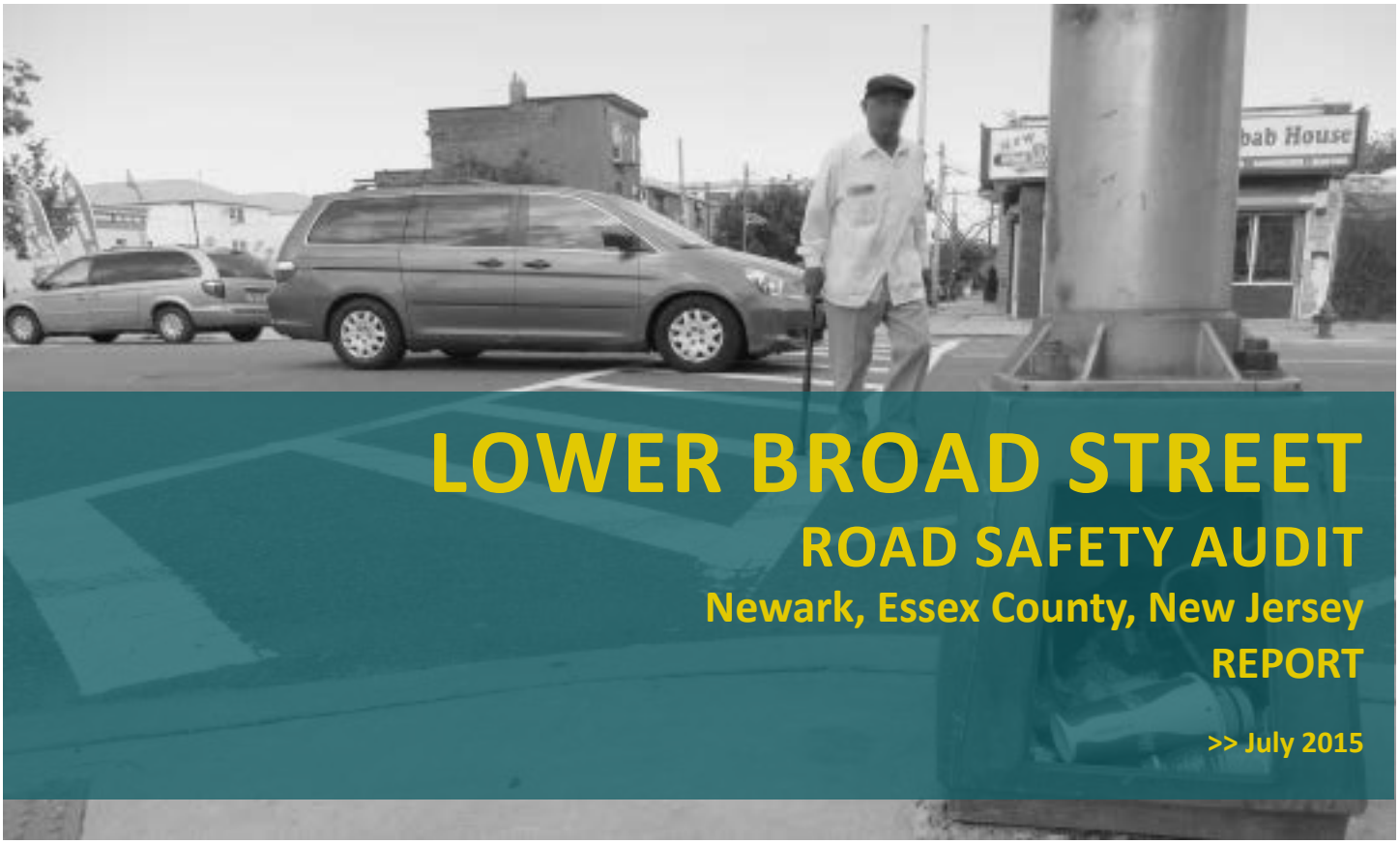

LOWER BROAD STREET
ROAD SAFETY AUDIT
Newark, Essex County, New Jersey
REPORT

>> July 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 the City of Newark with funding provided by the Federal Highway Administration (FHWA) and the New Jersey Department of Transportation (NJDOT)

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>> Introduction

What is a Road Safety Audit (RSA)?

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 RSA surveys 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 Plan4Safety, TSRC's award-winning crash database and software.

The RSA team provides a final report that includes long- and short-term countermeasure recommendations that fit within the requestor's budget. Furthermore, RSAs pay off. According to the Federal Highway Administration (FHWA), countermeasures applied after RSAs can reduce crashes by about 60 percent.

For more information, contact Andy Kaplan, Safety Program Manager, at andy.kaplan@rutgers.edu.

Disclaimer

A Road Safety Audit report provided by the Center for Advanced Infrastructure and Transportation staff does not constitute an engineering report. The agency responsible for design and construction should consult a professional engineer licensed in the State of New Jersey in preparing construction documents to implement any of the safety countermeasures in the 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) at four intersections along Broad Street in the City of Newark was chosen as a result of an NJTPA network screening of crashes on county and municipal roadways. The network screening revealed that a pedestrian corridor along lower Broad Street ranked number six in NJTPA and number one in Newark. A pedestrian spot that includes Parkhurst Street and Thomas Street ranked number 10 in NJTPA and number one in Newark. Four intersections along the corridor, within the ranked locations, were identified for further evaluation through an RSA: Emmet Street, Murray Street, Parkhurst Street and Thomas Street.

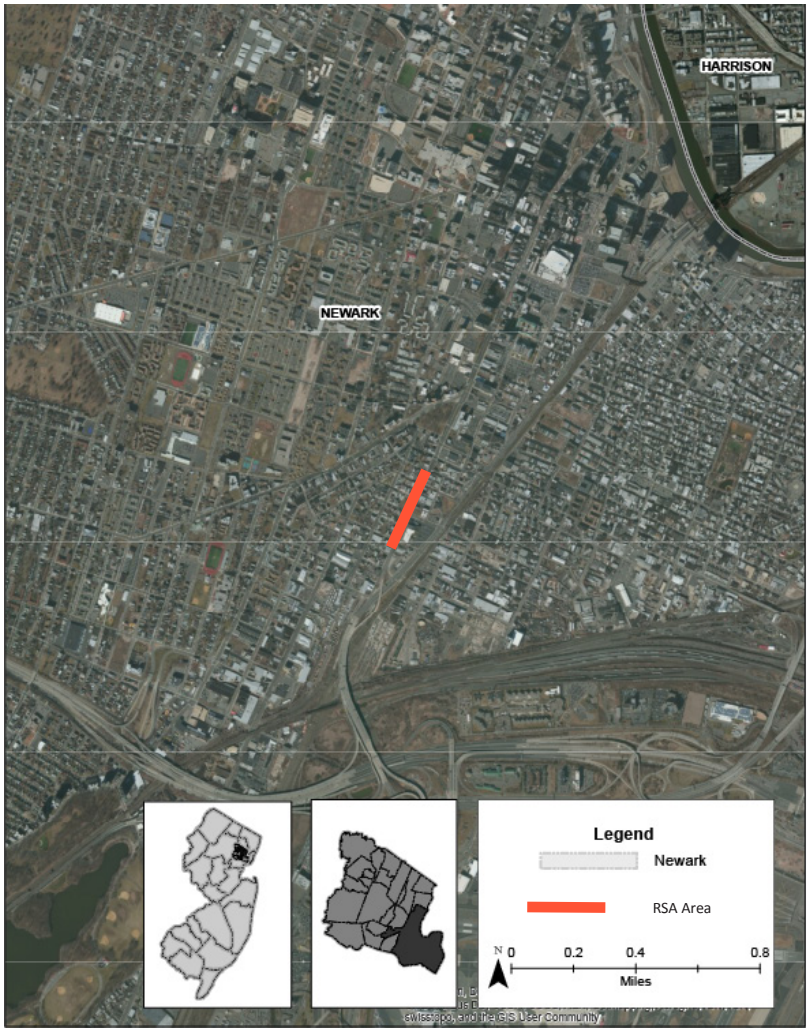
The RSA process helped to identify safety issues, evaluate risks and suggest countermeasures. The audit process utilized a dynamic and intensive short-term approach that tapped into the collective knowledge of local experts and subject-matter experts, using crash data and a walking survey of the intersections. This document is the final report for the RSA conducted in the City of Newark. The result, detailed in this report, is a summary of the four intersections' safety history, and a listing of recommended improvements.

Broad Street is a heavily traveled north-south roadway, an Urban Principal Arterial that functions both as a through-corridor in the City of Newark, and as a means of access to local businesses and residential areas. It connects to NJ Route 21 northbound by a ramp on the southern end, and traverses Newark's downtown area on the northern end. There is frequent NJ Transit bus traffic and a significant amount of pedestrian activity along lower Broad Street. Of the four intersections in the RSA, the two southerly intersections (Emmet Street and Murray Street) are signalized, and the two northerly intersections (Parkhurst Street and Thomas Street) are unsignalized. The cross section consists of two lanes in each direction, with parking on both sides of the street. The wide cross section makes it difficult for pedestrians to cross the roadway, especially at the two unsignalized intersections. Another issue is the presence of frequent bus service. Buses that pull over for passengers have difficulty merging back into traffic. Some buses simply stop in the live lane, rather than pulling into the bus stop at the curb.

Alternatives to the 60-foot-wide cross section were evaluated, in an effort to meet the respective needs of the pedestrians, buses, bicyclists, and vehicles. As two lanes of travel in both directions are needed for the traffic volumes, meeting the needs of all aforementioned roadway users is not possible, and compromises must be made. Various alternative graphics are proposed within the report. In addition to the cross section, suggestions are made to reduce speeding, improve delineation, and improve signage. The addition of bump-outs would benefit pedestrians and reduce speeding.

>> 1.0 Corridor Description and Analysis

1.1 Site Selection



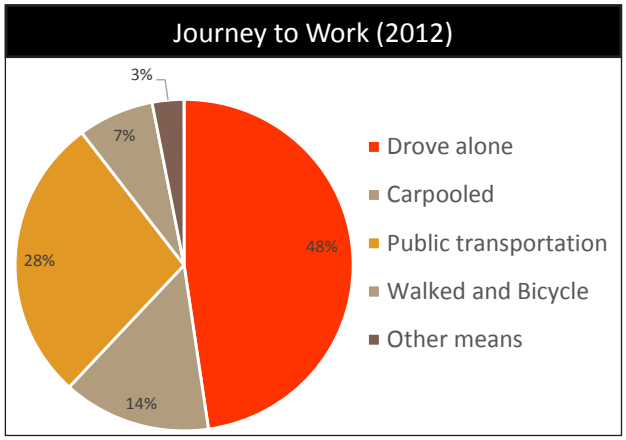
As a result of a network screening analysis completed by TSRC for NJTPA, the City of Newark requested that a Road Safety Audit be conducted in this corridor (along Broad Street, from Emmet Street at the south end, to Thomas Street at the north end) in order to improve pedestrian safety. The network screening revealed that on the ranked list for pedestrian corridors, lower Broad Street ranked number six in all of NJTPA and number one in the city of Newark. On the pedestrian spot ranking list, the pedestrian spot[1] covering the Parkhurst Street and Thomas Street intersections ranked number 10 in all of NJTPA and number one in the city of Newark. Four intersections along the corridor, within the ranked locations, were identified for further evaluation through an RSA.

1 A pedestrian spot is a stretch of roadway, one-tenth of a mile in length.

2010–2012 Crash Data			
Broad Street	**NJTPA #**	**Essex County #**	**Newark #**
Intersection ranking	n/a	n/a	n/a
Pedestrian spot ranking (Parkhurst St. and Thomas St.)	10	7	1
Pedestrian corridor ranking	6	5	1

1.2 Traffic Volumes

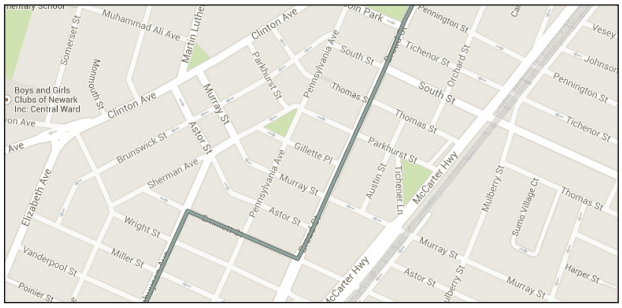
A traffic count conducted by NJDOT along Broad Street, a half mile north of the RSA area, found an annual average daily traffic (AADT) of 31,420 in 2011. (See Appendix C for traffic volumes.)



1.3 Transit Service

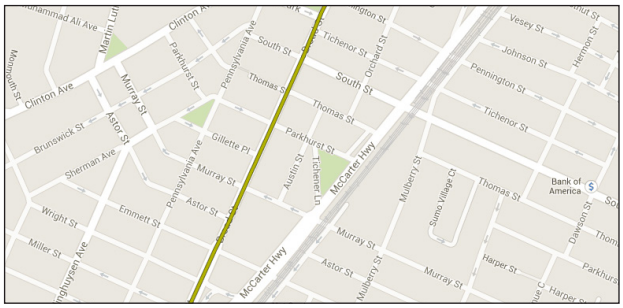
Coach USA

Bus routes 24A and 24B are operated by Coach USA. They run along Broad Street in the north part of the RSA area, turning west on Emmet Street, connecting Newark to Orange in the north, and to Elizabeth in the south.

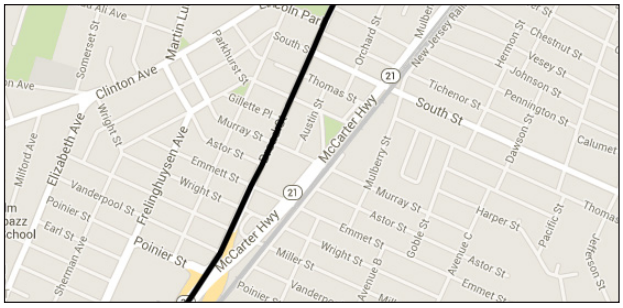


NJ Transit

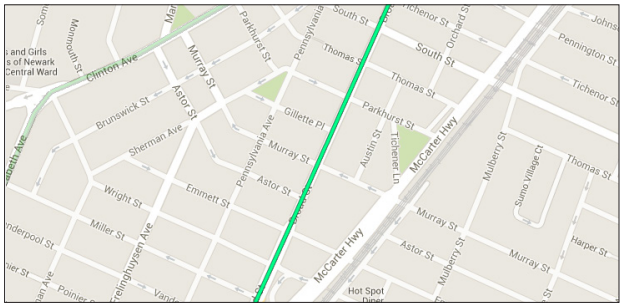
NJ Transit bus route 62 connects Newark Penn Station to Newark Liberty International Airport and the Elizabeth downtown business district.



NJ Transit bus route G28 runs along Broad Street and provides connectivity between Bloomfield, Newark, and Newark Liberty International Airport.



Bus Route 67 provides connectivity between Toms River, Lakewood, and Newark.



1.4 Area Characteristics

Broad Street is a 2.2 mile north-south Urban Principal Arterial through the city of Newark. It begins in the southern end as access/exit from NJ Route 21 (McCarter Highway), traverses Newark's downtown area, crosses under US Route 280, and merges with Broadway in the north. It is comprised of four lanes in the RSA area, widening to six lanes north of the RSA area. There are no shoulders. The speed limit is 25 mph. The Broad Street corridor includes commercial, retail, and residential properties.

1.5 Intersection Characteristics

Thomas Street and Broad Street

- Stop-controlled on Thomas Street
- Dead-end west of Broad Street
- Westbound-only on Thomas Street, east of Broad Street
- Commercial properties on east corners
- Church on northwest corner
- Residential building on southwest corner

Parkhurst Street and Broad Street

- Stop-controlled on Parkhurst Street
- Parkhurst Street is one-way eastbound
- Northbound bus stop at southeast corner
- Southbound bus stop with bus shelter at northwest corner
- Significant pedestrian activity
- Small businesses on all four corners

Murray Street and Broad Street

- Signalized intersection
- No pedestrian heads
- Murray Street is one-way westbound.
- Bus stops on northbound and southbound Broad Street
- Vacant lots on both northeast and northwest corners
- Used car lot on southwest corner

Emmet Street and Broad Street

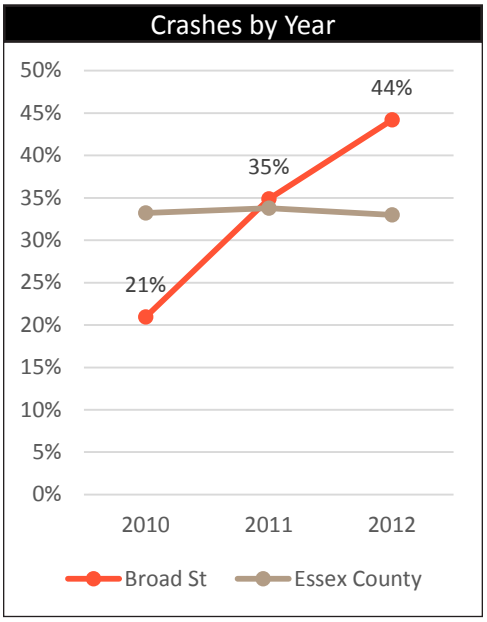
- Signalized intersection
- Bus stops on northbound and southbound Broad Street
- Bus routes 24A and 24B make right turns onto Emmet from Broad Street southbound, and left turns from Broad Street northbound.
- Northbound traffic enters Broad Street from south of Emmet Street, by exiting from NJ Route 21, and must transition down from higher speed to lower speed.
- There is increased speeding on Broad Street southbound in evening hours and in the middle of the night.
- No left turn for northbound and southbound Broad Street traffic
- Car wash on southeast corner, vacant lot on northwest corner

>> 2.0 Crash Findings—Broad Street RSA Area—All Four Intersections

2.1 Chronology

According to the NJDOT crash database, there were 43 reportable crashes during the three-year analysis period of 2010–2012. The percentage of crashes per year increased from 2010, as seen in the chart. When compared to crashes in Essex County, the crashes at the County level have remained relatively constant. Since the rankings of the network screening were based on five years of data (2008–2012) the pedestrian crashes from 2008–2009 were also evaluated.

Examining the number of crashes by month over the three-year period, there was no clear variation by month. By the day of the week, crash totals were clearly overrepresented on Friday and Saturday (49 percent) as compared to the Essex County distribution (30 percent). Regarding the time of day, there were two peak periods, from 8 a.m. to noon, and from approximately 3 p.m. to 8 p.m.



2.2 Severity

Severity	All Crashes	% Crashes	Pedestrians	Bicyclists
Incapacitated	1	2%	—	—
Moderate Injury	5	12%	5	—
Complaint of Pain	15	35%	2	1
Property Damage Only	22	51%	—	—
TOTAL	43	100%	7	1

Almost half (49 percent) of the 43 crashes resulted in injury: 15 crashes with complaints of pain, five moderate injuries and one incapacitating injury. There were 22 property-damage-only crashes and no fatal crashes.

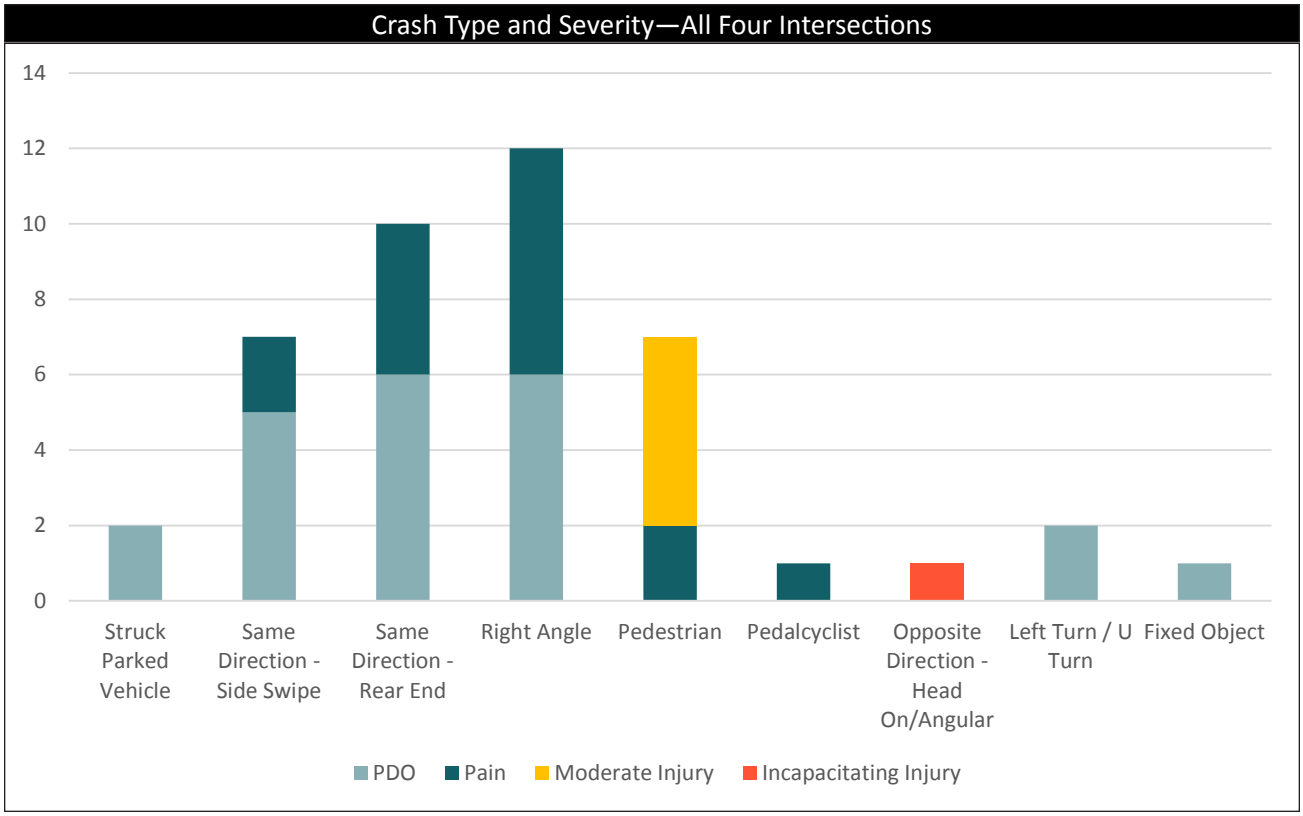
2.3 Collision Type

Of the 43 crashes between the years of 2010–2012, three crash types accounted for 83 percent of the crashes: same-direction (39 percent), right-angle (28 percent) and pedestrian (16 percent). When compared to Essex County, the RSA area has a significant overrepresentation of right-angle crashes and pedestrian crashes.

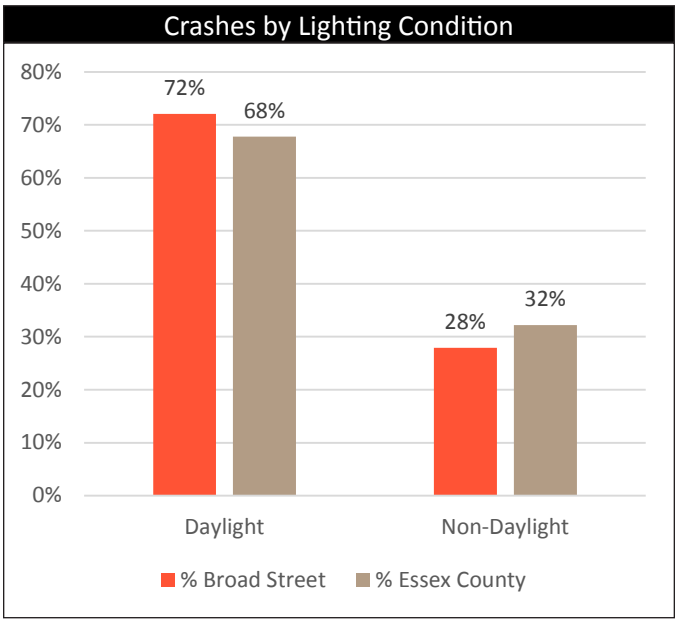
Both Emmet Street and Murray Street had a number of same-direction crashes. Parkhurst Street had the highest number of right-angle crashes. Parkhurst Street and Thomas Street each had three pedestrian crashes (out of seven in total) for the 2010–2012 period.

Crash Type	Count in RSA Area	% in RSA area*	% in Essex County*
Same-Direction—Rear-End	10	23%	23%
Same-Direction—Sideswipe	7	16%	15%
Right-Angle	12	28%	13%
Opposite-Direction—Head-On/Angular	1	2%	1%
Opposite-Direction—Sideswipe	—	—	1%
Struck Parked Vehicle	2	5%	18%
Left-Turn/U-Turn	2	5%	4%
Backing	—	—	8%
Fixed Object	1	2%	10%
Animal	—	—	1%
Pedestrian	7	16%	4%
Pedcyclist	1	2%	1%
Other	—	—	2%
TOTAL	43	100%	100%

*Percentages are rounded



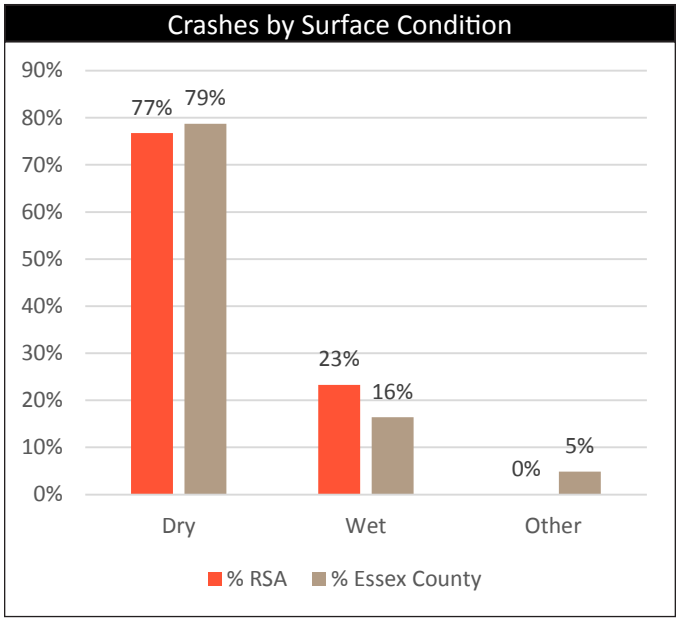
2.4 Roadway Surface and Lighting Conditions



Seventy-two percent of crashes in the corridor occurred during daylight conditions, which is similar to the Essex County overall incidence of 68 percent. During dark or partial-dark conditions, the percentage on Broad Street was lower than Essex County: 28 percent vs. 32 percent. According to the 2010–2012 statewide averages for county routes, daylight crashes typically account for 70 percent of all crashes. (For lighting information by intersection, see Appendix D.)

Seventy-seven percent of the corridor-wide crashes occurred in dry road conditions, which is only slightly less than Essex County.

Twenty-three percent of the crashes occurred in wet conditions; this is almost 50% more than the County-wide crashes during the same period. The distribution suggests that road surface may have been a factor contributing to crash frequency.



2.5 Cross Section Geometry

The cross section on Broad Street has four lanes and is 60 feet wide, according to the Straight Line Diagram. The outside lane appears wide, as the parking lane is only striped in certain locations. There is no median and no shoulder. South of the intersection with Emmett Street, there are bollards dividing the roadway.

Looking south from Emmet Street. Roadway is divided with bollards.

Looking south from Parkhurst Street. Road is striped with two lanes in each direction, with parking lanes on both sides.

3.1 Chronology

According to the NJDOT crash database, there were 11 reportable crashes during the three-year analysis period of 2010–2012. The percentage of crashes per year decreased slightly over the three-year period, as seen in the adjacent chart.

Examining concentrations by month over the three-year period, the total ranged between one and six crashes per month. The highest number of crashes (six) occurred in November, followed by June (five crashes). There was only one crash per month in March and August. By the day of the week, crash totals were also fairly evenly spread, with a range of two to seven crashes per weekday. Thursday had the highest number of crashes, and Wednesday had the lowest. Regarding the time of day, there was one peak period, 4 p.m. to 6 p.m., with more than a third of the crashes occurring in that interval.

There were two pedestrian crashes in 2008–2009.

3.2 Severity

Severity (2010–2012)	All Crashes	Pedestrians
Incapacitated	1	—
Moderate Injury	—	—
Complaint of Pain	5	—
Property Damage Only	5	—

Out of the 11 crashes, more than half resulted in injury. The incapacitating injury was from an opposite-direction, head-on, angular crash that was probably caused by a medical condition, as noted in the crash report.

The circumstances of the fatal pedestrian crash are unclear from the crash report. It appears that the driver had the green light, and the pedestrian ran across Broad Street.

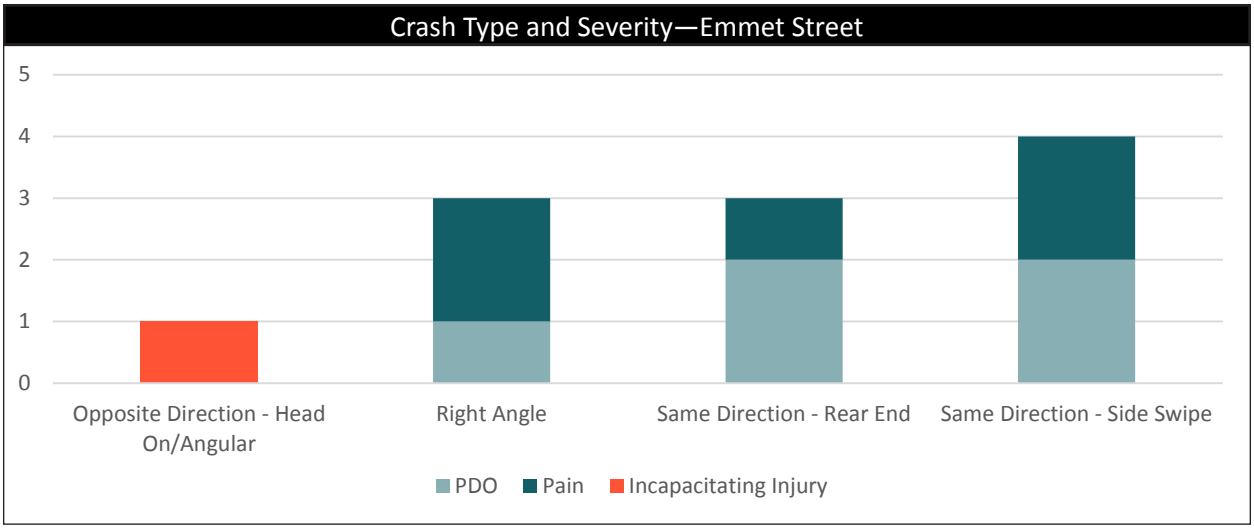
Severity (2008–2009)	# Crashes
Fatal (2009)	1
Pain (2008)	1

3.3 Collision Type

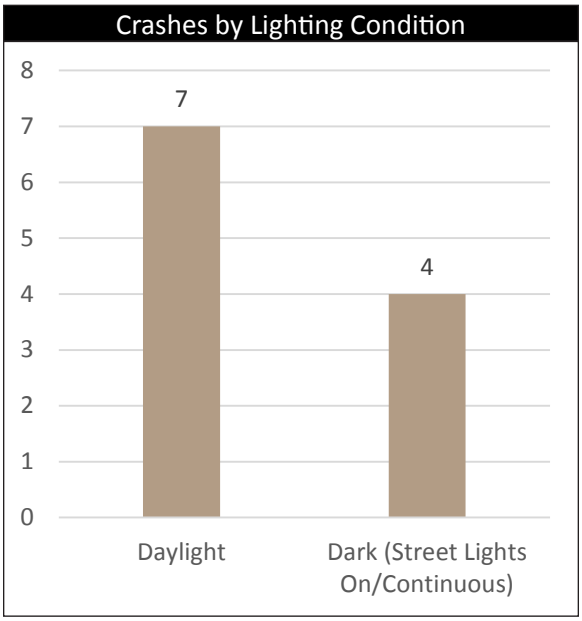
Of the 11 crashes between the years of 2010–2012, 63 percent were same-direction. More than a quarter of the crashes were right-angle crashes (three crashes). When compared to Essex County, the RSA area has a significant overrepresentation of same-direction-sideswipe and right-angle crashes.

Crash Type—Emmet St. and Broad St.	Count in RSA Area	% in Intersection*	% Essex County*
Same-Direction—Rear-End	3	27%	23%
Same-Direction—Sideswipe	4	36%	15%
Right-Angle	3	27%	13%
Opposite-Direction—Head-On/Angular	1	9%	1%
Opposite-Direction—Sideswipe	—	—	1%
Struck Parked Vehicle	—	—	18%
Left-Turn/U-Turn	—	—	4%
Backing	—	—	8%
Fixed Object	—	—	10%
Animal	—	—	1%
Pedestrian	—	—	4%
Other	—	—	2%
TOTAL	11	100%	100%

*Percentages are rounded

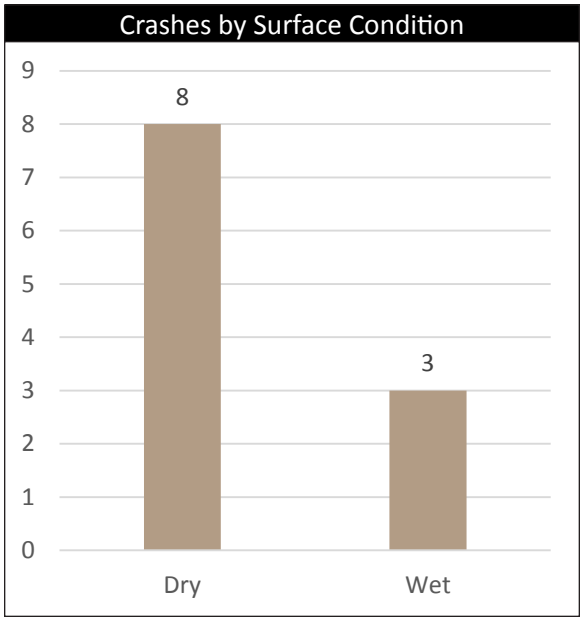


3.4 Roadway Surface and Lighting Conditions



Of the four crashes that occurred in dark conditions, three of them involved a motorist running a red light, and do not appear to be directly related to nightime conditions.

Of the three crashes that occurred with wet conditions, in only one of them did the wet pavement conditions appear to have contributed to the crash.

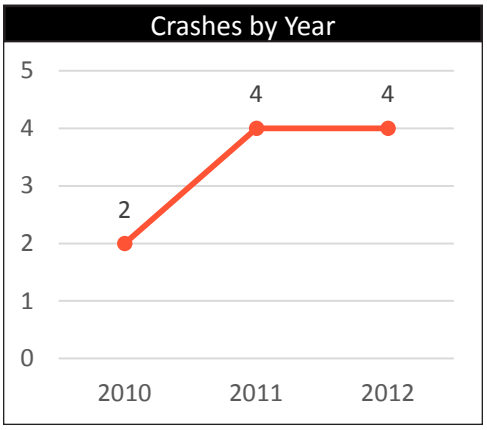


>> 4.0 Crash Findings—Murray Street and Broad Street

4.1 Chronology

According to the NJDOT crash database, there were ten reportable crashes during the three-year analysis period of 2010–2012. The number of crashes per year rose after the first year and then remained constant at four crashes, as seen in the graph.

Given the small number of crashes, it is impossible to see trends in the month, day of week, or time of day.



4.2 Severity

Severity	All Crashes	Pedestrians	Bicyclists
Complaint of Pain	2	1	1
Property Damage Only	8	-	-

The two injury crashes involved a pedestrian and a pedalcyclist.

4.3 Collision Type

Of the ten crashes between the years of 2010–2012, 60% of them were same-direction crashes, three sideswipe crashes, and three rear-end crashes. The fixed object crash involved a vehicle striking a light pole. In the pedalcyclist crash, the cyclist ran into a vehicle.

Murray St. and Broad St.	Count in RSA Area	% in Intersection*	% Essex County*
Same-Direction—Rear-End	3	30%	23%
Same-Direction—Sideswipe	3	30%	15%
Right-Angle	-	-	13%
Opposite-Direction—Head-On/Angular	-	-	1%
Opposite-Direction—Sideswipe	-	-	1%
Struck Parked Vehicle	-	-	18%
Left-Turn/U-Turn	1	10%	4%
Backing	-	-	8%
Fixed Object	1	10%	10%
Animal	-	-	1%
Pedestrian	1	10%	4%
Pedalcyclist	1	10%	3%
TOTAL	10	100%	100%

*Percentages are rounded

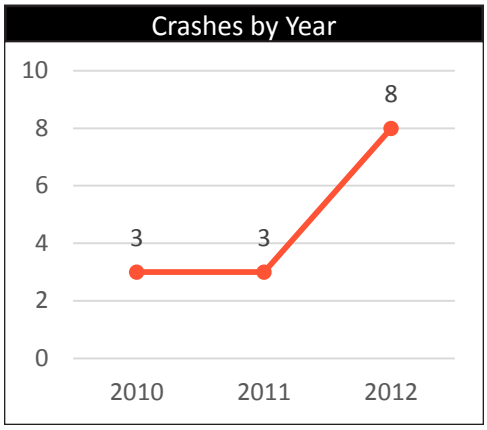
4.4 Roadway Surface and Lighting Conditions

Nine out of the ten crashes occurred during daylight conditions. Two of the ten occurred in wet conditions, but surface conditions were not a factor in those crashes, according to the crash narratives.

5.1 Chronology

According to the NJDOT crash database, there were 14 reportable crashes during the three-year analysis period of 2010–2012. The number of crashes per year remained the same for the first two years, and rose significantly over the last year, as seen in the graph.

Given the small number of crashes, it is impossible to see trends in the month, day of week, or time of day.



5.2 Severity

Severity	All Crashes	Pedestrians only
Moderate Injury	3	3
Complaint of Pain	6	—
Property Damage Only	5	—

Of the fourteen crashes, nine of them involved injuries. All of the three moderate injuries involved pedestrians.

5.3 Collision Type

Of the fourteen crashes between the years of 2010–2012, four of them were same-direction, rear- end crashes, and six were right-angle crashes. Three of the seven pedestrian crashes in the entire RSA area took place at this one intersection.

Parkhurst St. and Broad St.	Count in RSA Area	% in Intersection*	% Essex County*
Same-Direction—Rear-End	4	29%	23%
Same-Direction—Sideswipe	—	—	15%
Right-Angle	6	43%	13%
Opposite-Direction—Head On/Angular	—	—	1%
Opposite-Direction—Sideswipe	—	—	1%
Struck Parked Vehicle	—	—	18%
Left-Turn/U-Turn	1	7%	4%
Backing	—	—	8%
Fixed Object	—	—	10%
Animal	—	—	1%
Pedestrian	3	21%	4%
Other	—	—	3%
TOTAL	14	100%	100%

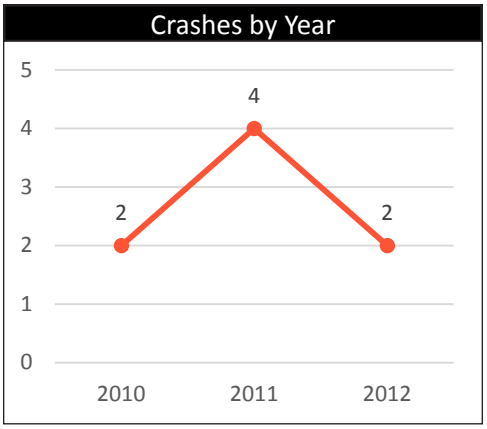
*Percentages are rounded

>> 6.0 Crash Findings—Thomas Street and Broad Street

6.1 Chronology

According to the NJDOT crash database, there were eight reportable crashes during the three-year analysis period of 2010–2012. The percentage of crashes per year rose in the second year, and decreased in the third year, as seen in the graph.

Given the small number of crashes, it is impossible to see trends in the month, day of week, or time of day.



6.2 Severity

Severity	All Crashes	Pedestrians only
Moderate Injury	2	2
Complaint of Pain	2	1
Property Damage Only	4	—

Half of the eight crashes resulted in injury. Of the four injury crashes, three involved pedestrians.

6.3 Collision Type

Of the eight crashes between 2010–2012, there were three crash types at Thomas Street: right-angle, struck parked vehicle, and pedestrian. Three of the seven pedestrian crashes in the entire RSA area took place at this one intersection.

Thomas St. and Broad St.	Count in RSA Area	% in Intersection*	% Essex County*
Same-Direction—Rear-End	—	—	23%
Same-Direction—Sideswipe	—	—	15%
Right-Angle	3	38%	13%
Opposite-Direction—Head-On/Angular	—	—	1%
Opposite-Direction—Sideswipe	—	—	1%
Struck Parked Vehicle	2	25%	18%
Left-Turn/U-Turn	—	—	4%
Backing	—	—	8%
Fixed Object	—	—	10%
Animal	—	—	1%
Pedestrian	3	38%	4%
Other	—	—	3%
TOTAL	8	100%	100%

*Percentages are rounded

>> 7.0 Identified Issues

Ref #	General—RSA Corridor
	Traffic Operations
1	Speeding is a problem throughout the RSA corridor.
2	There is driver confusion, and noncompliance with one-way and no-left-turn signs.
3	Some roadway users' needs are unmet by the current cross-sectional configuration.
	Pedestrians
4	Many of the ramps are not ADA compliant.
5	Sidewalks are in poor condition in many locations.
6	Midblock pedestrian crossings are common.
7	Pedestrians often have difficulty crossing at the crosswalks, both signalized and unsignalized.
	Signs
8	Some of the signs are blocked by poles and foliage.
9	Many of the signs are not retroreflective.
	Buses
10	Buses have difficulty merging back into traffic after loading/unloading passengers.
11	Some buses don't pull up to curb, but stop in a live lane to load/unload passengers.
12	Buses stopping for passengers can contribute to shadowing problems by limiting sight distance of pedestrians crossing roadway.
	Bicyclists
13	Some of the inlet grates are not bicycle-safe.
	Pavement Condition and Markings
14	Many of the pavement markings are faded.
15	Potholes and uneven pavement make for poor rideability.
	Lighting
16	Pedestrian and vehicle lighting appears to be insufficient, especially for making pedestrians visible.

Ref #	Signalized Intersections—Emmet Street and Murray Street
	General
	Parking
17	The parking lanes on Broad Street are significantly underutilized.
	Traffic Signals
18	Sun glare reduces signal visibility, especially on east-west roadways, and can be mitigated by adding retro-reflective backplates.
19	Left turns can be difficult to make.
	Emmet Street
	Traffic Operations
20	Many vehicles enter the intersection at excessive speed, coming downhill and around a curve from the NJ Route 21 exit ramp.
21	Many southbound vehicles proceed at excessive speed, especially from 4 p.m. to 7 p.m. and in middle of night.
22	Some vehicles make illegal left turns from Broad Street.
23	The intersection box becomes blocked in congested traffic.
24	People still make U-turns near car wash, despite the bollards.
25	There were three right-angle crashes from Emmet Street eastbound.
	Signs
26	“No U-turn” sign is partially hidden behind a tree.
	Traffic Signals
27	One of the red light bulbs is not functioning.
28	Newark is in the process of automating pedestrian push buttons, so the nonfunctioning buttons may be be removed.
	Pavement
29	Pavement appears uneven at location of loops.
	Murray Street
	Traffic Operations
30	Illegal turns are made onto Murray Street eastbound.
31	There is lack of clear lane delineation on Murray Street.
	Traffic Signals
32	There are no pedestrian heads.
33	The 8-inch signal heads on Murray Street do not provide sufficient visibility.
	Pedestrians
34	Pedestrians can have a difficult time crossing Broad Street, especially with aggressive left-turning vehicles from Murray Street.
	Signs
35	The “no U-turn” sign is partially obstructed by a tree.
	Drainage
36	One of the drainage grates is depressed.

Ref #	Unsignalized Intersections—Parkhurst Street and Thomas Street
	General
	Pedestrians
37	The wide cross section, with few gaps, creates difficult conditions for pedestrians crossing the roadway.
38	Drivers turning onto Broad Street from the cross streets may be focused on finding a gap in the traffic, and not notice the pedestrians crossing.
39	There is a long stretch between Murray Street and South Street with no signalized intersections.
	Parkhurst Street
	Traffic Operations
40	Visibility for eastbound traffic on Parkhurst Street is compromised by the location of the bus shelter.
41	There is a history of right angle crashes.
42	The Dunkin' Donuts driveway is wide and close to the intersection.
	Pedestrians
43	There is a history of left-turn crashes involving pedestrians.
	Signs
44	The “STOP” sign on Parkhurst Street is not clearly visible to drivers, and they don't stop at the stop bar.
	Bus
45	There is no bus shelter on Broad Street at the southeast corner (northbound bus).
	Thomas Street
	Pedestrians
46	Missing crosswalk on Broad Street, which is needed to meet the crossing demand.
47	The skewed crosswalk does not meet the crossing demand or the needs of all pedestrians.
48	Presence of intoxicated pedestrians is more common here, due to the nature of the businesses.

Inlet grates are not bicyclesafe

One example of uneven sidewalk

Faded pavement markings

Uneven pavement

Curb ramps are not ADA compliant

Lack of gaps for pedestrians crossing roadway

Midblock crossings are common

Bus merging back into traffic

No place for bicyclists and other roadway users

Excessive speed in corridor, especially coming off the ramp

Signs obscured by trees and foliage

Bus stopping in live lane

Visualizing Issues—Emmet Street and Broad Street

Vehicles coming off NJ Route 21 ramp often travel at excessive speed

Parking is underutilized in this area

Some vehicles make this illegal left turn

Pedestrian push buttons are not operational

People still make U-turns near car wash, in spite of the bollards

Depressed inlet and non-operational loops in pavement

Visualizing Issues—Murray Street and Broad Street

People still make illegal left turns despite signage

Uneven pavement

Unsafe for bicycle travel

Lack of lane delineation on Murray Street

Sign is obscured by foliage

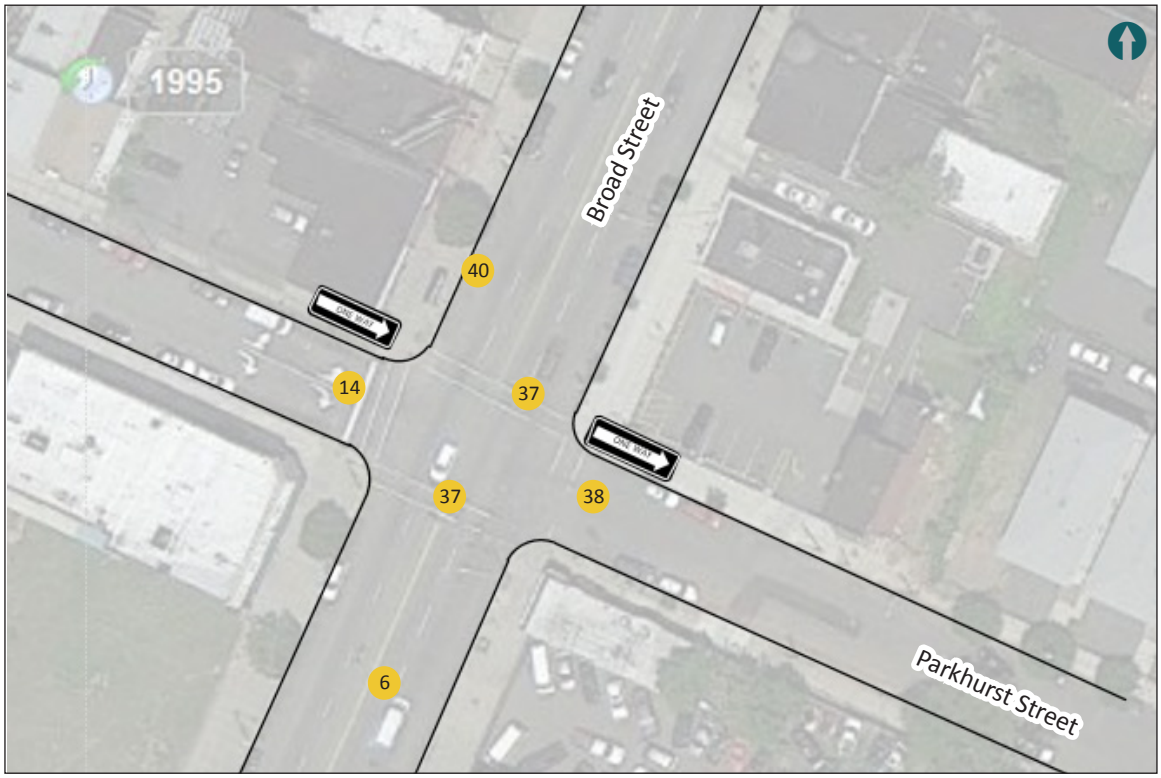
The 8-inch signal heads are not as visible as the 12-inch heads

Visualizing Issues—Parkhurst Street and Broad Street

Wide cross section makes it difficult for pedestrians to cross

Faded pavement markings

Sight distance for Parkhust Street eastbound is limited by bus shelter



Very wide crosswalk is often unsafe to cross

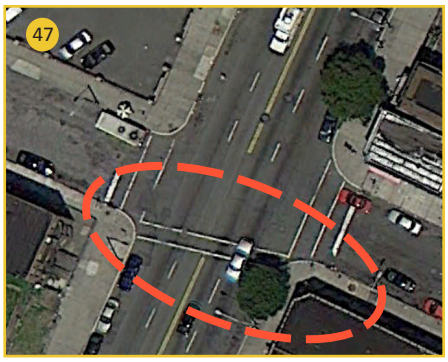
Many left-turning vehicles are watching for a gap and not paying attention to pedestrians

Midblock crossings are common

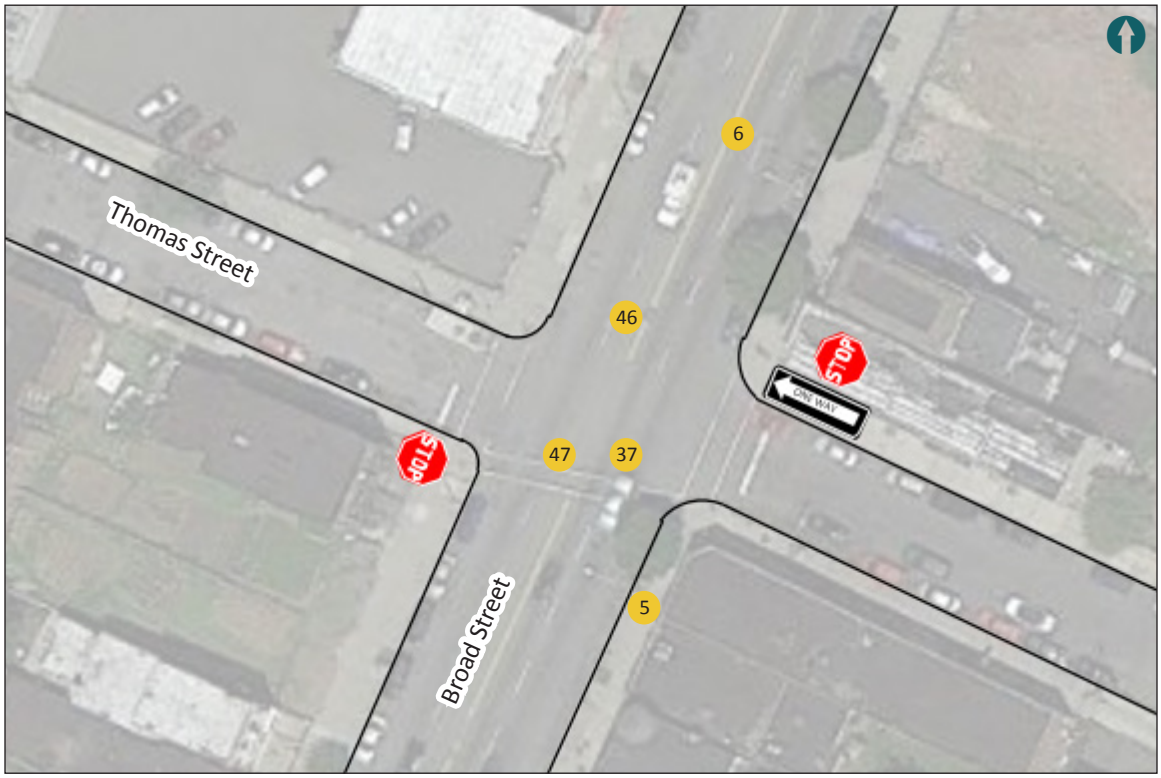
Visualizing Issues—Thomas Street and Broad Street

Wide cross section makes it difficult for pedestrians to cross

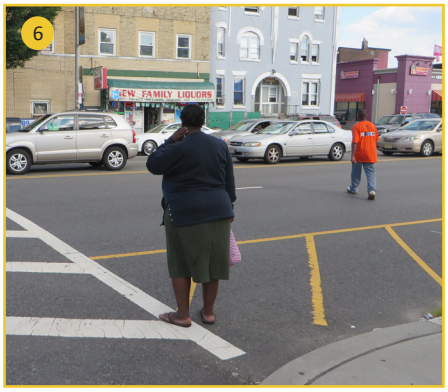
Missing crosswalk across Broad Street



Pedestrian attempting to cross Broad Street



Partially obscured sign



Frequent midblock crossings

Uneven sidewalk surface

>> 8.0 Recommendations

Ref #	A—General	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref #
	Traffic Operations					
A-1	Post more speed limit signs throughout the corridor.	Medium	Short	$	Newark	1
A-2	An evaluation of the corridor could be done to designate intersections where left-turning movements are allowed and where prohibited.	Medium/ High	Medium	$	Newark	2
A-3	An evaluation of the corridor could be done to install left-turn lanes.	Medium/ High	Medium	$	Newark	2
A-4	The parking lane is underutilized and should be evaluated in the context of the cross section analysis.	Low	Medium	$	Newark	17
	Pedestrians					
A-5	Replace curb ramps with ADA-compliant facilities.	Medium	Medium	$$	Newark	4
A-6	Replace all sidewalks that are not safe for pedestrians.	Medium/ High	Medium	$$	Newark	5
A-7	Install a median fence to prevent mid-block pedestrian crossings.	High	Long	$$	Newark	6
A-8	Revise the cross section to include a refuge island.	High	Long	$$	Newark	7
	Signs					
A-9	Replace signs with retroreflective ones.	Medium	Short	$	Newark	9
A-10	Make all signs clearly visible by moving signs and cutting back foliage.	Medium/ Low	Short	$	Newark	8, 21
	Buses					
A-11	There are a few options for revising the cross section to improve bus operations:					
a	Install a dedicated bus lane in place of the parking lane.	Medium	Medium	$	Newark	10, 11, 12
b	Move bus stops to the far sides of intersections.	Medium	Long	$$	Newark	12
c	Install bump-outs to operate in conjunction with the buses that stop in the live lane of traffic.	Medium	Long	$$$	Newark	10
d	Consider adding roadway markings to clearly designate bus pull-in areas.	Medium/ Low	Short	$	Newark	10
	Pavement Condition and Markings					
A-12	The pavement should be replaced where there are potholes and uneven pavement .	Medium	Medium	$	Newark	15
A-13	Replace all pavement markings so they are clearly visible.	Medium/ High	Short	$	Newark	14
A-14	Install more arrows to provide more positive guidance, especially where left turns are prohibited.	High	Short	$	Newark	2, 30
	Lighting					
A-15	Professional staff should conduct a formal engineering review of existing lighting conditions to evaluate where both vehicular and pedestrian-level lighting can be enhanced.	Medium/ High	Medium	$$	Newark	16
	Education and Enforcement					
A-16	Increased enforcement, and running additional radar, may help reduce speeding.	High	Short	$	Newark PD	1, 20, 21. 22, 24
A-17	Utilize Street Smart campaign and Ambassador in Motion program to educate pedestrians and bicyclists.	High	Medium	$	Newark & NJTPA	6

Ref #	A—General	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref #
A-18	Install "YOUR SPEED IS…." for traffic coming off the ramp at NJ Route 21.	Medium/ High	Short	$	Newark	20
	Cross Section					
A-19	Revise cross section:					
a	Reduce lane width.	High	Medium	Varies	Newark	3
b	Eliminate parking on one or both sides of Broad Street.	High	Medium	Varies	Newark	3
c	Install a designated bus lane.	High	Medium	Varies	Newark	3
d	Install a bike lane.	High	Medium	Varies	Newark	3
	Misc.					
A-20	Replace inlet grates with bicycle-safe grates.	High	Short	$	Newark	13

Ref #	B—Emmet Street and Murray Street (Signalized Intersections)	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref #
	Traffic Signal					
B-1	Install retroreflective back plates, especially on east-west approaches.	Medium/ High	Short	$	Newark	18

Ref #	C—Emmet Street	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref #
	Traffic Operations					
C-1	Install rumble strips coming off the ramp on Broad Street northbound to help reduce vehicle speed.	High	Medium	$	Newark	20
C-2	Replace green ball on left-most traffic signal heads with a green upward arrow along Broad Street.	Medium/ High	Medium	$	Newark	2
C-3	Add pavement-marking arrow in left-most lane, indicating through-traffic only.	Medium/ High	Short	$	Newark	2
C-4	Install "NO TURN ON RED" signs for eastbound Emmet Street, helping to reduce right-turn crashes.	Medium	Short	$	Newark	25
	Pavement Condition and Markings					
C-5	Remove unused loops when pavement improvements are made.	Low	Medium	$	Newark	29
C-6	Restripe crosswalks.	Medium	Short	$	Newark	14
C-7	Paint "25 mph" on roadway.	Medium/ Low	Short	$	Newark	1
	Traffic Signal					
C-8	Remove the nonoperational pedestrian buttons.	Low	Medium	$	Newark	28
C-9	The nonfunctional red light will be replaced by maintenance.	Medium	Short	$	Newark	27
	Signs					
C-10	Install speed signs on both sides of the road at end of ramp for northbound vehicles. Oversized signs will increase visibility.	Medium	Short	$	Newark	1, 20

Ref #	C—Emmet Street	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref #
C-11	Install "REDUCED SPEED AHEAD" signs on ramp.	Medium/ High	Medium	$	Newark & NJDOT	1, 20
	Enforcement					
C-12	Increase enforcement of illegal left turns from Broad Street.	Medium/ High	Short	$	Newark PD	22
	Gateway Treatment					
C-13	Install a clearly visible gateway treatment to create a transition from the interstate to an urban environment.	Medium/ High	Long	$$$	Newark	1, 20

Ref #	D—Murray Street	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref #
	Pedestrians					
D-1	Install bump-outs to shorten the crosswalk for pedestrians.	Medium/ High	Long	$$	Newark	34
	Traffic Signal					
D-2	Upgrade the traffic signal heads to 12-inch bulbs.	Medium/ High	Short	$$	Newark	33
D-3	Install countdown pedestrian heads.	High	Long	$$	Newark	32
D-4	Install protected left turn onto Murray Street for Broad Street northbound.	Medium/ High	Medium	$$	Newark	19
	Pavement Conditions and Markings					
D-5	Install pavement markings to clarify lane use.	Medium/ High	Short	$	Newark	2
	Signs					
D-6	Add “DO NOT ENTER” sign to both sides of the one-way road.	Medium	Short	$	Newark	2

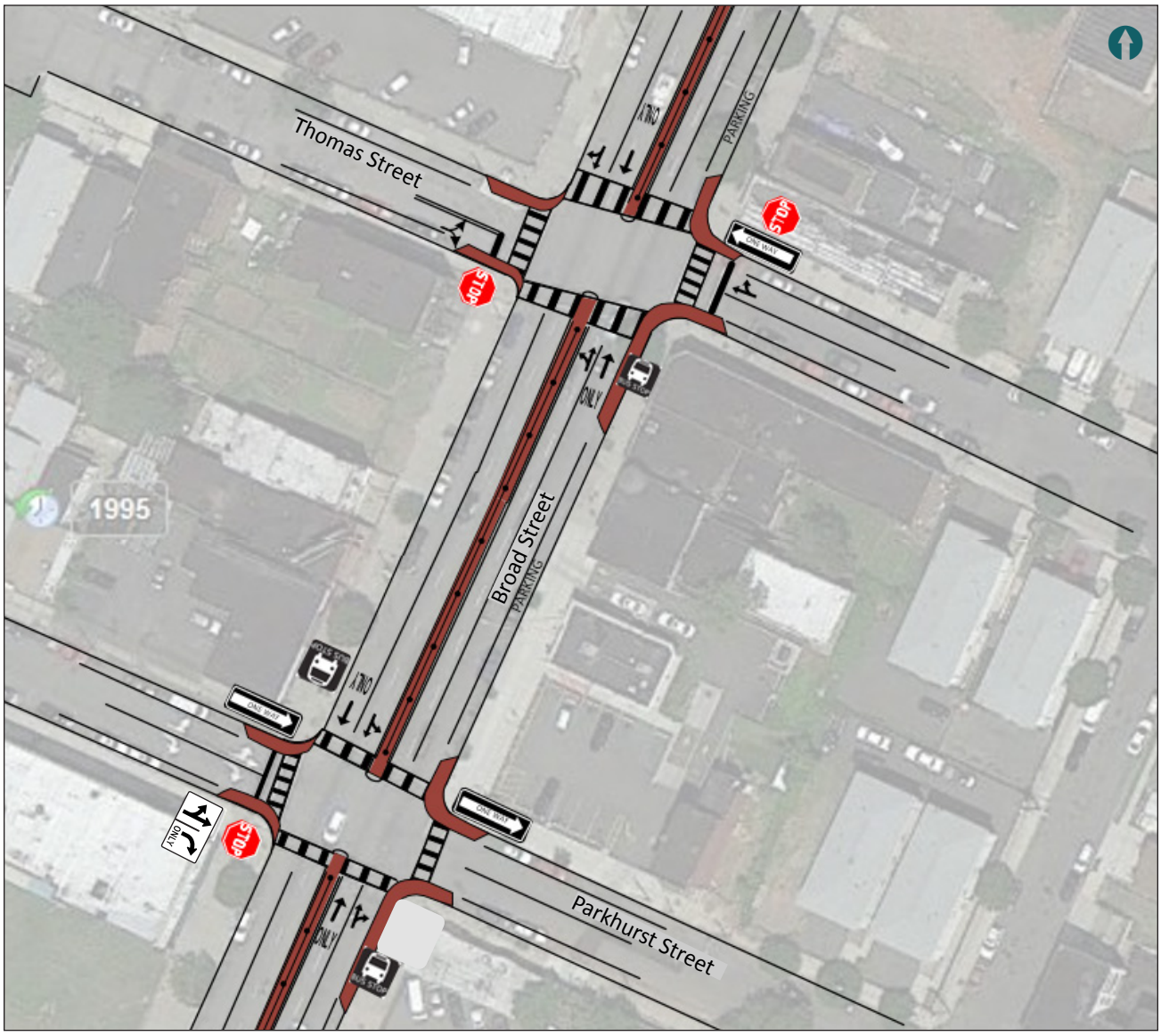
Ref #	E—Parkhurst Street and Thomas Street (unsignalized intersections)	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref #
	Traffic Operations					
E-1	Install a speed table to help reduce speed.	Medium/ High	Medium	$$$	Newark	1
	Pedestrians					
E-2	Install bump-outs to shorten the crosswalk distance.	Medium/ High	Medium	$$$	Newark	37
E-3	Enhanced intersection treatment may improve the environment for pedestrians.	Medium/ High	Medium	$$$	Newark	37
E-4	Install an in-street pedestrian warning sign.	Medium/ High	Medium	$$$	Newark	37
	Enforcement					
E-5	Implement the Pedestrian Safety Decoy enforcement program.	High	Short	$	Newark PD	37, 38, 39

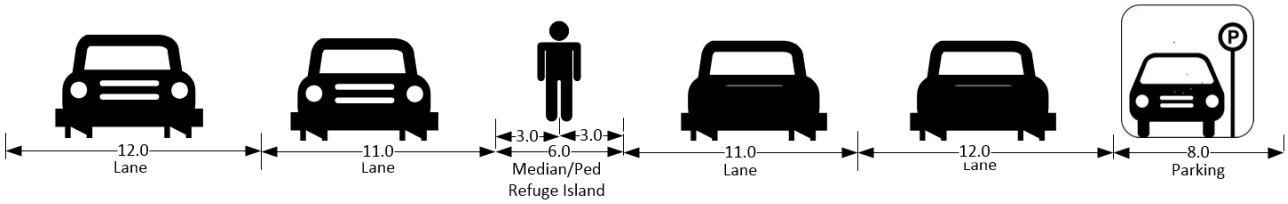
Ref #	F—Parkhurst Avenue	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref #
	Traffic Operations					
F-1	Traffic Signal or HAWK:					
a	Install a traffic signal to significantly improve traffic operations and pedestrian safety.	High	Long	$$$	Newark	1, 6, 37, 39
b	Install a HAWK as an alternative to traffic signal, if signal not warranted.	Medium/ High	Long	$$$	Newark	1, 6, 37
F-2	Make Parkhurst Street eastbound right-turn-only.	Medium/ High	Long	$$$	Newark	38, 43
F-3	Install a speed table to reduce speeding.	Medium/ High	Long	$$	Newark	1
F-4	Install bump-outs to narrow Parkhurst Street to one lane only.	Medium	Short	$	Newark	38
	Pedestrians					
F-5	Temporary bump-outs could be installed in the short term as a pilot project (painted or texturized pavement, planters and bollards).	Medium	Short	$	Newark	37, 38, 39
F-6	Install in-street pedestrian warning signs.	Medium	Short	$	Newark	37
F-7	Install rumble strips before the crosswalk.	Medium	Long	$$	Newark	1
	Bus					
F-8	Install the bus shelter on the south side of the intersection (Broad Street northbound)	Low	Long	$$	Newark	45

Ref #	G—Thomas Street	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref #
	Pedestrians					
G-1	Install ergonomic crosswalk to address skew.	Medium/ Low	Short	$	Newark	47
G-2	Stripe the missing crosswalk on the north side of the intersection.	Medium	Short	$	Newark	46
	Education					
G-3	Education campaign at the local businesses, such as the liquor stores.	Medium	Short	$	Newark & NJTPA	48

>> Appendix A—Recommendation Graphics

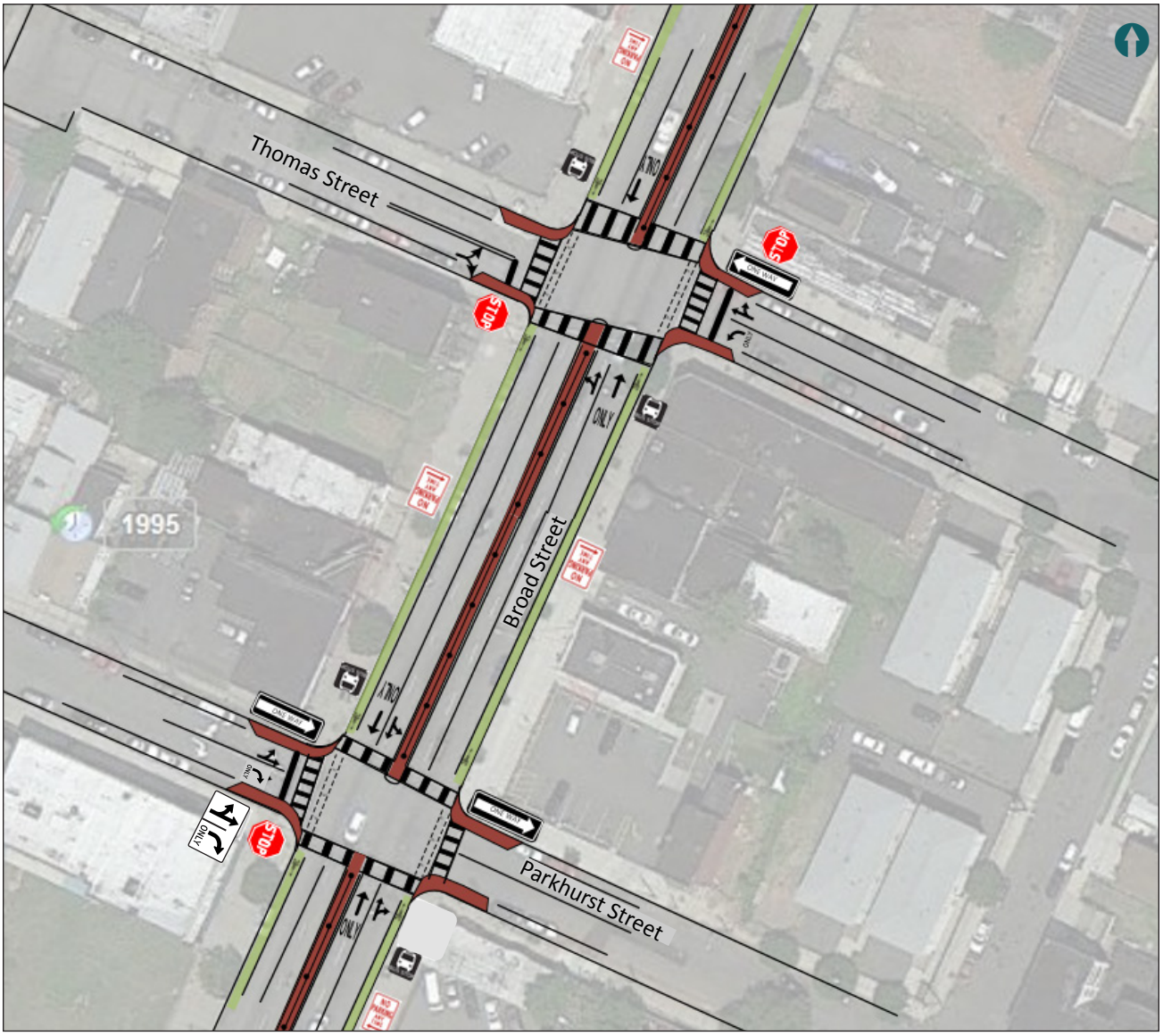
Cross Section – With Pedestrian Refuge Island and Parking

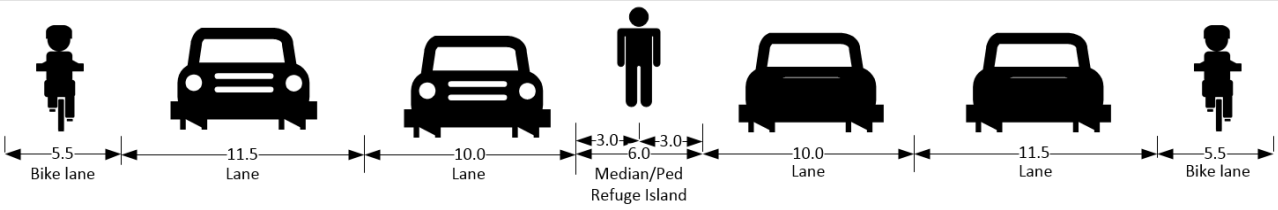




- Six-foot wide median with pedestrian refuge island and fencing
- Parking on one side only
- Bump-outs on side streets, and on parking-side of Broad Street, would shorten crosswalks
- Bump-outs would limit parking adjacent to intersections
- Fence in median would prevent mid-block crossing
- Arrows on pavement to restrict left-turn movement

Cross Section - With Pedestrian Refuge Island and Bike Lanes

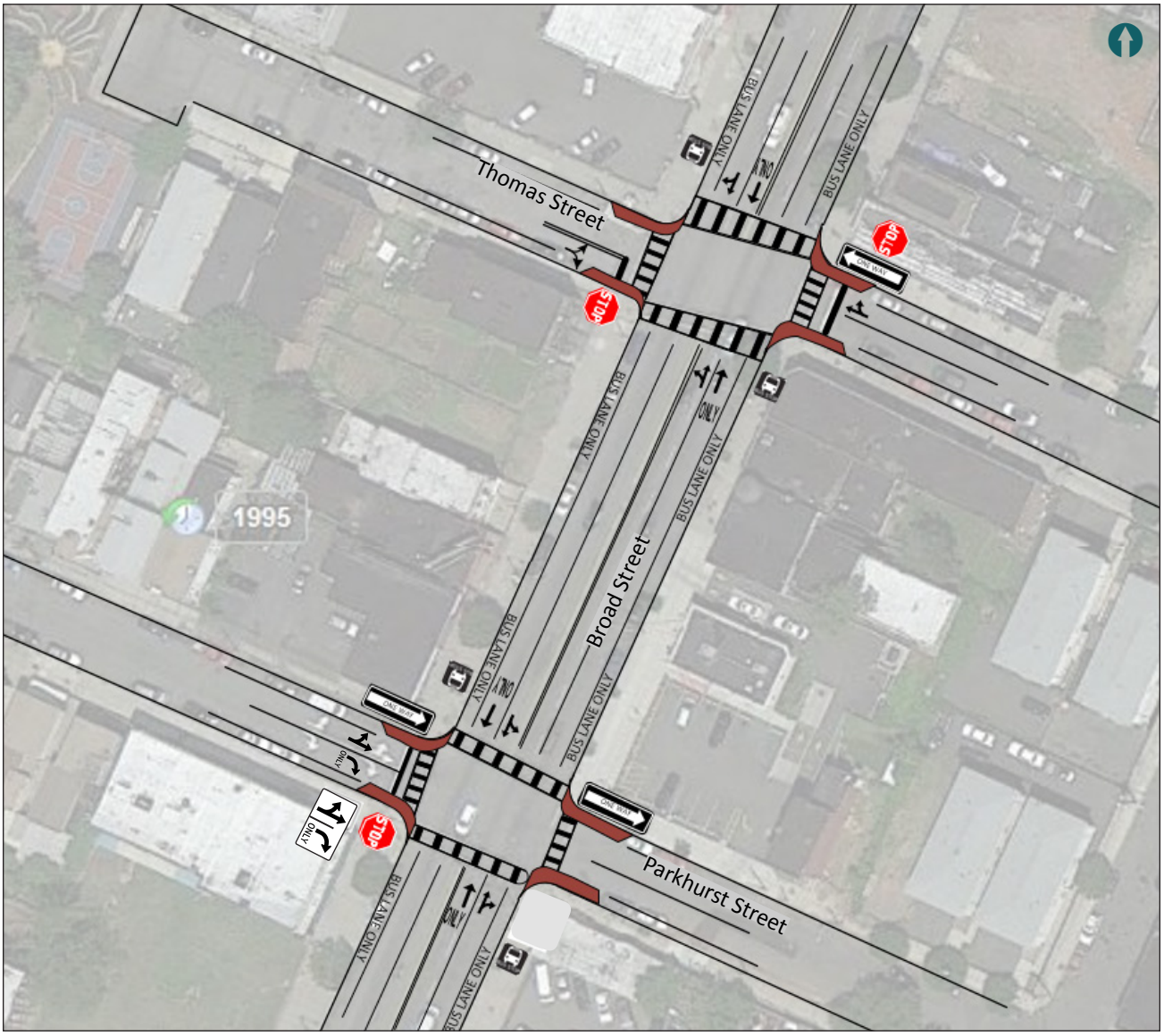




- Six-foot wide median with pedestrian refuge island
- Bike lanes with narrow buffer on both sides of roadway
- Bump-outs on side streets would shorten crosswalks
- Bump-outs would limit parking adjacent to intersections
- Fence in median would prevent mid-block crossing
- Arrows on pavement to restrict left-turn movement
- No on-street parking

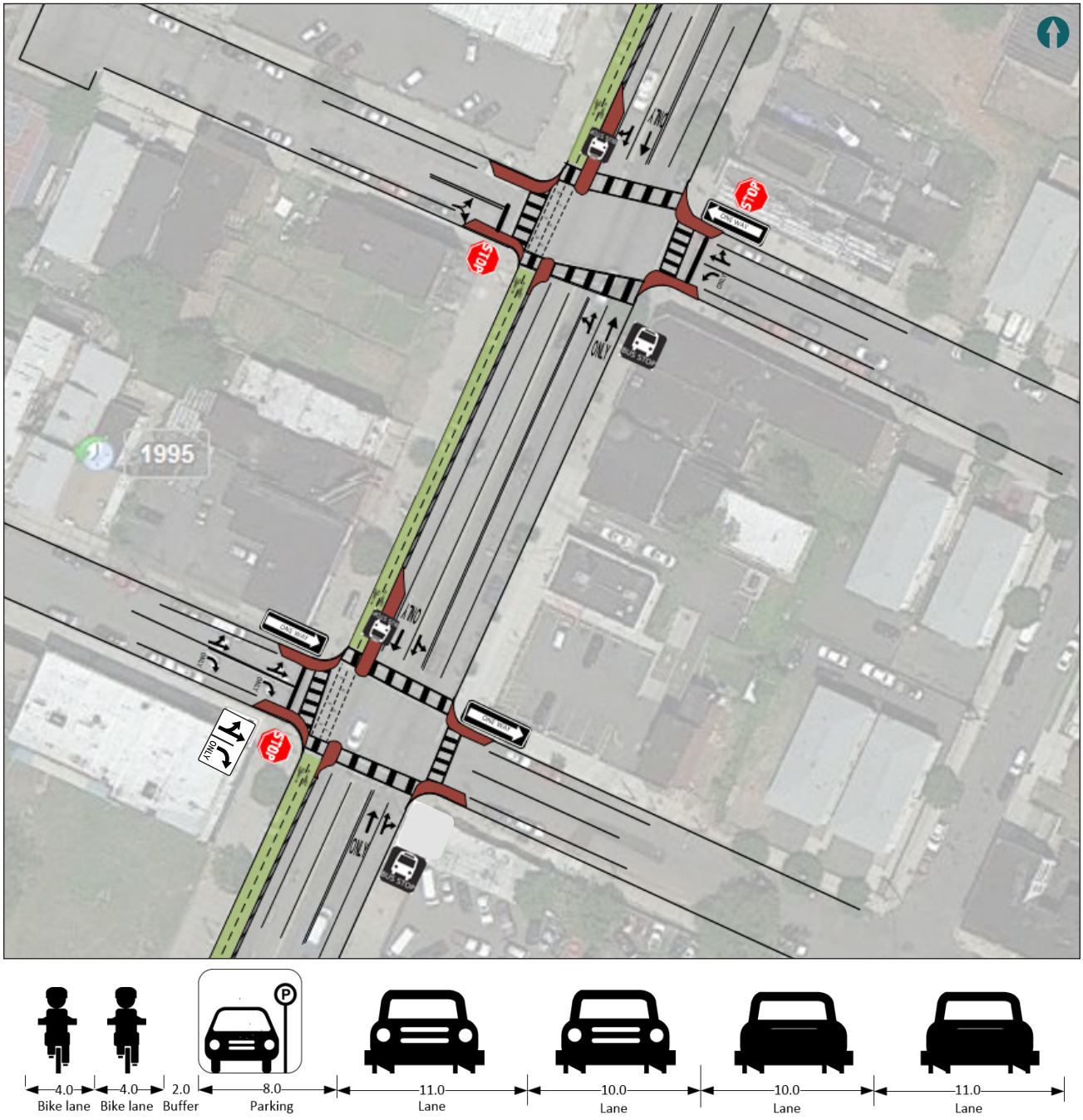
Visualizing the Recommendations - Before and After

CROSS SECTION - DEDICATED BUS LANES



- Bus-lane-only; eliminates merging movement as an issue
- Bump-outs on side-street crossings would shorten crosswalks
- No parking on Broad Street

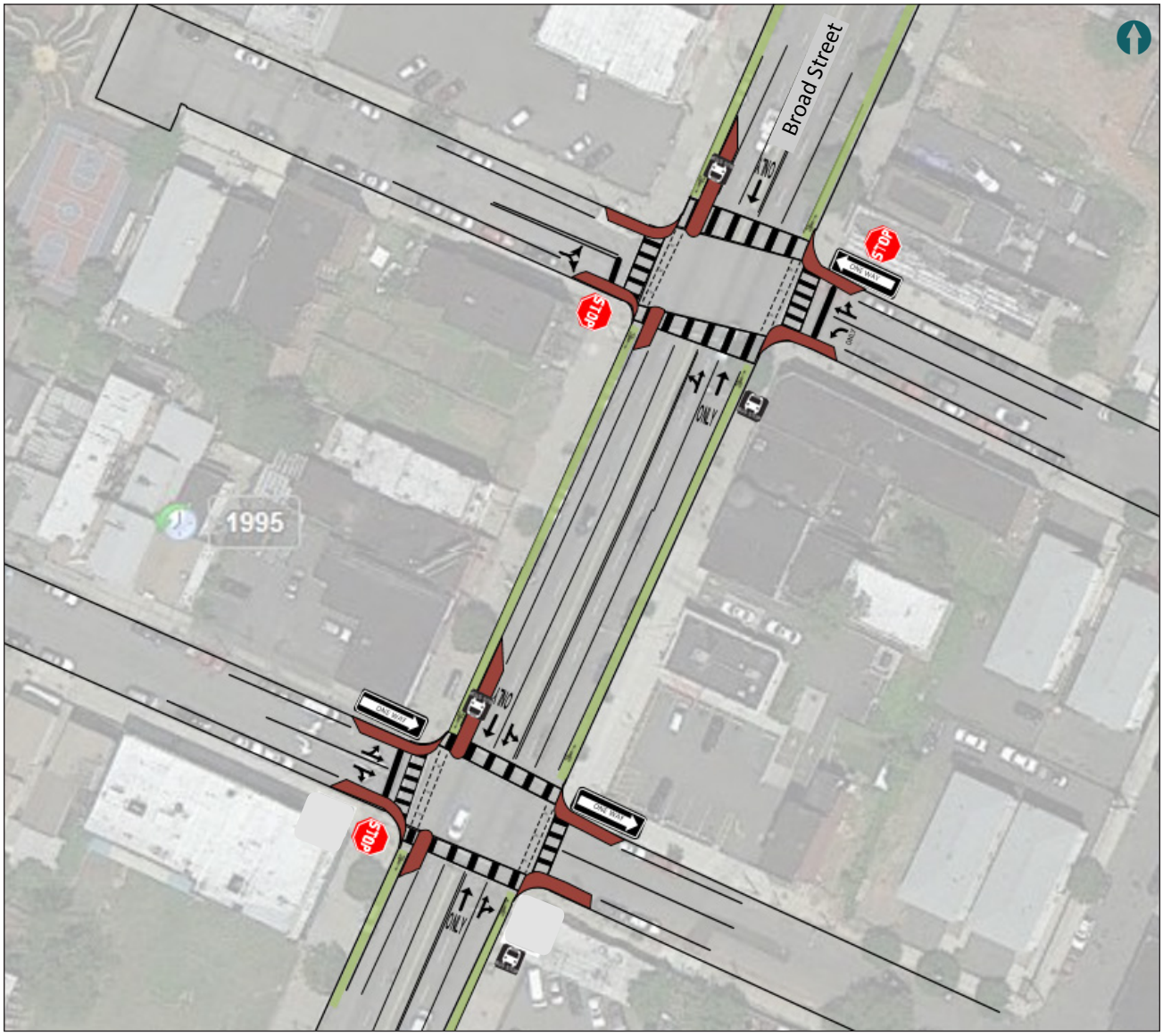
Cross Section - One side Bidirectional bike lane with buffer and parking

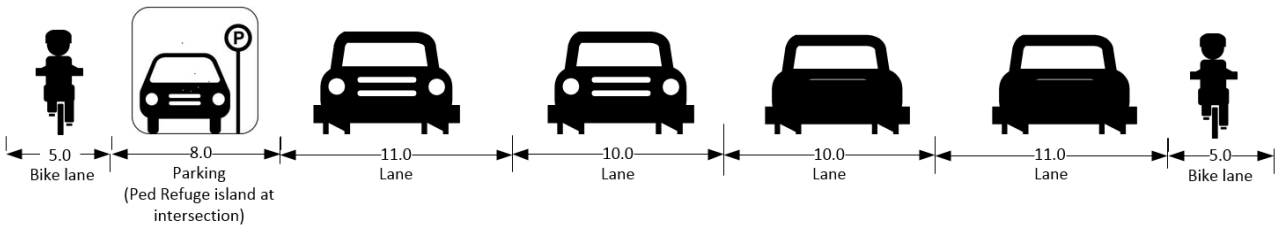


- Refuge adjacent to bike lanes would shorten crosswalks
- Bidirectional bike lanes on one side of roadway with narrow buffer
- Bump-outs on side streets would shorten crosswalks
- Bump-outs would limit parking adjacent to intersection
- Arrows on pavement to restrict left-turn movement
- Parking along median of bicycle lane

Visualizing the Recommendations - Before and After

Cross Section - Bike lanes adjacent to both curbs with one parking lane





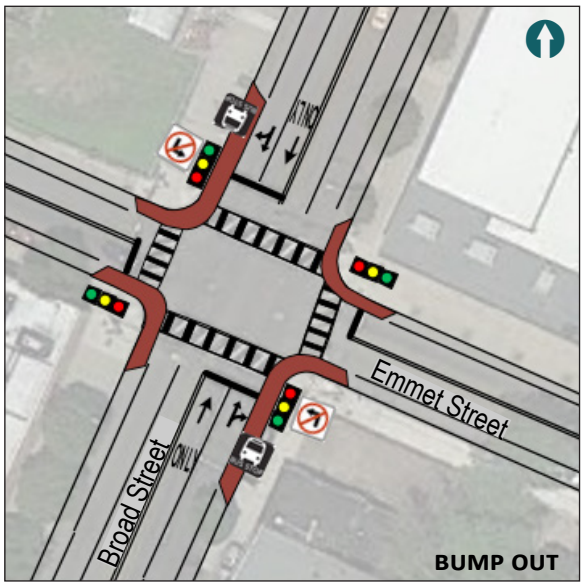
- Refuge adjacent to bike lanes would shorten crosswalks
- Bidirectional bike lanes on one side of roadway with narrow buffer
- Bump-outs on side streets would shorten crosswalks
- Bump-outs would limit parking adjacent to intersection
- Arrows on pavement to restrict left-turn movement
- Parking along median of bicycle lane

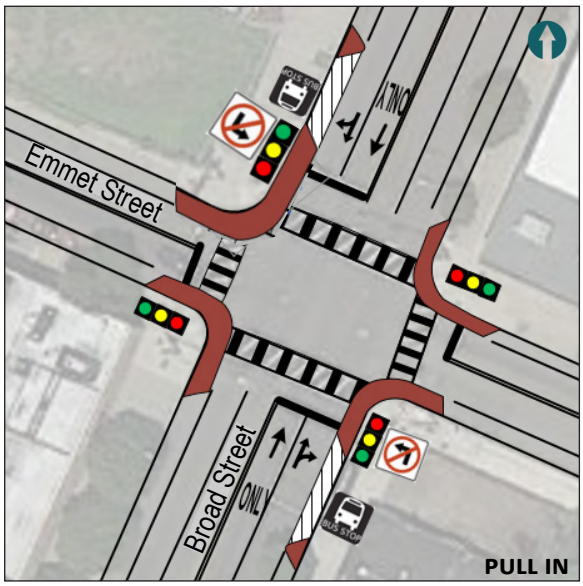
Visualizing the Recommendations - Before and After

Bus Stops

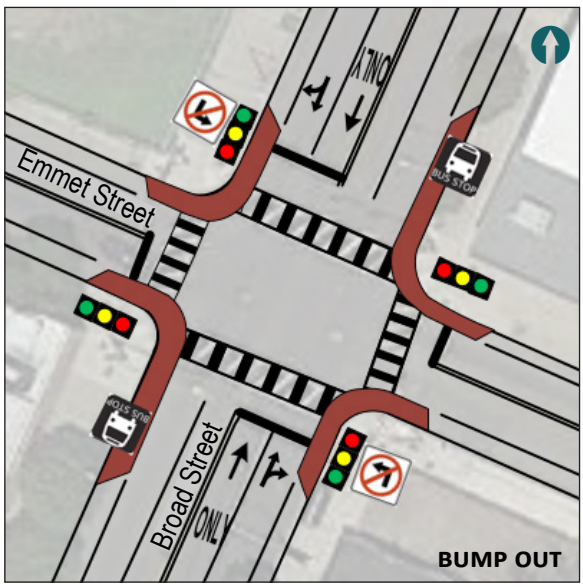
WITH BUMP OUT	WITH PULL IN
• Bus stops in lane of traffic • Bump-out includes bus stop • Bump-outs on all crossings would shorten crosswalks • Bump-outs limit parking adjacent to intersection • Arrows on pavement to restrict left-turn movement • Parking on both sides of roadway	• Bus pull-in adjacent to curb • Arrows on pavement to restrict left-turn movement • Parking on both sides of roadway

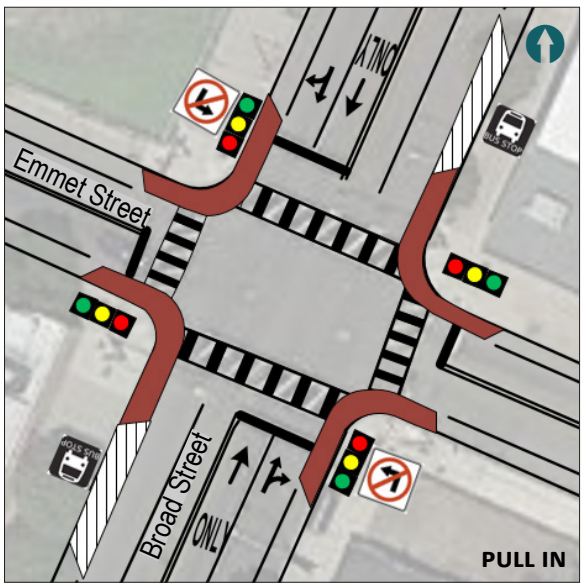
BUS STOP – BEFORE INTERSECTION



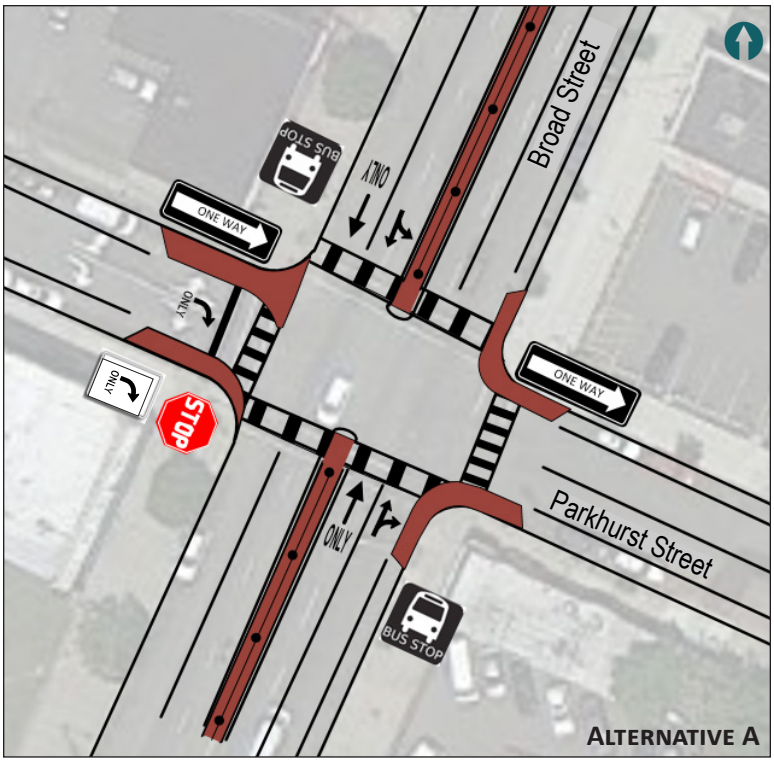


BUS STOP – AFTER INTERSECTION

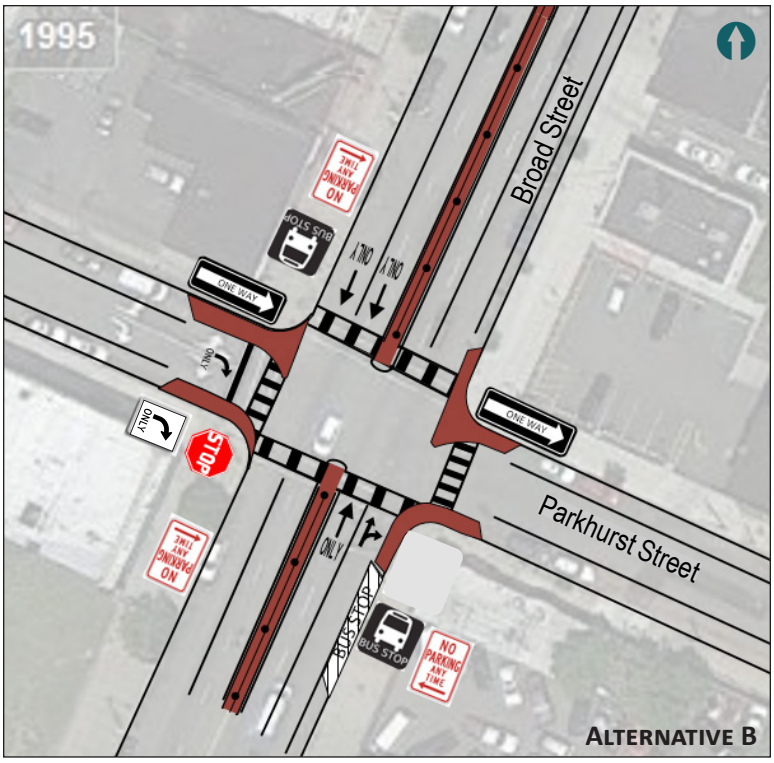




Parkhurst Street Right Turn only



- Right-turn-only from Parkhurst Street eastbound
- Only one left-turn movement permitted for Broad Street southbound



- Right-turn-only from Parkhurst Street eastbound
- Right turn to Parkhurst Street from Broad Street northbound

>> Appendix B—RSA Team

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>> Appendix C—Area Maps

Study Area


EAST ORANGE
KEARNY
EAST NEWARK BOROUGH
HARRISON
NGTON TOWNSHIP
NEWARK
SIDE TOWNSHIP
Legend
Newark
RSA Area
N
0
0.25
0.5
1
Miles

Area NJ Transit Bus Routes

Traffic Volumes

Daily Volume from 11/14/2011 through 11/16/2011

Site Names: 3-4-608, , Broad Street-1.6, 00000021__, Newark City
County: ESSEX
Funct. Class: Urban Principal Arterial - Other
Location: Bet Kinney and Court St

Seasonal Factor Type: 2 Urban Other Roadways
Daily Factor Type: 2 Urban Other Roadways
Axle Factor Type: 14
Growth Factor Type:

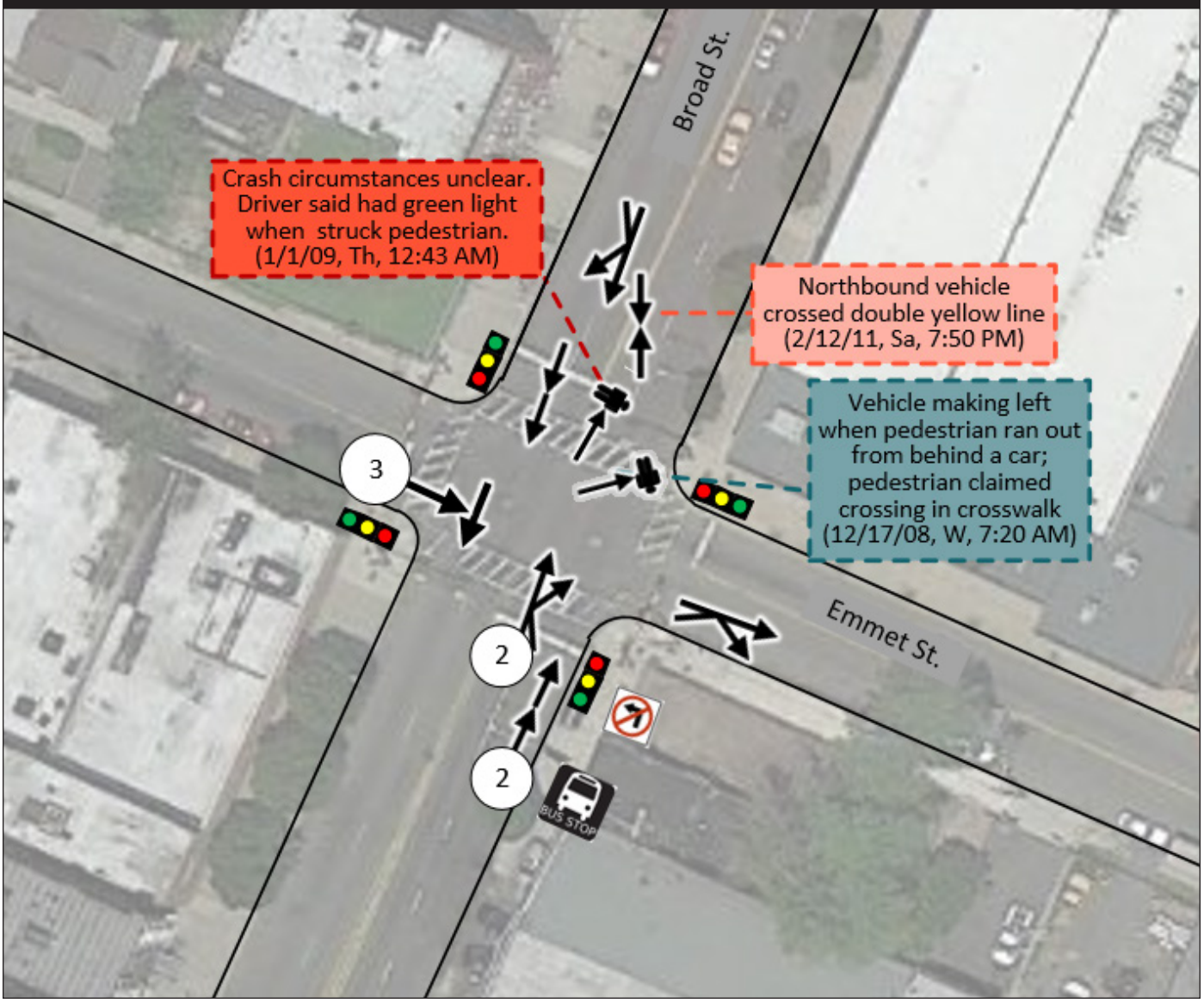
	Sun 11/13/2011			Mon 11/14/2011			Tue 11/15/2011			Wed 11/16/2011			Thu 11/17/2011			Fri 11/18/2011			Sat 11/19/2011		
	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N
00:00							644	473	171	251	126	125									
01:00							193	92	101	167	78	89									
02:00							145	57	88	112	41	71									
03:00							138	76	62	120	63	57									
04:00							176	76	100	186	90	96									
05:00							448	215	233	439	205	234									
06:00							1,165	482	683	1,120	475	645									
07:00							2,386	966	1,420	2,327	968	1,359									
08:00							2,383	986	1,397	2,409	963	1,446									
09:00							2,113	854	1,259	2,200	901	1,299									
10:00							1,732	744	988	1,660	734	926									
11:00							1,743	852	891	1,711	815	896									
12:00							1,781	928	853	1,772	852	920									
13:00				1,814	880	934	1,860	972	888	1,788	895	893									
14:00				2,001	992	1,009	2,014	1,065	949	2,028	1,029	999									
15:00				2,445	1,285	1,160	2,366	1,273	1,093	2,254	1,201	1,053									
16:00				2,871	1,621	1,250	2,850	1,662	1,188	2,898	1,655	1,243									
17:00				3,083	1,700	1,383	2,921	1,610	1,311	3,345	1,974	1,371									
18:00				2,307	1,209	1,098	2,101	1,200	901	2,505	1,313	1,192									
19:00				1,701	909	792	1,386	772	614												
20:00				1,112	654	458	1,057	654	403												
21:00				902	524	378	883	489	394												
22:00				696	357	339	630	315	315												
23:00				643	381	262	436	202	234												
Volume				19,575	10,512	9,063	33,551	17,015	16,536	29,292	14,378	14,914									
AM Peak Vol							2,504	1,064	1,440	2,530	1,076	1,481									
AM Peak Fct							0.95	0.90	0.95	0.93	0.91	0.97									
AM Peak Hr							7:30	7:30	7:30	7:30	7:30	7:45									
PM Peak Vol							3,068	1,733	1,337												
PM Peak Fct							0.96	0.92	0.92												
PM Peak Hr							16:30	16:30	16:45												
Seasonal Fct				1.033	1.033	1.033	1.033	1.033	1.033	1.033	1.033	1.033									
Daily Fct				0.948	0.948	0.948	0.911	0.911	0.911	0.912	0.912	0.912									
Axle Fct				0.487	0.487	0.487	0.487	0.487	0.487	0.487	0.487	0.487									
Pulse Fct				2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000									

Collected by: NJDOT
Created 02/17/2012 10:11:09AM

ROAD AADT 31,421 **S AADT 15,763** **N AADT 15,657**

>> Appendix D—Crash Diagrams

Emmet Street and Broad Street



Legend

- Right angle
- Cyclist
- Pedestrians
- Left-turn
- Same direction - Side swipe
- Same direction - Rear End
- Struck parked vehicle
- Opposite direction - Head on/angular

TSRC Imagery, 2014

- = Fatal
- = Incapacitating injury
- = Complaint of pain

Relation to Study Area

In addition to the 2010–2012 dataset, the crash diagram locates 2008 and 2009 pedestrian or cyclist crashes. All pedestrian or cyclist crashes include crash narratives and are color coded by severity. Any other crash type having a severity of "moderate injury" or greater also has a color-coded narrative.

Emmet Street and Broad Street—Crash Summary (2010–2012)

Crash Type	#
Same-Direction—Rear-End	3
Same-Direction—Sideswipe	4
Right-Angle	3
Opposite-Direction–Head-On/Angular	1
Opposite Direction–Sideswipe	-
Struck Parked Vehicle	-
Left-Turn/U-Turn	-
Backing	-
Encroachment	-
Overturned	-
Fixed Object	-
Animal	-
Pedestrian	-
Pedalcyclist	-
Non-fixed Object	-
Railcar-Vehicle	-
Other	-
Total	11

Month	#
January	-
February	2
March	3
April	-
May	1
June	-
July	1
August	3
September	-
October	-
November	1
December	-
Total	11

Severity	#
Property Damage Only	5
Pain	5
Moderate Injury	-
Incapacitating Injury	1
Fatal	-
Total	11

Day	#
Monday	-
Tuesday	-
Wednesday	1
Thursday	1
Friday	3
Saturday	4
Sunday	2
Total	11

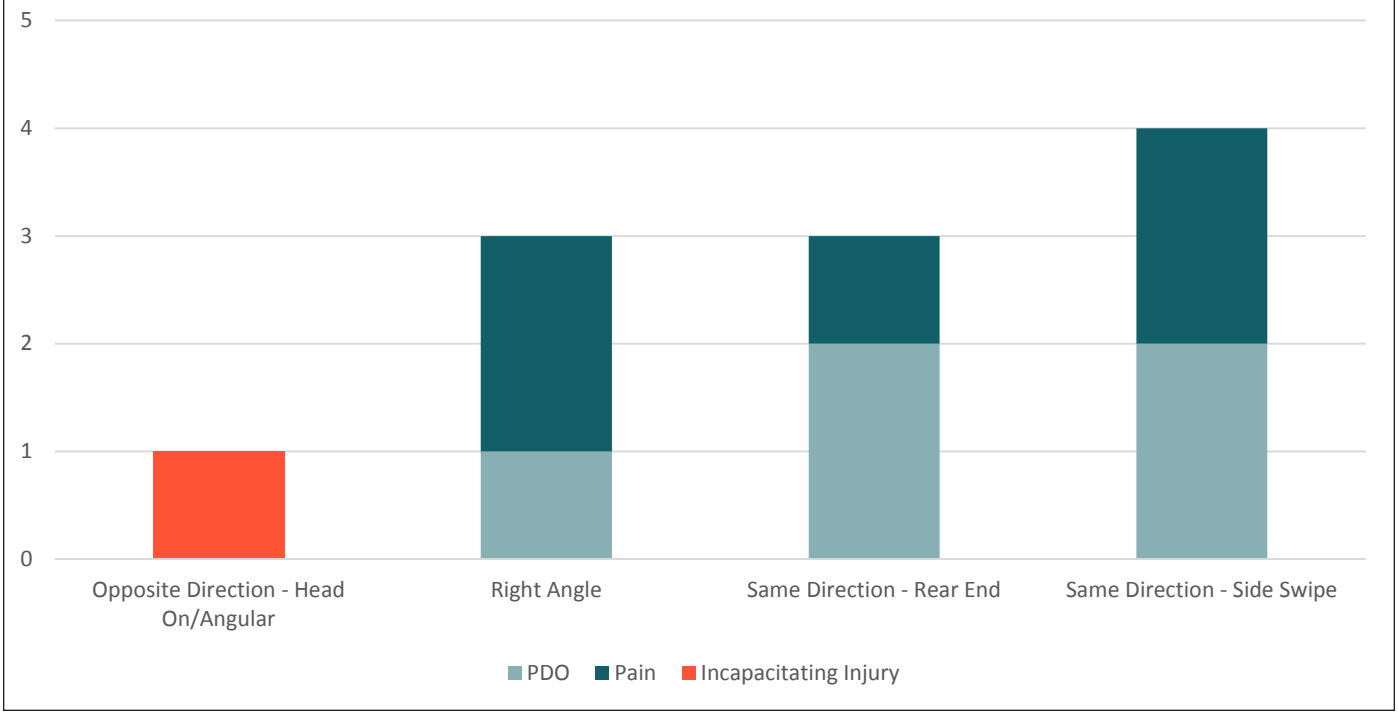
Surface Condition	#
Dry	8
Wet	3
Snowy	-
Icy	-
Slush	-
Water-Standing/Moving	-
Sand, Mud, Dirt	-
Oil	-
Total	11

Light Condition	#
Daylight	7
Dawn	-
Dusk	-
Dark —No Street Lights	-
Dark—Street Lights On/Continuous	4
Dark—Street Lights On/Spot	-
Total	11

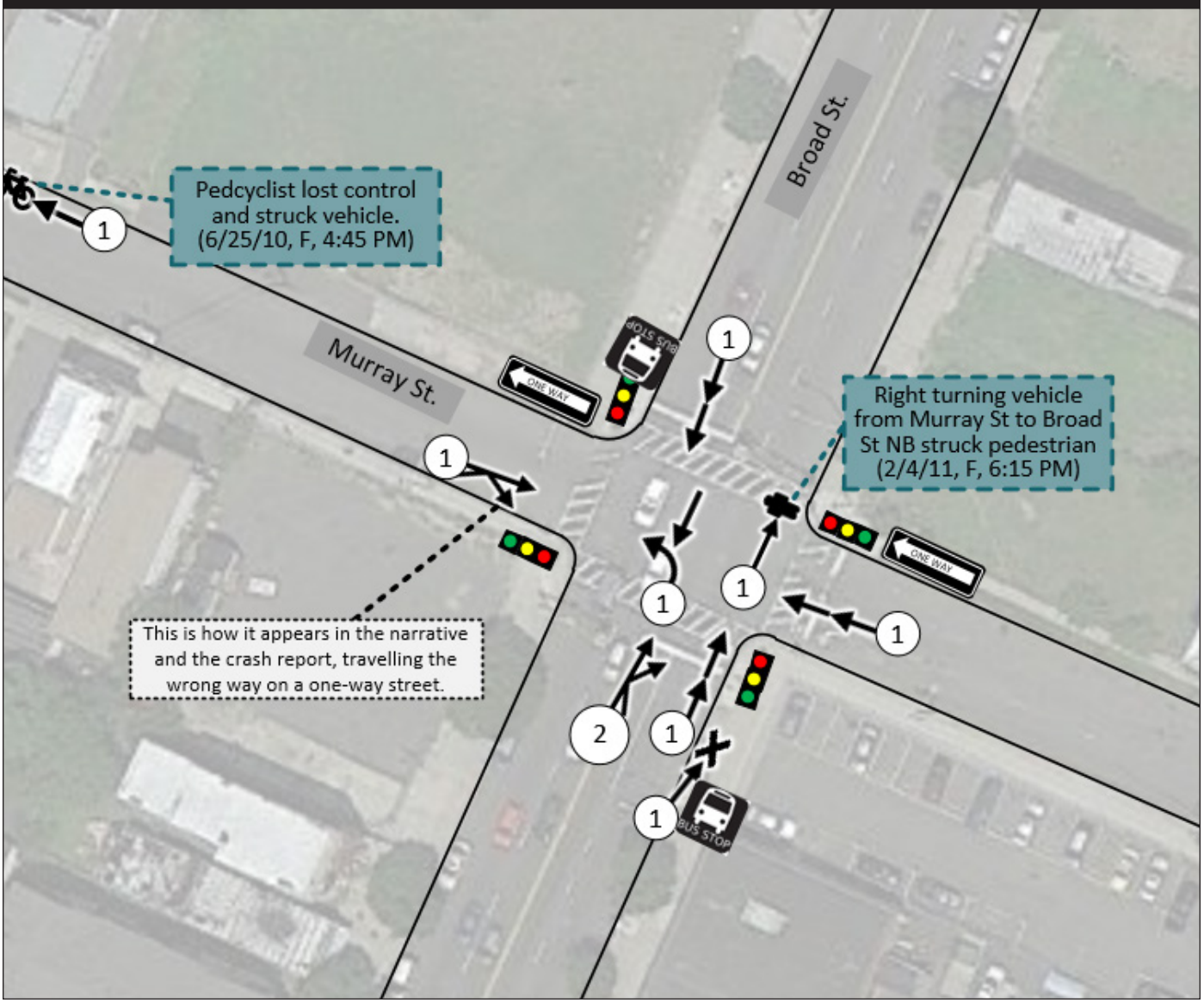
Intersection	#
At intersection	8
Not at intersection	3
Total	11

Crash Year	#
2010	2
2011	4
2012	5
Total	11

Crash Type and Severity



Murray Street and Broad Street



Legend

- Right angle
- Cyclist
- Pedestrians
- Left-turn
- Same direction - Side swipe
- Same direction - Rear End
- Struck parked vehicle
- Opposite direction - Head on/angular

TSRC Imagery, 2014

= Complaint of pain

Relation to Study Area

In addition to the 2010–2012 dataset, the crash diagram locates 2008 and 2009 pedestrian or cyclist crashes. All pedestrian or cyclist crashes include crash narratives and are color coded by severity. Any other crash type having a severity of "moderate injury" or greater also has a color-coded narrative.

Murray Street and Broad Street—Crash Summary (2010–2012)

Crash Type	#
Same-Direction—Rear-End	3
Same-Direction—Sideswipe	3
Right-Angle	-
Opposite-Direction–Head-On/Angular	-
Opposite-Direction—Sideswipe	-
Struck Parked Vehicle	-
Left-Turn/U-Turn	1
Backing	-
Encroachment	-
Overturned	-
Fixed Object	1
Animal	-
Pedestrian	1
Pedalcyclist	1
Non-fixed Object	-
Railcar-Vehicle	-
Other	-
Total	10

Month	#
January	-
February	2
March	-
April	1
May	-
June	3
July	-
August	1
September	-
October	1
November	1
December	1
Total	10

Severity	#
Property Damage Only	8
Pain	2
Moderate Injury	-
Incapacitating Injury	-
Fatal	-
Total	10

Day	#
Monday	1
Tuesday	3
Wednesday	1
Thursday	-
Friday	4
Saturday	-
Sunday	1
Total	10

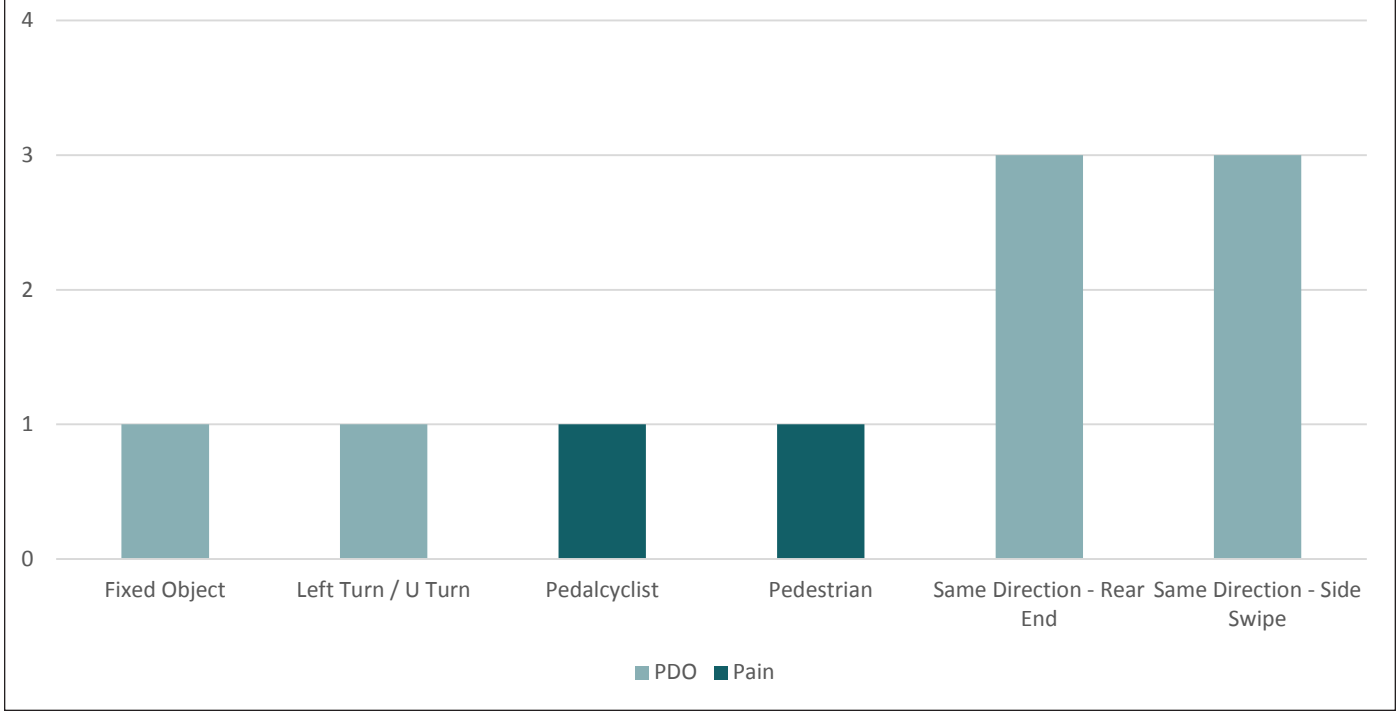
Surface Condition	#
Dry	8
Wet	2
Snowy	-
Icy	-
Slush	-
Water-Standing/Moving	-
Sand, Mud, Dirt	-
Oil	-
Total	10

Light Condition	#
Daylight	9
Dawn	-
Dusk	-
Dark—No Street Lights	-
Dark—Street Lights On/Continuous	1
Dark—Street Lights On/Spot	-
Total	10

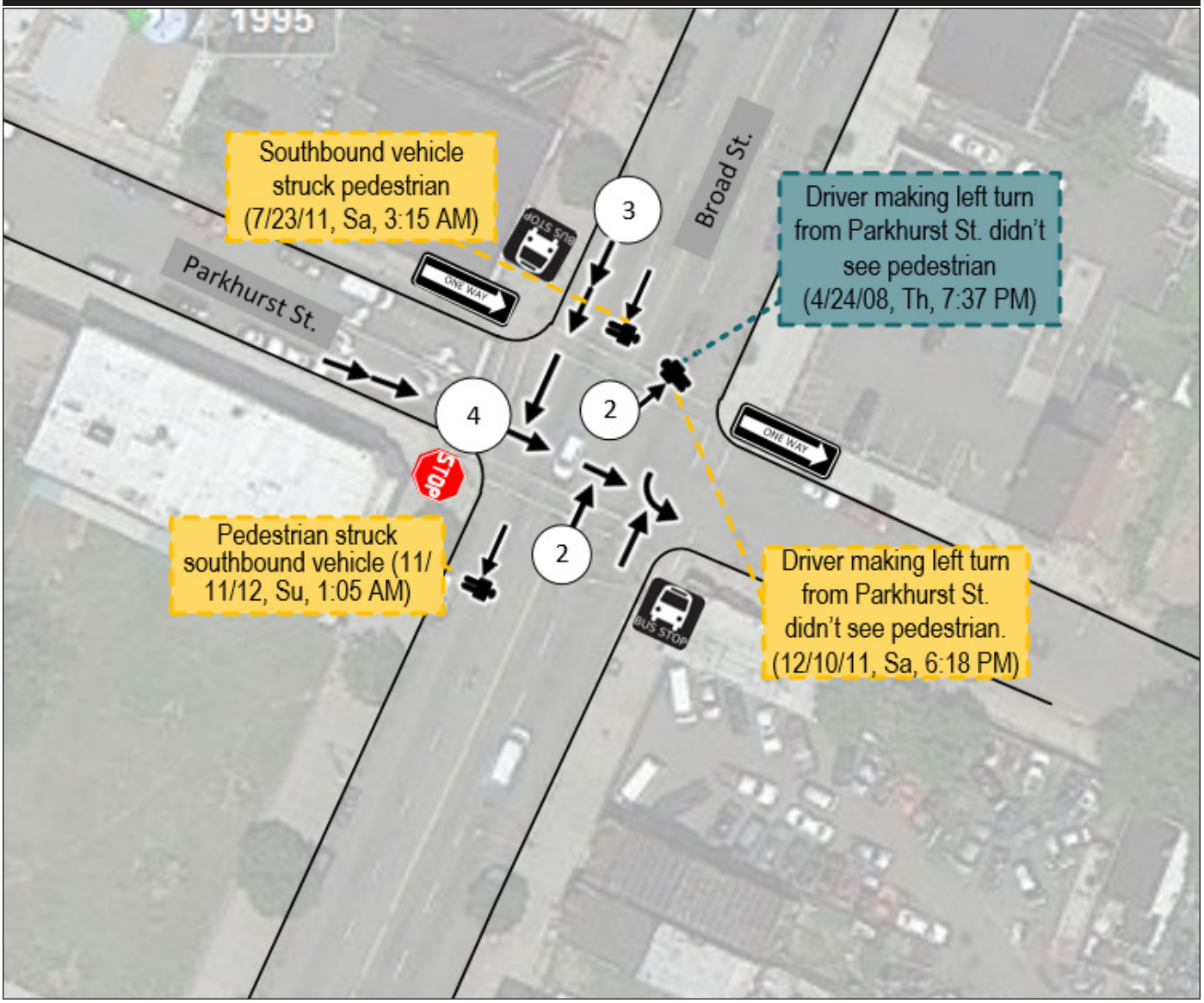
Intersection	#
At intersection	7
Not at intersection	3
Total	10

Crash Year	#
2010	2
2011	4
2012	4
Total	10

Crash Type and Severity



Parkhurst Street and Broad Street



Legend

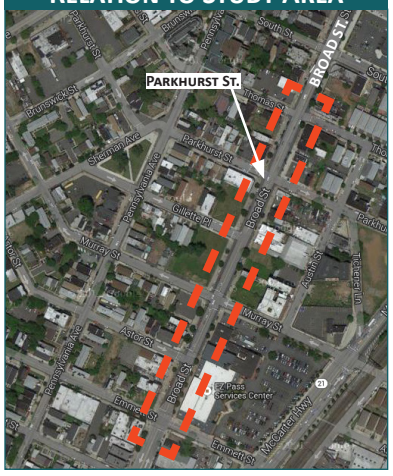
- Right angle
- Cyclist
- Pedestrians
- Left-turn
- Same direction - Side swipe
- Same direction - Rear End
- Struck parked vehicle
- Opposite direction - Head on/angular

TSRC Imagery, 2014

= Moderate injury

= Complaint of pain

Relation to Study Area



In addition to the 2010–2012 dataset, the crash diagram locates 2008 and 2009 pedestrian or cyclist crashes. All pedestrian or cyclist crashes include crash narratives and are color coded by severity. Any other crash type having a severity of "moderate injury" or greater also has a color-coded narrative.

Parkhurst Street and Broad Street—Crash Summary (2010–2012)

Crash Type	#
Same-Direction—Rear-End	4
Same-Direction—Sideswipe	-
Right-Angle	6
Opposite-Direction–Head-On/Angular	-
Opposite-Direction—Sideswipe	-
Struck Parked Vehicle	-
Left-Turn/U-Turn	1
Backing	-
Encroachment	-
Overturned	-
Fixed Object	-
Animal	-
Pedestrian	3
Pedalcyclist	-
Non-fixed Object	-
Railcar-Vehicle	-
Other	-
Total	14

Month	#
January	1
February	1
March	2
April	2
May	2
June	-
July	1
August	-
September	-
October	-
November	2
December	3
Total	14

Severity	#
Property Damage Only	5
Pain	6
Moderate Injury	3
Incapacitating Injury	-
Fatal	-
Total	14

Day	#
Monday	3
Tuesday	-
Wednesday	2
Thursday	2
Friday	1
Saturday	4
Sunday	2
Total	14

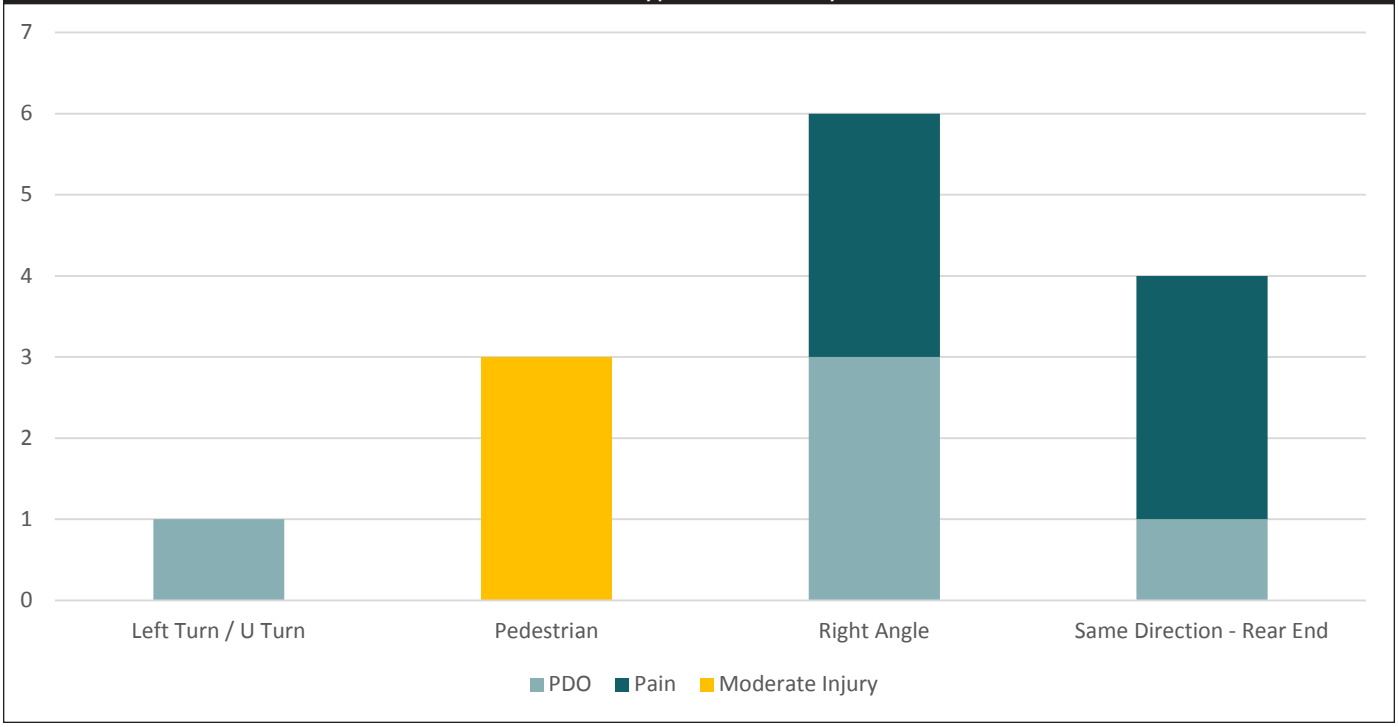
Surface Condition	#
Dry	9
Wet	5
Snowy	-
Icy	-
Slush	-
Water-Standing/Moving	-
Sand, Mud, Dirt	-
Oil	-
Total	14

Light Condition	#
Daylight	9
Dawn	-
Dusk	-
Dark—No Street Lights	-
Dark—Street Lights On/Continuous	5
Dark—Street Lights On/Spot	-
Total	14

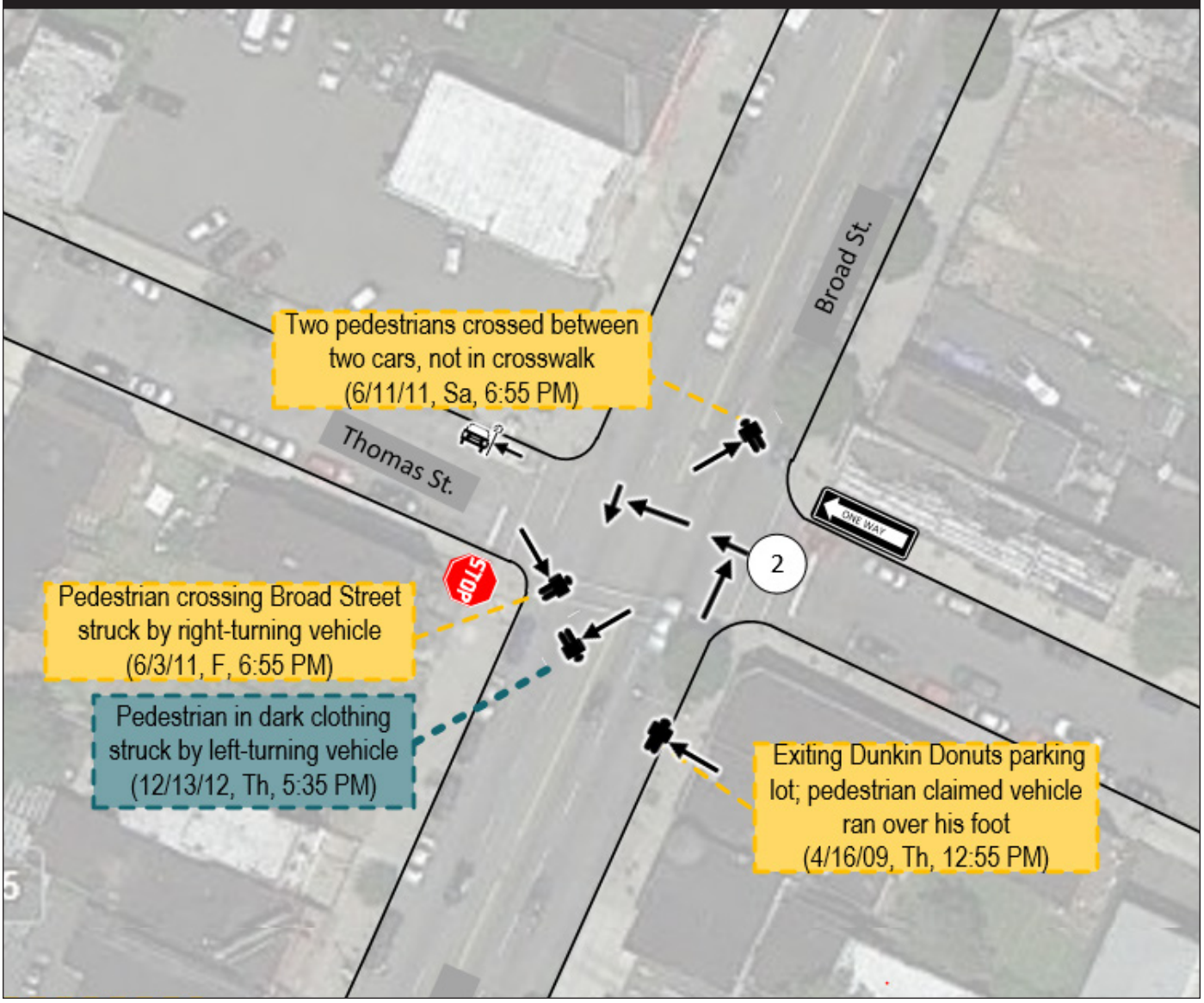
Intersection	#
At intersection	12
Not at intersection	2
Total	14

Crash Year	#
2010	3
2011	3
2012	8
Total	14

Crash Type and Severity



Thomas Street and Broad Street



Legend

- Right angle
- Same direction - Side swipe
- Cyclist
- Same direction - Rear End
- Pedestrians
- Struck parked vehicle
- Left-turn
- Opposite direction - Head on/angular

TSRC Imagery, 2014

= Moderate injury

= Complaint of pain

Relation to Study Area

In addition to the 2010–2012 dataset, the crash diagram locates 2008 and 2009 pedestrian or cyclist crashes. All pedestrian or cyclist crashes include crash narratives and are color coded by severity. Any other crash type having a severity of "moderate injury" or greater also has a color-coded narrative.

Thomas Street and Broad Street—Crash Summary (2010–2012)

Crash Type	#
Same-Direction—Rear-End	-
Same-Direction—Sideswipe	-
Right-Angle	3
Opposite-Direction–Head-On/Angular	-
Opposite-Direction–Sideswipe	-
Struck Parked Vehicle	2
Left-Turn/U-Turn	-
Backing	-
Encroachment	-
Overturned	-
Fixed Object	-
Animal	-
Pedestrian	3
Pedalcyclist	-
Non-fixed Object	-
Railcar-Vehicle	-
Other	-
Total	8

Month	#
January	-
February	-
March	-
April	1
May	1
June	3
July	-
August	1
September	-
October	1
November	-
December	1
Total	8

Severity	#
Property Damage Only	4
Pain	2
Moderate Injury	2
Incapacitating Injury	-
Fatal	-
Total	8

Day	#
Monday	-
Tuesday	-
Wednesday	1
Thursday	2
Friday	3
Saturday	2
Sunday	-
Total	8

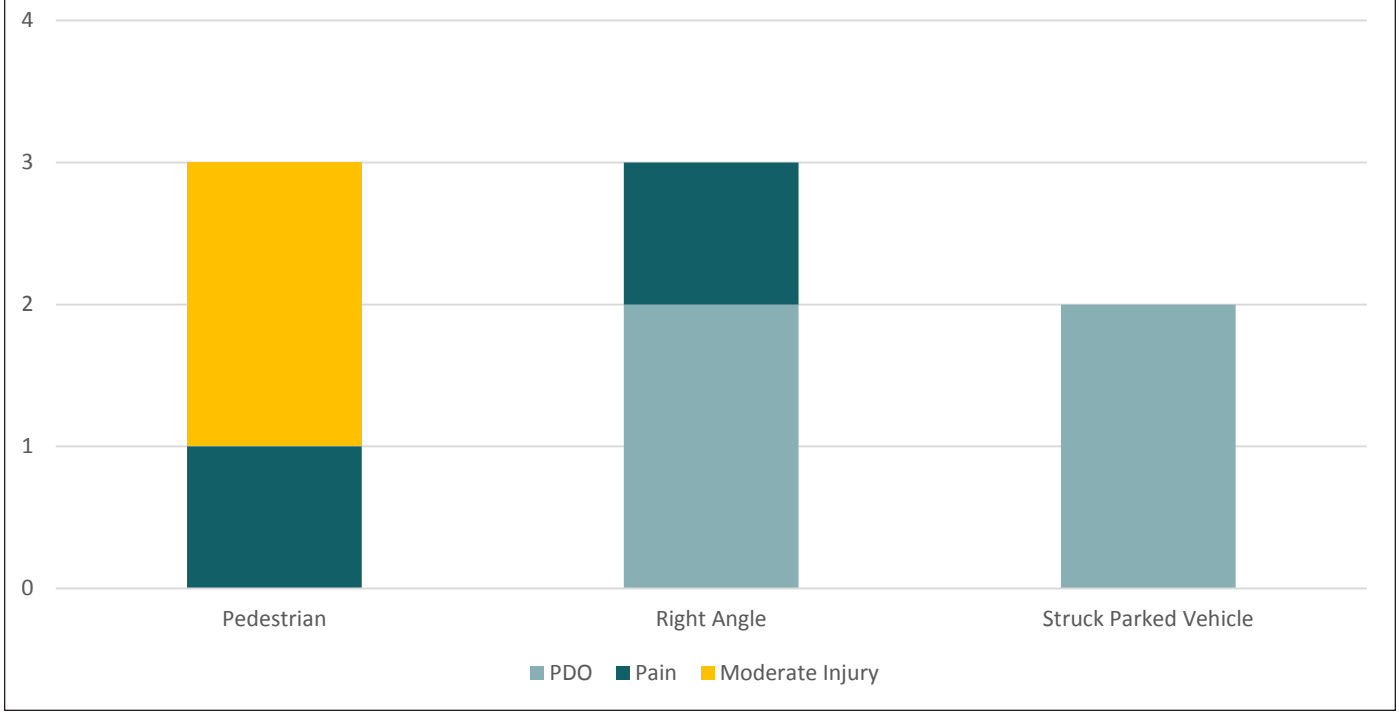
Surface Condition	#
Dry	8
Wet	-
Snowy	-
Icy	-
Slush	-
Water-Standing/Moving	-
Sand, Mud, Dirt	-
Oil	-
Total	8

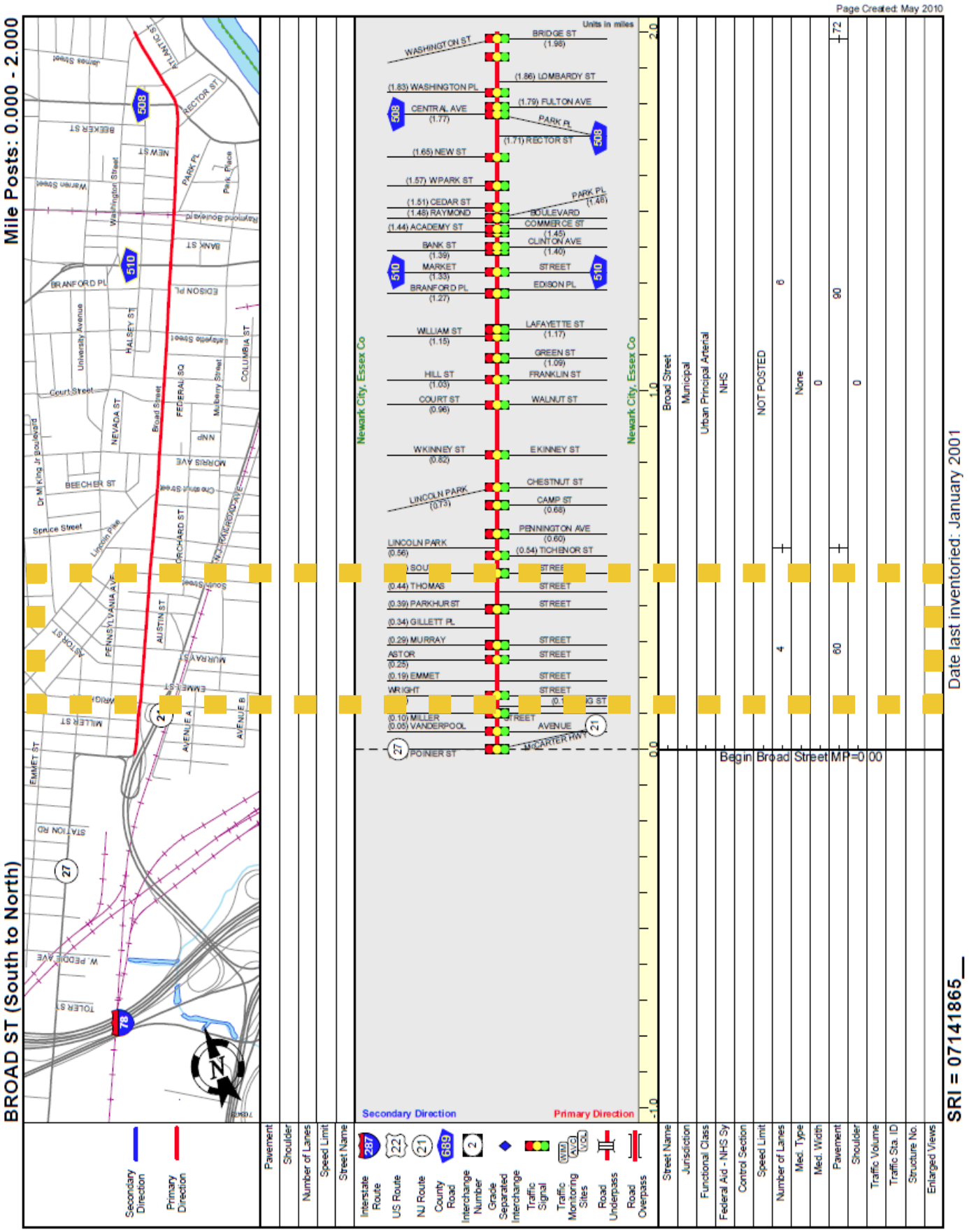
Light Condition	#
Daylight	6
Dawn	-
Dusk	-
Dark—No Street Lights	1
Dark—Street Lights On/Continuous	1
Dark— Street Lights On/Spot	-
Total	8

Intersection	#
At intersection	7
Not at intersection	1
Total	8

Crash Year	#
2010	2
2011	4
2012	2
Total	8

Crash Type and Severity




Page Created: May 2010
BROAD ST (South to North)
Mile Posts: 0.000 - 2.000
Units in miles
Newark City, Essex Co
Secondary Direction
Primary Direction
Begin Broad Street MP=0.00
Date last inventoried: January 2001
SRI = 07141865__
Broad Street
Municipal
Urban Principal Arterial
NHS
NOT POSTED
None
Pavement
Shoulder
Number of Lanes
Speed Limit
Street Name
Interstate Route
US Route
NJ Route
County Road
Interchange Number
Grade Separated Interchange
Traffic Signal
Traffic Monitoring Sites
Road Underpass
Road Overpass
Jurisdiction
Functional Class
Federal Aid - NHS Sy
Control Section
Med. Type
Med. Width
Traffic Volume
Traffic Sta. ID
Structure No.
Enlarged Views