



CR 55 (KOZLOSKI ROAD/HALLS MILL ROAD)
(Between Center Street and Willow Brook Road)
ROAD SAFETY AUDIT REPORT
Freehold Township, Monmouth County, New Jersey

>> December 2015

RSA facilitated by the Transportation Safety Resource Center (TSRC) at the Rutgers Center for Advanced Infrastructure and Transportation (CAIT) in partnership with the North Jersey Transportation Planning Authority (NJTPA) and Monmouth County with funding provided by FHWA and NJDOT

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>> INTRODUCTION

WHAT IS A ROAD SAFETY AUDIT (RSA)?

The Center for Advanced Infrastructure and Transportation's (CAIT's) Transportation Safety Resource Center (TSRC) offers a statewide Road Safety Audit (RSA) service at no charge to New Jersey towns and counties. Interested parties can request road surveys which are conducted by a team of engineers, planners, and law-enforcement officers to help municipalities and counties make cost-effective safety improvements.

A multidisciplinary team of professionals offers assessments on roadway issues such as pedestrian and bicycle safety, intersection analyses, rural roads, human factors, speed management, and sign visibility and retroreflectivity standards.

RSAs include data-driven considerations and analysis of crashes. To determine the best safety solutions, RSA professionals perform incisive crash data evaluations on the target area using their award-winning crash database and software, Plan4Safety, of the New Jersey Department of Transportation, developed and maintained by the Rutgers Transportation Safety Resource Center.

The RSA team provides a final report that includes short-, medium- and long-term countermeasure recommendations with the corresponding low, medium and high cost levels. Furthermore, RSAs pay off. According to the Federal Highway Administration (FHWA), countermeasures applied after RSAs can reduce crashes by about 60 percent.

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DISCLAIMER

Road Safety Audit reports provided by the Center for Advanced Infrastructure and Transportation staff do not constitute engineering reports. The agency responsible for design and construction should consult a professional engineer licensed by the State of New Jersey in preparing the design and construction documents to implement any of the safety countermeasures in this report.

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the New Jersey Department of Transportation or the Rutgers Center for Advanced Infrastructure and Transportation. This report does not constitute a standard, specification, or regulation. This document is disseminated under the sponsorship of the Department of Transportation, University Transportation Centers Program, in the interest of information exchange. The US government assumes no liability for the contents or use thereof.

EXECUTIVE SUMMARY

The Road Safety Audit (RSA) along a 1.1 mile corridor of CR 55 (Kozloski Road / Halls Mill Road) in Freehold Township, Monmouth County, was chosen after two fatal crashes that occurred on the roadway in 2014. In addition, there was crash history at the intersection of CR 55 and Center Street/Freneau Boulevard that included four incapacitating injuries within a seven-year period (2008–2013). The result of the RSA, detailed in this report, is a summary of the corridor’s safety history from 2011–2013 (with analysis of severe injury crashes from 2008–2014) and a listing of recommended improvements that were created by the RSA team.

CR 55 (Kozloski Road / Halls Mill Road) is a heavily travelled north-south roadway, an Urban Minor Arterial. It is a four-lane roadway, undivided, with a speed limit of 50 miles per hour. South of the RSA area, the corridor connects to NJ 33; toward the north it crosses CR 537 and CR 46. The four-lane cross section has centerline rumble strips in the northern half of the corridor. There are no shoulders in the north, and variable-width shoulders in the south. There are signalized intersections at both ends of the corridor, two T-intersections accessing neighborhoods, and several commercial properties along the roadway. Left turns are a problem, as there are few left-turn bays. There are few accommodations for pedestrians, and no sidewalks.

The primary concern is to prevent opposite direction / crossover crashes (which are exacerbated by the high speed of travel.) Separating the two directions of travel with a barrier is the favored solution, but improving the existing centerline rumble strips and adding shoulders could also improve safety. Monmouth County has established a Complete Streets policy that supports safe and accessible roads for all users. Although there isn’t data concerning pedestrian crashes, there is a long-term need to accommodate pedestrians and bicyclists. The southeast corner of Thoreau Drive is slated for development, and this will create an opportunity to implement some of the recommendations in this report.

Other recommendations in this report include preventing left turns from the driveways and side streets, and reducing conflicts with fixed objects at the edge of the roadway. Increased enforcement is an additional way to reduce speeding.

>> 1.0 CORRIDOR DESCRIPTION AND ANALYSIS

1.1 SITE SELECTION

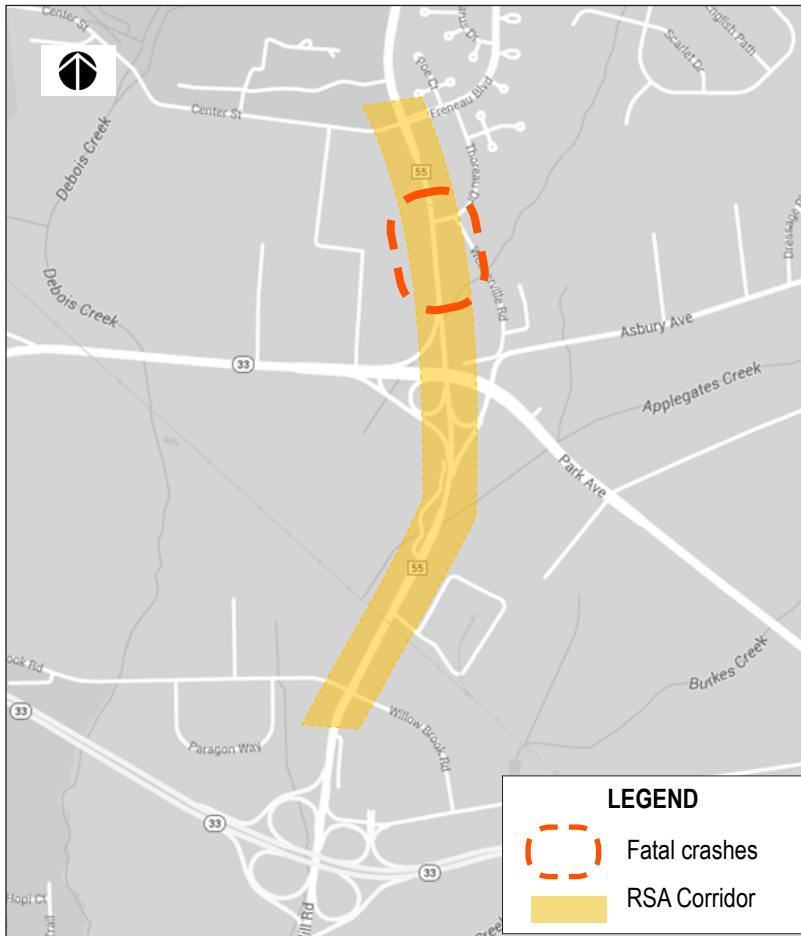


Figure 1 – Identified Priority Crash Locations

In 2014, there were two crashes south of Thoreau Drive, resulting in four fatalities and one incapacitating injury. Both of these crashes occurred as a result of southbound vehicles crossing over into the northbound lane of traffic.

Although the RSA relied on crash data from a three-year period from 2011 to 2013, crash data was evaluated for an additional three-year period preceding this. There were four more crashes from 2008–2010 that resulted in incapacitating injuries: a left-turn crash and a right-angle crash at the Center Street intersection; a same-direction/sideswipe just north of the Center Street intersection; and an opposite -direction/head-on/ angular crash at Thoreau Drive.

1.2 TRAFFIC VOLUMES

Traffic volume from September 2014, 792 feet south of Center Street, was 12,107 AADT southbound and 9,947 AADT northbound. (See Appendix B for detailed information.)

1.3 AREA TRANSIT

There are no NJ Transit bus routes on CR 55 (Kozloski Road / Halls Mill Road). There is bus service along NJ 33 Business, a grade-separated interchange. There are NJ Transit buses that use this roadway when not in service, and there are school buses that travel this roadway.

1.4 AREA CHARACTERISTICS

CR 55 is a four lane Urban Minor Arterial that runs south to north for three miles from Willow Brook Road at the southern end, and ends at CR 46 (Dutch Lane Road) in the north. CR 55 is called Halls Mill Road south of Park Avenue (CR 33B), and Kozloski Road to the north. In the RSA corridor, CR 55 crosses over 33 Business (Park Avenue) with connecting ramps. Outside of the RSA corridor it continues north and west as E. Freehold Road and to the south it intersects with State Route 33, terminating at CR 524. The roadway functions as an alternative north-south route connecting to Route 9 to the west.

In the RSA corridor, the roadway is predominantly four lanes with no shoulders (except at the bridge). There is no median north of the bridge, and a partial painted median south of the bridge. There are only a few access points along the roadway. Very few people in Freehold Township use public transportation for their commute.

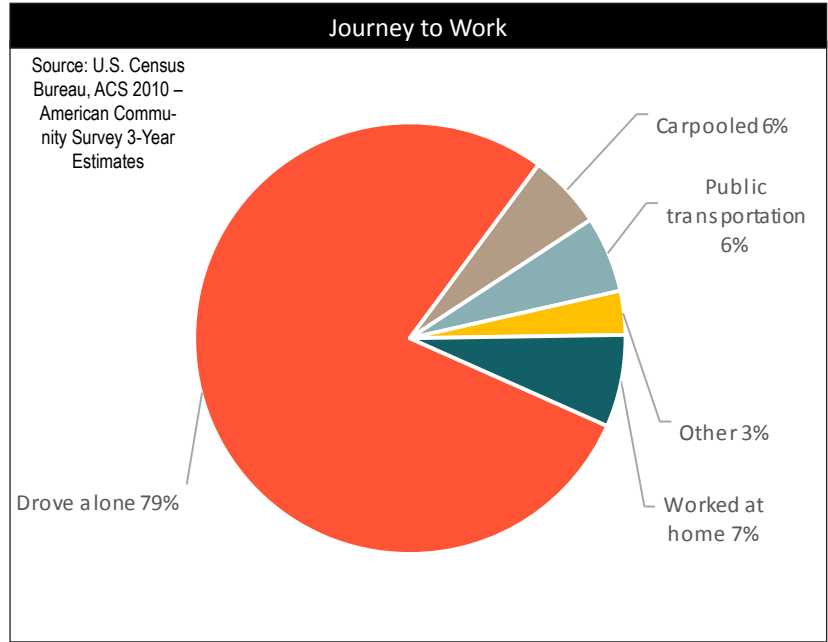


Figure 2 – Journey to Work

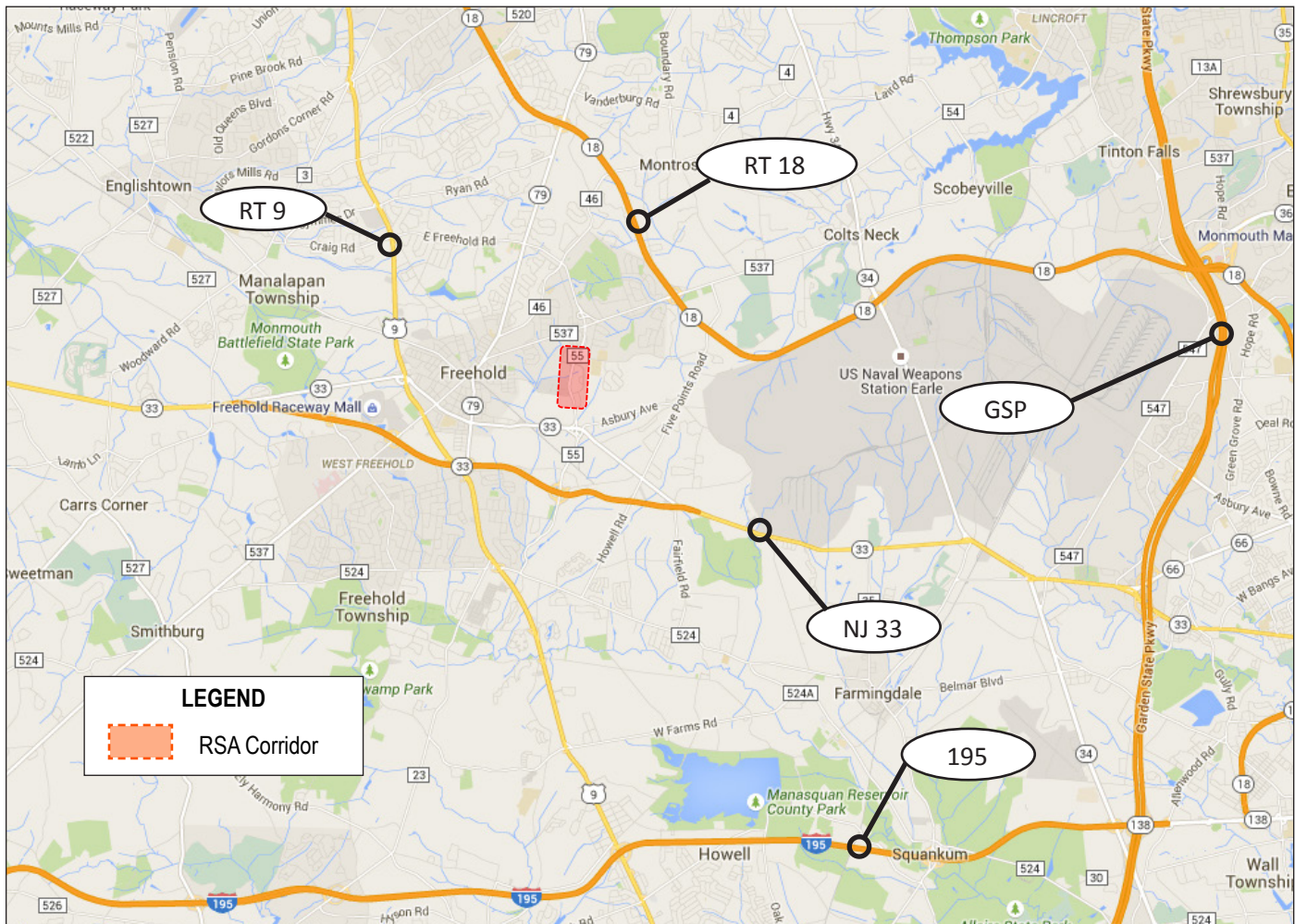


Figure 3 – Area Roadways

1.5 INTERSECTION CHARACTERISTICS

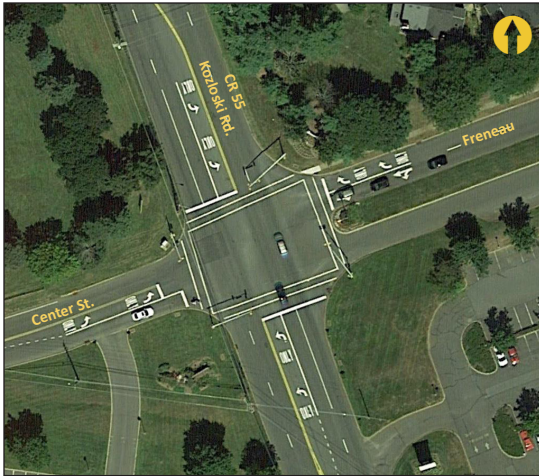


Figure 4 – Intersection of Center Street/ Freneau Boulevard

Center Street / Freneau Boulevard

- Signalized, no pedestrian heads
- Kozloski Road—two lanes in each direction with left-turn lane
- Center Street—one lane in each direction with dedicated left-turn lane
- Freneau Boulevard—one through-lane in each direction; dedicated right-turn lane; grassy median island
- Southwest corner—Monmouth County Public Works Complex
- Southeast corner—Poets Corner shopping center
- Northeast corner—neighborhood set back from intersection
- Northwest corner—East Freehold Park



Figure 5 – Intersection with Thoreau Drive

Thoreau Drive

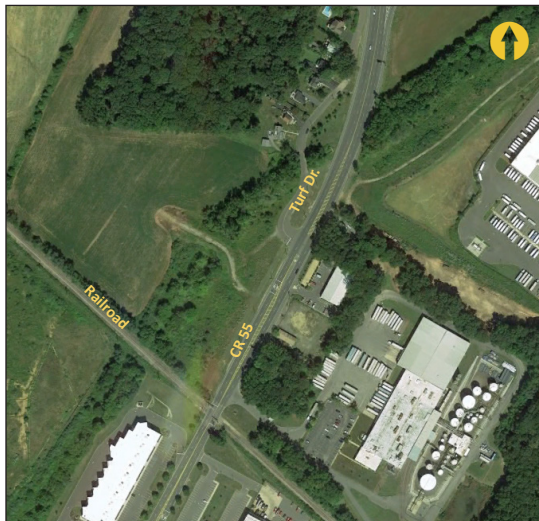
- T-intersection
- Access to Poets Corner shopping center and neighborhood
- No left turns permitted
- Sidewalk along the north side of Thoreau Drive
- Guiderail on west side of roadway along curbline



33 Business

- Off ramps for northbound and southbound
- Cloverleaf ramps on south side only
- Wide shoulders throughout

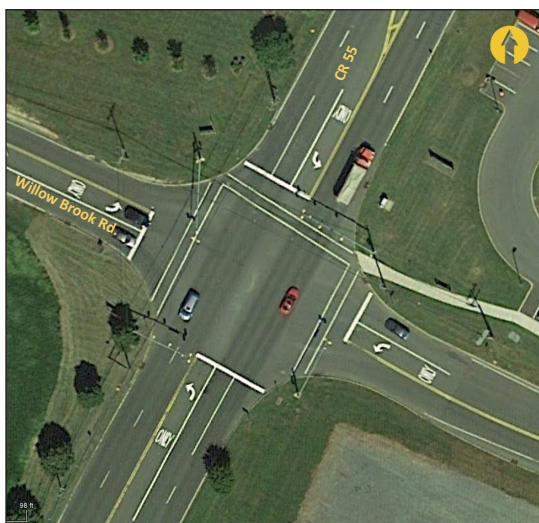
Figure 6 – Bridge over 33 Business



Between Bridge and Willow Brook Road

- Two lanes in each direction
- Acceleration and deceleration lanes at bridge
- Left turn lane at Turf Drive
- Residential Turf Street on west side of roadway
- Driveways to businesses on east side of roadway
- Exit only from business on west side of roadway
- Railroad crossing without gates; only a few trains each week

Figure 7 – South of bridge and north of Willow Brook Road



Willow Brook Road / (CR 55) Halls Mill Road

- Signalized with pedestrian heads
- Halls Mill Road—two lanes in each direction with left-turn lane
- Willow Brook Road—one lane in each direction with dedicated left-turn lane
- No curb ramps
- No marked crosswalk on south leg of intersection
- Northeast corner—Monmouth County facility
- Northwest corner—office building
- Southeast corner—vacant
- Southwest corner—vacant

Figure 8 – Intersection with Willow Brook Road

1.6 CROSS SECTION GEOMETRY



Figure 9 – North section facing south

In the photo shown in Figure 10 slightly further south from the above photo, there are shoulders on both sides of the roadway with acceleration/deceleration lanes.



Figure 10 – Bridge cross section



Figure 11 – South cross section

In the photo shown in Figure 9 just south of Thoreau Drive, there are two lanes in each direction with a centerline rumble strip. There are no shoulders and no striped edge of travel lane. A few areas have guide rail. There are no sidewalks.

The area from south of the bridge to Willow Brook Road also has two lanes in each direction. There is a shoulder of varying width and left-turn bays at Turf Drive and at Willow Brook Road and includes a painted median.

>> 2.0 CRASH FINDINGS

2.1 TEMPORAL TRENDS

The following charts compare the crashes in the RSA area to all of Monmouth County during 2011–2013 in order to give a frame of reference. In terms of the time of day, crashes were over-represented from approximately 7:00 a.m. to 12:00 p.m. Crashes occurred more frequently on Monday, Tuesday and Thursday with fewer crashes on the weekend. Crashes occurred more frequently during the months of May, September, and October.

The crash frequency stayed level from 2011 to 2012 and then increased in 2013.

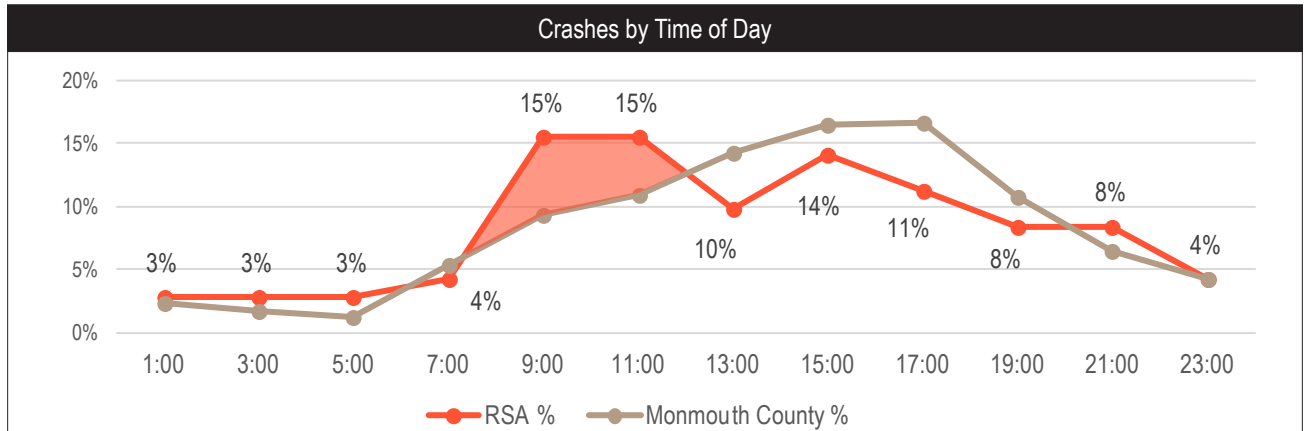


Figure 12 – Crashes by Time of Day

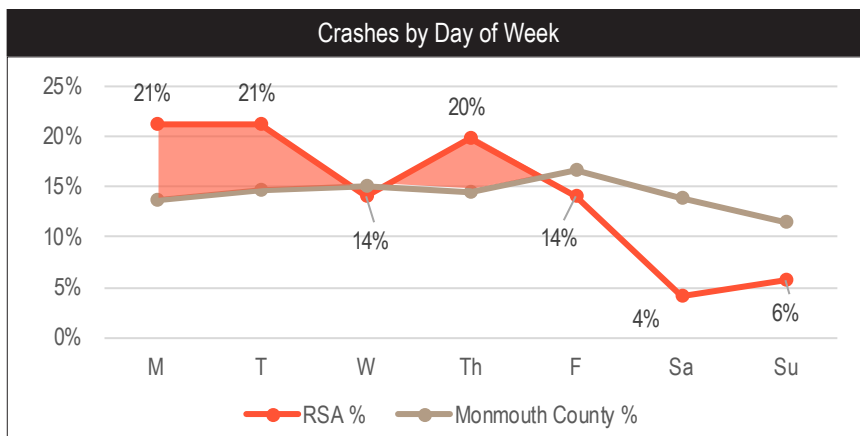


Figure 13 – Crashes by Day of Week

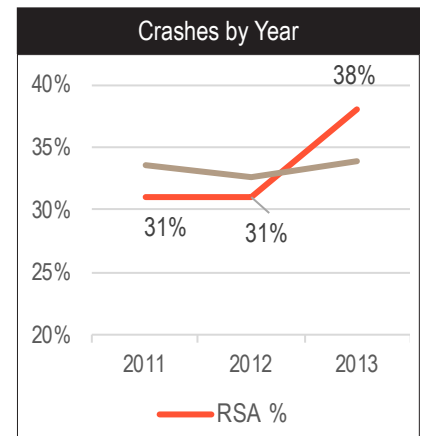


Figure 14 – Crashes by Year

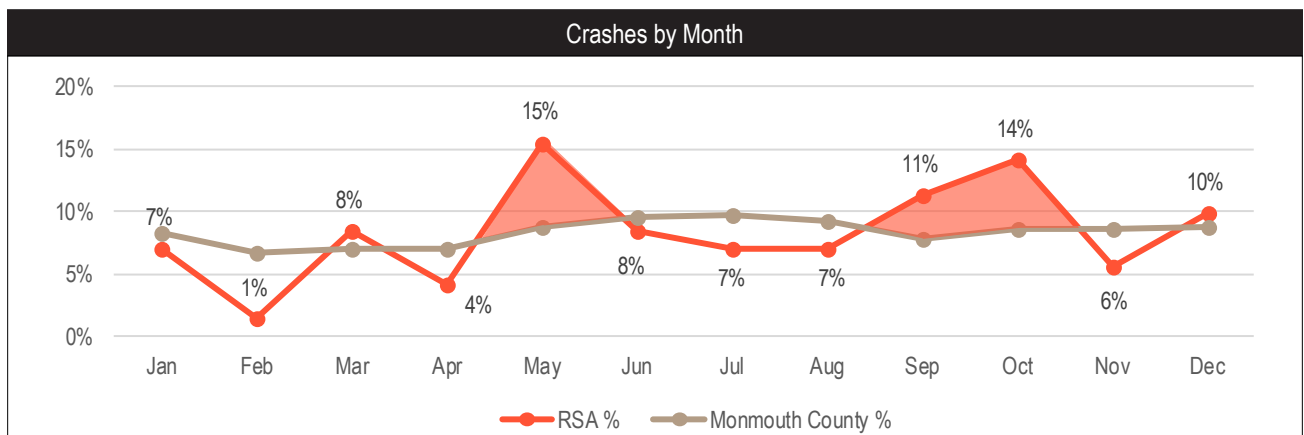


Figure 15 – Crashes by Month

2.2 CRASH TYPE & SEVERITY

The comparison of percentages between the RSA area and Monmouth County gives a frame of reference. There was an overrepresentation of same-direction/sideswipe; the RSA-area rate was twice the county rate. Left-turn crashes were also overrepresented, at nine times the county rate. Left-turn crashes were also overrepresented, at nine times the county rate.

Crash Type 2011–2013	Count in RSA Area	% Crash Type in RSA Area	% of Crash Type in Monmouth County
Same Direction - Rear End	19	27%	30%
Same Direction - Side Swipe	12	17%	9%
Right Angle	8	11%	12%
Left Turn / U Turn	13	18%	2%
Animal	9	13%	4%
Fixed Object	9	13%	13%
Other*	1	1%	29%
TOTAL	71	100%	100%

Figure 16 – Crash Type

*Other includes: Opposite Direction (sideswipe and head-on/angular), Struck Parked Vehicle, Encroachment, Overturned, Pedestrian, Pedalcyclist, Non-fixed object, Railcar-vehicle, "Other" and NULL)

Severity 2011–2013	All People
Fatal	-
Incapacitated	2
Moderate Injury	5
Complaint of Pain	13
Property Damage Only	51
TOTAL	71

Figure 17 – Crash Severity

There were no pedestrian and bicyclist crashes. Very few pedestrians or bicyclists were observed in the RSA area, but a footpath gave evidence of pedestrian usage.

In addition to the crash severity information shown in Figure 17, there were two crashes in 2014 that included three fatalities and one incapacitating injury.

The two incapacitating injuries arose, respectively, from a fixed object crash, and a same-direction/sideswipe crash.

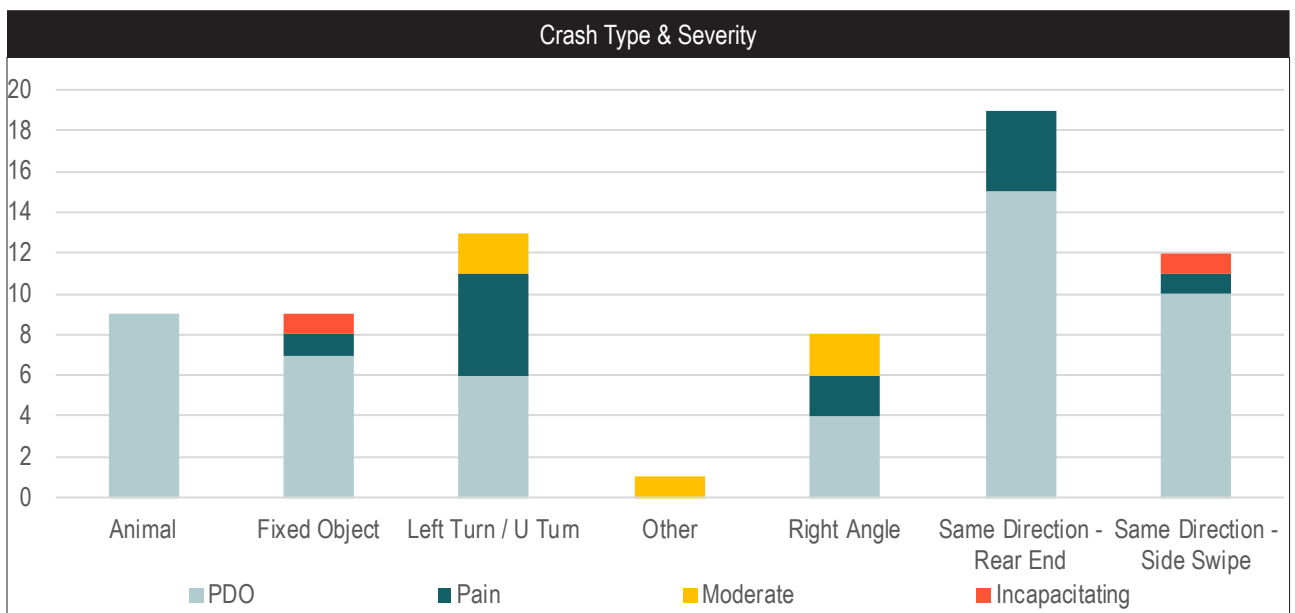


Figure 18 – Crash Type and Severity in RSA Area

2.3 ROADWAY SURFACE AND LIGHTING CONDITIONS

Wet-roadway crashes occurred more frequently in the RSA area than in Monmouth County overall, for the same time period. Reduced roadway friction and reduced visibility are typical contributors to wet-roadway crashes.

A larger percentage of crashes occurred during daylight hours, which suggests that roadway lighting is not an issue.

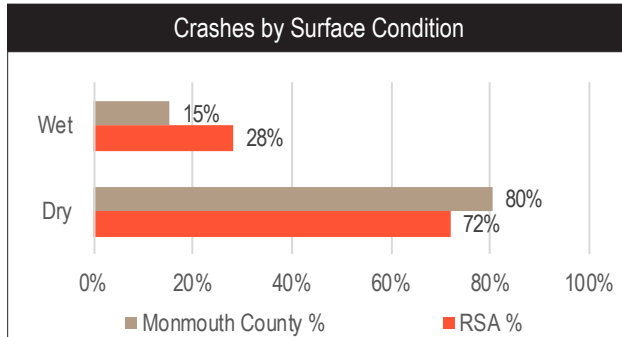


Figure 19 – Crashes by Surface Condition

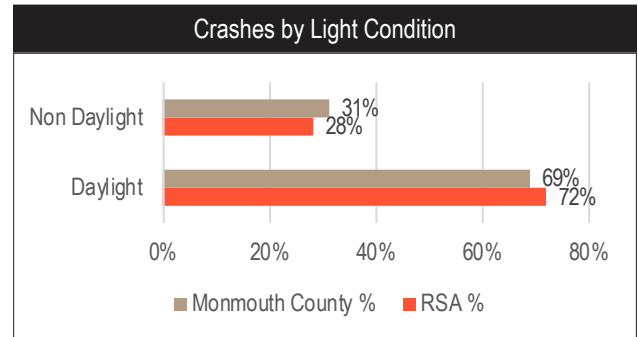


Figure 20 – Crashes by Light Condition

>> 3.0 IDENTIFIED ISSUES

Ref #	Issues List
Corridorwide	
Traffic Operations	
1	There is a history of crossover crashes with fatalities.
2	Left turns are difficult, as drivers need enough of a gap to cross two lanes of oncoming traffic.
3	Queuing behind left turning vehicles is unsafe in a high-speed area.
4	Speeding is encouraged by the wide four-lane cross section.
5	Drivers were seen hugging the centerline, very close to the opposing lane of traffic.
Pavement and Pavement Markings	
6	Pavement condition is poor in many locations; wet-condition crashes are overrepresented.
7	Pavement striping is faded or lacking in many locations.
8	The centerline rumble strips appear to be in poor condition, and not as effective as they were when new.
9	Reflective pavement markers are lacking.
10	There is erosion at the edge of pavement in areas without curb.
Visibility	
11	The horizontal and vertical curves affect sight distance.
12	Poor lighting may be a factor in crash history.
Geometry and Infrastructure	
13	There are no shoulders except on the bridge over 33B.
14	The guiderail is damaged in a few locations, and the end treatments do not meet design standards.
15	The berm width behind guiderail in some locations appears to be too narrow, with reduced deflection zone.
16	There are no delineators on the guiderails.
Signage	
17	Many of the sign posts are not breakaway.
18	Many of the signs are old and lack retroreflectivity.
19	Some of the signs are too close to the curb, and have been struck by vehicles.
20	Some of the signs are undersized for a multi-lane roadway.
Pedestrians	
21	There are no sidewalks for pedestrians.
22	There are no ADA facilities at the signalized intersections.
Bicycle Facilities	
23	There are no facilities for bicyclists.
Center Street / Freneau Boulevard	
Traffic Operations	
23	There are a significant number of left-turn crashes from Kozloski Road, in both directions.
25	There is a crash history of rear-end crashes for southbound vehicles.
Geometry	
26	Turning radius is insufficient for trucks turning from Center Street to Kozloski Road southbound, as they encroach into left-turn lane.
Pavement	
27	There are many potholes at the intersection.
Visibility	
28	There is limited visibility of the traffic signal, particularly for the southbound approach along the horizontal curve.
29	There is overgrowth close to the roadway.
Pedestrian Facilities	
30	There is a worn footpath on the west side of the roadway, demonstrating pedestrian demand.

Ref #	Issues List
31	There are no pedestrian signal heads.
32	There is no ADA-compliant access to the pedestrian push buttons.
Thoreau Drive	
	Infrastructure
33	Guiderail is located at curblineline on west side of roadway, and may encourage vehicles to avoid it by driving close to left lane line.
	Driver Behavior
34	Northbound vehicles appear to be hugging the centerline .
35	There are still some drivers who make the prohibited left turn.
Bridge over 33 B and Ramps	
	Infrastructure
36	The guiderail anchor is not properly tensioned on the northbound side.
37	There is compressed U-channel on guiderail.
38	The pavement markings are barely visible on the white concrete bridge deck.
39	There is a clogged drainage facility.
	Signage
40	There is no merge sign for ramp onto Kozloski Road southbound.
	Pedestrians
41	There are no pedestrian accommodations or connectivity to the adjacent businesses.
Between Ramps and Willow Brook Road	
	Traffic Operations
42	Drivers make left turns in and out of driveways, both north and south of the railroad crossing.
	Maintenance
43	The drainage basin is completely filled at the southeast corner of the driveway (north of the railroad crossing.)
	Infrastructure
44	Guiderail on northeast corner was severely damaged.
45	Telephone poles are close to roadway and unprotected.
	Railroad Crossing
46	School buses were involved in rear-end crashes at the railroad crossing.
Willow Brook Avenue	
	Traffic Operations
47	There is a history of left-turn crashes.
	Pedestrian Facilities
48	The crosswalk is missing on the south side of intersection.

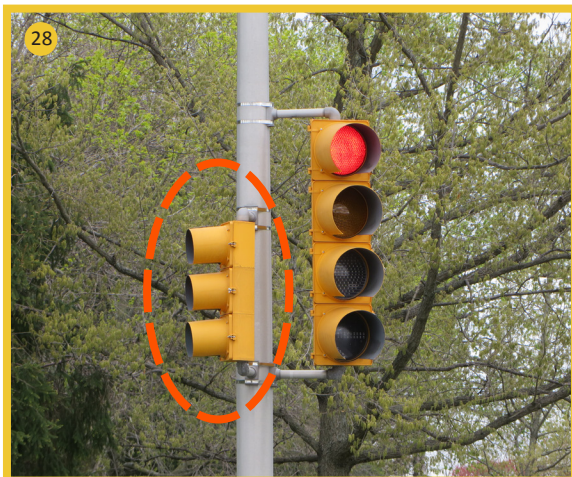
VISUALIZING ISSUES



Pavement condition is lacking



There are no pedestrian facilities although there is demand



Some of the signal heads are 8"



There are no ADA accommodations



The centerline rumble strip is worn



Horizontal and vertical curves affect sight distance

VISUALIZING ISSUES



Cars often hug the centerline



There is a history of centerline-crossover crashes



Many signs are in poor condition



There is no edge-of-pavement line



Left turns are difficult to implement



Pavement markings are faded

>> 4.0 RECOMMENDATIONS

Rec. #	Recommendations List	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref. #
A	Corridorwide					
	Traffic Operations					
1	Installation of a concrete median, grass median, or median barrier curb.	High	Long	\$\$\$	Monmouth Co.	1,4,5
2	Consider installing transverse rumble strips in advance of the traffic signals.	Medium	Medium	\$\$	Monmouth Co.	4
3	Consider adding a two-foot painted median.	Medium/High	Long	\$\$	Monmouth Co.	1,4,5
4	Consider conducting a speed study to compare with the previous study. (There was an educational component following the previous speed study.)	High	Medium	\$\$	Monmouth Co.	4
	Visibility					
5	Consider adding chevrons or delineators at the horizontal curves.	Medium	Short	\$	Monmouth Co.	11
6	Trim the vegetation on the southbound to improve sight distance.	Medium	Short	\$	Monmouth Co.	11,28
7	Professional staff should conduct a formal engineering review of existing lighting to evaluate improvement of both vehicle-level and pedestrian-level lighting.	Medium	Medium	\$\$	Monmouth Co.	12
	Pavement					
8	Consider improving the condition of the centerline rumble strips.	High	Short	\$\$	Monmouth Co.	1,8
9	Consider installing a wider centerline rumble strip.	High	Medium	\$\$	Monmouth Co.	1,5
10	Consider the installation of high-friction surface treatment.	Medium	Long	\$\$	Monmouth Co.	6
11	Consider extending the centerline rumble strips throughout the corridor.	Medium/High	Medium	\$	Monmouth Co.	1
12	Re-soil edge of pavement to address drop off; consider installing a safety edge.	Medium/Low	Medium	\$\$	Monmouth Co.	10
	Pavement Markings					
13	Add edge-of-travel-lane line.	Medium/High	Short	\$	Monmouth Co.	4
14	Consider the installation of epoxy wet-weather retroreflective paint.	Medium	Medium	\$\$	Monmouth Co.	6
	Geometry and Infrastructure					
15	Evaluate the roadway geometry, and consider smoothing out the curve transitions in the event of roadway widening.	Medium	Long	\$\$\$	Monmouth Co.	11
16	Complete a comprehensive review of guiderail: evaluate warrant, guiderail design, and end treatment; implement upgrades as necessary.	Medium/High	Medium	\$\$	Monmouth Co.	14,15,16
17	Review sight distance for all curves.	Medium	Short	\$	Monmouth Co.	11
18	Consider the addition of shoulders along the entire corridor.	Medium/High	Long	\$\$\$	Monmouth Co.	13
19	Install islands, or flexible delineators, on a two-foot painted median to prevent left turns into driveways.	Medium/High	Medium	\$	Monmouth Co.	2
	Signage					
20	Comprehensive sign review to evaluate the quality, size, material, and MUTCD compliance for a multi-lane roadway	Medium	Medium	\$	Monmouth Co.	17,18,19,20
21	Utilize the Ball Bank indicator method to determine advisory speeds for changing horizontal alignments.	Medium/High	Short	\$	Monmouth Co.	4

Rec. #	Recommendations List	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref. #
22	Consider the installation of chevrons or delineator sticks along curves.	Medium	Short	\$	Monmouth Co.	11
23	Install breakaway posts on all signs.	Low	Short	\$	Monmouth Co.	17
	Pedestrians					
24	Consider the installation of a multi-use path for pedestrians and bicyclists.	Medium	Long	\$\$\$	Freehold Twp.	21,23
25	Install ADA-compliant pedestrian facilities, where appropriate.	Medium	Medium	\$\$	Freehold Twp.	22
26	Evaluate the connectivity needs of pedestrians in the corridor, including access to 33 Business.	Medium	Long	\$\$	Freehold Twp./NJDOT	21,41
	Enforcement					
27	Consider a high-profile enforcement campaign.	High	Short	\$	Freehold Twp	4
28	Consider the use of "Your speed is..." signs.	Medium/High	Short	\$	Monmouth Co.	4
B	Center Street/Freneau					
	Traffic Signal					
1	Consider installing retroreflective back plates on all the signal heads.	Medium	Medium	\$	Monmouth Co.	25,28
2	Consider installing an active flashing red "Signal Ahead" sign for southbound vehicles on Kozloski Road.	Medium/Low	Long	\$\$\$	Monmouth Co.	28
3	Add supplemental near-right traffic signal for southbound vehicles.	Medium	Medium	\$\$	Monmouth Co.	28
4	Consider conducting a traffic study to evaluate protected-only left turns from both northbound and southbound Kozloski Road.	High	Medium	\$\$	Monmouth Co.	24
5	Ensure that the traffic signal heads have 12" bulbs.	Medium/Low	Medium	\$	Monmouth Co	28
	Pavement and Pavement Markings					
6	Consider stepping back the stop bar at the northbound left-turn lane.	Medium/Low	Short	\$	Monmouth Co.	26
7	Repave to eliminate the potholes.	Medium/Low	Short	\$\$	Monmouth Co.	27
	Pedestrian Facilities					
8	Consider the installation of countdown pedestrian signal heads.	Medium/Low	Medium	\$\$	Monmouth Co.	31
9	Install ADA-compliant access to the pedestrian push buttons.	Medium/Low	Medium	\$\$	Monmouth Co.	22,32
C	Thoreau Drive					
	Traffic Operations					
1	Installation of a small island restricting movements to right-in right-out only.	Medium/High	Medium	\$\$	Monmouth Co.	35
2	Consider the installation of a traffic signal with the anticipated development of the southeast corner and access to Monmouth County Public Works facility on the west side.	High	Long	\$\$\$	Monmouth Co.	2,35
3	Evaluate stopping-sight distance for installation of an active-warning signal-ahead sign for northbound traffic coming off the vertical curve (with installation of the new traffic signal).	Medium/High	Long	\$\$	Monmouth Co.	4,11
4	Add right-turn and left-turn lanes with the construction of the new signal.	Medium/High	Long	\$\$\$	Monmouth Co.	2,35
	Infrastructure					
5	Evaluate whether the guiderail on the west side of roadway can be further offset from the curbline.	Medium/High	Medium	\$\$	Monmouth Co.	33

Rec. #	Recommendations List	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref. #
D	Bridge over 33 B and Ramps					
	Signage					
1	Install a properly sized sign on southbound Kozloski Road, advising of merging vehicles from 33B ramp.	Medium/High	Short	\$	Monmouth Co./ NJDOT	40
	Pavement Markings					
2	Add "lane drop" or "merge" arrows from ramp, and dotted line, on southbound Kozloski Road. Consider same for northbound Kozloski Road.	Medium/High	Short	\$	Monmouth Co./ NJDOT	40
3	Consider installing contrast markings to improve visibility of pavement markings on the white bridge deck; need to coordinate with NJDOT.	Medium	Medium	\$\$	NJDOT	38
	Pedestrian Facilities					
4	Formulate a long-term plan to accommodate pedestrians—including sidewalks, crosswalks, and pedestrian treatments.	Medium/High	Long	\$\$	Freehold Twp.	21,41
	Infrastructure					
5	Clean out the clogged drainage facilities.	Medium/High	Long	\$\$	Monmouth Co./ NJDOT	39
E	South of 33B Bridge to Willow Brook Road					
	Traffic Operations					
1	Installation of a small island, concrete or painted	Medium	Medium	\$\$	Monmouth Co./ Property owner	2,42
2	Restrict movements to right-turn-in/right-turn-out, for the driveways north and south of the railroad crossing.	Medium	Medium	\$\$	Monmouth Co.	2,42
3	Add a shoulder line to visually buffer the telephone poles adjacent to the roadway.	High	Medium	\$	Monmouth Co.	45
4	Install plastic break-away bollards to prevent left turns into and out of the driveways.	High	Short	\$	Monmouth Co.	2
5	Consider extending the centerline rumble strips where there are four lanes and no median.	Medium/High	Medium	\$\$	Monmouth Co.	1,4
	Infrastructure					
6	Ensure that the guiderail at the driveway entrance is warranted. If it is, bring it into compliance with current design specifications.	High	Short	\$\$	Business owner	44
7	Consider installation of retroreflective markers on the utility poles.	High	Short	\$	Monmouth Co./ Utility Company	45
8	Install a two-foot centerline gore for plastic break-away bollards .	High	Medium	\$	Monmouth Co.	42
9	Add curbing to protect the utility poles.	Medium	Long	\$\$\$	NJDOT/ Freehold Twp.	45
10	Consider relocating the utility poles away from the roadway.	Medium/High	Long	\$\$\$	Utility Company	45
	Railroad Crossing					
11	Consider installing a sign to warn that vehicles may be stopped at the tracks (such as a "Buses Stop" plaque). County can initiate discussion with the RR owner.	Medium/High	Short	\$	Monmouth Co.	46
	Maintenance					
12	Clean out the clogged drainage basin on southeast corner of driveway north of the railroad crossing.	Low	Short	\$	Monmouth Co.	43

Rec. #	Recommendations List	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref. #
F	Willow Brook Road					
	Traffic Signal					
1	Evaluate adding protected left turns to eliminate the left-turn/through-traffic conflicts.	Medium/High	Medium	\$\$	Monmouth Co.	47
2	Consider installing retroreflective back plates on all signal heads.	Medium	Medium	\$\$	Monmouth Co.	11
	Pedestrian Facilities					
3	Install a marked crosswalk on the southern leg of the intersection.	Medium/Low	Short	\$	Monmouth Co.	48
4	Revise the pedestrian push button orientation and provide ADA-compliant access.	Medium/Low	Short	\$	Monmouth Co.	32

CONCEPT DESIGNS - MEDIUM TERM

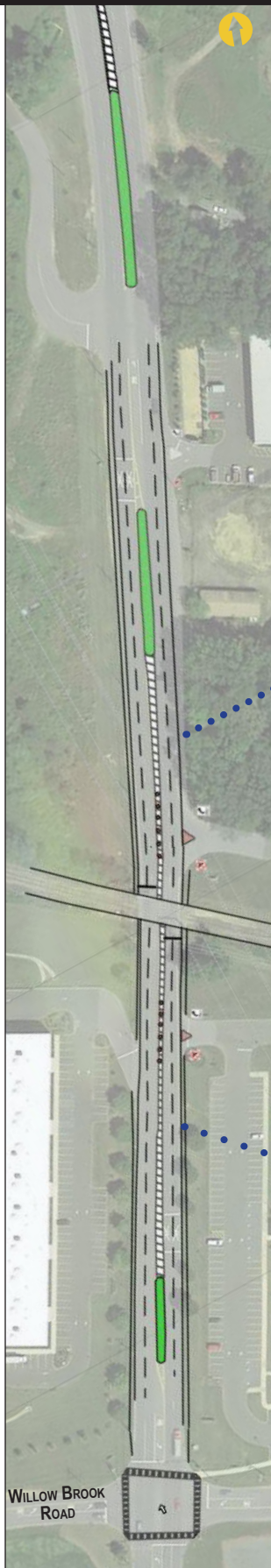


Figure 21 – Recommendations in southern part of RSA corridor

- Install grassy islands where there are already painted medians
- Restrict driveway entry and exit to right-turn-in and right-turn-out, preventing left turns
- Install small island at driveways to channelize movements
- Install marked crosswalks on all four crossings at Willow Brook Road
- Install sign alerting drivers that buses stop before railroad tracks

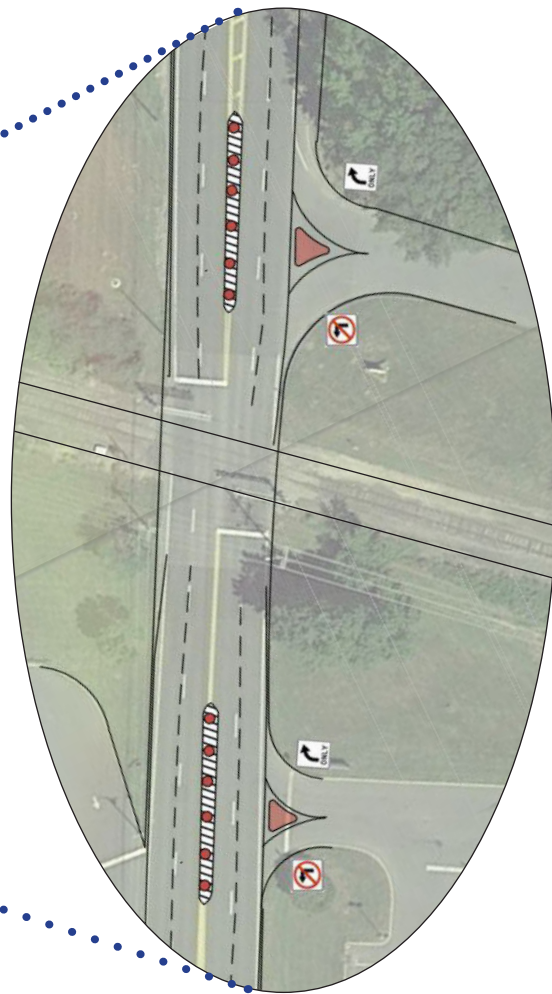


Figure 22 – Treatments at driveways

- Breakaway plastic bollards on centerline to prevent left turns from the driveways
- Two foot gore area for the breakaway plastic bollards
- Restripe lane lines, one foot away from gore area
- Install signs—“No Left Turn” and “Right Turn Only”—at the driveways



Figure 23 – Recommendations in northern part of RSA corridor

- Newly painted crosswalks at Center Street / Freneau Blvd
- Step back the stop bar for northbound left-turn lane
- Refresh the centerline rumblestrips
- Install small island at Thoreau Drive
- Additional signage—“No Left Turn” and “Right Turn Only”—at Thoreau Drive
- The road is too narrow for breakaway plastic bollards at centerline, to prevent left turns to/from Thoreau Drive.
- Improvements to guide rail if necessary
- Chevrons on curves

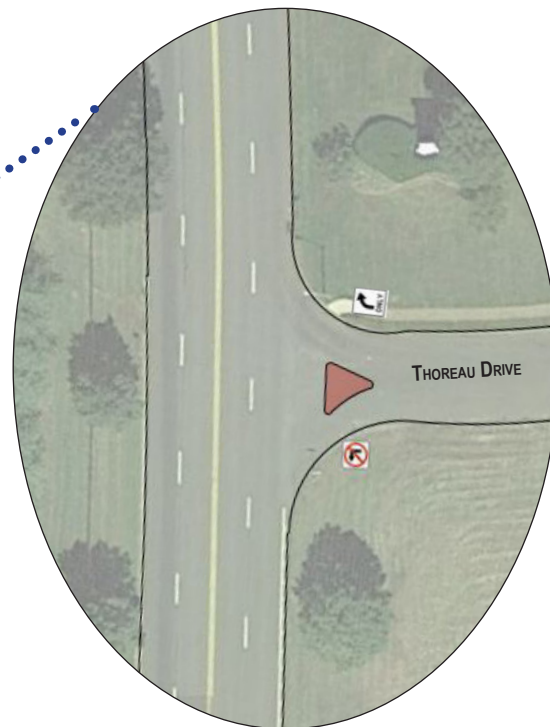


Figure 24 – Thoreau Drive

CONCEPT DESIGNS - LONG TERM - SOUTHERN SECTION



In addition to some of the medium-term recommendations:

- Widen roadway to permit two lanes in each direction plus median, and shoulders on both sides.
- Minimum two-foot painted median
- Breakaway Plastic Bollards in median opposite drive-ways

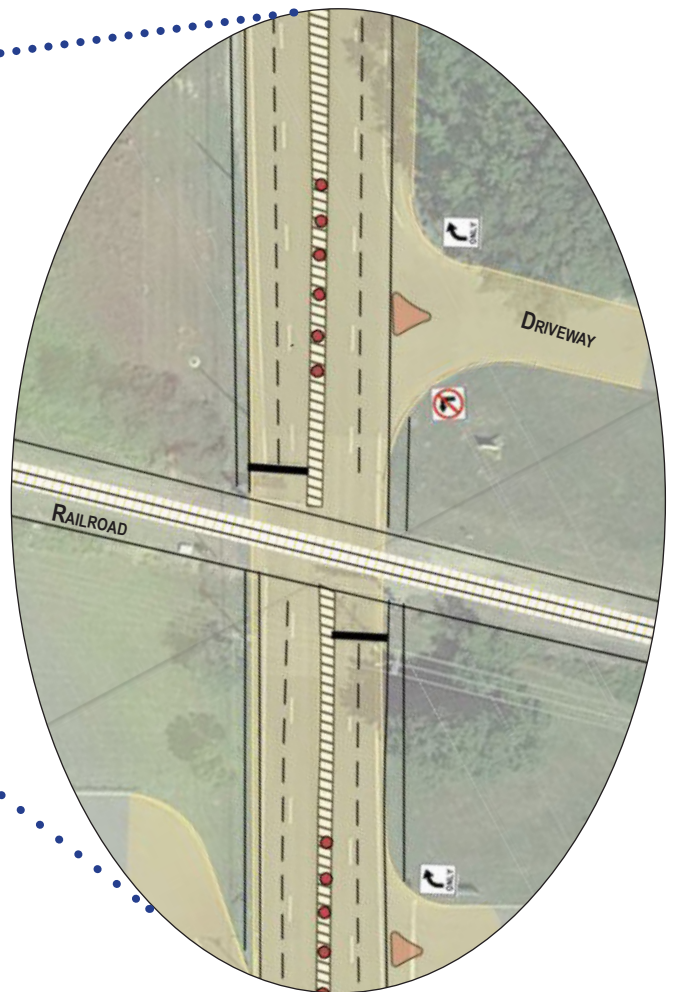


Figure 26 – Median in southern section of RSA

Figure 25 – Recommendations in southern section of RSA



In addition to some of the medium-term recommendations:

- Widen roadway to include two lanes in each direction, plus median, and shoulders on both sides.
- Concrete median barrier (limits of barrier to be determined)

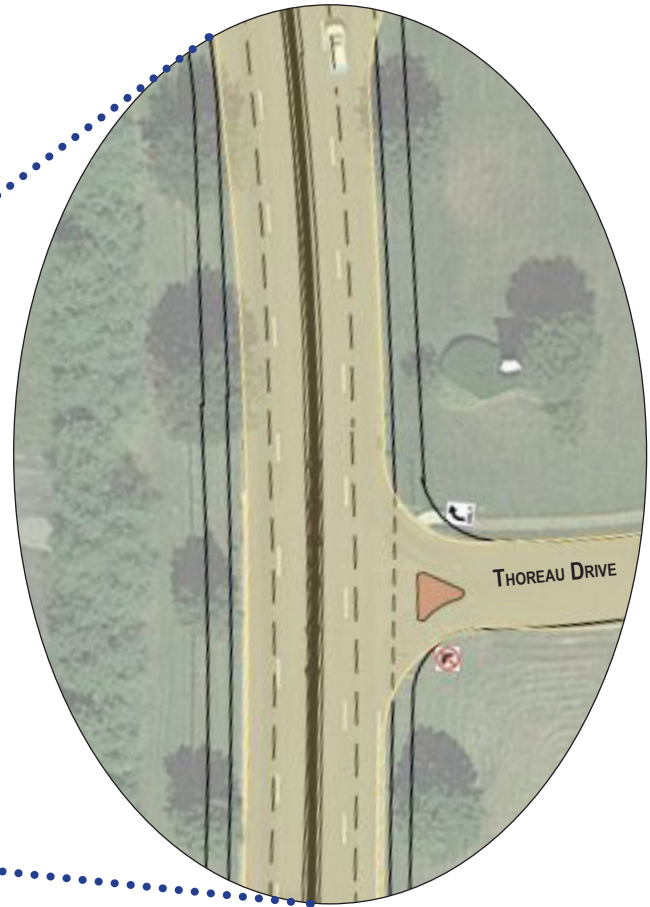


Figure 27 – Northern section of RSA

Figure 28 – Recommendations in northern section of RSA corridor

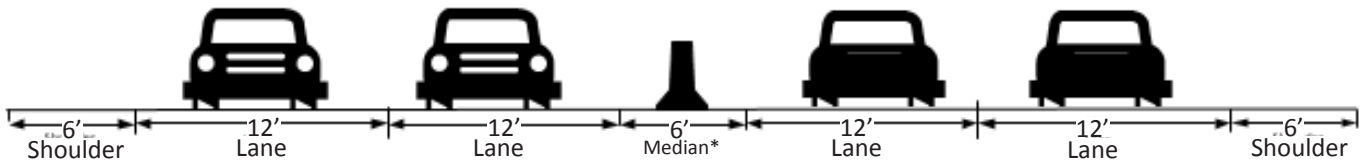


Figure 29 – Cross Section of roadway widening (typical)

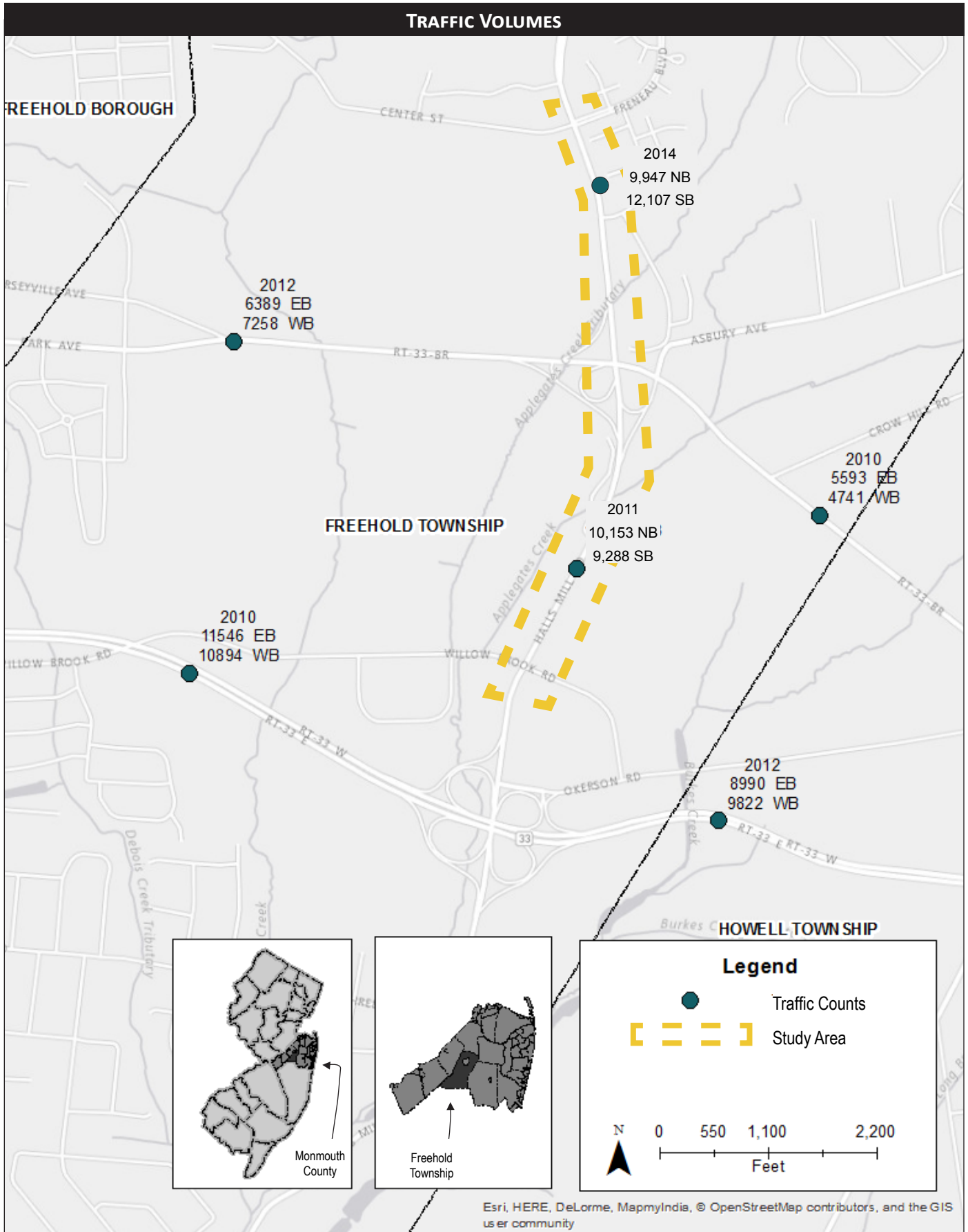
Median - concrete barrier curb, grassy median or painted median*

This is a typical cross section for the roadway. It is understood that the approaches to the intersections and the bridge deck will require a modified cross section.

>> APPENDIX A – RSA TEAM

Name	Representing	E-mail
James Sinclair	Alan M. Voorhees Transportation Center	james.sinclair@ejb.rutgers.edu
Pete Valesi	Freehold Township	pvalesi@twp.freehold.nj.us
Timothy White	Freehold Township Engineer	twhite@twp.freehold.nj.us
Lt. Dean Smith	Freehold Township Police Department	DSmith@twp.freehold.nj.us
Brenda Carter	Meadowlink	info@ezride.org
Teri O'Connor	Monmouth County	geri.elias@co.monmouth.nj.us
Ming Kao	Monmouth County Engineering	Ming.Kao@co.monmouth.nj.us
Joseph Ettore	Monmouth County Engineering	Joseph.Ettore@co.monmouth.nj.us
Vince Cardone	Monmouth County Engineering	Vince.Cardone@co.monmouth.nj.us
Debra Compton	Monmouth County Engineering	Debra.Compton@co.monmouth.nj.us
John Tobia	Monmouth County Engineering	jwtobia@co.monmouth.nj.us
Edward Sampson	Monmouth County Planning	Edward.Sampson@co.monmouth.nj.us
Ed O'Connor	NJ DHTS	Edward.Oconnor@lps.state.nj.us
Marhaba Omer	NJDOT	Marhaba.Omer@dot.nj.gov
Wendy Smith	NJDOT - Local Aid District 3	wendy.smith@dot.state.nj.us
John Kosciuch	NJDOT - Local Aid District 3	John.Kosciuch@dot.nj.gov
Christine Mittman	NJTPA	cmittman@njtpa.org
Elizabeth Thompson	NJTPA	ethompson@njtpa.org
Andy Kaplan	Rutgers TSRC	akaplan1@rutgers.edu
Sally Karasov	Rutgers TSRC	sally.karasov@rutgers.edu
Aimee Jefferson	Rutgers TSRC	aimee.jefferson@rutgers.edu

>> APPENDIX B – TRAFFIC COUNTS



Monmouth County Division of Engineering & Traffic Safety

Location: CR 55 (Kozloski Road)
 954' South Of Freanu Boulevard.
 Municipality: Freehold Township
 Counted By: Patrick T Barrett

1E, Main St
 Freehold, NJ 07728
 (732) 431-7760

Site Code:
 Station ID:

Latitude: 0' 0.000 Undefined

Start Time	29-Sep-14		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd
12:00 AM	*	*	*	*	*	*	*	*	*	*	68	34	2	72	35	53
01:00	*	*	*	*	*	*	*	*	*	*	41	19	1	35	21	27
02:00	*	*	*	*	*	*	*	*	*	*	20	16	1	40	10	28
03:00	*	*	*	*	*	*	*	*	*	*	17	16	0	13	8	14
04:00	*	*	*	*	*	*	*	*	*	*	14	11	0	22	7	16
05:00	*	*	*	*	*	*	*	*	*	*	31	29	0	49	16	39
06:00	*	*	*	*	*	*	*	*	*	*	73	63	3	86	38	74
07:00	*	*	*	*	*	*	*	*	*	*	129	107	2	150	66	128
08:00	*	*	*	*	*	*	*	*	*	*	253	150	14	301	134	226
09:00	*	*	*	*	*	*	*	*	*	*	276	189	9	353	142	271
10:00	*	*	*	*	*	*	*	*	*	*	315	213	10	460	162	336
11:00	*	*	*	*	*	*	*	*	*	*	343	200	17	541	180	370
12:00 PM	*	*	*	*	*	*	*	*	*	*	392	258	14	606	272	387
01:00	*	*	*	*	*	*	*	*	*	*	61	482	17	564	166	466
02:00	*	*	*	*	*	*	*	*	*	*	13	537	10	511	154	468
03:00	*	*	*	*	*	*	*	*	*	*	535	401	19	556	189	502
04:00	*	*	*	*	*	*	*	*	*	*	658	515	13	492	230	526
05:00	*	*	*	*	*	*	*	*	*	*	583	494	15	540	204	514
06:00	*	*	*	*	*	*	*	*	*	*	17	467	11	401	177	394
07:00	*	*	*	*	*	*	*	*	*	*	9	408	12	340	141	323
08:00	*	*	*	*	*	*	*	*	*	*	238	110	5	245	84	211
09:00	*	*	*	*	*	*	*	*	*	*	222	103	4	119	78	148
10:00	*	*	*	*	*	*	*	*	*	*	131	70	3	106	47	136
11:00	*	*	*	*	*	*	*	*	*	*	5	233	2	61	39	89
Lane	0	0	0	0	0	0	0	0	0	0	2151	5750	179	6626	2600	5746
Day	0	0	0	0	0	0	0	0	0	7940	7901	6805	8346			
AM Peak Vol.											11:00	10:00	11:00	11:00	11:00	11:00
PM Peak Vol.											12:00	16:00	13:00	12:00	12:00	16:00
											343	213	17	541	180	370
											658	515	17	606	272	526

CR 55 Northbound Traffic Counts (continued)

Monmouth County Division of Engineering & Traffic Safety

Location: CR 55 (Kozloski Road)
 954' South Of Freanu Boulevard.
 Municipality: Freehold Township
 Counted By: Patrick T Barrett

1E, Main St
 Freehold, NJ 07728
 (732) 431-7760

Site Code:
 Station ID:

Latitude: 0' 0.000 Undefined

Start Time	06-Oct-14		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	Northbd	1	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd	Northbd
12:00 AM	1	25	28	12	25	19	32	0	26	0	*	*	*	*	22	11
01:00	2	23	22	11	22	15	22	0	13	0	*	*	*	*	16	10
02:00	1	17	17	8	22	16	21	0	22	0	*	*	*	*	17	8
03:00	0	22	23	8	18	13	14	0	14	0	*	*	*	*	14	9
04:00	0	48	27	31	35	20	34	0	34	0	*	*	*	*	26	20
05:00	3	188	111	86	123	80	129	0	115	0	*	*	*	*	96	67
06:00	18	589	337	319	400	314	355	0	350	0	*	*	*	*	292	244
07:00	23	946	566	662	739	466	665	1	567	1	*	*	*	*	512	415
08:00	33	985	577	613	744	364	641	5	*	*	*	*	*	*	499	492
09:00	15	659	426	315	624	135	484	14	*	*	*	*	*	*	387	281
10:00	17	566	372	238	571	19	394	7	*	*	*	*	*	*	338	208
11:00	15	555	362	250	487	3	403	9	*	*	*	*	*	*	317	204
12:00 PM	306	371	407	292	551	6	460	1	*	*	*	*	*	*	431	168
01:00	424	328	370	329	452	7	487	4	*	*	*	*	*	*	433	167
02:00	450	358	398	355	509	2	515	3	*	*	*	*	*	*	468	180
03:00	493	348	491	377	567	0	643	0	*	*	*	*	*	*	548	181
04:00	535	378	556	447	657	0	678	0	*	*	*	*	*	*	606	206
05:00	654	469	648	493	791	0	751	0	*	*	*	*	*	*	711	240
06:00	502	330	500	316	532	0	605	0	*	*	*	*	*	*	535	162
07:00	298	154	374	183	415	0	349	0	*	*	*	*	*	*	359	84
08:00	230	113	222	96	259	0	271	0	*	*	*	*	*	*	246	52
09:00	152	89	166	92	194	0	195	0	*	*	*	*	*	*	177	45
10:00	80	40	72	46	108	0	121	0	*	*	*	*	*	*	95	22
11:00	44	39	41	39	67	0	64	0	*	*	*	*	*	*	54	20
Lane	4296	7620	7113	5618	8912	1479	8333	44	1141	1	0	0	0	0	7199	3496
Day	11916	12731	12731	12731	10391	8377	8377	8377	1142	1142	0	0	0	0	10695	
AM Peak	08:00	08:00	08:00	07:00	08:00	07:00	07:00	09:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	08:00
Vol.	33	985	577	662	744	466	665	14	567	1					512	492
PM Peak	17:00	17:00	17:00	17:00	13:00	17:00	13:00	13:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00
Vol.	654	469	648	493	791	7	751	4							711	240
Comb. Total	11916	12731	12731	10391	8377	8377	8377	8377	9082	9082	7901	7901	6805	19041		
ADT	ADT 9,947	ADT 9,947	ADT 9,947	ADT 9,947	ADT 9,947	ADT 9,947	ADT 9,947	ADT 9,947								

Monmouth County Division of Engineering & Traffic Safety

Location: CR 55 (Kozloski Road)
 792' South Of Center Street.
 Municipality: Freehold Township
 Counted By: Patrick T Barrett

1E. Main St
 Freehold, NJ 07728
 (732) 431-7760

Site Code: Apollyon
 Station ID: SN:023376

Latitude: 0' 0.000 Undefined

Start Time	29-Sep-14		Tue		Wed		Thu		Fri		Sat		Sun		Week Average		
	Southbd1	Southbd	Southbd	Southbd	Southbd	Southbd	Southbd	Southbd	Southbd	Southbd	Southbd	Southbd	Southbd	Southbd	Southbd	Southbd	
12:00 AM	*	*	*	*	*	*	*	*	*	*	63	35	82	33	72	34	
01:00	*	*	*	*	*	*	*	*	*	*	43	19	36	16	40	18	
02:00	*	*	*	*	*	*	*	*	*	*	34	9	42	6	38	8	
03:00	*	*	*	*	*	*	*	*	*	*	18	11	20	10	19	10	
04:00	*	*	*	*	*	*	*	*	*	*	28	17	22	5	25	11	
05:00	*	*	*	*	*	*	*	*	*	*	52	11	22	11	37	11	
06:00	*	*	*	*	*	*	*	*	*	*	86	28	73	22	80	25	
07:00	*	*	*	*	*	*	*	*	*	*	195	58	158	42	176	50	
08:00	*	*	*	*	*	*	*	*	*	*	294	105	210	67	252	86	
09:00	*	*	*	*	*	*	*	*	*	*	302	128	383	125	342	126	
10:00	*	*	*	*	*	*	*	*	*	*	372	174	386	161	379	168	
11:00	*	*	*	*	*	*	*	*	*	500	235	426	204	392	181	439	207
12:00 PM	*	*	*	*	*	*	*	*	*	528	253	431	195	488	227	482	225
01:00	*	*	*	*	*	*	*	*	*	668	214	449	205	473	243	530	221
02:00	*	*	*	*	*	*	*	*	*	672	371	441	193	452	237	522	267
03:00	*	*	*	*	*	*	*	*	*	720	448	469	220	457	198	549	289
04:00	*	*	*	*	*	*	*	*	*	877	531	403	201	396	163	559	298
05:00	*	*	*	*	*	*	*	*	*	749	456	457	182	381	161	529	266
06:00	*	*	*	*	*	*	*	*	*	669	378	375	167	319	132	454	226
07:00	*	*	*	*	*	*	*	*	*	398	217	302	121	262	110	321	149
08:00	*	*	*	*	*	*	*	*	*	300	129	217	95	182	82	233	102
09:00	*	*	*	*	*	*	*	*	*	213	90	205	74	113	41	177	68
10:00	*	*	*	*	*	*	*	*	*	164	81	172	65	78	38	138	61
11:00	*	*	*	*	*	*	*	*	*	105	53	122	62	49	17	92	44
Lane	0	0	0	0	0	0	0	0	0	6563	3456	5956	2579	5476	2328	6485	2970
Day	0	0	0	0	0	0	0	0	0	10019	8535	7804	9455				
AM Peak Vol.										11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00
PM Peak Vol.										500	235	426	204	392	181	439	207
										16:00	15:00	15:00	15:00	12:00	13:00	16:00	16:00
										877	531	469	220	488	243	559	298

* For Classified counts, contact the Monmouth County Engineering Department.

CR 55 Southbound Traffic Counts (continued)

Monmouth County Division of Engineering & Traffic Safety

Location: CR 55 (Kozloski Road)
792' South Of Center Street.
Municipality: Freehold Township
Counted By: Patrick T Barrett

1E. Main St
Freehold, NJ 07728
(732) 431-7760

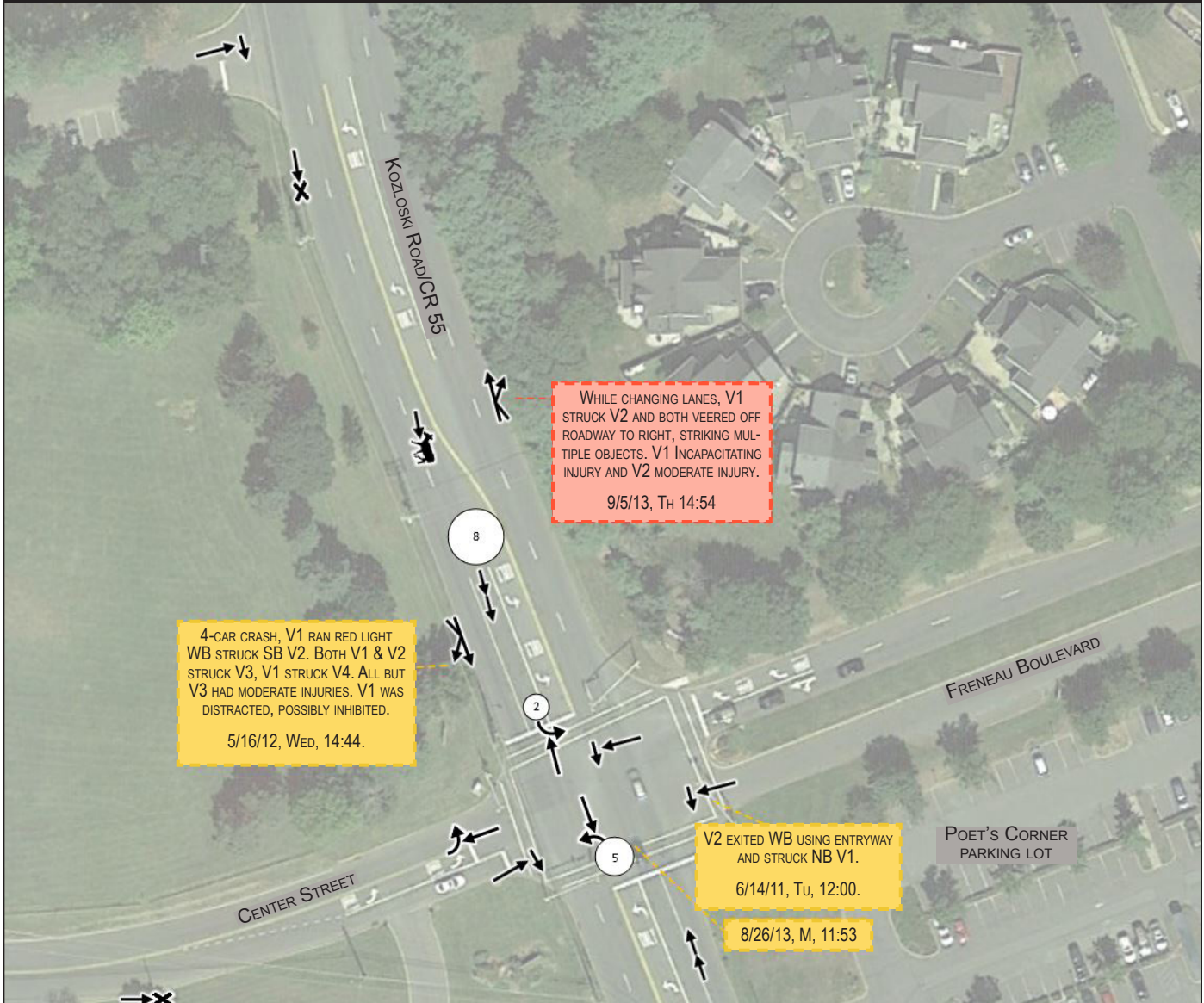
Site Code: Apollyon
Station ID: SN:023376

Latitude: 0' 0.000 Undefined

Start Time	06-Oct-14		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	Southb	Southbd	Southb	Southbd	Southb	Southbd	Southb	Southbd	Southb	Southbd	Southb	Southbd	Southb	Southbd	Southb	Southbd
12:00 AM	23	14	30	15	31	19	36	20	37	25	*	*	*	*	31	19
01:00	20	11	17	10	19	15	31	11	27	8	*	*	*	*	23	11
02:00	12	7	16	12	19	8	17	5	30	3	*	*	*	*	19	7
03:00	14	8	17	4	25	2	13	5	19	5	*	*	*	*	18	5
04:00	30	9	33	11	39	14	36	13	33	9	*	*	*	*	34	11
05:00	125	38	130	34	137	37	130	49	136	29	*	*	*	*	132	37
06:00	292	116	299	151	293	124	312	125	289	121	*	*	*	*	297	127
07:00	550	288	539	301	540	304	553	293	398	226	*	*	*	*	516	282
08:00	681	378	710	406	726	391	680	371	*	*	*	*	*	*	699	386
09:00	499	205	521	229	471	232	496	227	*	*	*	*	*	*	497	223
10:00	436	197	432	215	441	200	462	209	*	*	*	*	*	*	443	205
11:00	436	204	455	188	473	236	495	238	*	*	*	*	*	*	465	216
12:00 PM	553	258	507	204	483	233	540	239	*	*	*	*	*	*	521	234
01:00	571	255	530	238	498	273	530	233	*	*	*	*	*	*	532	250
02:00	550	323	586	314	621	349	586	338	*	*	*	*	*	*	586	331
03:00	726	420	764	446	700	448	740	468	*	*	*	*	*	*	732	446
04:00	795	562	829	545	809	482	873	534	*	*	*	*	*	*	826	531
05:00	760	489	773	476	798	479	801	518	*	*	*	*	*	*	783	490
06:00	620	309	666	351	644	349	682	396	*	*	*	*	*	*	653	351
07:00	421	202	424	197	450	204	460	233	*	*	*	*	*	*	439	209
08:00	325	148	329	137	353	166	351	146	*	*	*	*	*	*	340	149
09:00	196	81	253	96	251	117	201	100	*	*	*	*	*	*	225	98
10:00	106	33	129	54	119	62	106	41	*	*	*	*	*	*	115	48
11:00	61	23	54	30	69	26	71	30	*	*	*	*	*	*	64	27
Lane	8802	4578	9043	4664	9009	4770	9202	4842	969	426	0	0	0	0	8990	4693
Day	13380		13707		13779		14044		1395		0	0	0	0	13683	
AM Peak	08:00	08:00	08:00	08:00	08:00	08:00	08:00	08:00	07:00	07:00					08:00	08:00
Vol.	681	378	710	406	726	391	680	371	398	226					699	386
PM Peak	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00					16:00	16:00
Vol.	795	562	829	545	809	482	873	534							826	531
Comb. Total	13380		13707		13779		14044		11414		8535		7804		23138	
ADT	ADT 12,107		ADT 12,107		ADT 12,107		ADT 12,107									

>> APPENDIX C – CRASH DATA & DIAGRAMS

CENTER STREET/FRENEAU BOULEVARD & KOZLOSKI ROAD/CR 55



- = Incapacitating injury
- = Moderate injury

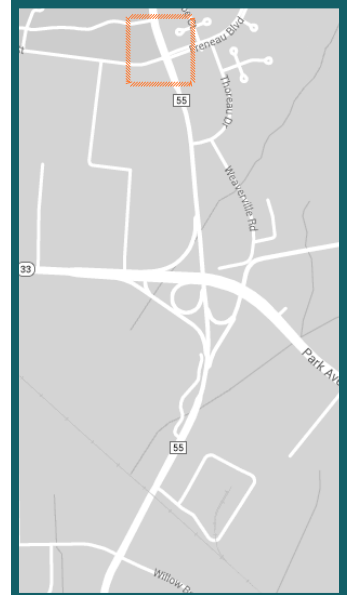
CRASH DIAGRAM LEGEND

- | | | | |
|--|-------------|--|--------------------------------------|
| | Right angle | | Same direction - Side swipe |
| | Animal | | Same direction - Rear End |
| | Left-turn | | Fixed-object |
| | Other | | Opposite direction - Head on/angular |

Google Imagery, 2014

Crash diagrams based on reports retrieved from NJDOT

INTERSECTION LOCATER



All crashes occurred 2011–2013. Any other crash type having a severity of “moderate injury” or greater has a color-coded narrative.

CENTER STREET TO THOREAU DRIVE—CRASH SUMMARY (2011–2013)

Crash Type	#
Same Direction – Rear End	9
Same Direction – Side Swipe	6
Right Angle	5
Opposite Direction – Head On/ Angular	-
Opposite Direction – Side Swipe	-
Struck Parked Vehicle	-
Left Turn / U-Turn	8
Backing	-
Encroachment	-
Overtaken	-
Fixed Object	2
Animal	1
Pedestrian	-
Pedalcyclist	-
Non-fixed Object	-
Railcar – Vehicle	-
Other	-
Total	31

Month	#
January	4
February	-
March	2
April	2
May	5
June	3
July	2
August	2
September	3
October	3
November	2
December	3
Total	31

Severity	#
Property Damage Only (PDO)	22
Pain	5
Moderate Injury	3
Incapacitating Injury	1
Fatal	-
Total	31

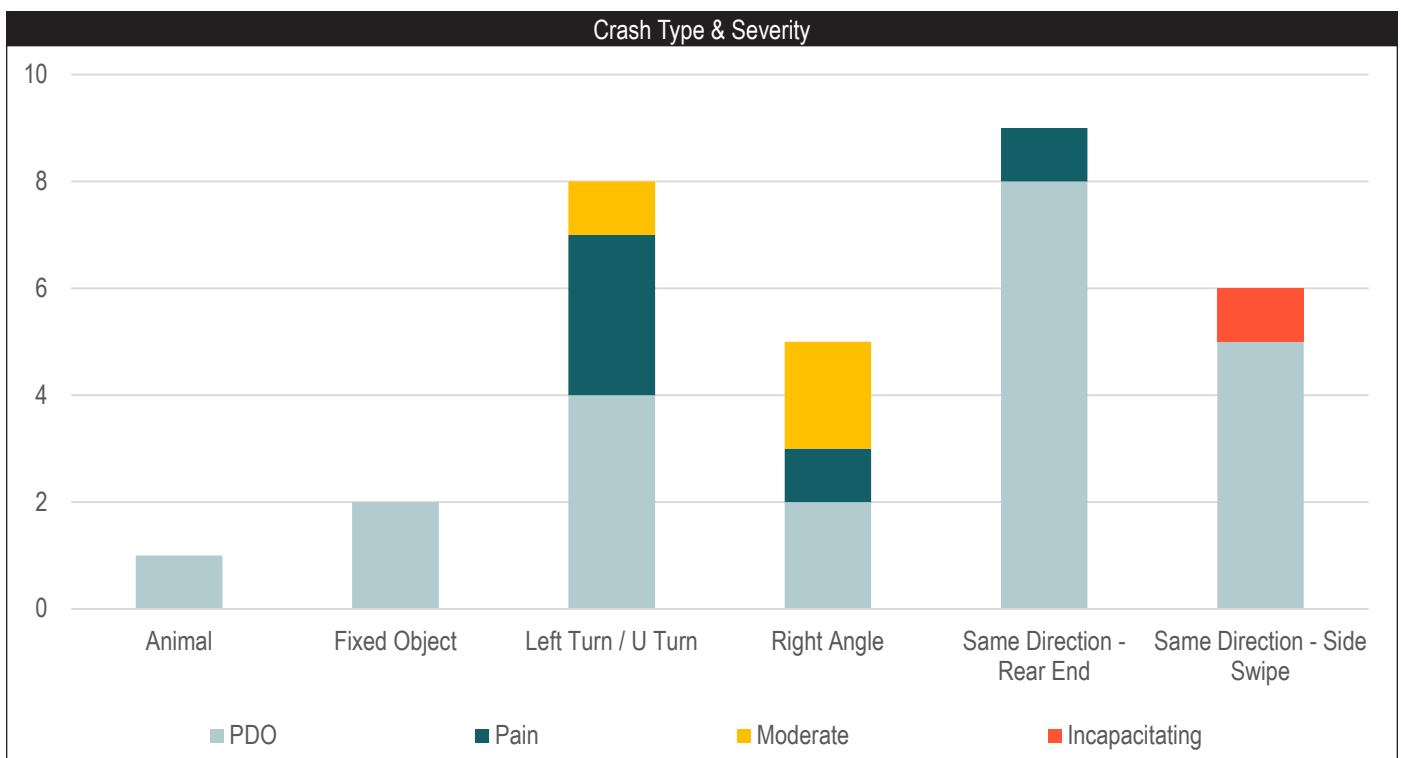
Crash Year	#
2011	9
2012	10
2013	12
Total	31

Intersection	#
At intersection	12
Not at intersection	19
At or Near Railroad	-
Total	31

Surface Condition	#
Dry	22
Wet	9
Snowy	-
Icy	-
Slush	-
Water – Standing/ Moving	-
Sand, Mud, Dirt	-
Oil	-
Total	31

Light Condition	#
Daylight	21
Dawn	-
Dusk	-
Dark – No Street Lights	1
Dark – Street Lights On/ Continuous	7
Dark – Street Lights On/ Spot	-
Dark – Street Lights Off	2
Other	-
Total	31

Day	#
Monday	8
Tuesday	7
Wednesday	5
Thursday	4
Friday	5
Saturday	-
Sunday	2
Total	31

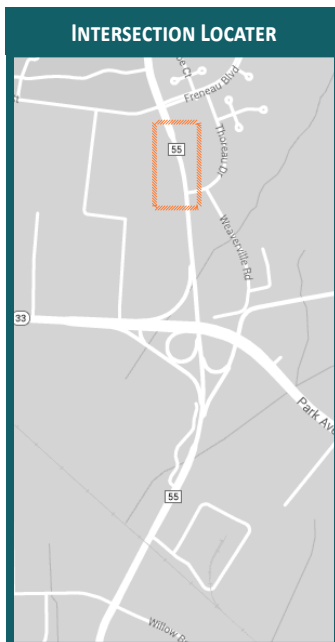


NOTE: Crash summary information for this road segment is grouped with the Center Street / Freneau Boulevard intersection information on the previous page.



= Fatal

All crashes occurred 2011 – 2013.* Any other crash type having a severity of “moderate injury” or greater has a color-coded narrative.



CRASH DIAGRAM LEGEND

Right angle	Same direction - Side swipe
Animal	Same direction - Rear End
Left-turn	Fixed-object
Other	Opposite direction - Head on/angular

Google Imagery, 2014

Crash diagrams based on reports retrieved from NJDOT

The 2 fatal crashes in the diagram to the right were included because they demonstrated a certain crash pattern and severity. They are the only diagrammed crashes that are not in the 2011–2013 date range.

CR 55: MALL ENTRANCE TO THOREAU DRIVE

SOUTHBOUND VEHICLE CROSSED CENTERLINE AND SPUN INTO NORTHBOUND VEHICLE, WHICH FLIPPED OVER AND STRUCK A THIRD VEHICLE. THE TWO OCCUPANTS OF VEHICLE 1 AND THE SINGLE OCCUPANT OF VEHICLE 2 ALL DIED. THE SINGLE OCCUPANT IN VEHICLE 3 WAS IN CRITICAL CONDITION.

8/19/14, Tu.

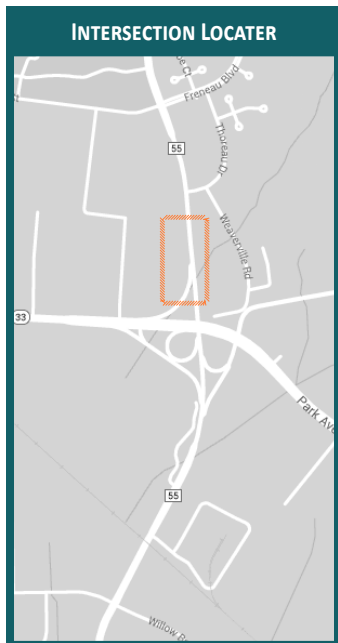
CHILD PASSENGER DIED. DRIVER SUSTAINED MODERATE-LIGHT INJURIES.

9/27/14, Sa 20:10

NOTE: Panels 1–5 on the following pages show crash diagrams for the area north to south of the 33B/Park Avenue bypass. Use the crash diagram legend below to decipher the crash-type images.



All crashes occurred 2011–2013.*
 Any other crash type having a severity of “moderate injury” or greater has a color-coded narrative.



CRASH DIAGRAM LEGEND

Right angle	Same direction - Side swipe
Animal	Same direction - Rear End
Left-turn	Fixed-object
Other	Opposite direction - Head on/angular

Google Imagery, 2014
 Crash diagrams based on reports retrieved from NJDOT



INTERCHANGE AREA: PANEL 2

INTERSECTION LOCATER



Use crash diagram legend on p. 35 to interpret crash images.

33B/Park Avenue

Ramp to 33B/Park Avenue (eastbound)

CR 55/Kozloski Road/Halls Mill Road

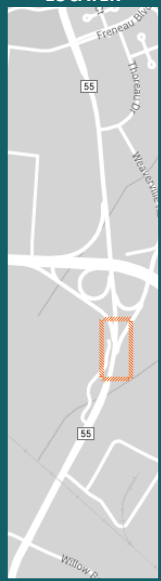
Ramp from 33B/Park Avenue (eastbound) to southbound CR 55

Ramp from 33B/Park Avenue (eastbound) to northbound CR 55

Continued on panel 3

INTERCHANGE AREA: PANEL 3

INTERSECTION LOCATER



RAMP FROM 33B/PARK AVENUE (EASTBOUND) TO SOUTHBOUND CR 55



Use crash diagram legend on p. 35 to interpret crash images.

VEHICLE WENT FAST UP RAMP TO CR 55 SB AND SLID OFF ROAD INTO POLE. DRIVER HAD INCAPACITATING INJURY AND PASSENGER MODERATE INJURY.

9/23/11 F, 20:15

WHILE PERFORMING ROADSIDE MAINTENANCE OUTSIDE V1, MOTORIST INJURED WHEN V1 SLIPPED OUT OF GEAR

7/8/13, M 7:48

CR 55/KOZLOSKI ROAD/HALLS MILL ROAD

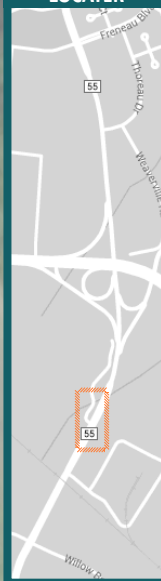
RAMP TO 33B/PARK AVENUE (EASTBOUND)



Continued on panel 4

INTERCHANGE AREA: PANEL 4

INTERSECTION LOCATER



Use crash diagram legend on p. 35 to interpret crash images.

CR 55/KOZLOSKI ROAD/HALLS MILL ROAD

TURF DRIVE



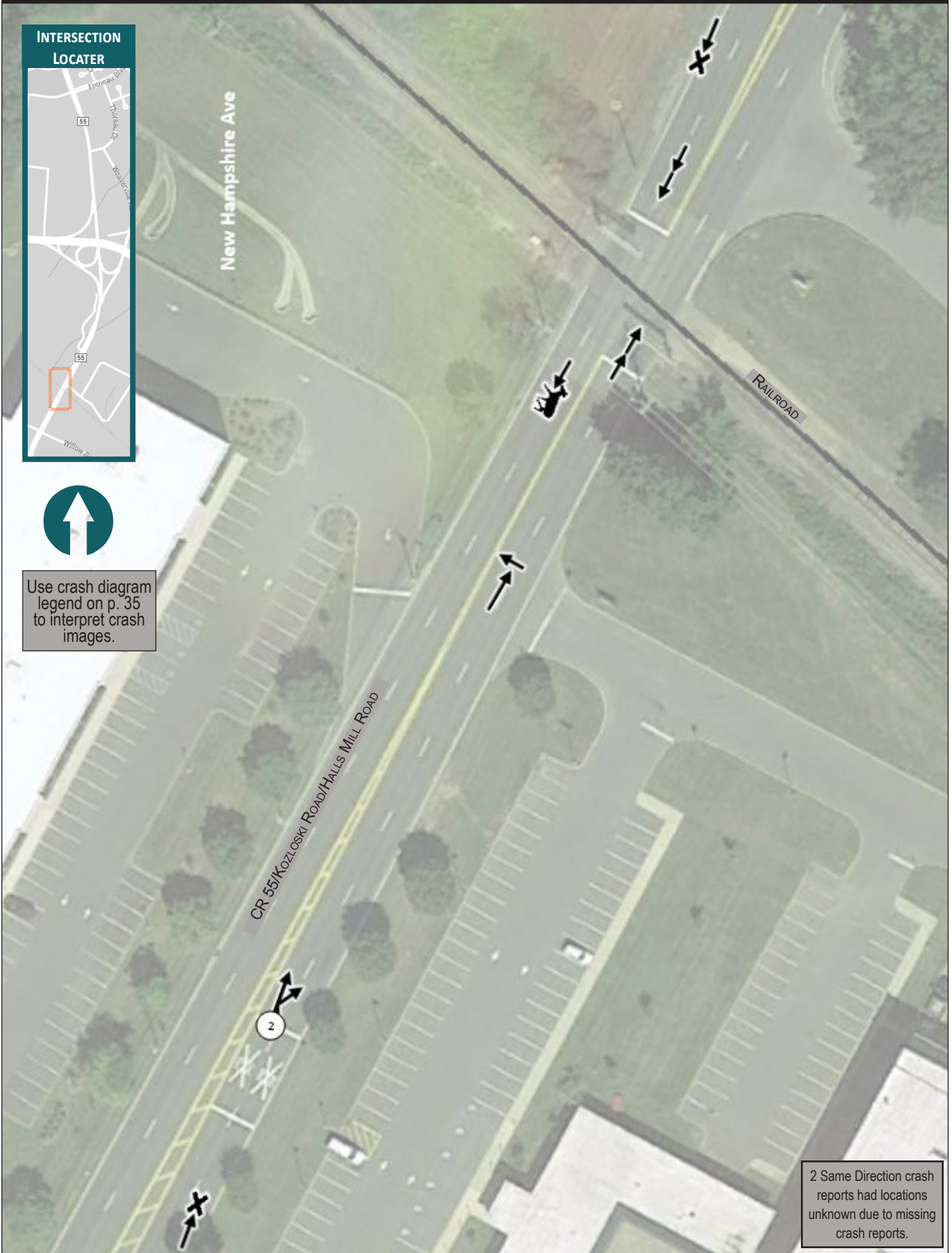
Continued on panel 5

INTERCHANGE AREA: PANEL 5

INTERSECTION
LOCATER



Use crash diagram legend on p. 35 to interpret crash images.



2 Same Direction crash reports had locations unknown due to missing crash reports.

INTERCHANGE AREA: PANELS 1 TO 5—CRASH SUMMARY (2011–2013)

Crash Type	#
Same Direction – Rear End	6
Same Direction – Side Swipe	3
Right Angle	2
Opposite Direction – Head On/ Angular	-
Opposite Direction – Side Swipe	-
Struck Parked Vehicle	-
Left Turn / U-Turn	1
Backing	-
Encroachment	-
Overtuned	-
Fixed Object	7
Animal	7
Pedestrian	-
Pedalcyclist	-
Non-fixed Object	-
Railcar – Vehicle	-
Other	1
Total	27

Month	#
January	1
February	1
March	2
April	-
May	4
June	2
July	2
August	3
September	3
October	6
November	-
December	3
Total	27

Severity	#
Property Damage Only (PDO)	20
Pain	5
Moderate Injury	1
Incapacitating Injury	1
Fatal	-
Total	27

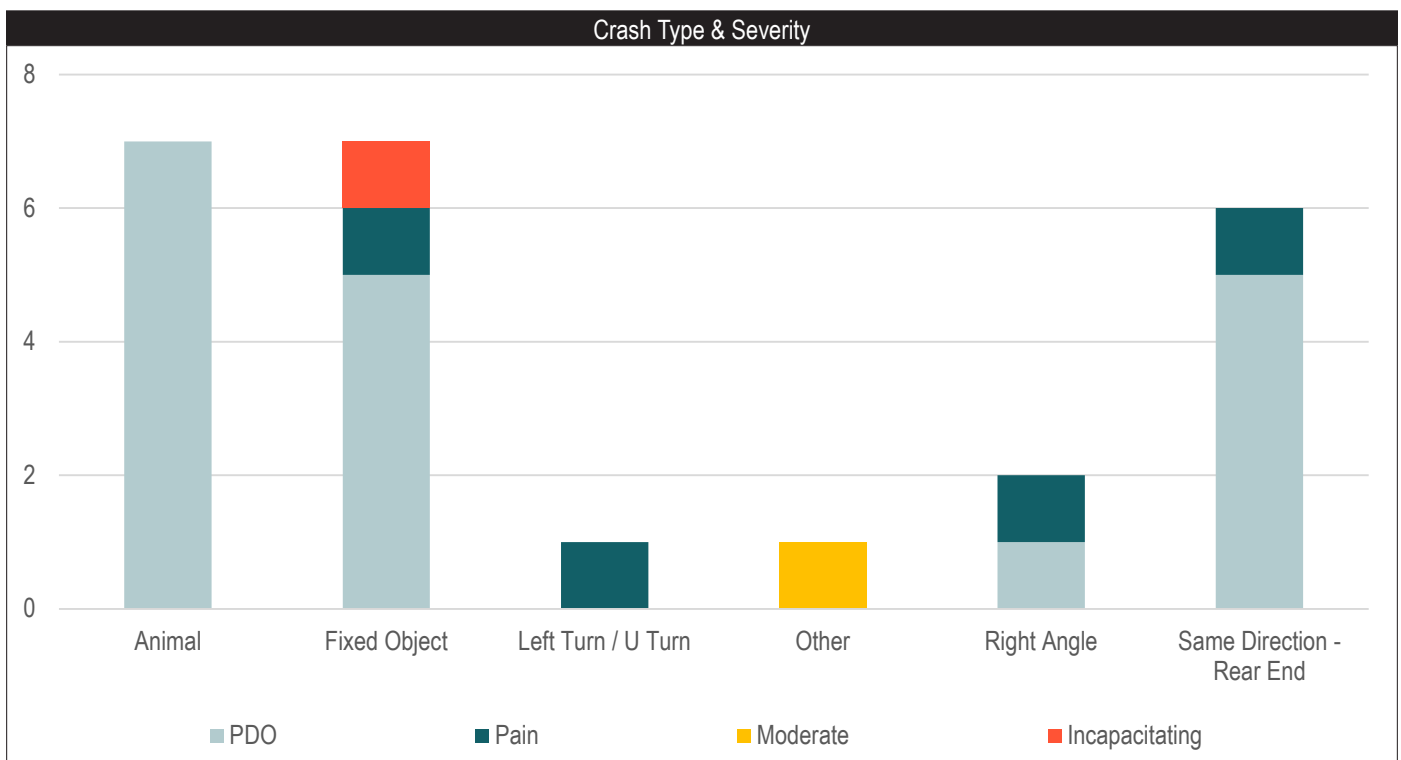
Crash Year	#
2011	12
2012	7
2013	8
Total	27

Intersection	#
At intersection	-
Not at intersection	27
At or Near Railroad	-
Total	27

Surface Condition	#
Dry	20
Wet	7
Snowy	-
Icy	-
Slush	-
Water – Standing/ Moving	-
Sand, Mud, Dirt	-
Oil	-
Total	27

Light Condition	#
Daylight	18
Dawn	-
Dusk	-
Dark – No Street Lights	2
Dark – Street Lights On/ Continuous	4
Dark – Street Lights On/ Spot	2
Dark – Street Lights Off	1
Other	-
Total	27

Day	#
Monday	5
Tuesday	7
Wednesday	3
Thursday	4
Friday	4
Saturday	3
Sunday	1
Total	27



WILLOW BROOK ROAD & HALLS MILL ROAD/CR 55



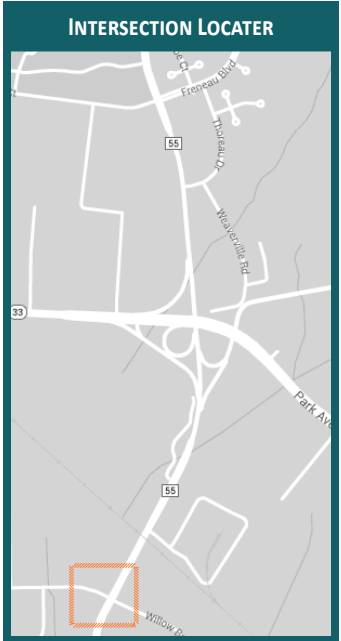
CRASH DIAGRAM LEGEND

	Right angle		Same direction - Side swipe
	Animal		Same direction - Rear End
	Left-turn		Fixed-object
	Other		Opposite direction - Head on/angular

Google Imagery, 2014

Crash diagrams based on reports retrieved from NJDOT

All crashes occurred 2011–2013. Any other crash type having a severity of “moderate injury” or greater has a color-coded narrative.



WILLOW BROOK ROAD & HALLS MILL ROAD/CR 55 – CRASH SUMMARY (2011–2013)

Crash Type	#
Same Direction – Rear End	4
Same Direction – Side Swipe	3
Right Angle	1
Opposite Direction – Head On/ Angular	-
Opposite Direction – Side Swipe	-
Struck Parked Vehicle	-
Left Turn / U-Turn	4
Backing	-
Encroachment	-
Overtaken	-
Fixed Object	-
Animal	1
Pedestrian	-
Pedalcyclist	-
Non-fixed Object	-
Railcar – Vehicle	-
Other	-
Total	23

Month	#
January	-
February	1
March	2
April	1
May	2
June	1
July	1
August	-
September	2
October	1
November	2
December	1
Total	13

Severity	#
Property Damage Only (PDO)	9
Pain	3
Moderate Injury	1
Incapacitating Injury	-
Fatal	-
Total	13

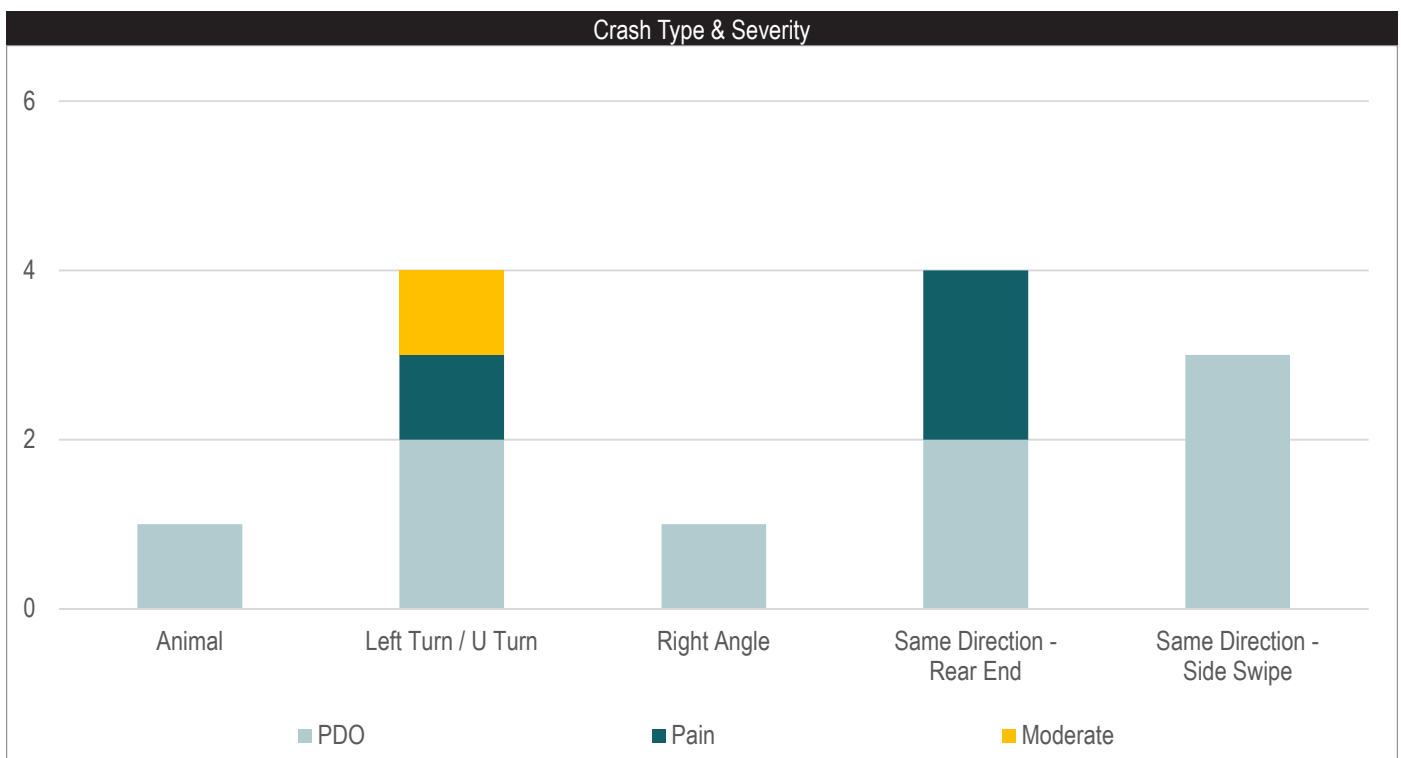
Crash Year	#
2011	1
2012	5
2013	7
Total	13

Intersection	#
At intersection	4
Not at intersection	9
At or Near Railroad	-
Total	13

Surface Condition	#
Dry	9
Wet	4
Snowy	-
Icy	-
Slush	-
Water – Standing/ Moving	-
Sand, Mud, Dirt	-
Oil	-
Total	13

Light Condition	#
Daylight	12
Dawn	-
Dusk	-
Dark – No Street Lights	-
Dark – Street Lights On/ Continuous	1
Dark – Street Lights On/ Spot	-
Dark – Street Lights Off	-
Other	-
Total	13

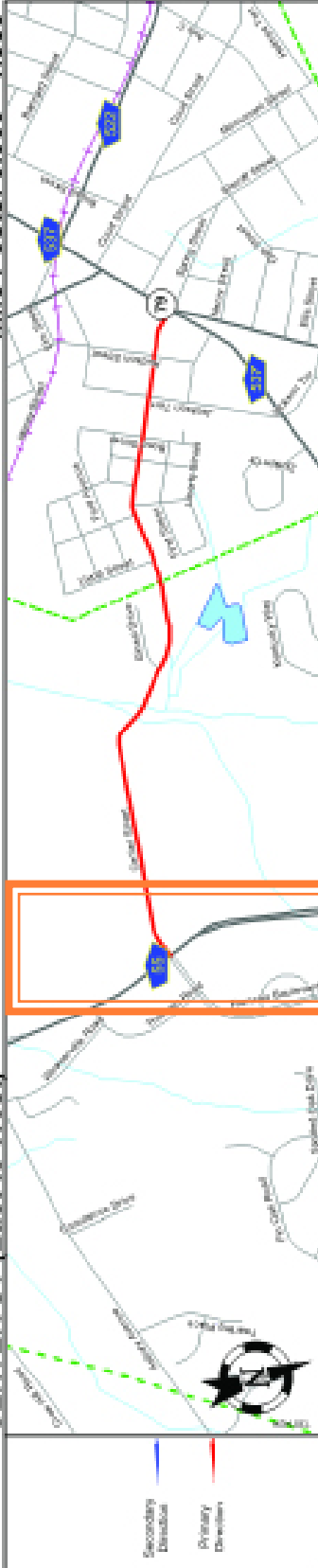
Day	#
Monday	2
Tuesday	1
Wednesday	2
Thursday	6
Friday	1
Saturday	-
Sunday	1
Total	13



➤➤ APPENDIX D – STRAIGHT LINE DIAGRAMS

Mile Posts: 0.000 - 1.380

CENTER ST (East to West)



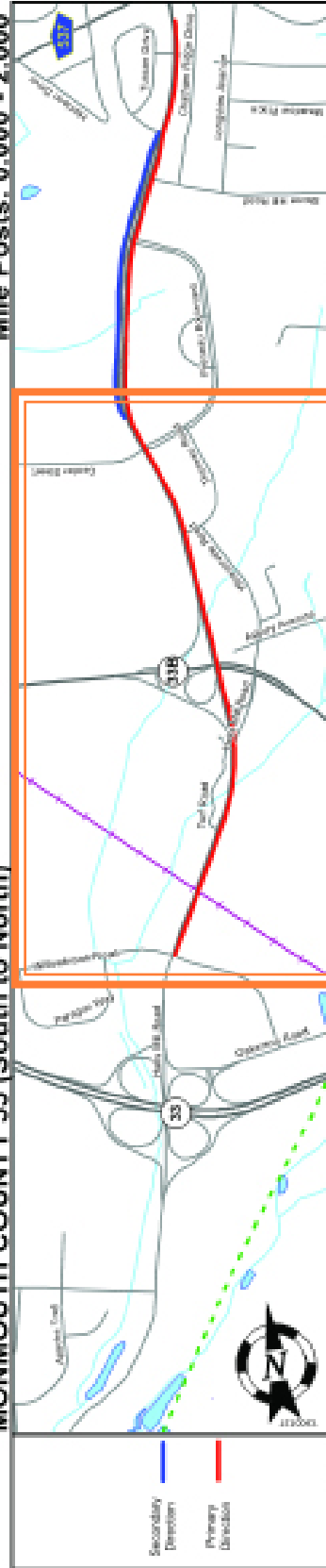
Street Name	Center Street
Junction	Municipal
Functional Class	Urban Collector
Federal Aid - AHD by	STP
Control Section	2B
Speed Limit	2
Number of Lanes	None
Med. Type	0
Med. Width	20
Shoulder	2
Traffic Volume	
Traffic Sig. ID	
Structure Id.	
Enclosed View	

Date last inventoried: June 2000

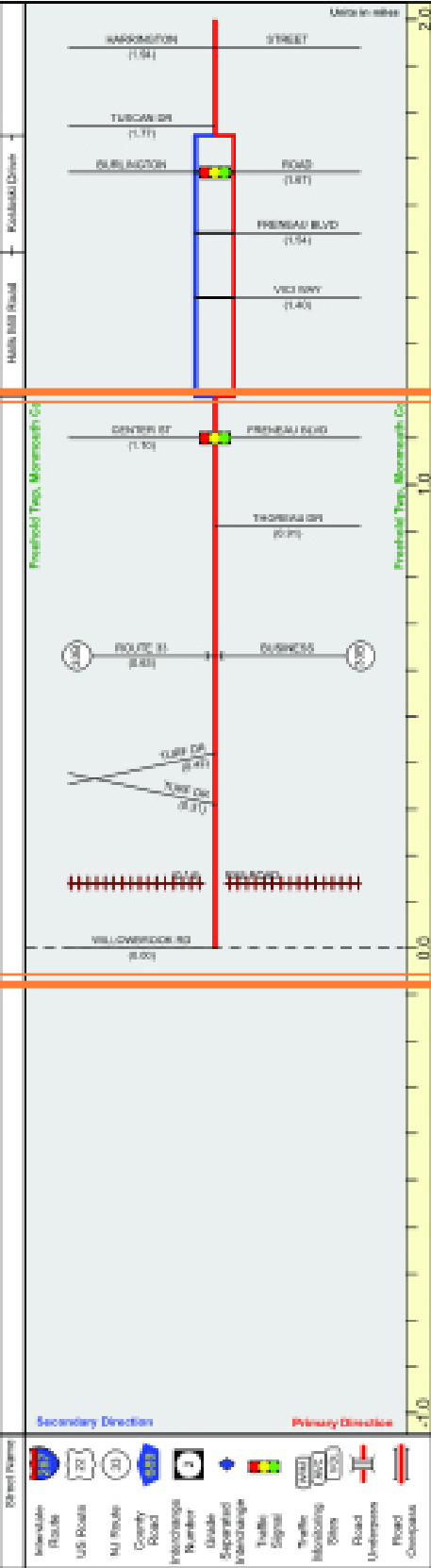
SRI = 13161208

MONMOUTH COUNTY 55 (South to North)

Mile Posts: 0.000 - 2.000



Payment	25
Structure	0
Number of Lanes	2
Speed Limit	50
Other Items	



Street Name	Halls Mill Road	County	Monmouth County
Functional Class	Urban Minor Arterial		
Federal Aid - RHD 55	M - 501 Term.		31P
Control Section			
Speed Limit	50		
Number of Lanes	4		
Med. Type	None		
Med. Width	1		
Shoulder	48		
Shoulder	6		
Traffic Volume	17,864 (2008)		
Traffic Sta. ID	16484 (2008)		
Structure No.	11-1-101		
Enlarged View			

SR | = 13000055

Date last inventoried: June, 2000