



SR 141 Pedestrian Safety Study

SR 273 (Frenchtown Road/Delaware Street) to SR 37 (Commons Boulevard)

2019 Hazard Elimination Program – Site U-2

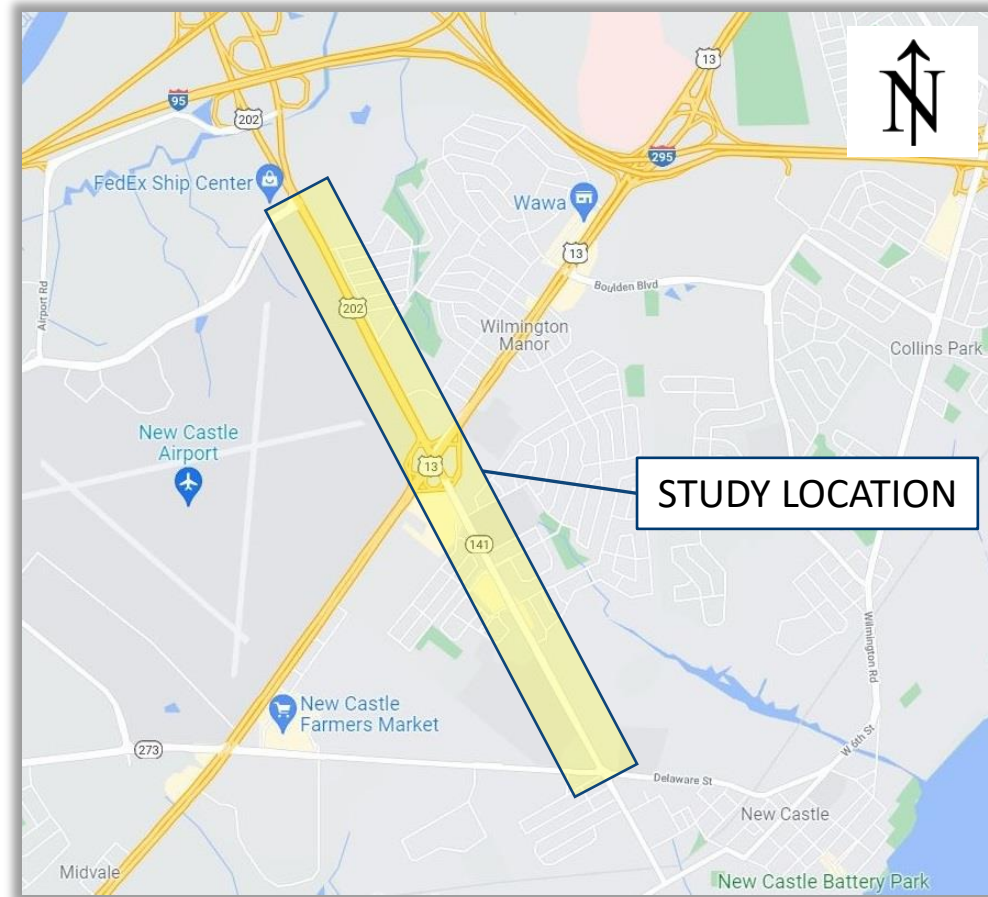
June 2023



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Study Scope

- Review pedestrian crash history
- Observe and collect pedestrian, transit, and traffic data
- Gather adjacent land use data
- Evaluate pedestrian safety along corridor and identify recommendations



EXISTING CONDITIONS

SR 141 – Corridor Characteristics

- 2.37-mile Other Principal Arterial
- Roadway Character
 - SR 273 to SR 37: 4-lane, divided
 - Turn lanes at major intersections
 - No shoulder from SR 273 to Washington Ave (10' minimum shoulder/bike lanes provided from Washington Ave to Commons Blvd)
 - Intermittent lighting along the corridor
 - No designated bike routes
- Traffic Control
 - 8 signalized intersections
 - Grade separated interchange at US 13/US 40 (N. Dupont Hwy)
 - 8 unsignalized median crossovers/U-turn locations
 - Numerous private driveways and business entrances

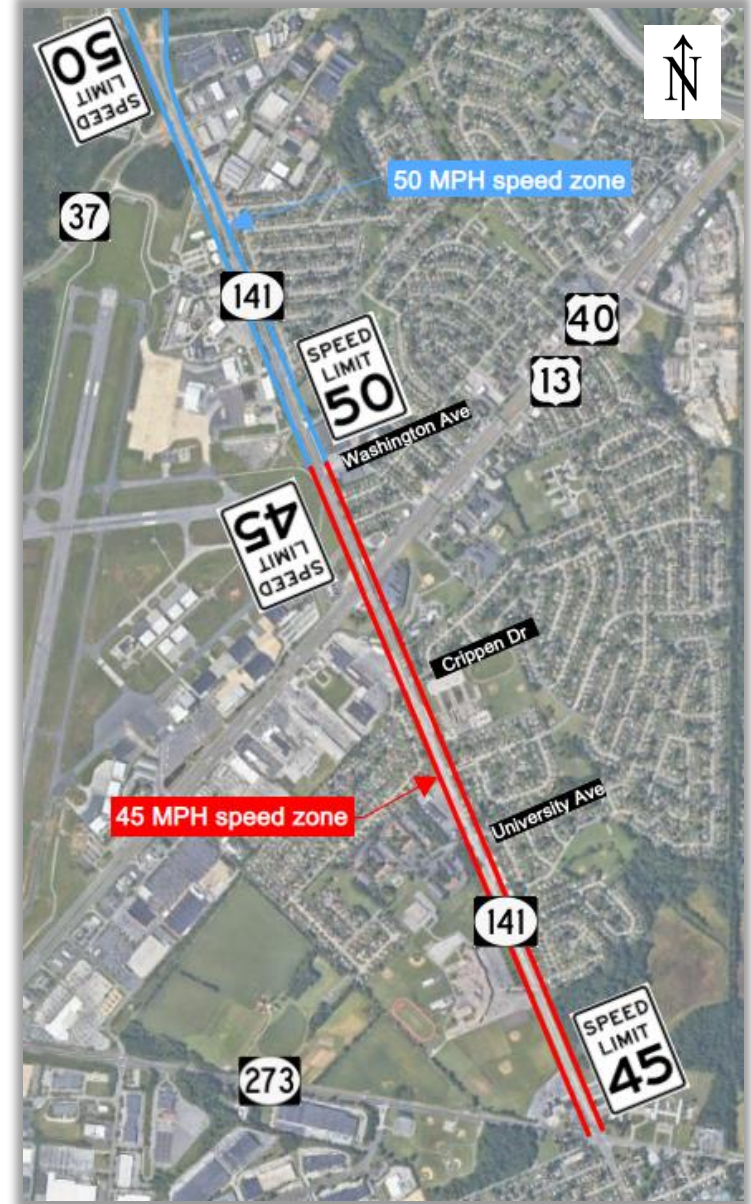
AADT (2021 DeIDOT Traffic Summary):

- SR 37 to Jay Dr: **41,767**
- Jay Dr to US 13: **38,038**
- US 13 to University Ave: **20,972**
- University Ave to SR 273: **14,972**



SR 141 – Corridor Characteristics

- Posted Speed Limits
 - SR 273 to north of Washington Ave:
 - 45 MPH – NB and SB
 - North of Washington Ave to north of SR 37:
 - 50 MPH – NB and SB
- Major Pedestrian Generators
 - Delaware Valley Classical School
 - Schoolside Apartments
 - Carrie Downie Elementary School
 - William Penn High School
 - Basin Shoppes & Penn Mart Shopping Centers
 - George Read Middle School
 - Wawa convenience store
 - Multiple stand-alone stores and restaurants
 - Residential developments



SR 141 – Corridor Characteristics

Signalized Pedestrian Crossings of SR 141



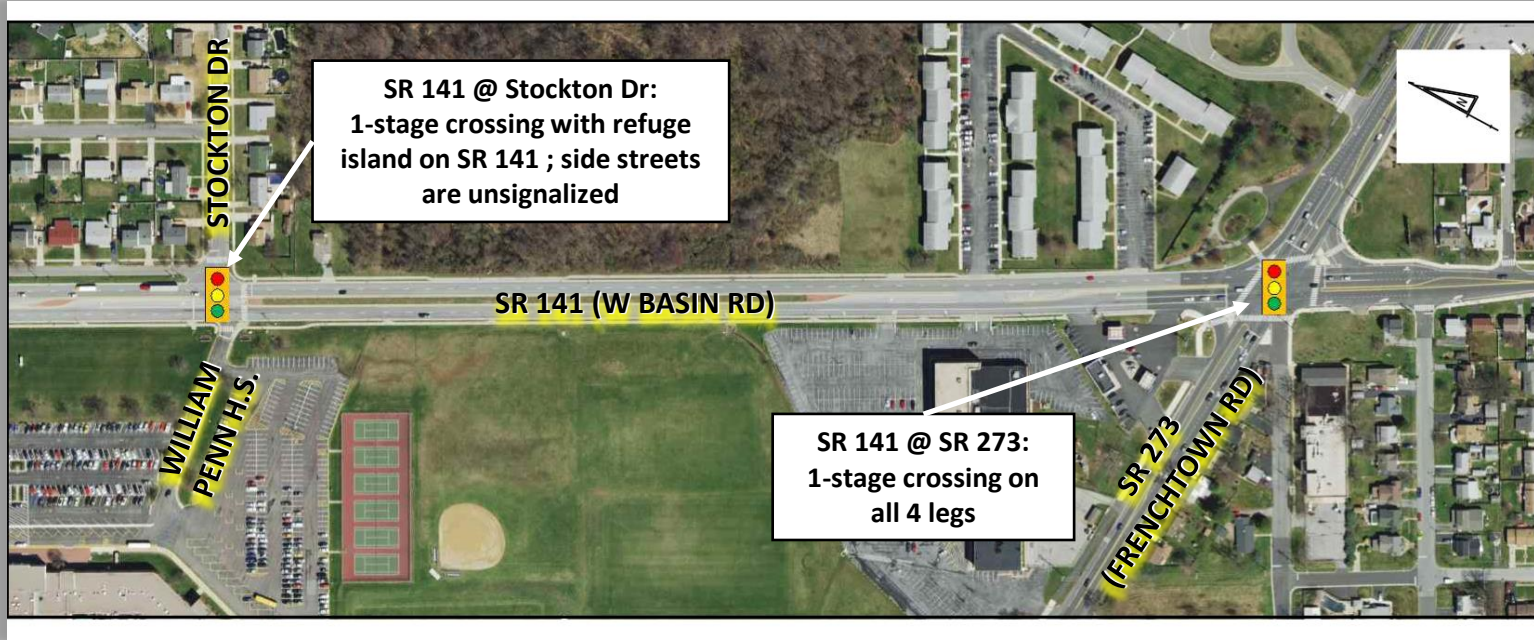
SR 141 – Corridor Characteristics

Signalized Pedestrian Crossings of SR 141

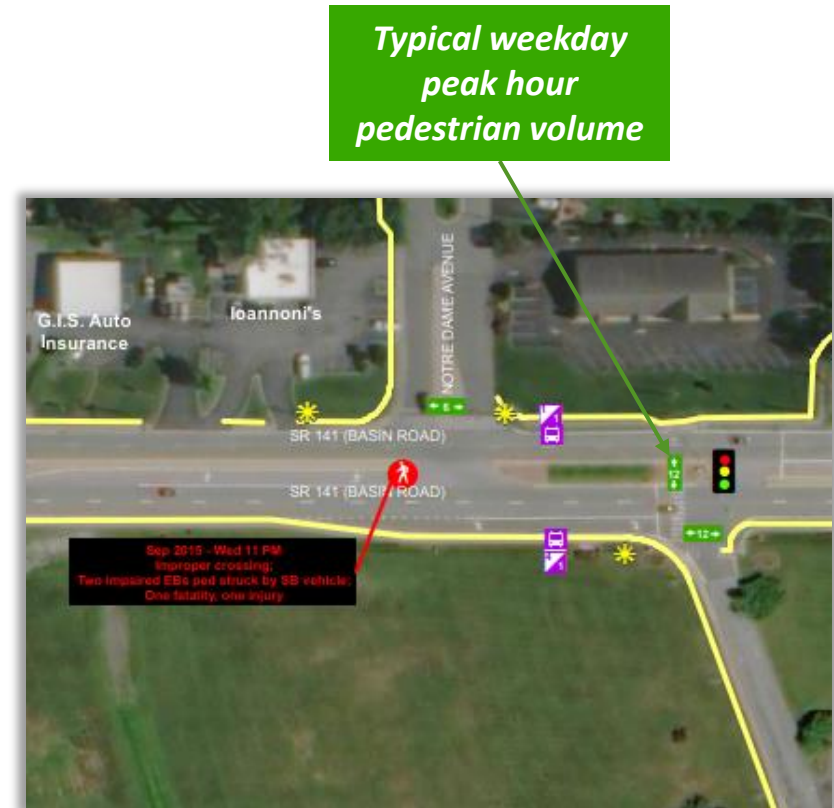


SR 141 – Corridor Characteristics

Signalized Pedestrian Crossings of SR 141

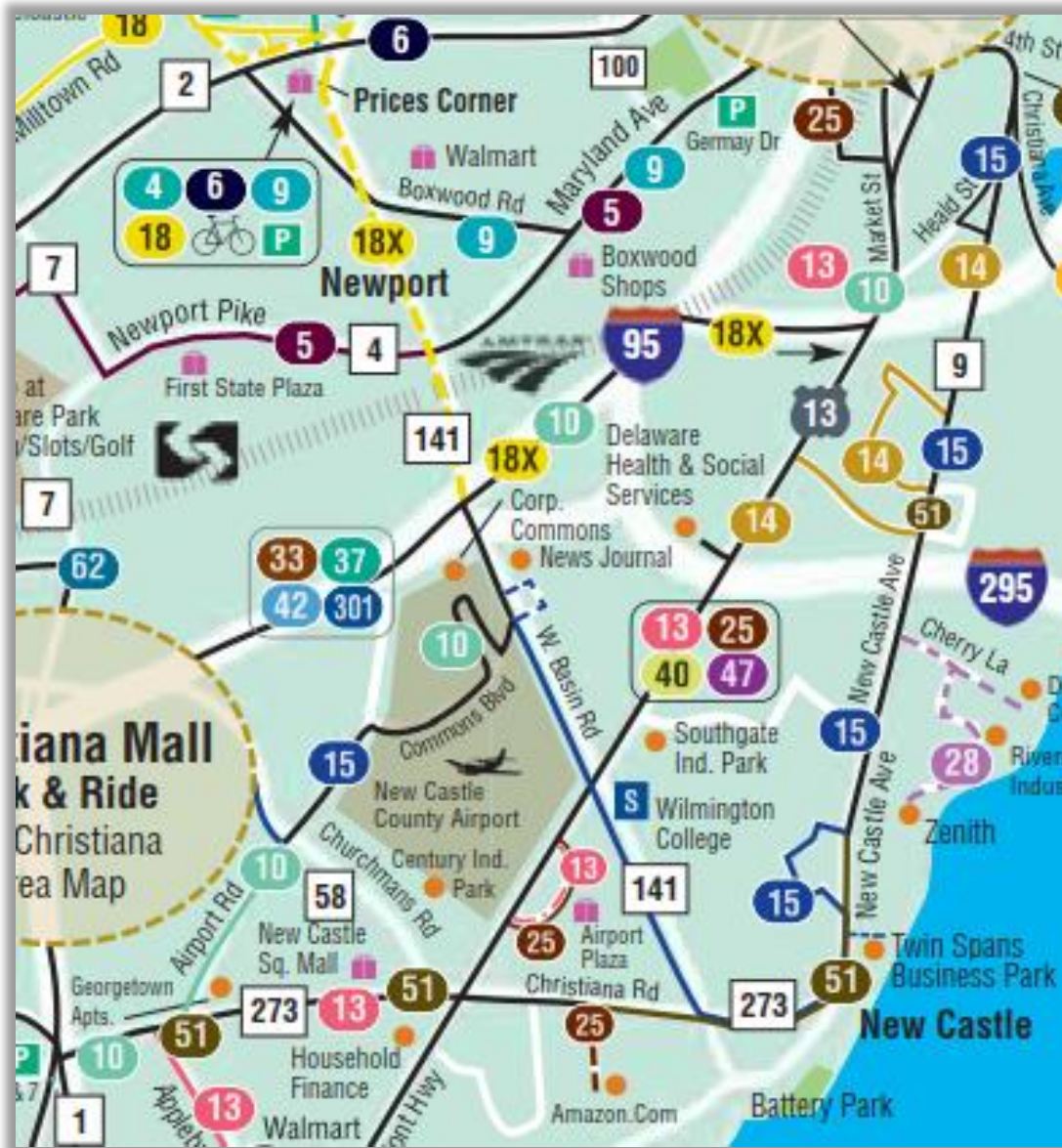


- May 2022 during typical weekday conditions *
- AM Peak (7 – 9 AM)
- Midday Peak (11 AM – 1 PM)
- PM Peak (2:30 – 6 PM)
- Data summarized on Existing Conditions figures

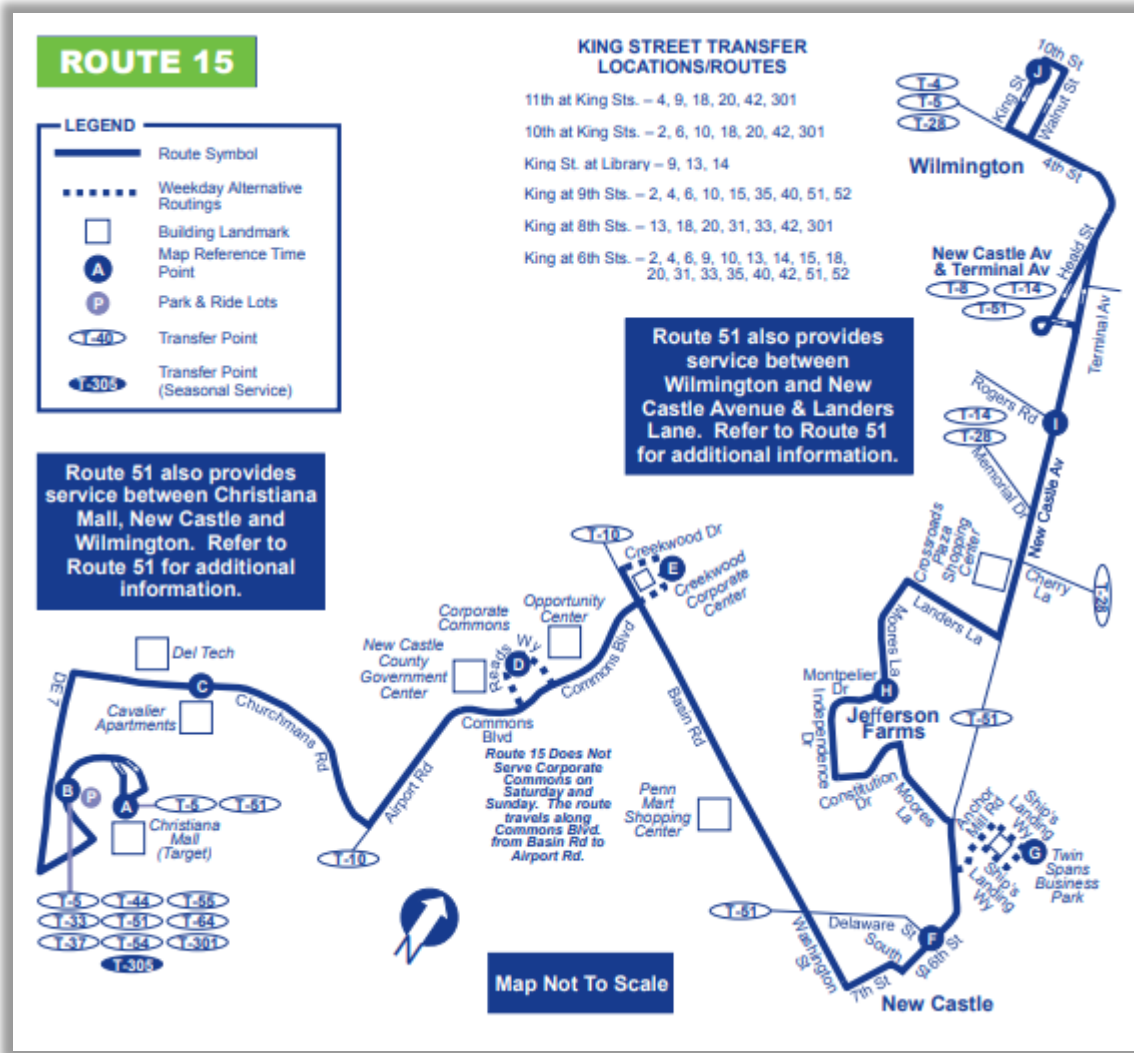


* For the purposes of these observations, a “typical weekday” was considered a non-holiday Tuesday, Wednesday, or Thursday with favorable weather conditions (i.e., minimal precipitation and fair temperatures) while local schools are in session

- Busiest pedestrian activity occurred during school arrival and dismissal times
- Two crossing guards are stationed at the signalized crosswalk at SR 141/Crippen Drive to assist George Read Middle School students
 - 11 pedestrians crossing SR 141 during AM peak hour
 - 32 pedestrians crossing SR 141 during PM peak hour
- One crossing guard stationed at the signalized crosswalk at William Penn High School entrance during AM only
 - 12 pedestrians crossing SR 141 during AM peak hour
 - 5 pedestrians crossing SR 141 during PM peak hour
- One crossing guard stationed at the signalized crosswalk at Stockton Drive/William Penn High School exit during AM only
 - 11 pedestrians crossing SR 141 during AM peak hour
 - 0 pedestrians crossing SR 141 during PM peak hour
- Pedestrians observed crossing SR 141 at unsignalized crossover between Penn Mart Shopping Center and Asbury Methodist Church (3 pedestrians crossed during PM peak hour)
- Significant pedestrian crossing volumes observed on north leg of SR 141 at Commons Boulevard primarily coming to/from Wawa (10 crossings during AM peak hour)
- No pedestrian/bicycle activity observed between US 13 and Commons Boulevard during “off-peak” field visits
- Relatively low pedestrian/bicycle activity observed between US 13 and SR 273 during “off-peak” field visits



- DART Route 15 is the main bus route operating within the study corridor
- DART Route 10 also operates in the area, but only stops at the northern most bus stop (#239)



- 19 bus stops front SR 141 in the study limits
- 4 bus stops do not have a landing pad
- 11 bus stops have a landing pad
- 4 bus stops have a landing area with a shelter

- Radar speed studies conducted in July 2022
- Average speeds are up to 4 mph higher than the posted speed limit
- 85th-percentile speeds are up to 6 mph higher than the posted speed limit

Location	Posted Speed Limit (mph)	Northbound SR 141		Southbound SR 141	
		Average Speed (mph)	85 th -Percentile Speed (mph)	Average Speed (mph)	85 th -Percentile Speed (mph)
William Penn High School	45	46	50	45	51
George Read Middle School	45	45	50	43	50
Washington Avenue	50 ¹	46	49	49	54
Paul Road	50	48	52	48	52

¹ Speed limit changes immediately north of Washington Ave (50 mph to the north, 45 mph to the south)

- Existing lighting present at the following locations:
 - Leased lighting at SR 141/SR 273 intersection
 - Intermittent leased lighting primarily oriented towards side streets from SR 273 to Crippen Drive
 - Recent LED leased lighting intersection improvements at SR 141 and Amstel Drive/E Roosevelt Avenue (2019 HEP Site U-2)
 - DeIDOT HPS lighting system at US 13/SR 141 interchange (Crippen Drive to Washington Avenue; no lighting on bridge over US 13)
 - New DeIDOT LED lighting system at SR 141/SR 37 including leased lighting along SR 141 to Paul Road
 - Existing lights shown on “Existing Conditions” figures
- The following segments of SR 141 are generally unlit:
 - SR 273 to Crippen Drive (except SR 141/Amstel Drive intersection)
 - Washington Avenue to Paul Road
- Intersections of SR 273, University Avenue and Jay Drive experienced higher nighttime crash rates than other intersections along the corridor
 - See “Crash Trends: Lighting Condition” slide for additional information

Ped/Bike Crash Trends

(January 2012 to May 2023)

- 12 total pedestrian crashes; 2 total bike crashes
- 13 of 14 (93%) ped/bike crashes resulted in an injury or fatality
 - 2 pedestrian fatalities
 - 0 bicyclist fatalities
- 50% of ped/bike crashes occurred at nighttime
 - 43% of these occurred in unlit locations
- 57% of ped/bike crashes occurred from 8 PM to 8 AM
- 57% of ped/bike crashes occurred within 150 feet of a signalized crosswalk
- 21% of ped/bike crashes occurred on a Friday, Saturday or Sunday
- 7 of 14 (50%) of ped/bike crashes occurred on a Thursday
- 50% of bicycle crashes involved a cyclist traveling in the opposite direction of traffic
- 21% of ped/bike crashes involved an impaired ped/bicyclist
- 4 of 14 (29%) of ped/bike crashes involved minors under the age of 18

Crash Trends

Study Period		January 2012 to May 2023						January 2017 to December 2021	
		Pedestrian Crashes		Bicycle Crashes		Peds + Bikes		All Crashes*	
		No.	% of Total	No.	% of Total	No.	% of Total	No.	% of Total
Severity	Fatal	2	17%	0	0%	2	14%	0	0%
	Injury	9	75%	2	100%	11	79%	127	22%
	PDO**	1	8%	0	0%	1	7%	440	78%
Lighting Condition	Daylight	6	50%	1	50%	6	43%	401	71%
	Dark-Lit	2	17%	1	50%	3	21%	115	20%
	Dark-Unlit	3	25%	0	0%	3	21%	27	5%
	Dawn/Dusk	1	8%	0	0%	1	7%	19	3%
	Unknown	0	0%	0	0%	0	0%	5	1%
Impairment	Impaired	3	25%	0	0%	3	21%	13	2%
	Not Impaired	9	75%	2	100%	11	79%	554	98%

* Includes pedestrian/bicycle crashes

** PDO = Property Damage Only

Crash Trends: Lighting Condition

Location (SR 141 at)	All Crashes			Ped + Bike Crashes		
	(Jan 2012 – Dec 2021)			(Jan 2012 – May 2023)		
	Total Crashes	Nighttime Crashes**		Total Crashes	Nighttime Crashes**	
		No.	%		No.	%
Commons Blvd	134	38	28%	1	1	100%
Jay Dr	50	20	40%	2	0	0%
Washington Ave	45	7	16%	0	0	0%
SB US 13 Ramps	22	6	27%	0	0	0%
NB US 13 Ramps	51	15	29%	1	1	100%
Crippen Dr	25	4	16%	1	0	0%
Blount Rd	4	1	25%	2	1	50%
E Roosevelt Ave	15	3	20%	2	1	50%
University Ave	25	13	52%	3	2	67%
Notre Dame Ave / William Penn H.S.	12	3	25%	1	1	100%
Stockton Dr	10	3	30%	0	0	0%
SR 273	90	32	36%	1	0	0%
Totals	483	145	30%	14	7	50%

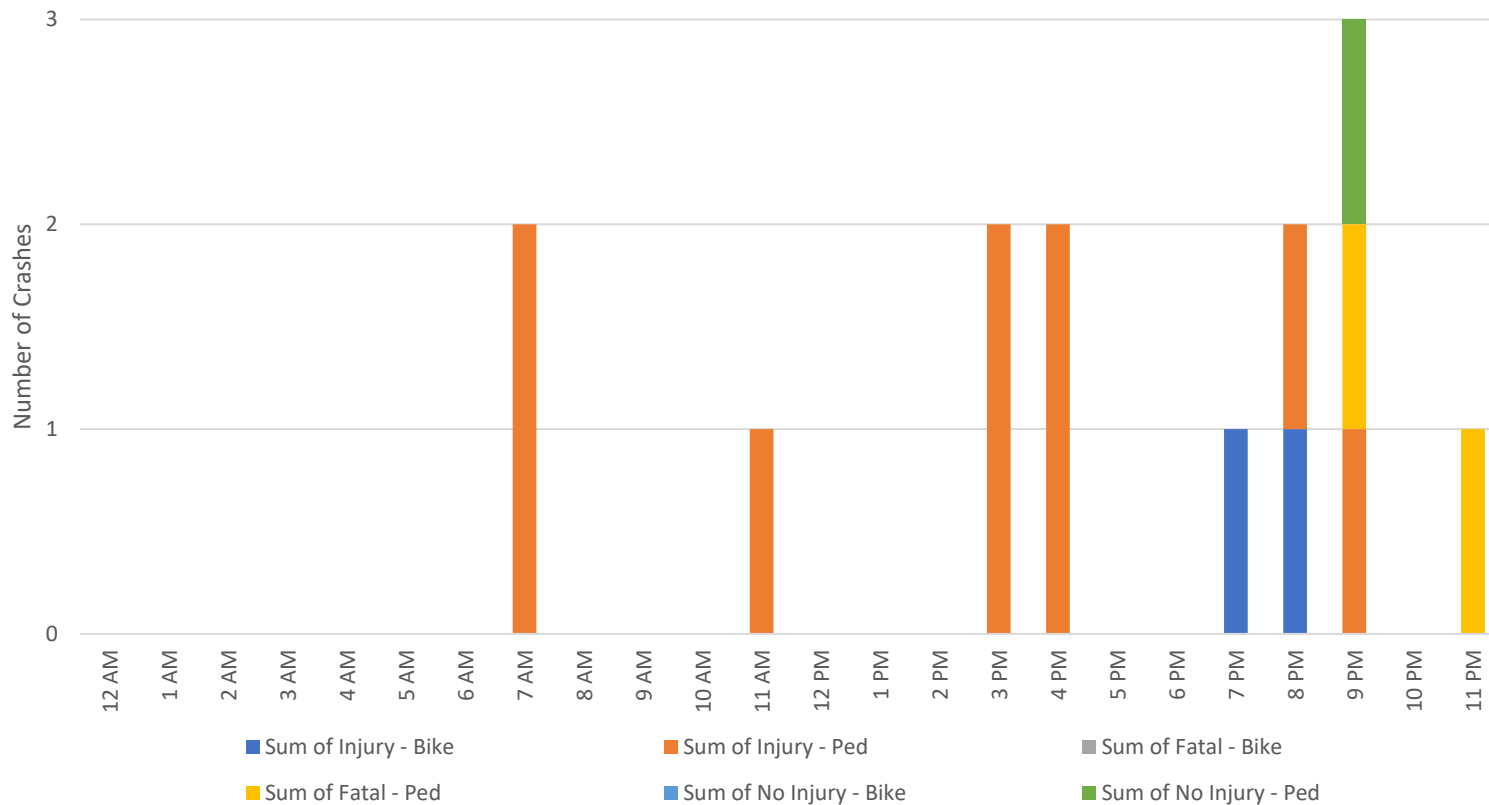
Segments with higher nighttime crash rate compared to other locations along the corridor

Ped/Bike Crash Trends

(January 2012 to August 2022)



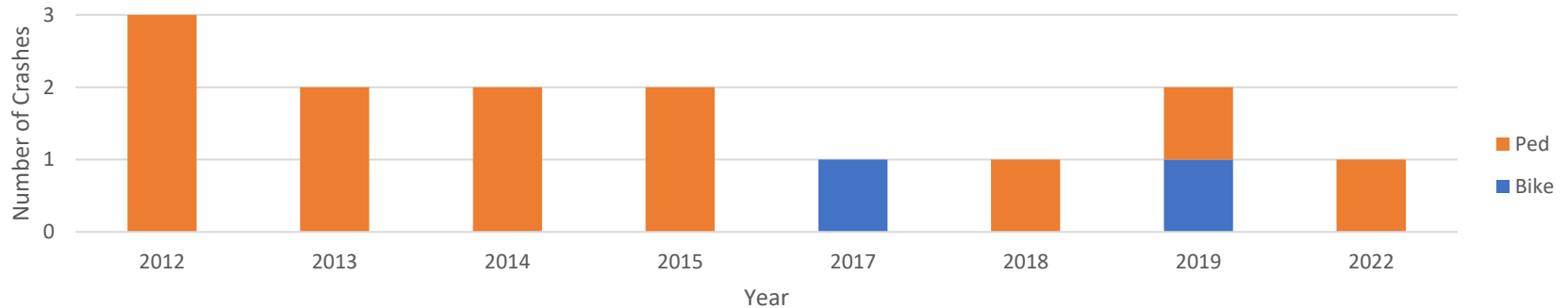
SR 141, Commons Blvd to SR 273 Ped / Bike Crashes by Time of Day (January 2012 to May 2023)



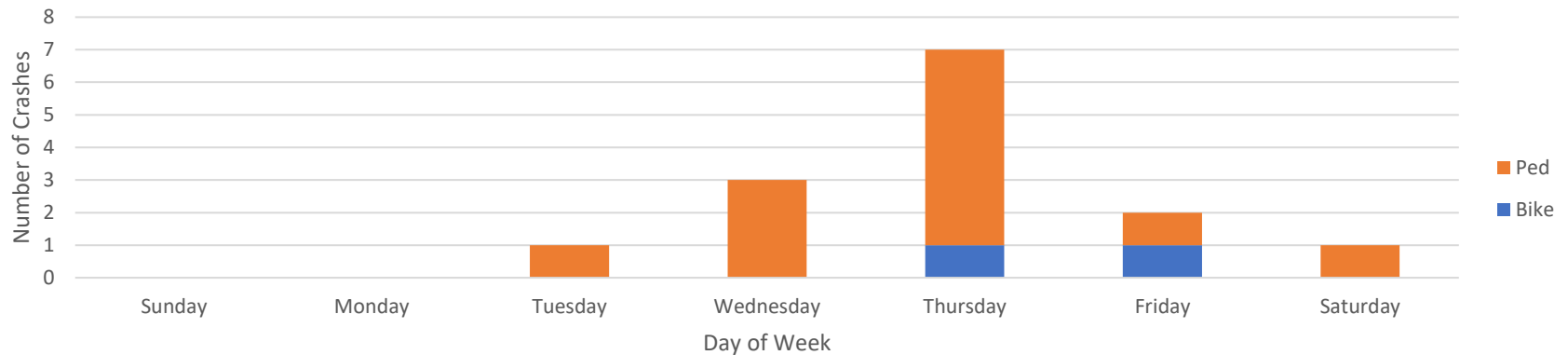
Ped/Bike Crash Trends

(January 2012 to August 2022)

SR 141, Commons Blvd to SR 273 Ped / Bike Crashes by Year (January 2012 to May 2023)



SR 141, Commons Blvd to SR 273 Ped / Bike Crashes by Day of Week (January 2012 to May 2023)

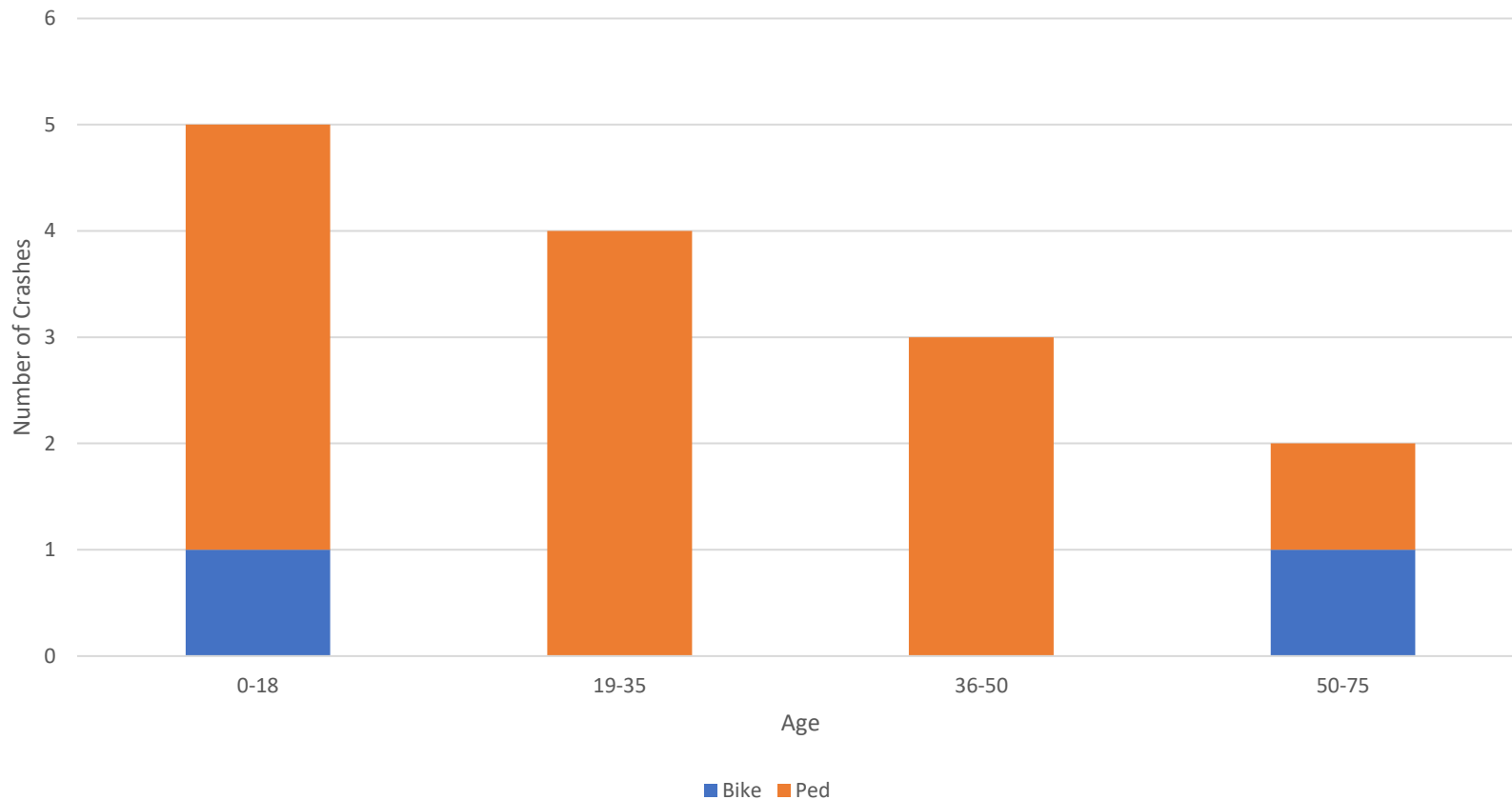


Ped/Bike Crash Trends

(January 2012 to August 2022)



SR 141, Commons Blvd to SR 273 Ped / Bike Crashes by Age (January 2012 to May 2023)




Ped/Bike Crash Trends

By Distance Between Signalized Intersections

Segment		Length (miles)	Total Access Points	Access Points Per Mile	Ped + Bike Crashes	Ped + Bike Crashes Per Mile
From	To					
SR 37 (Commons Blvd)	Jay Dr	0.60	11	18.4	2	3.3
Jay Dr	Washington Ave	0.22	6	27.2	1	4.5
Washington Ave	SB US 13 Ramps	0.19	4	21.3	0	0.0
SB US 13 Ramps	NB US 13 Ramps	0.18	3	16.9	0	0.0
NB US 13 Ramps	Crippen Dr	0.11	4	35.4	2	17.7
Crippen Dr	Blount Rd	0.15	4	26.1	2	13.1
Blount Rd	E Roosevelt Ave	0.05	2	37.7	1	18.9
E Roosevelt Ave	University Ave	0.15	5	32.9	3	19.8
University Ave	Notre Dame Ave	0.16	7	43.5	2	12.4
Notre Dame Ave	Stockton Dr	0.17	3	17.4	0	0.0
Stockton Dr	SR 273	0.36	8	22.1	1	2.8

Segments with higher Ped + Bike Crashes per Mile compared to other locations along the corridor

LEGEND

-  Traffic Signal
-  Existing Bus Stop
-  Daily Bus Board/Alight
-  Existing Luminaire
-  Pedestrian Non-Injury Crash
-  Bicycle Non-Injury Crash
-  Pedestrian Injury Crash
-  Bicycle Injury Crash
-  Pedestrian Fatal Crash
-  Bicycle Fatal Crash
-  Nighttime Crash
-  Weekday Hourly Ped Volume (highest recorded hour of 3 peaks)

- Traffic Control
- Bus Stop Locations
- Transit Ridership
- Lighting
- Sidewalks
- Pedestrian Crash History
- Pedestrian Volumes



RELEVANT PROJECTS

Relevant Projects

- SR 141 Improvements, I-95 to Jay Drive (Contract T201109001)
 - Substantially complete in 2021
 - New signalized crosswalks on all 4 legs of SR 141/Commons Blvd
 - New signalized crosswalks on north and east legs of SR 141/Jay Drive
 - New sidewalk and transit improvements throughout project limits
 - Project Website: [SR 141 Improvements, I-95 to Jay Drive](#)



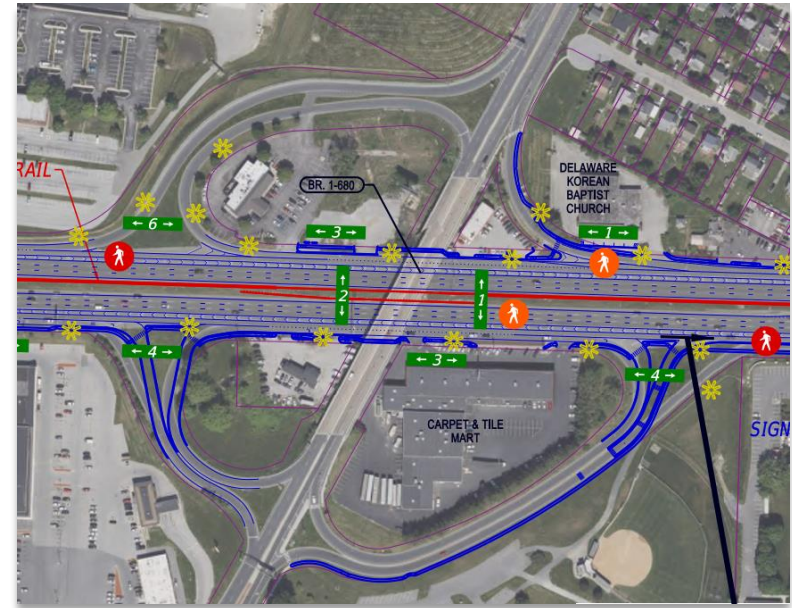
- Bridge 1-680 on SR 141 over US 13 (Contract T201407105)
 - Sidewalk installed along SR 141 NB in project limits including barrier-protected sidewalk along the bridge and connection to Delaware Ave
 - New crosswalks on SR 141 NB interchange ramps

- Commons Boulevard Pathway Phase II
 - Administered by New Castle County ([see April 2019 Feasibility Study](#))
 - Currently in design; construction anticipated summer 2023
 - Proposed shared-use path along the north side of Commons Blvd from Airport Rd to the T201109001 project limits
 - Follow-up NCC project in conceptual design for ped/bike connection from Commons Boulevard to Hope Center (Airport Rd @ I-95 ramps)



Relevant Projects

- US 13 Pedestrian Improvements, US 40 to Memorial Drive (T201601102)
 - Scope: linear sidewalk improvements (including connection to SR 141), median barrier installation, crossover modifications, signal upgrades
 - Multi-phase project implementation
 - Corridor lighting improvements from Llangolen Blvd to I-495 completed in 2021
 - Project Website: [US 13, US 40 to Memorial Drive Pedestrian Improvements](#)



- 2019 HEP Site U-2: SR 141 @ East Roosevelt Ave / Amstel Ave
 - Intersection lighting improvements installed by Delmarva Power in spring 2021
 - Geometric improvements to restrict EB-left turns from Amstel Drive; currently in design

CORRIDOR-WIDE RECOMMENDATIONS

Speed data was collected for SR 141 and input into FHWA's USLIMITS2 program to determine appropriate speed limit recommendations:

US LIMITS 2 Evaluation Criteria:

- 85th and 50th percentile speeds
- Traffic volumes
- Roadway functional classification
- Adjacent land use
- Pedestrian, bicycle and parking activity
- Roadway cross-section elements (e.g., number of lanes, medians, etc.)
- Number of signalized / unsignalized intersections and driveways
- Historical crash data

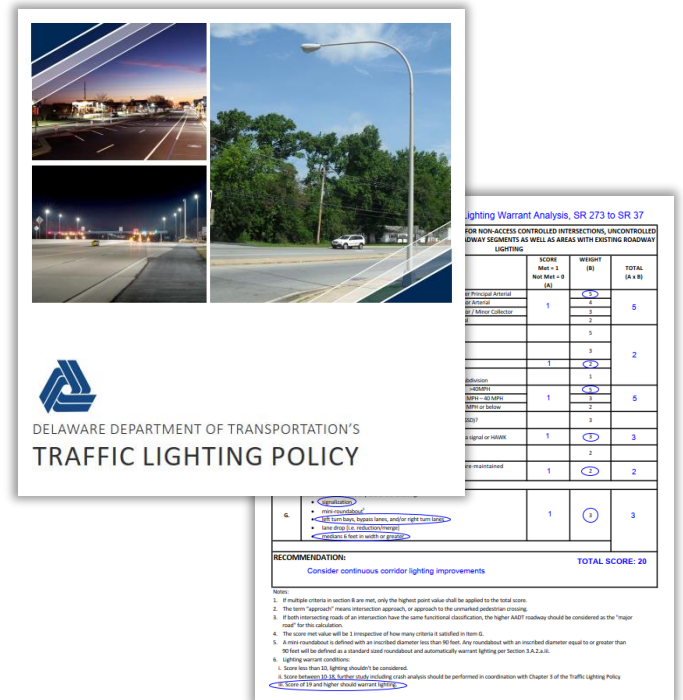
Segment	Posted Speed Limit (mph)	# Travel Lanes per Direction	50 th - Percentile Speed (mph)	85 th - Percentile Speed (mph)	USLIMITS2 Recommended Speed (mph)	Final Recommended Posted Speed (mph)
SR 273 to Washington Ave	45	2	43	50	45	45
Washington Ave to SR 37	50	2	49	52	50	50

RECOMMENDATIONS:

- Maintain existing posted speed limits
- Rescind existing inaccurate speed resolutions and create a new resolution for the corridor to reflect current posted speed limits
- Consider narrowing lanes and installing wider line striping via future rehabilitation project to encourage slower speeds

Lighting Assessment

- Continuous corridor lighting is warranted per *Form A* of the *DelDOT Lighting Policy*
 - Score of 20 (19+ warrants lighting)
- Preliminary photometrics conducted for potential lighting improvements:
 - Installation of luminaires on existing utility poles provides adequate lighting levels from SR 273 to the US 13 interchange
 - Consider installation of DelDOT lighting system from Washington Avenue to Paul Road
 - Prioritize Jay Drive intersection due to nighttime crash rate
 - No aerial utilities between Washington Avenue and Jay Drive
 - Existing utility pole spacing between Jay Drive and Paul Road does not provide adequate lighting levels
 - Coordination required with DRBA/FAA to place light poles along SR 141 SB
 - Approximate \$300K construction cost



Lighting Warrant Analysis, SR 273 to SR 37
 FOR NON-ACCESS CONTROLLED INTERSECTIONS, UNCONTROLLED ROADWAY SEGMENTS AS WELL AS AREAS WITH EXISTING ROADWAY LIGHTING

	SCORE Met = 1 Not Met = 0 (A)	WEIGHT (B)	TOTAL (A x B)
Functional Method of Control	1	5	5
Number of Lanes	1	1	1
Median	1	2	2
Adjunct	1	1	1
Intersecting Roadway	1	5	5
Width of Roadway	1	2	2
Signal or Signal	1	3	3
Unimproved	1	2	2
TOTAL	1	20	20

RECOMMENDATION: Consider continuous corridor lighting improvements

Notes:

1. If multiple criteria in section B are met, only the highest point value shall be applied to the total score.
2. The term "Signalized" means intersection approach, or approach to the controlled intersection crossing.
3. If both intersecting roads of an intersection have the same functional classification, the higher AADT roadway should be considered as the "major road" for this calculation.
4. The score met value will be 1 irrespective of how many criteria it satisfied in item 5.
5. A lane classification is defined with an included diameter less than 10 feet. Any roundabout with an included diameter equal to or greater than 10 feet will be defined as a standard sized roundabout and automatically warrant lighting per Section 3.A.2.a.i.
6. Lighting warrant conditions:
 - i. Score less than 10, lighting shouldn't be considered.
 - ii. Score between 10-19, further study including crash analysis should be performed in coordination with Chapter 3 of the Traffic Lighting Policy.
 - iii. Score of 19 and higher, should warrant lighting.

- RECOMMENDATIONS:**
- Coordinate leased lighting improvements with Delmarva Power from SR 273 to US 13
 - Coordinate with DelDOT Maintenance & Operations to retrofit existing HPS luminaires to LED at US 13 interchange
 - Consider installation of DelDOT lighting system from Washington Avenue to Paul Road (approx. \$300k)

Sidewalk Gap Assessment

SR 141 - Segments Without Sidewalk			
Direction	Beginning Point	Ending Point	Distance
Northbound SR 141 ¹	Delaware Ave (neighborhood north/west of US 13)	Washington Ave	640 ft
	Bus Stop (just north of Washington Ave)	Old Dominion Freight Line busines entrance (south side)	390 ft
	Old Dominion Freight Line busines entrance (north side)	Express Employment Professionals busines entrance (south side)	75 ft
	Dairy Palace parking lot	Bus Stop (Jay Dr)	120 ft
	Jay Dr (north side)	Paul Road	1,800 ft ²
Southbound SR 141	Bus Stop (south of SR 37-Commons Blvd)	Bus Stop (Penn Mart Shopping Center)	6,400 ft ²

¹ Existing sidewalk along SR 141 NB between Stockton Drive and Notre Dame Avenue and between University Avenue and Blount Road ranges from 3 to 4 feet wide and is in poor condition; heaving and deterioration has caused vertical differences in violation of ADA and DelDOT Pedestrian Accessibility standards

² During project scoping and design of Contract T201109001, the existing sidewalk along Morris Road between Jay Drive and Paul Road parallel to SR 141 was deemed an adequate pedestrian access route. Installation of sidewalk along SR 141 NB is not feasible without major right-of-way impacts and/or retaining walls; sidewalk is not preferred along SR 141 SB fronting the Wilmington Airport/Delaware Air National Guard.

RECOMMENDATIONS:

- **Conduct thorough ADA inventory to develop a scope for improvements to bring entire corridor (including Morris Road) up to current ADA and DelDOT Pedestrian Accessibility Standards**
- **Construct missing sidewalk links along SR 141 NB between the US 13 interchange and Jay Drive**
- **Formalize PAR transitions to/from SR 141 and Morris Road**

Bus Stop Amenities Assessment

Lighting, Bench, Shelter, Ridership Data



Direction	Location	Shelter/ Bench?	Lit?	Weekday Ridership (Sept – Nov 2021)			Bench Warranted? *	Shelter Warranted? *
				Boardings	Alightings	Total		
Northbound	(#165) SR 141 @ Schoolside Apartments	Pad	N	2	1	3	N	N
	(#1687) SR 141 @ Stockton Dr	Pad	PL	1	3	4	N	N
	(#1688) SR 141 @ Notre Dame Ave	Pad	N	1	1	2	N	N
	(#1689) SR 141 @ University Ave	Shelter	N	11	6	17	Y	N
	(#1690) SR 141 @ E Roosevelt Ave	Pad	Y	2	5	7	N	N
	(#1691) SR 141 North of Blount Rd	Pad	PL	1	0	1	N	N
	(#166) SR 141 @ Crippen Dr	Shelter	Y	4	10	14	N	N
	(#1693) SR 141 @ Washington Ave	Pad	PL	2	1	3	N	N
	(#1692) SR 141 @ Jay Dr	Pad	PL	2	2	4	N	N
	(#4104) SR 141 @ Paul Rd	None	N	0	4	4	N	N
	(#239) SR 141 @ business entrance between Commons Blvd & Creekwood Rd	Shelter	N	8	7	15	N	N

Shelter / Bench Legend
 None: No Shelter, Pad, or Bench
 Bench: Pad with a Bench
 Shelter: Pad with a Shelter and a Bench

Lighting Legend
 N: Not Lit
 PL: Partially Lit (Luminaire is close by)
 L: Lit

* SR 141 is considered to have moderate transit density; therefore, DTC's applicable criteria are as follows:

- Bench: 10 or more boardings per day
- Shelter: 20 or more boardings per day

Bus Stop Amenities Assessment

Lighting, Bench, Shelter, Ridership Data



Direction	Location	Shelter/ Bench?	Lit?	Weekday Ridership (Sept – Nov 2021)			Bench Warranted? *	Shelter Warranted? *
				Boardings	Alightings	Total		
Southbound	(#172) SR 141 between Commons Blvd & Bellecor Dr	Shelter	L	3	1	4	N	N
	(#1728) SR 141 @ Jay Dr	None	N	2	3	5	N	N
	(#1729) SR 141 @ Penn Mart Shopping Center	Shelter	PL	10	6	16	Y	N
	(#1730) SR 141 @ Amstel Dr	Pad	L	3	3	6	N	N
	(#1731) SR 141 @ W University Ave	Pad	N	8	8	16	N	N
	(#1732) SR 141 @ Notre Dame Ave	Shelter	PL	4	1	5	N	N
	(#1733) SR 141 @ Stockton Dr	Pad	N	0	0	0	N	N
	(#1734) SR 141 @ Delaware Valley Classical School	None	N	2	2	4	N	N

Shelter / Bench Legend
 None: No Shelter, Pad, or Bench
 Bench: Pad with a Bench
 Shelter: Pad with a Shelter and a Bench

Lighting Legend
 N: Not Lit
 PL: Partially Lit (Luminaire is close by)
 L: Lit

* SR 141 is considered to have moderate transit density; therefore, DTC's applicable criteria are as follows:

- Bench: 10 or more boardings per day
- Shelter: 20 or more boardings per day

• DTC Requests for Improvements:

- All stops should be brought up to ADA/DelDOT standards
- Stop ID 165 – SR 141 NB at SR 273
 - Move stop 70 feet north of the southern entrance to Schoolside Apartments
- Stop ID 1734 – SR 141 SB at SR 273
 - Improve to a Type 2 5'x8' bus stop pad at current location
- Stop ID 1731 – SR 141 SB at University Avenue
 - Shift bus stop further north (within right-turn lane) to improve spacing from intersection
- Stop ID 1730 – SR 141 SB at Amstel Avenue/Roosevelt Avenue
 - Shift bus stop further north (within right-turn lane) to improve spacing from intersection
- Stop ID 1693 – SR 141 NB at Miller Furniture
 - Install companion stop on SR 141 SB (near side of Washington Ave) with crosswalk across SR 141

RECOMMENDATIONS:

- Install lighting at all bus stops along the corridor (captured by corridor lighting improvements)
- Incorporate DTC's requests above for transit improvements via a future project (i.e., pavement rehabilitation program, pedestrian access routes program, etc.)

SUMMARY OF RECOMMENDATIONS

Improvement Matrix (1 of 3)

Location	Timeframe	Recommendation	Responsible Party
Corridor Wide	Short-Term	Rescind outdated speed resolution for the SR 141 corridor from SR 273 to SR 37 and establish new resolution to reflect existing posted speed limits.	DeIDOT
	Short-Term	Coordinate with Delmarva Power to install leased lighting upgrades to provide full corridor lighting from SR 273 to the US 13 interchange.	DeIDOT
	Mid/Long-Term	Conduct thorough ADA compliance inventory of the corridor and identify missing PAR links to develop a scope for ADA/pedestrian improvements via a future Pave & Rehab, PAR, and/or capital project.	DeIDOT
	Mid/Long-Term	Evaluate all signing and striping and incorporate improvements via future Pave & Rehab project. Consider narrowing lanes and/or wider line striping to promote slower speeds.	DeIDOT
SR 141 at SR 273	Short-Term	Replace existing non-countdown pedestrian signal head with a countdown pedestrian signal head at the southwest corner of the intersection (Washington Street crossing).	DeIDOT
	Short/Mid-Term	Improve existing SR 141 SB transit stop (ID #1734) to a Type 2 bus stop pad (5'x8').	DeIDOT/DTC
	Mid/Long-Term	Relocate SR 141 NB transit stop (ID #165) to ~70 north of southern Schoolside Apartments entrance.	DeIDOT/DTC
SR 141 at Stockton Drive / William Penn HS Exit	Mid-Term	Provide the following ADA/pedestrian crossing improvements: <ul style="list-style-type: none"> • Install pedestrian signals for William Penn HS crossing • Reconstruct non-compliant pedestrian connections • Reorient SR 141 crossing pedestrian signal pushbuttons parallel with crosswalk 	DeIDOT

Improvement Matrix (2 of 3)

Location	Timeframe	Recommendation	Responsible Party
SR 141 at University Avenue	Mid-Term	Evaluate feasibility of reconstructing channelizing islands and pedestrian connections to improve pedestrian signal pushbutton reach distances.	DeIDOT
	Mid/Long-Term	Relocate SR 141 SB transit stop (ID #1731) further north (within the southbound right-turn lane) to improve spacing from the SR 141/University Avenue intersection.	DeIDOT/DTC
SR 141, University Avenue to Blount Road	Mid/Long-Term	Address deteriorating sidewalk and ADA compliance issues along SR 141 northbound. Explore feasibility of widening sidewalk to 5 feet (current width ranges from 3 to 3.5 feet).	DeIDOT
SR 141 at Amstel Drive/ E. Roosevelt Avenue	Short/Mid-Term	Construct geometric improvements identified in 2019 HEP Site U-2 study to restrict illegal eastbound left-turn movement from Amstel Drive.	DeIDOT
	Mid/Long-Term	Relocate SR 141 SB transit stop (ID #1730) further north (within the southbound right-turn lane) to improve spacing from the SR 141/Amstel Drive intersection.	DeIDOT/DTC
SR 141 at US 13	Short-Term	Retrofit existing high-pressure sodium roadway light fixtures with LED fixtures throughout the US 13/SR 141 interchange lighting system.	DeIDOT
SR 141, US 13 to Jay Drive	Long-term	Establish capital project to fill in missing PAR links and establish a formal PAR between the US 13 interchange and Jay Drive.	DeIDOT

Improvement Matrix (3 of 3)















Location	Timeframe	Recommendation	Responsible Party
SR 141 at Washington Avenue	Short/Mid-Term	Upgrade existing signalized pedestrian crossing across Washington Avenue: <ul style="list-style-type: none"> • Replace existing non-countdown pedestrian signal heads with countdown heads • Rotate pushbutton on southeast corner to be parallel with crosswalk and install R10-3 series pushbutton signage • Install new pedestrian signal with R10-3 series pushbutton signage on northeast corner adjacent to level landing area • Evaluate and reconstruct pedestrian connections, if necessary 	DeIDOT
	Mid/Long-Term	Install signalized pedestrian crossing across SR 141 and install a new companion SR 141 SB transit stop on the near side of Washington Avenue to compliment the existing SR 141 NB transit stop	DeIDOT/DTC
SR 141, Washington Avenue to Paul Road	Mid/Long-Term	Consider installation of DeIDOT lighting system to provide full corridor lighting between Washington Avenue and Paul Road. Prioritize SR 141/Jay Drive intersection due to nighttime crash rates. Coordination required with FAA, DRBA, and Air National Guard.	DeIDOT
Morris Road, Jay Drive to Paul Road	Mid/Long-Term	Conduct thorough ADA evaluation of existing PAR along Morris Road (designated as SR 141 PAR for this segment) and formalize PAR connections between SR 141 and Morris Road along Jay Drive and Paul Road.	DeIDOT

September 2022

Existing Conditions

SR 141/Basin Road

Commons Boulevard (SR 37) to Frenchtown Road (SR 273) New Castle, DE

-  Traffic Signal
-  Recently Completed Sidewalk
-  Existing Sidewalk
-  Existing Bus Stop
-  Daily Bus Board/Alight
-  Existing Roadway Luminaire
-  Pedestrian Non-Injury Crash
-  Bicycle Non-Injury Crash
-  Pedestrian Injury Crash
-  Bicycle Injury Crash
-  Pedestrian Fatal Crash
-  Bicycle Fatal Crash
-  Nighttime Crash
-  Weekday Hourly Ped Volume (highest recorded hour of 3 peaks)

Crash study period - January 2012 through August 2022

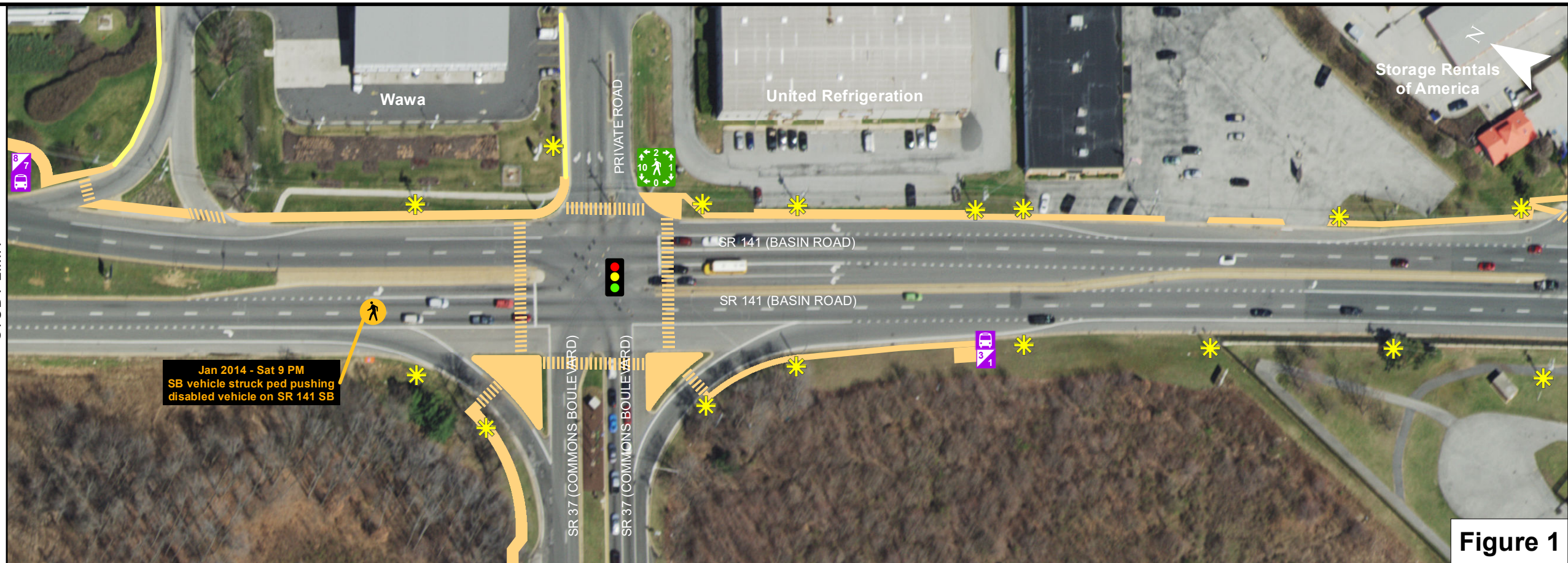
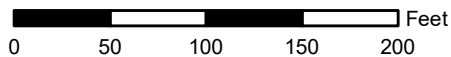


Figure 1

















Figure 2

Existing Conditions

SR 141/Basin Road

Commons Boulevard (SR 37)
to
Frenchtown Road (SR 273)
New Castle, DE

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-  Bicycle Fatal Crash
-  Nighttime Crash
-  Weekday Hourly Ped Volume (highest recorded hour of 3 peaks)

Crash study period - January 2012 through August 2022

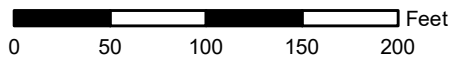


Figure 3

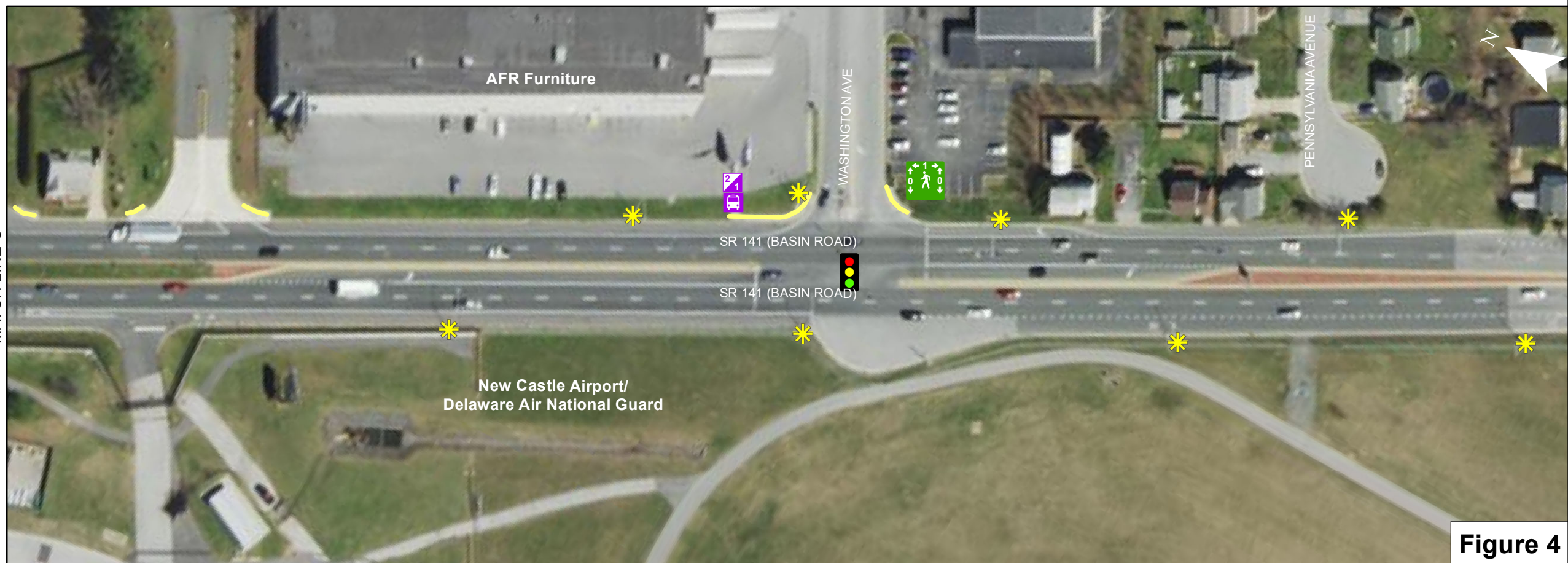
















Figure 4

September 2022

Existing Conditions

SR 141/Basin Road

Commons Boulevard (SR 37) to Frenchtown Road (SR 273) New Castle, DE

-  Traffic Signal
-  Recently Completed Sidewalk
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Crash study period - January 2012 through August 2022

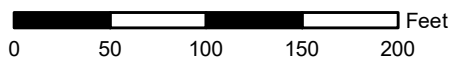


Figure 5

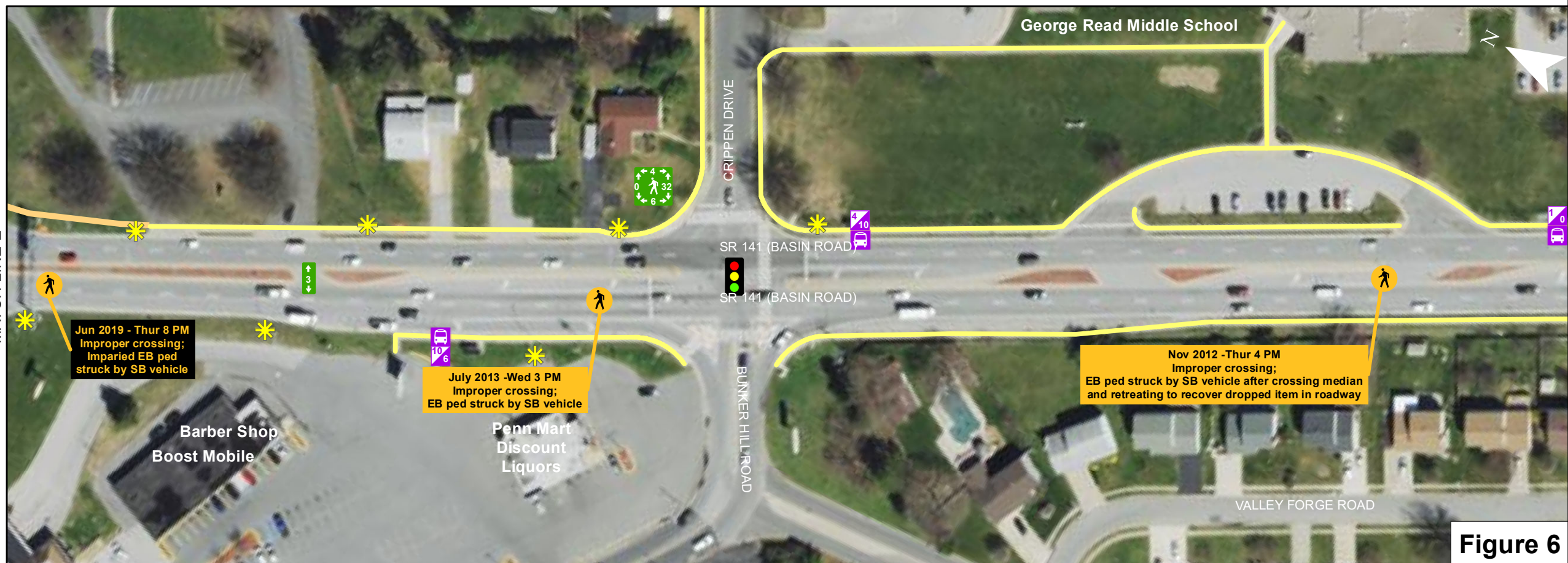
















Figure 6

Existing Conditions

SR 141/Basin Road

Commons Boulevard (SR 37)
to
Frenchtown Road (SR 273)
New Castle, DE

-  Traffic Signal
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-  Existing Bus Stop
-  Daily Bus Board/Alight
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Crash study period - January 2012 through August 2022

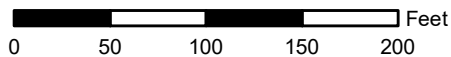


Figure 7







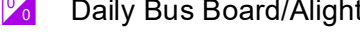
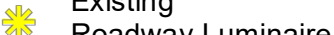
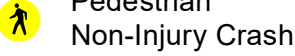
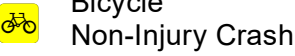
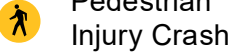
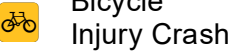
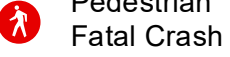
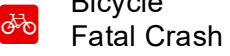

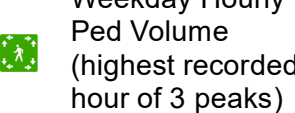
Figure 8

September 2022

Existing Conditions

SR 141/Basin Road

Commons Boulevard (SR 37)
to
Frenchtown Road (SR 273)
New Castle, DE

-  Traffic Signal
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Crash study period - January 2012 through August 2022

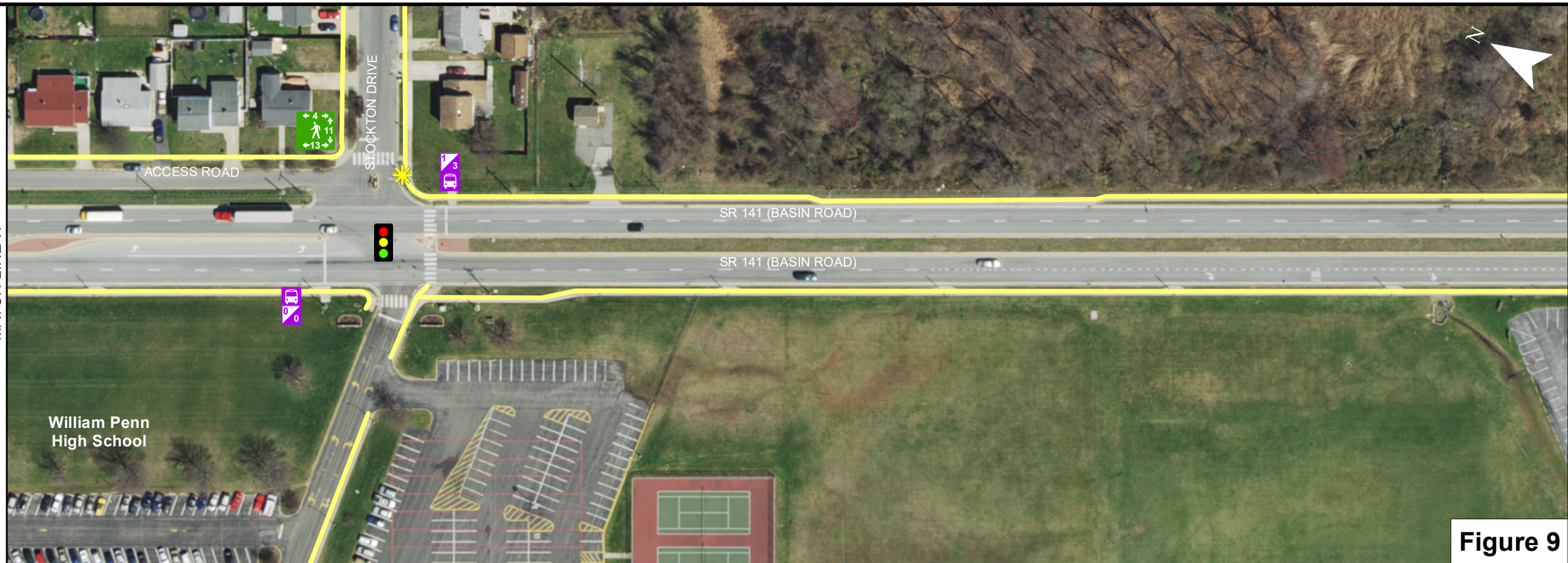
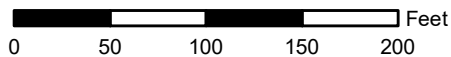


Figure 9



Figure 10