

Newark - Park Avenue and 4th Street Road Safety Audit

FINAL REPORT

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CAIT's Transportation Safety Resource Center (TSRC) and New Jersey Local Technical Assistance Program (NJLTAP) offer a statewide Road Safety Audit (RSA) service at no charge to New Jersey towns and counties. Interested parties can request road 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, engineer researcher, at akaplan1@rutgers.edu

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Introduction

In the winter of 2011, a partnership was formed between the Rutgers Transportation Safety Resource Center (TSRC) and Caminos Seguros—a Division of Highway Traffic Safety (DHTS)—funded, community-based transportation safety program—to analyze safety concerns. The coordinators at La Casa de Don Pedro (La Casa), the community organization overseeing the northern New Jersey region of Caminos Seguros, worked with TSRC’s Plan4Safety tool to identify crash-prone locations in northern Newark. One of the locations noted was the intersection of Park Avenue and 4th Street in Newark. The safety concerns identified included a history of pedestrian crashes, lack of pedestrian accommodations, proximity to transit facilities, and congestion at this intersection. A Road Safety Audit (RSA) was performed at said intersection, and this report documents the findings and recommendations made by the audit team.

A RSA is a safety performance evaluation done by an independent, multidisciplinary team on existing or future roads and intersections. The team identifies and foresees any potential road safety issues that could be hazardous to not only the motorized traffic, but to all road users including pedestrians and bicyclists.

Background



Figure 1 – Map of study area (Google Earth)

The intersection of Park Avenue and 4th Street (also known as 1st Street) is shown in Figure 1 above. Park Avenue, also known as County Route 658, is an Urban Principal Arterial with two lanes in each direction except through Branch Brook Park, where it drops to a single lane in each direction. Park Avenue runs about 4 miles in an east/west direction through the cities of Newark, East Orange, Orange

and West Orange. While Park Avenue is parallel and north of Interstate 280, 4th Street provides a direct connection between Park Avenue and the nearest I-280 entrance/exit. Except at the intersection and near the entrance/exit with I-280, 4th Street runs north/south with one lane in each direction. The speed limit in the study area is 25 miles per hour (mph).

The land use around the intersection is split between commercial and park land. To the west of the intersection are mostly commercial businesses with many access driveways. Fast-food restaurants, a gas station, and an auto detail center are in the immediate vicinity of the study area, as shown in Figure 2. To the east lies Branch Brook Park and its 360 acres of park land.¹

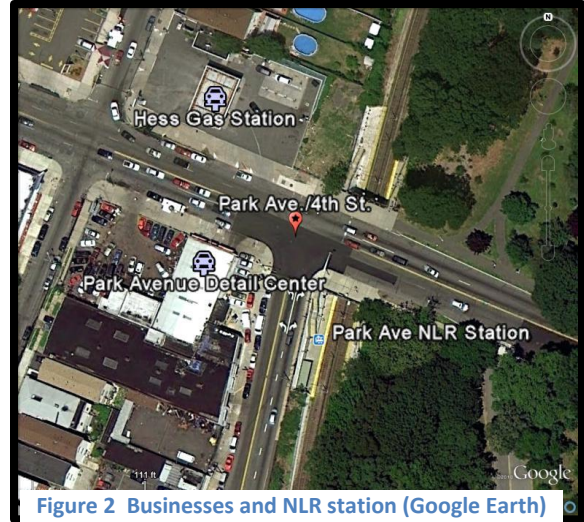


Figure 2 Businesses and NLR station (Google Earth)

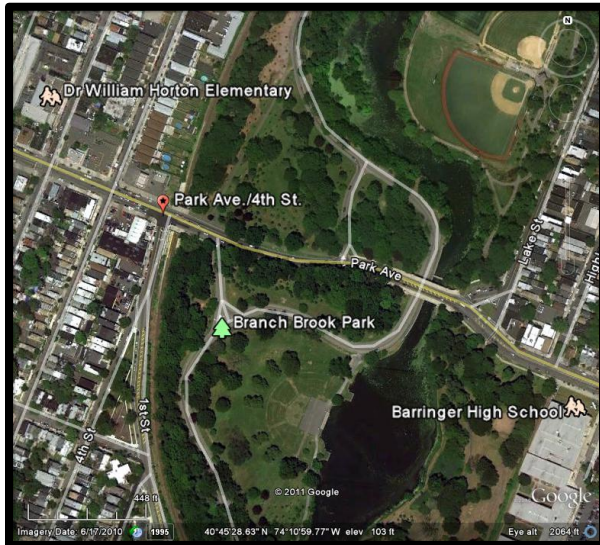


Figure 3 – Schools (Google Earth)

The NJ Transit Bus Route 41 (NJT #41), Orange to Newark, serves this intersection with a bus stop located on either side of Park Avenue. NJT #41 serves Park Avenue through the cities of Orange, East Orange, and Newark, and then turns onto Broad Street to end at Lincoln Park in downtown Newark.

NJ Transit also has the Newark Light Rail (NLR), which has a branch that stops at the Park Avenue/4th Street intersection. This branch of the NLR has 12 stops that connect the towns of Bloomfield and Belleville with Newark Penn Station. The line runs from Newark Penn Station through the University Heights neighborhood and then turns north, running the west edge of Branch Brook Park.

As shown in Figure 3, there are two public schools in the immediate area of the intersection. On the opposite side of Branch Brook Park is Barringer High School, which, as of the 2008–2009 school year, had an enrollment of 1,763 students. Located on 7th Street, off of Park Avenue, is the Dr. William Horton Elementary School, which enrolled 871 students, ranging from kindergarten to 8th grade, during the 2008–2009 school year.²

¹<http://www.essex-countynj.org/p/index.php?section=parks/sites/bb>

²<http://nces.ed.gov/>

Road Safety Audit Process

The Park Avenue/4th Street RSA followed a process that began with data collection, a crucial task that served as the backbone for recommendations for improvement. Crash data was collected using Plan4Safety, a crash data analysis tool, and consisted of crash types, locations, years, road conditions, and contributing circumstances. Using the crash data, a collision diagram, shown in appendix A, was produced that showed crash types and locations.

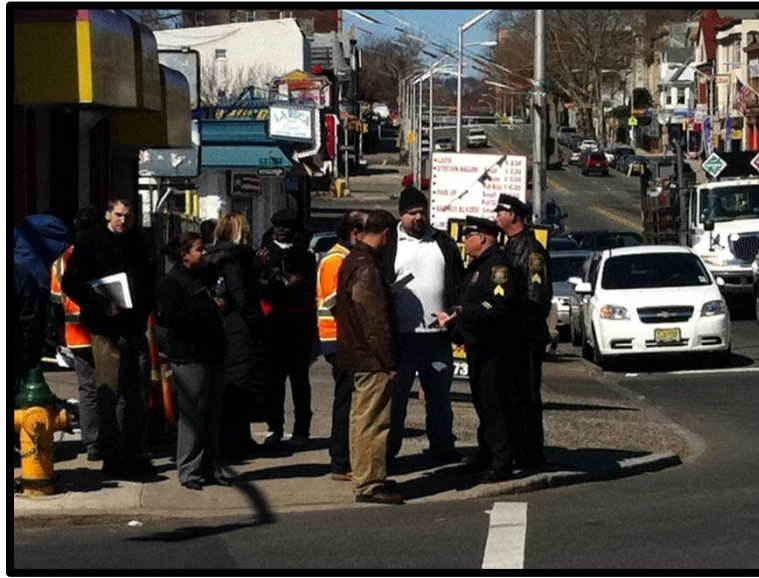


Figure 4 – RSA team conducting site visit

The Road Safety Audit occurred on March 29, 2011. The day began with a pre-audit meeting that involved the definition of road safety audit and an overview of the intersection. A presentation showing details of the crash analysis, aerial images of the site, and an overview of NJ Transit service in the area was shown. Following the presentation, a site visit was conducted where all participants were given a chance to inspect the site and utilize their various backgrounds to brainstorm recommended improvements. After the site visit, the team was brought back together to discuss the issues observed and to discuss recommendations to remedy the issues.

Information Sources

Several sources of information were used in the RSA process. For example, crash data from 2008–2010 was examined for trends and patterns. Specific resources used in the analysis include:

- NJDOT Crash Database (2008–2010)³
- Plan4Safety Crash Data Analysis Tool
- NJDOT Straight Line Diagrams
- NJ Transit Bus Routes
- National Center for Education Statistics (NCES)
- Google Earth

³ At the time of the Audit, the City of Newark did not submit approximately 7,000 of the approximate 14,000 2010 crash reports. The number reflected in this report includes three additional 2010 crashes.

RSA Team

The RSA team consisted of 29 members, including police officers, engineers, and planners, from different agencies across the state.

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Crash Data

As of the date of this report, the crash data reported by the NJDOT shows a total of 29 crashes occurring during the four-year period from 2008 to 2010. The following tables show certain statistics of the crash data analyzed.

Table 1 summarizes crash data by direction of travel vs. crash type. The numbers in the table are of vehicles involved in crashes.

Direction of Travel	Same Direction - Rear End	Same Direction - Side Swipe	Right Angle	Opposite Direction - Head On/Angular	Struck Parked Vehicle	Left Turn / U-Turn	Backing	Pedestrian	Other	Total
North	6	0	3	2	0	1	2	0	1	15
East	11	2	4	1	2	3	0	1	0	24
South	0	0	1	1	0	1	0	1	0	4
West	2	2	0	1	0	3	0	1	0	9
Total	19	4	8	5	2	8	2	3	1	

Table 1 – Direction of travel vs. crash type (2008–2010)

Four pedestrian crashes were observed between 2008 and 2010 at this intersection and are detailed in table 2. Note that 75 percent of the pedestrian crashes occurred during nighttime.

DATE	TIME	ENVIRONMENTAL CONDITION	LIGHT CONDITION	PEDESTRIANS INJURED	SEVERITY	SURFACE CONDITION
2/9/2009	6:30 PM	Clear	Dark (street lights on/continuous)	1	Injury	Dry
1/21/2010	8:52 PM	Clear	Dark (street lights on/continuous)	1	Injury	Dry
6/3/2010	2:55 PM	Clear	Daylight	1	Injury	Dry

Table 2 – Pedestrian crash data 2008–2010

RSA Team Findings

RSA Team General Observations

The following is a summary of general observations made by the team that may be outside the scope of this RSA, but should be noted.

1. During the RSA, it was brought to the attention of the team that the fire house two blocks west of the intersection was observed to pull out their fire trucks during morning peak hour and block one west-bound lane. This caused significant congestion for west-bound traffic. Newark PD advised that this was the firehouse conducting their “changeover,” where they pull out the trucks to inspect all equipment before shift changes.
2. A representative from the Newark Department of Engineering notified the team that crash data from the NJDOT statewide database for the City of Newark was incomplete for the year 2010. By NJDOT estimate, approximately 7,000 crash reports were not included. It was advised that the City of Newark is working to resolve this issue with NJDOT.
3. Emergency medical services (EMS) use 4th Street heavily to get to/from University Hospital. It was observed, during the site visit, that ambulances were delayed due to congestion at this intersection and from parked vehicles.
4. The reconstruction of the Nesbitt and Clifton Streets bridges may have had a negative impact on traffic in the area during recent years. As of the date of this report, both bridges have been reopened.
5. It was noted that bicycle accommodations at and in the vicinity of this site were minimal. It was recommended to further study appropriately accommodating bicycle users in context of the broader transportation system connectivity.

RSA Team Specific Findings

The following represents the specific findings and recommendations made by the RSA team. The red shaded areas represent recommendations thought to be low-cost improvements, which can be implemented in the short-term.

All recommendations and designs should be thoroughly evaluated with due diligence and designed as appropriate by the roadway owner and/or a professional engineer for conformance to codes, standards, and best practices.

Issue: East-bound “Delayed Green” Sign	Safety Risk	
Description: The west-bound approach on Park Avenue has a lead green phase for all movements. Since there is no indication of the west-bound lead on the east-bound approach, this may cause inattentive motorists to proceed through the red light based on the movement of the opposing traffic.	Medium	
RSA Team’s Recommendation	Cost	Potential Safety Benefit
Install “Delayed Green” signs on the east-bound approach, as per the MUTCD.	Low	Medium

Issue: East-bound Lane Drop	Safety Risk	
Description: East of the intersection, two east-bound lanes merge into one lane with no advance warning.	Low	
RSA Team’s Recommendation	Cost	Potential Safety Benefit
Install advance warning signs and/or merge arrow pavement markings, as per the MUTCD, to indicate the merge.	Low	High

Issue: Deteriorated Sidewalk	Safety Risk	
Description: Parts of the sidewalk surrounding the intersection are in poor condition creating a tripping hazard and making them impassable by pedestrians with disabilities.	High	
RSA Team’s Recommendation	Cost	Potential Safety Benefit
Repair/replace sidewalk as needed.	Medium	High


Issue: Right Turns on Red on 4th Street	Safety Risk
Description: Heavy right turn traffic off of 4th Street forces pedestrians to find a gap to cross 4th Street.	High



RSA Team's Recommendation	Cost	Potential Safety Benefit
Add signs alerting turning vehicles of the stop for pedestrian law. Also investigate possibility of eliminating right turns on red.	Low	High

Issue: Accessible Curb Ramps	Safety Risk	
Description: Accessible compliant curb ramps are missing. This makes it very difficult for pedestrians with disabilities to cross either street.	Medium	
RSA Team's Recommendation	Cost	Potential Safety Benefit
Install accessible compliant curb ramps.	Medium	Low


Issue: East-bound Right Turns – Car Wash Sign	Safety Risk	
<p>Description: The car wash business in the southwest corner of the intersection has sidewalk signs that limit the sight distance for drivers making a right turn onto 4th Street.</p>	<p>Medium</p>	
		
RSA Team's Recommendation	Cost	Potential Safety Benefit
<p>Review current regulations on sidewalk signs and reach out to the car wash business to discuss safety concerns.</p>	<p>Low</p>	<p>Medium</p>

Issue: Lack of Pedestrian Signals		Safety Risk	
Description: No pedestrian signals are present, and pedestrians have a very limited view of the current traffic signals. This may lead pedestrians to cross both streets at inappropriate times.		High	
			
RSA Team's Recommendation		Cost	Potential Safety Benefit
Install countdown pedestrian signal equipment with pedestrian push buttons conforming to the MUTCD.		Medium	Medium


Issue: Park Avenue Crosswalks		Safety Risk	
Description: Crosswalks are missing on Park Avenue.		High	
			
RSA Team's Recommendation		Cost	Potential Safety Benefit
Install high visibility style crosswalks, conforming to Essex County's standards for installation, on the east and west side of the intersection.		Low	Medium

Issue: Bicyclists	Safety Risk	
<p>Description: Intersection is located next to a park where bicycle traffic was observed. Currently, no bicyclist accommodations are present.</p>	Medium	
		
RSA Team's Recommendation	Cost	Potential Safety Benefit
<p>Investigate the installation of signs and/or shared lane use markings to alert drivers of the presence of bicyclists.</p>	Low	Medium

Issue: General Lighting	Safety Risk	
<p>Description: Three out of the four pedestrian crashes at this intersection occurred at night. This may indicate poor lighting conditions.</p>	High	
RSA Team's Recommendation	Cost	Potential Safety Benefit
<p>A design engineer should be consulted to review and perform a lighting study at the intersection. The engineer should prepare a plan indicating the appropriate location of any proposed lighting improvement.</p>	Medium/High	High


Issue: Damaged Light Pole	Safety Risk	
<p>Description: The light pole in the southeast corner of the intersection has been knocked down leaving an exposed foundation.</p>	High	
		
RSA Team's Recommendation	Cost	Potential Safety Benefit
<p>In the short-term, the knocked down equipment should be replaced. Additionally, a design engineer should be consulted to review and perform a lighting study at the intersection. The engineer should prepare a plan indicating the appropriate location of any proposed lighting improvement, and a contractor should be hired to install the lighting improvement.</p>	Medium/High	High


Issue: Fixed Time Signal	Safety Risk	
<p>Description: The signal at the intersection is a fixed time signal, which may not be optimal for the amount of traffic experienced.</p>	Low	
RSA Team's Recommendation	Cost	Potential Safety Benefit
<p>A design engineer should be consulted to perform a signal study. The engineer should prepare a plan indicating the proposed improvements to signal operations.</p>	Medium	Low


Issue: Lead Left without Arrows	Safety Risk	
<p>Description: West-bound traffic on Park Avenue has a protected lead left but no signal arrows to indicate when that protection terminates. Drivers may initially hesitate to make a left as they are unaware that it is protected. Drivers are also unaware when the lead terminates and left-turning vehicles no longer have the right-of-way when opposing traffic is released.</p>	High	
		
RSA Team's Recommendation	Cost	Potential Safety Benefit
<p>A design engineer should be consulted to perform a signal study. The engineer should prepare a plan indicating the proposed improvements to signal operations.</p>	Medium	High

Issue: East-bound Glare	Safety Risk	
<p>Description: East-bound traffic may experience glare in the morning due to the incline leading to the signal. This may result in poor visibility of the traffic signal.</p>	Medium	
RSA Team's Recommendation	Cost	Potential Safety Benefit
<p>Install back plates on all signal faces.</p>	Low	Medium

Issue: 8-inch Signal Heads	Safety Risk	
Description: Current signal heads are 8 inches.	Low	
		
RSA Team's Recommendation	Cost	Potential Safety Benefit
Upgrade to 12-inch signal heads to increase visibility.	Low	High

Issue: 4th Street Parking	Safety Risk	
Description: The parking of cars and delivery trucks on the west side of 4th Street restricts the flow of traffic and emergency vehicles from Park Avenue onto 4th Street.	Low	
		
RSA Team's Recommendation	Cost	Potential Safety Benefit
Review municipal parking ordinance around the intersection, properly sign/enforce, and modify as appropriate.	Low	Medium

Issue: Hess Station Access	Safety Risk	
<p>Description: The Hess gas station driveways lack signing and pavement markings to indicate entrance and exits. Left turns from the station into the intersection have also been observed to be a potential hazard.</p>	High	
		
RSA Team's Recommendation	Cost	Potential Safety Benefit
<p>Reach out to Hess station owner and/or Hess corporate regarding safety concerns. Review current Hess station access agreement with the county. Prohibit left turns out of driveway nearest to the intersection.</p>	Low	High

Issue: West-bound Bus Stop Sign	Safety Risk	
<p>Description: The west-bound bus stop sign is located on the signal pole, in the middle of the intersection. This is located away from the actual bus stop.</p>	Medium	
		
RSA Team's Recommendation	Cost	Potential Safety Benefit
<p>Reach out to NJ Transit to move bus stop sign back to the proper location.</p>	Low	Low

Issue: Light Rail Gates	Safety Risk	
Description: The light rail entrance gates on the north side of Park Avenue are currently locked. This forces pedestrians to use the south side entrances and results in more pedestrians crossing Park Avenue.	High	
RSA Team's Recommendation	Cost	Potential Safety Benefit
NJ Transit has expressed that this is due to the poor condition of the stairs leading down to the light rail and the lack of funding to repair them. Reach out to NJ Transit and City of Newark to investigate potential funding sources.	Medium	High

Issue: Bus Shelter/Benches	Safety Risk	
Description: Currently, there are no bus shelters or benches for the convenience of pedestrians.	Low	



RSA Team's Recommendation	Cost	Potential Safety Benefit
Reach out to NJ Transit and City of Newark to discuss adding accommodations for pedestrians.	Low	Low

Potential Funding Sources

In this economy, budget constraints may hamper the implementation of some of these recommendations. Finding alternative funding sources is critical to ensuring the investment in the safety of the intersection's users.

Local Funding Sources:

Roadway Owner's Maintenance and Operation Budget:

Existing funds from local and county sources, as appropriate, which are allocated for investment in maintenance and operational activity, can be used to implement above suggestions. Many of the above countermeasures may be eligible for the appropriate use of these existing funds. The manager of these funds who understands the full budget picture should be consulted.

State Funding Sources:

Contact:

NJDOT Local Aid District 2 Office
153 Halsey Street - 5th floor
Newark, NJ 07102
Phone: 973-877-1500
Fax: 973-877-1556

Municipal Aid/Urban Aid Program (NJDOT Local Aid):

<http://www.state.nj.us/transportation/business/localaid/municipaid.shtm>

This program has been a significant resource for municipalities in funding local transportation projects. All municipalities are eligible. The department continues to encourage municipalities to consider using the Municipal Aid Program to fund projects that support walking and biking in their communities. NJDOT has set a goal to award up to 10 percent of the Municipal Aid Program funds to projects such as pedestrian safety improvements, bikeways, and streetscapes.⁴

Local Aid Infrastructure Fund (Discretionary Aid):

<http://www.state.nj.us/transportation/business/localaid/descrfunding.shtm>

Subject to funding appropriation, a discretionary fund is established to address emergencies and regional needs throughout the state. Any county or municipality may apply at any time. These projects are approved at the discretion of the commissioner. Payment of project costs is the same as the Municipal Aid Program. Under this program a county or municipality may also apply for funding for local pedestrian safety and bikeway projects⁵.

⁴ Local Aid Letter Dated June 18, 2010, available publicly:

<http://www.state.nj.us/transportation/business/localaid/documents/2011Letter.pdf>

⁵ NJDOT TTF State Aid Handbook available publicly:

<http://www.state.nj.us/transportation/business/localaid/documents/StateAidHandbook-May272010.pdf>

Safe Streets to Transit:

<http://www.state.nj.us/transportation/business/localaid/safe.shtm>

The intent of this program is to encourage counties and municipalities to construct safe and accessible pedestrian linkages to transit facilities in order to promote increased usage of transit by all segments of the population.

NJDOT Centers of Place Program:

<http://www.state.nj.us/transportation/business/localaid/safe.shtm>

The program provides a funding opportunity to municipalities that have been designated as a Center of Place by the New Jersey Department of Community Affairs to obtain funding for nontraditional transportation improvements that advance municipal smart growth management objectives. Eligible program projects include pedestrian and bicycle facilities, scenic or historic transportation programs, parking and circulation management, landscaping/beautification of transportation-related facilities, and rehabilitation of publicly owned transportation structures

Contact:

New Jersey Business Action Center
Office for Planning Advocacy
Department of State
P.O. Box 204
Trenton, New Jersey 08625-0204
Barry Ableman
Phone: 609-292-3228
Email: bableman@dca.state.nj.us

Office of Smart Growth Downtown Business Improvement Zone Loan Fund

<http://www.nj.gov/state/planning/docs/techassist071506.pdf>

To provide loans up to \$500,000 to make capital improvements within designated downtown business improvement zones

Contact:

New Jersey Department of Community Affairs
101 South Broad Street
PO Box 800
Trenton, NJ 08625-0800
Laura Julian
Phone: 609-633-6265
Email: ljulian@dca.state.nj.us

Community Services Block Grant (CSBG)

<http://www.state.nj.us/dca/divisions/dhcr/offices/comact.html>

Awards funds to agencies for provision of health, education, employment housing, and other services to the low-income population of New Jersey. Ninety percent of the annual allocation must go to designated community action agencies (CAAs).

Federal Funding Sources via NJDOT Office of Local Aid:**Contact:**

NJDOT Local Aid District 2 Office
153 Halsey Street - 5th floor
Newark, NJ 07102
Phone: 973-877-1500
Fax: 973-877-1556

Safe Routes to Schools (SRTS):

<http://www.state.nj.us/transportation/business/localaid/srts.shtm>

The federal-aid SRTS program provides federal-aid highway funds to State Departments of Transportation over five fiscal years (FY2005–FY2009). The program targets schools for grades K–8 only. The main objectives of the program are:

- to enable and encourage children, including those with disabilities, to walk and bicycle to school;
- to make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and
- to facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.

Funds are available for infrastructure projects that benefit elementary and middle school children in grades K–8 in both public and private schools. The infrastructure portion can fund design, construction, and planning of the proposed improvements, while the non-infrastructure portion would fund activities that encourage walking and bicycling to school.

Selection of SRTS projects involves the participation of civic, education, and environmental groups, the transportation community, and other government organizations such as the state's metropolitan planning organizations.

[Federal Funding Sources via North Jersey Transportation Planning Authority \(NJTPA\):](#)

Contact:

North Jersey Transportation Planning Authority
One Newark Center, 17th Floor
Newark, NJ 07102
Phone: 973-639-8400
Fax: 973-639-1953

Local Safety Program:

http://www.njtpa.org/Project/Devel/local_safety/default.aspx

The federally funded Local Safety Program (LSP) is a component of wider safety planning at the NJTPA, supporting construction of quick-fix, high-impact safety improvements on county and local roadway facilities in the NJTPA region. Projects supported by this program have included new and upgraded traffic signals, signage, pedestrian indications, crosswalks, curb ramps, pavement markings, and other improvements to increase the safety of drivers, bicyclists, and pedestrians.

The Local Safety Program:

- typically addresses NJTPA and/or NJDOT derived high priority crash locations on county or local roadways,
- supports quick-fix projects, backed with detailed crash data, with minimal or no environmental or cultural resource impacts (eligible for programmatic categorical exclusion from FHWA), and
- funds the construction phase of work only— planning, design, and right-of-way acquisition are the responsibility of the sponsor.

Local CAMQ Mobility Initiatives:

<http://www.njtpa.org/Project/Mobility/CMAQ/CMAQMobility.aspx>

The federal Congestion Mitigation and Air Quality (CMAQ) program provides funds to reduce roadway congestion and reduce single occupancy auto usage in order to lessen the level of pollutants and greenhouse gases generated through the use of fossil fuels. The NJTPA has established the Local CMAQ Mobility Initiatives program to help meet these goals, including ridesharing, transit usage, travel demand management, and traffic mitigation projects. Proposals must implement strategies and policies in the Regional Transportation Plan, Plan 2035.

RSA Team's Conclusion

The RSA Team's recommendations suggested in this report should improve the safety of the intersection. Many of the recommendations can be implemented through routine maintenance, while others will take more time and investment. However, physical improvements alone will not eliminate the safety issues identified.

A combined effort of public education and police enforcement is necessary to make this intersection a safer place for all its users. Education about traffic safety in public schools, such as drivers' education courses in high school, and distributing informational pamphlets to pedestrians are just a sample of the different educational campaigns that can benefit road users. Enforcement, especially in the areas of parking and pedestrian right-of-way, can go a long way in reducing crashes and alerting drivers of the seriousness of being safety conscious. Officers may also hand out pamphlets during routine traffic stops to educate motorists of changes in traffic laws.

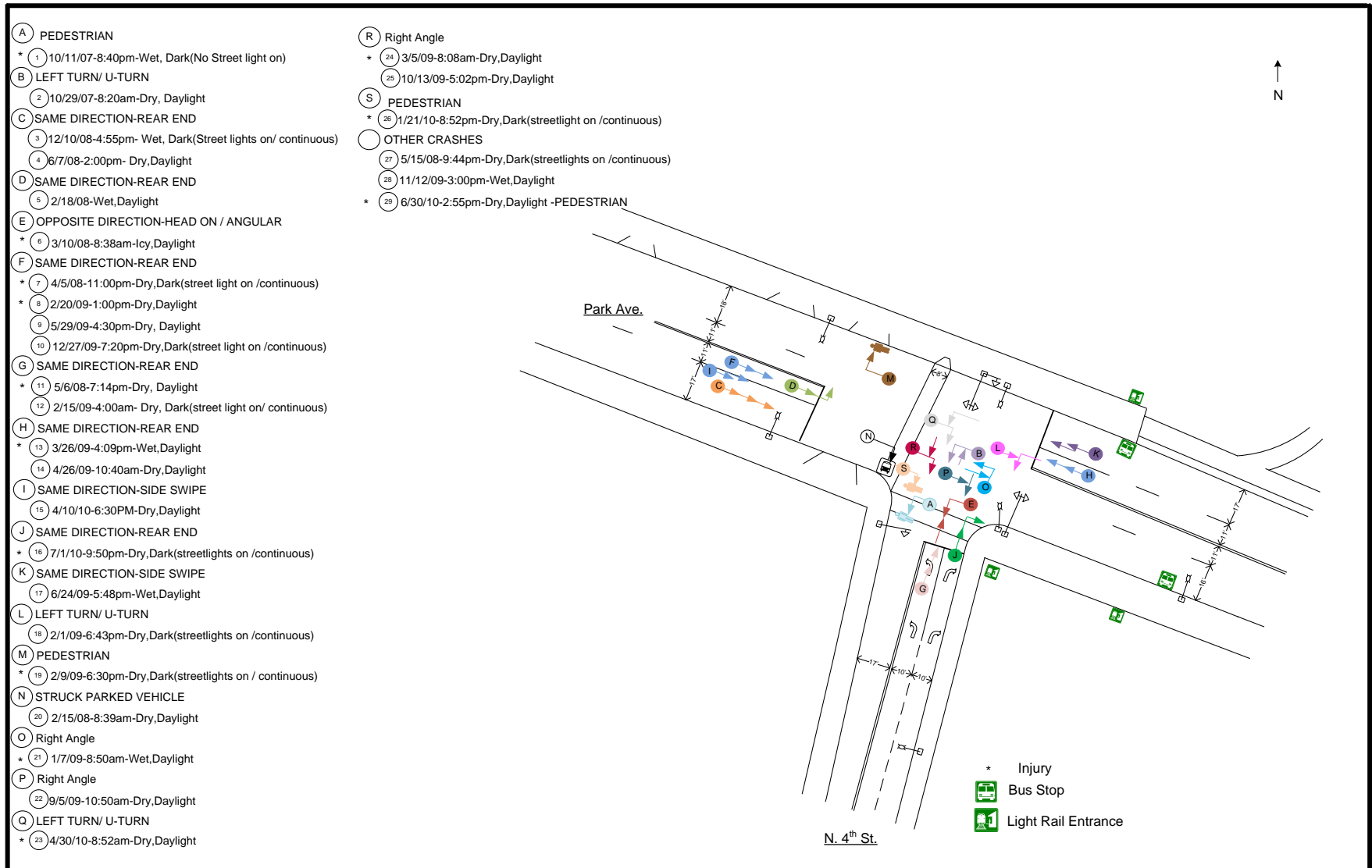
Appendix A

Raw Crash Data

<u>Crash Date</u>	<u>Crash Time</u>	<u>Crash Type</u>	<u>Environmental Condition</u>	<u>Light Condition</u>	<u>Severity</u>	<u>Surface Condition</u>	<u>Total Injured</u>	<u>Total Pedestrians Involved</u>
12/10/2008	4:55 PM	Same Direction - Rear End	Rain	Dark (Street Lights On/continuous)	Property Damage	Wet	0	0
3/10/2008	8:38 AM	Opposite Direction - Head On/Angular	Clear	Daylight	Injury	Icy	1	0
4/5/2008	11:00 PM	Same Direction - Rear End	Clear	Dark (Street Lights On/continuous)	Injury	Dry	2	0
5/6/2008	7:14 PM	Same Direction - Rear End	Clear	Daylight	Injury	Dry	1	0
5/15/2008	9:44 PM	Opposite Direction - Head On/Angular	Clear	Dark (Street Lights On/continuous)	Property Damage	Dry	0	0
2/15/2008	8:39 AM	Struck Parked Vehicle	Clear	Daylight	Property Damage	Dry	0	0
10/6/2008	10:18 AM	Backing	Clear	Daylight	Property Damage	Dry	0	0
2/15/2009	4:00 AM	Same Direction - Rear End	Clear	Dark (Street Lights On/continuous)	Property Damage	Dry	0	0
2/20/2009	1:00 PM	Same Direction - Rear End	Clear	Daylight	Injury	Dry	1	0
3/5/2009	8:08 AM	Right Angle	Clear	Daylight	Injury	Dry	1	0
3/26/2009	4:09 PM	Same Direction - Rear End	Rain	Daylight	Injury	Wet	1	0
4/26/2009	10:40 AM	Same Direction - Side Swipe	Clear	Daylight	Property Damage	Dry	0	0
5/29/2009	4:30 PM	Same Direction - Rear End	Clear	Daylight	Property Damage	Dry	0	0
6/24/2009	5:48 PM	Same Direction - Side Swipe	Rain	Daylight	Property Damage	Wet	0	0

2/1/2009	6:43 PM	Left Turn / U Turn	Clear	Dark (Street Lights On/continuous)	Property Damage	Dry	0	0
2/9/2009	6:30 PM	Pedestrian	Clear	Dark (Street Lights On/continuous)	Injury	Dry	1	1
1/7/2009	8:50 AM	Right Angle	Rain	Daylight	Injury	Wet	1	0
11/12/2009	3:00 PM	Other	Rain	Daylight	Injury	Wet	1	0
12/27/2009	7:20 PM	Same Direction - Rear End	Clear	Dark (Street Lights On/continuous)	Property Damage	Dry	0	0
9/5/2009	10:50 AM	Right Angle	Clear	Daylight	Property Damage	Dry	0	0
10/13/2009	5:02 PM	Right Angle	Clear	Daylight	Property Damage	Dry	0	0
11/15/2009	10:55 PM	Left Turn / U Turn	Clear	Dark (Street Lights On/continuous)	Property Damage	Dry	0	0
4/30/2010	8:52 AM	Left Turn / U Turn	Clear	Daylight	Injury	Dry	1	0
6/3/2010	2:55 PM	Pedestrian	Clear	Daylight	Injury	Dry	1	1
7/1/2010	9:50 PM	Same Direction - Rear End	Clear	Dark (Street Lights On/continuous)	Injury	Dry	1	0
1/21/2010	8:52 PM	Pedestrian	Clear	Dark (Street Lights On/continuous)	Injury	Dry	1	1
11/12/2010	1:00 PM	Same Direction - Side Swipe	Clear	Daylight	Property Damage	Dry	0	0
11/12/2010	5:38 PM	Same Direction - Rear End	Clear	Dark (Street Lights On/continuous)	Injury	Dry	1	0
11/20/2010	9:55 PM	Same Direction - Rear End	Clear	Dark (Street Lights On/continuous)	Injury	Dry	2	0

Collision Diagram

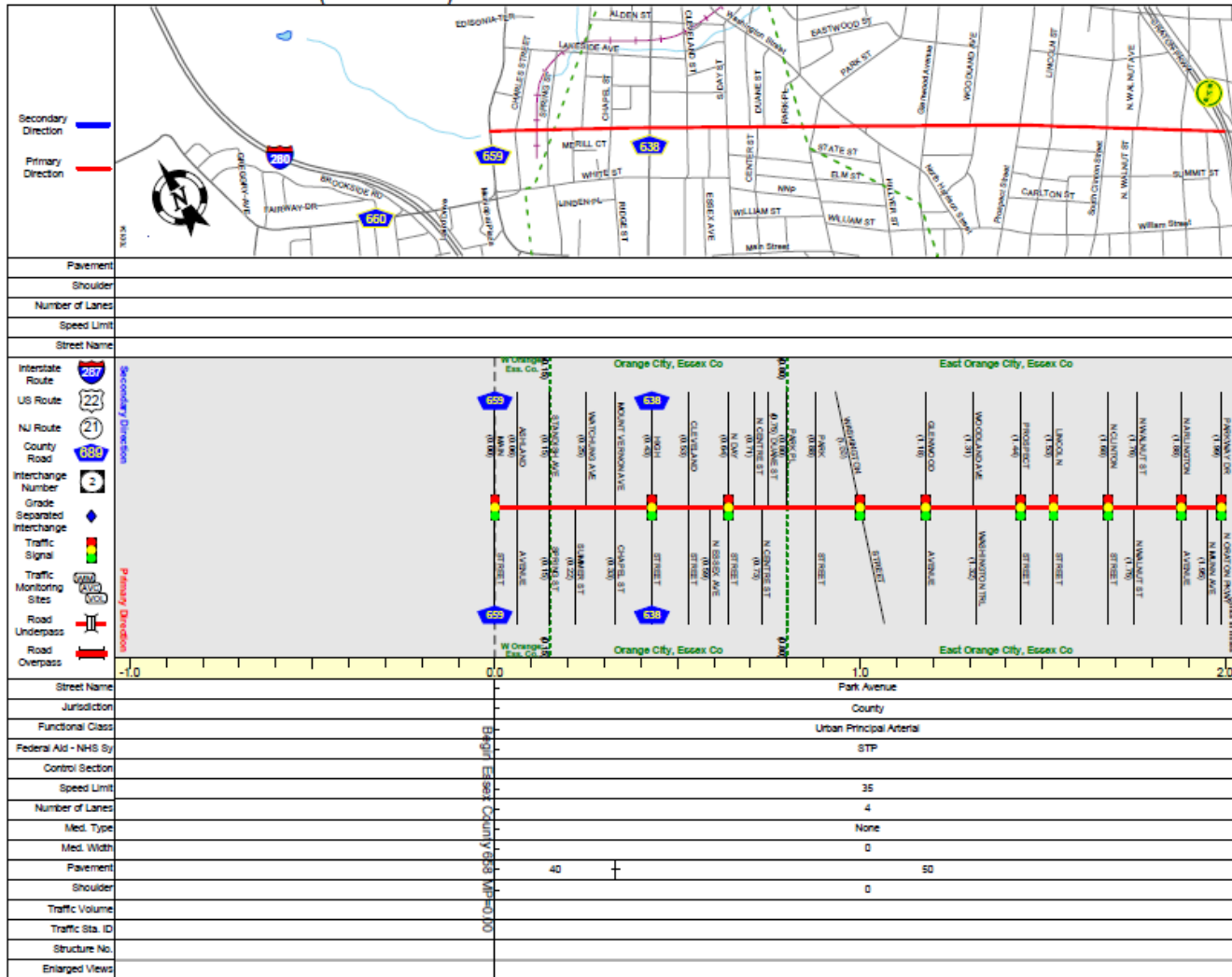


Appendix B

Straight Line Diagrams

ESSEX COUNTY 658 (West to East)

Mile Posts: 0.000 - 2.000



SRI = 07000658_

Date last inventoried: January 2001

Page Created: May 2010

ESSEX COUNTY 658 (West to East)

Mile Posts: 2.000 - 3.880

Secondary Direction	
Primary Direction	
Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	
Street Name	Park Avenue
Jurisdiction	County
Functional Class	Urban Principal Arterial
Federal Aid - NHS Sy	STP
Control Section	
Speed Limit	35
Number of Lanes	4 + 2 + 4
Med. Type	None
Med. Width	0
Pavement	50 + 36 + 50
Shoulder	0
Traffic Volume	
Traffic Sta. ID	
Structure No.	
Enlarged Views	

SRI = 07000658

Date last inventoried: January 2001

Appendix C

