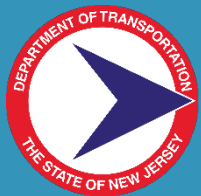




Road Safety Audit:

Central Avenue (CR 508),
Oakwood Place to S. Munn Avenue
Orange and East Orange Cities, Essex County



December 2020

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Executive Summary

This document is the final report of the Road Safety Audit (RSA) conducted along CR 508 (Central Avenue) from Oakwood Place to S. Munn Avenue in Orange and East Orange Cities, Essex 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 aforementioned roadway section was identified on NJTPA's Local Safety Program Network Screening list as high priority. According to the NJDOT crash database, there were 431 crashes from 2016 to 2018 along the study area section of CR 508, Central Avenue excluding pedestrians/pedacyclists. Additionally, 93 pedestrian crashes occurred over the 5-year period from 2014 to 2018. There were 14 pedacyclist crashes and 79 pedestrian crashes.

Due to the COVID-19 pandemic, this RSA was conducted all online/virtual on Friday, October 16, 2020. Similar to a Road Safety Scan (RSS), roadway conditions were documented in advance via photographs and corridor videos for the Team to review. Representatives from NJDOT, FHWA, NJTPA, NJ Transit, Essex County, and East Orange City were in attendance.

The RSA site and crash history are described in Sections II and III of this report, respectively. Section II also identifies previous and on-going studies conducted by the agency representatives. Corridor-wide and site-specific issues and recommendations, organized by location, are discussed in Section V. These recommendations addressed pedestrian safety by investigating curb extensions at intersections, repairing sidewalks and ensuring ADA compliance. Additionally, many suggestions were made to upgrade traffic signals, improve, and simplify signage, and improve lighting.

The recommendations contained herein were developed collaboratively with the roadway owner and local stakeholders from the RSA Team (members listed in Appendix A). The study partners have expressed interest in implementing many of the recommendations as time and funds allow. Many of the maintenance items, which are typically low cost, can be addressed without additional engineering.

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

This section of CR 508 (herein Central Avenue) was identified on NJTPA’s Local Safety Program (LSP) Network Screening list as a high priority location, as shown in the below rankings. Of note, these rankings are based on 2014-2016 vehicular and 2012-2016 pedestrian crash data.

Table 1 – NJTPA LSP Ranking (Corridor)

Location	Ped Corridor	Regional Corridor
CR 508 Central Avenue	#4 County (MP 7.75-8.75)	#8 County (MP 7.75-8.75)

Table 2 – NJTPA LSP Ranking (Intersection)

Location	Intersections	Pedestrian Intersections
S. Munn Ave (MP 8.81)	#1 County	#3 County
Halsted St (MP 8.20)	N/A	#77 County
S. Harrison St (MP 7.95)	#103 County	N/A

B. What is a Road Safety Audit?

A Road Safety Audit (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.

The RSA program is 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

Due to the COVID-19 pandemic, this RSA was conducted all online/virtual on Friday, October 16, 2020. Similar to a Road Safety Scan (RSS), roadway conditions were documented in advance via photographs and corridor videos for the Team to review. Representatives from NJDOT, FHWA, NJTPA, NJ Transit, Essex County, and East Orange City were in attendance. A list of team members can be found in Appendix A.

II. Corridor Description and Analysis

A. Study Location

The study area consists of approximately one mile of Central Avenue. The adjacent land use along the corridor is primarily commercial retail, professional and service establishments. Of note, the East Orange General Hospital and Monte Irvin Orange Park are in the western and eastern portion of the project limits, respectively. The Ecole Toussaint Louverture Elementary School is located between S. Arlington Avenue and Nassau Place. Several other schools are located within 1/4 mile of Central Avenue. Residential properties are located along or off the intersecting roadways within the project limits.

B. Roadway and Intersection Characteristics

Central Avenue is a four-lane urban principal arterial and is posted at 35 mph. It is divided between S. Harrison Street and S. Clinton Street by a brick pavers or landscaped median. Left turn lanes are provided in this section. School crossing guards are present at S. Munn Avenue, S. Arlington Avenue, S. Clinton Street, S. Harrison Street, and Oakwood Avenue during arrival and dismissal of students.

C. Existing Bicycle/Pedestrian Accommodations

Sidewalk is provided continuously on both sides of Central Avenue. The existing sidewalk is a mix of concrete, asphalt and pavers and varies in condition from newly installed to needing maintenance. Standard style crosswalks are provided at all. Many of the crosswalks are worn and could use restriping. There are no bicycle lanes or other bicycling infrastructure identified along the corridor.

D. Traffic Volumes

Based on available data, the 2018 Annual Daily Traffic (ADT) along Central Avenue between Shepard Avenue and Nassau Place is approximately 17,900 vehicles per day. A copy of the available data can be found in Appendix C.

E. Transit Service

NJ Transit bus service is provided along Central Avenue via routes 24, 44, 94, and 97. Stops are located at or near S. Munn Avenue, S. Arlington Avenue, Shepard Avenue, S. Burnett Street, S. Clinton Street, Halsted Street, S. Harrison Street, and Oakwood Avenue. The stops at Halsted Street are heavily used by transit riders.

F. Community Profile

The American Community Survey (ACS) estimate, which updates the 2010 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 2014 through 2018. A summary of the demographics is listed below.

Table 3 – Study Area Demographics

Characteristic		Project Area	County Average
Poverty		25%	14%
Limited English Proficiency (LEP)		10%	15%
Race/Ethnicity	White	3%	30%
	Hispanic/Latino	10%	24%
	Asian American	5%	1%
	Black or African American	84%	38%
	Two or More Races	1%	2%
	Other ¹	1%	1%
Use Public Transportation		26%	20%
Walk/Bike to Work		6%	3%
Homes with No Vehicle Available		33%	22%

G. Redevelopment

No current or ongoing redevelopment projects were identified within the project limits. A streetscape project was completed approximately 10 years ago in East Orange.

III. Crash Findings

The analysis used in the RSA was based on reportable crashes found in the NJDOT crash database resulting in a fatality, injury and/or property damage. Corridor-wide crash characteristics and overrepresentations were compared to the 2018 statewide average for the county road system as further detailed below. All crashes were plotted onto collision diagrams, which can be found in Appendix D and E.

A. Temporal Trends

According to the NJDOT crash database, 431 crashes occurred during the three-year period between January 1, 2016 and December 31, 2018 (excluding pedestrians/pedacyclists) along the study area.

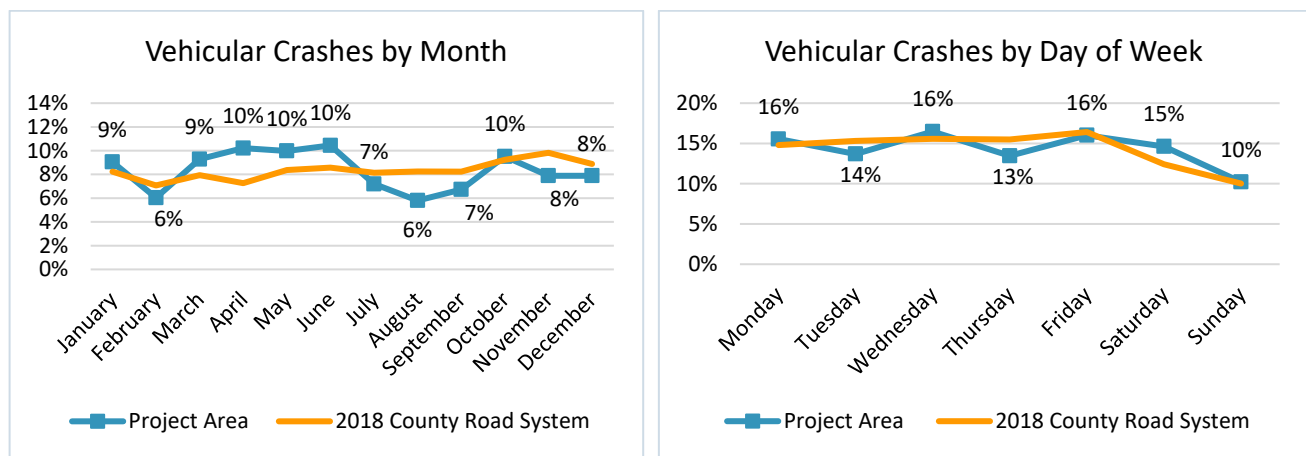


Figure 1 – Vehicular Crashes by Month and Day of Week

Total crashes were higher than the county average in March-June and lower from July to September. Crashes by day of week generally followed the county averages.

¹ Percentages may not equal 100% due to rounding. Other includes individuals who identified themselves as 'Native Hawaiian or Pacific Islander', 'Some Other Race Alone' or 'American Indian/Alaskan Native'

Additionally, 93 pedestrian crashes occurred over the 5-year period from 2014 to 2018; 14 were bicyclists and 79 were pedestrians. Collisions with pedestrians varied from the county average in January and August-October, and on Thursday.

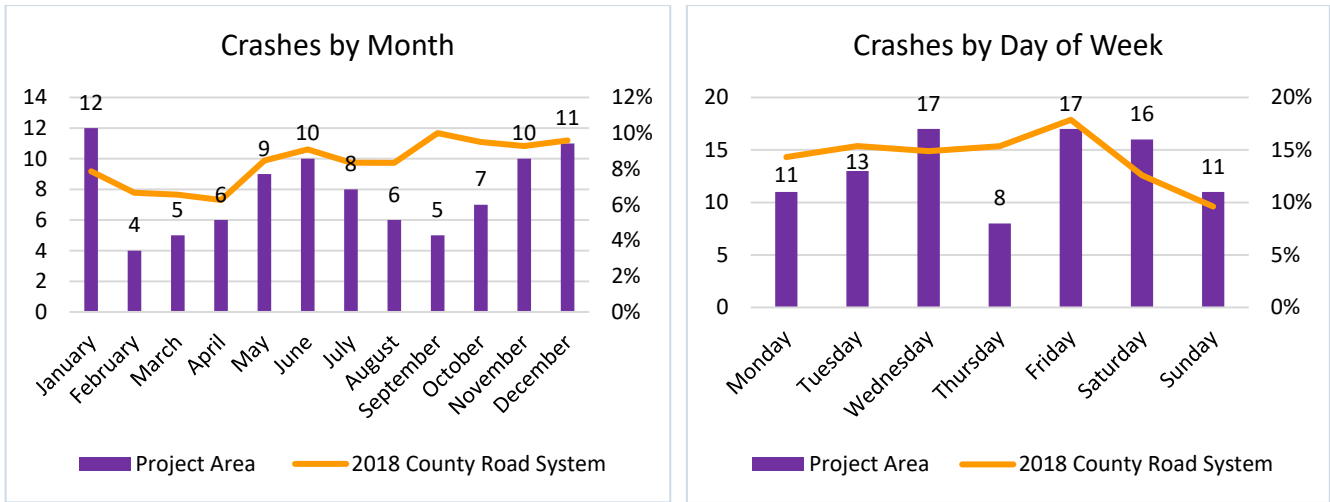


Figure 2 – Pedestrian/Bicyclist Crashes by Month and Day of Week

B. Collision Types

Overrepresented crash types over the 2016 to 2018 period included sideswipe, parked vehicle, left turn/u turn, backing and pedestrian. Please note that pedestrian crashes in 2014 and 2015 were not included in the data used for Figure 3.

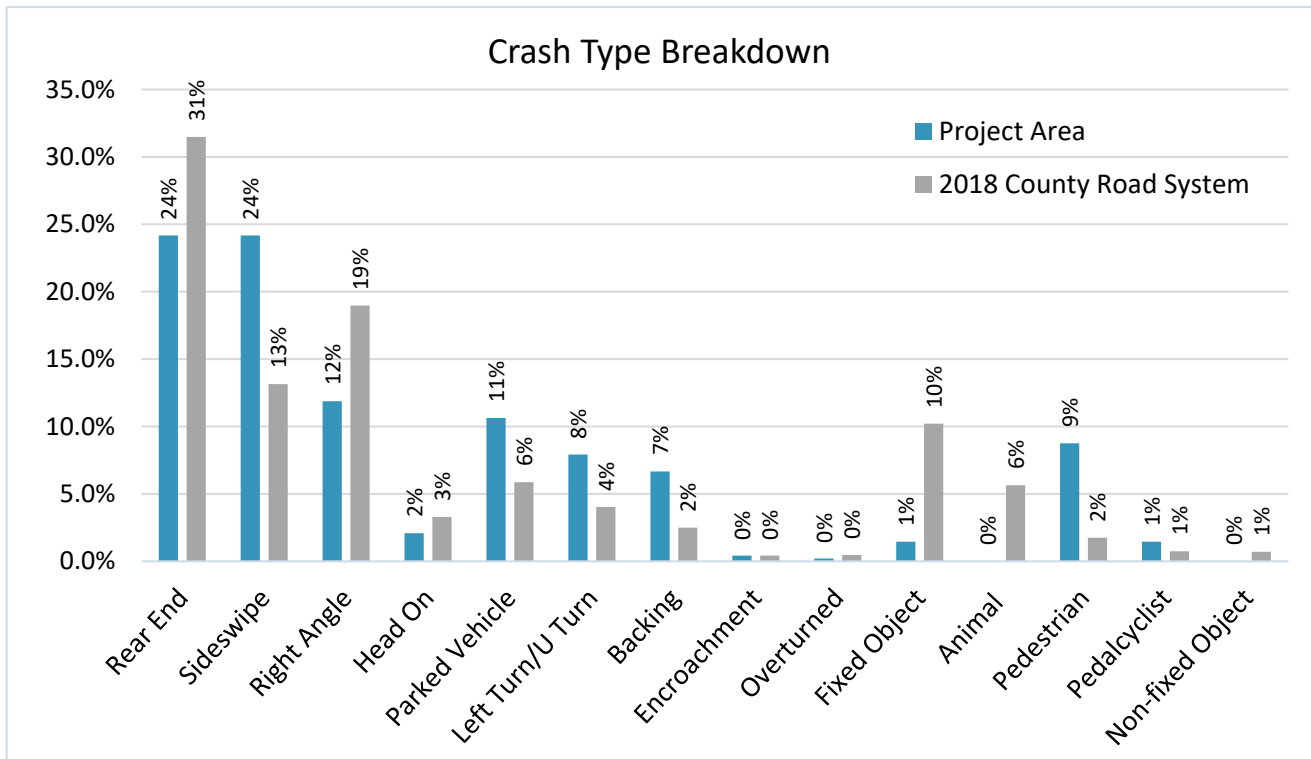


Figure 3 – Vehicular Crash Type Breakdown

The majority of pedestrian/bicycle crashes (excluded from Figure 3) included injury, occurred at night and at signalized intersections.

C. Severity

Pedestrian crashes resulting in minor and moderate injury were significantly overrepresented compared to the county road system from 2014 to 2018.

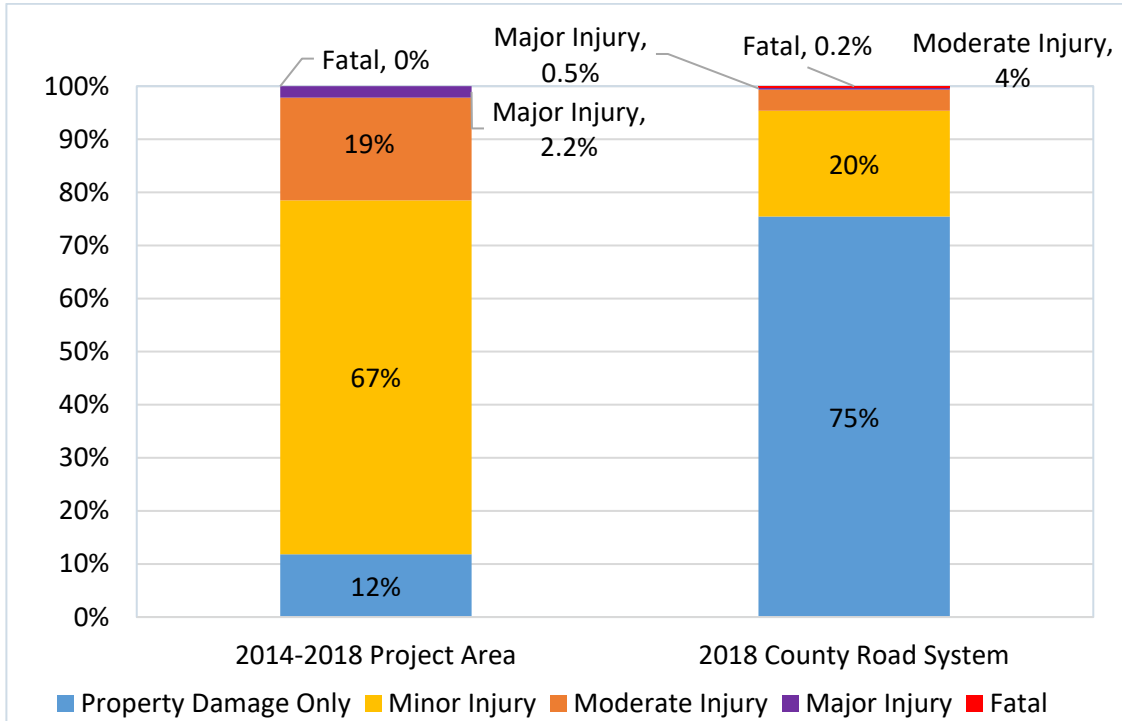


Figure 4 – Severity (Pedestrian/Bicycle Crashes)

D. Roadway Surface & Light Condition

Roadway surface and light conditions for crashes within the project area trended similarly to the county average.

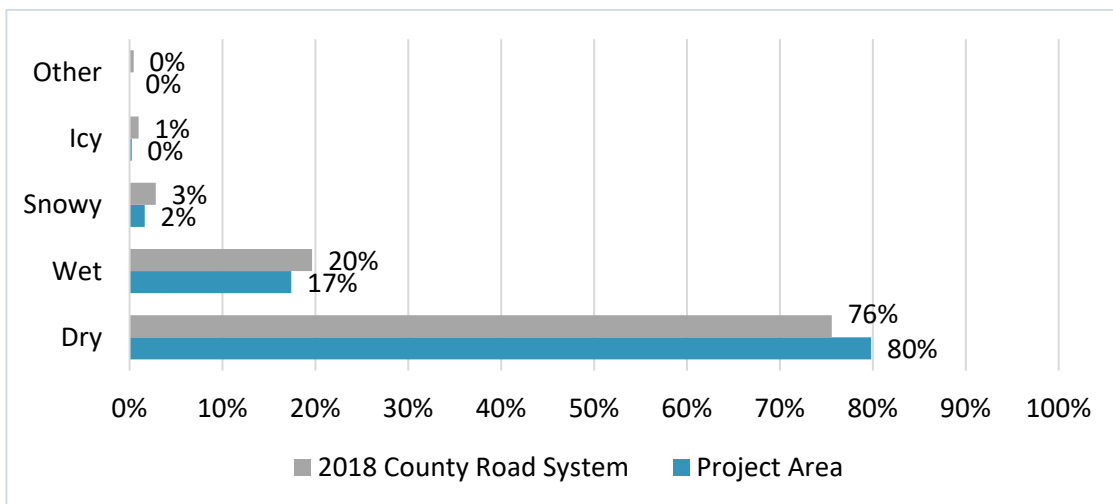


Figure 5 – Surface Conditions (Vehicular Crashes)

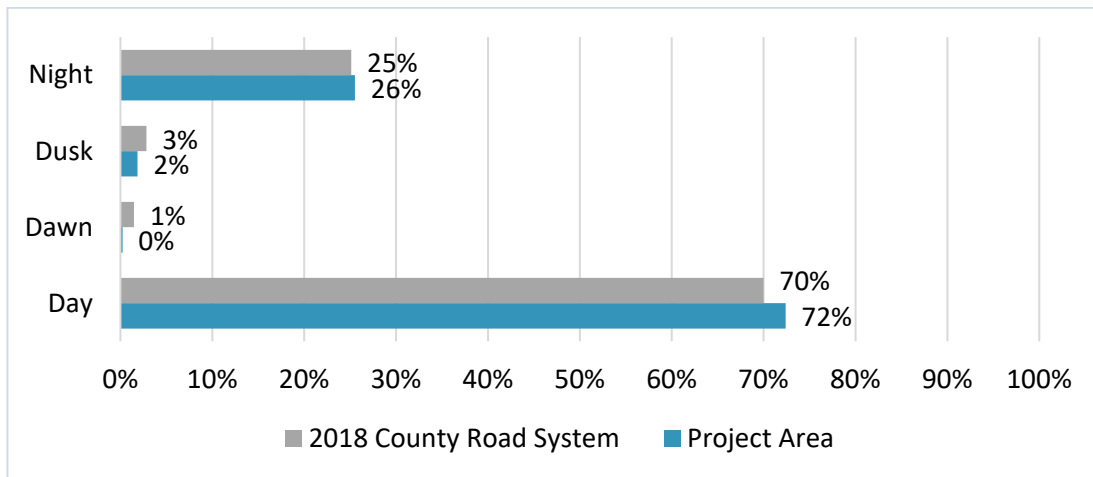


Figure 6 – Light Conditions (Vehicular Crashes)

Dry surface crashes involving pedestrians and bicyclists accounted for most of the crashes. In addition, 52% of pedestrian crashes occurred during non-daylight hours, with nighttime crashes accounting for 46% of all pedestrian/bicycle crashes.

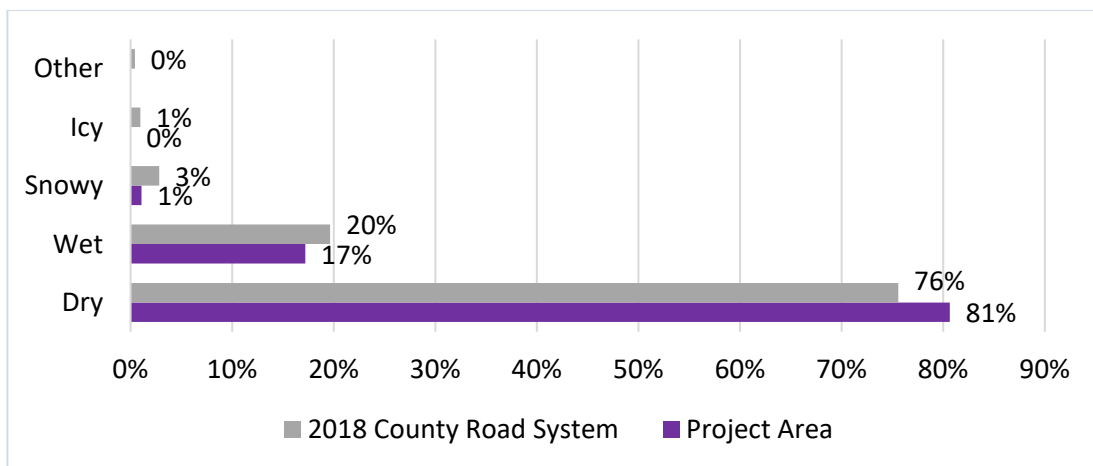


Figure 7 – Surface Conditions (Pedestrian/Bicycle Crashes)

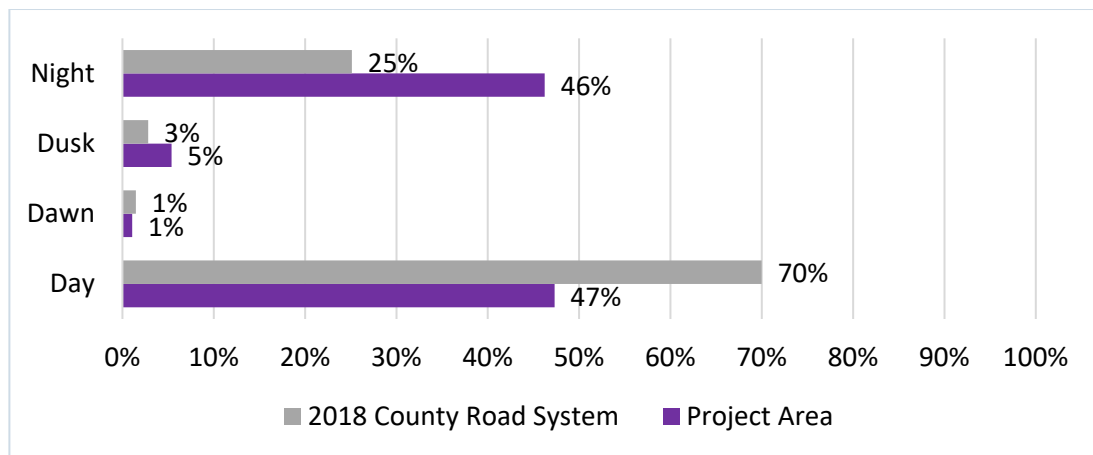


Figure 8 – Light Conditions (Pedestrian/Bicycle Crashes)

E. Location

Crashes occurring at signalized intersections were overrepresented compared to the county road system average. Thirty-six percent (36%) of crashes occurred at signalized intersections compared to 14% on all county roads. In addition, half of the 93 pedestrian/bicyclist crashes occurred at signalized intersections. Crash frequency, as shown in the following figures, shows the highest concentration of vehicular and pedestrian crashes. The histogram view is grouped by 0.1-mile segments and shows both crashes that could be geolocated and number of police crash reports where differences were noted.



Figure 9 – Total Crash Locations (2016-2018)



Figure 10 – Pedestrian Crash Locations (2014-2018)

IV. Identified Issues & Observations

This section summarizes the common corridor-wide safety issues identified during the RSA. They are categorized into pedestrian and bicyclist issues, and operations (including visibility) and maintenance issues. Additional site-specific issues and photographs can be found in Appendix F.

A. Pedestrian/Bicyclist



Curb ramp not ADA compliant. Different surface materials may pose tripping hazard.

Central Ave and Freeman Ave SE corner



Ponding at the curb ramp.

Central Ave and S. Burnett St SW corner



Uneven and inconsistent sidewalk.

Central Ave and S. Arlington Ave NE corner.



Crosswalk leads directly into driveway for the park.

Central Ave and Oakwood Ave



Worn crosswalk striping
Shared ramp at center of corner
radius not preferred layout

Central Ave and S. Harrison St

B. Operations, Visibility, and Maintenance



Street trees obscure signs

Central Ave and Halsted St



Vehicle blocking driveway. Other parking violations observed include double parking, parking across from 'T' intersections, parking too close to corners & crosswalks, on sidewalks, and blocking driveways.

Central Ave near Shepard Ave



Damaged/old fixtures.

Central Ave near Shepard Ave (broken light pole) & Central Ave and St. Agnes Ln (old traffic signal standard transformer base)



Inlet is backed up and needs cleaning.

Central Ave and S. Burnett St SW corner



Signs installed incorrectly: Stop sign is far-removed from intersection (left) and No U-turn sign installed upside down (right)

Amherst St and Central Ave (left) & Central Ave near Princeton St (right)

The Team noted the different light fixtures throughout the corridor which contributed to nearly half of all pedestrian crashes occurring at night (see Figure 8). It was also noted that there was a streetscape project more than 10 years ago that was not fully completed, which is why there is a lack of street trees in some areas and the sidewalk material is inconsistent throughout the corridor. In addition, it was noted that S. Harrison Street is heavily traveled with high density between Tremont Avenue and Freeway Drive (access to I-280). Aggressive driving occurs at the signalized intersection of Central Avenue and Harrison Street. During the data collection, it was observed that pedestrians did not use the pushbutton at the midblock crossing.

V. Findings and Recommendations

This section summarizes the site-specific and corridor-wide safety issues, potential strategies, and recommendations to improve the same, safety benefit, time frame, cost, and jurisdiction. Ratings used in the recommendation tables are described as follows. N/A indicates safety benefit not determined.

Symbol	Meaning	Definition
✓	Low safety benefit potential	May reduce total crashes by 1-25% ²
✓✓	Low to moderate safety benefit potential	May reduce total crashes by 26-49% ²
✓✓✓	Moderate safety benefit potential	May reduce total crashes by 50-74% ²
✓✓✓✓	High safety benefit potential	May reduce total crashes by 75+% ²
\$	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. 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 upgrading all ramps for ADA compliance	✓✓✓ ³	\$\$\$	◑	County
2	Consider corridor-wide signal upgrades (8" to 12" signal heads, install backplates with retroreflected border, evaluate clearance intervals, update to countdown pedestrian signal heads, replace push buttons for ADA compliance, signal timings, lighting, etc.)	✓✓ ³	\$\$\$	◑	County
3	Consider conducting a lighting analysis for the corridor and at each intersection	✓✓✓	\$\$	◐	County

² 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.

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
4	Consider conducting a parking study to investigate on-street parking requirements where businesses have existing parking lots and for conformance with Title 39	✓ ⁴	\$\$	●	County
5	Review access management for the corridor, especially at the intersections; consider driveway revisions or limiting turning movements (via signage and/or delineators)	✓	\$\$	●	County
6	Investigate feasibility of a road diet	✓✓	\$\$	●	County
7	Consider installing centerline hardening	✓ ⁴	\$	●	County
8	Consider installing edge lines to delineate travel lanes	✓ ⁴	\$	●	County
Bicycle/Pedestrian					
9	Inspect, repair and construct sidewalks in compliance with ADA as needed, including driveway aprons. Consider using consistent material throughout	✓✓✓	\$\$	●	City/ County
10	Examine inlets and install bicycle-safe grates	✓ ⁴	\$\$	●	County
11	Examine crosswalks status: check placement and alignment. Consider high visibility crosswalks	✓✓	\$	●	County
12	Coordinate with NJ Transit to add bus shelters where feasible and practical	✓ ⁴	\$\$	●	NJ Transit/ City/County
Maintenance					
13	Inspect existing striping for wear and restripe accordingly; add RPMs where appropriate	✓✓	\$	●	County
14	Inspect and replace missing, faded, damaged or incorrect/outdated signage as needed (i.e. signs mounted below 7-ft, on non-breakaway posts or back-to-back signs that obscure shapes)	✓	\$	●	City/ County
15	Inspect drainage facilities; ensure they are free of debris	✓ ⁴	\$\$	●	County
16	Remove old or damaged fixtures along the corridor	✓	\$	●	County
Education					
17	Consider sidewalk, crosswalk, multimodal education campaign and code enforcement	✓ ⁴	\$	●	City/ County
18	Investigate relationship between crime and crashes via GIS mapping	N/A	\$\$	●	City/ County
Other					
19	Consider including street trees and green infrastructure	N/A	\$\$	●	City/ 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.

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

Table 5 – Site-Specific Recommendations

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
Oakwood Ave					
20	Consider corridor-wide recommendation 1, 9 and 11 regarding crosswalks, sidewalk and ADA compliance	✓✓✓ ⁵	\$\$\$	●	County
21	Consider corridor-wide recommendation 2 regarding signal upgrades	✓✓ ⁵	\$\$\$	●	County
22	Investigate relocating park driveway to side street	✓ ⁵	\$\$	●	County
23	Explore relocating the Oakwood Ave NB stop bar to the south if number of heavy vehicles warrants it	✓ ⁵	\$	●	County
S. Harrison St					
24	Consider corridor-wide recommendation 1, 9 and 11 regarding crosswalks, sidewalk and ADA compliance	✓✓✓ ⁵	\$\$\$	●	County
25	Consider corridor-wide recommendation 4 regarding Title 39	✓ ⁵	\$	●	County
26	Investigate adding a Lead Pedestrian Interval (LPI) or exclusive pedestrian phase	✓✓✓	\$	●	County
27	Consider adding a lead left phase for S. Harrison St and protected left phase for Central Ave	✓	\$	●	County
28	Consider corridor-wide recommendation 2 regarding clearance intervals	✓✓ ⁵	\$\$\$	●	County
29	Investigate corridor-wide recommendation 7 on centerline hardening	✓ ⁵	\$	●	County
Pedestrian Crossing Signal					
30	Investigate changing signal to a HAWK	✓✓✓	\$\$\$	●	County
31	Consider upgrading push buttons to include audio and/or visual feedback (i.e. bulldog pushbutton)	✓ ⁵	\$	●	County
32	Consider passive pedestrian detection (infrared or radar)	N/A	\$\$	●	County
33	Install stop bars	✓✓	\$	●	County
Sanford St/Cambridge St/Evergreen PI					
34	Consider adding right turn only signage for Cambridge St approach	✓ ⁵	\$	●	County
35	Consider adding pavement markings for Sanford St and Cambridge St	✓	\$	●	County
36	Investigate adding a Lead Pedestrian Interval (LPI) or exclusive pedestrian phase	✓✓✓	\$	●	County
37	Consider adding a protected only phase for left turns from Central Ave	✓	\$	●	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
38	Investigate closing Cambridge St from the Rite Aid driveway to Central Avenue; reconfigure Cambridge St at Sanford St	✓ ⁶	\$\$	○	County
39	Consider corridor-wide recommendation 2 regarding signal upgrades, specifically clearance times	✓✓ ⁶	\$\$\$	●	County
40	Consider corridor-wide recommendation 1, 9 and 11 regarding crosswalks, sidewalk and ADA compliance	✓✓✓ ⁶	\$\$\$	●	County
41	Consider corridor-wide recommendation 3 regarding lighting	✓✓✓	\$\$	○	County
Princeton St					
42	Consider right in, right out operation	✓✓ ⁶	\$\$	○	County
Halsted St					
43	Consider corridor-wide recommendation 1, 9 and 11 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ⁶	\$\$\$	●	County
44	Consider corridor-wide recommendation 2 regarding signal upgrades, including signal timings	✓✓ ⁶	\$\$\$	●	County
45	Investigate adding a Lead Pedestrian Interval (LPI) or exclusive pedestrian phase	✓✓✓	\$	○	County
46	Consider corridor-wide recommendation 3 regarding lighting	✓✓✓	\$\$	○	County
47	Explore feasibility of relocating bus stops to far side	✓✓	\$	○	City/County /NJ Transit
S. Clinton St					
48	Consider corridor-wide recommendation 1, 9 and 11 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ⁶	\$\$\$	●	County
49	Consider corridor-wide recommendation 4 regarding parking/Title 39, including east of the intersection along Central Ave westbound	✓	\$\$	○	County
50	Consider adding parking spot striping or edge lines for the spots along S. Clinton St northbound	✓ ⁶	\$	○	County
51	Explore implementing spaces as loading zones or timed parking limits	N/A	\$	○	City/County
52	Consider extending the curb extension to create a 13-foot wide lane in the NE corner	✓✓	\$\$	●	County
53	Consider corridor-wide recommendation 7 regarding centerline hardening	✓ ⁶	\$	○	County
S. Burnett St					
54	Consider corridor-wide recommendation 1, 9 and 11 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ⁶	\$\$\$	●	County
55	Consider corridor-wide recommendation 2 regarding signal upgrades, including signal timings	✓✓ ⁶	\$\$\$	●	County

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.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
56	Consider corridor-wide recommendation 3 regarding lighting	✓✓✓	\$\$	○	County
Eppirt St					
57	Investigate converting to one-way away from Central Ave	✓✓	\$\$	●	County
58	Investigate converting to right-in right-out only	✓✓ ⁷	\$\$	●	County
59	Consider corridor-wide recommendation 3 regarding lighting	✓✓✓	\$\$	○	County
60	Consider adding a marked crosswalk	✓✓	\$	○	County
61	Explore physical delineation between sidewalk and car shop in the SE corner so vehicles do not encroach on the pedestrian path	N/A	\$	○	City/ County
Shepard Ave					
62	Consider adding street trees in the vicinity of this intersection	✓	\$\$	○	County
63	Consider corridor-wide recommendation 1, 9 and 11 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ⁷	\$\$\$	●	County
Oak St/Nassau Pl					
64	Consider converting Oak St to one way away from Central Ave	✓✓	\$\$	●	County
65	Consider making Nassau Pl right-in right-out only	✓✓	\$\$	●	County
66	Consider corridor-wide recommendation 1, 9 and 11 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ⁷	\$\$\$	●	County
S. Arlington Ave					
67	Consider corridor-wide recommendation 1, 9 and 11 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓	\$\$\$	●	County
68	Consider corridor-wide recommendation 2 regarding signal upgrades, including backplates	✓✓ ⁷	\$\$\$	●	County
69	Consider corridor-wide recommendation 3 regarding lighting	✓✓✓	\$\$	○	County
70	Investigate adding a Lead Pedestrian Interval (LPI) or exclusive pedestrian phase	✓✓✓	\$	○	County
Freeman Ave/St Agnes Ln					
71	Consider corridor-wide recommendation 1, 9 and 11 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ⁷	\$\$\$	●	County
72	Consider corridor-wide recommendation 2 regarding signal upgrades, including backplates	✓✓ ⁷	\$\$\$	●	County
73	Consider corridor-wide recommendation 3 regarding lighting	✓✓✓	\$\$	○	County
74	Investigate the driveway access to the CVS in the SW corner and bumping out the curb line	✓ ⁷	\$\$	●	County

⁷ 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
S. Munn Ave					
75	Consider corridor-wide recommendation 1, 9 and 11 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ⁸	\$\$\$	●	County
76	Consider corridor-wide recommendation 2 regarding signal upgrades, including backplates and clearance times	✓✓ ⁸	\$\$\$	●	County
77	Consider corridor-wide recommendation 3 regarding lighting	✓✓✓	\$\$	●	County
78	Investigate adding exclusive left turn lanes	✓✓	\$\$	●	County
79	Consider eliminating parking outside of gas station along Central Ave westbound	✓	\$	●	County
80	Investigate adding a Lead Pedestrian Interval (LPI) or exclusive pedestrian phase	✓✓✓	\$	●	County
81	Consider corridor-wide recommendation 5 regarding access management	✓	\$\$	●	County
82	Consider prohibiting right turns on red from S. Munn Ave	✓	\$	●	County

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. Essex County delivered their response following the finalization of the findings and recommendations table, a copy of which can be found in Appendix J.

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

Curb extensions visually and physically 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. Crossing islands, or pedestrian refuge islands, reduce the exposure time of pedestrians to vehicular traffic. They enable

⁸ 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.

pedestrians to make a crossing in two stages — crossing one direction of vehicular travel lanes, pausing at the island, and then completing the crossing. They are recommended where a pedestrian must cross three lanes of traffic in one or both directions but may be implemented on smaller cross sections where space permits.

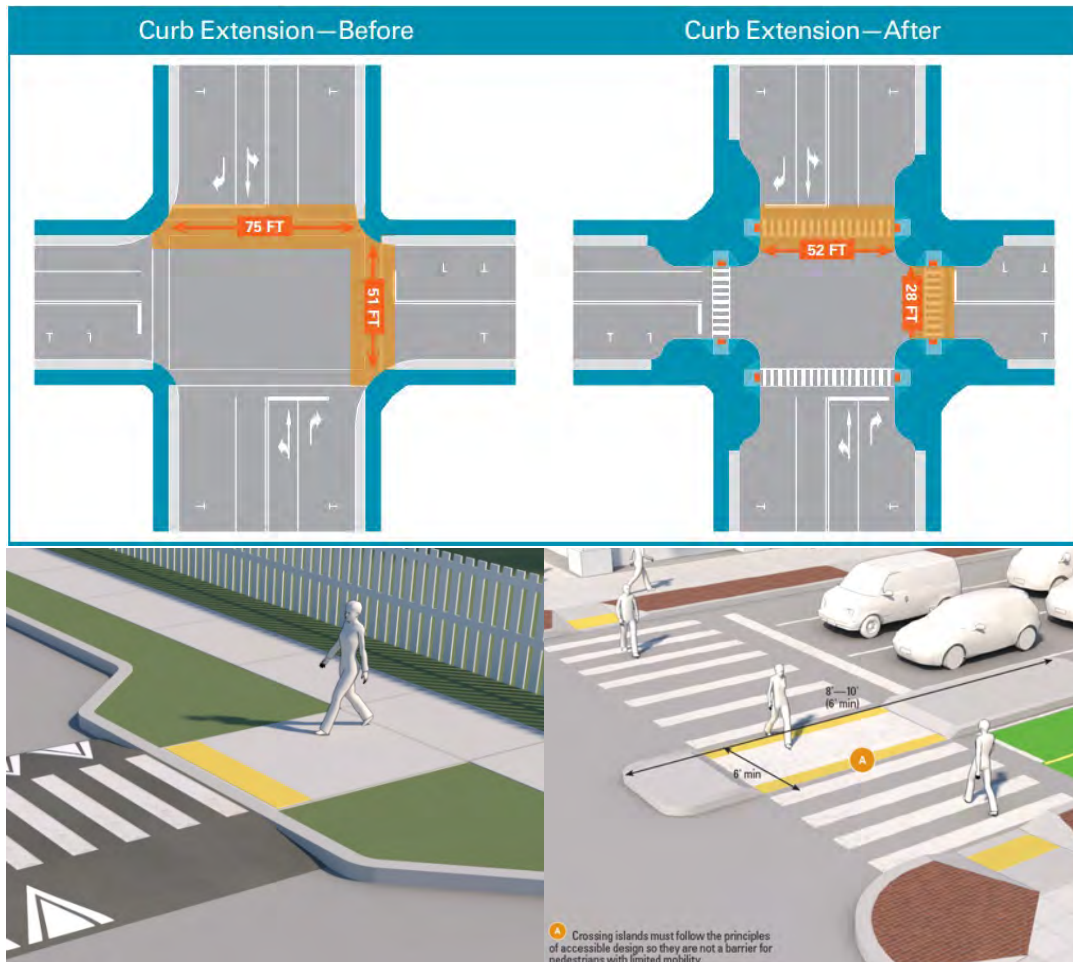


Figure 11 – Pedestrian Facility Examples

Top: Curb Extension. Left: Midblock Curb Extension. Right: Crossing Island (Source: CSDG)

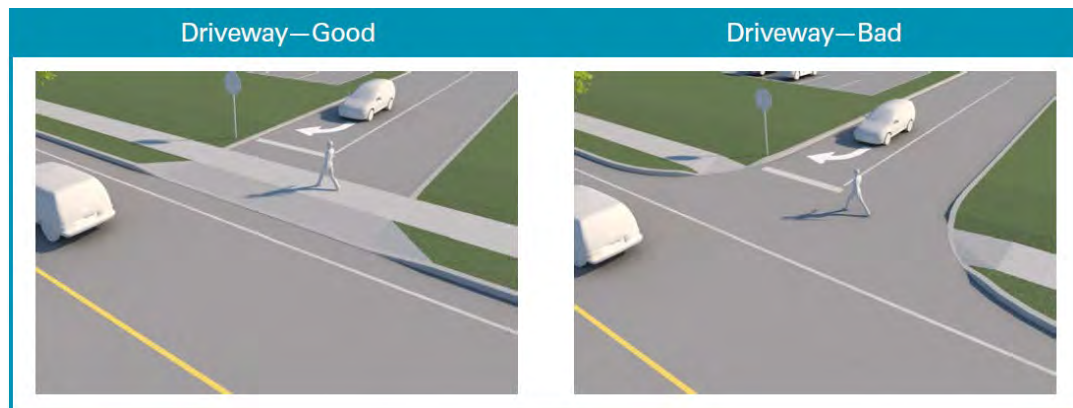


Figure 12 – Sidewalk and Driveways (Source: CSDG)

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

2. Roadway Reconfiguration

This treatment allows reallocation of existing street space (i.e. roadway cross section) to accommodate multi-modal users. Lane configuration and width for travel, turning movements, parking, and bicycle lanes can be adjusted to optimize use for vehicles, pedestrians, bicyclists, and transit. The most common roadway reconfiguration, known as a road diet, involves converting an existing four-lane undivided segment into a three-lane segment with two through lanes and a center two-way left turn lane (TWLTL). Another option is shown below.



Figure 13 – Example of a Main Street Typology (Source: NACTO-US)

Top: With medium traffic volumes and high pedestrian activity, the street has significant potential

for regeneration as a retail district, yet currently underperforms. Frequent destinations have resulted in multiple turning and weaving conflicts along the street.

Bottom: While road diets are not appropriate on all 4-lane cross sections, they can improve traffic flow and reduce conflicts with turning vehicles, enhancing safety. From an economic standpoint, they often rank favorably with business owners and have a positive impact on local business activity. Implementation should consider availability of parallel routes, potential for mode shift, and channelization of traffic.

3. Green Infrastructure

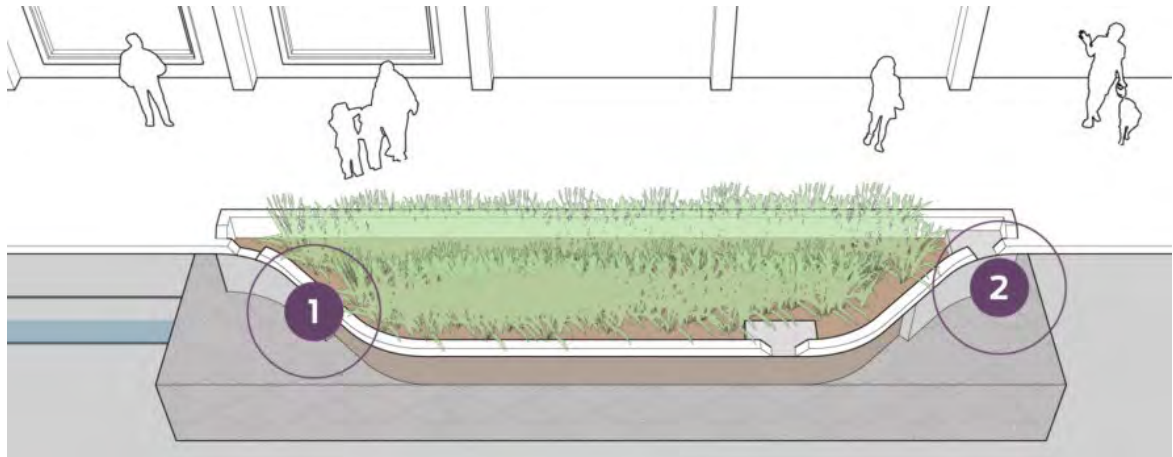
In addition to their immense social and aesthetic value, street trees provide quantifiable economic and ecological value to cities. Healthy street trees can contribute significantly to green stormwater management, with large capacity to transpire water, intercept rainfall, and treat water quality. Tree wells or pits are a box housing a single tree. Wells can have walled sides or structural soil systems to protect soil from compaction and retain stormwater.



(1) Stormwater from the roadway flows into the tree pit. (2) Water infiltrates through the soil – it is important to use the right soil composition. Runoff can also drain to a connection to the drainage network. (3) The tree filters and transpires water while providing shade and enhancing the streetscape. It also provides vertical separation between pedestrians and vehicles. (4) Tree wells and pits should be designed with adequate root space for climate-appropriate tree species underneath the sidewalk or street.

Figure 14 – Stormwater Tree Well Example
(Source: City of Philadelphia Green Streets Design Manual)

Another option, especially for existing asphalt areas, are stormwater curb extensions. These are vegetated, bioretention facilities designed to capture, treat, and infiltrate stormwater runoff as it moves downstream. They are the most effective type of green infrastructure facility in slowing runoff velocity and cleansing water while recharging the underlying groundwater table. Bioretention facilities can also be integrated with medians and other public space or traffic calming strategies.



(2) The curb return from bump-out edge to original curb line should be designed to enable street sweeping along the curb edge. (2) Design inlets and outlets to resist incursions by vehicles and bicycles, as motor vehicle wheels may be prone to enter, especially during parking maneuvers.

Figure 15 – Stormwater Curb Extension Example (Source: NACTO-USG)

VI. Conclusions

The Central Avenue RSA was conducted to identify safety issues and corresponding countermeasures that compromise multimodal use of the roadway. The team identified a long 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; 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 needed improvements 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.

APPENDIX A

RSA TEAM

Audit Team

Name	Agency
Asif Mahmood	Essex County Engineering
Rick Valderrama	Essex County Engineering
Issac Ojeda	Essex County Engineering
Christopher Coke	East Orange City, Director of Public Works
Elmira Buongiorno	NJ Transit, Bus Operations
Amon Boucher	NJDOT – Bureau of Safety, Bicycle and Pedestrian Programs
Grace Faughnan	NJDOT – Bureau of Safety, Bicycle and Pedestrian Programs
Reba Oduro	NJDOT – Bureau of Safety, Bicycle and Pedestrian Programs
Joseph Rapp	NJDOT – Bureau of Safety, Bicycle and Pedestrian Programs
James Sinclair	Rutgers – Voorhees Transportation Center (VTC)
Aimee Jefferson	NJTPA
Will Yarzab	NJTPA
Bernie Boerchers	Greenman-Pedersen, Inc. (NJDOT Consultant)
Andrew Halloran	Greenman-Pedersen, Inc.
Aidan Sheehan	Greenman-Pedersen, Inc.
Julia Steponanko	Greenman-Pedersen, Inc.



APPENDIX B

AREA MAP



1
1

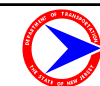
LEGEND

-  SIGNALIZED INTERSECTION
-  PROJECT CORRIDOR

**NJDOT HSIP – ROAD SAFETY AUDIT
CENTRAL AVENUE (CR 508)**

ORANGE & EAST ORANGE CITIES
ESSEX COUNTY

PROJECT LOCATION



GPI Engineering
Design
Planning
Construction Management

N.T.S.

APPENDIX C

TRAFFIC DATA

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 03/05/2018 to 03/07/2018

Site names: 0611s8,Clinton Ave 0.17,07091881__
 County: ESSEX
 Funct Class: Urban Minor Arterial
 Location: bet Sharon Ave and Howard St

Seasonal Factor Grp: rg1_4U
 Daily Factor Grp: rg1_4U
 Axle Factor Grp: rg1_4U
 Growth Factor Grp: rg1_4U

	Sun, Mar 4, 2018			Mon, Mar 5, 2018			Tue, Mar 6, 2018			Wed, Mar 7, 2018			Thu, Mar 8, 2018			Fri, Mar 9, 2018			Sat, Mar 10, 2018		
	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W
00:00							195	78	117	245	98	147									
01:00							128	48	80	160	67	93									
02:00							89	33	56	112	50	62									
03:00							81	23	58	81	37	44									
04:00							92	31	61	80	27	53									
05:00							156	53	103	123	53	70									
06:00							403	171	232	366	153	213									
07:00							968	509	459	929	475	454									
08:00							1,053	563	490	968	507	461									
09:00							829	395	434	772	364	408									
10:00							748	385	363	681	348	333									
11:00							805	413	392	730	372	358									
12:00							845	424	421	767	381	386									
13:00							876	450	426	858	431	427									
14:00				1,002	465	537	961	437	524												
15:00				1,081	541	540	1,012	485	527												
16:00				1,168	558	610	1,064	566	498												
17:00				1,073	431	642	1,087	584	503												
18:00				1,006	431	575	1,051	503	548												
19:00				747	321	426	1,001	483	518												
20:00				622	216	406	738	341	397												
21:00				532	215	317	648	311	337												
22:00				359	145	214	495	203	292												
23:00				303	119	184	323	137	186												
Total				7,893	3,442	4,451	15,648	7,626	8,022	6,872	3,363	3,509									
AM Peak Vol							1,121	613	532	1,078	577	526									
AM Peak Fct							.916	.97	.853	.942	.955	.926									
AM Peak Hr							7: 15	7: 30	7: 15	7: 15	7: 30	7: 15									
PM Peak Vol							1,128	598	581												
PM Peak Fct							.865	.94	.886												
PM Peak Hr							17: 15	17: 15	18: 30	:	:	:									
Seasonal Fct				1.019	1.019	1.019	1.019	1.019	1.019	1.019	1.019	1.019									
Daily Fct				.876	.876	.876	.882	.882	.882	.876	.876	.876									
Axle Fct				.492	.492	.492	.492	.492	.492	.492	.492	.492									
Pulse Fct				2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000									

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 03/05/2018 to 03/07/2018

Site names: 0611s8,Clinton Ave 0.17,07091881__
 County: ESSEX
 Funct Class: Urban Minor Arterial
 Location: bet Sharon Ave and Howard St

Seasonal Factor Grp: rg1_4U
 Daily Factor Grp: rg1_4U
 Axle Factor Grp: rg1_4U
 Growth Factor Grp: rg1_4U

	Sun, Mar 4, 2018			Mon, Mar 5, 2018			Tue, Mar 6, 2018			Wed, Mar 7, 2018			Thu, Mar 8, 2018			Fri, Mar 9, 2018			Sat, Mar 10, 2018		
	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W
00:00							195	78	117	245	98	147									
01:00							128	48	80	160	67	93									
02:00							89	33	56	112	50	62									
03:00							81	23	58	81	37	44									
04:00							92	31	61	80	27	53									
05:00							156	53	103	123	53	70									
06:00							403	171	232	366	153	213									
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11:00							805	413	392	730	372	358									
12:00							845	424	421	767	381	386									
13:00							876	450	426	858	431	427									
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15:00				1,081	541	540	1,012	485	527												
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Total				7,893	3,442	4,451	15,648	7,626	8,022	6,872	3,363	3,509									
AM Peak Vol							1,121	613	532	1,078	577	526									
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AM Peak Hr							7: 15	7: 30	7: 15	7: 15	7: 30	7: 15									
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Seasonal Fct				1.019	1.019	1.019	1.019	1.019	1.019	1.019	1.019	1.019									
Daily Fct				.876	.876	.876	.882	.882	.882	.876	.876	.876									
Axle Fct				.492	.492	.492	.492	.492	.492	.492	.492	.492									
Pulse Fct				2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000									

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 03/12/2018 to 03/14/2018

Site names: 0621s8,Clinton Ave 2.16,07091881__
 County: ESSEX
 Funct Class: Urban Minor Arterial
 Location: bet Milford Ave and Elizabeth Ave

Seasonal Factor Grp: rg1_4U
 Daily Factor Grp: rg1_4U
 Axle Factor Grp: rg1_4U
 Growth Factor Grp: rg1_4U

	Sun, Mar 11, 2018			Mon, Mar 12, 2018			Tue, Mar 13, 2018			Wed, Mar 14, 2018			Thu, Mar 15, 2018			Fri, Mar 16, 2018			Sat, Mar 17, 2018		
	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W
00:00							180	102	78	161	84	77									
01:00							101	48	53	117	56	61									
02:00							75	37	38	100	59	41									
03:00							49	29	20	63	39	24									
04:00							77	46	31	89	53	36									
05:00							136	82	54	129	82	47									
06:00							254	154	100	250	154	96									
07:00							576	363	213	600	383	217									
08:00							778	497	281	751	472	279									
09:00							471	264	207	489	294	195									
10:00							471	267	204	493	293	200									
11:00							537	266	271	477	256	221									
12:00				573	316	257	607	294	313												
13:00				588	309	279	513	286	227												
14:00				651	348	303	568	306	262												
15:00				734	351	383	740	361	379												
16:00				848	365	483	729	344	385												
17:00				818	358	460	744	362	382												
18:00				740	343	397	640	322	318												
19:00				544	261	283	544	274	270												
20:00				430	218	212	469	225	244												
21:00				376	198	178	353	168	185												
22:00				297	158	139	285	146	139												
23:00				208	111	97	211	100	111												
Total				6,807	3,336	3,471	10,108	5,343	4,765	3,719	2,225	1,494									
AM Peak Vol							813	530	286	794	501	296									
AM Peak Fct							.888	.872	.841	.89	.921	.851									
AM Peak Hr							7: 30	7: 30	7: 45	7: 45	7: 45	7: 30									
PM Peak Vol				876	388	488	756	362	400												
PM Peak Fct				.936	.915	.917	.955	.933	.935												
PM Peak Hr				16: 15	16: 15	16: 15	15: 15	17: 00	15: 15												
Seasonal Fct				1.019	1.019	1.019	1.019	1.019	1.019	1.019	1.019	1.019									
Daily Fct				.876	.876	.876	.882	.882	.882	.876	.876	.876									
Axle Fct				.492	.492	.492	.492	.492	.492	.492	.492	.492									
Pulse Fct				2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000									

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 03/12/2018 to 03/14/2018

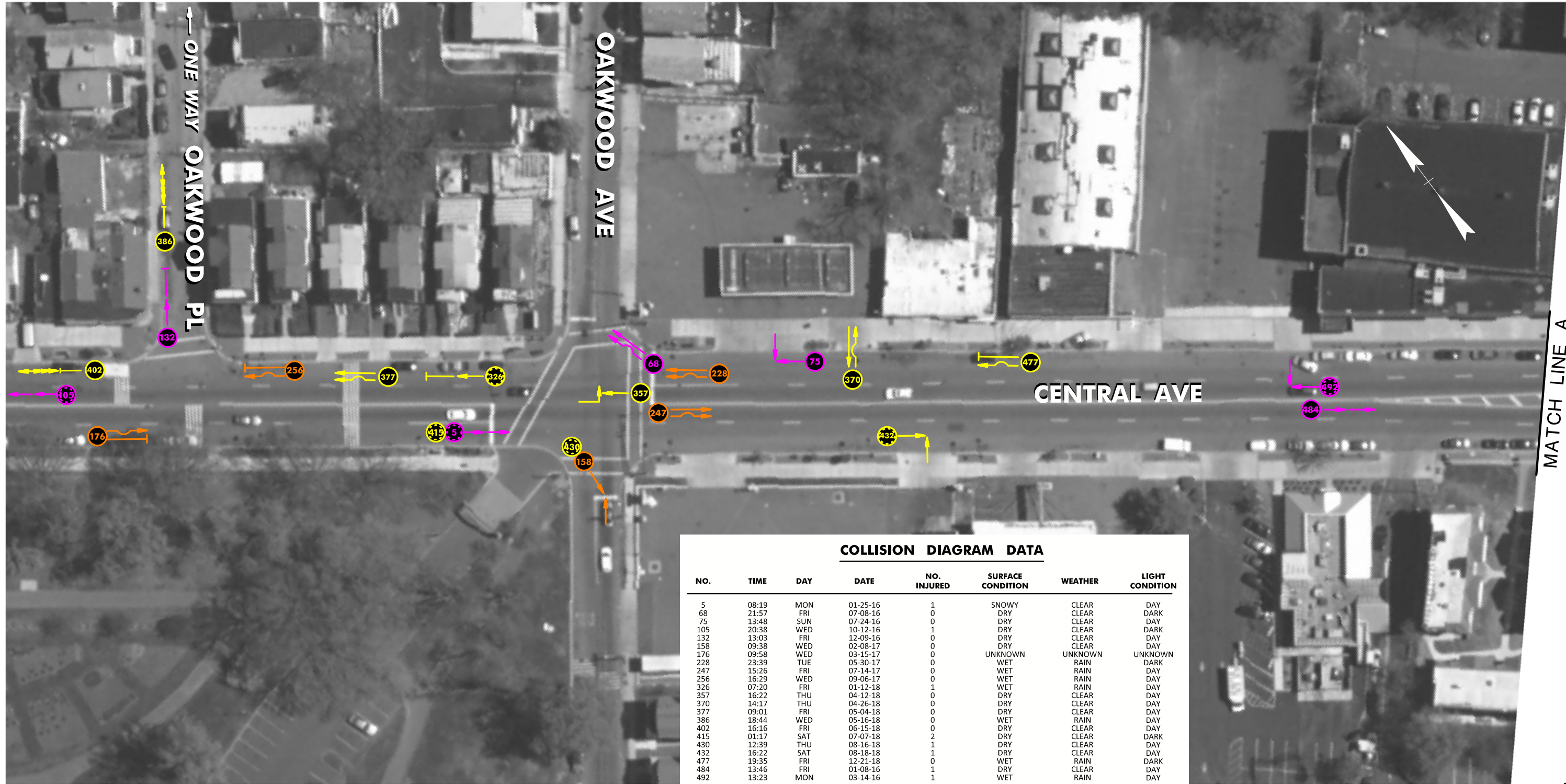
Site names: 0621s8,Clinton Ave 2.16,07091881__
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 Growth Factor Grp: rg1_4U

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	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W
00:00							180	102	78	161	84	77									
01:00							101	48	53	117	56	61									
02:00							75	37	38	100	59	41									
03:00							49	29	20	63	39	24									
04:00							77	46	31	89	53	36									
05:00							136	82	54	129	82	47									
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12:00				573	316	257	607	294	313												
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16:00				848	365	483	729	344	385												
17:00				818	358	460	744	362	382												
18:00				740	343	397	640	322	318												
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20:00				430	218	212	469	225	244												
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22:00				297	158	139	285	146	139												
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Total				6,807	3,336	3,471	10,108	5,343	4,765	3,719	2,225	1,494									
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PM Peak Fct				.936	.915	.917	.955	.933	.935												
PM Peak Hr				16: 15	16: 15	16: 15	15: 15	17: 00	15: 15												
Seasonal Fct				1.019	1.019	1.019	1.019	1.019	1.019	1.019	1.019	1.019									
Daily Fct				.876	.876	.876	.882	.882	.882	.876	.876	.876									
Axle Fct				.492	.492	.492	.492	.492	.492	.492	.492	.492									
Pulse Fct				2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000									

APPENDIX D

VEHICULAR CRASH DIAGRAMS



MATCH LINE A
SEE SHEET NO. 2 OF 10

COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
5	08:19	MON	01-25-16	1	SNOWY	CLEAR	DAY
68	21:57	FRI	07-08-16	0	DRY	CLEAR	DARK
75	13:48	SUN	07-24-16	0	DRY	CLEAR	DAY
105	20:38	WED	10-12-16	1	DRY	CLEAR	DARK
132	13:03	FRI	12-09-16	0	DRY	CLEAR	DAY
158	09:38	WED	02-08-17	0	DRY	CLEAR	DAY
176	09:58	WED	03-15-17	0	UNKNOWN	UNKNOWN	UNKNOWN
228	23:39	TUE	05-30-17	0	WET	RAIN	DARK
247	15:26	FRI	07-14-17	0	WET	RAIN	DAY
256	16:29	WED	09-06-17	0	WET	RAIN	DAY
326	07:20	FRI	01-12-18	1	WET	RAIN	DAY
357	16:22	THU	04-12-18	0	DRY	CLEAR	DAY
370	14:17	THU	04-26-18	0	DRY	CLEAR	DAY
377	09:01	FRI	05-04-18	0	DRY	CLEAR	DAY
386	18:44	WED	05-16-18	0	WET	RAIN	DAY
402	16:16	FRI	06-15-18	0	DRY	CLEAR	DAY
415	01:17	SAT	07-07-18	2	DRY	CLEAR	DARK
430	12:39	THU	08-16-18	1	DRY	CLEAR	DAY
432	16:22	SAT	08-18-18	1	DRY	CLEAR	DAY
477	19:35	FRI	12-21-18	0	WET	RAIN	DARK
484	13:46	FRI	01-08-16	1	DRY	CLEAR	DAY
492	13:23	MON	03-14-16	1	WET	RAIN	DAY

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	14
INJURIES	8
FATALITIES*	0
TOTAL NO. OF CRASHES	22

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

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

COLORS	
	2016 CRASHES
	2017 CRASHES
	2018 CRASHES

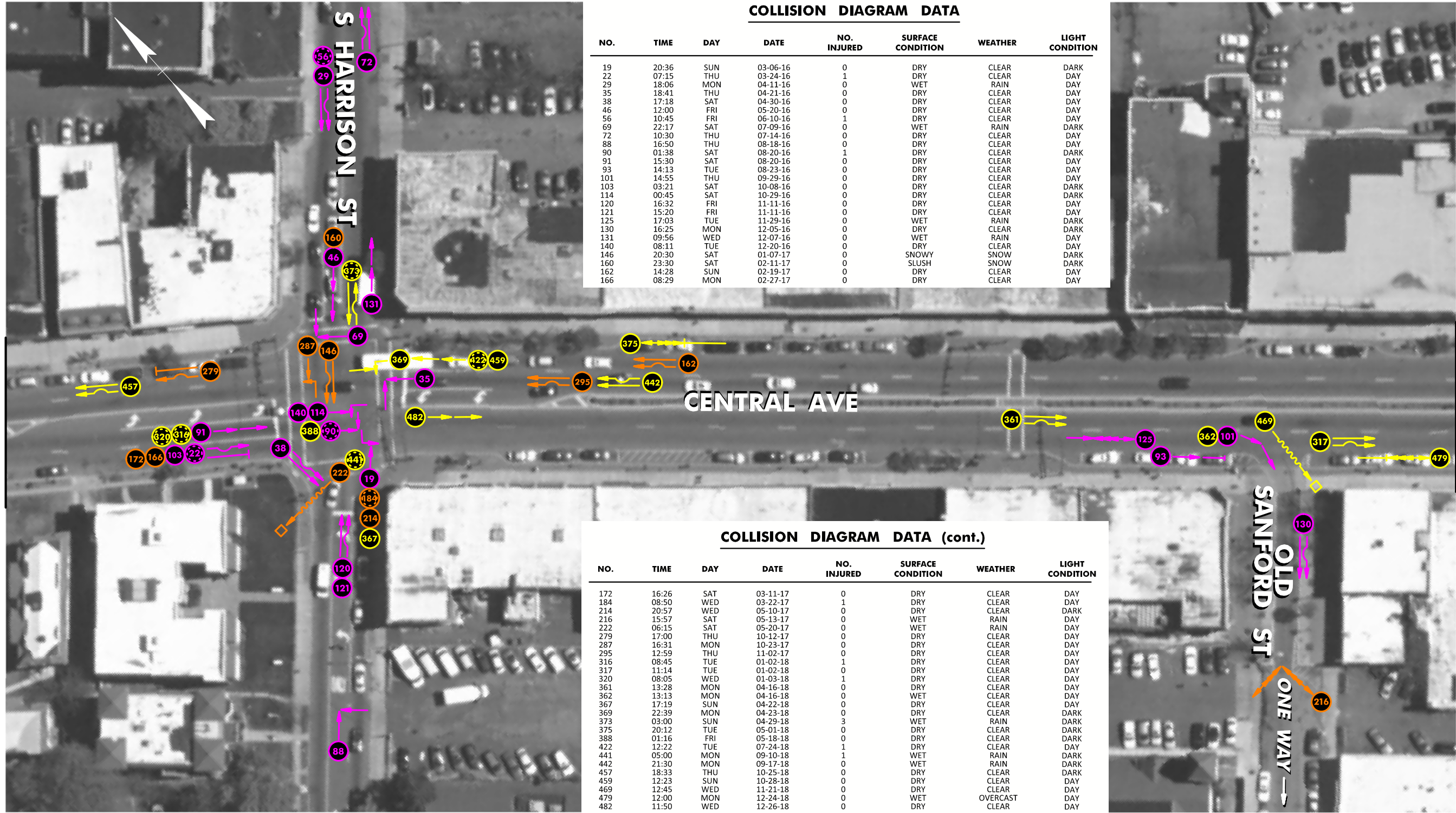
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CENTRAL AVENUE (CR 508)
FROM OAKWOOD PLACE TO S. MUNN AVENUE
ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE



COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
19	20:36	SUN	03-06-16	0	DRY	CLEAR	DARK
22	07:15	THU	03-24-16	1	DRY	CLEAR	DAY
29	18:06	MON	04-11-16	0	WET	RAIN	DAY
35	18:41	THU	04-21-16	0	DRY	CLEAR	DAY
38	17:18	SAT	04-30-16	0	DRY	CLEAR	DAY
46	12:00	FRI	05-20-16	0	DRY	CLEAR	DAY
56	10:45	FRI	06-10-16	1	DRY	CLEAR	DAY
69	22:17	SAT	07-09-16	0	WET	RAIN	DARK
72	10:30	THU	07-14-16	0	DRY	CLEAR	DAY
88	16:50	THU	08-18-16	0	DRY	CLEAR	DAY
90	01:38	SAT	08-20-16	1	DRY	CLEAR	DARK
91	15:30	SAT	08-20-16	0	DRY	CLEAR	DAY
93	14:13	TUE	08-23-16	0	DRY	CLEAR	DAY
101	14:55	THU	09-29-16	0	DRY	CLEAR	DAY
103	03:21	SAT	10-08-16	0	DRY	CLEAR	DARK
114	00:45	SAT	10-29-16	0	DRY	CLEAR	DARK
120	16:32	FRI	11-11-16	0	DRY	CLEAR	DAY
121	15:20	FRI	11-11-16	0	DRY	CLEAR	DAY
125	17:03	TUE	11-29-16	0	WET	RAIN	DARK
130	16:25	MON	12-05-16	0	DRY	CLEAR	DARK
131	09:56	WED	12-07-16	0	WET	RAIN	DAY
140	08:11	TUE	12-20-16	0	DRY	CLEAR	DAY
146	20:30	SAT	01-07-17	0	SNOWY	SNOW	DARK
160	23:30	SAT	02-11-17	0	SLUSH	SNOW	DARK
162	14:28	SUN	02-19-17	0	DRY	CLEAR	DAY
166	08:29	MON	02-27-17	0	DRY	CLEAR	DAY

COLLISION DIAGRAM DATA (cont.)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
172	16:26	SAT	03-11-17	0	DRY	CLEAR	DAY
184	08:50	WED	03-22-17	1	DRY	CLEAR	DAY
214	20:57	WED	05-10-17	0	DRY	CLEAR	DARK
216	15:57	SAT	05-13-17	0	WET	RAIN	DAY
222	06:15	SAT	05-20-17	0	WET	RAIN	DAY
279	17:00	THU	10-12-17	0	DRY	CLEAR	DAY
287	16:31	MON	10-23-17	0	DRY	CLEAR	DAY
295	12:59	THU	11-02-17	0	DRY	CLEAR	DAY
316	08:45	TUE	01-02-18	1	DRY	CLEAR	DAY
317	11:14	TUE	01-02-18	0	DRY	CLEAR	DAY
320	08:05	WED	01-03-18	1	DRY	CLEAR	DAY
361	13:28	MON	04-16-18	0	DRY	CLEAR	DAY
362	13:13	MON	04-16-18	0	WET	CLEAR	DAY
367	17:19	SUN	04-22-18	0	DRY	CLEAR	DAY
369	22:39	MON	04-23-18	0	DRY	CLEAR	DARK
373	03:00	SUN	04-29-18	3	WET	RAIN	DARK
375	20:12	TUE	05-01-18	0	DRY	CLEAR	DARK
388	01:16	FRI	05-18-18	0	DRY	CLEAR	DARK
422	12:22	TUE	07-24-18	1	DRY	CLEAR	DAY
441	05:00	MON	09-10-18	1	WET	RAIN	DARK
442	21:30	MON	09-17-18	0	WET	RAIN	DARK
457	18:33	THU	10-25-18	0	DRY	CLEAR	DARK
459	12:23	SUN	10-28-18	0	DRY	CLEAR	DAY
469	12:45	WED	11-21-18	0	DRY	CLEAR	DAY
479	12:00	MON	12-24-18	0	WET	OVERCAST	DAY
482	11:50	WED	12-26-18	0	DRY	CLEAR	DAY

MATCH LINE A
SEE SHEET NO. 1 OF 10

MATCH LINE B
SEE SHEET NO. 3 OF 10

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	43
INJURIES	9
FATALITIES*	0
TOTAL NO. OF CRASHES	52

SYMBOLS

→	MOVING VEHICLE	→	BACKING VEHICLE
---	NON-INVOLVED VEHICLE	⊗	PEDESTRIAN
⊗	BICYCLIST	⊙	PROPERTY DAMAGE ONLY CRASH
⊙	INJURY IN CRASH	⊙	FATAL CRASH
□	FIXED OBJECT	△	ANIMAL
⊠	NON-FIXED OBJECT	⊗	POTHOLE

TYPES OF CRASHES

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

COLORS

⊙	2016 CRASHES
⊙	2017 CRASHES
⊙	2018 CRASHES

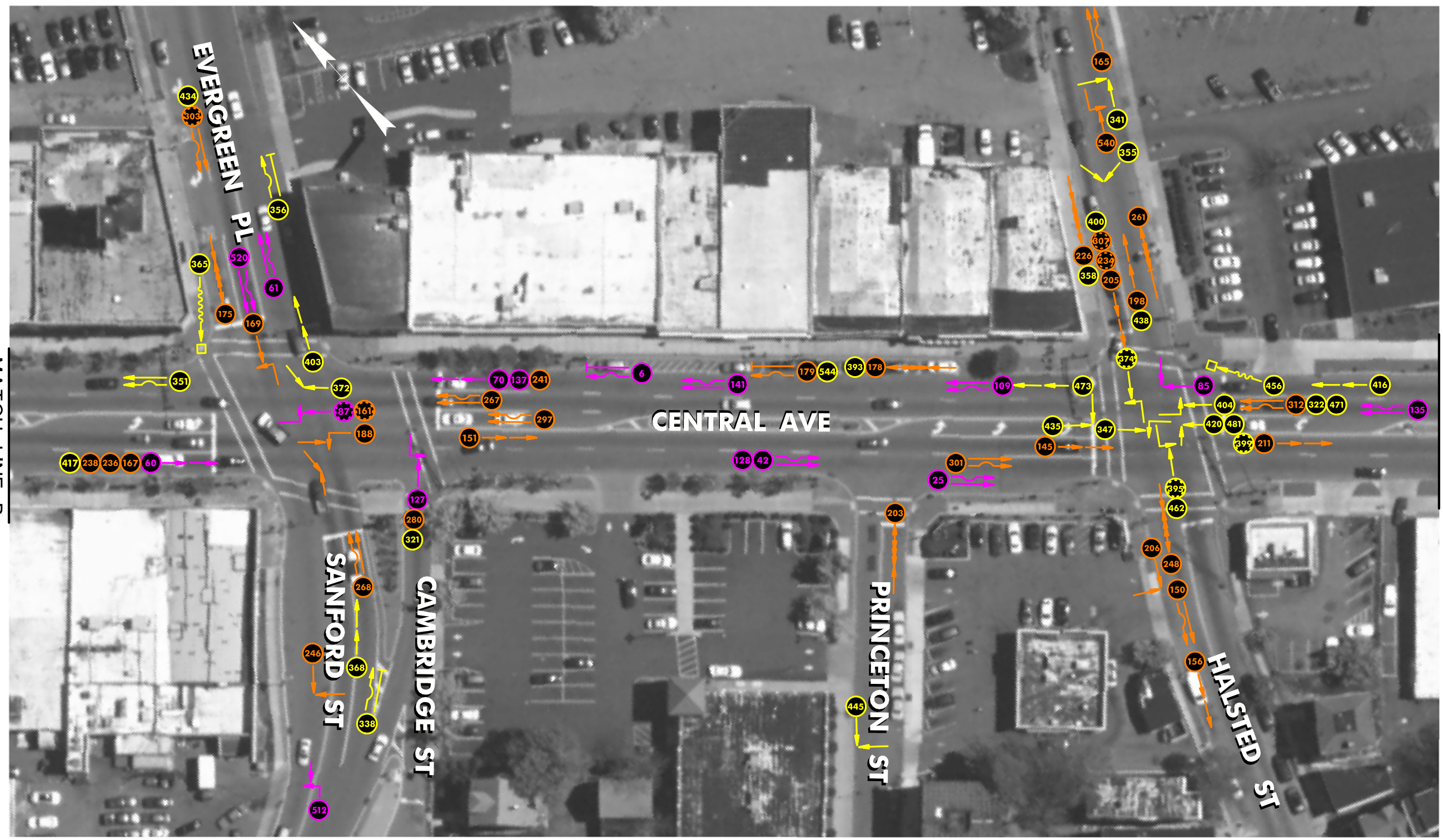
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CENTRAL AVENUE (CR 508)
FROM OAKWOOD PLACE TO S. MUNN AVENUE
ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

2016 - 2018 COLLISION DIAGRAMS

<p>Engineering Design Planning Construction Management</p>	<p>NOT TO SCALE</p>
--	---------------------

DATE: 4/21/2020 TIME: 11:15:59 AM FILE: L:\2017659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_2_CatchWay\07_Essex_Collision_Diagram_Sheets\Ven3 - Sheet 03.dgn



MATCH LINE B
SEE SHEET NO. 2 OF 10

MATCH LINE C
SEE SHEET NO. 5 OF 10

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	74
INJURIES	8
FATALITIES*	0
TOTAL NO. OF CRASHES	82

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

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

COLORS	
	2016 CRASHES
	2017 CRASHES
	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CENTRAL AVENUE (CR 508)
FROM OAKWOOD PLACE TO S. MUNN AVENUE
ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
6	17:42	FRI	01-29-16	0	DRY	CLEAR	DUSK
25	16:00	TUE	03-29-16	0	DRY	CLEAR	DAY
42	13:05	SUN	05-08-16	0	DRY	CLEAR	DAY
60	15:00	WED	06-22-16	0	DRY	CLEAR	DAY
61	12:45	THU	06-23-16	0	DRY	CLEAR	DAY
70	17:30	WED	07-13-16	0	DRY	CLEAR	DAY
85	16:49	FRI	08-12-16	0	DRY	CLEAR	DAY
87	22:51	THU	08-18-16	1	DRY	CLEAR	DARK
109	13:36	MON	10-24-16	0	DRY	CLEAR	DAY
127	14:00	FRI	12-02-16	0	DRY	CLEAR	DAY
128	15:09	SUN	12-04-16	0	DRY	CLEAR	DAY
135	19:59	SUN	12-18-16	0	DRY	CLEAR	DARK
137	16:54	MON	12-19-16	0	DRY	CLEAR	DARK
141	13:23	WED	12-28-16	0	DRY	CLEAR	DAY
145	14:10	SAT	01-07-17	0	SNOWY	SNOW	DAY
150	11:00	THU	01-12-17	0	WET	CLEAR	DAY
151	20:28	TUE	01-17-17	0	DRY	CLEAR	DARK
156	14:15	SAT	02-04-17	0	DRY	CLEAR	DAY
161	07:20	WED	02-15-17	2	DRY	CLEAR	DAY
165	14:36	MON	02-27-17	0	DRY	CLEAR	DAY
167	08:51	FRI	03-03-17	0	DRY	CLEAR	DAY
169	04:00	SUN	03-05-17	0	DRY	CLEAR	DARK
175	09:21	WED	03-15-17	0	ICY	CLEAR	DAY
178	17:17	SAT	03-18-17	0	WET	SNOW	DAY
179	14:45	SUN	03-19-17	0	DRY	CLEAR	DAY
188	19:30	TUE	03-28-17	0	WET	RAIN	DARK
198	11:55	TUE	04-11-17	0	DRY	CLEAR	DAY
203	18:15	SUN	04-23-17	0	WET	RAIN	DAY
205	12:36	MON	04-24-17	0	DRY	CLEAR	DAY
206	07:20	WED	04-26-17	0	WET	RAIN	DAY
211	14:59	SUN	05-07-17	0	DRY	CLEAR	DAY
226	10:33	SUN	05-28-17	0	DRY	CLEAR	DAY
234	22:11	MON	06-12-17	2	DRY	CLEAR	DARK
236	15:23	TUE	06-13-17	0	DRY	CLEAR	DAY
238	12:25	WED	06-14-17	0	DRY	CLEAR	DAY
241	07:38	FRI	06-16-17	0	DRY	CLEAR	DAY
246	09:38	FRI	07-14-17	0	WET	RAIN	DAY
248	19:58	WED	07-19-17	0	DRY	CLEAR	DUSK
261	14:00	FRI	09-15-17	0	DRY	CLEAR	DAY
267	13:00	MON	09-25-17	0	DRY	CLEAR	DAY
268	06:35	WED	09-27-17	0	DRY	CLEAR	DAY
280	06:37	MON	10-16-17	0	WET	CLEAR	DARK
297	17:10	FRI	11-10-17	0	DRY	CLEAR	DARK
301	16:20	WED	11-15-17	0	DRY	CLEAR	DAY
303	15:00	FRI	11-17-17	1	DRY	CLEAR	DAY
307	15:18	FRI	11-24-17	2	DRY	CLEAR	DAY

COLLISION DIAGRAM DATA (cont.)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
312	18:21	MON	12-11-17	0	DRY	CLEAR	DARK
321	13:05	FRI	01-05-18	0	SLUSH	CLEAR	DAY
322	12:30	FRI	01-05-18	0	SNOWY	CLEAR	DAY
338	08:15	TUE	01-30-18	0	WET	SNOW	DAY
341	15:15	SAT	02-17-18	0	DRY	CLEAR	DAY
347	11:52	SAT	03-10-18	0	DRY	CLEAR	DAY
351	10:26	FRI	03-23-18	0	DRY	CLEAR	DAY
355	15:37	SAT	04-07-18	0	DRY	CLEAR	DAY
356	05:11	MON	04-09-18	0	DRY	CLEAR	DARK
358	19:57	FRI	04-13-18	0	DRY	CLEAR	DARK
365	02:03	SUN	04-22-18	0	DRY	CLEAR	DARK
368	14:45	SUN	04-22-18	0	DRY	CLEAR	DAY
372	13:39	SAT	04-28-18	0	DRY	CLEAR	DAY
374	17:33	MON	04-30-18	1	WET	RAIN	DAY
393	20:57	THU	06-07-18	0	DRY	CLEAR	DARK
395	23:34	FRI	06-08-18	1	DRY	CLEAR	DARK
399	13:54	MON	06-11-18	1	DRY	CLEAR	DAY
400	11:34	WED	06-13-18	0	DRY	CLEAR	DAY
403	22:59	TUE	06-19-18	0	DRY	CLEAR	DARK
404	17:30	WED	06-20-18	0	DRY	CLEAR	DAY
416	09:11	WED	07-11-18	0	DRY	CLEAR	DAY
417	10:16	THU	07-12-18	0	DRY	CLEAR	DAY
420	11:34	SAT	07-21-18	0	DRY	CLEAR	DAY
434	14:52	WED	08-29-18	0	DRY	CLEAR	DAY
435	11:56	SUN	09-02-18	0	DRY	CLEAR	DAY
438	18:19	MON	09-10-18	0	WET	RAIN	DAY
445	19:16	TUE	09-25-18	0	WET	RAIN	DARK
456	17:23	MON	10-22-18	0	DRY	CLEAR	DAY
462	06:46	WED	11-07-18	0	WET	CLEAR	DAY
471	15:20	FRI	11-23-18	0	DRY	CLEAR	DAY
473	08:46	MON	12-03-18	0	DRY	CLEAR	DAY
481	15:38	TUE	12-25-18	0	DRY	CLEAR	DUSK
512	08:30	WED	08-03-16	0	DRY	CLEAR	DAY
520	14:01	FRI	09-16-16	0	DRY	CLEAR	DAY
540	09:45	FRI	07-07-17	0	WET	RAIN	DAY
544	11:00	THU	06-28-18	0	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	<u>74</u>
INJURIES	<u>8</u>
FATALITIES*	<u>0</u>
TOTAL NO. OF CRASHES	<u>82</u>

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

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

COLORS	
	2016 CRASHES
	2017 CRASHES
	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CENTRAL AVENUE (CR 508)
FROM OAKWOOD PLACE TO S. MUNN AVENUE
ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development_Support\NJDOT_HSP_Year_2_CatchUp\07_Essex_Collision_Diagram_Sheets\W04 - Sheet 03 - Data.dgn
DATE: 4/2/2020
TIME: 11:50:59 AM
GREENMAN-PEDERSEN, INC.

FILE: L:\2017659_HSP_Program_and_Project_Development_Support\NJDOT_HSP_Year_2_Catchment\07_Essex_Collision_Diagram_Sheets\Veh'S - Street 04.dgn
 TIME: 9:58:14 AM
 DATE: 4/20/2020
 GREENMAN-PEDERSEN, INC.



MATCH LINE C
SEE SHEET NO. 3 OF 10

MATCH LINE D
SEE SHEET NO. 7 OF 10

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	74
INJURIES	10
FATALITIES*	0
TOTAL NO. OF CRASHES	84

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
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	2016 CRASHES
	2017 CRASHES
	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CENTRAL AVENUE (CR 508)
 FROM OAKWOOD PLACE TO S. MUNN AVENUE
 ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
1	07:59	WED	01-06-16	0	DRY	CLEAR	DAY
2	--:--	SAT	01-09-16	0	WET	RAIN	DARK
15	19:55	TUE	03-01-16	0	DRY	CLEAR	DARK
39	15:38	WED	05-04-16	0	DRY	CLEAR	DAY
45	17:00	THU	05-19-16	0	DRY	CLEAR	DAY
51	19:10	SAT	06-04-16	0	DRY	CLEAR	DAY
57	18:38	SAT	06-11-16	0	DRY	CLEAR	DAY
63	19:08	WED	06-29-16	0	DRY	CLEAR	DAY
64	13:39	THU	06-30-16	0	DRY	CLEAR	DAY
74	15:00	THU	07-21-16	0	DRY	CLEAR	DAY
81	01:17	MON	08-01-16	0	DRY	CLEAR	DARK
82	12:36	WED	08-03-16	0	DRY	CLEAR	DAY
83	13:02	THU	08-04-16	0	DRY	CLEAR	DAY
92	00:32	SUN	08-21-16	1	DRY	CLEAR	DARK
104	21:03	MON	10-10-16	0	DRY	CLEAR	DARK
106	19:36	SAT	10-15-16	0	DRY	CLEAR	DARK
108	07:20	THU	10-20-16	0	DRY	CLEAR	DAY
122	11:59	THU	11-17-16	0	DRY	CLEAR	DAY
133	09:18	THU	12-15-16	0	DRY	CLEAR	DAY
134	13:20	FRI	12-16-16	0	DRY	CLEAR	DAY
136	21:52	MON	12-19-16	0	DRY	CLEAR	DARK
149	14:25	TUE	01-10-17	4	DRY	CLEAR	DAY
164	14:30	SAT	02-25-17	0	DRY	CLEAR	DAY
171	15:14	SAT	03-11-17	0	DRY	CLEAR	DAY
173	16:48	SUN	03-12-17	0	DRY	CLEAR	DAY
177	15:30	FRI	03-17-17	0	SNOWY	SNOW	DAY
180	14:10	TUE	03-21-17	0	DRY	CLEAR	DAY
183	08:50	WED	03-22-17	0	DRY	CLEAR	DAY
190	23:06	FRI	03-31-17	0	WET	RAIN	DARK
195	10:38	TUE	04-04-17	0	WET	RAIN	DAY
199	11:48	SAT	04-15-17	0	DRY	CLEAR	DAY
202	15:21	SAT	04-22-17	0	WET	RAIN	DAY
207	16:12	THU	04-27-17	0	DRY	CLEAR	DAY
210	22:22	FRI	05-05-17	0	WET	RAIN	DARK
224	15:30	TUE	05-23-17	0	DRY	CLEAR	DAY
249	17:50	THU	07-20-17	0	DRY	CLEAR	DAY
254	09:50	TUE	08-22-17	0	DRY	CLEAR	DAY
265	22:35	SUN	09-17-17	0	DRY	CLEAR	DARK
266	16:23	MON	09-18-17	2	DRY	CLEAR	DAY
273	10:48	MON	10-02-17	0	DRY	CLEAR	DAY
276	20:33	SUN	10-08-17	0	DRY	CLEAR	DARK
278	14:00	THU	10-12-17	0	DRY	CLEAR	DAY

COLLISION DIAGRAM DATA (cont.)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
290	13:00	WED	10-25-17	0	DRY	CLEAR	DAY
292	21:45	SUN	10-29-17	1	WET	RAIN	DARK
296	17:50	TUE	11-07-17	1	WET	RAIN	DARK
304	13:57	SUN	11-19-17	0	DRY	CLEAR	DAY
306	00:02	MON	11-20-17	0	DRY	CLEAR	DARK
309	17:43	FRI	12-01-17	0	DRY	CLEAR	DARK
310	08:10	SUN	12-10-17	0	WET	CLEAR	DAY
319	11:08	WED	01-03-18	0	DRY	CLEAR	DAY
328	21:48	MON	01-15-18	0	DRY	CLEAR	DARK
329	16:44	WED	01-17-18	0	WET	CLEAR	DUSK
330	21:40	THU	01-18-18	0	DRY	CLEAR	DARK
334	19:02	WED	01-24-18	0	DRY	CLEAR	DARK
335	20:40	THU	01-25-18	0	DRY	CLEAR	DARK
345	16:59	THU	02-22-18	0	WET	RAIN	DAY
346	09:15	TUE	03-06-18	3	DRY	CLEAR	DAY
350	20:41	FRI	03-23-18	0	WATER (STANDING/MOVING)	SLEET/HAIL	DARK
366	07:06	SUN	04-22-18	0	DRY	CLEAR	DAY
391	17:00	FRI	05-25-18	0	DRY	CLEAR	DAY
401	13:00	FRI	06-15-18	0	DRY	CLEAR	DAY
408	14:10	SAT	06-23-18	0	DRY	CLEAR	DAY
409	03:00	SAT	06-23-18	1	WET	RAIN	DARK
411	17:00	SAT	06-30-18	0	DRY	CLEAR	DAY
419	21:36	MON	07-16-18	0	DRY	CLEAR	DARK
423	15:25	WED	07-25-18	0	DRY	OVERCAST	DAY
437	14:53	SUN	09-09-18	0	WET	RAIN	DAY
447	14:30	SAT	10-06-18	0	DRY	CLEAR	DAY
450	09:02	FRI	10-12-18	0	DRY	CLEAR	DAY
454	09:26	WED	10-17-18	0	DRY	CLEAR	DAY
458	15:30	SUN	10-28-18	0	DRY	CLEAR	DAY
463	16:31	FRI	11-09-18	0	WET	RAIN	DAY
465	22:59	THU	11-15-18	1	SNOWY	SNOW	DARK
476	18:00	MON	12-17-18	0	DRY	CLEAR	DARK
478	13:20	MON	12-24-18	0	WET	CLEAR	DAY
488	17:07	SAT	02-13-16	1	WET	RAIN	DAY
490	15:20	FRI	03-04-16	1	DRY	CLEAR	DAY
497	08:52	THU	04-28-16	0	DRY	CLEAR	DAY
500	12:35	THU	05-12-16	0	DRY	CLEAR	DAY
502	12:42	TUE	05-31-16	0	DRY	CLEAR	DAWN
506	18:29	TUE	06-21-16	0	DRY	CLEAR	DAY
511	08:44	FRI	07-22-16	0	DRY	CLEAR	DAY
532	13:36	SAT	11-12-16	0	DRY	CLEAR	DAY
542	18:40	THU	05-31-18	0	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	<u>74</u>
INJURIES	<u>10</u>
FATALITIES*	<u>0</u>
TOTAL NO. OF CRASHES	<u>84</u>

SYMBOLS

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

TYPES OF CRASHES

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

COLORS

	2016 CRASHES
	2017 CRASHES
	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CENTRAL AVENUE (CR 508)
FROM OAKWOOD PLACE TO S. MUNN AVENUE
ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

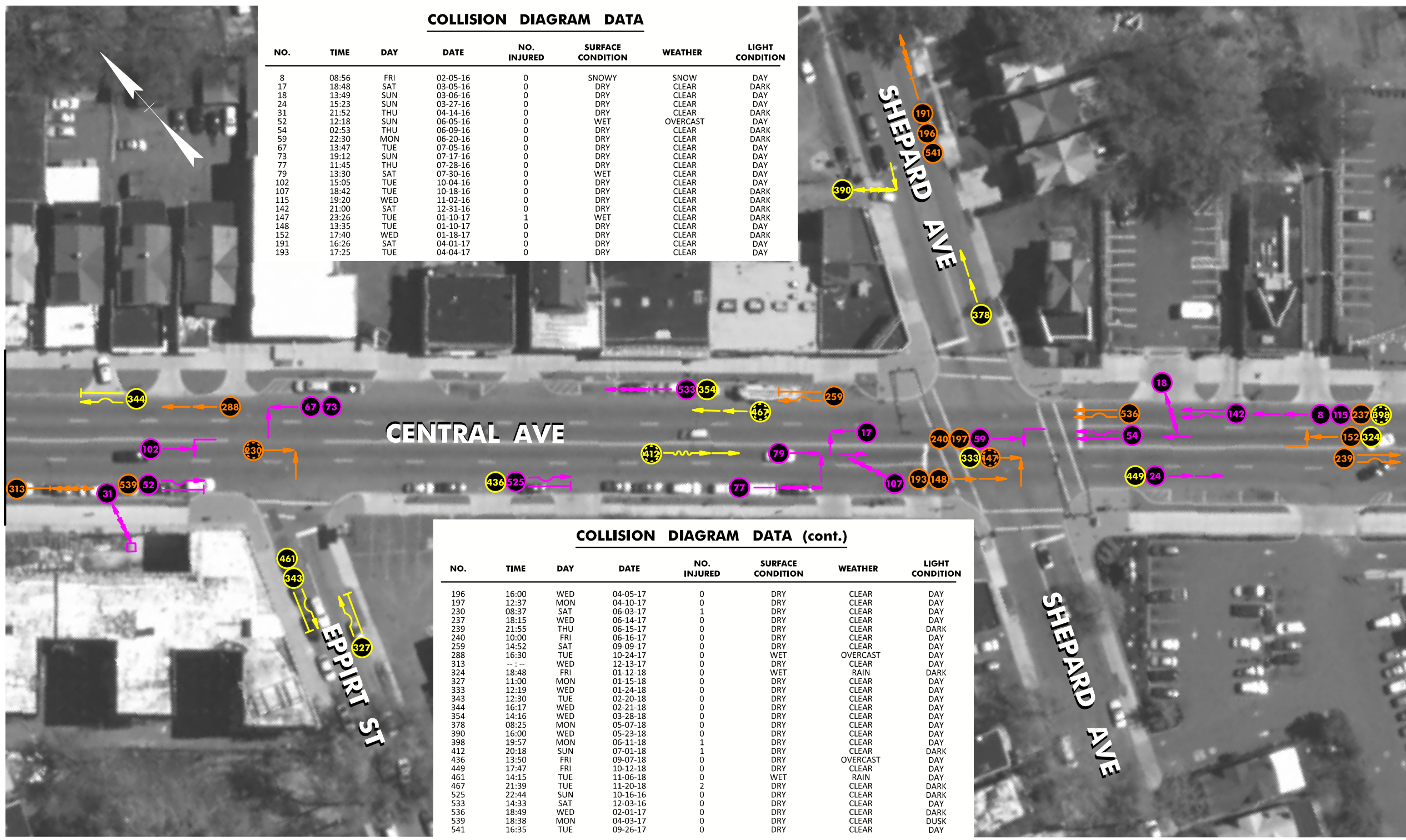
2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development\Support\INDOT_HSP_Year_2_Cad\HWY07_Essex_Collision_Diagram_Sheets\W06 - Sheet 04 - Data.dgn
DATE: 4/22/2020
TIME: 12:24:36 PM
GREENMAN-PEDERSEN, INC.

FILE: L:\2017\659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_2_Catchway\07_Essex_Collision_Diagram_Sheets\Ven17 - Sheet 05.dgn
 TIME: 8:57:38 AM
 DATE: 4/20/2020



COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
8	08:56	FRI	02-05-16	0	SNOWY	SNOW	DAY
17	18:48	SAT	03-05-16	0	DRY	CLEAR	DARK
18	13:49	SUN	03-06-16	0	DRY	CLEAR	DAY
24	15:23	SUN	03-27-16	0	DRY	CLEAR	DAY
31	21:52	THU	04-14-16	0	DRY	CLEAR	DARK
52	12:18	SUN	06-05-16	0	WET	OVERCAST	DAY
54	02:53	THU	06-09-16	0	DRY	CLEAR	DARK
59	22:30	MON	06-20-16	0	DRY	CLEAR	DARK
67	13:47	TUE	07-05-16	0	DRY	CLEAR	DAY
73	19:32	SUN	07-17-16	0	DRY	CLEAR	DAY
77	11:45	THU	07-28-16	0	DRY	CLEAR	DAY
79	13:30	SAT	07-30-16	0	WET	CLEAR	DAY
102	15:05	TUE	10-04-16	0	DRY	CLEAR	DAY
107	18:42	TUE	10-18-16	0	DRY	CLEAR	DARK
115	19:20	WED	11-02-16	0	DRY	CLEAR	DARK
142	21:00	SAT	12-31-16	0	DRY	CLEAR	DARK
147	23:26	TUE	01-10-17	1	WET	CLEAR	DARK
148	13:35	TUE	01-10-17	0	DRY	CLEAR	DAY
152	17:40	WED	01-18-17	0	DRY	CLEAR	DARK
191	16:26	SAT	04-01-17	0	DRY	CLEAR	DAY
193	17:25	TUE	04-04-17	0	DRY	CLEAR	DAY

COLLISION DIAGRAM DATA (cont.)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
196	16:00	WED	04-05-17	0	DRY	CLEAR	DAY
197	12:37	MON	04-10-17	0	DRY	CLEAR	DAY
230	08:37	SAT	06-03-17	1	DRY	CLEAR	DAY
237	18:15	WED	06-14-17	0	DRY	CLEAR	DAY
239	21:55	THU	06-15-17	0	DRY	CLEAR	DARK
240	10:00	FRI	06-16-17	0	DRY	CLEAR	DAY
259	14:52	SAT	09-09-17	0	DRY	CLEAR	DAY
288	16:30	TUE	10-24-17	0	WET	OVERCAST	DAY
313	--:--	WED	12-13-17	0	DRY	CLEAR	DAY
324	18:48	FRI	01-12-18	0	WET	RAIN	DARK
327	11:00	MON	01-15-18	0	DRY	CLEAR	DAY
333	12:19	WED	01-24-18	0	DRY	CLEAR	DAY
343	12:30	TUE	02-20-18	0	DRY	CLEAR	DAY
344	16:17	WED	02-21-18	0	DRY	CLEAR	DAY
354	14:16	WED	03-28-18	0	DRY	CLEAR	DAY
378	08:25	MON	05-07-18	0	DRY	CLEAR	DAY
390	16:00	WED	05-23-18	0	DRY	CLEAR	DAY
398	19:57	MON	06-11-18	1	DRY	CLEAR	DAY
412	20:18	SUN	07-01-18	1	DRY	CLEAR	DARK
436	13:50	FRI	09-07-18	0	DRY	OVERCAST	DAY
449	17:47	FRI	10-12-18	0	DRY	CLEAR	DAY
461	14:15	TUE	11-06-18	0	WET	RAIN	DAY
467	21:39	TUE	11-20-18	2	DRY	CLEAR	DARK
525	22:44	SUN	10-16-16	0	DRY	CLEAR	DARK
533	14:33	SAT	12-03-16	0	DRY	CLEAR	DAY
536	18:49	WED	02-01-17	0	DRY	CLEAR	DARK
539	18:38	MON	04-03-17	0	DRY	CLEAR	DUSK
541	16:35	TUE	09-26-17	0	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	44
INJURIES	5
FATALITIES*	0
TOTAL NO. OF CRASHES	49

SYMBOLS	
→	MOVING VEHICLE
←	BACKING VEHICLE
---	NON-INVOLVED VEHICLE
⋈	PEDESTRIAN
⋈	BICYCLIST
○	PROPERTY DAMAGE ONLY CRASH
⊙	INJURY IN CRASH
⊙	FATAL CRASH
□	FIXED OBJECT
△	ANIMAL
⊞	NON-FIXED OBJECT
⊞	POTHOLE

TYPES OF CRASHES	
←	REAR END
→	HEAD ON
↔	SIDE SWIPE
~	OUT OF CONTROL
⊞	OVERTURNED
↘	LEFT TURN
↗	RIGHT ANGLE
⊞	STRUCK PARKED VEHICLE

COLORS	
○	2016 CRASHES
○	2017 CRASHES
○	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CENTRAL AVENUE (CR 508)
 FROM OAKWOOD PLACE TO S. MUNN AVENUE
 ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year2_Catchway07_Essex_Collision_Diagram_Sheets\Ven8 - Sheet 06.dgn
 TIME: 8/17/15 AM
 DATE: 4/20/2020
 GREENMAN-PEDERSEN, INC.



MATCH LINE E
SEE SHEET NO. 7 OF 10

MATCH LINE F
SEE SHEET NO. 10 OF 10

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	50
INJURIES	16
FATALITIES*	0
TOTAL NO. OF CRASHES	66

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

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

COLORS	
	2016 CRASHES
	2017 CRASHES
	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION	
CENTRAL AVENUE (CR 508) FROM OAKWOOD PLACE TO S. MUNN AVENUE ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY	
2016 - 2018 COLLISION DIAGRAMS	
GPI Engineering Design Planning Construction Management	NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development_Support\NJDOT_HSP_Year_2_Catchway07_Essex_Collision_Diagram_Sheets\Ven9 - Sheet 06 - Data.dgn
 DATE: 4/20/2020
 TIME: 8:42:57 AM

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
4	13:08	FRI	01-22-16	0	DRY	CLEAR	DAY
9	16:52	TUE	02-09-16	0	WET	CLEAR	DAY
10	08:46	THU	02-11-16	0	DRY	CLEAR	DAY
13	20:19	WED	02-24-16	0	WET	RAIN	DARK
21	18:15	THU	03-17-16	0	DRY	CLEAR	DAY
23	10:43	SAT	03-26-16	0	DRY	CLEAR	DAY
34	20:49	THU	04-21-16	0	DRY	CLEAR	DARK
41	14:32	SUN	05-08-16	0	DRY	CLEAR	DAY
47	17:28	FRI	05-27-16	0	DRY	CLEAR	DAY
76	13:20	MON	07-25-16	0	DRY	CLEAR	DAY
78	08:18	FRI	07-29-16	1	WET	RAIN	DAY
80	19:03	SAT	07-30-16	0	WET	RAIN	DAY
98	11:50	TUE	09-20-16	0	DRY	CLEAR	DAY
99	09:34	MON	09-26-16	5	DRY	CLEAR	DAY
112	14:55	FRI	10-28-16	0	DRY	CLEAR	DAY
119	10:06	THU	11-10-16	0	DRY	CLEAR	DAY
124	19:09	TUE	11-22-16	0	DRY	CLEAR	DARK
126	07:46	FRI	12-02-16	2	DRY	CLEAR	DAY
129	16:22	MON	12-05-16	0	DRY	CLEAR	DAY
153	18:06	MON	01-23-17	0	WET	RAIN	DARK
174	16:48	MON	03-13-17	0	DRY	CLEAR	DAY
182	12:09	WED	03-22-17	0	DRY	CLEAR	DAY
186	13:19	SAT	03-25-17	0	DRY	CLEAR	DAY
192	08:54	MON	04-03-17	0	DRY	CLEAR	DAY
201	15:17	THU	04-20-17	0	DRY	CLEAR	DAY
204	10:56	MON	04-24-17	1	DRY	CLEAR	DAY
213	13:54	TUE	05-09-17	0	DRY	CLEAR	DAY
218	14:51	TUE	05-16-17	2	DRY	CLEAR	DAY
219	15:15	WED	05-17-17	0	DRY	CLEAR	DAY
223	16:35	TUE	05-23-17	0	DRY	CLEAR	DAY
232	20:12	MON	06-05-17	1	DRY	CLEAR	DARK
243	12:09	FRI	06-30-17	0	DRY	CLEAR	DAY
264	18:18	SAT	09-16-17	0	DRY	CLEAR	DAY
274	18:04	FRI	10-06-17	0	DRY	CLEAR	DUSK
281	08:40	THU	10-19-17	0	DRY	CLEAR	DAY

COLLISION DIAGRAM DATA (cont.)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
289	13:02	WED	10-25-17	0	DRY	CLEAR	DAY
293	15:11	TUE	10-31-17	0	DRY	CLEAR	DAY
294	04:57	THU	11-02-17	0	DRY	CLEAR	DARK
298	17:57	MON	11-13-17	0	DRY	RAIN	DARK
302	11:45	FRI	11-17-17	0	DRY	CLEAR	DAY
311	11:18	MON	12-11-17	0	DRY	CLEAR	DAY
332	10:45	SUN	01-21-18	1	DRY	CLEAR	DAY
340	16:57	SAT	02-17-18	0	WET	SNOW	DUSK
348	17:06	FRI	03-16-18	0	DRY	CLEAR	DAY
353	15:30	WED	03-28-18	2	DRY	OVERCAST	DAY
359	15:30	SAT	04-14-18	0	DRY	CLEAR	DAY
360	15:30	SAT	04-14-18	0	DRY	CLEAR	DAY
363	20:29	TUE	04-17-18	2	DRY	CLEAR	DUSK
364	14:43	THU	04-19-18	2	WET	RAIN	DAY
379	11:27	MON	05-07-18	0	DRY	CLEAR	DAY
381	08:32	THU	05-10-18	0	DRY	CLEAR	DAY
383	23:15	FRI	05-11-18	1	DRY	CLEAR	DARK
387	12:13	FRI	05-18-18	1	DRY	CLEAR	DAY
394	11:10	FRI	06-08-18	0	DRY	CLEAR	DAY
407	23:43	FRI	06-22-18	1	WET	RAIN	DARK
431	04:06	SAT	08-18-18	0	WET	RAIN	DARK
446	17:00	SAT	09-29-18	0	DRY	CLEAR	DAY
455	07:39	THU	10-18-18	4	DRY	CLEAR	DAY
460	13:48	THU	11-01-18	0	DRY	CLEAR	DAY
466	13:28	MON	11-19-18	0	DRY	CLEAR	DAY
472	20:25	MON	11-26-18	1	WET	RAIN	DARK
480	--:--	TUE	12-25-18	3	DRY	CLEAR	DARK
489	12:57	THU	02-25-16	0	DRY	CLEAR	DAY
513	01:41	FRI	08-05-16	0	DRY	CLEAR	DARK
535	08:35	WED	01-11-17	0	WET	CLEAR	DAY
545	14:00	SAT	07-07-18	0	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	<u>50</u>
INJURIES	<u>16</u>
FATALITIES*	<u>0</u>
TOTAL NO. OF CRASHES	<u>66</u>

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

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

COLORS	
	2016 CRASHES
	2017 CRASHES
	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CENTRAL AVENUE (CR 508)
 FROM OAKWOOD PLACE TO S. MUNN AVENUE
 ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

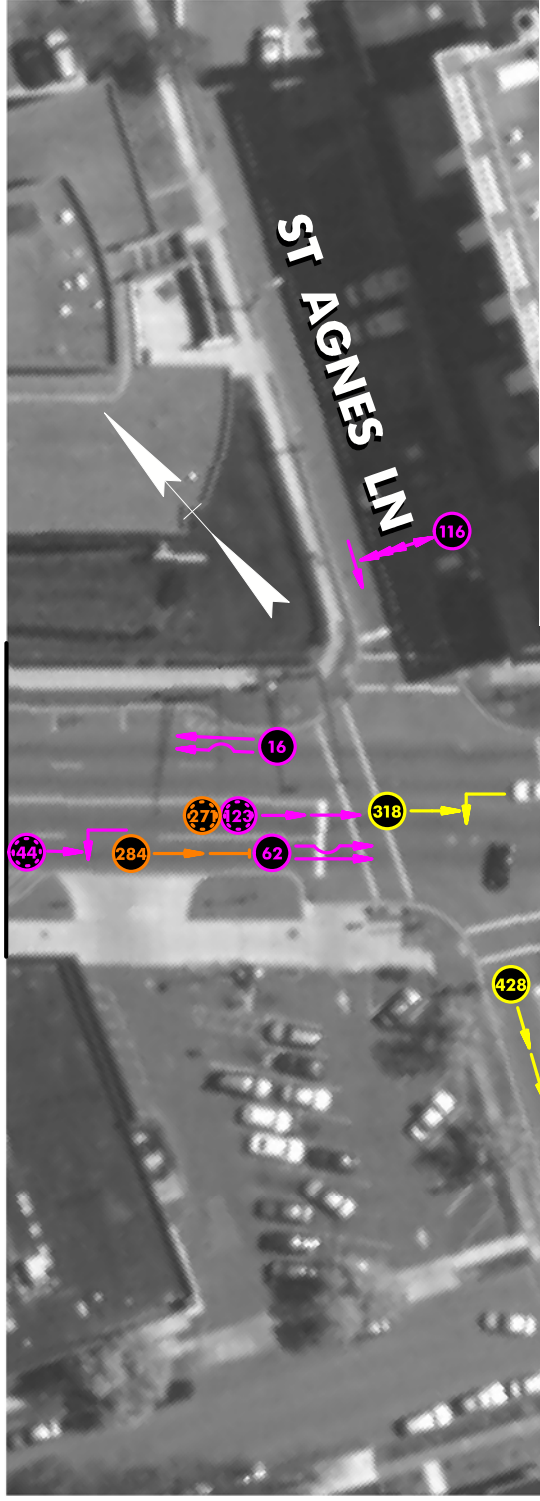
2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

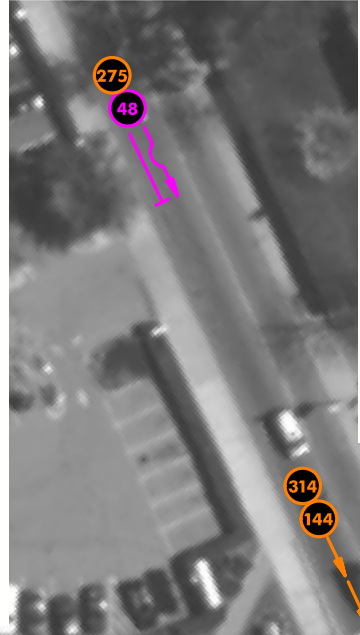
NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development\Support\INDOT_HSP_Year_2_Catchway07_Essex_Collision_Diagram_Sheets\Map10 - Sheet 07.dgn
 TIME: 11:11:54 AM
 DATE: 4/21/2020
 GREENMAN-PEDERSEN, INC.

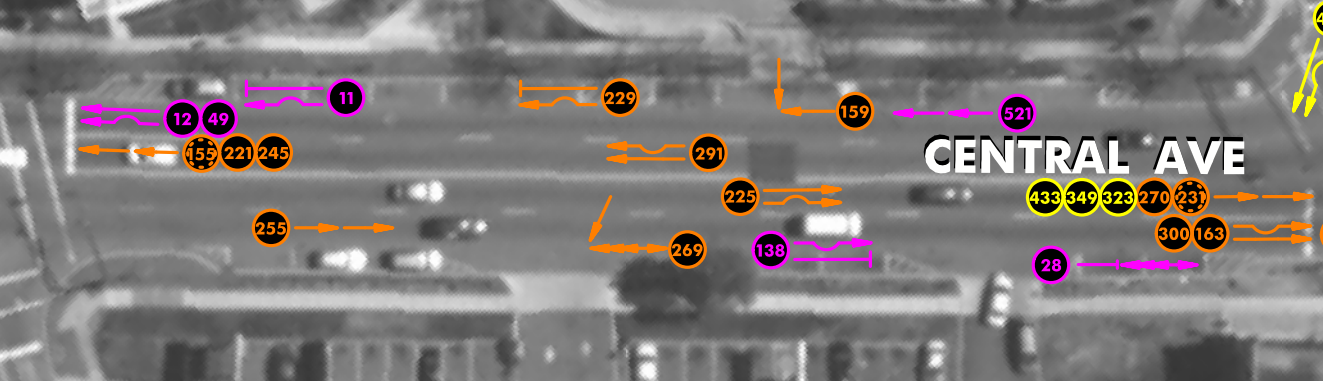
MATCH LINE F
 SEE SHEET NO. 8 OF 10



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
3	08:17	SAT	01-16-16	0	WET	RAIN	DAY
11	22:30	MON	02-15-16	0	SLUSH	RAIN	DARK
12	12:00	SAT	02-20-16	0	DRY	CLEAR	DAY
16	15:41	WED	03-02-16	0	DRY	CLEAR	DAY
27	03:00	SUN	04-10-16	1	DRY	CLEAR	DARK
28	20:37	MON	04-11-16	0	DRY	CLEAR	DARK
36	21:20	MON	04-25-16	0	DRY	CLEAR	DARK
44	11:43	WED	05-18-16	1	DRY	CLEAR	DAY
48	13:15	TUE	05-31-16	0	WET	RAIN	DAY
49	18:06	WED	06-01-16	0	DRY	CLEAR	DAY
50	15:05	SAT	06-04-16	4	DRY	CLEAR	DAY
53	15:05	WED	06-08-16	0	WET	RAIN	DAY
58	16:38	THU	06-16-16	0	DRY	CLEAR	DAY
62	16:19	WED	06-29-16	0	DRY	CLEAR	DAY
84	16:40	MON	08-08-16	0	DRY	CLEAR	DAY
86	23:55	SAT	08-13-16	0	DRY	CLEAR	DARK
94	02:59	SUN	08-28-16	0	DRY	CLEAR	DARK
95	13:37	SUN	09-04-16	1	DRY	CLEAR	DAY
96	10:35	MON	09-12-16	0	DRY	CLEAR	DAY
100	16:17	MON	09-26-16	0	DRY	CLEAR	DAY
116	13:40	THU	11-03-16	0	DRY	CLEAR	DAY
123	02:19	SUN	11-20-16	1	WET	RAIN	DARK
138	09:10	TUE	12-20-16	0	DRY	CLEAR	DAY
139	04:27	TUE	12-20-16	0	DRY	CLEAR	DARK
144	12:55	SAT	01-07-17	0	SLUSH	SNOW	DAY
155	12:55	THU	02-02-17	1	DRY	CLEAR	DAY
157	08:41	TUE	02-07-17	0	WET	RAIN	DAY
159	09:30	FRI	02-10-17	0	WET	SNOW	DAY
163	07:30	THU	02-23-17	0	DRY	CLEAR	DAY
170	18:37	TUE	03-07-17	1	DRY	CLEAR	DARK
209	10:24	WED	05-03-17	0	DRY	CLEAR	DAY
221	22:49	SAT	05-20-17	0	DRY	CLEAR	DARK



COLLISION DIAGRAM DATA (cont.)							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
225	16:56	WED	05-24-17	0	DRY	CLEAR	DAY
227	--:--	TUE	05-30-17	0	WET	OVERCAST	DAY
229	12:49	THU	06-01-17	0	DRY	CLEAR	DAY
231	10:32	MON	06-05-17	2	DRY	CLEAR	DAY
244	14:22	SAT	07-08-17	0	DRY	CLEAR	DAY
245	13:15	MON	07-10-17	0	DRY	CLEAR	DAY
251	21:30	SAT	07-29-17	0	DRY	CLEAR	DARK
252	15:55	TUE	08-15-17	0	WET	CLEAR	DAY
255	08:05	WED	09-06-17	0	WET	RAIN	DAY
257	17:00	THU	09-07-17	0	DRY	CLEAR	DAY
258	16:41	FRI	09-08-17	0	DRY	CLEAR	DAY
269	09:20	THU	09-28-17	0	DRY	CLEAR	DAY
270	00:22	SUN	10-01-17	0	DRY	CLEAR	DARK
271	20:05	SUN	10-01-17	1	DRY	CLEAR	DARK
275	23:10	SAT	10-07-17	0	DRY	CLEAR	DARK
277	07:47	WED	10-11-17	0	DRY	OVERCAST	DAY
282	01:35	FRI	10-20-17	0	DRY	CLEAR	DARK
284	08:30	SAT	10-21-17	0	DRY	CLEAR	DAY
286	15:00	SUN	10-22-17	0	DRY	CLEAR	DAY
291	14:40	THU	10-26-17	0	DRY	CLEAR	DAY
300	09:01	WED	11-15-17	0	DRY	CLEAR	DAY



COLLISION DIAGRAM DATA (cont.)							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
305	21:47	MON	11-20-17	1	DRY	CLEAR	DARK
314	13:50	WED	12-13-17	0	DRY	CLEAR	DAY
315	12:51	WED	12-20-17	0	DRY	CLEAR	DAY
318	20:52	WED	01-03-18	0	DRY	CLEAR	DARK
323	12:10	TUE	01-09-18	0	WET	CLEAR	DAY
336	13:55	FRI	01-26-18	0	WET	CLEAR	DAY
337	09:45	SUN	01-28-18	0	WET	CLEAR	DAY
349	12:40	TUE	03-20-18	0	DRY	CLEAR	DAY
376	15:30	TUE	05-01-18	0	DRY	CLEAR	DAY
382	16:00	FRI	05-11-18	2	DRY	CLEAR	DAY
384	20:35	MON	05-14-18	2	DRY	CLEAR	DARK
385	14:24	WED	05-16-18	0	WET	RAIN	DAY
389	12:50	TUE	05-22-18	0	DRY	CLEAR	DAY
396	17:31	SAT	06-09-18	0	DRY	CLEAR	DAY
410	23:30	MON	06-25-18	0	DRY	CLEAR	DARK
426	17:53	SUN	08-12-18	1	DRY	CLEAR	DAY
428	12:15	WED	08-15-18	0	DRY	CLEAR	DAY
429	16:15	WED	08-15-18	0	DRY	CLEAR	DAY
433	11:10	FRI	08-24-18	0	DRY	CLEAR	DAY
464	10:13	MON	11-12-18	0	DRY	CLEAR	DAY
475	23:30	SAT	12-15-18	2	DRY	CLEAR	DARK
521	11:27	FRI	09-23-16	0	DRY	CLEAR	DAY
538	--:--	TUE	03-13-17	0	DRY	CLEAR	DARK



LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	62
INJURIES	14
FATALITIES*	0
TOTAL NO. OF CRASHES	76

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	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
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	2016 CRASHES
	2017 CRASHES
	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CENTRAL AVENUE (CR 508)
 FROM OAKWOOD PLACE TO S. MUNN AVENUE
 ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

2016 - 2018 COLLISION DIAGRAMS

	NOT TO SCALE
--	--------------

APPENDIX E

PEDESTRIAN CRASH DIAGRAMS

FILE: L:\2017659_HSP_Program_and_Project_Development_Support\NDDOT_HSP_Year_2_Catchway07_Essex_Collision_Diagram_Sheets\FedSheet01 - PED.dgn
 TIME: 11:05:40 AM
 DATE: 8/26/2020
 GREENMAN-PEDERSEN, INC.



COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
4	21:12	TUE	03-25-14	1	DRY	CLEAR	DARK DAY
35	16:01	SUN	08-30-15	1	DRY	CLEAR	DAY
36	15:55	WED	09-16-15	1	DRY	CLEAR	DAY

MATCH LINE A
 SEE SHEET NO. 2 OF 7

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	<u>0</u>
INJURIES	<u>3</u>
FATALITIES	<u>0</u>
TOTAL NO. OF CRASHES	<u>3</u>

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

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

COLORS	
	PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

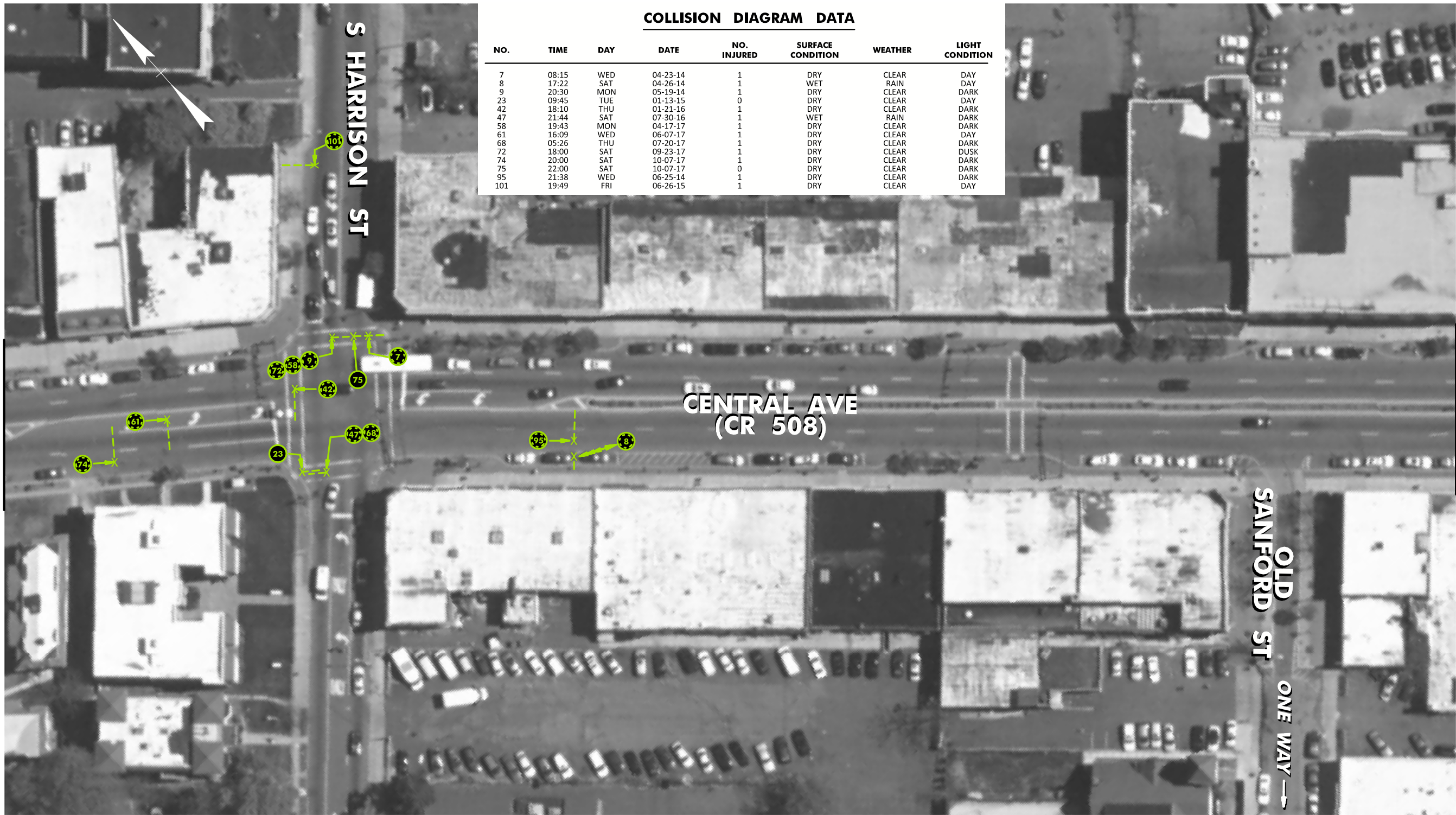
CENTRAL AVENUE (CR 508)
 FROM OAKWOOD PLACE TO S. MUNN AVENUE
 ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management	NOT TO SCALE
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DATE: 9/19/2020 TIME: 5:27:34 PM FILE: L:\2017659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_2_Catchway\07_Essex_Collision_Diagram_Sheets\Final\Sheet_02_PED.dgn

SEE SHEET NO. 1 OF 7
MATCH LINE A



MATCH LINE B
SEE SHEET NO. 3 OF 7

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
7	08:15	WED	04-23-14	1	DRY	CLEAR	DAY
8	17:22	SAT	04-26-14	1	WET	RAIN	DAY
9	20:30	MON	05-19-14	1	DRY	CLEAR	DARK
23	09:45	TUE	01-13-15	0	DRY	CLEAR	DAY
42	18:10	THU	01-21-16	1	DRY	CLEAR	DARK
47	21:44	SAT	07-30-16	1	WET	RAIN	DARK
58	19:43	MON	04-17-17	1	DRY	CLEAR	DARK
61	16:09	WED	06-07-17	1	DRY	CLEAR	DAY
68	05:26	THU	07-20-17	1	DRY	CLEAR	DARK
72	18:00	SAT	09-23-17	1	DRY	CLEAR	DUSK
74	20:00	SAT	10-07-17	1	DRY	CLEAR	DARK
75	22:00	SAT	10-07-17	0	DRY	CLEAR	DARK
95	21:38	WED	06-25-14	1	DRY	CLEAR	DARK
101	19:49	FRI	06-26-15	1	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	<u>2</u>
INJURIES	<u>12</u>
FATALITIES	<u>0</u>
TOTAL NO. OF CRASHES	<u>14</u>

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

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

COLORS	
	PEDESTRIAN CRASH

2 / 7

NEW JERSEY DEPARTMENT OF TRANSPORTATION

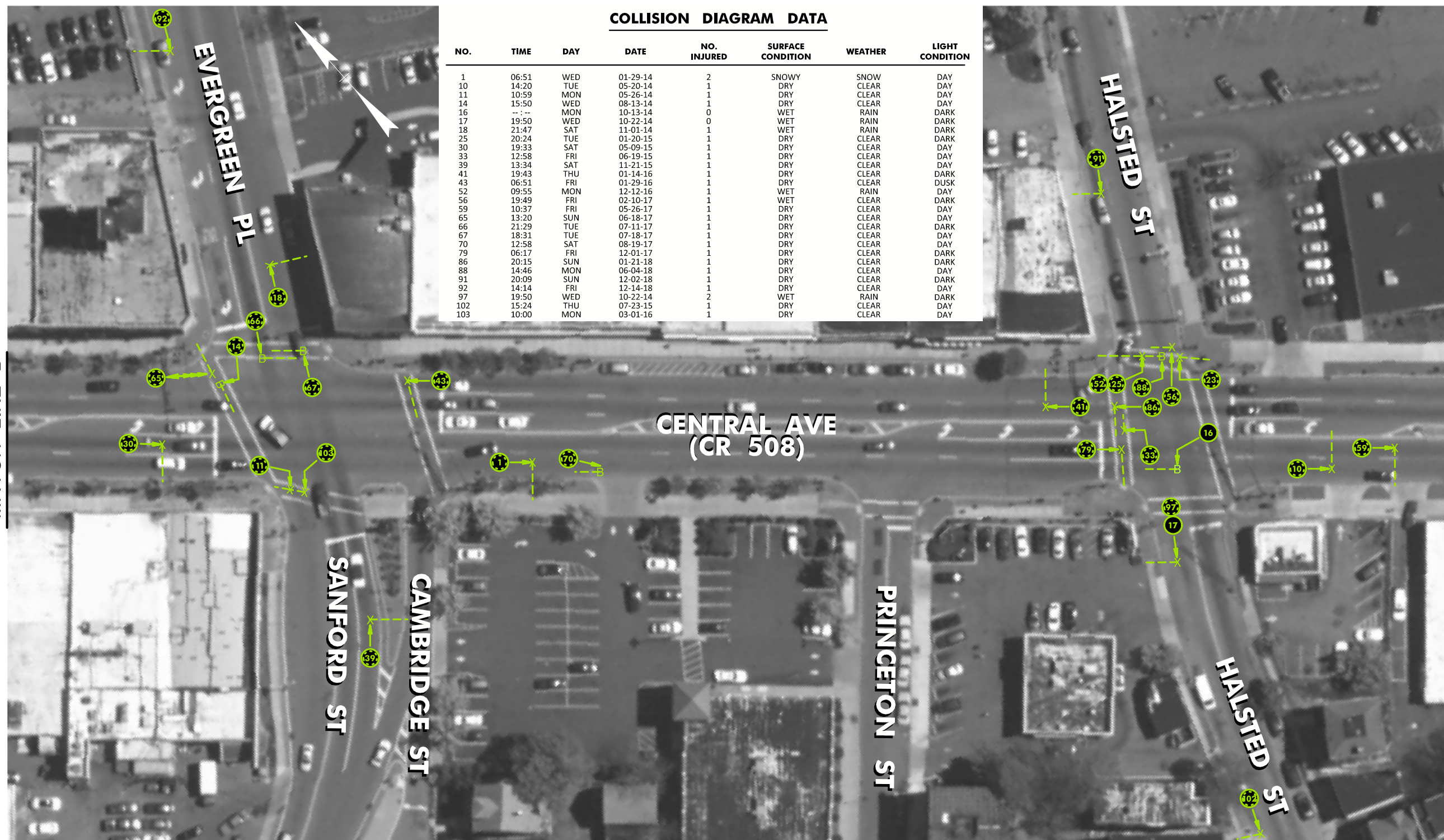
CENTRAL AVENUE (CR 508)
FROM OAKWOOD PLACE TO S. MUNN AVENUE
ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

DATE: 8/20/2020 TIME: 4:21:37 PM FILE: L:\2017659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_2_Catchway\07_Essex_Collision_Diagram_Sheets\FedSheet_03_PED.dgn



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
1	06:51	WED	01-29-14	2	SNOWY	SNOW	DAY
10	14:20	TUE	05-20-14	1	DRY	CLEAR	DAY
11	10:59	MON	05-26-14	1	DRY	CLEAR	DAY
14	15:50	WED	08-13-14	1	DRY	CLEAR	DAY
16	--:--	MON	10-13-14	0	WET	RAIN	DARK
17	19:50	WED	10-22-14	1	WET	RAIN	DARK
18	21:47	SAT	11-01-14	1	WET	RAIN	DARK
25	20:24	TUE	01-20-15	1	DRY	CLEAR	DARK
30	19:33	SAT	05-09-15	1	DRY	CLEAR	DAY
33	12:58	FRI	06-19-15	1	DRY	CLEAR	DAY
39	13:34	SAT	11-21-15	1	DRY	CLEAR	DAY
41	19:43	THU	01-14-16	1	DRY	CLEAR	DARK
43	06:51	FRI	01-29-16	1	DRY	CLEAR	DUSK
52	09:55	MON	12-12-16	1	WET	RAIN	DAY
56	19:49	FRI	02-10-17	1	WET	CLEAR	DARK
59	10:37	FRI	05-26-17	1	DRY	CLEAR	DAY
65	13:20	SUN	06-18-17	1	DRY	CLEAR	DAY
66	21:29	TUE	07-11-17	1	DRY	CLEAR	DARK
67	18:31	TUE	07-18-17	1	DRY	CLEAR	DAY
70	12:58	SAT	08-19-17	1	DRY	CLEAR	DAY
79	06:17	FRI	12-01-17	1	DRY	CLEAR	DARK
86	20:15	SUN	01-21-18	1	DRY	CLEAR	DARK
88	14:46	MON	06-04-18	1	DRY	CLEAR	DAY
91	20:09	SUN	12-02-18	1	DRY	CLEAR	DARK
92	14:14	FRI	12-14-18	1	DRY	CLEAR	DAY
97	19:50	WED	10-22-14	2	WET	RAIN	DARK
102	15:24	THU	07-23-15	1	DRY	CLEAR	DAY
103	10:00	MON	03-01-16	1	DRY	CLEAR	DAY

SEE SHEET NO. 2 OF 7
MATCH LINE B

MATCH LINE C
SEE SHEET NO. 4 OF 7

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	3
INJURIES	25
FATALITIES	0
TOTAL NO. OF CRASHES	28

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

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

COLORS	
	PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CENTRAL AVENUE (CR 508)
FROM OAKWOOD PLACE TO S. MUNN AVENUE
ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

FILE: L:\2017\659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_2\Catchway\07_Essex_Collision_Diagram_Sheets\Fed\Sheet 04 - PED.dgn
 TIME: 12:00:37 PM
 DATE: 8/21/2020



MATCH LINE C
 SEE SHEET NO. 3 OF 7

MATCH LINE D
 SEE SHEET NO. 5 OF 7

COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
2	22:00	SAT	03-15-14	1	DRY	CLEAR	DARK
15	18:26	FRI	08-22-14	1	DRY	CLEAR	DAY
29	08:00	WED	05-06-15	1	DRY	CLEAR	DAY
34	13:35	FRI	07-10-15	1	DRY	CLEAR	DAY
40	19:51	WED	01-13-16	1	DRY	CLEAR	DARK
51	21:31	WED	11-23-16	0	DRY	CLEAR	DARK
55	--:--	WED	01-18-17	1	DRY	CLEAR	DARK
60	17:08	SUN	06-04-17	1	WET	RAIN	DAY
69	19:20	FRI	07-28-17	1	DRY	CLEAR	DUSK
73	21:07	FRI	09-29-17	0	DRY	CLEAR	DARK
76	13:51	SUN	10-22-17	1	DRY	CLEAR	DAY
77	18:51	MON	10-30-17	1	DRY	CLEAR	DARK
78	07:45	THU	11-30-17	1	DRY	CLEAR	DAY
85	17:07	MON	01-08-18	2	WET	SNOW	DARK

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	2
INJURIES	12
FATALITIES	0
TOTAL NO. OF CRASHES	14

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
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CENTRAL AVENUE (CR 508)
 FROM OAKWOOD PLACE TO S. MUNN AVENUE
 ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

DATE: 8/2/2020 TIME: 11:59:28 AM FILE: L:\2017659_HSPF_Program_and_Project_Development\Support\NJDOT_HSPF_Year_2\Cadd\HW\07_Essex\Collision_Diagram_Sheets\Ped_Sheet_05 - PED.dgn

SEE SHEET NO. 4 OF 7
MATCH LINE D



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
13	21:47	SAT	08-02-14	1	DRY	CLEAR	DARK
21	00:25	SUN	12-07-14	1	WET	RAIN	DARK
28	15:39	MON	05-04-15	0	DRY	CLEAR	DAY
53	21:17	TUE	12-13-16	1	DRY	CLEAR	DARK
81	17:27	TUE	12-05-17	2	DRY	CLEAR	DARK
87	18:43	SUN	02-18-18	1	DRY	CLEAR	DARK

MATCH LINE E
SEE SHEET NO. 6 OF 7

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	1
INJURIES	5
FATALITIES	0
TOTAL NO. OF CRASHES	6

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

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

COLORS	
	PEDESTRIAN CRASH

5
7

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CENTRAL AVENUE (CR 508)
FROM OAKWOOD PLACE TO S. MUNN AVENUE
ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_2_Catchway\07_Essex_Collision_Diagram_Sheets\Fed\Sheet_06_PED.dgn
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 DATE: 8/2/2020

SEE SHEET NO. 5 OF 7
 MATCH LINE E



MATCH LINE F
 SEE SHEET NO. 7 OF 7

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
6	15:30	SUN	04-13-14	1	DRY	CLEAR	DAY
27	08:39	FRI	02-27-15	0	DRY	CLEAR	DAY
50	17:12	TUE	11-08-16	0	DRY	CLEAR	DAY
54	03:15	THU	12-15-16	0	DRY	CLEAR	DAY
57	08:05	FRI	04-07-17	1	DRY	CLEAR	DAY
64	22:45	FRI	06-16-17	1	DRY	CLEAR	DARK
90	21:40	SAT	11-24-18	1	WET	RAIN	DARK

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	<u>2</u>
INJURIES	<u>5</u>
FATALITIES	<u>0</u>
TOTAL NO. OF CRASHES	<u>7</u>

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

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

COLORS	
	PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CENTRAL AVENUE (CR 508)
 FROM OAKWOOD PLACE TO S. MUNN AVENUE
 ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

2014-2018 PEDESTRIAN COLLISION DIAGRAMS

Engineering Design Planning Construction Management	NOT TO SCALE
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FILE: L:\2017659_HSP_Program_and_Project_Development_Support\NJDOT_HSP_Year_2_Catchway07_Essex_Collision_Diagram_Sheets\FedSheet07_PED.dgn
 TIME: 2:30:29 PM
 DATE: 8/2/2020

SEE SHEET NO. 6 OF 7
 MATCH LINE F



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
3	19:40	THU	03-20-14	1	DRY	CLEAR	DARK
5	15:18	FRI	03-28-14	0	WET	OVERCAST	DAY
12	15:54	TUE	06-17-14	1	DRY	CLEAR	DAY
20	20:24	SAT	11-22-14	1	DRY	CLEAR	DARK
22	14:57	THU	01-08-15	2	DRY	CLEAR	DAY
24	06:45	TUE	01-13-15	1	DRY	CLEAR	DAWN
26	15:00	TUE	02-03-15	1	DRY	CLEAR	DAY
37	12:25	SUN	09-20-15	0	DRY	CLEAR	DAY
38	14:34	TUE	11-03-15	1	DRY	CLEAR	DAY
46	19:29	WED	07-27-16	1	DRY	CLEAR	DAY
49	22:30	WED	09-28-16	1	WET	RAIN	DARK
62	23:33	SAT	06-10-17	1	DRY	CLEAR	DARK
71	--:--	SUN	08-27-17	1	DRY	CLEAR	DARK
82	17:01	FRI	12-08-17	1	DRY	CLEAR	DUSK
83	11:57	MON	12-18-17	0	DRY	CLEAR	DAY
84	18:34	SAT	12-23-17	1	WET	RAIN	DARK
89	17:18	FRI	11-16-18	1	SLUSH	CLEAR	DARK

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	3
INJURIES	17
FATALITIES	0
TOTAL NO. OF CRASHES	20

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

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

COLORS	
	PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CENTRAL AVENUE (CR 508)
 FROM OAKWOOD PLACE TO S. MUNN AVENUE
 ORANGE AND EAST ORANGE CITIES, ESSEX COUNTY

2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

APPENDIX F

SITE PHOTOGRAPHS

Pedestrian push button installed on incorrect side of traffic signal pole



Vehicle parked blocking sidewalk



Traffic signal pole blocks pedestrian access route



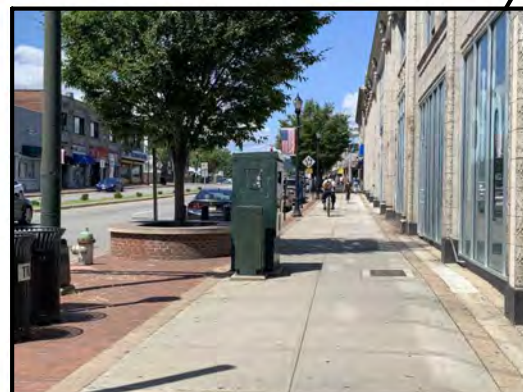
U-turn sign installed incorrectly



Ponding at curb ramp



Crosswalk leads directly into driveway for the park



Bicyclist rides on sidewalk due to lack of on-street bike facilities



Pedestrians cross outside of marked crosswalks



Trees block sign visibility

LEGEND



SIGNALIZED INTERSECTION



PROJECT CORRIDOR

**NJDOT HSIP - ROAD SAFETY AUDIT
CENTRAL AVENUE (CR 508)**

ORANGE & EAST ORANGE CITIES
ESSEX COUNTY

PROJECT SITE PHOTOGRAPHS



N.T.S.

Pedestrian push button missing associated crossing sign



Vehicle illegally parked blocking driveway



Damaged fixtures create tripping hazards for pedestrians



Sidewalk in poor condition, utilities located within curb ramp



Trees block visibility of signs and signals



Ponding at inlet, needs to be cleared of debris



Parking violations; cars parked too close to intersection



Access management; driveway located immediately adjacent to the intersection



Inconsistent sidewalk material

LEGEND



SIGNALIZED INTERSECTION



PROJECT CORRIDOR

**NJDOT HSIP - ROAD SAFETY AUDIT
CENTRAL AVENUE (CR 508)**

ORANGE & EAST ORANGE CITIES
ESSEX COUNTY

PROJECT SITE PHOTOGRAPHS



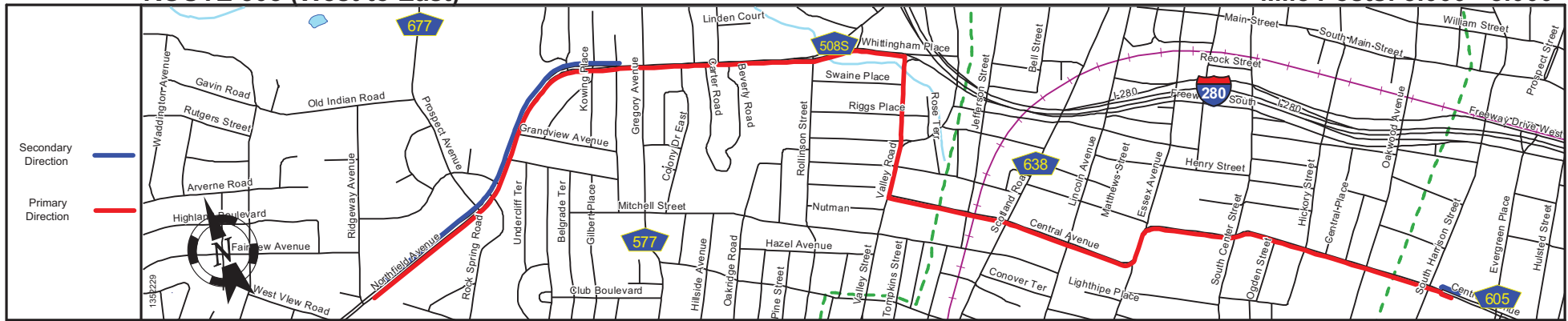
N.T.S.

APPENDIX G

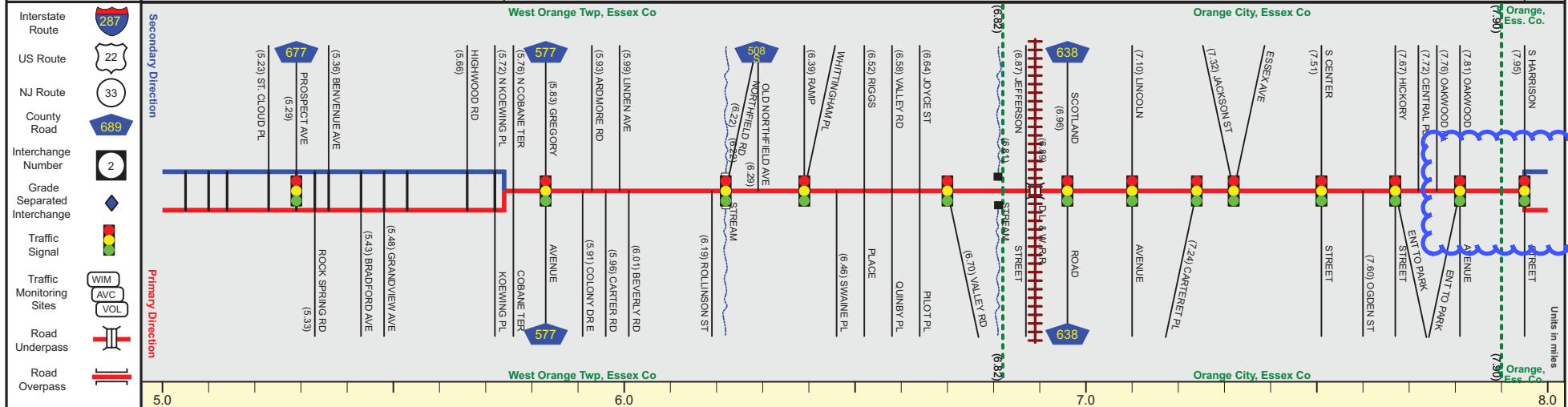
STRAIGHT LINE DIAGRAMS

ROUTE 508 (West to East)

Mile Posts: 5.000 - 8.000



Pavement	30	24
Shoulder	0	0
Number of Lanes	2	2
Speed Limit	35	35
Street Name	Northfield Avenue	Central Avenue



Street Name	Northfield Avenue		Whittingham Place	Kingsley Street	Valley Road	Central Avenue	
Jurisdiction	County		County		County		County
Functional Class	Urban Principal Arterial		Urban Minor Arterial		Urban Principal Arterial		Urban Principal Arterial
Federal Aid - NHS Sy	NHS		STP		NHS		NHS
Control Section	35		30		25		35
Number of Lanes	2	4	2	1	2	4	2
Med. Type	Curbed				None		Curbed
Med. Width	VAR				0		4
Pavement	30	40	30			48	24
Shoulder			0				
Traffic Volume	21,971 (2018)	23,252 (2018)					
Traffic Sta. ID	90708	90709					
Structure No.							
Enlarged Views							

SRI = 0000508__

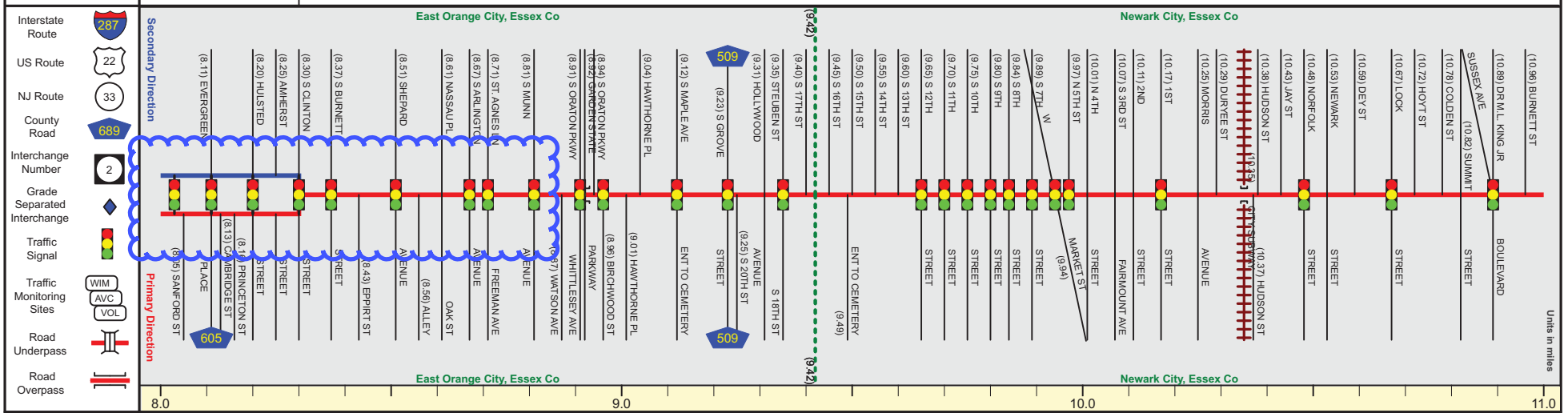
Date last inventoried: July 2012

ROUTE 508 (West to East)

Mile Posts: 8.000 - 11.000



Pavement	24
Shoulder	0
Number of Lanes	2
Speed Limit	35
Street Name	Central Avenue



Street Name	Central Avenue	
Jurisdiction	County	
Functional Class	Urban Principal Arterial	
Federal Aid - NHS Sy	NHS	
Control Section		
Speed Limit	35	30
Number of Lanes	2	2
Med. Type	Curbed	None
Med. Width	4	0
Pavement	24	40
Shoulder	0	
Traffic Volume	17,834 (2018)	12,246 (2018)
Traffic Sta. ID	90710	90711
Structure No.	361467T	0700N06
Enlarged Views		

SRI = 0000508__

Date last inventoried: July 2012

APPENDIX H

PRE-AUDIT PRESENTATION



ONLINE ROAD SAFETY AUDIT

CR 508 (CENTRAL AVENUE)

OAKWOOD PLACE TO S. MUNN AVENUE



ORANGE AND EAST ORANGE CITIES,
ESSEX COUNTY

OCTOBER 16, 2020





AUDIT TEAM



NJDOT



NJTPA



Essex County



East Orange City



Orange City



FUNDED BY FEDERAL HIGHWAY ADMINISTRATION AND NJDOT

PRESENTED BY GREENMAN-PEDERSEN, INC., NJDOT CONSULTANT



Today's Schedule

1

- Welcome and Introductions (Roll Call)
- Safety Program Overview and RSA Process

2

- FHWA Proven Safety Countermeasures
- Project Overview and Crash Data

3

- Online Field Visit and Observations

4

- Make Recommendations
- Next Steps

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

- 7 Emphasis Areas (NJ 2020 Strategic Highway Safety Plan)
- Pedestrian Safety and Intersection Focus State
- 7 sub-programs including Local Safety Program
- Core Federal Aid Program, NJ receives about \$57M



**Lane
Departure**



Intersections



**Driver
Behavior**



**Pedestrians
and Bicyclists**



**Other
Vulnerable
Road Users**



Data

Driver Behavior: Drowsy and Distracted Driving, Aggressive Driving, Impaired Driving, Unlicensed Driving, and Unbelted Drivers and Occupants
Other Vulnerable Road Users: Mature Drivers, Younger Drivers, Motorcyclists, Work Zone Workers and Other Road Workers.



HSIP/LOCAL SAFETY PROGRAM

MAIN GOAL: Reduce serious injury and fatality (K+A) crashes on all of NJ's public roads



Program Goals

- Toward zero deaths on all public roads
- Performance-based goals consistent with SHSP
- Data-driven, strategic approach to improving highway safety



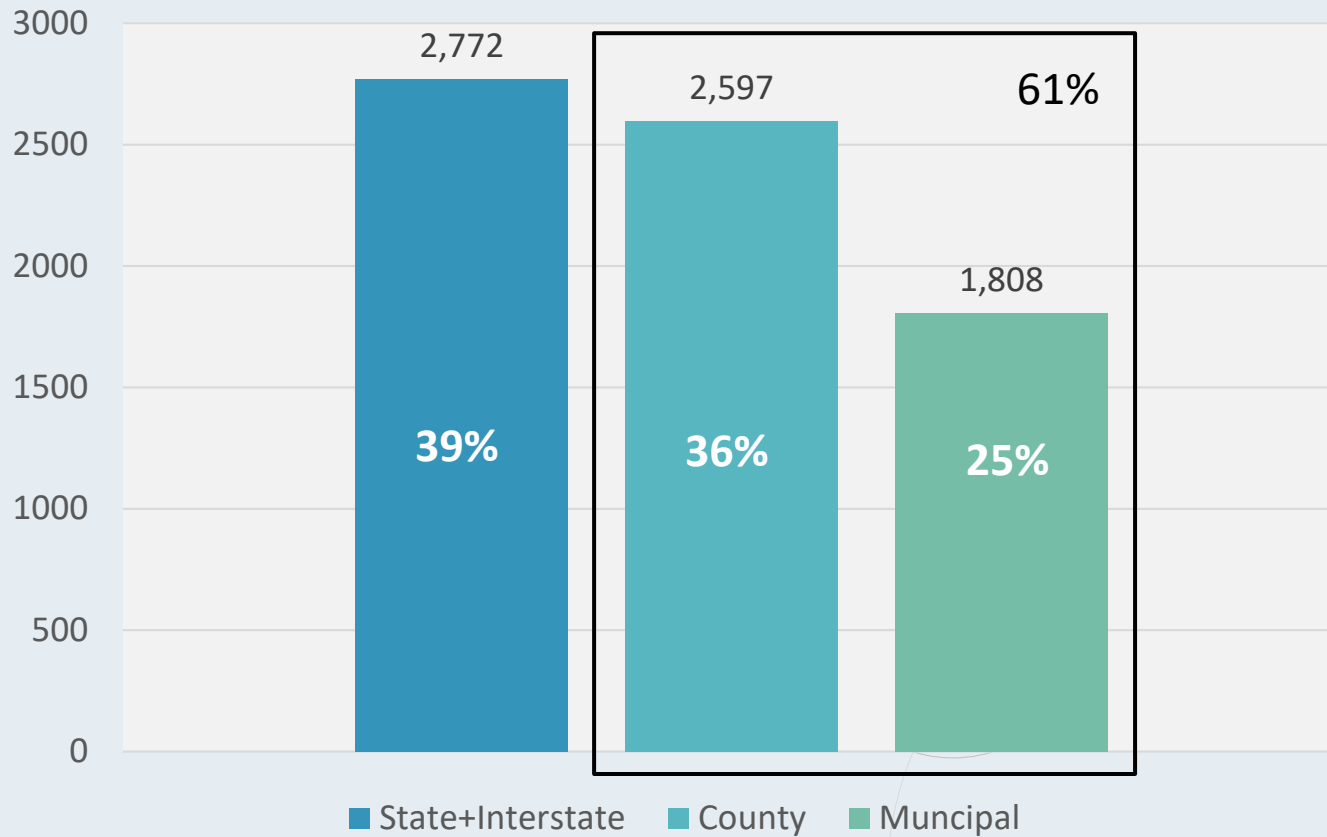
Local Safety Program (LSP)

- NJDOT support
 - Dedication of HSIP funds
 - Technical assistance
 - Screening lists for MPOs
 - **Road Safety Audits**
- MPOs support
 - Local Road Safety
 - High Risk Rural Roads
 - CD/PE/FD Assistance Program

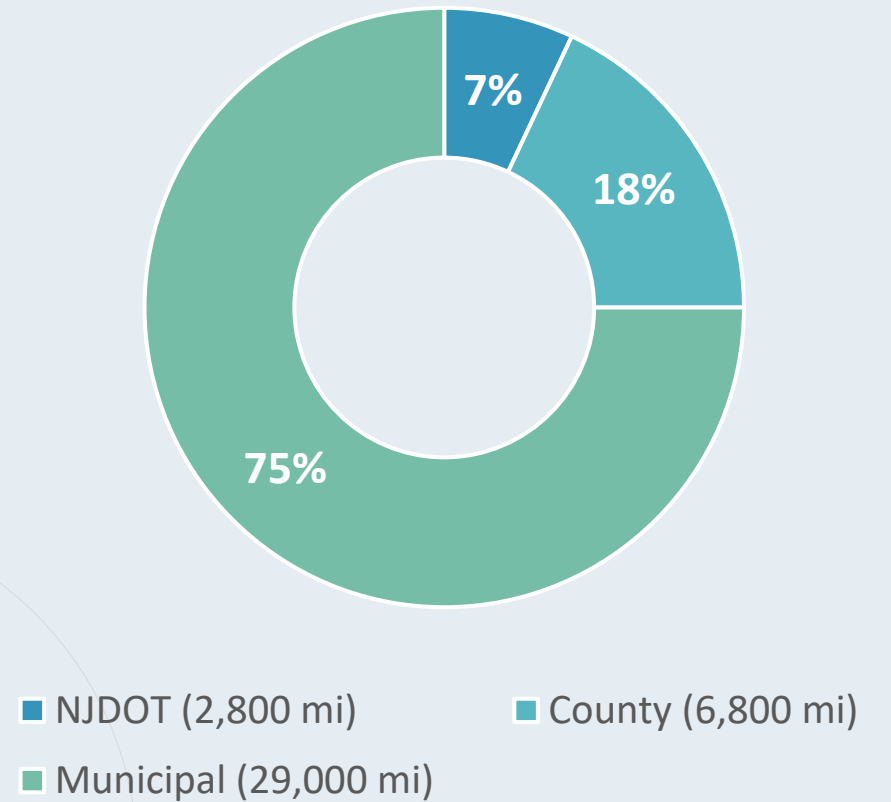


FATAL & SERIOUS INJURIES BY ROADWAY SYSTEM (2014-2018)

FSI Crashes by Road System



Roadway Jurisdiction



Local Safety Program & High Risk Rural Roads FY 2005–2018

Total Projects: 131

Total Local Safety Program
Funding: \$144.6 million

Total High Risk Rural
Roads Program Funding:
\$19.6 million

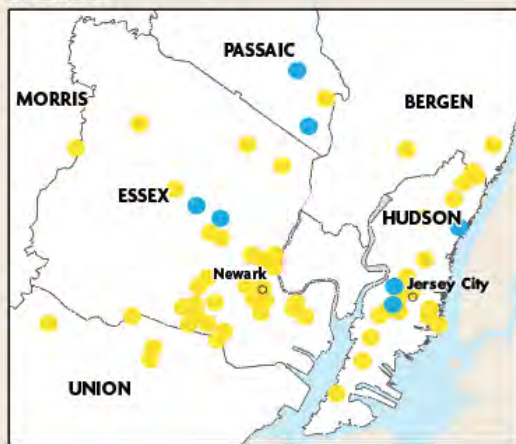
FY 2017-2018 Projects

- Local Safety Projects
- High Risk Rural Road Projects

Past Projects

- Local Safety Projects
- High Risk Rural Road Projects

Detail Area



FEDERAL TRANSPORTATION FUNDING

- Local Safety and High Risk Rural Roads Programs
 - \$145+ million in funding 2005-18 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 such as right-angle or roadway departures
- Community Outreach – provides the public, local officials and stakeholders with opportunities to comment and ask questions



RSA PURPOSE

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



Benefits

- 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 for future projects
- Support optimized savings of lives, money and time



Not meant to replace

- Design quality control
- Standard compliance
- Traffic or safety impact studies
- Safety conscious planning
- Road safety inventory programs
- Traffic safety modeling efforts



RSA PROCESS



Responsibilities:

Steps 1-2 & 7-8: Design Team/Road Owner

Steps 3-6: RSA Team

FHWA PROVEN SAFETY COUNTERMEASURES

20 countermeasures

Descriptions provided in handouts



Roadside Design Improvement at Curves



Reduced Left-Turn Conflict Intersections



Systemic Application of Multiple Low Cost Countermeasures at Stop-Controlled Intersections



Leading Pedestrian Interval



Local Road Safety Plan



USLIMITS2



Enhanced Delineation and Friction for Horizontal Curves



Longitudinal Rumble Strips and Stripes on Two-Lane Roads



Median Barrier



Safety EdgesSM



Backplates with Retroreflective Borders



Corridor Access Management



Dedicated Left- and Right-Turn Lanes at Intersections



Roundabouts



Yellow Change Intervals



Medians and Pedestrian Crossing Islands in Urban and Suburban Areas



Pedestrian Hybrid Beacon



Road Diet



Walkways

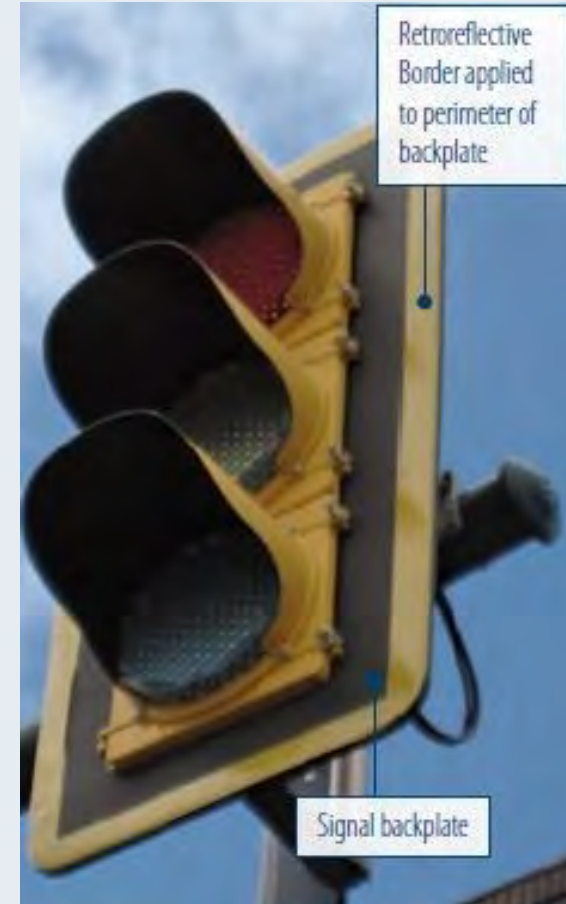


Road Safety Audit



FHWA PROVEN SAFETY COUNTERMEASURES

- Clockwise from top:
 - Roundabout, Chesterfield Township, Burlington County
 - Backplates with Retroreflective Borders, Statewide
 - Road diet, Maplewood Township, Essex County
 - Pedestrian Hybrid Beacon (HAWK), Ocean City, Cape May County





ADDITIONAL CONSIDERATIONS

Curb Extensions

Hoboken City, Hudson County



Enhanced signing / pedestrian crossings

Bellevue City, WA





NJ Transit 24, 44, 94, 97



Begin
MP 7.75

End
MP 8.81

- Urban Principal Arterial
- 4-lanes, divided from S. Harrison to S. Clinton Streets ↔



PROJECT AREA



- Sidewalk both sides
- Standard style crosswalks



COMMUNITY PROFILE

Surrounding Project Area Census Tracts and County Level Data

(Source: U.S. Census Bureau)



Race/Ethnicity

	Study Area	County
White	3%	30%
Hispanic/Latino	10%	24%
Asian American	5%	1%
Black or African American	84%	38%
Two or More Races	1%	2%
Other*	1%	1%

** Includes American Indian/Alaskan Native, Native Hawaiian and Other Pacific Islander Alone, and Some other race alone*



Low Income, Limited English Proficiency (LEP), Travel to Work

	Study Area	County
Poverty	25%	14%
LEP	10%	15%
Public Transportation	26%	20%
Walk or Bike	6%	3%
No Vehicles Available	33%	22%



NETWORK SCREENING

NJTPA County Ranking – 2012-2016 Data



Top 100 Corridors

Route	Regional	Pedestrian/Bicycle
CR 508	#8: MP 7.75-8.75	#4: MP 7.75-8.75



Top 100 Intersections

Location	All Crashes	Pedestrian	Bike/Ped
S. Munn Ave	#1	#3	#4
Halsted St	-	#77	#85
S. Harrison St	#103	-	-

Bold indicates corridor or intersection in the County Top 10.



CRASH DATA

2014-2018 Pedestrian/Bicyclist

- 93 crashes (79 Ped/14 Bike)
- Minor to Moderate Injuries

2016-2018 Vehicular

- 431 crashes
- Primarily property damage only

Overrepresentations

Vehicular

- Sideswipe
- Struck Parked Vehicle
- Left Turn
- Backing
- At Signalized Intersections
- Dry Surface
- Day

Ped/Bike

- Injury
- At Signalized Intersection
- Dry Surface
- Night



CRASHES: LOCATION IN RSA (CR 508)

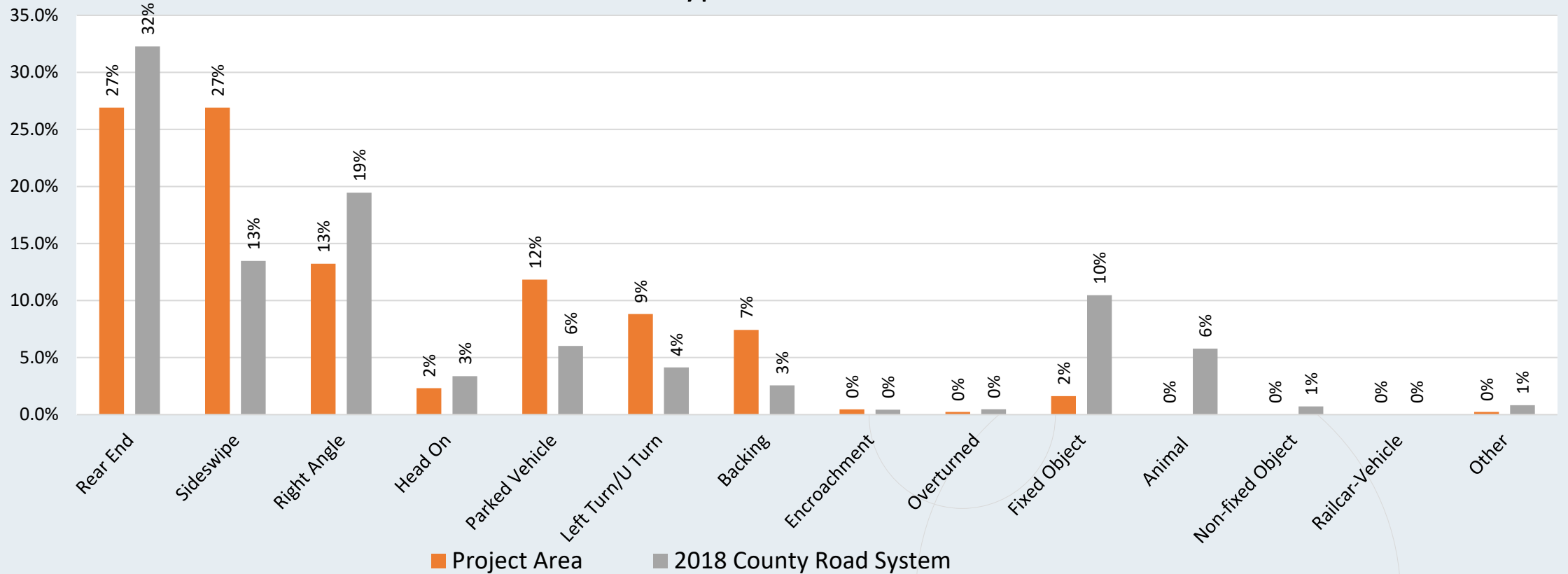
Modified Histogram View by 0.1 Mile
Geocoded Crashes Only (2016-2018)
Differences with Police Crash Reports Noted





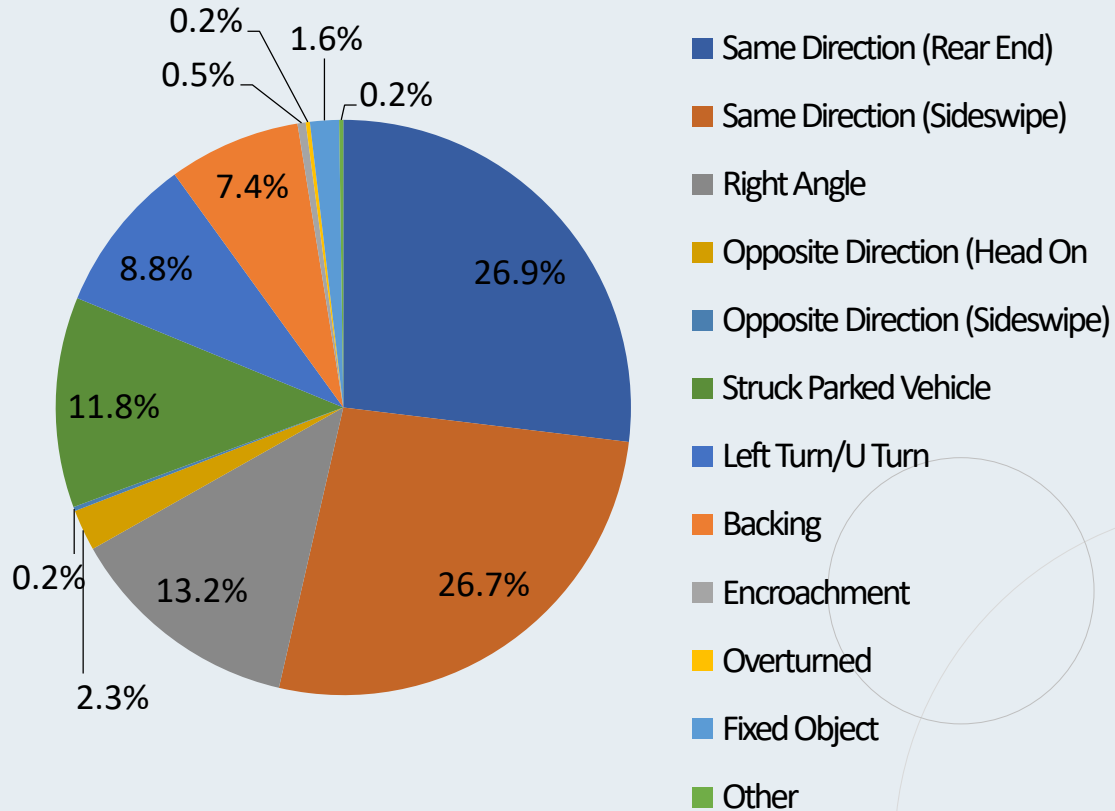
CRASH TYPE: RSA AREA v. COUNTY ROAD SYSTEM

Crash Type Breakdown

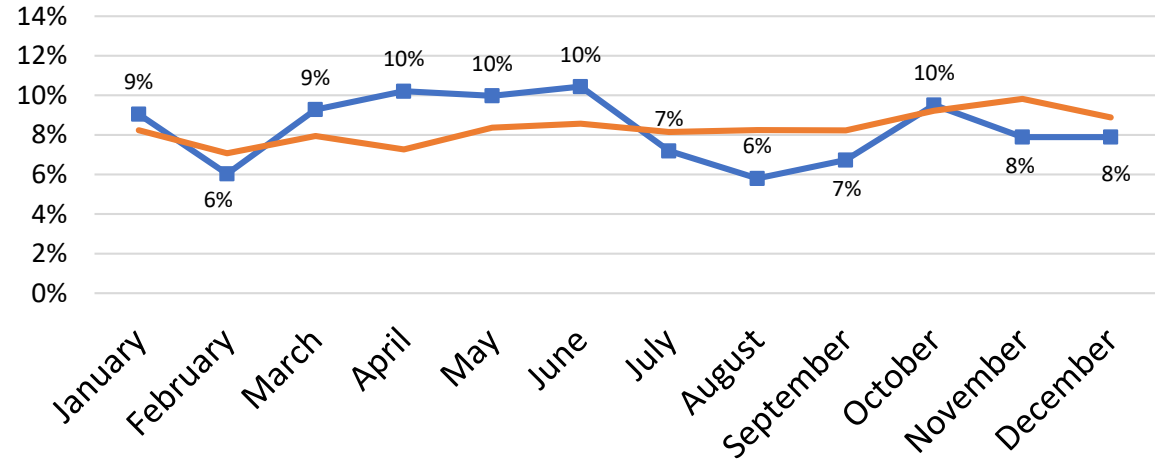


CRASHES: TYPE & TIMES

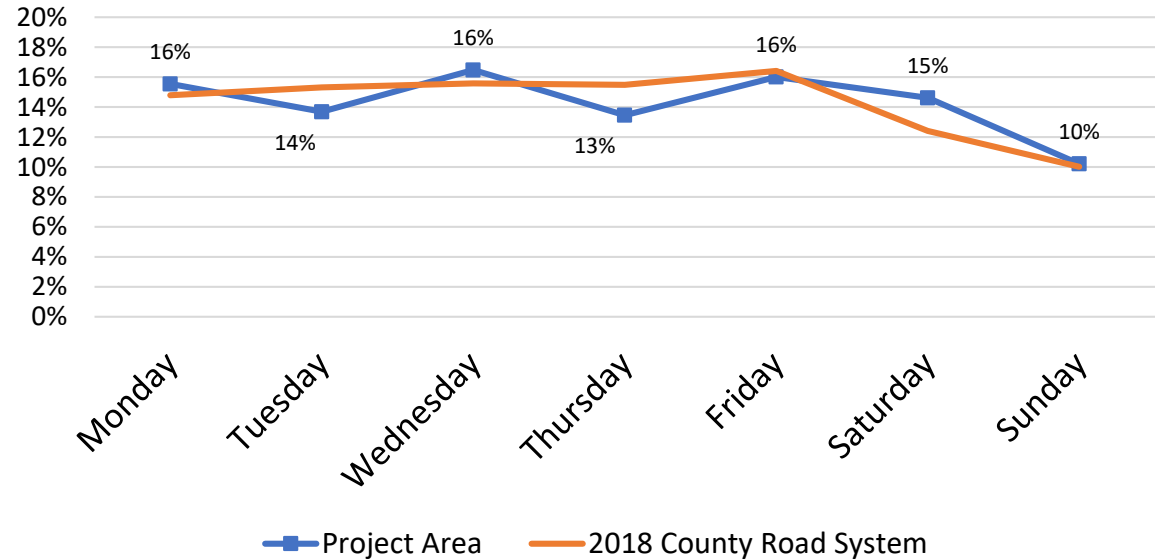
Vehicle Crash Types (2016-2018)



Vehicular Crashes by Month



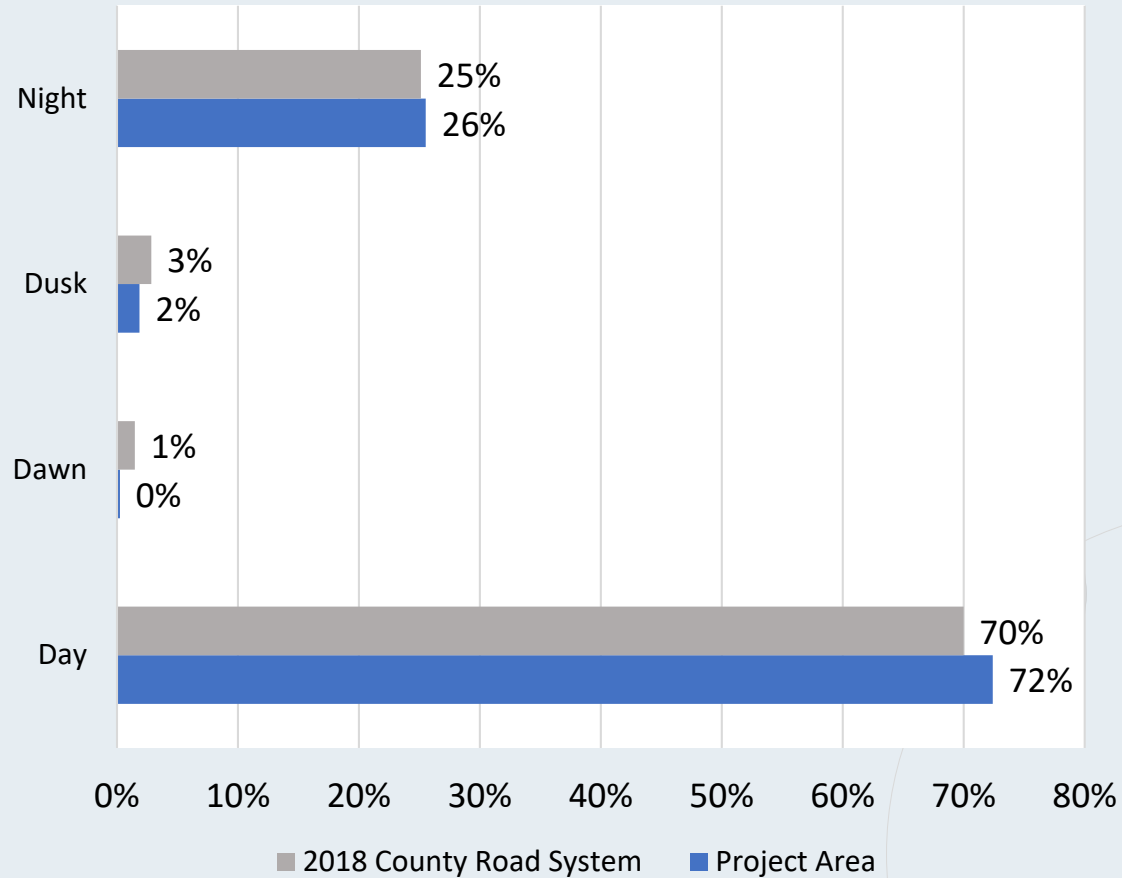
Vehicular Crashes by Day of Week



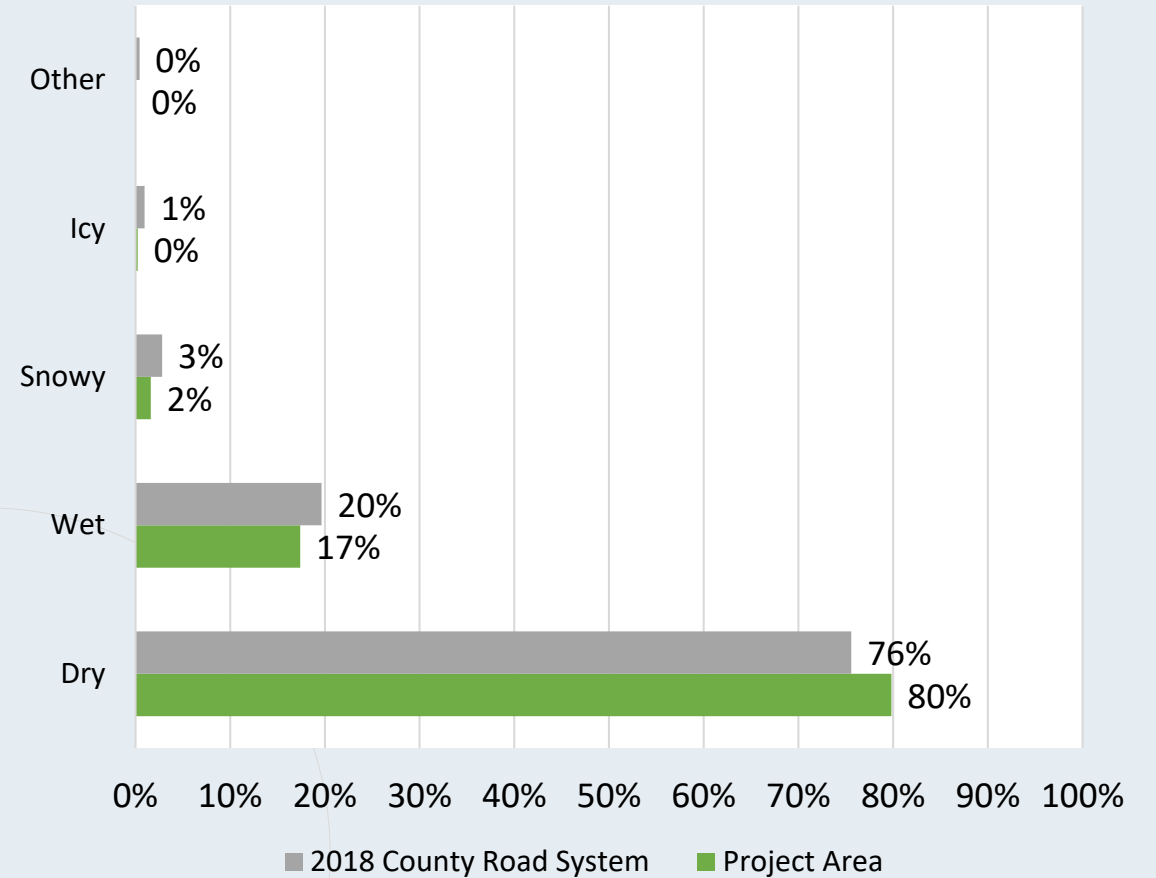


CRASHES: LIGHT & SURFACE CONDITIONS

Light Conditions



Surface Conditions





PED/BIKE CRASHES: LOCATION IN RSA

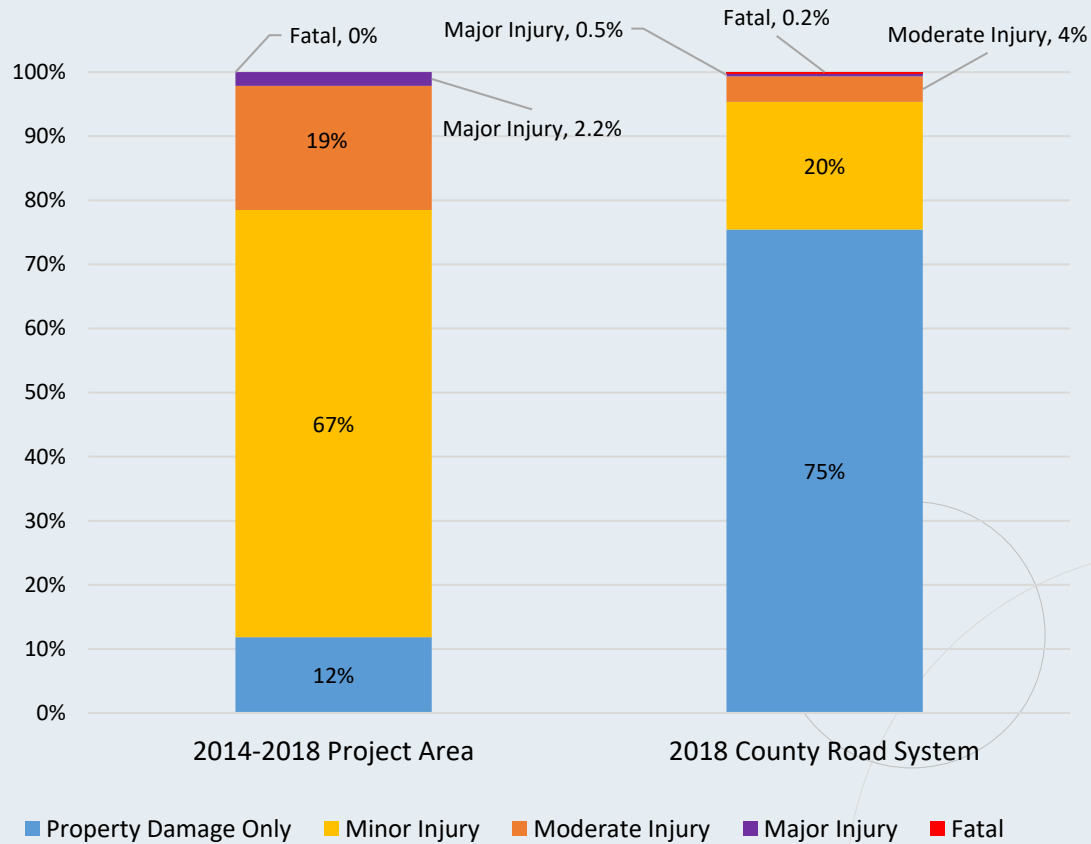
Modified Histogram View by 0.1 Mile
Geocoded Crashes Only (2014-2018)
Differences with Police Crash Reports Noted



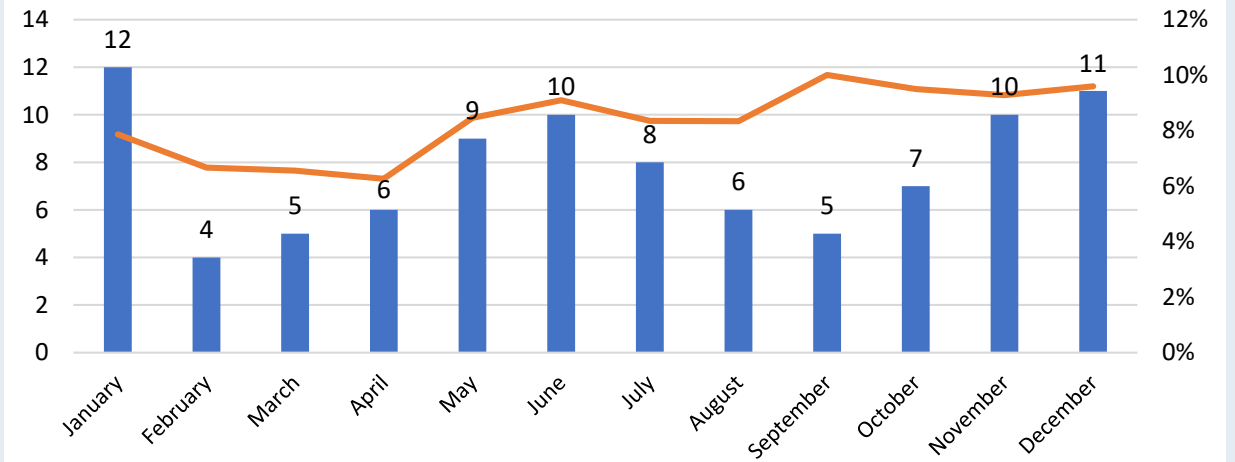


PED/BIKE CRASHES: SEVERITY & TIMES

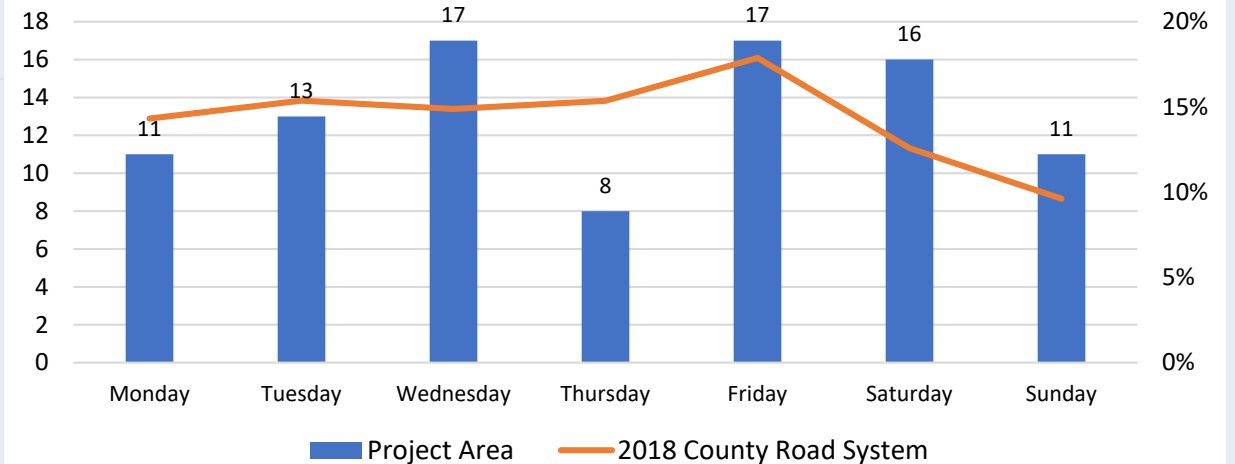
Bicycle/Pedestrian Crash Severity



Crashes by Month



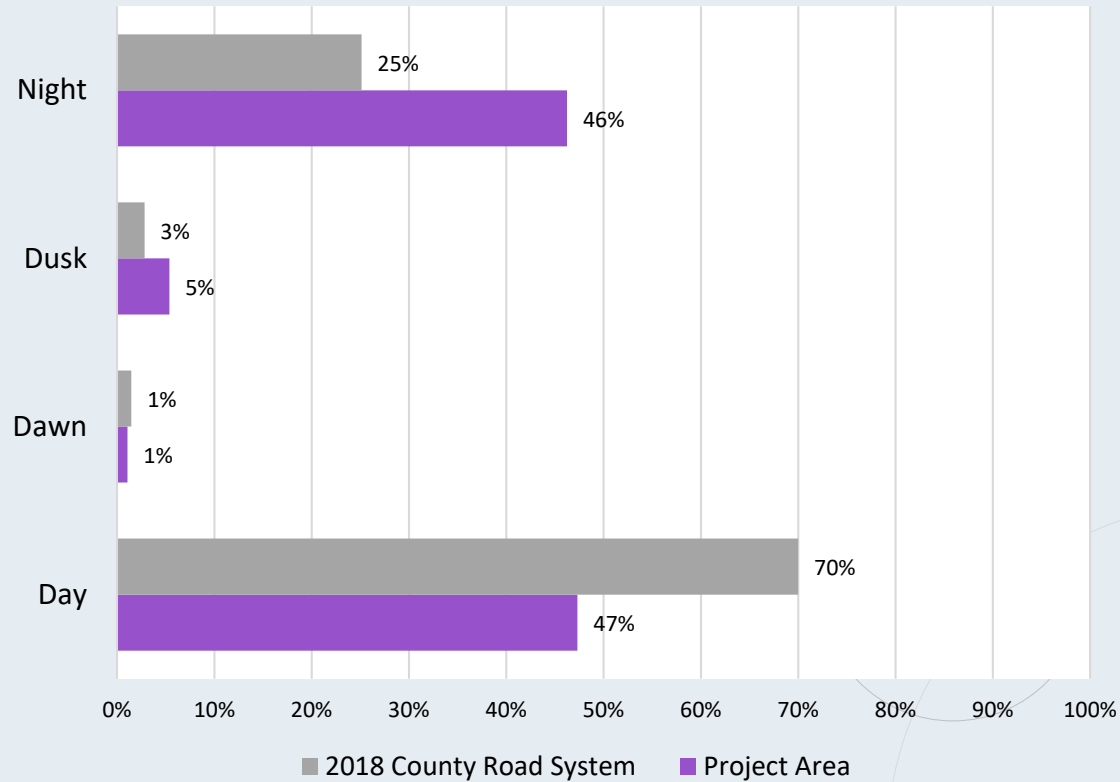
Crashes by Day of Week



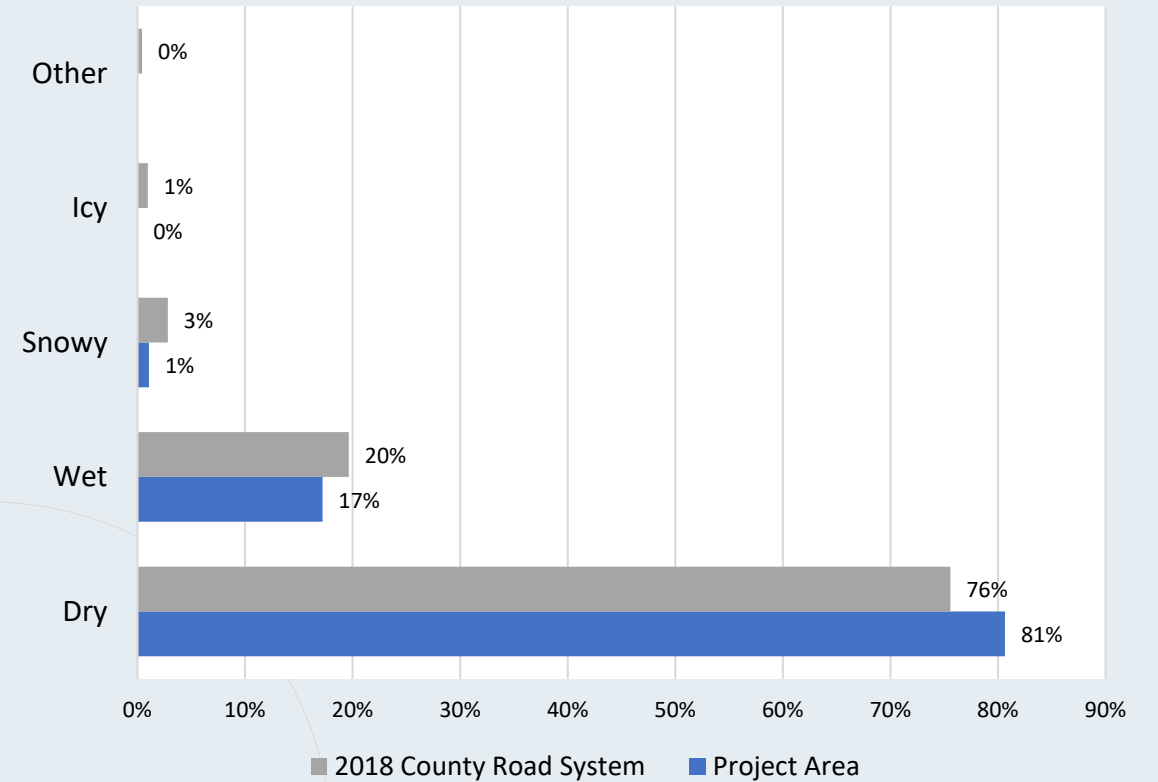


PED/BIKE CRASHES: LIGHT & SURFACE CONDITIONS

Light Conditions



Surface Conditions





ONLINE FIELD VISIT & POST AUDIT



Photos and Video from August 18, 2020



ONLINE FIELD VISIT & POST AUDIT

Discussion



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?

STREET TREES OBSCURE SIGNAL HEADS AND SIGNS

- St Agnes Ln/Freeman Ave
- S. Munn Ave
- Halstead St
- Midblock pedestrian crossing (btw Evergreen Pl and S. Harrison St)





INCONSISTENT SIDEWALK MATERIAL

- Asphalt in berm areas/curb extensions
- Pavers in curb extensions/at corners
- Concrete on walking paths/driveways
- Sections of slate sidewalk

MISSING/BROKEN FIXTURES

Clockwise from top:

- In front of Checkers (btw Shepard Ave and Nassau Pl)
- NW corner of Central Ave and St Agnes Ln
- NE corner of Central Ave and S. Clinton St
- SW corner of Central Ave and S. Clinton St





CROSSWALK PLACEMENT

- Appears to be partially within travel lane
- Shared ramp not preferred (multiple locations along corridor)

PARKING VIOLATIONS

- Double parking
- Across from 'T' intersection
- Too close to corners, crosswalks, etc.
- Blocking driveways
- On sidewalk
- Blocking bus stops





CURB RAMPS

- Not all ADA compliant
- Ponding at ramp

VARIOUS LIGHTING STYLES

Clockwise from top:

- In front of Checkers (btw Shepard Ave and Nassau Pl)
- Along Old Sanford St
- Along Sanford St/Cambridge St
- Near Oakwood Ave



PUSH BUTTON LOCATION NOT ADA COMPLIANT

Clockwise from top:

- SE corner of Central Ave and Halsted St
- SW corner of Central Ave and Oakwood Ave
- NW corner of Central Ave and Oakwood Ave





NEXT STEPS

- Preparation of RSA Report
- Review/comments from RSA Team
- Preparation of Preliminary Final Report
- Road Owner Response
- Preparation of Final Report
- Approximate timeframe: 8 weeks





THANK YOU



<http://www.gpiprojects.com/HSIP/Essex>

APPENDIX I

COUNTY & MUNICIPAL INFORMATION

ESSEX COUNTY COMPREHENSIVE TRANSPORTATION PLAN



FINAL PLAN

Chapters 1-6

June 2013

Prepared by:

 **Dewberry**

In association with:

Maser Consulting, P.A.

Stump/Hausman Partnership





Table 8: Summary of Transit Services

Municipality	Population (2010) ¹	Transit Trips (2011) ²	Projected Transit Trips (2035) ³	Light Rail Stations ⁴	Rail Stations/Jitney ⁴	Newark Bus Routes ⁴	New York Bus Routes ⁴
Belleville	35,926	2,882	3,350	1		9	2
Bloomfield	47,315	6,444	7,608	1	2	7	5
Caldwell	7,822	674	785			2	3
Cedar Grove	12,411	916	1,151			2	1
City of Orange	30,134	6,050	7,193		2	10	2
East Orange	64,270	13,398	15,569		2	11	3
Essex Fells	2,113	122	162			1	
Fairfield	7,466	270	307			2	
Glen Ridge	7,527	2,084	2,310		1 / Jitney	4	
Irvington	53,926	10,396	12,122			8	1
Livingston	29,366	2,568	2,752		Jitney	5	1
Maplewood	23,867	6,196	6,291		1 / Jitney	5	1
Millburn	20,149	4,348	4,483		2	1	
Montclair	37,669	8,926	10,587		6	4	6
Newark	277,140	53,990	64,184	15	3 ⁵	28	4
North Caldwell	6,183	400	477			1	
Nutley	28,370	3,292	3,934		Jitney	5	5
Roseland	5,819	170	184			2	3
South Orange	16,198	4,326	4,940		2 / Jitney	1	1
Verona	13,332	1,116	1,385			3	3
West Caldwell	10,759	360	432			2	5
West Orange	46,207	6,750	7,620		Jitney	5	5
ESSEX COUNTY	783,969	122,678	157,826	17	20	28	16

Sources: 1. US Census; 2. American Community Survey 2007-2011; 3. NJRTM-E growth 2011 to 2035 applied to ACS 2011; 4. NJ TRANSIT; 5. Includes PATH & AMTRAK Service



Table 14: County Route Locations with High Percentage of Auto Trips with Potential to be Diverted to Transit

Location			2011				2035			
Roadway	Name	Municipality	Trips to/from Southeast Quadrant		Trips to/from East External		Trips to/from Southeast Quadrant		Trips to/from East External	
			Number	% of Total	Number	% of Total	Number	% of Total	Number	% of Total
CR 509	Grove St	Irvington	8,008	64.0%	1,302	10.4%	9,358	63.1%	1,658	11.2%
CR 508	Central Ave	East Orange	9,934	53.8%	2,847	15.4%	10,555	51.2%	3,805	18.5%
CR 603	Springfield Ave	Irvington	7,553	53.0%	495	3.5%	8,866	52.8%	738	4.4%
CR 506	Bloomfield Ave	Belleville	582	3.8%	6,153	40.1%	536	3.5%	6,451	41.8%
CR 509	Grove St	East Orange	6,145	41.1%	670	4.5%	6,352	41.0%	995	6.4%
CR 645	Franklin Ave	Nutley	710	6.0%	3,901	33.2%	622	4.7%	5,218	39.1%
CR 665	Clinton Ave	Irvington	7,030	32.3%	1,416	6.5%	8,178	33.3%	1,718	7.0%
CR 508	Northfield Ave	West Orange	4,372	17.2%	4,429	17.4%	4,700	16.4%	5,223	18.2%
CR 609	Eisenhower Pkwy	Roseland	2,978	12.0%	4,575	18.4%	3,218	10.9%	5,598	19.0%
CR 622	West Passaic Ave	Bloomfield	360	1.7%	5,333	25.1%	355	1.5%	7,281	31.6%
CR 645	Franklin Ave	Belleville	1,526	13.0%	1,348	11.5%	1,374	11.3%	1,537	12.6%
CR 506S	Bloomfield Ave	Glen Ridge	5,321	19.2%	1,391	5.0%	5,311	18.5%	1,539	5.4%
CR 506S	Bloomfield Ave	Bloomfield	4,840	18.2%	1,593	6.0%	4,696	16.7%	1,958	7.0%
CR 658	Park Ave	East Orange	1,784	18.0%	585	5.9%	1,798	18.0%	726	7.3%
CR 577	Prospect Ave	West Orange	5,794	16.1%	2,665	7.4%	6,051	16.2%	2,918	7.8%

Appendix D: Essex County Complete Streets Policy





COUNTY OF ESSEX, NEW JERSEY
BOARD OF CHOSEN FREEHOLDERS

State of New Jersey, }
County of Essex } ss

I Deborah Davis Ford Clerk of the Board of Chosen

Freeholders of the County of Essex in the State of New Jersey

Do Hereby Certify, the foregoing to be a true copy of a resolution adopted at a

meeting of said Board on Wednesday

the 25th day of April 2012, together with the certification,

signatures and endorsements thereon.

RESOLUTION NO: R-2012-00392

*IN Testimony WHEREOF, I have hereunto set my
hand and affixed the official seal of said County at
Newark this 17th day of
December A.D. 2012*

Clerk

PLEASE NOTE: Resolution Nos. R-12-0392, become R-2012-00392, as per Ordinance No. O-2011-00010, adopted August 17, 2011.

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RESOLUTION OF THE BOARD OF CHOSEN FREEHOLDERS
COUNTY OF ESSEX

RESOLUTION NO. R-12-0392
PROPOSED BY: FREEHOLDER GILL

AUTHORITY FOR RESOLUTION N.J.S.A. 40:41A-38(a)
AUTHORITY FOR ACTION C.C.E. 3:2-29(B)

SUBJECT:

RESOLUTION ESTABLISHING AND ADOPTING AN ESSEX COUNTY COMPLETE STREETS POLICY

WHEREAS, a Complete Street is defined as a means to provide safe access for all users by designing and operating a comprehensive, integrated, connected multi-modal network of transportation options; and

WHEREAS, the benefits of Complete Streets include improving safety for pedestrians, bicyclists, children, older citizens, non-drivers and the mobility challenged as well as those that cannot afford a car or choose to live car free; providing connections to bicycling and walking trip generators such as employment, education, residential, recreation, retail centers and public facilities; promoting healthy lifestyles; creating more livable communities; reducing traffic congestion and reliance on carbon fuels thereby reducing greenhouse gas emissions; and saving money by incorporating sidewalks, bike lanes, safe crossings and transit amenities into the initial design of a project, thus sparing the expense of retrofits later; and

WHEREAS, the Essex County Board of Chosen Freeholders wishes to establish a Complete Streets policy through the planning, design, construction, maintenance and operation of new and retrofit transportation facilities, enabling safe access and mobility; and

WHEREAS, it is the intent of the Board of Chosen Freeholders that to the extent practicable, the Essex County Complete Streets policy shall include all road, bridge, and building projects.

NOW, THEREFORE, be it resolved that the Essex County Board of Chosen Freeholders establish the following Complete Streets Policy with the following goals and objectives:

1. Provide safe and accessible accommodations for existing and future pedestrian, bicycle and transit facilities.
2. Establish a checklist of pedestrian, bicycle and transit accommodations such as accessible sidewalks curb ramps, crosswalks, countdown pedestrian signals, signs, curb extensions, pedestrian scale lighting, bike lanes, and shoulders for consideration in each project where county jurisdiction applies.
3. Additionally, in rural areas, paved shoulders or a multi-use path shall be in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day. Paved shoulders provide safety and operational advantages for all road users. Exemptions shall be considered for County and State designated routes such as Scenic Roads, and Historic or Cultural Byways. If there is evidence of heavy pedestrian usage then sidewalks shall be considered in the project.
4. Establishment of a procedure to evaluate resurfacing projects for Complete Streets inclusion according to length of project, local support, environmental constraints, right-of-way limitations, funding resources, and bicycle and/or pedestrian compatibility.
5. Transportation facilities constructed for long-term use shall anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements.
6. Designs shall address the need for bicyclists and pedestrians to cross corridors, as well as travel along them, in a safe, accessible and convenient manner.
7. Bicycle and pedestrian facilities shall be designed and constructed to the best currently available standards and practices including the New Jersey Roadway Design Manual, the AASHTO Guide for the Development of Bicycle Facilities, AASHTO's Guide for the Planning, Design and Operation of Pedestrian Facilities, the Manual of Uniform Traffic Control Devices and others as related.

8. Provisions shall be made for pedestrians and bicyclists when closing roads, bridges or sidewalks for construction projects as outlined in NJDOT Policy #705 -Accommodating Pedestrian and Bicycle Traffic During Construction.

9. Improvements shall also consider connections for Safe Routes to Schools, Safe Routes to Transit, Transit Villages, trail crossings and areas or population groups with limited transportation options.

10. Improvements shall comply with Title VII Environmental Justice, Americans with Disabilities Act (ADA) and complement the context of the surrounding community.

11. Exemptions to the Complete Streets policy shall be presented for final decision to the County Engineer in writing and documented with supporting data that indicates the reason for the decision and are limited to the following:

- a) Non-motorized users are prohibited on the roadway.
- b) Scarcity of population, travel and attractors, both existing and future, indicate an absence of need for such accommodations.
- c) Detrimental environmental or social impacts outweigh the need for these accommodations.
- d) Cost of accommodations is excessively disproportionate to cost of project.
- e) The safety or timing of a project is compromised by the inclusion of Complete Streets.
- f) An exemption other than those listed above must be documented with supporting data and must be approved by the County Engineer.

BE IT FURTHER RESOLVED, that a certified copy of this Resolution shall be sent to the Office of the County Administrator, Office of County Counsel and Department of Public Works.

Michel J. Parlantakis

Approved as to form and legality _____

RECORD OF VOTE (X=Vote N.V.=Absention ABS=Absent)

Moved by Freeholder *Sebold*
Second by Freeholder *Beasley*

Freeholder	Yes	No	N.V.	ABS	Freeholder	Yes	No.	N.V.	ABS
BEASLEY	✓				LUCIANO	✓			
BOBADILLA	✓				PAYNE, JR				X
CLARK	✓				SEBOLD, VICE PRES.	✓			
GILL	✓								
JOHNSON	✓				WATSON, PRES.	✓			

It is hereby certified that the foregoing Resolution was (X) adopted () defeated () tabled by roll call vote at a regular meeting of the Board of Chosen Freeholders of the County of Essex, New Jersey held on April 25, 2012.

Is Publication Required () Yes () No
Date Published _____

Blonnie R. Watson
Blonnie R. Watson, President

29 Park Street, Orange, NJ 07050

Sgt. M. Craig, Supervisor
973-266-4111 x5002

School Crossing Unit



Patsy Harper, School Crossing Unit
973-266-4111 x6010
973-674-4008 (Fax)

Fax

TRAFFIC BUREAU Commander

To:

From:

Sgt. Craig

Fax: 973-224-7469

Pages:

2

Phone: 973-266-4111

Date:

4/8/08

Re: Designated School Crossing List

CC:

- Urgent
- For Review
- Please Comment
- Please Reply
- Please Recycle

• Comments: AS YOU REQUESTED ORANGE TWP SCHOOL CROSSING LOCATION LIST.

Orange Twp

School Guard Assignments



Date:

Day:

Time Checked:

4/8/08

Conditions:

School Guards Name:	On/Off	Post	Remarks
		Scotland Road & Frankfort Street	
		Cleveland Street & White Street	
		South Center St. & Central Ave.	
		Cleveland St. & Main St.	
		White St. & No. Day St.	
		Berkeley Ave. & Heywood Ave.	
		Valley Road & Forest Street	
		Floater	
		Oakwood Avenue School	
		Central Ave. & Oakwood Ave.	
		Lincoln Ave. & Heywood Ave.	
		Carteret Terr. & Central Ave.	
		Central Ave. & So. Essex Ave.	
		Valley Road & Nassau Street	
		Falview Ave. & Scotland Road	
		High Street & Alden Street	
		Lakeside Ave. & High Street	
		Park Ave. & Mt. Vernon Ave.	
		Washington St. & High St.	
		Oakwood Ave. & Parrow St.	

		Lincoln Ave. & Central Ave.	
		Scotland Rd. & Heywood Ave.	
		Lincoln Ave. & Jackson St.	
		Cleveland St. & Alden St.	
		Park Ave. & Duane St.	
		Carteret Terr. & Reynolds Terr.	
		No. Day St. & Alden St.	
		St. John's School	
		Cleveland St. & Park Ave.	



ESSEX COUNTY DEPARTMENT OF PUBLIC WORKS DIVISION OF ENGINEERING

900 Bloomfield Avenue
VERONA, NEW JERSEY 07044
TEL. (973) 226-8506

FACSIMILE TRANSMITTAL SHEET

TO: **TRAFFIC BUEARUE COMMANDER**

FROM: **ASIF U. MAHMOOD
PRINCIPAL ENGINEER**

AGENCY / COMPANY: **POLICE DEPARTMENT** DATE: **April 1, 2008** PHONE NUMBER: **973-226-8500 EXT. 256**

FAX NUMBER: PHONE NUMBER: NO. OF PAGES INCLUDING COVER SHEET: **1**

REF: **DESIGNATED SCHOOL CROSSINGS LIST** DPW FAX NO: **973-226-7469**

- URGENT
- FOR REVIEW
- PLEASE COMMENT
- PLEASE REPLY
- YOUR INFORMATION

NOTES/COMMENTS:

Gentlemen,

The Traffic Section of the Office of the County Engineer is in process of updating designated school crossing locations along County Roads in each Municipality. Please send me the updated school crossing location list within your Municipality.

Your co-operation in this matter is highly appreciated.

C: Sanjeev Varghese, PE, PP, County Engineer
ema/file

J:\VMAHMOOD\of\SCHOOLCROSSINGS2008.doc

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Sgt Cheng PLEASE ASSIST

EAST ORANGE POLICE DEPARTMENT
RECORDS AND IDENTIFICATIONS DIVISION

FAX COVER SHEET

THE FOLLOWING FAX MESSAGE CONSISTS OF 3
PAGE(S) INCLUDING THIS COVER SHEET.

SENT TO: ASIF U. Mahmood.

FAX NUMBER: _____

FROM: off. F. De Herde

RE: school crossing locations in East Orange

SENDER TELEPHONE: 973.266.5027 FAX: _____

COMMENTS: _____

CONFIDENTIALITY NOTICE

The information contained in this facsimile from the East Orange Police Department, Records and Identifications is PRIVILEGED and CONFIDENTIAL. It is intended for the sole use of the person(s) or entity named on this transmittal cover sheet. If you are not the intended recipient of this transmission, distribution, copying or other use of this information is strictly prohibited. If you have received this transmission in error, please call the sender immediately and arrange for the return of this information.

East Washington
School Crossings

ID:

MAY 02 '02

8:57 No.006 P.02

LOCATION
4TH. AVE. & 19TH ST.
WASHINGTON ST. & GLENWOOD AVE.
WILLIAM ST. & PROSPECT ST.
WILLIAM ST. & LINCOLN ST.
WILLIAM ST. & NO. CLINTON ST.
WILLIAM ST. & NO. ORATON PKWY.
WILLIAM ST. & NO. GROVE ST.
WILLIAM ST. & GREENWOOD AVE.
WILLIAM ST. & NO. 15TH ST.
GREENWOOD AVE. & GROVE PL.
GREENWOOD AVE. & GROVE PL.
GREENWOOD AVE. & EATON PL.
SUSSEX AVE. & SO. GROVE ST.
SUSSEX AVE. & SO. MAPLE AVE.
WHINTHROP TERR. & SO. GROVE ST.
HOLLYWOOD AVE. & 9TH AVE.
STEBEAN ST. & 9TH AVE.
CENTRAL AVE. & SO. GROVE ST.
CENTRAL AVE. & SO. MAPLE AVE.
CENTRAL AVE. & PARKWAY (EAST)
CENTRAL AVE. & PARKWAY (WEST)
CENTRAL AVE. & SO. MUNN AVE.
CENTRAL AVE. & SO. ARLINGTON AVE.
CHESTNUT ST. & SO. ARLINGTON AVE.
ELMWOOD AVE. & SHEPARD AVE.
ELMWOOD AVE. & SO. BURNET ST.
ELMWOOD AVE. & SO. CLINTON ST.
ELMWOOD AVE. & SANFORD ST.

LOCATION	SCHOOL
DODD ST. & MIDLAND AVE.	
DODD ST. & COLONIAL TERR.	
DODD ST. & GLENWOOD AVE.	
DODD ST. & PROSPECT ST.	
SPRINGDALE AVE. & MIDLAND AVE.	
SPRINGDALE AVE. & NO. CLINTON ST.	
SPRINGDALE AVE. & NO. MAPLE AVE.	
SPRINGDALE AVE. & NO. 23RD. ST.	
RUTLEDGE AVE. & NO. GROVE ST.	
RUTLEDGE AVE. & HOFFMAN BLVD.	
AMPERE PKWY. & ROWE ST.	
PARK AVE. & WASHINGTON TERR.	
PARK AVE. & PROSPECT ST.	
PROSPECT ST. & PROSPECT TERR.	
LINCOLN ST. & MELMORE GARDEN	
PARK AVE. & LINCOLN ST.	
HAMILTON ST. & LINCOLN ST.	
HAMILTON ST. & NO. CLINTON ST.	
HAMILTON ST. & NO. CLINTON ST.	
M. L. K. BLVD. & NO. CLINTON ST.	
PARK AVE. & NO. ORATON PKWY.	
PARK AVE. & NO. GROVE ST.	
4TH. AVE. & NO. GROVE ST.	

Dispatcher: 266 50.

EAST ORANGE
School CROSSINGS

LOCATION
WAYNE AVE. & SO. HARRISON ST.
CENTRAL AVE. & SO. HARRISON ST.
CENTRAL AVE. & SO. CLINTON ST.
RHODE ISLAND AVE. & SHEPARD AVE.
RHODE ISLAND AVE. & SO. CLINTON ST.
RHODE ISLAND & SANFORD ST.
TREMONT AVE. & SHEPARD AVE.
TREMONT AVE. & SO. CLINTON ST.
TREMONT AVE. & TELFORD ST.
TREMONT AVE. & SANFORD ST.
PARK AVE. & GLENWOOD AVE.
WASHINGTON ST. & WASHINGTON TERR.
PROSPECT ST. & SPRINGDAL AVE.

e last crossing will be 2:45-3:30

e last crossing will be 2:30-3:30

ZONING MAP



LEGEND

REGULAR ZONING

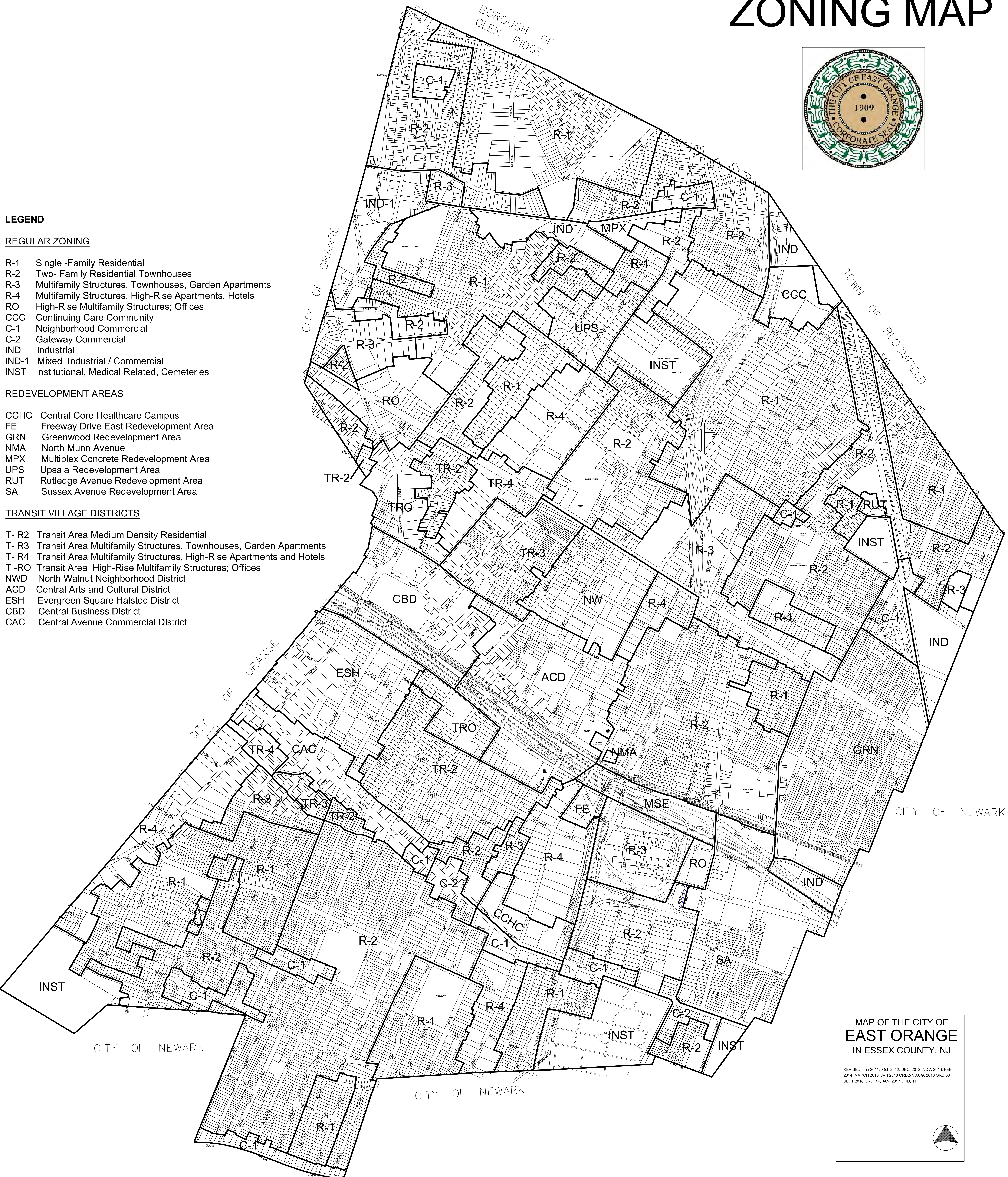
- R-1 Single -Family Residential
- R-2 Two- Family Residential Townhouses
- R-3 Multifamily Structures, Townhouses, Garden Apartments
- R-4 Multifamily Structures, High-Rise Apartments, Hotels
- RO High-Rise Multifamily Structures; Offices
- CCC Continuing Care Community
- C-1 Neighborhood Commercial
- C-2 Gateway Commercial
- IND Industrial
- IND-1 Mixed Industrial / Commercial
- INST Institutional, Medical Related, Cemeteries

REDEVELOPMENT AREAS

- CCHC Central Core Healthcare Campus
- FE Freeway Drive East Redevelopment Area
- GRN Greenwood Redevelopment Area
- NMA North Munn Avenue
- MPX Multiplex Concrete Redevelopment Area
- UPS Upsala Redevelopment Area
- RUT Rutledge Avenue Redevelopment Area
- SA Sussex Avenue Redevelopment Area

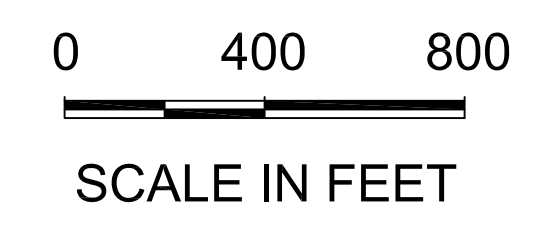
TRANSIT VILLAGE DISTRICTS

- T- R2 Transit Area Medium Density Residential
- T- R3 Transit Area Multifamily Structures, Townhouses, Garden Apartments
- T- R4 Transit Area Multifamily Structures, High-Rise Apartments and Hotels
- T -RO Transit Area High-Rise Multifamily Structures; Offices
- NWD North Walnut Neighborhood District
- ACD Central Arts and Cultural District
- ESH Evergreen Square Halsted District
- CBD Central Business District
- CAC Central Avenue Commercial District



MAP OF THE CITY OF
EAST ORANGE
IN ESSEX COUNTY, NJ

REVISED: Jan 2011, Oct 2012, Dec 2012, Nov 2013, Feb 2014, March 2015, Jan 2016 ORD.57, Aug. 2016 ORD.38
SEPT 2016 ORD. 44, JAN. 2017 ORD. 11



PREPARED FOR THE PLANNING BOARD
EAST ORANGE, NEW JERSEY

STAFF SERVICES
DEPT OF PUBLIC WORKS - MAYORS OFFICE OF PLANNING/
COMMUNITY DEV. - BUILDING DEPT.

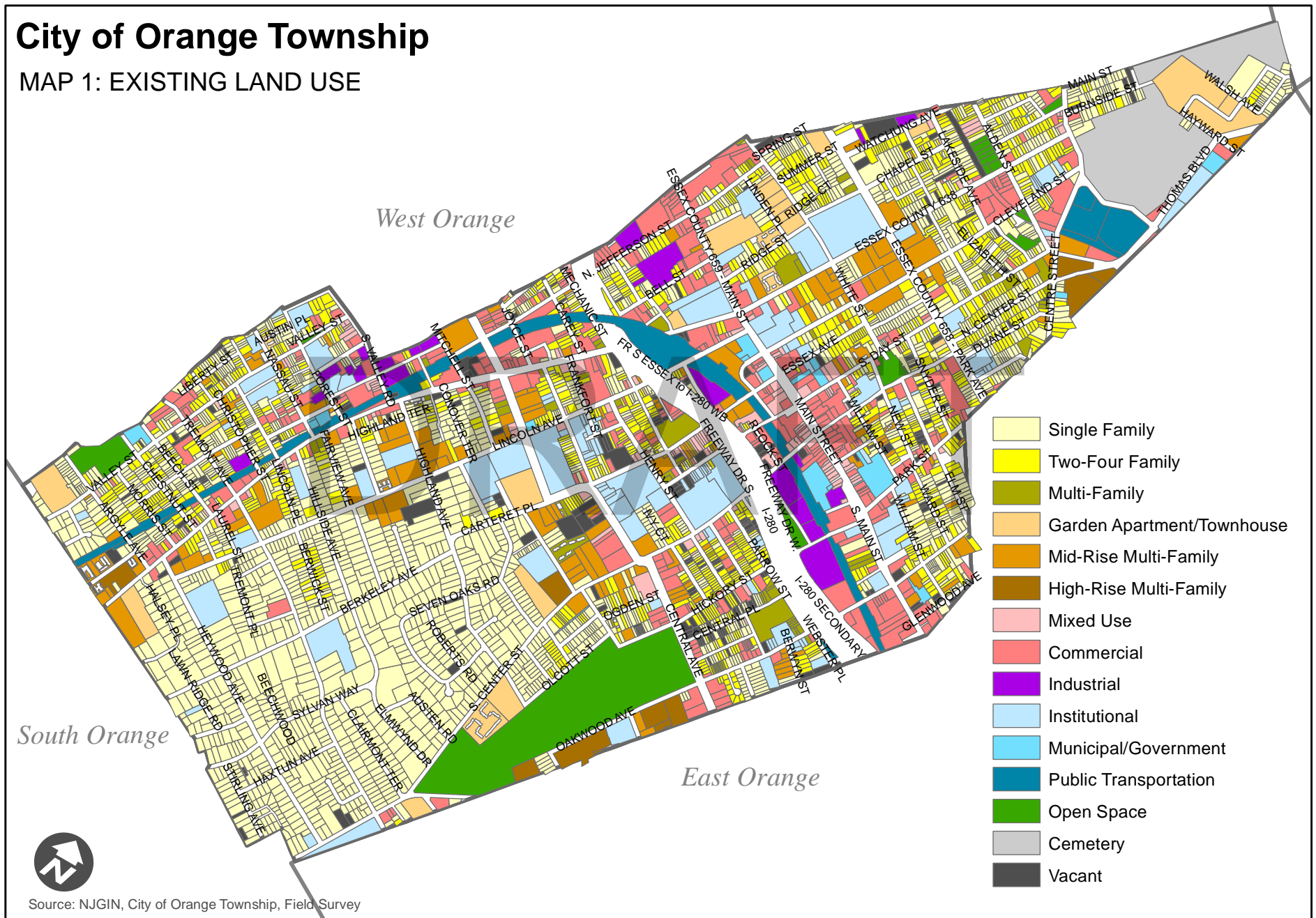
NOTE:
DISTRICT BOUNDARIES CONFORM WITH EXISTING LOT LINES
AND TO CENTER LINES OF STREETS, HIGHWAYS, RAILROADS
AND STREAM, OR STRAIGHT LINE EXTENSIONS THEREOF

FOR ADDITIONAL ZONING INFORMATION PLEASE VISIT ZONING DEPARTMENT

3.1 Land Use

City of Orange Township

MAP 1: EXISTING LAND USE

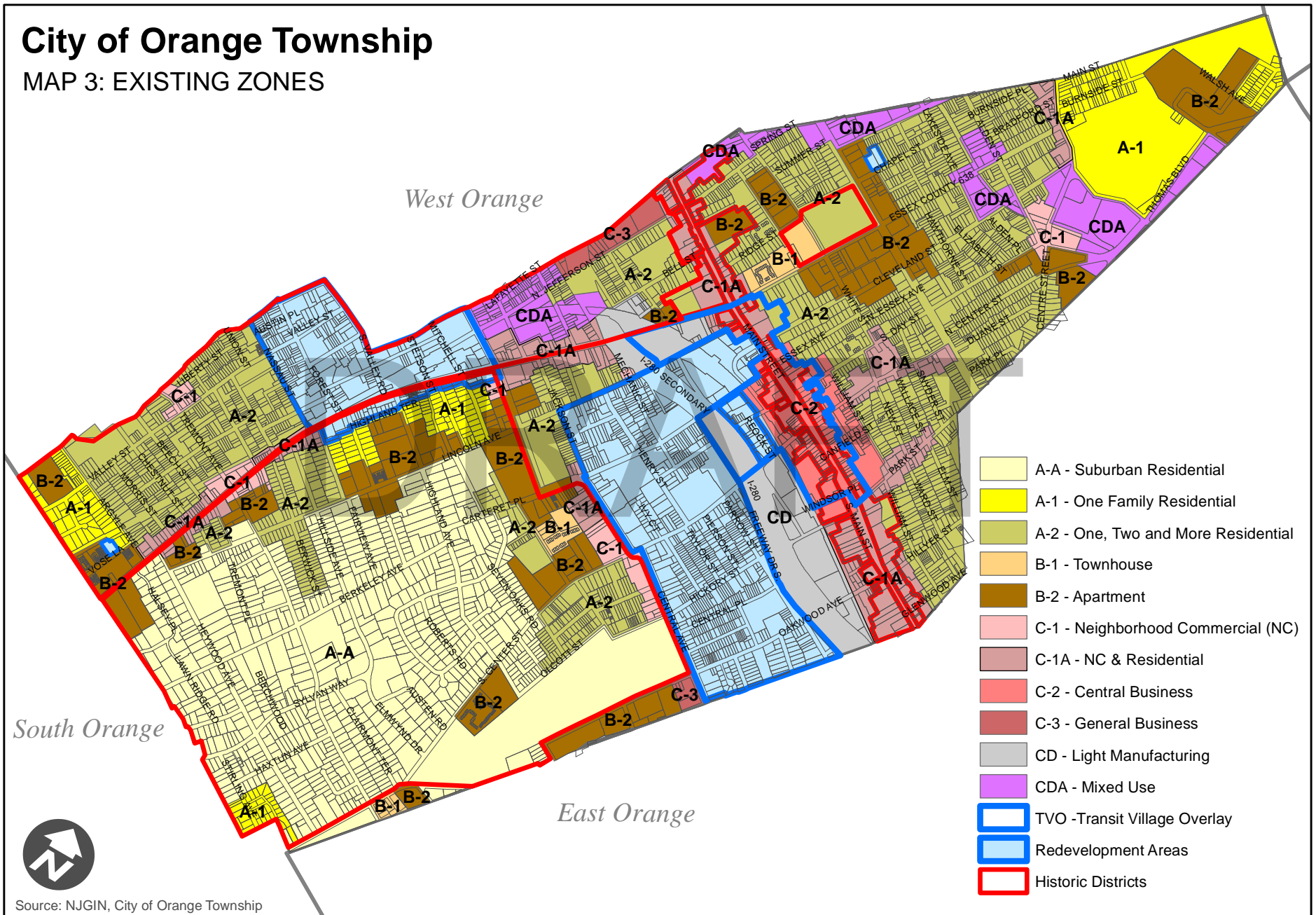


Source: NJGIN, City of Orange Township, Field Survey

3.1 Land Use

City of Orange Township

MAP 3: EXISTING ZONES



Source: NJGIN, City of Orange Township

APPENDIX J

ROAD OWNER RESPONSE



**COUNTY OF ESSEX
DEPARTMENT OF PUBLIC WORKS**

**DIVISION OF ENGINEERING
900 BLOOMFIELD AVENUE
VERONA, NEW JERSEY 07044-1393**

**☎ (973) 226-8500
📠 (973) 226-7469**

**JOSEPH N. DIVINCENZO, JR.
COUNTY EXECUTIVE**

**Sanjeev Varghese, P.E., P.P.
Director & County Engineer**

**Luis E. Rodriguez
Assistant County Engineer**

December 8, 2020

Julia Steponanko, PE, Project Manager
Greenman-Pedersen Inc (GPI)
100 Corporate Drive
Lebanon, NJ 08833

**Re: Central Ave (CR-508), Oakwood Pl to S. Munn Ave, Road Safety Audit (RSA)
Cities of Orange and East Orange, County of Essex**

Dear Ms. Steponanko:

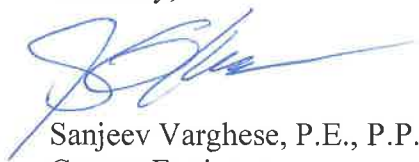
The County of Essex generally agrees with the recommendations 1 through 82, pages 11 through 16 of the report of the Central Ave, Road Safety Audit (RSA). The County strives to make our roads safer for all road users and is willing to investigate any recommendations that can assist in achieving that 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:

- Essex County does not maintain or inspect sidewalks along County Roads. That responsibility lies with the municipality or property owner.
- Traffic impacts of land development projects are contingent on implementation of measures that ameliorate those impacts. Review of the traffic impacts of new developments would therefore be redundant.
- Some recommendations may not be warranted or feasible due to engineering or fiscal constraints. Additional analysis is necessary.

Should you have any questions concerning the above, please contact Asif U. Mahmood, Principal Engineer at (973) 226-8500, extension 2560.

Sincerely,



Sanjeev Varghese, P.E., P.P.
County Engineer

SV/JP/AUM/RV/IO/File

J:\AMAHMOOD\njtpa\RSA 2020\RSA for Central Ave, letter to Ms Julia.doc

Putting Essex County First

ESSEX COUNTY IS AN EQUAL OPPORTUNITY EMPLOYER