT	 ANIMAL	 OUT OF CONTROL					
		 NON-FIXED OBJECT	 POTHOLE	 OVERTURNED					
								2018-2022 PEDESTRIAN COLLISION DIAGRAMS	
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GREENMAN-PEDERSEN, INC.



LEGEND

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PROPERTY DAMAGE ONLY	0	 MOVING VEHICLE	 BACKING VEHICLE	 REAR END	 ENCROACHMENT		COUNTY ROUTES 513 AND 644 FROM MT. PLEASANT AVENUE TO UNION STREET AND JACKSON AVENUE TO WALL STREET (CR 513) ROCKAWAY BOROUGH, MORRIS COUNTY		
INJURIES	0	 NON-INVOLVED VEHICLE	 PEDESTRIAN	 BICYCLIST	 LEFT TURN				
FATALITIES	0	 PROPERTY DAMAGE ONLY CRASH	 FATAL CRASH	 HEAD ON	 RIGHT ANGLE				
TOTAL NO. OF CRASHES	0	 FIXED OBJECT	 ANIMAL	 SIDE SWIPE	 RIGHT ANGLE		2018-2022 PEDESTRIAN COLLISION DIAGRAMS		
		 NON-FIXED OBJECT	 POTHOLE	 OUT OF CONTROL	 STRUCK PARKED VEHICLE				
				 OVERTURNED			 Engineering Design Planning Construction Management	NOT TO SCALE	

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LEGEND

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

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

TYPES OF CRASHES	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	ENCROACHMENT
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS

PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

COUNTY ROUTES 513 AND 644
FROM MT. PLEASANT AVENUE TO UNION STREET
AND JACKSON AVENUE TO WALL STREET (CR 513)
ROCKAWAY BOROUGH, MORRIS COUNTY

2018-2022 PEDESTRIAN COLLISION DIAGRAMS

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Planning
Construction Management

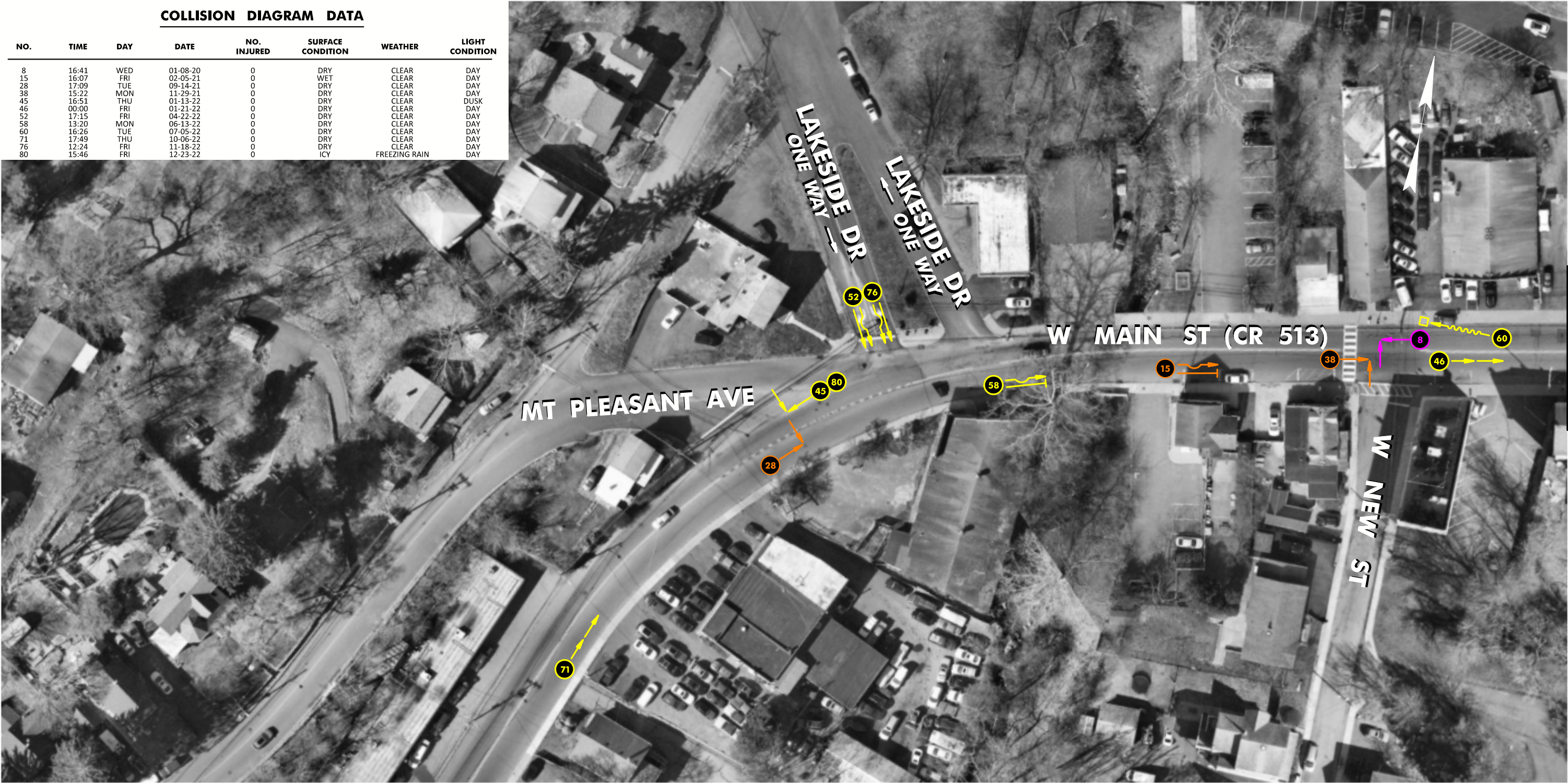
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D. VEHICULAR CRASH DIAGRAMS

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46	00:00	FRI	01-21-22	0	DRY	CLEAR	DAY
52	17:15	FRI	04-22-22	0	DRY	CLEAR	DAY
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76	12:24	FRI	11-18-22	0	DRY	CLEAR	DAY
80	15:46	FRI	12-23-22	0	ICY	FREEZING RAIN	DAY



MATCH LINE A
SEE SHEET NO. 2 OF 6

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY12

INJURIES0

FATALITIES*0

TOTAL NO. OF CRASHES12

SYMBOLS

MOVING VEHICLE

BACKING VEHICLE

NON-INVOLVED VEHICLE

PEDESTRIAN

BICYCLIST

PROPERTY DAMAGE ONLY CRASH

INJURY IN CRASH

FIXED OBJECT

NON-FIXED OBJECT

FATAL CRASH

ANIMAL

POT HOLE

TYPES OF CRASHES

REAR END

HEAD ON

SIDE SWIPE

OUT OF CONTROL

OVERTURNED

ENCROACHMENT

LEFT TURN

RIGHT ANGLE

STRUCK PARKED VEHICLE

COLORS

2020 CRASHES

2021 CRASHES

2022 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

COUNTY ROUTES 513 AND 644

FROM MT.PLEASANT AVENUE TO UNION STREET

AND JACKSON AVENUE TO WALL STREET (CR 513)

ROCKAWAY BOROUGH, MORRIS COUNTY

2020 - 2022 COLLISION DIAGRAMS

GPI

Engineering
Design
Planning
Construction Management

NOT TO SCALE



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20	11:48	WED	06-09-21	0	DRY	CLEAR	DAY
22	18:12	SUN	07-11-21	0	DRY	CLEAR	DAY
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31	13:17	FRI	09-24-21	0	DRY	CLEAR	DAY
40	09:46	WED	12-01-21	0	DRY	CLEAR	DAY
41	19:32	FRI	12-03-21	0	DRY	CLEAR	DARK
43	20:30	SAT	12-11-21	0	WET	RAIN	DARK
44	16:17	FRI	12-31-21	1	WET	OVERCAST	DUSK
49	18:09	THU	02-10-22	0	DRY	CLEAR	DARK
53	22:09	MON	05-02-22	1	DRY	CLEAR	DARK
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63	13:22	TUE	08-16-22	0	DRY	CLEAR	DAY
65	10:41	WED	09-21-22	0	DRY	CLEAR	DAY
68	17:17	TUE	10-04-22	0	DRY	CLEAR	DAY
70	09:11	WED	10-05-22	0	WET	RAIN	DAY
79	09:40	WED	12-14-22	1	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	18
INJURIES	3
FATALITIES*	0
TOTAL NO. OF CRASHES	21

SYMBOLS			
→	MOVING VEHICLE	→	ENCROACHMENT
↔	BACKING VEHICLE	→	LEFT TURN
- - -	NON-INVOLVED VEHICLE	→	RIGHT ANGLE
* - - -	PEDESTRIAN	→	STRUCK PARKED VEHICLE
⊙	PROPERTY DAMAGE ONLY CRASH		
⊙	INJURY IN CRASH	⊙	FATAL CRASH
□	FIXED OBJECT	△	ANIMAL
□	NON-FIXED OBJECT	⊗	POT HOLE

TYPES OF CRASHES	
→	REAR END
→	HEAD ON
→	SIDE SWIPE
→	OUT OF CONTROL
→	OVERTURNED
→	ENCROACHMENT
→	LEFT TURN
→	RIGHT ANGLE
→	STRUCK PARKED VEHICLE

COLORS	
⊙	2020 CRASHES
⊙	2021 CRASHES
⊙	2022 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

COUNTY ROUTES 513 AND 644
FROM MT. PLEASANT AVENUE TO UNION STREET
AND JACKSON AVENUE TO WALL STREET (CR 513)
ROCKAWAY BOROUGH, MORRIS COUNTY
2020 - 2022 COLLISION DIAGRAMS

GPI
Engineering
Design
Planning
Construction Management

NOT TO SCALE

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GREENMAN-PEDERSEN, INC.

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25	09:39	SUN	08-15-21	0	DRY	CLEAR	DAY
42	18:38	MON	12-06-21	0	WET	RAIN	DARK
47	12:16	WED	01-26-22	0	DRY	CLEAR	DAY
51	16:25	MON	04-18-22	0	DRY	CLEAR	DAY
57	08:28	TUE	05-17-22	0	DRY	CLEAR	DAY
67	17:23	FRI	09-30-22	1	DRY	CLEAR	DAY
69	14:55	TUE	10-04-22	0	WET	OVERCAST	DAY
73	12:47	WED	10-12-22	0	DRY	CLEAR	DAY
74	09:52	TUE	10-18-22	0	DRY	CLEAR	DAY
81	16:27	FRI	12-23-22	2	WET	CLEAR	DARK



LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY10

INJURIES2

FATALITIES*0

TOTAL NO. OF CRASHES12

SYMBOLS

MOVING VEHICLE

BACKING VEHICLE

NON-INVOLVED VEHICLE

PEDESTRIAN

PROPERTY DAMAGE ONLY CRASH

INJURY IN CRASH

FIXED OBJECT

NON-FIXED OBJECT

BICYCLIST

FATAL CRASH

ANIMAL

POT HOLE

TYPES OF CRASHES

REAR END

HEAD ON

SIDE SWIPE

OUT OF CONTROL

OVERTURNED

ENCROACHMENT

LEFT TURN

RIGHT ANGLE

STRUCK PARKED VEHICLE

COLORS

2020 CRASHES

2021 CRASHES

2022 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

COUNTY ROUTES 513 AND 644

FROM MT.PLEASANT AVENUE TO UNION STREET

AND JACKSON AVENUE TO WALL STREET (CR 513)

ROCKAWAY BOROUGH, MORRIS COUNTY

2020 - 2022 COLLISION DIAGRAMS

GPI

Engineering
Design
Planning
Construction Management

NOT TO SCALE

3/6

FILE: L:\2021\655 HSP Project Development and Support\Cadd\hwy\Crash Diagrams\14 - NJTPA Morris\veh\sheet4.dgn
TIME: 11:41 PM
DATE: 2/4/2025
GREENMAN-PEDERSEN, INC.

MATCH LINE C
SEE SHEET NO. 2 OF 6



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
48	02:43	FRI	01-28-22	1	DRY	CLEAR	DARK

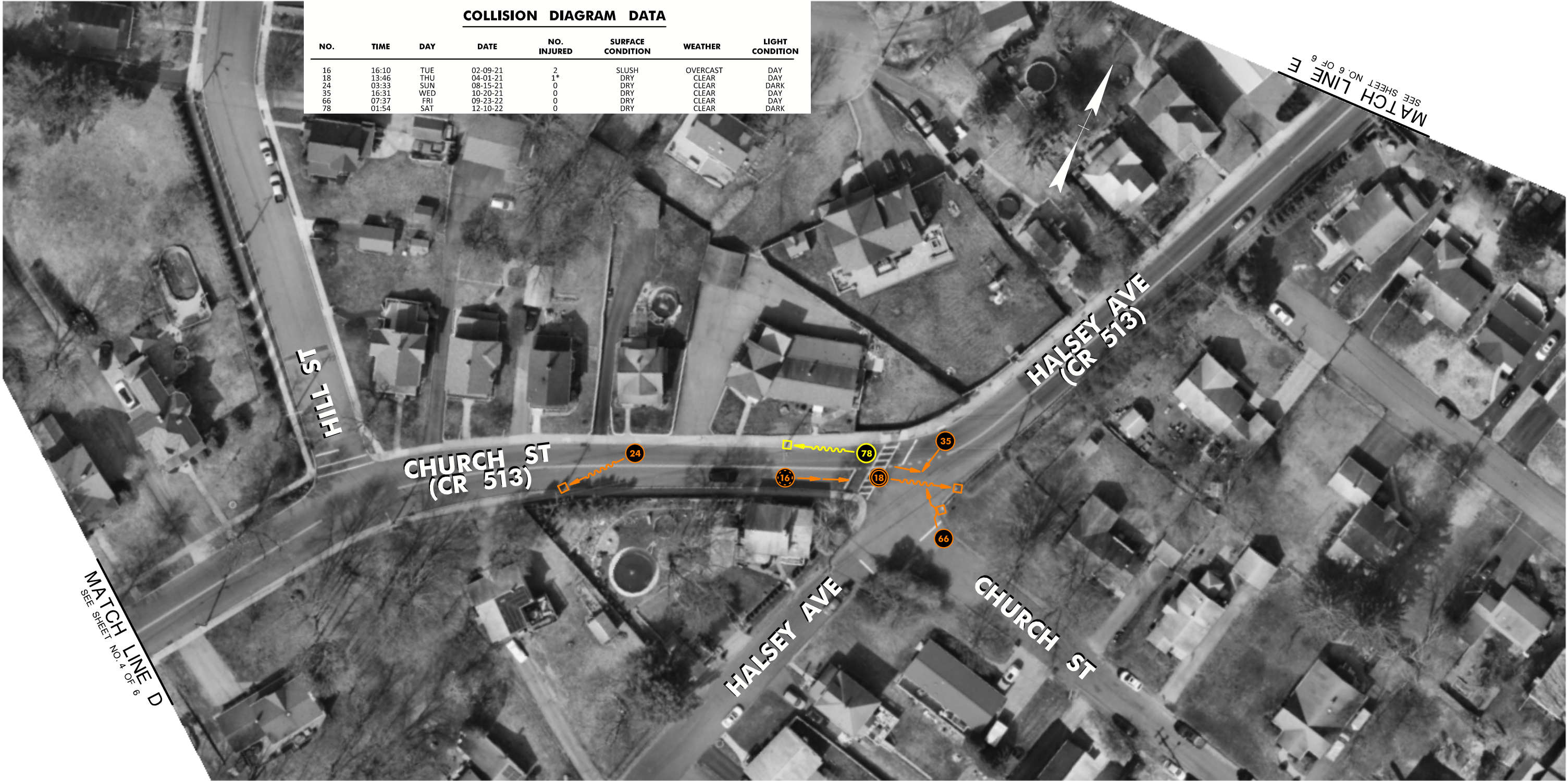
LEGEND

NUMBER OF CRASHES WITH <table><tr><td>PROPERTY DAMAGE ONLY</td><td>0</td></tr><tr><td>INJURIES</td><td>1</td></tr><tr><td>FATALITIES*</td><td>0</td></tr><tr><td>TOTAL NO. OF CRASHES</td><td>1</td></tr></table>	PROPERTY DAMAGE ONLY	0	INJURIES	1	FATALITIES*	0	TOTAL NO. OF CRASHES	1	SYMBOLS <table><tr><td>→</td><td>MOVING VEHICLE</td><td>→</td><td>ENCROACHMENT</td></tr><tr><td>↔</td><td>BACKING VEHICLE</td><td>→</td><td>LEFT TURN</td></tr><tr><td>- - -</td><td>NON-INVOLVED VEHICLE</td><td>→</td><td>RIGHT ANGLE</td></tr><tr><td>x - - -</td><td>PEDESTRIAN</td><td>→</td><td>STRUCK PARKED VEHICLE</td></tr><tr><td>○</td><td>PROPERTY DAMAGE ONLY CRASH</td><td></td><td></td></tr><tr><td>⊙</td><td>INJURY IN CRASH</td><td>⊙</td><td>FATAL CRASH</td></tr><tr><td>□</td><td>FIXED OBJECT</td><td>△</td><td>ANIMAL</td></tr><tr><td>□</td><td>NON-FIXED OBJECT</td><td>⊗</td><td>POT HOLE</td></tr></table>	→	MOVING VEHICLE	→	ENCROACHMENT	↔	BACKING VEHICLE	→	LEFT TURN	- - -	NON-INVOLVED VEHICLE	→	RIGHT ANGLE	x - - -	PEDESTRIAN	→	STRUCK PARKED VEHICLE	○	PROPERTY DAMAGE ONLY CRASH			⊙	INJURY IN CRASH	⊙	FATAL CRASH	□	FIXED OBJECT	△	ANIMAL	□	NON-FIXED OBJECT	⊗	POT HOLE	TYPES OF CRASHES <table><tr><td>→</td><td>REAR END</td><td>→</td><td>ENCROACHMENT</td></tr><tr><td>→</td><td>HEAD ON</td><td>→</td><td>LEFT TURN</td></tr><tr><td>→</td><td>SIDE SWIPE</td><td>→</td><td>RIGHT ANGLE</td></tr><tr><td>→</td><td>OUT OF CONTROL</td><td>→</td><td>STRUCK PARKED VEHICLE</td></tr><tr><td>→</td><td>OVERTURNED</td><td>→</td><td></td></tr></table>	→	REAR END	→	ENCROACHMENT	→	HEAD ON	→	LEFT TURN	→	SIDE SWIPE	→	RIGHT ANGLE	→	OUT OF CONTROL	→	STRUCK PARKED VEHICLE	→	OVERTURNED	→		COLORS <table><tr><td>⊙</td><td>2020 CRASHES</td></tr><tr><td>⊙</td><td>2021 CRASHES</td></tr><tr><td>⊙</td><td>2022 CRASHES</td></tr></table>	⊙	2020 CRASHES	⊙	2021 CRASHES	⊙	2022 CRASHES
PROPERTY DAMAGE ONLY	0																																																																				
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NEW JERSEY DEPARTMENT OF TRANSPORTATION COUNTY ROUTES 513 AND 644 FROM MT. PLEASANT AVENUE TO UNION STREET AND JACKSON AVENUE TO WALL STREET (CR 513) ROCKAWAY BOROUGH, MORRIS COUNTY 2020 - 2022 COLLISION DIAGRAMS																																																																					
GPI Engineering Design Planning Construction Management			NOT TO SCALE																																																																		

FILE: L:\2021\65 HSP Project Development and Support\Cad\Draw Crash Diagrams\14 - NJTPA Morris veh sheets.dgn
TIME: 4:32:01 PM
DATE: 2/2/2025
GREENMAN-PEDERSEN, INC.

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
16	16:10	TUE	02-09-21	2	SLUSH	OVERCAST	DAY
18	13:46	THU	04-01-21	1*	DRY	CLEAR	DAY
24	03:33	SUN	08-15-21	0	DRY	CLEAR	DARK
35	16:31	WED	10-20-21	0	DRY	CLEAR	DAY
66	07:37	FRI	09-23-22	0	DRY	CLEAR	DAY
78	01:54	SAT	12-10-22	0	DRY	CLEAR	DARK



LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY

INJURIES

FATALITIES*

TOTAL NO. OF CRASHES

4

1

1

6

SYMBOLS

MOVING VEHICLE

BACKING VEHICLE

NON-INVOLVED VEHICLE

PEDESTRIAN

PROPERTY DAMAGE ONLY CRASH

INJURY IN CRASH

FIXED OBJECT

NON-FIXED OBJECT

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FATAL CRASH

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POT HOLE

TYPES OF CRASHES

REAR END

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OUT OF CONTROL

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LEFT TURN

RIGHT ANGLE

STRUCK PARKED VEHICLE

COLORS

2020 CRASHES

2021 CRASHES

2022 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

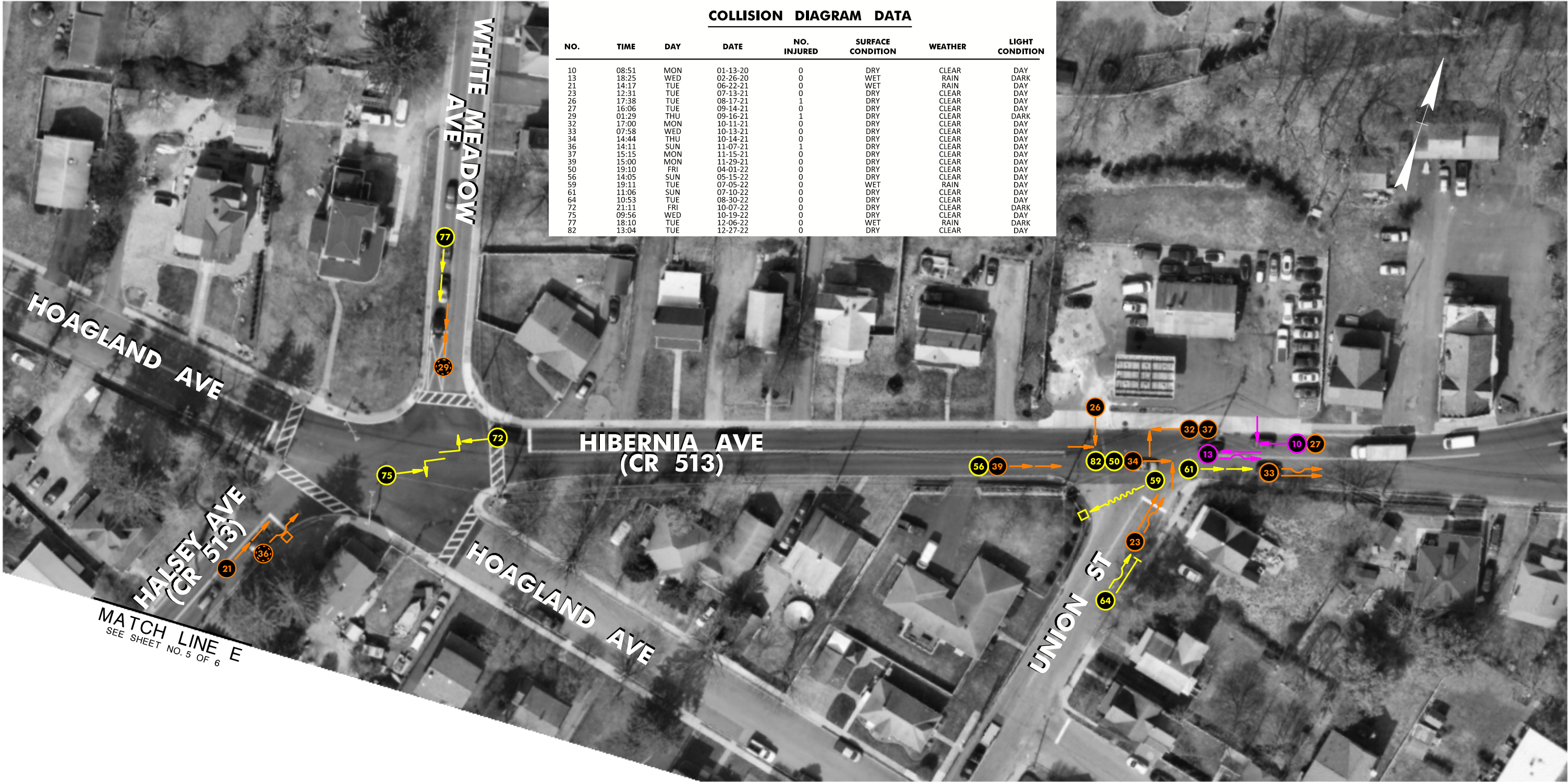
COUNTY ROUTES 513 AND 644
FROM MT. PLEASANT AVENUE TO UNION STREET
AND JACKSON AVENUE TO WALL STREET (CR 513)
ROCKAWAY BOROUGH, MORRIS COUNTY
2020 - 2022 COLLISION DIAGRAMS

GPI

Engineering
Design
Planning
Construction Management

NOT TO SCALE

FILE: L:\2021\655 HSP Project Development and Support\Cad\Draw Crashes Diagrams\14 - NJTPA Morris veh Sheets.dgn
TIME: 4:32:44 PM
DATE: 2/2/2025
GREENMAN-PEDERSEN, INC.



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
10	08:51	MON	01-13-20	0	DRY	CLEAR	DAY
13	18:25	WED	02-26-20	0	WET	RAIN	DARK
21	14:17	TUE	06-22-21	0	WET	RAIN	DAY
23	12:31	TUE	07-13-21	0	DRY	CLEAR	DAY
26	17:38	TUE	08-17-21	1	DRY	CLEAR	DAY
27	16:06	TUE	09-14-21	0	DRY	CLEAR	DAY
29	01:29	THU	09-16-21	1	DRY	CLEAR	DARK
32	17:00	MON	10-11-21	0	DRY	CLEAR	DAY
33	07:58	WED	10-13-21	0	DRY	CLEAR	DAY
34	14:44	THU	10-14-21	0	DRY	CLEAR	DAY
36	14:11	SUN	11-07-21	1	DRY	CLEAR	DAY
37	15:15	MON	11-15-21	0	DRY	CLEAR	DAY
39	15:00	MON	11-29-21	0	DRY	CLEAR	DAY
50	19:10	FRI	04-01-22	0	DRY	CLEAR	DAY
56	14:05	SUN	05-15-22	0	DRY	CLEAR	DAY
59	19:11	TUE	07-05-22	0	WET	RAIN	DAY
61	11:06	SUN	07-10-22	0	DRY	CLEAR	DAY
64	10:53	TUE	08-30-22	0	DRY	CLEAR	DAY
72	21:11	FRI	10-07-22	0	DRY	CLEAR	DARK
75	09:56	WED	10-19-22	0	DRY	CLEAR	DAY
77	18:10	TUE	12-06-22	0	WET	RAIN	DARK
82	13:04	TUE	12-27-22	0	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY

INJURIES

FATALITIES*

TOTAL NO. OF CRASHES

19

3

0

22

SYMBOLS

MOVING VEHICLE

BACKING VEHICLE

NON-INVOLVED VEHICLE

PEDESTRIAN

PROPERTY DAMAGE ONLY CRASH

INJURY IN CRASH

FIXED OBJECT

NON-FIXED OBJECT

BICYCLIST

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COLORS

2020 CRASHES

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2022 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

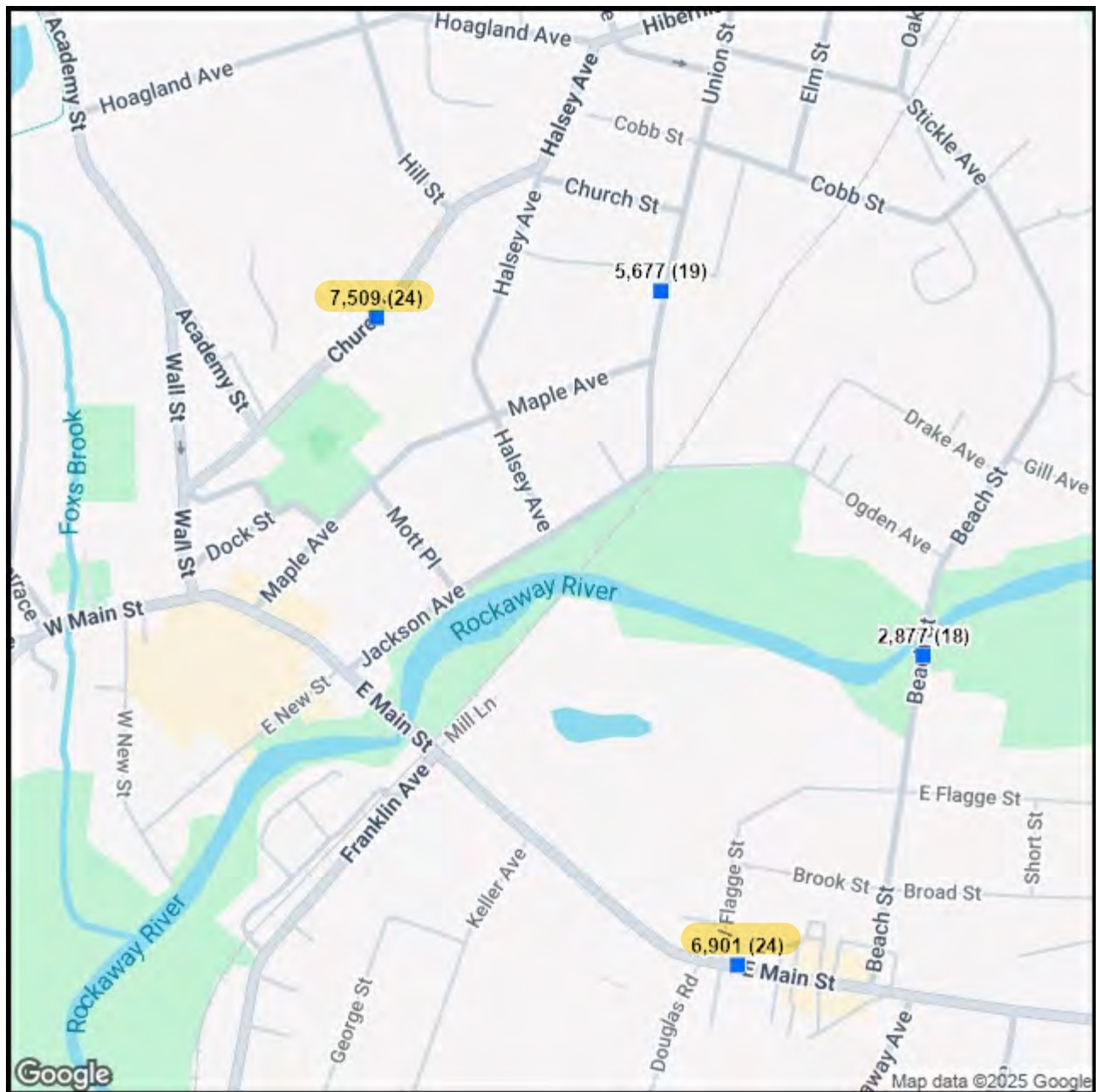
COUNTY ROUTES 513 AND 644
FROM MT. PLEASANT AVENUE TO UNION STREET
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ROCKAWAY BOROUGH, MORRIS COUNTY
2020 - 2022 COLLISION DIAGRAMS

GPI

Engineering
Design
Planning
Construction Management

NOT TO SCALE

E. TRAFFIC DATA STRAIGHT LINE DIAGRAMS



0 750 1500



Feet



TCDS Locations

- Short
- Continuous
- WIM
- Located Short
- Located Continuous
- Located WIM
- Inactive Location



12/16/2025



Latest Volume Count Detail

Criteria: County exactly matches Morris and Community exactly matches Rockaway Boro

LOCATION INFO	
Location ID	091422
Type	SPOT
Functional Class	4
Located On	RT 513 Church St
	Bet Academy St and Hill St
Direction	2-WAY
Community	Rockaway Boro
MPO ID	
HPMS ID	
Agency	NJDOT

COUNT INFO	
Count Status	Accepted
Start Date	Tue 10/25/2022
End Date	Wed 10/26/2022
Start Time	12:00 PM
End Time	12:00 PM
Direction	
Notes	
Count Source	
Filename	
Weather	
Study	
Speed Limit	
Sensor Type	Tube Class
Imported	12/2/2022 2:10 PM
Owner	peter.herbert

INTERVAL: 15-MIN					
Time	15-min Interval				Hourly
	1st	2nd	3rd	4th	Count
0:00-1:00	15	13	12	8	48
1:00-2:00	5	7	8	2	22
2:00-3:00	6	1	5	6	18
3:00-4:00	5	7	7	10	29
4:00-5:00	11	8	10	20	49
5:00-6:00	22	31	30	58	141
6:00-7:00	53	62	84	98	297
7:00-8:00	112	146	173	167	598
8:00-9:00	117	148	125	135	525
9:00-10:00	96	103	92	96	387
10:00-11:00	88	95	92	99	374
11:00-12:00	108	113	109	101	431
12:00-13:00	105	117	135	120	477
13:00-14:00	123	112	136	123	494
14:00-15:00	147	135	128	137	547
15:00-16:00	144	160	150	165	619
16:00-17:00	156	175	142	144	617
17:00-18:00	150	136	144	128	558
18:00-19:00	130	123	108	127	488
19:00-20:00	117	104	79	66	366
20:00-21:00	88	91	61	70	310
21:00-22:00	62	48	44	57	211
22:00-23:00	29	32	34	24	119
23:00-24:00	14	19	21	17	71
Total					7,796



Latest Volume Count Detail

Criteria: County exactly matches Morris and Community exactly matches Rockaway Boro

LOCATION INFO	
Location ID	111452
Type	SPOT
Functional Class	4
Located On	CO 644 East Main St
	Bet Beach St and West Flagge St
Direction	2-WAY
Community	Rockaway Boro
MPO ID	
HPMS ID	
Agency	NJDOT

COUNT INFO	
Count Status	Accepted
Start Date	Mon 12/11/2023
End Date	Tue 12/12/2023
Start Time	1:00 PM
End Time	1:00 PM
Direction	
Notes	njdot
Count Source	001114523070
Filename	
Weather	
Study	
Speed Limit	
Sensor Type	Axle/Tube
Imported	12/26/2023 3:51 PM
Owner	peter.herbert

INTERVAL: 15-MIN					
Time	15-min Interval				Hourly
	1st	2nd	3rd	4th	Count
0:00-1:00	5	11	13	10	39
1:00-2:00	4	9	5	4	22
2:00-3:00	3	9	4	3	19
3:00-4:00	2	3	1	2	8
4:00-5:00	0	3	4	4	11
5:00-6:00	2	8	8	11	29
6:00-7:00	19	17	18	16	70
7:00-8:00	32	31	57	74	194
8:00-9:00	94	93	135	145	467
9:00-10:00	211	206	137	127	681
10:00-11:00	85	105	135	130	455
11:00-12:00	120	100	93	108	421
12:00-13:00	106	96	101	106	409
13:00-14:00	118	110	119	126	473
14:00-15:00	103	98	96	105	402
15:00-16:00	103	106	138	148	495
16:00-17:00	165	239	157	173	734
17:00-18:00	171	168	188	191	718
18:00-19:00	147	165	147	152	611
19:00-20:00	133	102	84	128	447
20:00-21:00	85	72	68	52	277
21:00-22:00	76	49	41	29	195
22:00-23:00	45	21	19	26	111
23:00-24:00	21	21	20	16	78
Total					7,366

Weekly Vehicle Counts

WeeklyVehicle-320

Site: 23 - E Main St..0.1EW
Description: W of Franklin Ave.
Filter time: 12:00 Monday, April 25, 2022 => 12:00 Friday, April 29, 2022
Scheme: Vehicle classification (Scheme F)
Filter: Cls(1-13) Dir(EW) Sp(5,100) Headway(>0) Span(0 - 300) Lane(0-16)

	Mon 25 Apr	Tue 26 Apr	Wed 27 Apr	Thu 28 Apr	Fri 29 Apr	Sat 30 Apr	Sun 01 May	Averages	
Hour								1 - 5	1 - 7
0000-0100	*	31	30	43	51	*	*	38.8	38.8
0100-0200	*	21	22	16	19	*	*	19.5	19.5
0200-0300	*	12	10	11	17	*	*	12.5	12.5
0300-0400	*	14	21	13	6	*	*	13.5	13.5
0400-0500	*	49	52	52	47	*	*	50.0	50.0
0500-0600	*	135	138	137	137	*	*	136.8	136.8
0600-0700	*	415	399	397	398	*	*	402.3	402.3
0700-0800	*	828	765	763	710	*	*	766.5	766.5
0800-0900	*	847	881	835	858	*	*	855.3	855.3
0900-1000	*	618	649	617	687	*	*	642.8	642.8
1000-1100	*	585	663	646	648	*	*	635.5	635.5
1100-1200	*	685	768	718	754	*	*	731.3	731.3
1200-1300	775	769	833	797	*	*	*	793.5	793.5
1300-1400	761	744	754	858	*	*	*	779.3	779.3
1400-1500	876	883	866	901	*	*	*	881.5	881.5
1500-1600	1117	1062	1138	1098	*	*	*	1103.8	1103.8
1600-1700	1073	1201	1204	1128	*	*	*	1151.5	1151.5
1700-1800	1150	1216	1235	1218	*	*	*	1204.8	1204.8
1800-1900	878	925	867	1026	*	*	*	924.0	924.0
1900-2000	635	617	663	814	*	*	*	682.3	682.3
2000-2100	434	390	453	548	*	*	*	456.3	456.3
2100-2200	200	296	277	317	*	*	*	272.5	272.5
2200-2300	125	116	155	184	*	*	*	145.0	145.0
2300-2400	79	80	81	90	*	*	*	82.5	82.5
Totals									
0700-1900	*	10363	10623	10605	*	*	*	10469.5	10469.5
0600-2200	*	12081	12415	12681	*	*	*	12282.8	12282.8
0600-0000	*	12277	12651	12955	*	*	*	12510.3	12510.3
0000-0000	*	12539	12924	13227	*	*	*	12781.3	12781.3
AM Peak	*	0800	0800	0800	0800	*	*		
	*	847	881	835	858	*	*		
PM Peak	1700	1700	1700	1700	*	*	*		
	1150	1216	1235	1218	*	*	*		

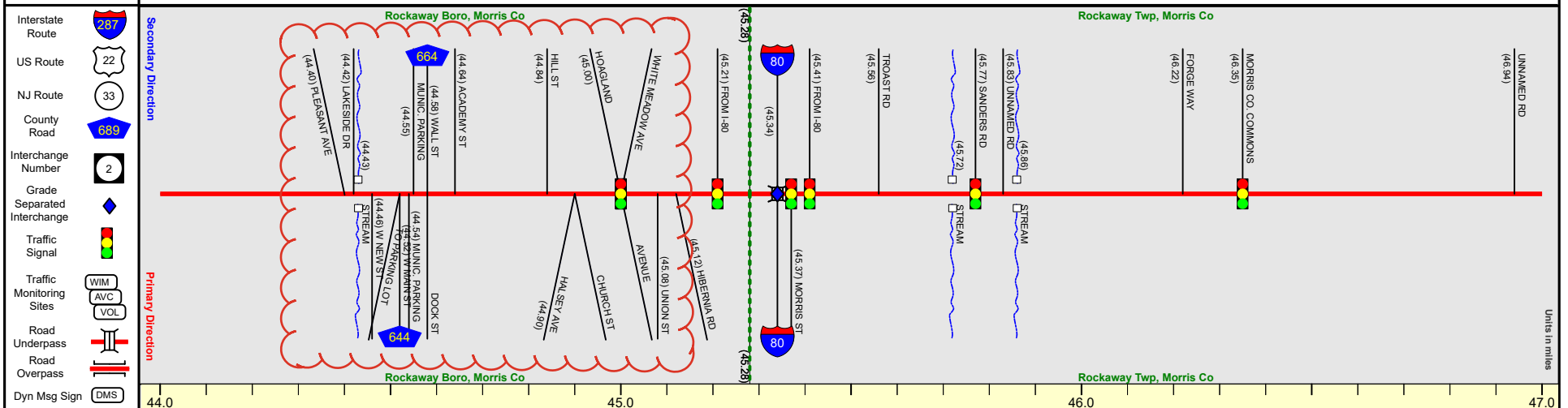
* - No data.

ROUTE 513 (South to North)

Mile Posts: 44.000 - 47.000



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



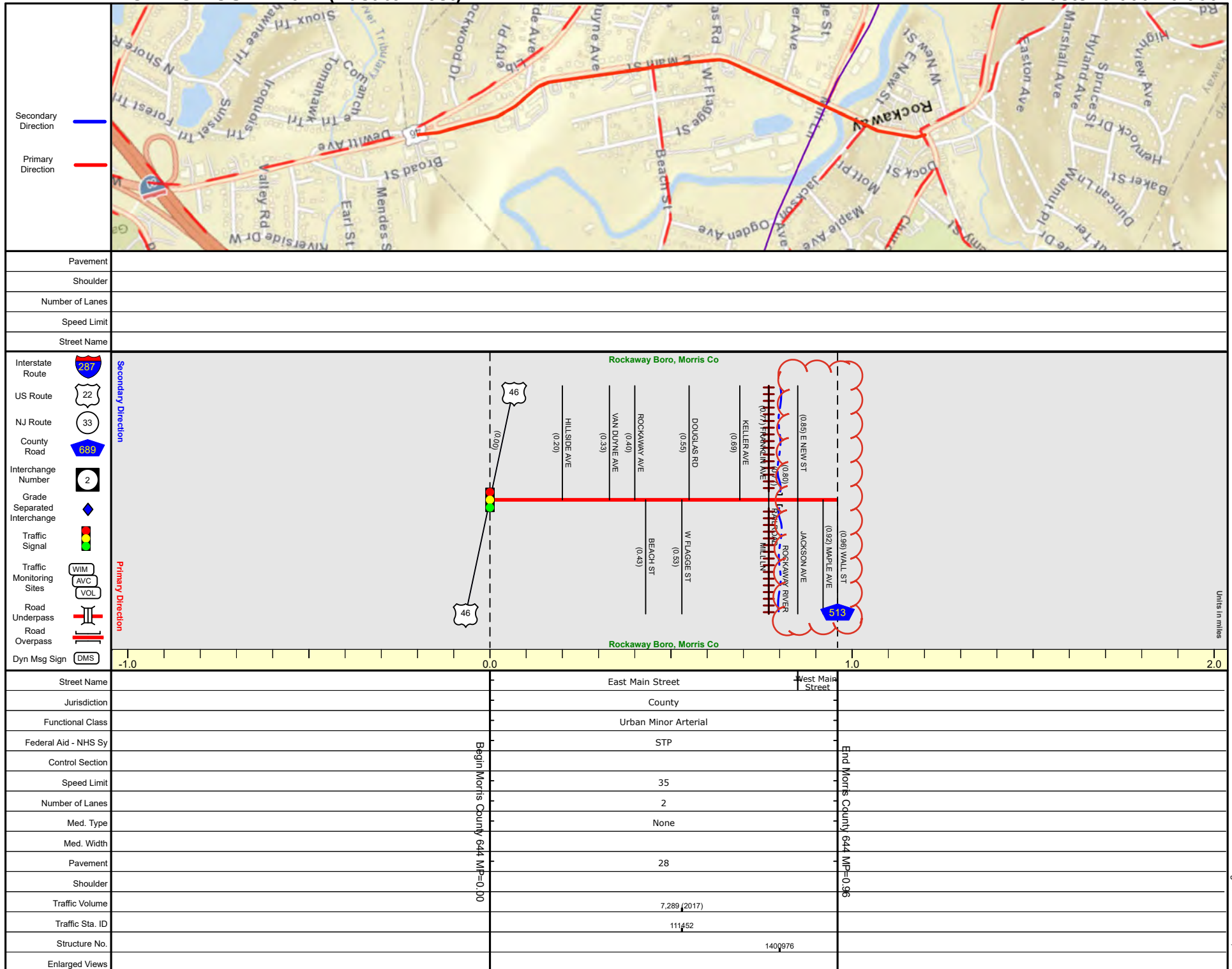
Street Name	West Main Street Wall Street Church Street Halsey Avenue Hibernia Avenue Green Pond Road									
Jurisdiction	County									
Functional Class	Urban Minor Arterial									
Federal Aid - NHS Sy	STP									
Control Section										
Speed Limit	40			30				45		40
Number of Lanes		2					4		3	2
Med. Type	None									
Med. Width										
Pavement	34	24		30			40		48	24
Shoulder										2
Traffic Volume	7,363 (2016)									
Traffic Sta. ID	91422									
Structure No.	1413167 1413166									
Enlarged Views										

SRI = 00000513__

Date last inventoried: November 2012

MORRIS COUNTY 644 (East to West)

Mile Posts: 0.000 - 0.960



SRI = 14000644_

Date last inventoried: July 2011

F. PHOTOGRAPHS

No edgeline; No centerline; Missing ADA compliant ramps, sidewalk and crosswalk



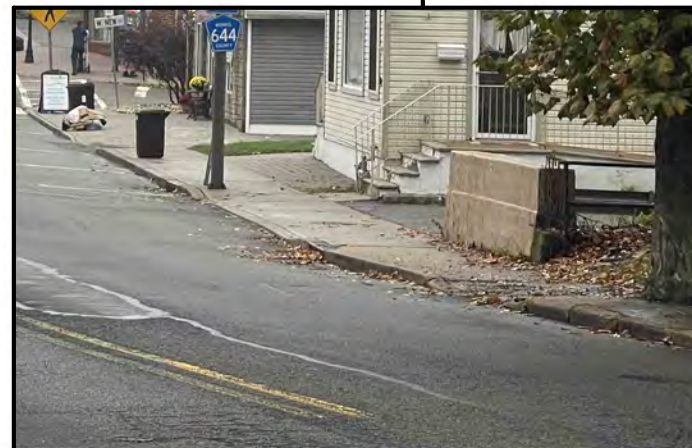
No ADA compliant curb ramp; No sidewalk and crosswalk



Non-ADA compliant bus stop; Broken curb; No buffer between vehicular lane and sidewalk



Sightline issues due to the existing corner building



Faded centerline; Inconsistent sidewalk width; Uneven sidewalk



Missing ADA compliant curb ramp; Faded crosswalk



Vehicle parked on the sidewalk; No edgeline marking

LEGEND



SIGNALIZED INTERSECTION



PROJECT CORRIDOR

1
6

**NJDOT HSIP – ROAD SAFETY AUDIT
COUNTY ROUTES 513 AND 644 FROM MT.
PLEASANT AVENUE TO UNION STREET
AND JACKSON AVENUE TO WALL STREET
ROCKAWAY BOROUGH, MORRIS COUNTY**

SITE PHOTOGRAPHS



GPI Engineering
Design
Planning
Construction Management

N.T.S.

Faded crosswalk; Inconsistent sidewalk width due to the fire hydrant



Sidewalk width is reduced due to the landscaping elements



Incomplete crosswalk network



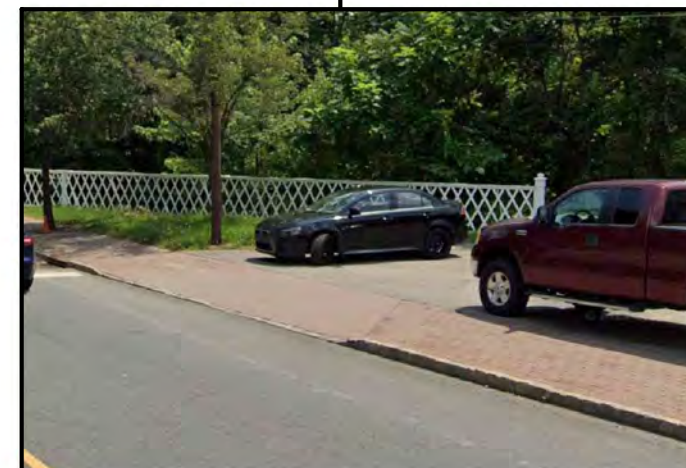
No ADA compliant curb ramp to detect the driveway apron;
No driveway warning sign



Poor driveway access mangement of the commercial establishments; Missing no left turn signs



Fire hydrant obstructing the sidewalk; Illegible street name signs



Driveway too close to the intersection; No driveway warning sign

- LEGEND**
- SIGNALIZED INTERSECTION
 - PROJECT CORRIDOR

2
6

NJDOT HSIP – ROAD SAFETY AUDIT
COUNTY ROUTES 513 AND 644 FROM MT. PLEASANT AVENUE TO UNION STREET AND JACKSON AVENUE TO WALL STREET
 ROCKAWAY BOROUGH, MORRIS COUNTY

SITE PHOTOGRAPHS



GPI Engineering
 Design
 Planning
 Construction Management

N.T.S.

No crosswalk; No ADA compliant curb ramps



Sidewalk obstructed due to utility poles and fire hydrants;
No crosswalk; Missing ADA compliant curb ramps



Street parking at the intersection; Illegible street name signs;
Sightline obstruction due to the landscaping island



Faded crosswalk; Missing ADA curb ramps



No crosswalk; Missing ADA curb ramps



Narrow sidewalk; Roadway sign obstructing the sidewalk

LEGEND



SIGNALIZED INTERSECTION



PROJECT CORRIDOR

3
6

**NJDOT HSIP - ROAD SAFETY AUDIT
COUNTY ROUTES 513 AND 644 FROM MT.
PLEASANT AVENUE TO UNION STREET
AND JACKSON AVENUE TO WALL STREET
ROCKAWAY BOROUGH, MORRIS COUNTY**

SITE PHOTOGRAPHS



GPI Engineering
Design
Planning
Construction Management

N.T.S.

Water accumulation at the curb ramp; Faded crosswalk



Non ADA compliant curb ramp



Uneven sidewalk



Illegible street name signs



No driveway warning sign

LEGEND



SIGNALIZED INTERSECTION



PROJECT CORRIDOR

4
6

**NJDOT HSIP - ROAD SAFETY AUDIT
COUNTY ROUTES 513 AND 644 FROM MT.
PLEASANT AVENUE TO UNION STREET
AND JACKSON AVENUE TO WALL STREET
ROCKAWAY BOROUGH, MORRIS COUNTY**

SITE PHOTOGRAPHS



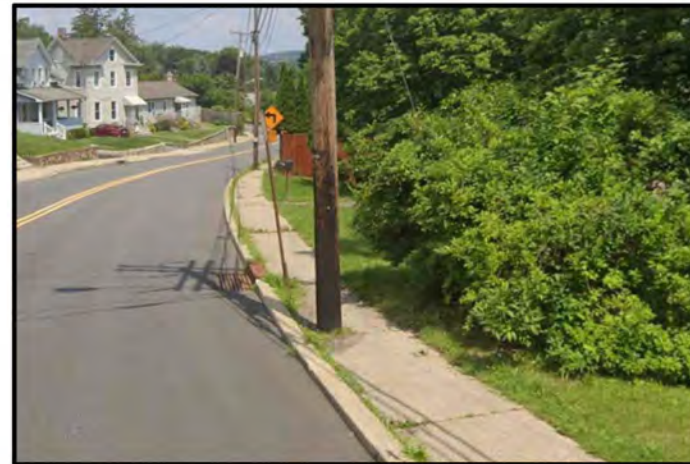
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Construction Management

N.T.S.

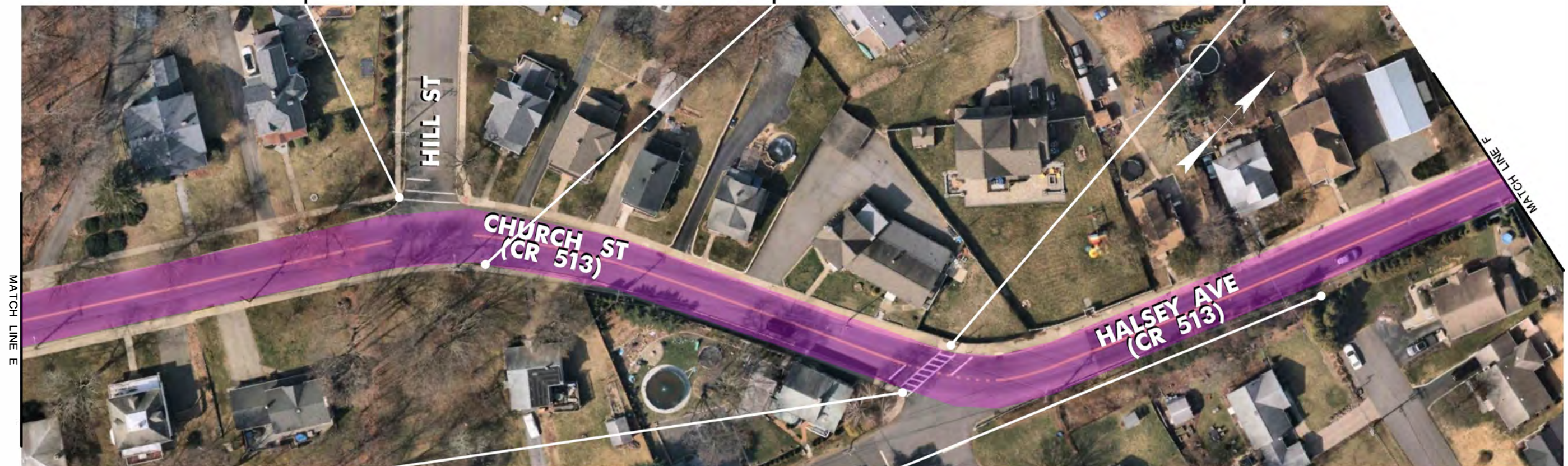
No edgeline and centerline markings; Narrow sidewalk; Sightline issues due to the intersection geometry and landscaping elements



Utility poles obstructing sidewalk; Narrow sidewalk



Faded crosswalk; Debris accumulated at curb ramp; Incorrect stop bar location



No crosswalk; No centerline and edgeline markings; Sightline issues due to intersection geometry; No track marks



Water accumulation issues; No sidewalk on the SB edge

LEGEND



SIGNALIZED INTERSECTION



PROJECT CORRIDOR

5
6

**NJDOT HSIP - ROAD SAFETY AUDIT
COUNTY ROUTES 513 AND 644 FROM MT.
PLEASANT AVENUE TO UNION STREET
AND JACKSON AVENUE TO WALL STREET
ROCKAWAY BOROUGH, MORRIS COUNTY**

SITE PHOTOGRAPHS



GPI Engineering
Design
Planning
Construction Management

N.T.S.

Pot hole adjacent to the sidewalk



Illegible street name signs; No sidewalk on EB Hoagland Avenue



No tracks marks; No buffer between sidewalk and vehicle lane; Narrow sidewalk



Speed sign bent and hidden due to the overgrown vegetation; No sidewalk



No sidewalk; No edgeline and centerline markings



Non ADA compliant pedestrian signal push button location



No crosswalk; No ADA compliant curb ramps; No edgeline and centerline markings

LEGEND

 SIGNALIZED INTERSECTION

 PROJECT CORRIDOR

6/6

NJDOT HSIP – ROAD SAFETY AUDIT
COUNTY ROUTES 513 AND 644 FROM MT. PLEASANT AVENUE TO UNION STREET AND JACKSON AVENUE TO WALL STREET
ROCKAWAY BOROUGH, MORRIS COUNTY

SITE PHOTOGRAPHS



GPI Engineering
Design
Planning
Construction Management

N.T.S.

G. PRE-AUDIT PRESENTATION



1



2

Safe System Approach

Zero is our goal. A Safe System is how we will get there.

The Basics

- Eliminate fatal & serious injuries for all road users
- Holistic view of the road system:
 1. Anticipates human mistakes
 2. Keeps impact energy tolerable on the human body
- Human perspective
- Ethical imperative of the designers and owners of the transportation system



3

3

Highway Safety Improvement Program (HSIP)

- 4 Emphasis Areas (NJ 2025 Strategic Highway Safety Plan)
- 7 sub-programs including Local Safety Program – ROAD SAFETY AUDITS
- Core Federal Aid Program, NJ receives about \$75M



Safer Roads & Safer Speeds

- Lane Departure
- Intersections
- Rail-highway grade crossings
- Pedestrian accommodations
- Bicyclist accommodations



Safer People & Safer Speeds

- Impaired Drivers
- Drowsy/Distracted Drivers
- Aggressive Drivers
- Unlicensed Drivers
- Unbelted Drivers
- Mature/Young Drivers
- Pedestrians
- Bicyclists
- Work Zones



Safer Vehicles

- Automobiles
- Motorcycles
- Heavy/Commercial Vehicles
- Connected Autonomous Vehicles



Post-Crash Care

- (Emergency response focus)
- Incident management
 - Medical training



Additional Safety Areas

- (Included in all)
- Traffic records
 - Data

4

4

Federal Transportation Funding

- **Local Safety and High Risk Rural Roads Programs**
 - \$235M on County / Local Roadways
 - Relatively quick-fix safety improvements
- **HSIP funds** – emphasizes data-driven, strategic approach to improving highway safety
- **Network Screening** – identifies locations experiencing:
 - High crash frequencies
 - Severe crash injuries
 - Specific crash types (e.g. right-angle, roadway departures)
- **Community Outreach** – opportunities for public, local officials and stakeholders to comment and ask questions

Local Safety Program & High Risk Rural Roads FY 2004–2022

LOCAL SAFETY PROGRAM

Past: 126 projects \$235 M
 FY 2022: 19 projects \$168 M
 TOTAL: 145 projects \$403 M

HRRR PROGRAM

Past: 23 projects \$53 M
 FY 2022: 3 projects \$20 M
 TOTAL: 26 projects \$73 M

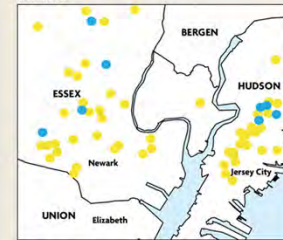
FY 2022 PROJECTS

Local Safety Projects
 High Risk Rural Road Projects

PAST PROJECTS

Local Safety Projects
 High Risk Rural Road Projects

Detail Area



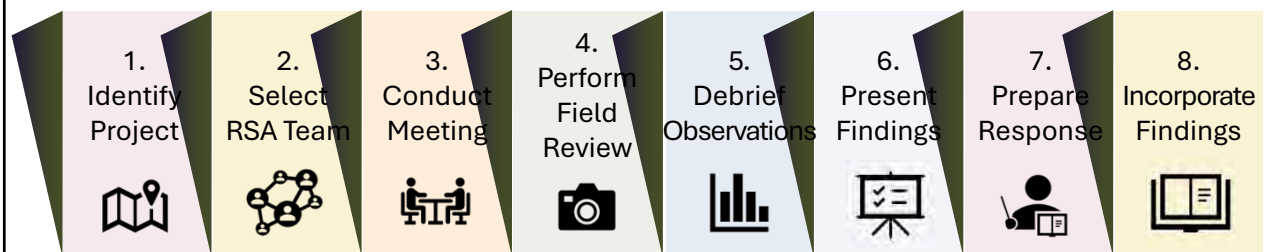
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RSA Purpose and Process

Formal safety performance examination by an independent, multidisciplinary audit team that identifies safety improvement opportunities for all road users.

- Pro-actively address safety; reduce crashes
- Identify low-cost/high-value improvements
- Promote “safety culture”
- Provide continuous advancement of safety skills and knowledge
- Contribute feedback on safety issues
- Support optimized savings of lives, money and time



Responsibilities: Steps 1-2 & 7-8: Design Team/Road Owner | Steps 3-6: RSA Team

6

6



FHWA Proven Safety Countermeasures (PSC)

- 28 countermeasures
- Research proven strategies
 - ✓ Intersections
 - ✓ Roadway departures
 - ✓ Pedestrian/bicyclist
- Several crosscutting strategies address multiple safety focus areas

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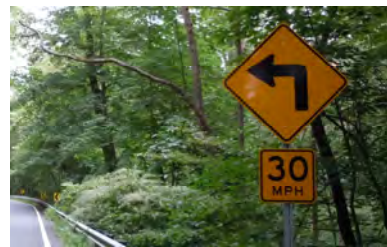
PSC Examples



Road Diet, Asbury Park City, Monmouth County



Roundabout, Cinnaminson Township, Burlington County



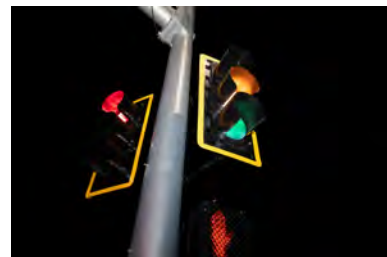
Enhanced Delineation, Horizontal Curves, Statewide



Pedestrian Hybrid Beacon (HAWK), Carlsbad Borough, Bergen County



RRFBs and high visibility crosswalks, Princeton Township, Mercer County



Backplates with Retroreflective Borders, Statewide

8

Project Area Site Summary



- Limits:
CR 513 - Pleasant Ave to Union Street (0.68 mi);
CR 644 – Wall St to Jackson Ave (0.16 mi)
- Undivided, 2 lanes
- Urban minor arterial
- Inconsistent sidewalk
- On-street parking on one side
- CR 513 - 30 mph; CR 644 – 35 mph
- Commercial and residential



Demographics

Item*	Study Area	Morris Co.
Public Transport	1%	2%
Walk/Bike	1.3%	1%
No Vehicle	12%	5%

Public Transport = People who use public transportation

Walk/Bike = People of who walk or bike to work

No Vehicle = Homes with no vehicle available

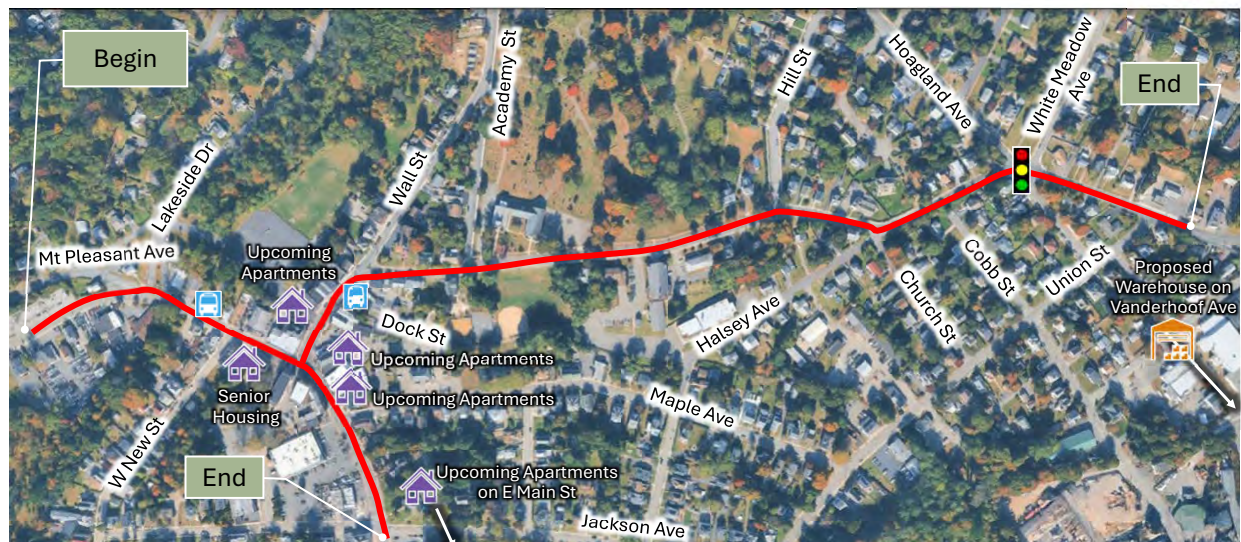
CR 513 and 644 RSA

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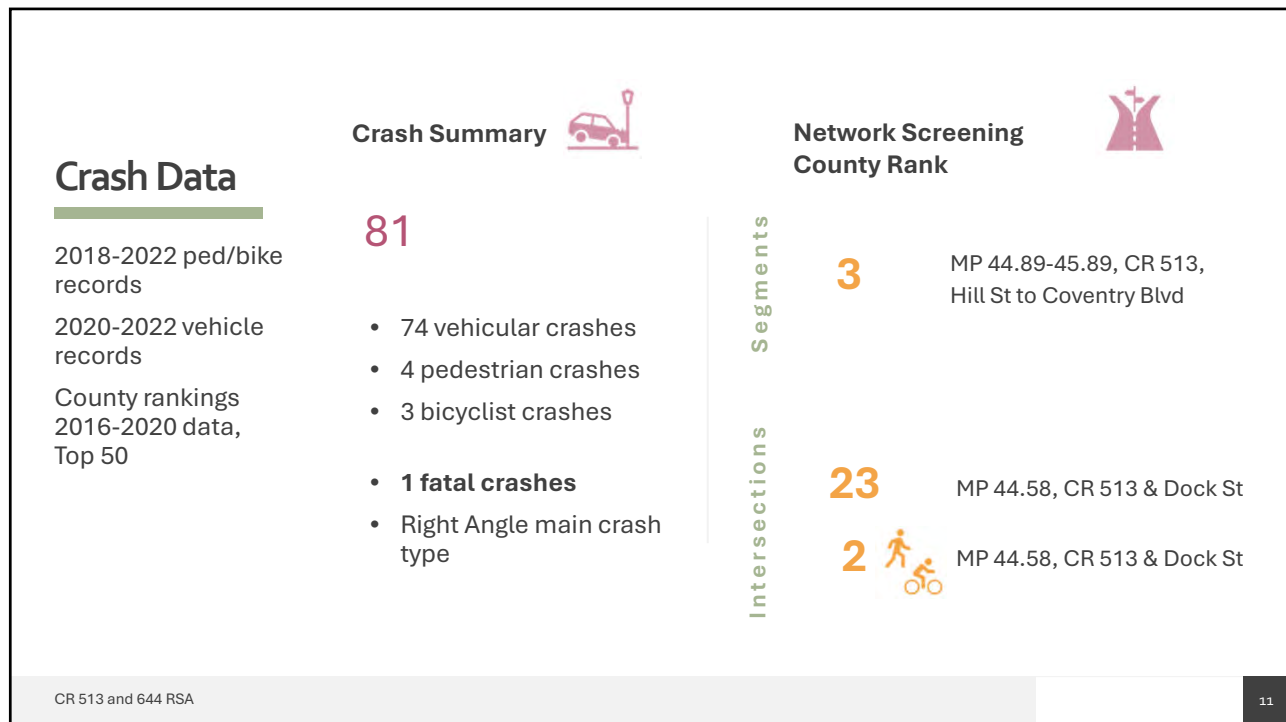
Project Area

CR 513, Mt. Pleasant Avenue to Union Street;
CR 644, Wall Street to Jackson Avenue

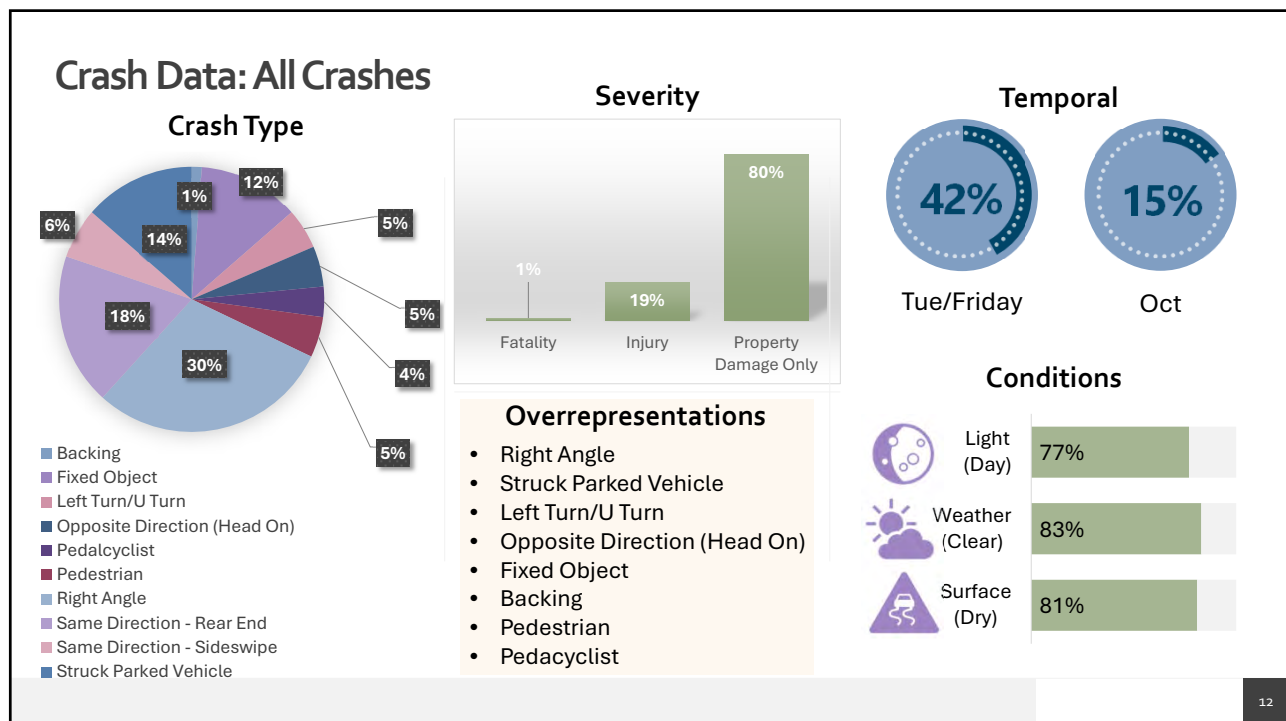


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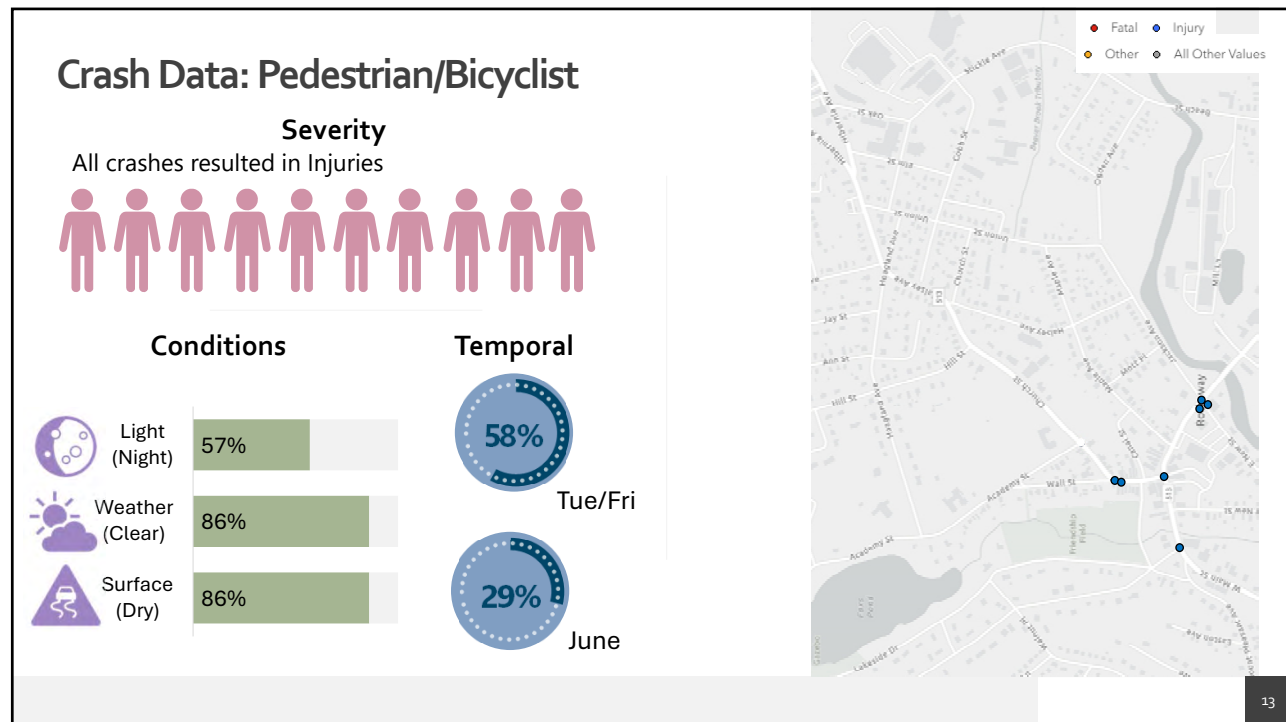
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Field Visit Schedule, Rules, and Discussion

1. Meet at Rockaway Community Center at 9:30AM (rain or shine). Hard copies of the packet will be available.
2. Dress appropriately for safety and weather. Safety vests **must** be worn.
3. Regroup at meeting site to summarize field visit.

Observations

- What elements of the road may present a safety concern?
- To what extent, to which road users, and under what circumstances?
- What corridor safety issues did you observe?
- What localized safety issues did you observe?

Recommendations

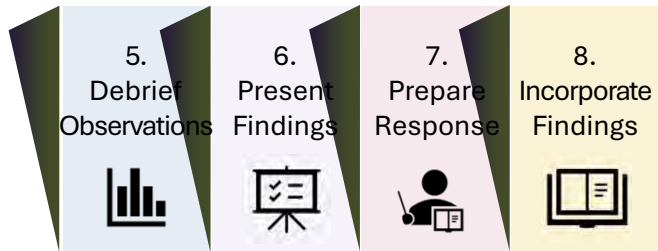
- What opportunities exist to eliminate or mitigate identified safety concerns?
- What improvements would you make?
- Are any of the FHWA countermeasures beneficial?

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Next Steps

- Preparation of RSA Report
- Review/comments from RSA Team
- Preparation of Preliminary Final Report
- Preparation of Final Report
- Approximate timeframe: 6-8 weeks for draft report



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H.ROAD OWNER RESPONSE

COUNTY OF MORRIS
DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING & TRANSPORTATION

Board of County Commissioners
Commissioner Director
Stephen H. Shaw

Commissioner Deputy Director
John Krickus

Douglas R. Cabana
Thomas J. Mastrangelo
Christine Myers
Tayfun Selen
Deborah Smith

P.O. Box 900
Morristown, New Jersey 07963-0900



County Administrator
Deena Leary

*Director of Public Works &
County Engineer*
Christopher J. Vitz, P.E.
973-285-6750
Fax: 973-539-3141
cvitz@co.morris.nj.us

Assistant County Engineer
Roslyn C. Khurdan, P.E.

February 20, 2026

Julia Steponanko, P.E., RSP1
Assistant Vice President / Project Engineer
Greenman-Pedersen, Inc
100 Corporate Drive, Suite 301
Lebanon, NJ 08833

RE: Road Safety Audit – CR 513, Mt. Pleasant Avenue to Union Street (MP 44.40-45.12) & CR 644, Wall Street to Jackson Avenue (MP 0.80-0.96), Rockaway Borough

Ms. Steponanko:

Morris County thanks the Road Safety Audit team for conducting this important evaluation of traffic safety along County Routes 513 and 644 in Rockaway Borough. The team identified many recommendations for improving safety and better accommodating travel along these critical corridors.

Morris County is committed to improving safety for all road users and has adopted its Local Safety Action Plan in 2025. While we cannot commit to specific improvements presented in the report, the recommendations will be closely reviewed and considered in future analysis as we seek to improve travel and safety.

We will discuss these recommendations with Rockaway Borough and consider applying to NJTPA's Local Safety Program for design and construction funding.

Again, we thank you for your efforts in preparing this detailed report.

Sincerely,

Christopher J. Vitz, P.E., C.P.W.M.
Director of Public Works & County Engineer