

Route 130

PEDESTRIAN ROAD SAFETY AUDIT

BURLINGTON CITY, NJ

JULY 27, 2018



Disclaimer

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01 INTRODUCTION

US Route 130 through Burlington City in Burlington County has been identified as a high pedestrian crash corridor. Between 2012 and 2016 there were nine crashes involving a pedestrian, including three fatalities, and four crashes involving a bicyclist. The New Jersey Department of Transportation (NJDOT) is committed to working with the community and local officials to improve safety along U.S. Route 130 in Burlington City.

BACKGROUND

The Route 130 corridor bisects Burlington City in Burlington County, New Jersey. According to analysis by the Tri-State Transportation Campaign, for the sixth year in a row Route 130 in Burlington County is New Jersey's most dangerous road for walking.¹

Over the years, NJDOT has been conducting corridor studies and crash data analyses, increasing enforcement, undertaking repaving projects, involving the community - especially the high school students - and, more recently, implementing a road diet.

The following is a summary of some of NJDOT's recent efforts:

- » In 2014, a NJDOT study of the corridor recommended measures to control speeds including implementing a road diet,

¹ http://www.nj.com/burlington/index.ssf/2017/11/this_is_njs_most_dangerous_road_for_pedestrians.html

combining signs, retiming signals for a 25 MPH progression during school commute times, reducing the speed limit to 35 MPH from 40 MPH, and installing visual cues, such as gateways and landscaping.

- » In 2013 and 2014, the County Sheriff's office and local police increased enforcement of motor vehicle violations through the Operation 130 Safe Passage program funded by the NJ Division of Highway Traffic Safety.
- » In April 2017, as part of a planned repaving project, NJDOT implemented a road diet from Jerome Street (milepost 45.8) and the Assiscunk Creek (milepost 46.6) by reducing the number of travel lanes from three to two lanes in each direction.
- » In May 2017, NJDOT conducted an analysis of all bicycle and pedestrian crashes since 2009 and all crashes along the corridor between 2013 and 2015.



Salem Road, Burlington City, NJ



Missing sidewalk near Wilbur Watts School, Burlington City, NJ

WHAT IS A PEDESTRIAN ROAD SAFETY AUDIT (PRSA)?

A road safety audit (RSA) is an opportunity for a diverse group of decision makers and stakeholders to jointly visit a problem spot or corridor and assess existing conditions. According to the FHWA, it is “the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team.” RSAs typically generate recommendations and countermeasures to address safety concerns on a roadway or roadway segment. While all RSAs typically include pedestrian safety analysis, some RSAs address an identified pedestrian safety problem.

Given the concerns for pedestrian safety on Route 130, the objective for this project was to conduct a pedestrian road safety audit (PRSA) for the entire length of Route 130 in Burlington City, NJ.

» In June 2017, NJDOT hosted a planning workshop with students from Burlington City High School. The purpose of the workshop was to educate the students on the process for implementing roadway projects, get input on challenges and issues, and solicit ideas and recommendations for improvements along the corridor.

Even with the increased enforcement and safety improvements, there has been minimal compliance with the posted speed limit and continued concern for the safety of pedestrians, including students from Burlington City High School and Wilbur Watts Intermediate School who walk along and across Route 130 to get to school every day.

The NJDOT Office of Bicycle and Pedestrian Programs (OBPP) recommended that a Pedestrian Road Safety Audit (PRSA) be conducted along the entire 2.3-mile corridor within Burlington City (milepost 45.25 to 47.55). NV5 was selected to conduct the PRSA for the corridor.

The 0.8 mile section (milepost 45.8 to 46.6) of Route 130 where the road diet was implemented is a divided highway where the northbound and southbound lanes are separated by a median of approximately 350'. Commercial businesses located in the large median have led to multiple

curb cuts, sign clutter, and conflicts between pedestrians and turning motorists.

The Burlington City High School and Wilbur Watts Intermediate School are both located along this segment of Route 130 and more than 1,000 students cross or travel along Route 130 to get to school every day. Because the roadway is divided, students must navigate two roads rather than one, with twice the opportunities for conflict.

The PRSA included the three cross streets (Wood Street, High Street (CR 541), and Jacksonville Road (CR 670) between the northbound and the southbound lanes of Route 130. The study corridor was evaluated in a comprehensive manner, considering state-of-the-practice engineering, enforcement, and education tools to develop solutions to address pedestrian access and safety issues.

This report provides an overview of the existing conditions within the study corridor and surrounding area. NV5 conducted field investigations and collected background data including crash data, aerials, traffic volumes and speeds, area demographics and land use to document existing conditions in the corridor and to identify the key issues relating to pedestrian safety.

ROUTE 130 PEDESTRIAN ROAD SAFETY AUDIT WORKSHOP

The Route 130 PRSA workshop was held on March 26, 2018 from 12:30 - 4:30 PM. The workshop was held at Burlington City High School, located at 100 Blue Devil in Burlington City, NJ. To address pedestrian safety issues, a multi-disciplinary Safety Impact Team (SIT) was formed. The SIT included local officials, engineers, planners, and traffic safety experts with both local and technical knowledge to help assess the safety of the corridor and develop recommendations to improve the safety and walking environment along Route 130. Appendix J includes a list of the SIT members at the workshop.



PRSA workshop at Burlington City High School

PLANNING PROCESS

The planning process and methodology is summarized in Figure 1. The Route 130 Pedestrian Road Safety Audit (PRSA) was conducted by the NJDOT with assistance from NV5. The project team (NV5) conducted a kickoff meeting with NJDOT to review project needs and understanding, project approach, and existing resources available. From this meeting a scope of work was developed to guide the project moving forward.

Data Collection and Evaluation

NV5 undertook a comprehensive data collection review and evaluation in order to better assess the existing conditions of the corridor and help guide future efforts. NV5 gathered background information such as crash report data, traffic volumes, technical engineering plans, area demographics, and other relevant data to develop a profile of the existing conditions along the corridor. In addition, NV5 conducted field investigations, including traffic/intersection counts, to further identify potential problem locations and establish priority areas.

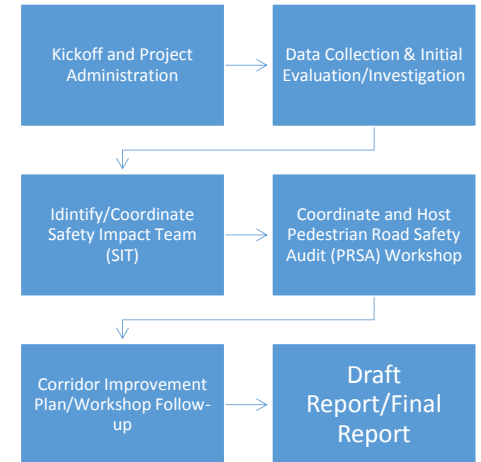


Figure 1: Project Planning Process Chart



PRSA workshop at Burlington City High School



Student input at PRSA workshop, Burlington City High School



Review of existing conditions, PRSA workshop

Safety Impact Team (SIT)

NV5, in consultation with NJDOT, developed a multi-disciplinary Safety Impact Team (SIT) comprised of stakeholders with local knowledge and expertise. The goal of convening this group was to engage representatives from a broad cross section of the community. Potential SIT members were sent invitation letters detailing the project purpose and need and requesting their participation in the process. The SIT was comprised of local, county, state and regional representatives. A copy of a sample invitation letter and the workshop sign-in sheet can be found in Appendix J.

The Route 130 Pedestrian Road Safety Audit (PRSA) was conducted on March 26, 2018 from 12:30 - 4:30 pm at Burlington City High School. It was attended by members of the Route 130 PRSA Safety Impact Team (SIT).

The recommendations supplied by the SIT members were combined with other corridor-wide recommendations, potential engineering, education, and enforcement solutions to form the Corridor Improvement Plan. This plan includes conceptual level plans and recommendation matrices prepared with input by NJDOT.



PRSA field assessment, Burlington City, NJ



PRSA field assessment, Burlington City, NJ

02 CORRIDOR CONDITIONS & ANALYSIS

US Route 130 runs approximately 83.5 miles from Pennsville in Salem County to North Brunswick in Middlesex County. It is classified as an urban principal arterial highway and is under the jurisdiction of the New Jersey Department of Transportation. The entire 2.3-mile section of Route 130 within Burlington City (milepost 45.45 to 47.55) and the cross streets in the bifurcated section were the focus of the PRSA.

STUDY AREA CONTEXT

The City of Burlington is located in the northwestern portion of Burlington County along the banks of the Delaware River (see Figure 2). It is bordered by Burlington Township in New Jersey and Bristol and Bristol Township across the river in Pennsylvania.

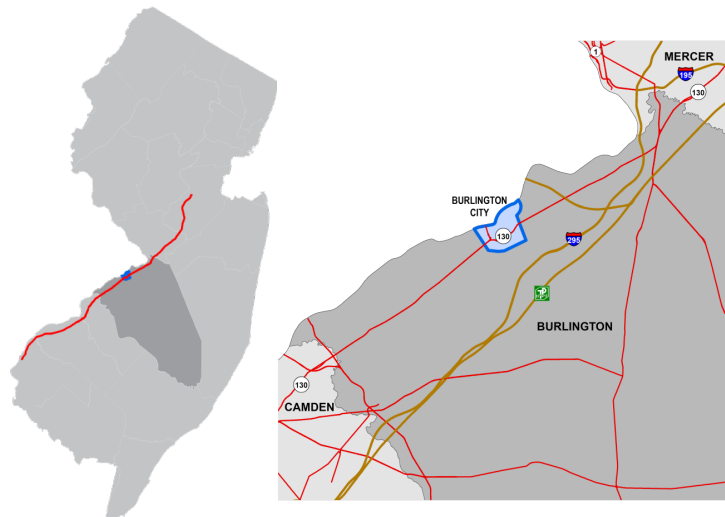


Figure 2: Context Map

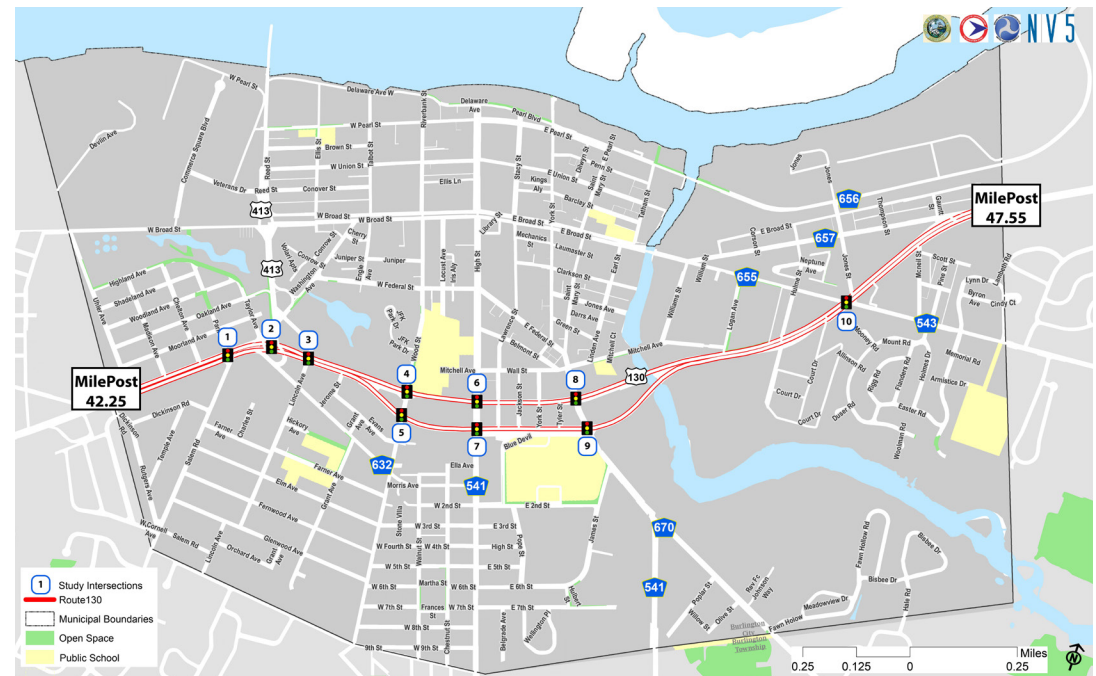
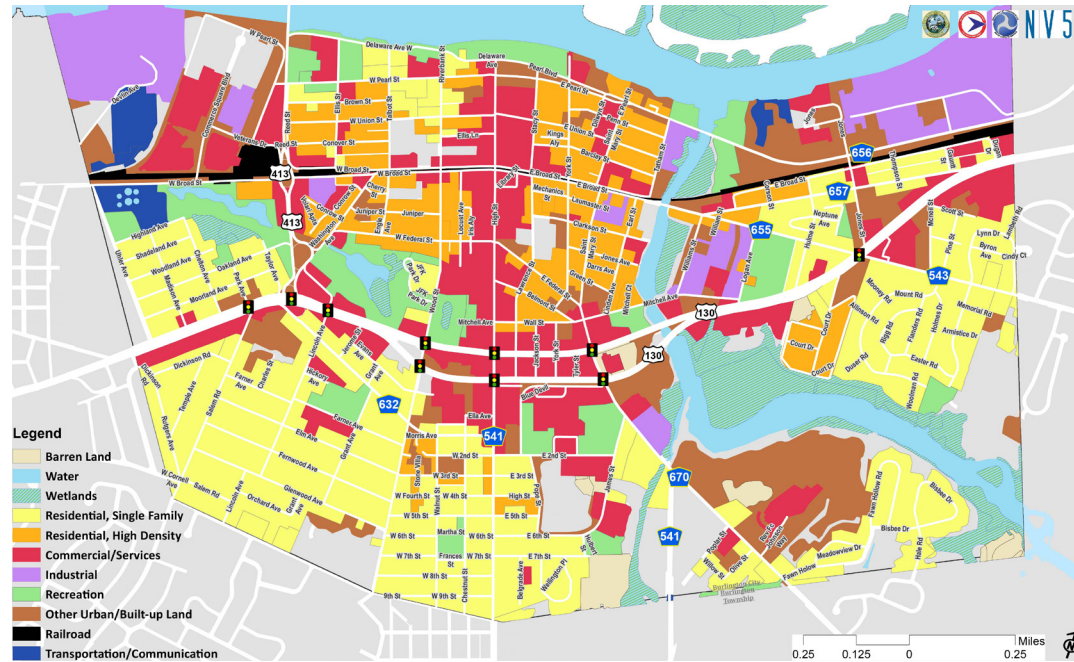


Figure 3: Land Use Map



Land Use

Route 130 is a predominantly commercial corridor with services and retail uses (Figure 3). Both the Burlington City High School (grades 7-12) and Wilbur Watts Intermediate School (grades 3-6) are located along the roadway. Route 130 divides the urban neighborhoods and historic downtown located to the north from the newer, more suburban neighborhoods to the south.

Through the school zone section of the study area, the southbound and northbound lanes are separated by a median of approximately 350' consisting of mostly auto-oriented, commercial uses. There are multiple destinations along the corridor including Wawa, Rite Aid, Walgreens, McDonald's, Dunkin Donuts, KFC, and numerous restaurants including a diner and two pizza shops.



Commercial developments on Route 130 corridor



Students waiting at Route 130 intersection

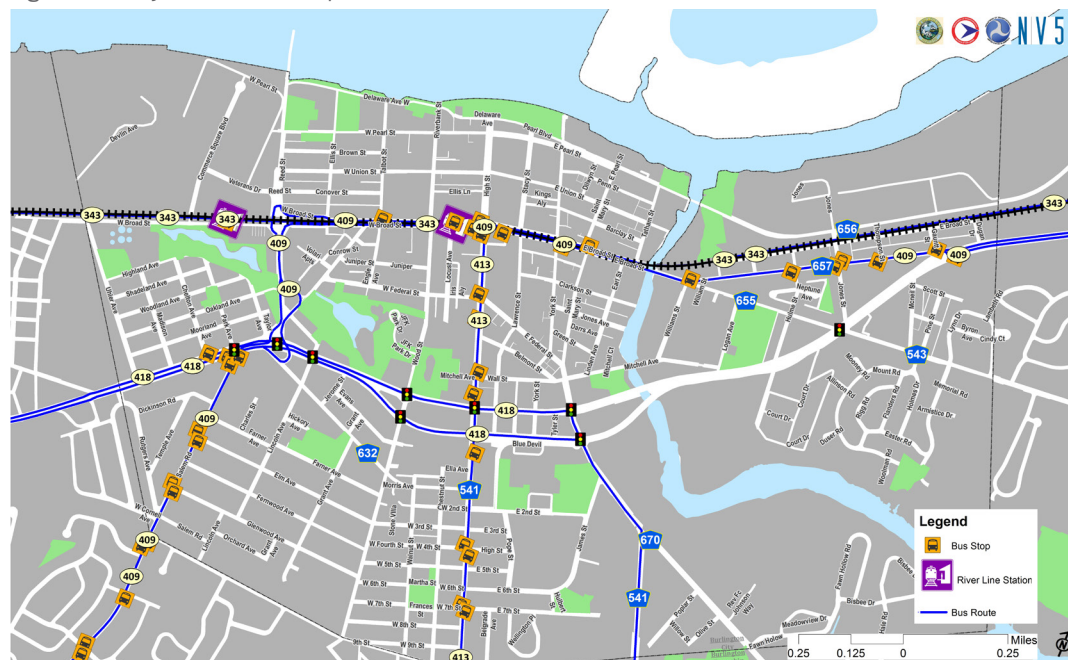
Transit

Burlington City is well-served by transit (Figure 4). NJ Transit provides bus service to Trenton and Philadelphia and the River Line light rail system provides transportation between Trenton and Camden with stops at Burlington South and Burlington Towne Center.

NJ Transit Bus Route 418 runs along Route 130 from Federal Street/Jacksonville Road (CR 670) south. However, there is only one pair of bus stops for this bus line actually on Route 130. The southbound bus stops at Chelton Avenue. The northbound bus stop is on Salem Road.

Bus Route 409 operates on Route 130 for the northern section of Route 130 before continuing on Bordentown Road before crossing Route 130 at Keim Boulevard and Salem Road. There is one unmarked stop for Bus Route 409 at Route 130 NB and Bordentown Road. Bus Route 413 crosses Route 130 at High Street.

Figure 4: Study Area Transit Map



Route 418 bus stop at Chelton Avenue

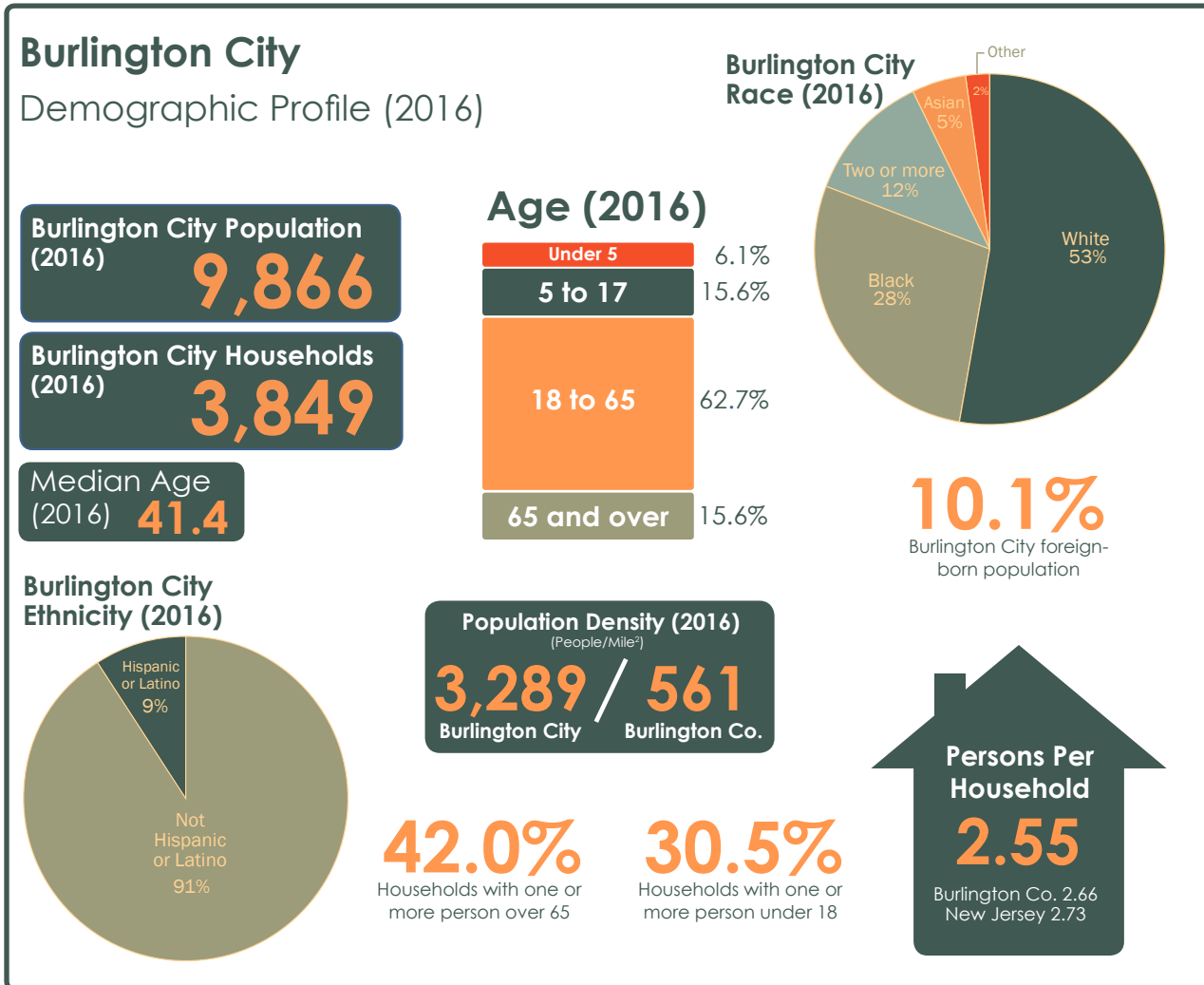


Unmarked Route 409 bus stop at Bordentown Avenue

Study Area Demographics

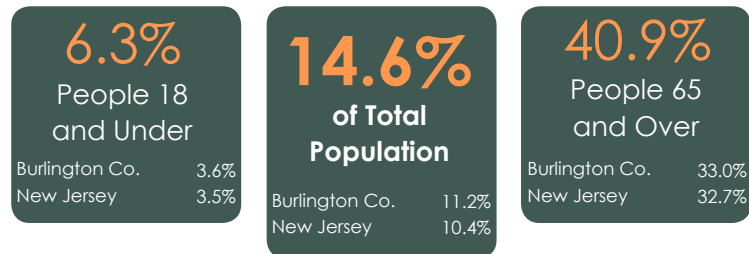
The demographic profile of the City provides background data to better understand the bicycling and pedestrian needs for infrastructure improvements. Similarly, car ownership and commuting data suggests the need to improve the bicycling and walking environments not just for workers but for the overall population. Other statistics that should be considered while making decisions about improving the bicycling and walking environments in the City are:

- » Over 15% of the population is 65 years and over
- » About 30% of households have someone under 18 years and more than a third (33.7%) have someone 65 years and over
- » Over 11% of households have no access to a motor vehicle
- » The median household income is lower than the County and the State
- » Almost 10% of the population has an income below the poverty level
- » 14.6% of the population and 41% of the senior population (65 years and over) has some disability

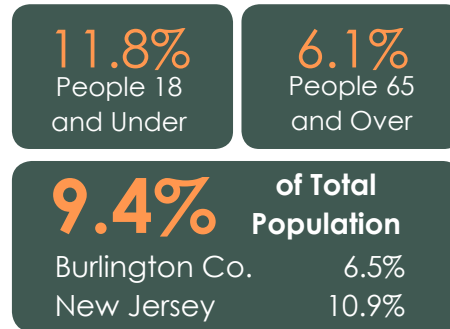


Demographic Profile Continued

Residents Disability Status (2016)



Residents Living Below Poverty Level (2016)

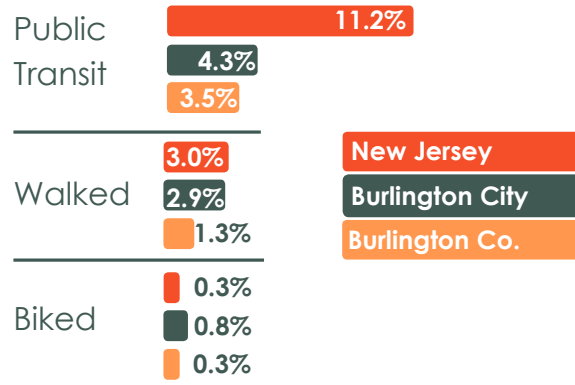


Median Household Income (2016)

New Jersey \$73,702
Burlington Co. \$80,034

Burlington City \$52,537

Means of Travel to Work (2016)



Source: American Community Survey (ACS) 2016

CORRIDOR CHARACTERISTICS

Route 130 is classified as an urban principal arterial highway and is under the jurisdiction of NJDOT. Principal arterial highways tend to have the highest traffic volumes and the longest trip lengths of non-interstate roadways. According to the NJDOT Roadway Design Manual, “in urban areas, mobility is often balanced against the need to provide direct access as well as the need to accommodate pedestrians, bicyclists, and transit users.”

Route 130 is also an important business corridor where many of the customers utilize cars and trucks for access. It is part of the NJ Access Network, a

Table 1: Pedestrian Facilities at Signalized Intersections

#	Major Street	Minor Street	Crosswalks	Push Buttons	Curb Ramps	Man Hand	Countdown
1	Rt. 130 (NB & SB)	Park Avenue & Salem Road	Yes - ladder	Yes	Some**	Yes***	
2	Rt. 130 (NB & SB)	Mott Avenue (CR 632) & Keim Boulevard (Rt. 413)	Yes - ladder	No	No	No	No
3	Rt. 130 (NB & SB)	Lincoln Avenue	No	No	No		No
4	Rt. 130 SB*	Wood Street	Yes - high visibility	Yes	Yes		Yes
5	Rt. 130 NB*	Wood Street	Yes - high visibility	Yes	Yes		Yes
6	Rt. 130 SB*	High Street (CR 541)	Yes - high visibility	Yes	Yes		Yes
7	Rt. 130 NB*	High Street (CR 541)	Yes - high visibility	Yes	Yes		Yes
8	Rt. 130 SB*	East Federal Street (CR 640)	Yes - high visibility	Yes	Yes		Yes
9	Rt. 130 NB*	Jacksonville Road (CR 670)	Yes - high visibility	Yes	Yes		Yes
10	Rt. 130 (NB & SB)	Columbus Road (CR 655/543) & Jones Street	1 leg - ladder	No	Some**	No	No

* Intersection within the school zone
 ** Not ADA compliant
 *** Across Rt. 130 only

network of designated travel routes for 102-inch wide trucks and double-trailer truck combinations. NV5 conducted field visits, lighting assessments and traffic analysis to better understand the existing conditions on Route 130.

Intersections

There are ten signalized intersections within the study area (Figure 1). Crossing guards are stationed at the six intersections in the school zone during school arrival and dismissal. All unsignalized intersections along Route 130 have unmarked crosswalks. Many of the curb ramps at the unsignalized intersections are not aligned and some intersections are missing curb ramps.

Lighting Assessment

The crash data analysis indicated that eight of the thirteen pedestrian- and bicyclist-involved crashes in the years 2012 through 2016 occurred in the dark. Seven of the eight crashes occurred in areas within the study corridor where the existing streetlights were on. All three of the pedestrian fatalities occurred in the dark. These findings suggest potential lighting inadequacies along the corridor that negatively affect pedestrian and bicyclist safety.

A lighting assessment was conducted to quantify roadway lighting levels at all intersections within the study corridor. Lighting levels were measured using a light meter and were noted in foot-candles. The NJDOT requires a minimum of 0.6-0.8 foot-candles for crosswalks at intersections, and a maximum of 6 foot-candles (so that bright spots do not wash out the lesser lit areas). Most street lighting within the study corridor consists of lighting fixtures installed on utility poles and/or lighting for the businesses along Route 130.

The lighting assessment was conducted by NV5 on December 4 from 5:30 PM – 9:30 PM after the nautical twilight time to ensure adequate darkness to measure the lighting levels. Almost two-thirds (63%) of the crossings surveyed did not provide adequate lighting levels and are noted as being too

dim. This includes most legs of:

- » Route 130 Southbound and Salem Avenue, Route 413/Keim Boulevard, Lincoln Avenue, Lawrence Street, York Street, Tyler Street, and Federal Street.
- » Route 130 Northbound and High Street, Lawrence Street, Jackson Street, Tyler Street.

Some intersections were noted as being too bright (more than 6 foot-candles). This includes the SE corner of Route 130 Northbound and Wood Street; the SW corner of Route 130 Southbound and Columbus Road; and the SW corner of Route 130 Southbound and York Street. Lighting analysis and field notes are included in Appendix C: Street Lighting Assessment.

Traffic Analysis

Automatic Traffic Recorders (ATRs) were placed along Route 130 southbound between High Street and Wood Street and along Route 130 northbound between High Street and Lawrence Street in 2014. In 2017, ATRs were placed south of High Street along Route 130 southbound and north of High Street along Route 130 Northbound. These locations near the center of the school zone were selected to optimize the recording of any potential speeding. Vehicle volume, speed, and class data were collected

from Monday, April 14 through Tuesday, April 15, 2014 and from Wednesday, November 1 through Tuesday, November 7, 2017. The data collected from the ATRs on vehicle class, level of service and speed is discussed in the road diet section.

Traffic Speeds

Automatic Traffic Recorders (ATRs) were utilized to measure traffic speeds on Route 130. The speed

limit on Route 130 is 50 MPH upon entering Burlington City from both the north and south and then transitions to 45 MPH before reducing to 40 MPH through the center of the corridor. During school zone hours, which are set by Burlington City Ordinance, the speed limit is reduced to 25 MPH from 7:00 - 9:00 am and 2:00 - 4:00 pm when school is in session along:

SPEED LIMITS ALONG STUDY CORRIDOR

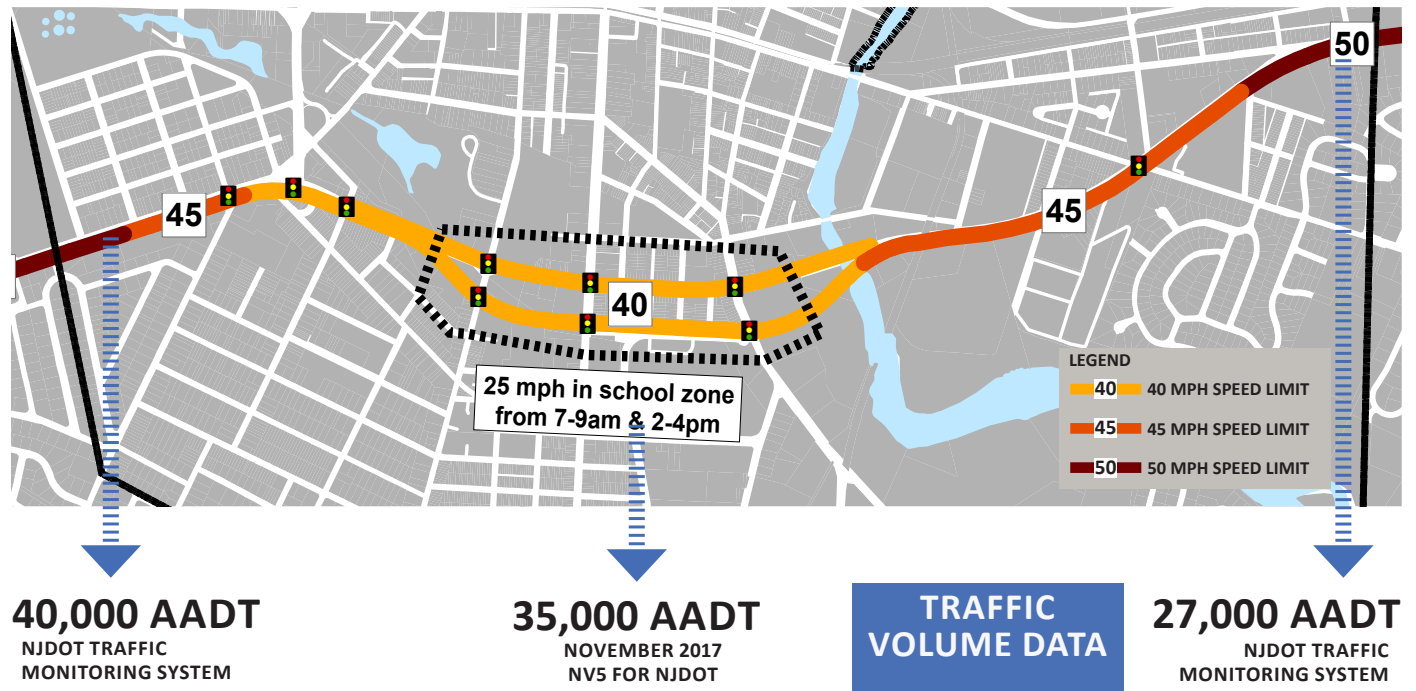


Figure 5: Speed Limits and AADT Along Study Corridor

- » Route 130 northbound beginning 500 feet south of the intersection of Wood Street and ending 500 feet north of the intersection of Jacksonville Road (County Route 670)
- » Route 130 southbound beginning 500 feet north of the intersection of Jacksonville Road (County Route 670) and ending 500 feet south of the intersection of Wood Street

Speed data collected from the 2014 and 2017 ATRs indicates that 85th percentile speeds have not changed since the road diet and have increased during school zone hours between 2014 and 2017. Reducing the number of travel lanes does not appear to have created additional congestion that would force drivers to slow down.

Traffic Volumes

AADT data (southbound and northbound), AM and PM peak hours and volumes were also collected from NJDOT's Traffic Monitoring Systems (TMS).

Crash Data

All reported crash records from NJDOT's Safety Voyager System were reviewed for the study corridor from 2012-2016. While the focus of this PRSA is to analyze pedestrian and bicyclist crashes, all vehicle crash records were reviewed to better understand the overall safety of the study corridor.

Overall Crashes

According to Safety Voyager data, there were 888 crashes within the study corridor from 2012-2016. Of these, there were nine pedestrian crashes and four bicyclist crashes. Overall, the total number of crashes within the study corridor has been steadily decreasing from 2012-2016. The highest number of crashes occurred in 2012 (220 crashes) and 2016 had the lowest number of crashes (99).

Of the 888 crashes within the study corridor, there were 5 fatal crashes, 2 crashes with incapacitating injuries, 231 moderate injury/pain crashes, and 650 property damage only crashes.



Traffic along Route 130 corridor



Intersection along Route 130 corridor

Crash Type

The two most frequent crash types in the study area were “same direction – sideswipe” (38%) and “same direction – rear end” (30%). Sideswipe and rear end type crashes are common in multi-lane roadways with intersecting side streets where drivers are exiting and entering the roadways at multiple conflict points. Crash types and frequencies are summarized in Table 2.

Intersections

About half (48%) of the crashes occurred at intersections. Of the 434 crashes that occurred at intersections, two thirds occurred at the following five intersections (Table 3):

Table 3: High Crash Intersections (All Crashes) (2012-2016)

Cross Streets	Milepost	# of Crashes	% of Crashes
High Street	46.19	82	20%
Keim Boulevard (Route 413)/Mott Avenue*	45.06	62	15%
Federal Street/Jacksonville Road (CR 670)*	46.45	48	12%
Columbus Road (CR 543)*	47.14	43	11%
Jackson Street	46.29	31	8%

From 2012-2016, crashes tended to increase in the

Table 2: Crash Type on Route 130 in Burlington City (2012-2016)

Crash Type	# of Crashes	% of Crashes
Same Direction - Sideswipe	334	37.6%
Same Direction - Rear End	268	30.2%
Right Angle	164	18.5%
Fixed Object	45	5.1%
Left Turn/U Turn	28	3.2%
Encroachment	16	1.8%
Pedestrian	8	0.9%
Backing	6	0.7%
Opposite Direction (Head On)	4	0.5%
Pedalcyclist	4	0.5%
Overtuned	3	0.3%
Struck Parked Vehicle	3	0.3%
Animal	2	0.2%
Non-fixed Object	1	0.1%
Opposite Direction (Sideswipe)	1	0.1%
Other	1	0.1%
Total	888	100%

spring and decrease in the fall. April had the most crashes (98) and December had the least (53).

With regards to the day of the week, Friday had the most number of crashes (163) followed by Saturday (135). Sunday had the least number of crashes (81) followed by Monday (114). The remaining days of the week had a consistent number of crashes.

Crash Conditions

Most crashes (83%) occurred in dry weather conditions and during daylight hours (75%).

Posted Speed Limit

The majority of crashes (67%) took place on roadways with a posted speed limit of 40 MPH.

Additional Factors

Alcohol intoxication was a factor in 27 crashes and 5 crashes involved cell phone use.

Table 4 provides a summary of crash data analyzed from 2012-2016.

Table 4: Crash Data Summary (2012-2016)

<i>Study Corridor - Motor Vehicle Crash Data Summary</i>	
Overall Crash Trend (2012-2016)	Steadily decreasing
Pedestrian Fatalities	3 between 2012-2016
Common Crash Collision Types	Rear-end crashes, Sideswipe Crashes
Highest Crash Months	April and June
Highest Crash Days of the Week	Friday and Saturday
Surface Condition	Dry road surface (83%)
Light Condition	Daylight (75%), Dark (21%)
High Crash Locations	Between Intersections (52%)
High Crash Intersections	Wood Street, Keim Boulevard (413) / Mott Avenue, Federal Street/Jacksonville Road (CR 670)



Memorial to JaDon Jenkins

Pedestrian and Bicyclist Crashes

There were nine pedestrian crashes and four bicyclist crashes reported in the study corridor from 2012-2016. The 13 pedestrian and bicyclist-involved crashes represent only 1.5% of the all crashes within the study corridor from 2012-2016. However, of the pedestrian and bicyclist crashes, three pedestrians were killed. The high number of pedestrian fatalities within the study corridor supports the need to address pedestrian safety along the study corridor.

Eight of the thirteen bicycle and pedestrian crashes and all three fatal pedestrian crashes occurred during dark conditions and all of these crashes except one were in areas with street lights on. This suggests that the lighting levels may not adequately illuminate crosswalks and roadways.

Ten of the crashes occurred on clear days and three occurred on rainy days. Eleven of the bicycle and pedestrian crashes (85%) occurred at intersections. The High Street intersection had the most crashes with five. The three fatal crashes occurred at High Street/ Route 541, East Federal Street/CR670, and Logan Avenue.

With regard to the age of the victims (both pedestrians and bicyclists), there were three under the age of 18, and almost half were from the 18-

44 years age group. The three fatal crash victims were 17 years, 32 years and 37 years old. Two of the fatalities involved drivers under the influence of alcohol.

Ten of the victims (both pedestrians and bicyclists) and all three fatalities were male and the remaining three victims were female. Eight of the pedestrians and bicyclists were from Burlington City.

Figure 6 shows the locations of crashes involving a pedestrian or bicyclist per the latitude and longitude provided in the Safety Voyager data tables. Unfortunately, the latitude and longitude information in the data tables did not match the milepost location listed in the crash table. Furthermore, all of the crashes in the bifurcated section are geocoded only to the northbound side of the roadway. To remedy these issues, crashes were manually geocoded to the correct locations by utilizing police records, where available.

Table 5 provides a summary (location, severity, year, victim information, conditions, etc.) of pedestrian and bicyclist crashes along the Route 130 corridor from 2012-2016.

PEDESTRIAN & BICYCLIST CRASHES (2012-2016)

Route 130 Pedestrian Road Safety Audit

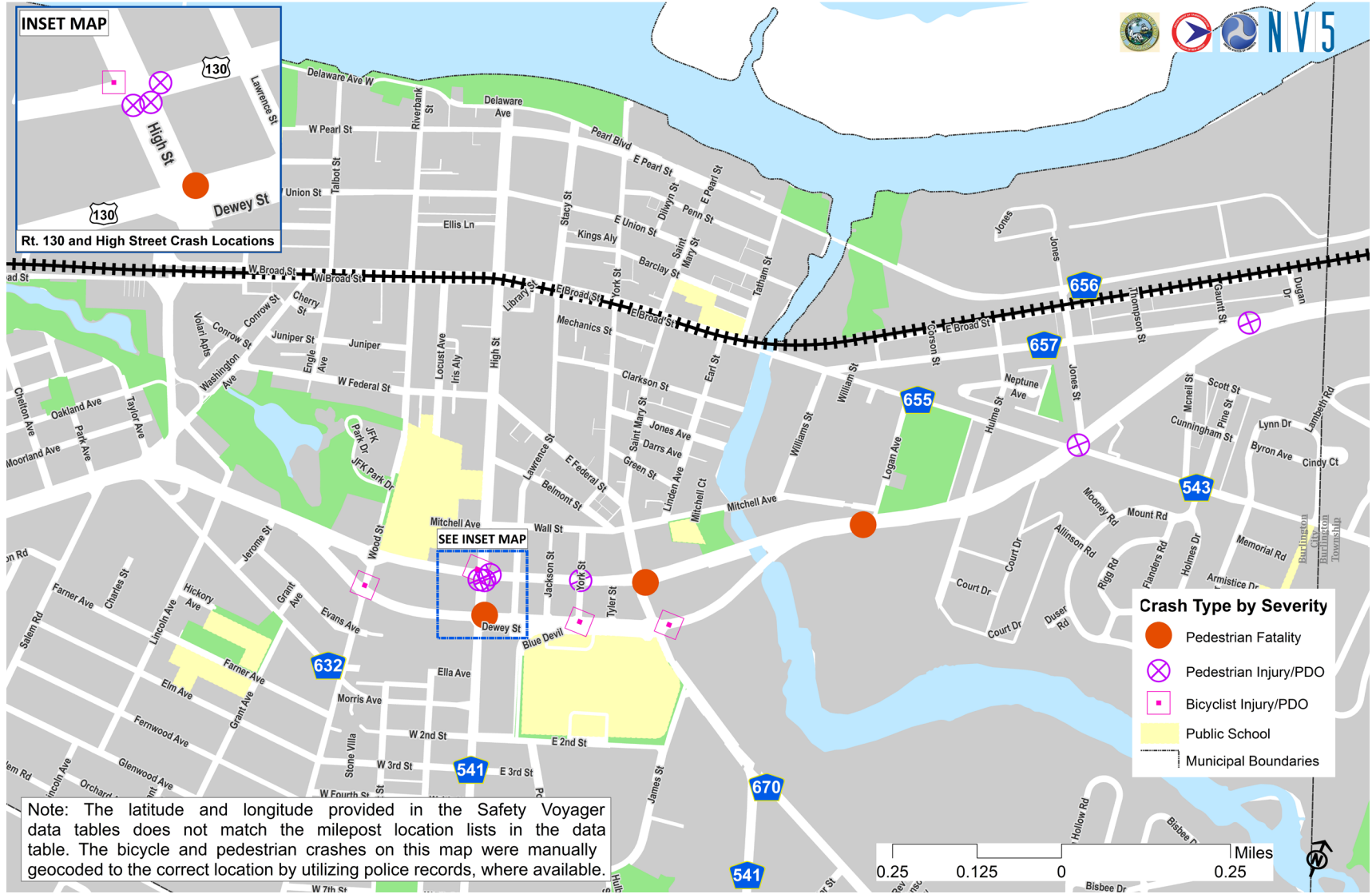


Figure 6: Bicycle and Pedestrian Crash Map (2012-2016)

Table 5: Pedestrian & Bicyclist Crash Data Summary

Mile Post	Cross Street	Year	Severity	Location	Age of Victim	Gender of Victim	Light Conditions	Environmental Conditions
<i>PEDESTRIAN CRASHES</i>								
46.19	ROUTE 541 / HIGH STREET	2012	Fatality	At Intersection	32	M	Dark (street lights on)	Clear
46.19	ROUTE 541 / HIGH STREET	2012	Injury	At Intersection	16	M	Daylight	Clear
46.19	ROUTE 541 / HIGH STREET	2012	Injury	At Intersection	25	F	Dark (street lights on)	Rain
46.19	ROUTE 541 / HIGH STREET	2014	Property Damage Only	At Intersection	25	F	Dark (street lights on)	Clear
46.38	TYLER STREET	2015	Property Damage Only	At Intersection	18	F	Dark (street lights on)	Clear
46.45	CR 670 / E FEDERAL ST / JACKSONVILLE	2016	Fatality	At Intersection	17	M	Dark (street lights on)	Rain
46.85	LOGAN AVENUE	2016	Fatality	Not At Intersection	37	M	Dark (no street lights)	Clear
47.14	ROUTE 543 / COLUMBUS ROAD	2016	Injury	At Intersection	45	M	Daylight	Clear
47.47	CR 657 / BORDENTOWN STREET	2016	Injury	At Intersection	22	M	Dark (street lights on)	Clear
<i>BICYCLIST CRASHES</i>								
46.00	WOOD STREET	2012	Property Damage Only	At Intersection	12	M	Daylight	Clear
46.19	ROUTE 541 / HIGH STREET	2013	Injury	At Intersection	59	M	Daylight	Rain
46.38	TYLER STREET	2014	Injury	At Intersection	73	M	Dusk	Clear
46.44	CR 670 / E FEDERAL ST / JACKSONVILLE	2012	Property Damage Only	Not At Intersection	57	M	Dark (street lights on)	Clear

ROAD DIET

In April 2017, as part of a planned repaving project, NJDOT implemented a road diet, which is a reduction in travel lanes, between Jerome Street (milepost 45.8) and the Assiscunk Creek (milepost 46.6). This 0.8-mile section of the highway had three lanes in both the northbound and southbound directions (Figure 7).

Following the paving project, NJDOT restriped the road to reduce it to two lanes in each direction with an 11-foot to 12-foot left shoulder. The southern 0.6 miles remains a six lane divided roadway (three lanes in each direction) with no shoulder. The 0.2-mile segment of northbound Route 130 north of Jacksonville Road (CR 670) also has three travel lanes. The rest of the study area is a 4-lane divided highway (two lanes in each direction.)

The median along the study area varies in width and type. The southern end of the study area has a 20-foot wide curbed median. The 0.8-mile section (milepost 45.8 to 46.6) of Route 130 where the road diet was implemented has a median of approximately 350' consisting of mostly auto-oriented, commercial businesses with access roads connecting Route 130 northbound and southbound at regular intervals. The northern end of the study area has an unprotected 20-foot grass median.



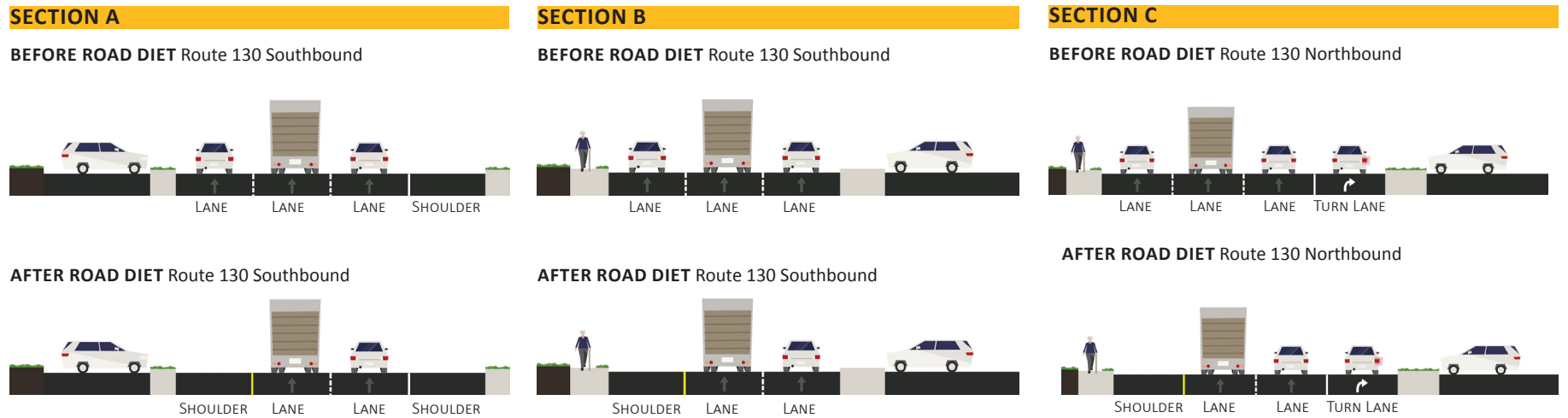
Route 130 NB (between Wood Street and High Street) before road diet



Route 130 NB (between Wood Street and High Street.) after road diet

Average annual daily traffic (AADT) volumes in vehicles per day for the Route 130 study corridor were obtained from the ATRs installed in 2014 and 2017 and NJDOT's Traffic Monitoring System. Between 27,000 and 42,000 motor vehicles travel the roadway through Burlington City every day. Traffic volumes tend to be higher in the southern section of the corridor near Keim Boulevard/ Burlington Bristol Bridge (Route 413) than in the middle and northern sections of the corridor.

Figure 7: Route 130 Cross Sections Before & After Road Diet



TRAVEL LANES MAP

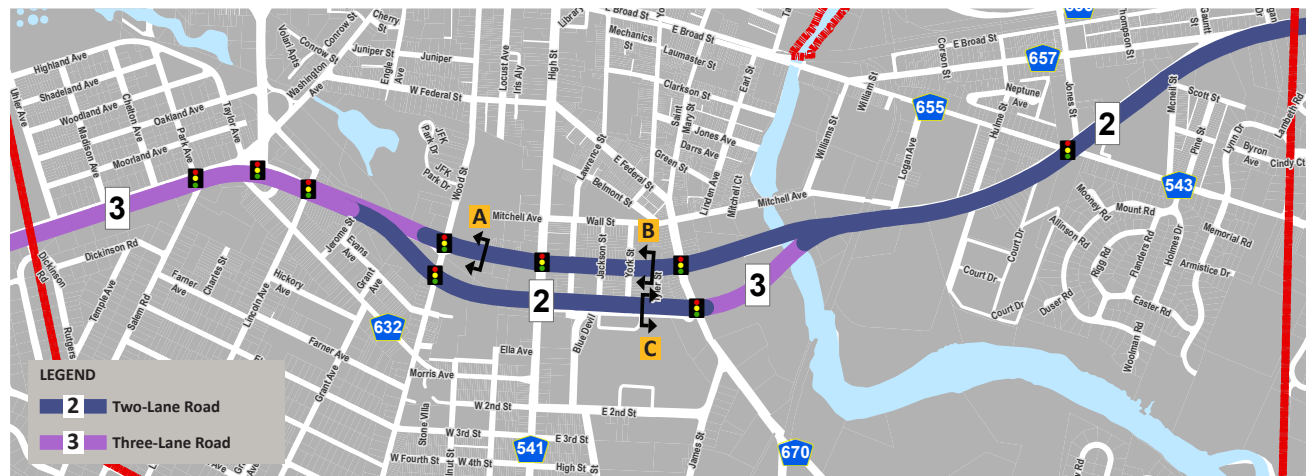


Figure 8: Travel Lanes Map



		Pre-Road Diet Jan - May 2016	Post-Road Diet Jan - May 2017
Vehicle Class	Total Volume (vehicles/day)	34,000	35,000
	Cars & Trailers 	Northbound: 57.1% Southbound: 70.0%	Northbound: 65.0% Southbound: 65.5%
	Heavy Vehicles 	Northbound: 21.4% Southbound: 22.6%	Northbound: 33.4% Southbound: 27.9%
Level of Service	Rt. 130 NB & Wood St St	A	B
	Rt. 130 NB & High St St	C	C
	Rt. 130 NB & Jacksonville Rd Rd	B	B
	Rt. 130 SB & Wood St St	C	C
	Rt. 130 SB & High St St	D	C
	Rt. 130 SB & E. Federal St St	C	C
85 th Percentile Speeds	Route 130 Northbound AM Peak (7:00-8:00 AM) PM Peak (2:30-3:30 PM)	Total: 41 MPH 36-40 MPH 36-40 MPH	Total: 45 MPH 43 MPH 43 MPH
	Route 130 Southbound AM Peak (7:00-8:00 AM) PM Peak (2:30-3:30 PM)	Total: 39 MPH 36-40 MPH 36-40 MPH	Total: 39 MPH 41 MPH 38 MPH
Crash Analysis	Total Crashes (Fatality/Injury/Non-Injury)	231 (2/68/161)	186 (0/69/117)
	- Vehicle Only (Fatality/Injury/Non-Injury)	224 (0/65/159)	184 (0/67/117)
	- Pedestrian (Fatality/Injury/Non-Injury)	7 (2/3/2)	2 (0/2/0)

Figure 9: Pre & Post Road Diet Summary

Pre & Post Road Diet Analysis

Volume on Route 130 has not changed significantly in the section where the road diet was implemented. Approximately 34,000 vehicles per day in 2014 vs. 35,000 in 2017 (Appendix A: Traffic Count Data).

Heavy vehicles make up about a third of all traffic while cars account for two-thirds.

The reduction to two travel lanes had minimal affect on the level of service (LOS) along the corridor. LOS decreased during the evening peak hour at Route 130 NB and Wood Street from A to B and LOS increased during the evening peak hour at Route 130 SB and High Street from D to C. (Appendix B)

Findings indicate that 85th percentile speeds have either remained constant or increased since the road diet. Reducing the number of travel lanes did not create additional congestion that would force drivers to slow down.

Despite increases in vehicular speed, there has been a decrease in both total number and severity of crashes along the corridor.

Compared to Pre-Road Diet data, fatal crashes were eliminated. Total crashes decreased from 231 to 186 (-19.5%), vehicular crashes reduced from 225 to 184 (-18.2%) and pedestrian crashes reduced from 7 to 2 (-71%).

SUMMARY OF KEY FINDINGS, ISSUES & OPPORTUNITIES

Route 130 is an important commercial corridor where many of the customers rely on cars and trucks. However, it also divides the City and makes travel between the schools and neighborhoods difficult. The school community and City have experienced multiple tragedies along the corridor and have expressed a desire for a better balance of transportation options, especially for people walking.

Key Findings

- » The road diet implemented in the school zone area of the study area (milepost 45.8 to 46.6) has not affected level of service or motor vehicle speeds.
- » There has been a significant reduction in both total crashes and crash severity since the road diet implementation.
- » The intersection of Route 130 and High Street has the most crashes in the study area.

Issues

Some of the challenges and constraints identified along Route 130 in Burlington City include:

Long Crossings

Route 130 has multiple long crossings. Long pedestrian crossing distances increase pedestrian exposure to potential conflicts with vehicles. Some crossings along the corridor are over 100 feet. Long crossings are particularly burdensome for disabled or slow-walking pedestrians who take longer to cross. NJDOT Pedestrian Planning and Design Guidelines call for a refuge for any crossing longer than 60 feet.

Large Corner Radii

Corner radii directly influence vehicle turning speeds and pedestrian crossing distances. The larger the radius, the higher the turning speed and the longer the pedestrian crossing. Many intersections in the Route 130 area have very large curb radii. This is a significant safety issue for pedestrians trying to cross where high speed turns may occur.

Limited Pedestrian Waiting Areas

Pedestrian waiting areas at some intersections along Route 130 are limited and have obstacles, such as utility poles and boxes, which obscure sightlines between drivers and pedestrians. When the landing area is inadequate, people waiting to cross the roadway have little protection from turning vehicle traffic.



Example of long crossing



Large corner radius



Pedestrian waiting area



Turning movements on and off Route 130

Turning Movements

Throughout the corridor, there are substantial turning movements on and off Route 130. Turns by motor vehicles can be very dangerous for pedestrians, especially when taken at high speeds. Motorists may be more focused on looking for a gap in traffic rather than the potential for pedestrians in their path.



Makeshift pedestrian walkway

Sidewalk Gaps and Condition

Pedestrian facilities are inconsistent along the corridor and many are in poor condition. There are large gaps in the sidewalk network that pose significant danger to pedestrians. Driveways and parking lots often serve as makeshift pedestrian facilities. In addition, there is substantial litter and broken glass along the sidewalk and side of the road.



Unmarked crosswalk

Unmarked Crosswalks

Crosswalks exist at all legs of all intersections but not every crosswalk is marked with painted lines. All unsignalized intersections along Route 130 have unmarked crosswalks. In New Jersey, the driver of a vehicle must stop and stay stopped for a pedestrian crossing the roadway within any marked crosswalk, and they shall yield the right-of-way to a pedestrian crossing the roadway within an unmarked crosswalk at an intersection. Marked crosswalks benefit

pedestrians by directing them to cross at locations where appropriate traffic control exists and drivers know where to expect pedestrians.

Speeding

During field observations, no vehicles were observed traveling at or below 25 MPH while the School Zone Speed Limit was in effect. The Burlington City Police Department occasionally uses pace cars to try to slow motor vehicle travel during school travel times.

Roadway Volume

Route 130 is a high volume road, with 35,000 to 40,000 cars per day. The more cars and trucks, the more turns on and off the road, the more potential weaving of cars, the more road noise, and the more potential conflicts between all roadway users.

Noise

A smartphone sound measurement app consistently measured between 70-80 dB of sound along the corridor but would peak to around 90 dB when large trucks would pass. According to the FHWA, “Levels of highway traffic noise typically range from 70 to 80 dB(A) at a distance of 15 meters (50 feet) from the highway. These levels affect a majority of people, interrupting concentration, increasing heart rates, or limiting the ability to carry on a conversation.” Noise

is a contributing factor to safety and limits pedestrian awareness making it difficult to differentiate between the sound of oncoming and turning vehicles.

Lighting

Almost two thirds of the crossings at intersections are too dim, according to NJDOT guidelines. There is no lighting at some of the unsignalized intersections.

Curb Ramps

Curb ramps provide pedestrians with a means of negotiating any change of elevation between the sidewalk and roadway. This is especially important for people using wheelchairs, strollers, walkers, crutches, handcarts, and pedestrians who have trouble stepping up and down high curbs. Per 2004 Americans with Disabilities Act (ADA) guidelines, curb ramps must be installed at all intersections and at mid-block locations to access on-street accessible parking spaces, where provided, and at all new passenger loading zones. Many curb ramps throughout the Route 130 area do not meet Americans with Disabilities Act guidelines. Cross slope, ramp orientation, and the presence or absence of truncated domes are all factors in proper curb ramp design.

Sign Placement

Fieldwork indicated multiple areas where signs were placed below the Manual on Uniform Traffic Control Devices (MUTCD) recommended 7' minimum for an urban sidewalk setting to allow pedestrians safe passage. In addition to some signs mounted below recommended heights, some roadway signs are blocked by utility poles and/or other signs, limiting their visibility to motorists.

Divided Roadway

The large median with commercial businesses results in multiple curb cuts, sign clutter, lack of landscaping, and conflicts between drivers making turns into and out of commercial properties and motorists traveling through the City. Because the roadway is divided, students crossing Route 130 must navigate two roads rather than one, with additional opportunities for conflict.



Obscured signage on Route 130 corridor



Commercial businesses, Route 130



Route 130 SB South of High Street (CR 541)



Route 130 NB view across Salem Road



Route 130 NB view across Jacksonville Road (CR 670)

Opportunities and Potential Improvements

Based on the field investigation, the following “problem locations” were identified during the PRSA workshop:

1. The 0.8-mile section where the road diet was implemented (milepost 45.25 to 47.55)

The road diet had little impact on motorist speeds. Additional improvements could include additional gore striping, moving curbs or adding temporary curbs to make the road diet permanent, adding sidewalks, and landscaping.

2. Route 130 NB and Salem Road

Missing sidewalks, curb ramps, and median barrier create an unfriendly pedestrian environment. The crossing of Route 130 SB has been upgraded to include curb ramps.

3. Route 130 NB and Jacksonville Road (CR 670).

This crossing is about 120 feet long. Creating a pedestrian refuge and/or reducing curb radii could greatly improve this crossing for pedestrians.

In addition, the following list of opportunities and ideas for potential improvements was developed:

- » Continue the road diet through the 0.2-mile segment along northbound Route 130 north

of Jacksonville Road.

- » Combine speed limit signs onto one pole and add flashing beacons to note when the 25 MPH limit is in effect.
- » Add additional landscaping.
- » Reduce the turn radius at some intersections.
- » Stripe crosswalks and install ADA compliant curb ramps at unsignalized intersections along Route 130.
- » Encourage property owners to provide 5-foot wide sidewalks, where not currently in place.
- » Consider gateway treatments at the entrances to Burlington City.
- » Install art along the High School’s chain link fence.
- » Work with Wawa to construct a sidewalk to allow pedestrians to access the store from the corners (desire lines) without using the driveway access, similar to the sidewalk at Walgreens at High Street.
- » Construct a sidewalk along the Route 130 frontage of the Wilbur Watts School property.
- » Construct sidewalk along the east side of Wood Street between 130 SB and NB.

03 PEDESTRIAN ROAD SAFETY WORKSHOP



PRSA workshop student input



PRSA workshop existing conditions

CONTEXT

US Route 130 through Burlington City in Burlington County has been identified as a high pedestrian crash corridor. Between 2012 and 2016 there were nine crashes involving a pedestrian, including three fatalities, and four crashes involving a bicyclist. The New Jersey Department of Transportation (NJDOT) has been working with the community and local officials for many years to improve safety along Route 130 in Burlington City.

Overview

The Pedestrian Road Safety Audit (PRSA) was conducted as part of efforts to address existing conditions and improve pedestrian safety throughout the corridor. It also served as the initial step in the NJDOT process for generating new projects by defining an existing problem.

The Route 130 PRSA was conducted on March 26th, 2018 from 12:30 - 4:30 pm at Burlington City High School. It was attended by members of the Route 130 PRSA Safety Impact Team (SIT), a diverse stakeholder group comprised of community members with local knowledge and expertise.

Thanks to student engagement and participation, particular focus has been given to increasing safety in school zones making these areas a priority for the PRSA.

Background Data

Participants were provided with a wide range of information detailing the project background and scope, area demographics, identified issues, and potential recommendations.

Based on comparisons of traffic data collected in 2014 and in 2017 (the road diet was implemented in 2016):

- » Traffic volume has not changed significantly.
- » Level of service along the corridor has remained similar.
- » 85th percentile speeds have remained consistent or increased.
- » Crashes have decreased in total number and severity.

The reduction of travel lanes from 3 to 2 has not

created additional congestion along Route 130 that would force drivers to slow down. Additionally, the road diet did not shorten pedestrian crossing times since there was no impact to turning lanes. It was noted that NJDOT will be upgrading curb ramps and traffic signal push buttons along the corridor to meet ADA standards.

Safety Audit

After the initial introduction and briefing, meeting attendees were asked to choose one of three groups to conduct field observations for the audit portion of the workshop. The groups were as follows:

- » Group A walked northbound Route 130 from Jacksonville Street to Wood Street and back.
- » Group B walked southbound Route 130 from Jacksonville Street to Wood Street and back.
- » Group C drove the corridor in a van and walked the area around Keim Boulevard.

After completing field inspections, attendees reconvened and shared their observations and findings which are summarized as follows:

- » The corridor is loud and jarring at times. There is considerable truck traffic.
- » Pedestrian facilities vary from concrete and asphalt sidewalks to dirt paths.
- » There needs to be more awareness that you

are in a school zone without adding to sign clutter.

- » Some signs are posted too low and others too high.
- » Sight lines are poor.
- » Motorists are not yielding to pedestrians. Pedestrians have to check over their shoulders while crossing.
- » Motorists take turns quickly and close to the corner.
- » Trucks still cut turns and “jump the curb” going from Jacksonville Road onto Route 130 NB.
- » On side streets (Tyler, York, Jackson, Lawrence):
 - » Curb ramps are located away from the intersection and in some cases behind the stop bar.
 - » Crosswalks are not marked.
- » The outside lane on Route 130 SB through the road diet section is still wide (about 16’).
- » Grates are not bike safe.
- » Students feel safer waiting to cross Route 130 NB at High Street in front of the liquor store. The reduction from 3 to 2 lanes created a buffer.
- » Car dealerships park cars in the ROW.
- » There is a new bike shop on Route 130 in the southern part of the study area.



SIT members conducting field work



SIT members conducting field work



SIT members inspecting crossing



Route 130 Sidewalk gaps

- » Poor maintenance of sidewalks.
 - » Significant traffic backups are present at Mott Avenue and Salem Road due to bridge openings.
 - » Mott Avenue has become a bypass to avoid Route 130 congestion.
 - » Pedestrian scale lighting is poor throughout corridor.
 - » Students routinely walk in the left shoulder created by the road diet.
 - » Students walk in the vicinity of Route 130 & Salem Road – there is an elementary school two blocks away.
- Based on discussions, the following potential solutions and recommendations were proposed:
- » There is room for a bike facility.
 - » There is an opportunity to consolidate signs especially the 40 MPH speed limit and the 25 MPH school zone speed limit.
 - » Road diet should be more permanent. Yellow shoulder striping could be more prominent with the addition of gore striping. Moving the curbs is also a potential solution, either via bump-outs or a corridor wide reconfiguration.
 - » Jacksonville and Route 130 NB could use a pedestrian refuge island; curb extensions; and a larger pedestrian waiting area.
 - » Investigate signal progression as a way to slow traffic.
 - » Perpendicular curb ramps are preferred over apex.
 - » Complete sidewalk network.
 - » More landscaping would buffer noise and give the roadway a “better feel.”
 - » Aesthetics - gateway treatments and banners on light poles.
 - » Redesign the bifurcated section to be two 2-way roads. It was two-way until the 1960’s.
 - » Redevelopment study of the corridor.
 - » Try to incorporate short term striping changes into the coming NJDOT maintenance contract.
 - » Signal upgrades, when done, should include retroreflective back plates on any overhead signals on steel poles.
 - » 11-foot travel lanes should be considered corridor wide.
 - » A two-lane roundabout should be considered as a replacement to the signal at Keim Boulevard.

04 RECOMMENDATIONS

Completing the pedestrian network along and across the Route 130 corridor is the top priority recommendation. This will involve constructing new sidewalks, striping crosswalks, and enhancing crossings across driveways. Each of the concepts described below are included in the Recommendations Matrix on the following pages.

CORRIDOR WIDE RECOMMENDATIONS

In the short- to mid-term (within the next year), corridor-wide recommendations include striping crosswalks across roadways and driveway areas to define and reinforce the pedestrian travel way. Speed limit signs along the corridor can be consolidated and augmented with flashing beacons to clearly identify when the 25 MPH school zone speed limit is in effect. The roadway striping along the reduced travel lane area can also be enhanced to emphasize the ‘road diet’ and discourage motorists from traveling along the newly created shoulder area.

To further reinforce reduced travel speeds through the area, gateway signs can be installed to inform drivers of a change in the environment; and travel lanes can be striped with a reduced width of 11 feet. Traffic signal progression can be evaluated to meter motor vehicle speeds through the school zone.

In the long term (more than one year) larger scale concepts can further enhance pedestrian safety. The largest concept with the most potential pedestrian mobility is to reconfigure the bifurcated section of Route 130, creating two separate two-way roadways. This would require significant traffic modeling to ensure that the through travel capacity is maintained, and

balanced against significant enhancements to the pedestrian travel options through the neighborhood including travel along and across both barrels of the Route 130 corridor.

With or without this major reconfiguration, the sidewalk network can be completed, filling in the gaps of existing sidewalk. Protected bicycle facilities can be considered along the northbound and southbound roadways. Curb extensions or continuous curb relocation can be used to shorten pedestrian crossing distances across Route 130.

Landscape buffers can be planted with vegetation behind the sidewalk to screen the adjacent land uses, such as the Burlington City High School, from through motor vehicles and roadway noise. Traffic signal upgrades to enhance visibility and pedestrian accommodation are listed in the recommendation matrix.

Additional long-term considerations include enhancing the bicycle accommodations along and across the Route 130 corridor, to be prioritized once the adjacent neighborhood bicycle network is further developed. Green infrastructure treatments, such as rain gardens and bioswales, should be considered during any opportunities for corridor-wide enhancements.

ENGINEERING MEASURES

Location	No.	Potential Measures	Responsibility	Time Frame	Cost	Comments
Corridor-Wide (M.P. 45.25-47.55) (Northbound and Southbound)	1	Complete the sidewalk network throughout the study area.	NJDOT	Long-Term	Medium	
	2	Provide a continuous pedestrian route along the corridor by striping crosswalks across all intersecting public streets and constructing concrete sidewalk across all major driveways. Decorative crosswalk murals across local and county roads can be considered to bring extra attention to the crossing locations.	NJDOT	Mid-Term	Medium	To be coordinated with the Route 130 maintenance contract
	3	Consider converting the bifurcated section into two 2-way roads. This will require a detailed analysis of traffic, circulation, business and roadway impacts.	NJDOT	Long-Term	High	
	4	Consider installing a protected bicycle lane/one-way cycle track for both the Northbound and Southbound roadways.	NJDOT	Long-Term	High	
	5	Reduce sign clutter and consolidate speed limit signage.	NJDOT	Short-Term	Low	
	6	Add gore striping to the yellow shoulder striping to make the road diet more visible.	NJDOT	Mid-term	Low	To be coordinated with the Route 130 maintenance contract
	7	Consider installing bumpouts/curb extensions or extending the curb corridor-wide to make the road diet more impactful and to create wider sidewalks and reduce the crossing distances.	NJDOT	Long-Term	High	
	8	Investigate signal progression to meter traffic through the school zone.	NJDOT	Mid-term	Medium	

DRAFT_Recommendations_Matrix_Route130PRSA_7 16 18.xlsx

COST

Low: <\$50,000
Medium: \$50,000 - \$250,000
High: \$250,000 +

TIME FRAME

Short term: 0-6 months
Mid term: 6 months – 1 year
Long-term: 1 year or more

ENGINEERING MEASURES						
Location	No.	Potential Measures	Responsibility	Time Frame	Cost	Comments
	9	Improve pedestrian-scale lighting levels along the corridor and at intersections as per the preliminary lighting assessment.	NJDOT	Long-Term	Medium	See attachment: Lighting Assessment
	10	Consider adding a landscaped buffer along the sidewalk adjacent to Burlington City High School to improve the appearance of the corridor and to buffer vehicular noise for pedestrians.	NJDOT	Long-Term	Medium	
	11	Consider adding gateway treatments, such as banners on the light poles, to inform drivers of a change in environment.	Burlington City	Mid-Term	Medium	
	12	Consider narrowing all travel lanes to 11' wide lanes.	NJDOT	Mid-Term	Medium	
	13	Future signal upgrades should include retroreflective back plates on any overhead signals on steel poles.	NJDOT	Long-Term	Medium	
	14	Replace 8" traffic signal heads with 12" (LED) traffic signal heads.	NJDOT	Long-Term	Medium	
	15	Traffic signal equipment on islands should be relocated behind the curb line.	NJDOT	Long-Term	Medium	
	16	For traffic signals that are running split timing, the split phase should include four sections (fourth head arrow) on traffic signal heads facing that approach.	NJDOT	Long-Term	Medium	
	17	Complete Street concepts should include separated bicycle facilities, such as separated bike lanes or shared use path, once the adjacent neighborhood bicycle network is developed.	NJDOT	Long-Term	High	
	18	Green infrastructure treatments, such as rain gardens and bioswales, should be considered during any opportunities for corridor-wide enhancements.	NJDOT	Long-Term	High	

DRAFT_Recommendations_Matrix_Route130PRSA_7 16 18.xlsx

COST
 Low:<\$50,000
 Medium: \$50,000 - \$250,000
 High: \$250,000 +

TIME FRAME
 Short term: 0-6 months
 Mid term: 6 months – 1 year
 Long-term: 1 year or more

SITE SPECIFIC RECOMMENDATIONS

Route 130 northbound at Jacksonville Road

Short Term

In the short term, the intersection of Route 130 northbound at Jacksonville Road (CR670) could be enhanced by striping a pedestrian refuge along the crosswalk across the Jacksonville Road approach to Route 130 northbound. This could be complimented with flexible, reflective bollards to further reinforce the large area of pavement that is not intended for motor vehicle movements.

In addition, there may be an opportunity to incorporate an artistic crosswalk mural project on side streets adjacent to Route 130. This component could serve as an awareness opportunity to further foster student engagement and draw extra attention to the school's presence.

Long Term

In the long term this intersection could be reconfigured with tighter turning radii and/or curb extensions to reduce the pedestrian crossing distances. Two alternatives for this are included on the following pages, one with a curb extension on the right side of Route 130 northbound, and an alternative concept with a curb extension on the left side. Both of these

concepts greatly reduce the distance pedestrians must travel to cross Route 130.

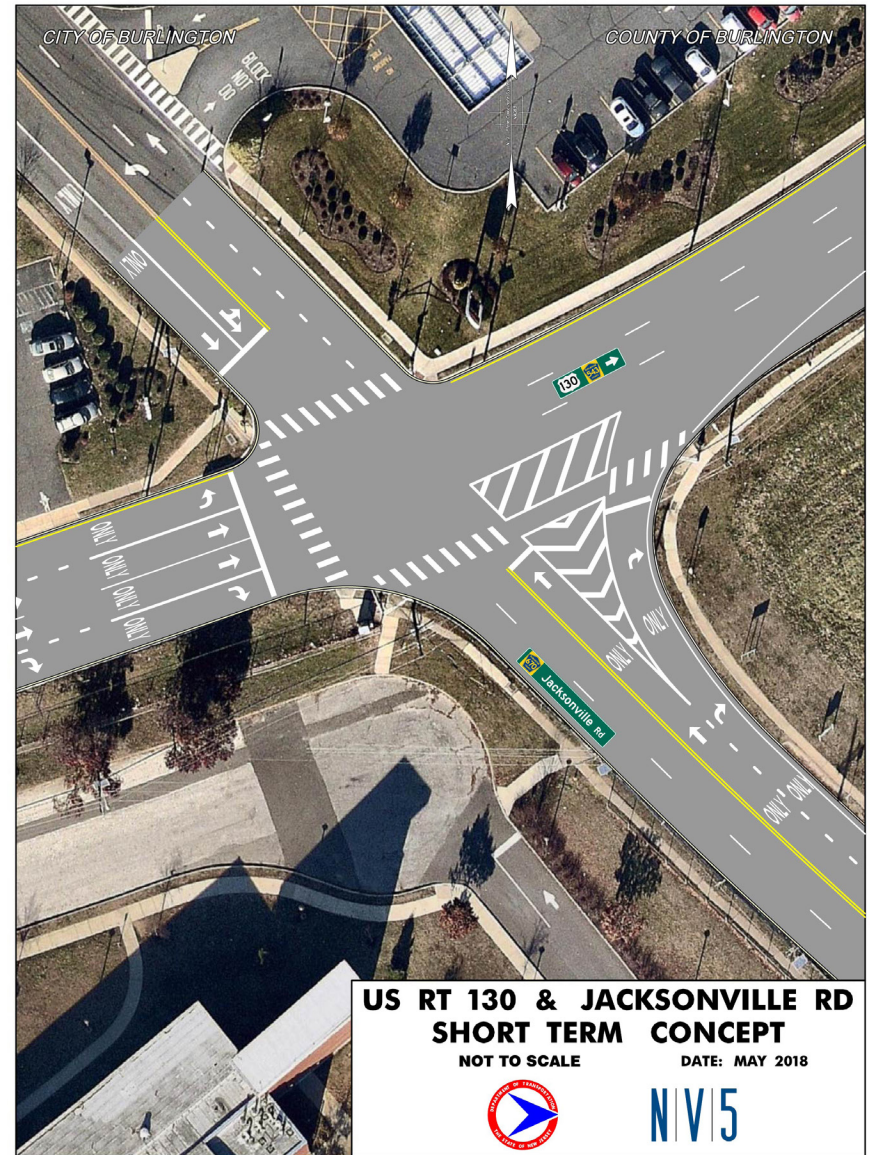
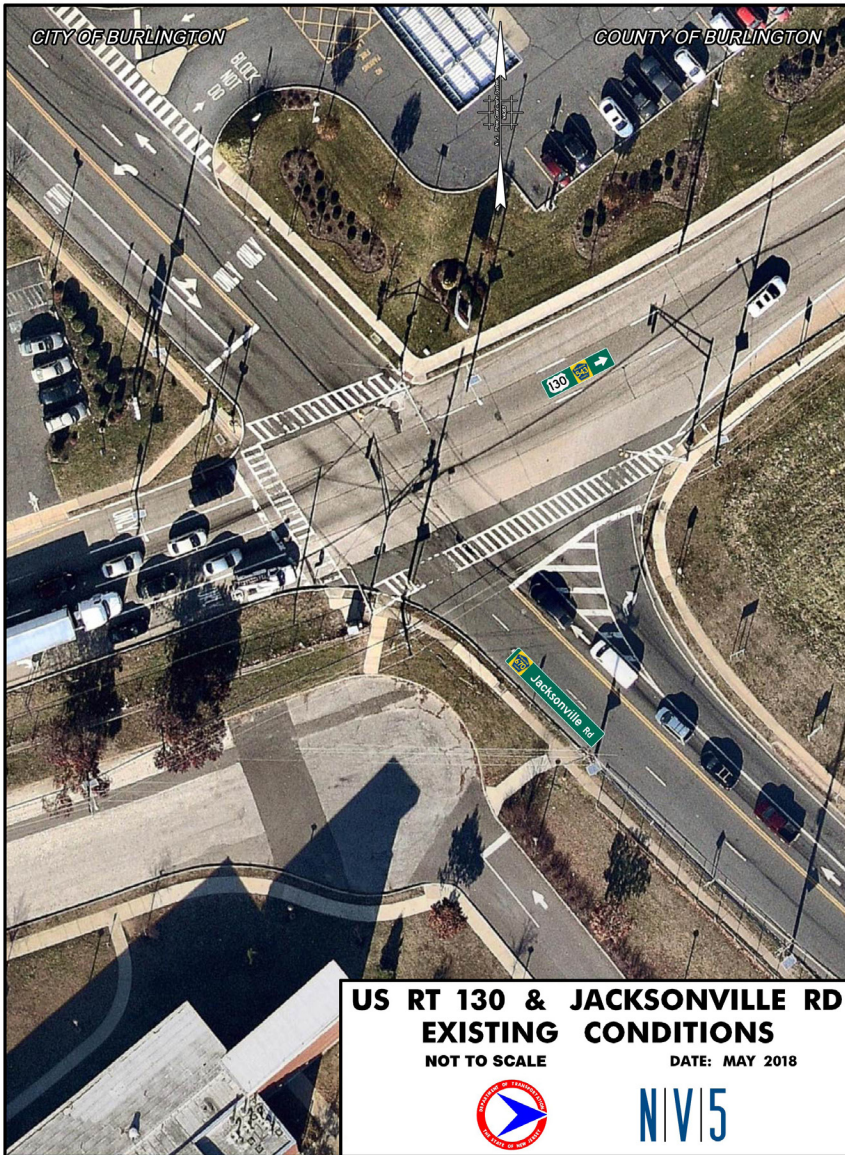
The right side curb extension has the added benefit of creating additional pedestrian queuing space adjacent to the high school property. Each of these concepts also assume that the dedicated left turn lane would be eliminated.

The impact of this lane configuration change will need to be further investigated and the concept verified in a future design phase of this project. Reconstructing this intersection with relocated curb lines will expand the traffic calming effect of the recent road diet restriping.

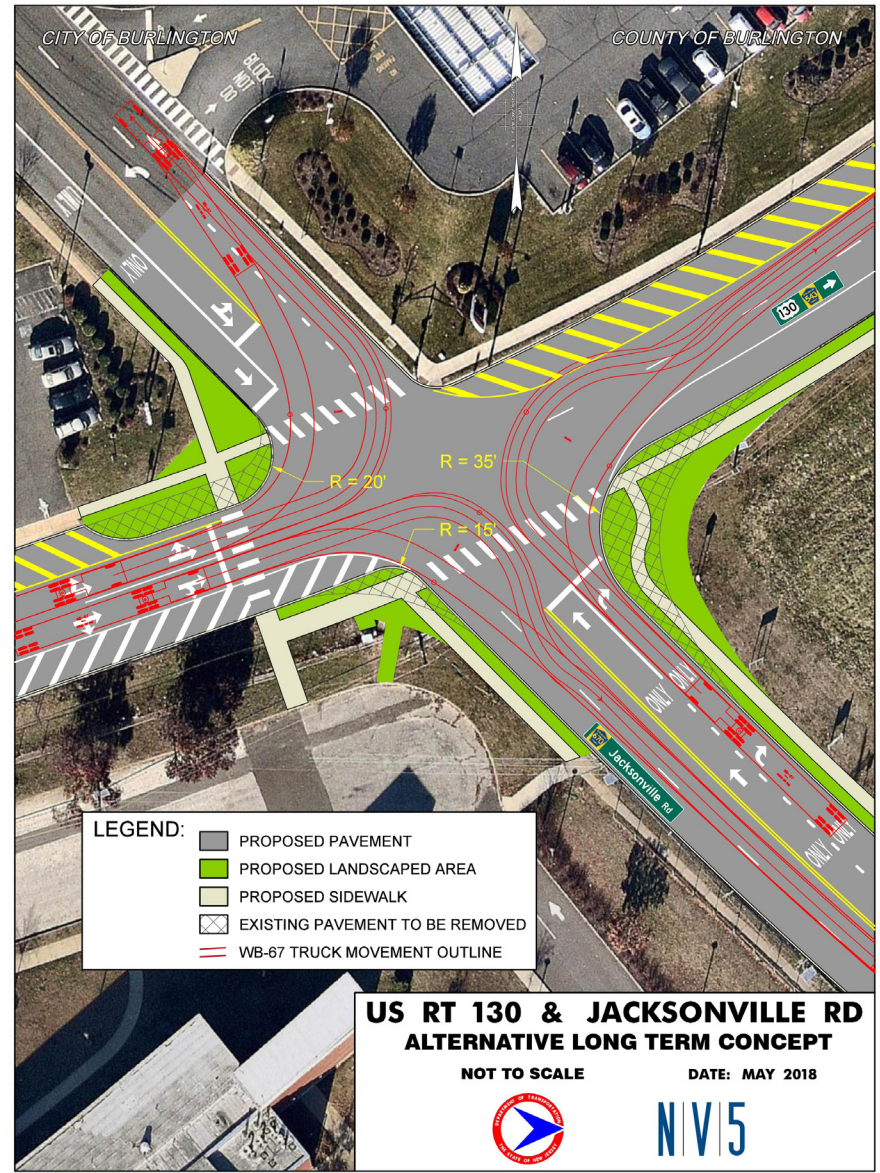
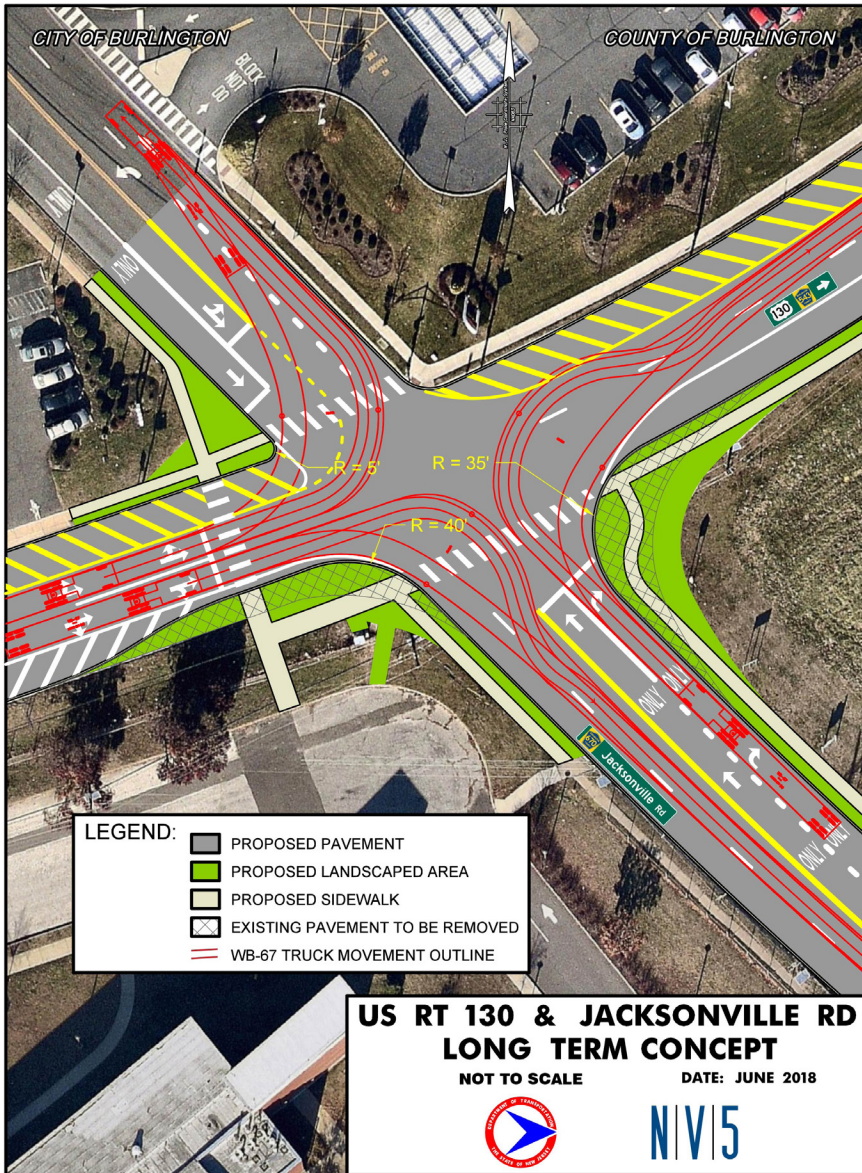
ENGINEERING MEASURES

Location	No.	Potential Measures	Responsibility	Time Frame	Cost	Comments
US Rt 130 & Jacksonville Rd Intersection	1	Stripe a pedestrian refuge by expanding the channelization island along Jacksonville Road northbound approach to the intersection with Route 130 northbound shortening the exposure area and crossing distances along Route 130 across Jacksonville Road. This can be complimented with collapsible, reflective bollards.	NJDOT	Short-Term	Low	
	2a	Construct a curb extension/bumpout on the northwest corner of Route 130 northbound along the left side of the roadway approach to the intersection with Jacksonville Road to shorten crossing distances across Route 130 and to reinforce the traffic calming effect of the road diet. Eliminate dedicated turn lane, change to a combined lane for through/ left movements.	NJDOT	Long-Term	Medium	Sidewalk recommendations are included on the Long Term concept graphic.
	2b	Reduce the turning radii at the intersection of Route 130 northbound at Jacksonville Road on the southeastern and northeastern corners to reduce the speed of turning vehicles. Eliminate dedicated turn lane, change to a combined lane for through/right movements.	NJDOT	Long-Term	Medium	

Route 130 NB & Jacksonville Rd



Route 130 NB & Jacksonville Rd



Route 130 at Route 413

The long-term concepts to help reduce crashes at the Route 130 intersection with Route 413 include a pair of roundabouts and restricting motor vehicle access across Route 130 at the intersection with Lincoln Avenue.

Pedestrian crossings will be accommodated at the traditional traffic signal at Salem Avenue, and at the pedestrian actuated hybrid beacon (HAWK) signal at Lincoln Avenue. Crosswalks are not recommended across the multi lane approaches to the Route 413 roundabout.

This concept is displayed in detail on the following page, and will need to be further investigated and the concept verified in a future design phase of this project.

The paired roundabouts along NJ Route 413 are designed to provide all traffic movements to the adjoining neighborhoods in two centralized locations. The roundabout at the intersection of Keim Boulevard (NJ Route 413) and Washington Street is a modernization of the existing one-way roadways that function as an uncontrolled traffic circle.

By moving the local neighborhood connection to Keim Boulevard from Oakland Avenue to Moorland Avenue and providing bi-directional access, Keim Boulevard will no longer act as a divider between the neighborhoods on either side of the roadway. Traffic speeds are anticipated to be reduced as large-radius one-way roadways will be replaced. In addition, the

roadway footprints are greatly reduced, allowing for repurposing of areas adjacent to the nearby waterway for general public access.

The roundabout at US Route 130 and NJ Route 413 eliminates an existing multi-legged, multiple-phased signalized intersection with jughandles with a multi-lane modern roundabout. Access from Taylor Avenue will be rerouted to these roads via Park Avenue or the new connection at Moorfield Avenue, eliminating a leg of the intersection.

The access point to Route 413 from the neighborhood to the south of US Route 130 has been moved to Mott Avenue, shifting traffic away from Lincoln Avenue. This reduces the number of conflict points along US Route 130 and allows for the creation of independently actuated hybrid beacon “HAWK” signals at Lincoln Avenue for northbound and southbound US Route 130. These HAWK signals will provide a safe crossing for pedestrians as this signal currently has no pedestrian facilities. A refuge will be provided in the grass median, cutting the crossing distance per cycle in half.

The signal at Salem Road and Park Avenue will be modified so that signals on northbound and southbound US Route 130 act independently. The signals will turn red for US Route 130 upon pedestrian activation or the presence of a vehicle queues on the side streets for only half of US Route 130 at a time. Signal timings will be based on a pedestrian crossing to the median as opposed to the full width of the roadway, reducing delay and allowing more frequent pedestrian crossing cycles.

ENGINEERING MEASURES						
Location	No.	Potential Measures	Responsibility	Time Frame	Cost	Comments
US Rt 130 & NJ Rt 413/ Keim Boulevard Intersection	1a	Consider adding a multi-lane roundabout as a replacement to the traffic signal along Route 130 (milepost 45.69) at Route 413/ Keim Boulevard and along Route 413/ Keim Boulevard at Lincoln Avenue.	NJDOT	Long-Term	High	Roadway and sidewalk recommendations are displayed on the Long Term concept graphic.
	1b	Close access across Route 130 at Lincoln Avenue (milepost 45.75) by extending the vegetated median, and changing the full traffic light to a "HAWK" pedestrian actuated hybrid beacon traffic signal. Install a high visibility crosswalk. Close Lincoln Avenue northerly access from Route 130.	NJDOT	Long-Term	High	
	1c	Route 130 at Salem Road/ Park Avenue (milepost 45.57) crosswalks will be realigned to minimize pedestrian crossing distance and allow Route 130 NB & SB signals to operate independently. Route 130 SB signal is to remain green for Route 130 SB until activated by vehicle detection or pedestrian push button. This will minimize traffic impacts to the future roundabout. The Route 130 NB signal can be used to help meter traffic in the roundabout as well as facilitate movements to/from Salem Road.	NJDOT	Long-Term	High	

DRAFT_Recommendations_Matrix_Route130PRSA_7 16 18.xlsx

COST

Low:<\$50,000

Medium: \$50,000 - \$250,000

High: \$250,000 +

TIME FRAME

Short term: 0-6 months

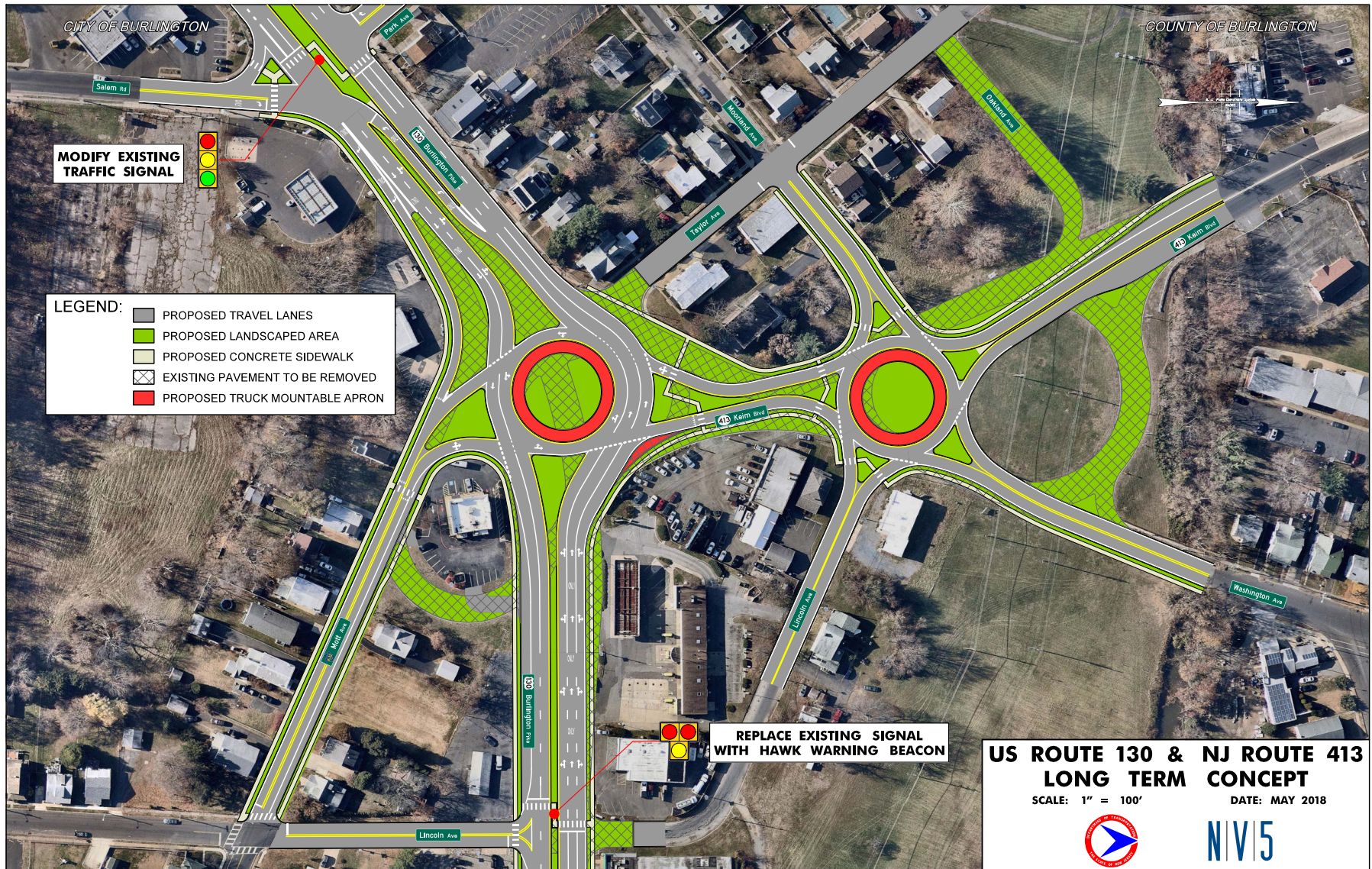
Mid term: 6 months – 1 year

Long-term: 1 year or more

Route 130 & Keim Blvd



Route 130 & Keim Blvd



05 NEXT STEPS

Overview of next steps

Any major concepts that require further study of design should be advanced through the project development pipeline. A logical next step would be to develop specific problem statements for each. This is expected to be a next step for each of the concepts that require more construction than installing signs or restriping the roadway.

Several short-term concepts are already in process, such as the crosswalk and refuge to be striped across Jacksonville Road along Route 130 northbound.



NV5