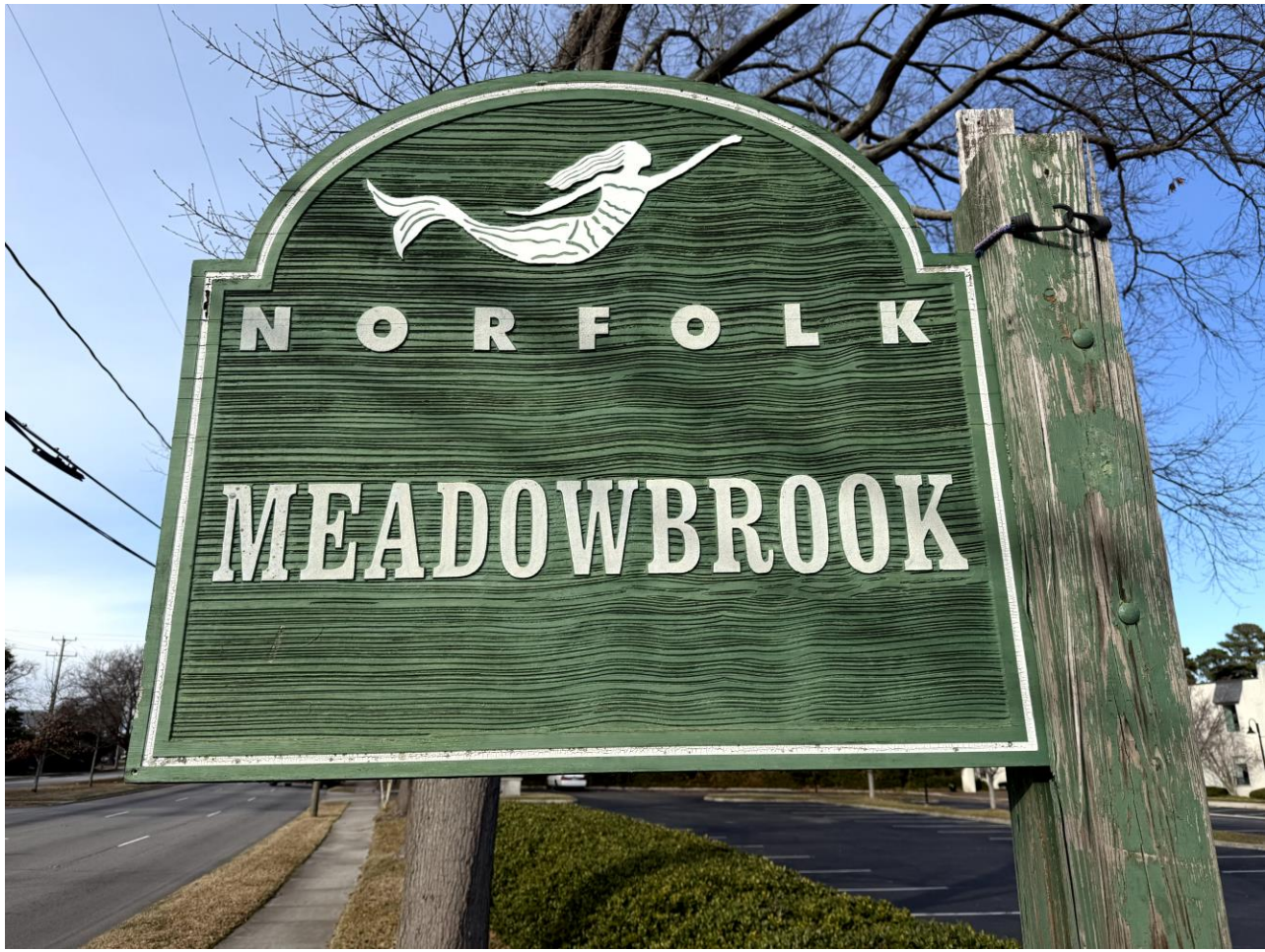
Hampton Boulevard & North Shore Road Safety Study



Meadowbrook Civic League Meeting

January 13, 2025

Welcome and Introductions

THE CITY OF NORFOLK

Agenda

- Welcome and Introductions
- Project Overview and Background
- Existing Conditions Analysis
  - Safety Analysis
  - Speed Analysis
  - Traffic Operations Analysis
- Project Timeline and Next Steps
- Input and Feedback on Potential Improvements
- Other Discussion and Q&A

Project Overview and Background

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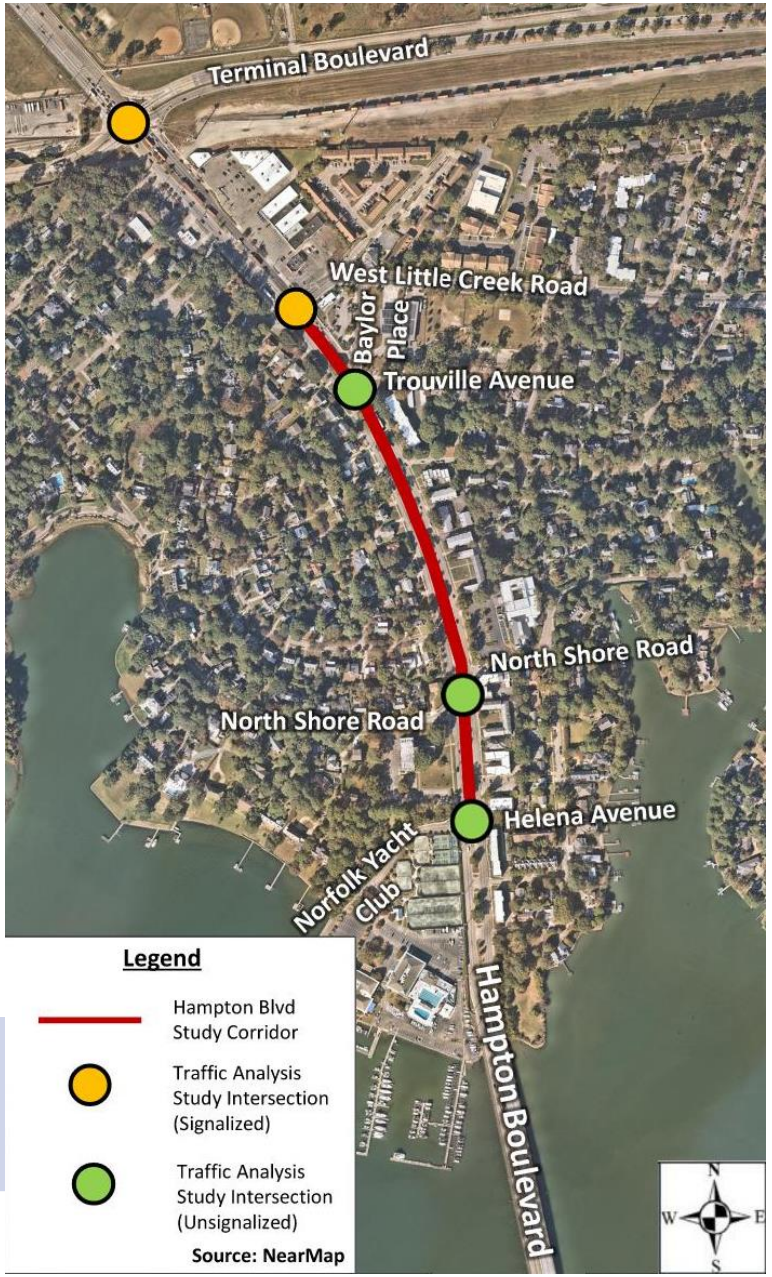
Project Overview

- Study Area – Hampton Boulevard
  - From Lafayette River Bridge to Little Creek Road
- We are here because of you!
- Evaluate need for traffic signal at Hampton Blvd & North Shore Road and/or other alternatives to improve traffic operations and safety along the corridor
- Building upon recent and planned corridor improvements

Project webpage:

www.norfolk.gov/upperhamptonblvdsafety



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Project Scope

- Evaluate potential benefits and impacts of signalizing the intersection of Hampton Boulevard at North Shore Road
- Identify other improvements and treatment alternatives along the Hampton Boulevard corridor to improve safety and operations
- Scope items:
  - Safety/crash analysis
  - Speed analysis
  - Traffic operations analysis
  - Signal warrant analysis
  - Planning-level cost estimates

Project Background

Considerations from Other Plans

- *HRTPO Hampton Boulevard Corridor Study*
  - Conducted to address the following:
    - Number of trucks using Hampton Boulevard
    - Safety/crashes
    - Excessive vehicle speeds
  - Restrictive truck hours (4 PM to 6 AM) on Hampton Boulevard shown to be effective
  - Safety countermeasures proposed for bicycle, pedestrian, speed-related, and truck-related crashes
  - Speed enforcement and traffic calming techniques also recommended
  - Road diet not considered due to resident concerns
  - Recommended improvements:
    - Improve bicyclist/pedestrian visibility
    - Improve signal timing and detection
    - Install pavement markings such as transverse lines
    - Education and outreach
    - Increase enforcement
    - Traffic calming including pavement markings and landscaping

Project Background

Considerations from Other Plans

- *Little Creek Road at Hampton Boulevard Curve Warning Improvements*
  - Study conducted to address the following:
    - Run-off-road crashes on westbound Little Creek Road approaching Hampton Boulevard
    - Layout of intersection of Gleneagles Road at Maury Arch approaching the signal at Little Creek Road and Hampton Boulevard
  - Developed alternative concepts and cost estimates
  - Concepts for the Little Creek Road curve:
    - Relocate Popeye's driveway OR install median island to separate from parking lot
    - Apply wider pavement markings
    - Install dynamic curve warning system
  - Concepts for Gleneagles Road at Maury Arch:
    - Install mini roundabout, OR
    - Modify intersection to more traditional "T" configuration

Existing Conditions Analysis

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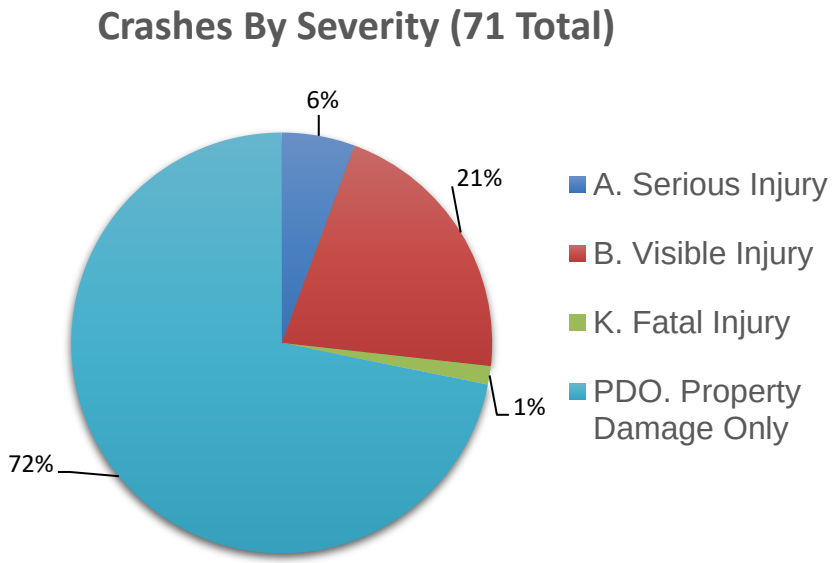
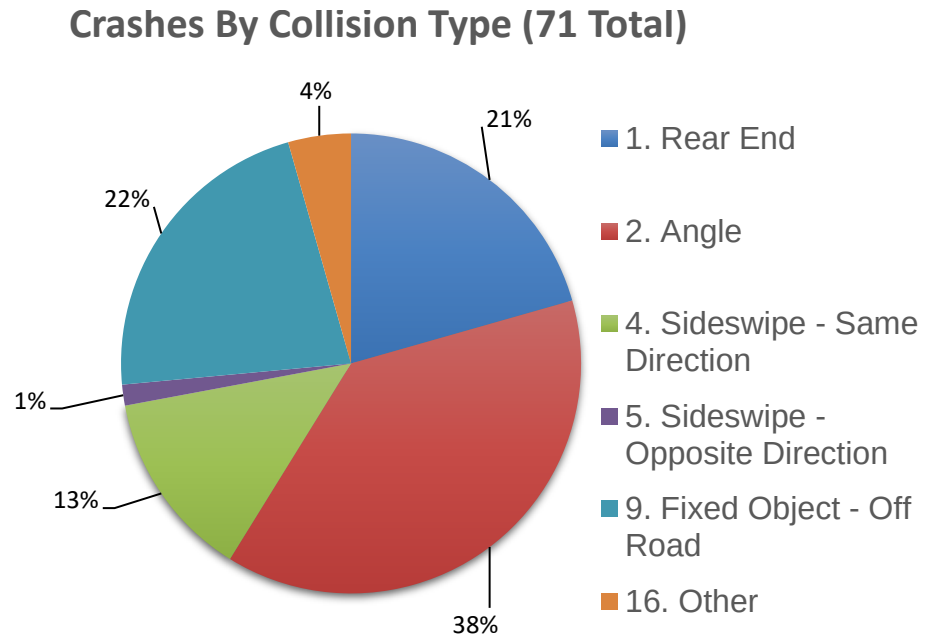
Crash Analysis (All Modes)

- 71 total crashes from May 1, 2019 to April 30, 2024
- 1 fatality reported in 2020
  - Occurred in the westbound direction of Little Creek Road and Hampton Boulevard
  - Crash involved fixed object off road (building)
- 7% of all crashes resulted in fatal or serious injury
- 5 crashes involving a heavy vehicle
- Higher instances of fixed object off road and sideswipe crashes
- 1 pedestrian crash at Little Creek Road and Hampton Boulevard





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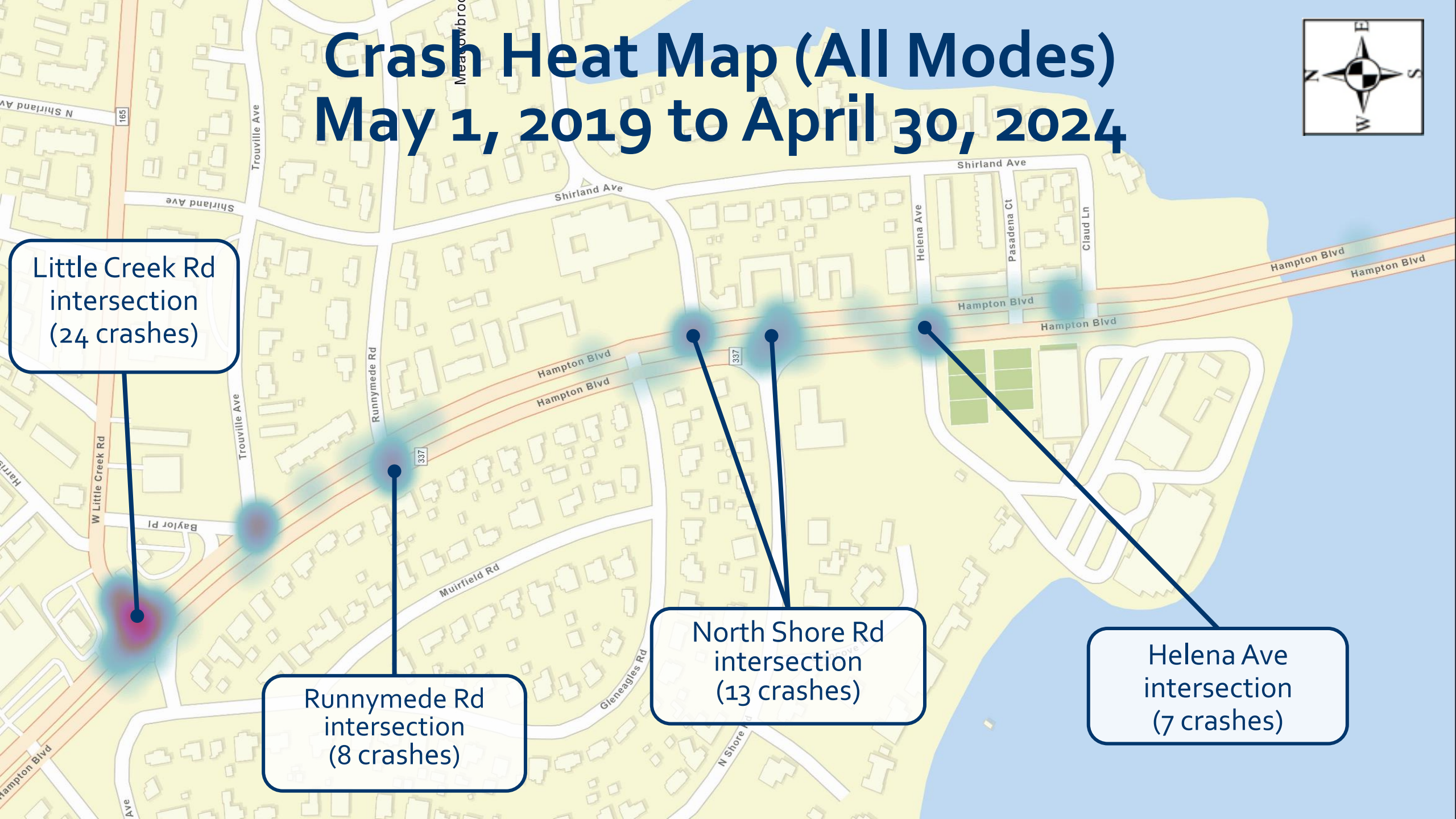
Crash Heat Map (All Modes)
May 1, 2019 to April 30, 2024



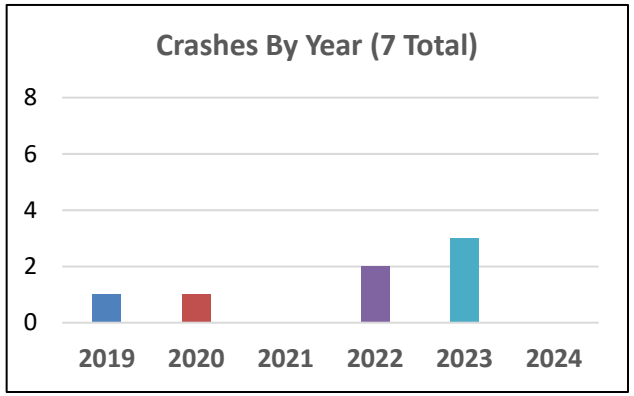
HAMPTON BOULEVARD AT HELENA AVENUE & NYCC

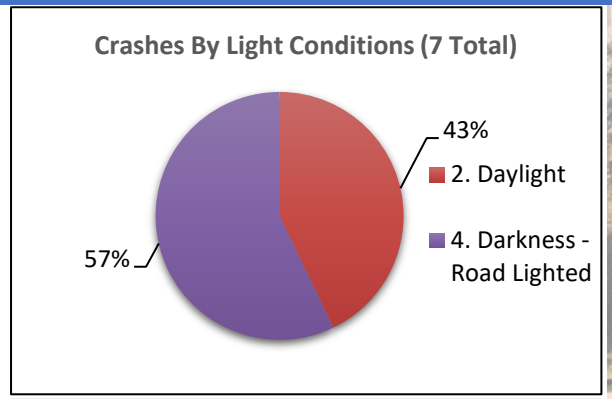
Summary of Crash Data: May 1, 2019 to April 30, 2024

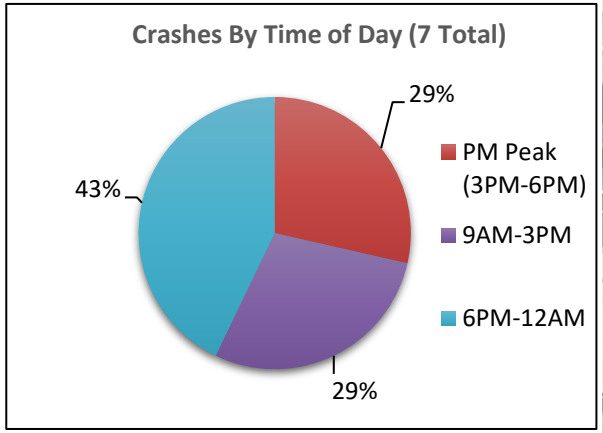
Unsignalized | 7 Total Crashes

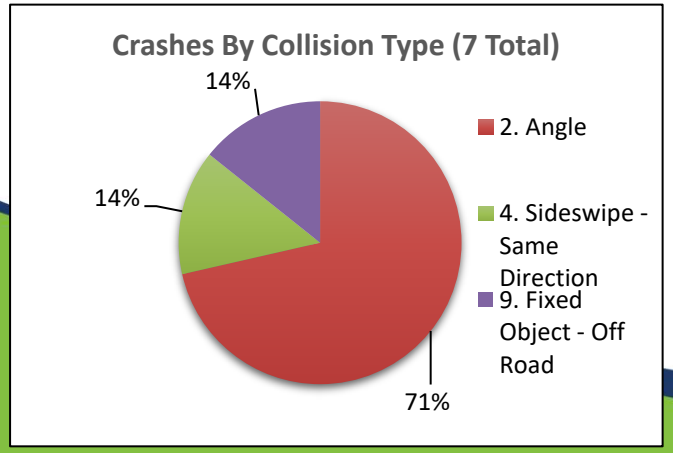
CRASH TRENDS

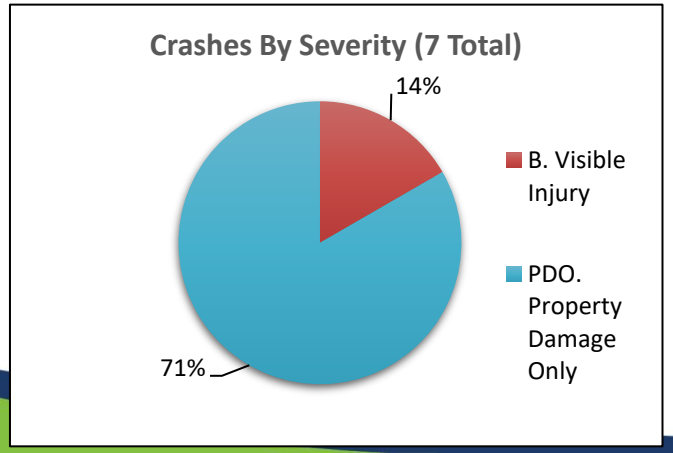
- Vast majority of crashes (71%) were angle crashes
- Majority of crashes (71%) resulted in Property Damage Only
- 43% of crashes occurred during evening hours (6 PM to 12 AM)
- 57% of crashes occurred during dark conditions

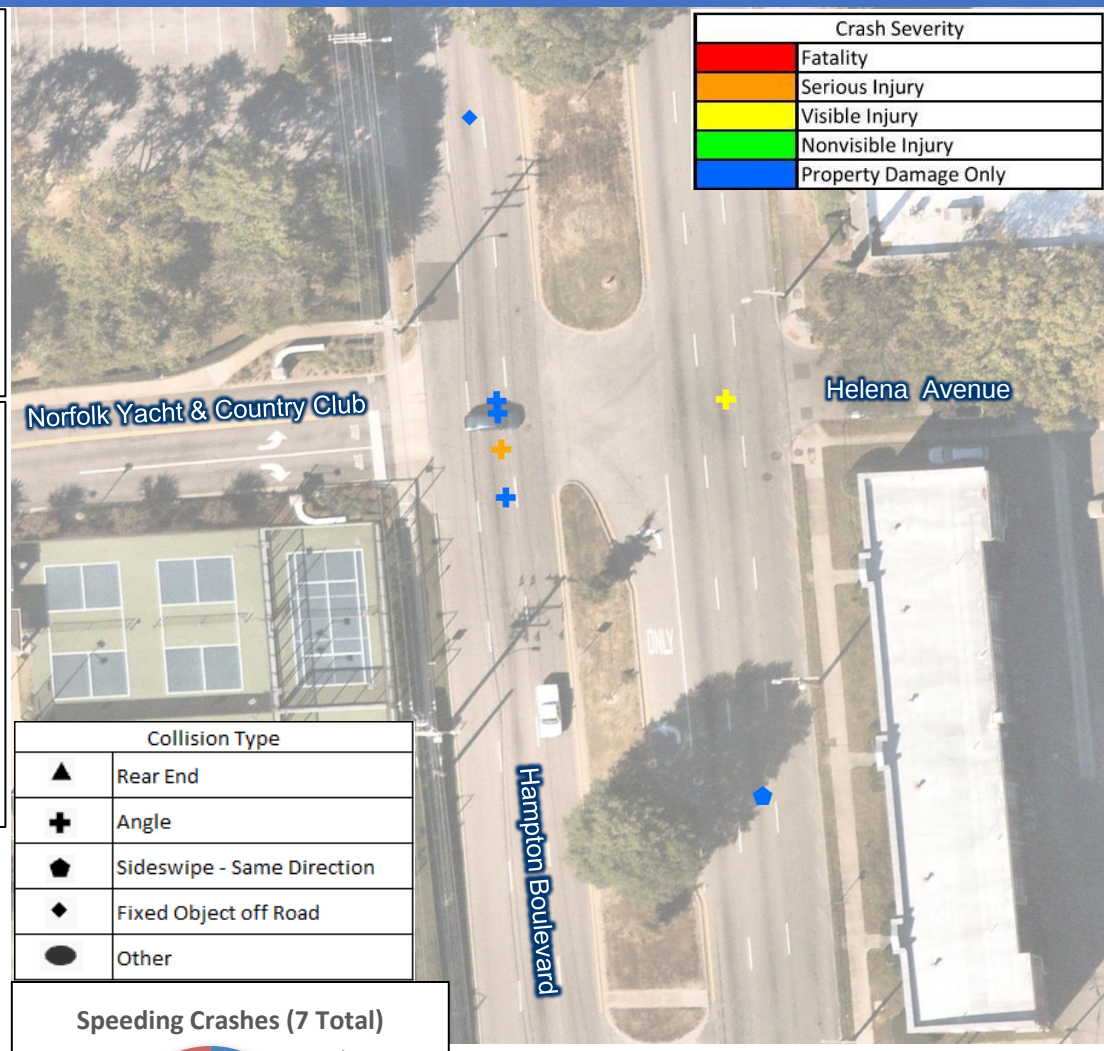


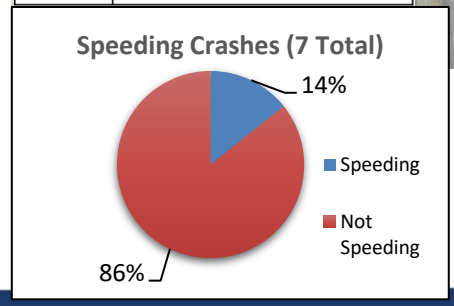












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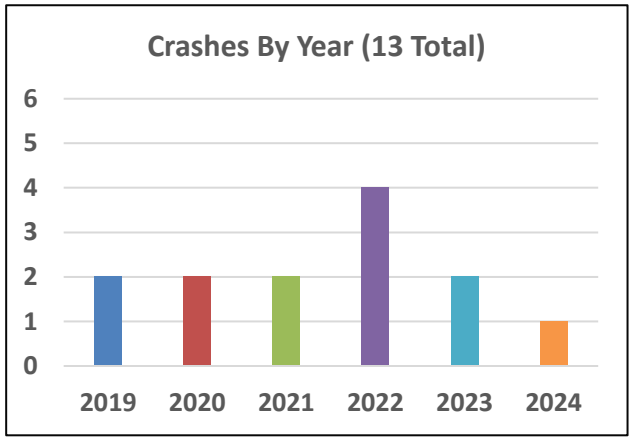
HAMPTON BOULEVARD AT NORTH SHORE ROAD

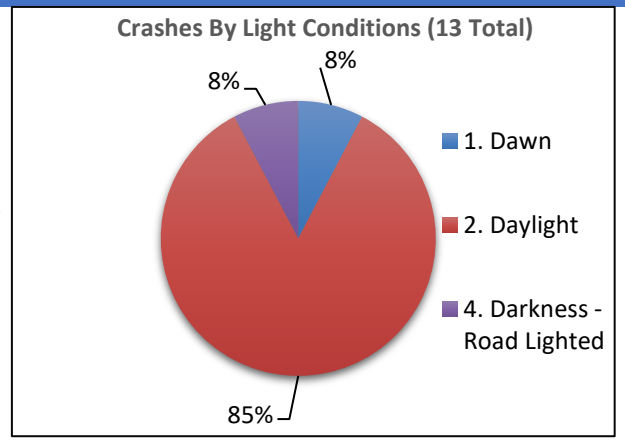
Summary of Crash Data: May 1, 2019 to April 30, 2024

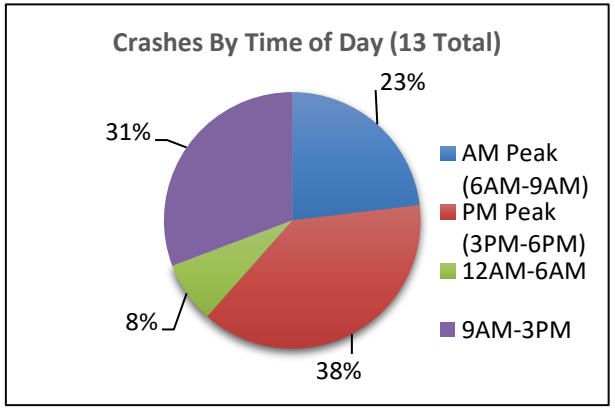
Unsignalized | 13 Total Crashes

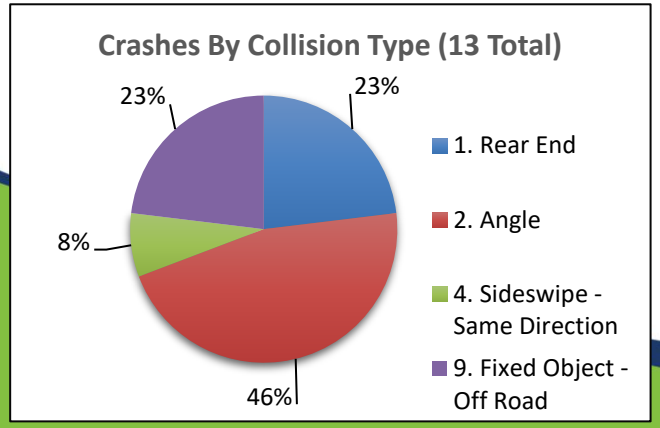
CRASH TRENDS

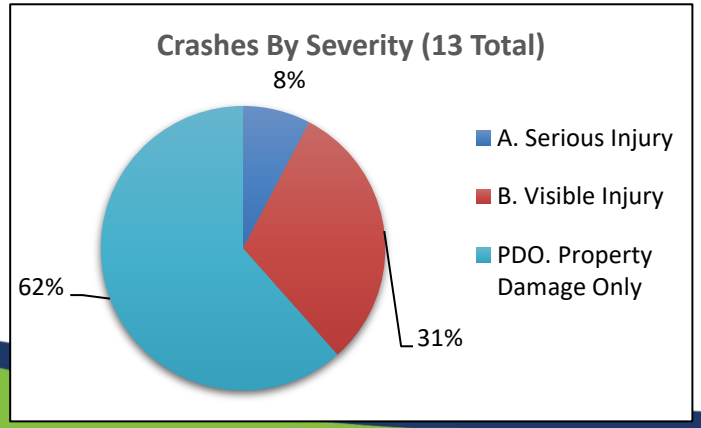
- Majority of crashes (69%) are either rear end or angle crashes, but there were three (23%) fixed object off road crashes
- Majority of crashes (62%) resulted in Property Damage Only
- Vast majority of crashes (85%) occurred during daylight
- 6 angle crashes were due to improper yielding to mainline traffic

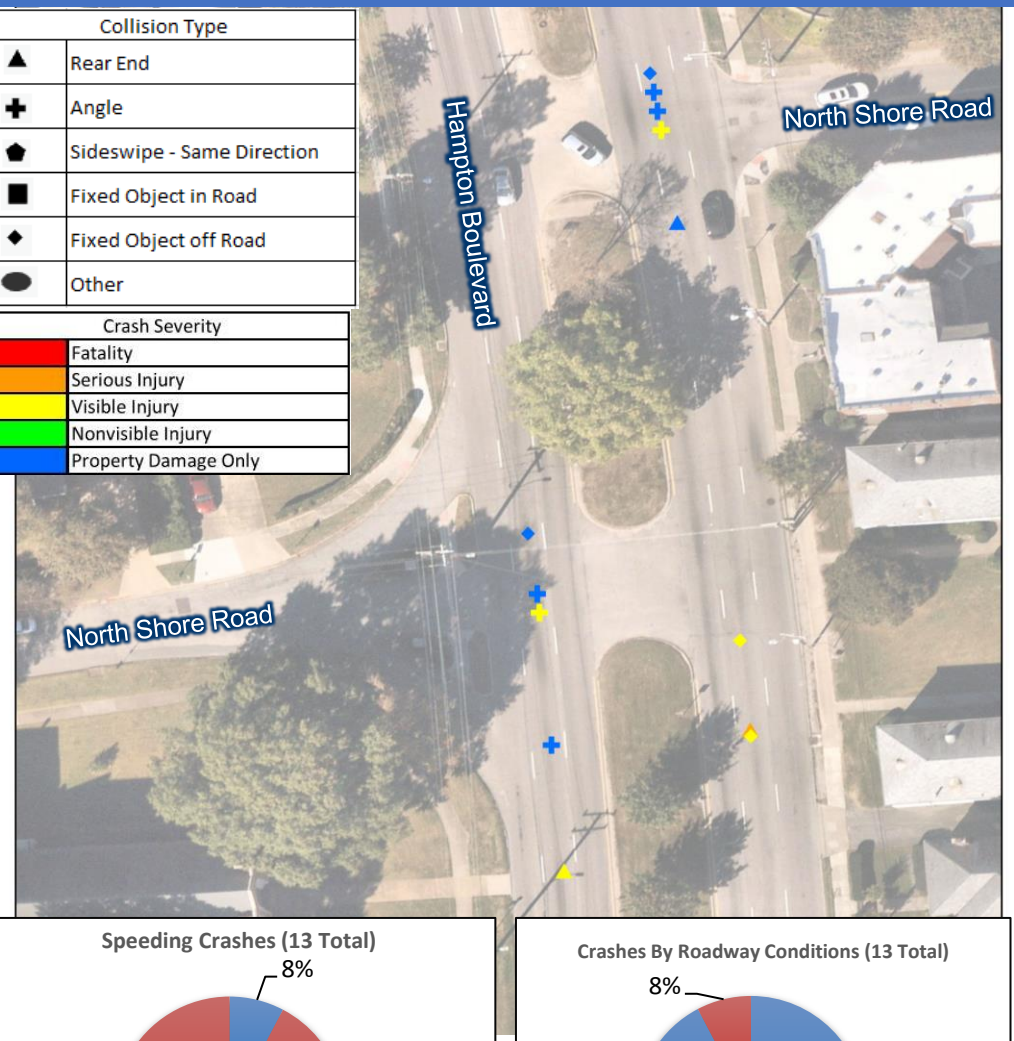


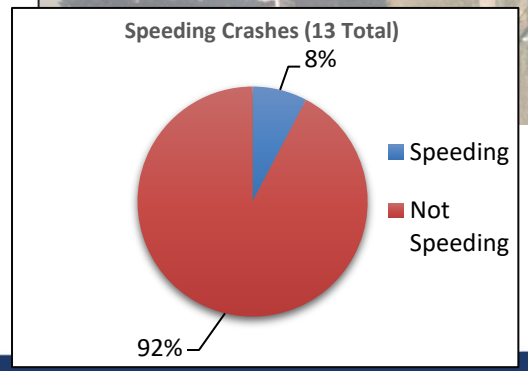


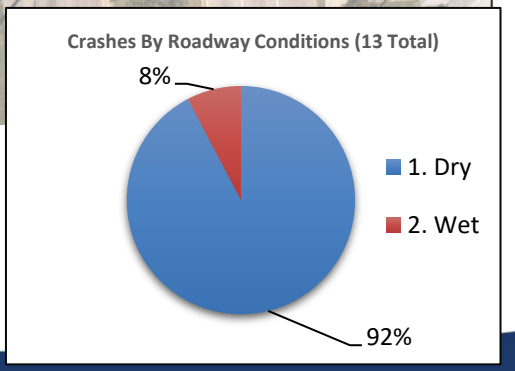












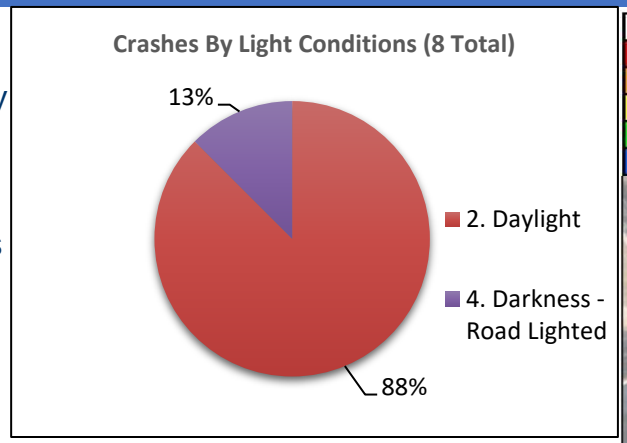
HAMPTON BOULEVARD AT RUNNYMEDE ROAD

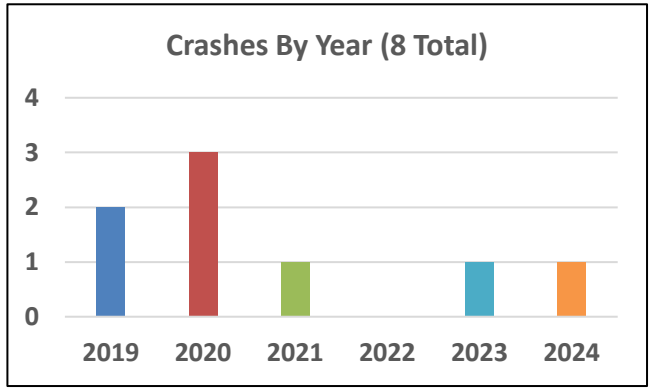
Summary of Crash Data: May 1, 2019 to April 30, 2024

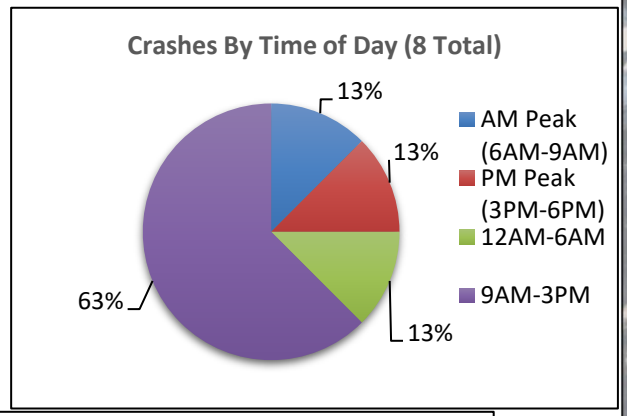
Unsignalized | 8 Total Crashes

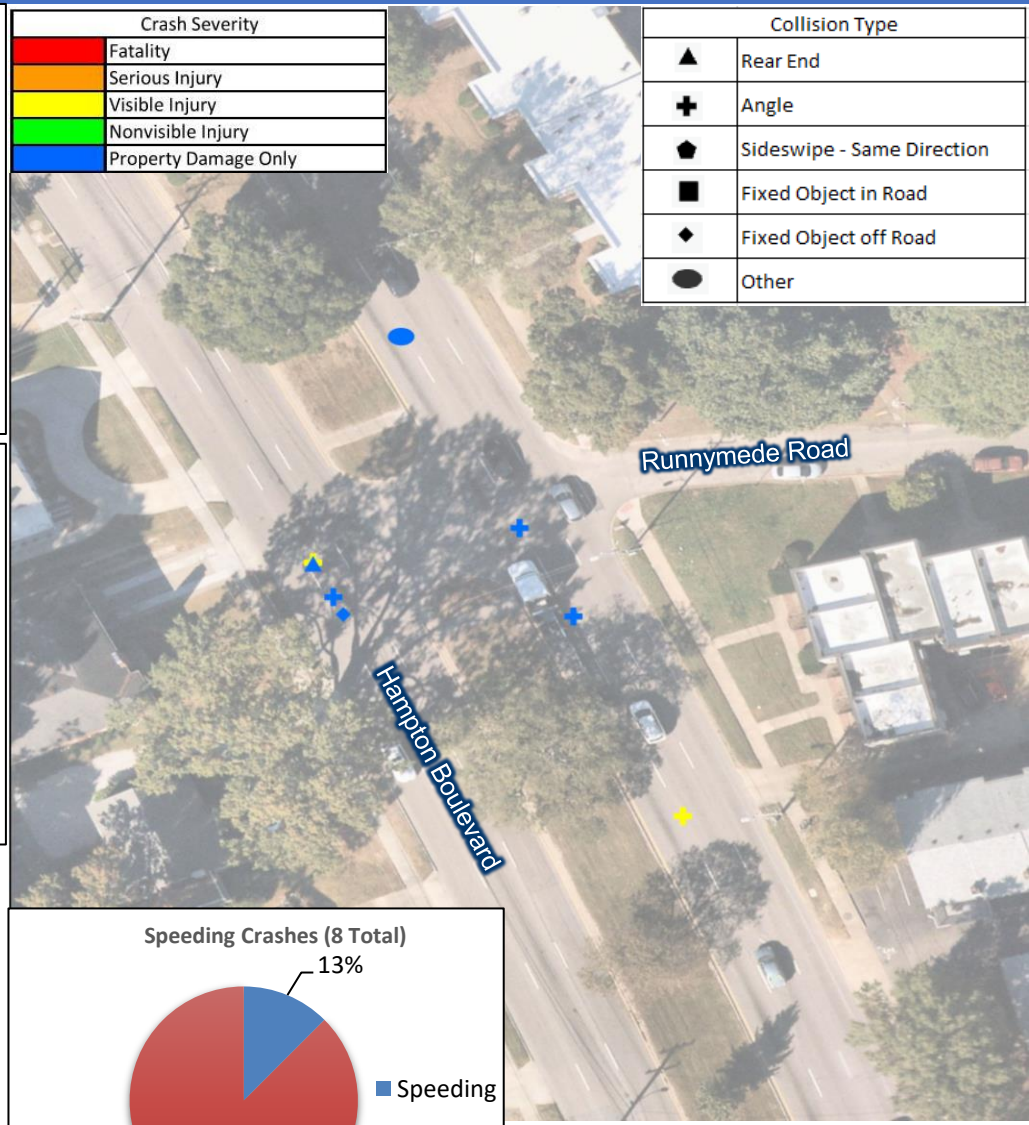
CRASH TRENDS

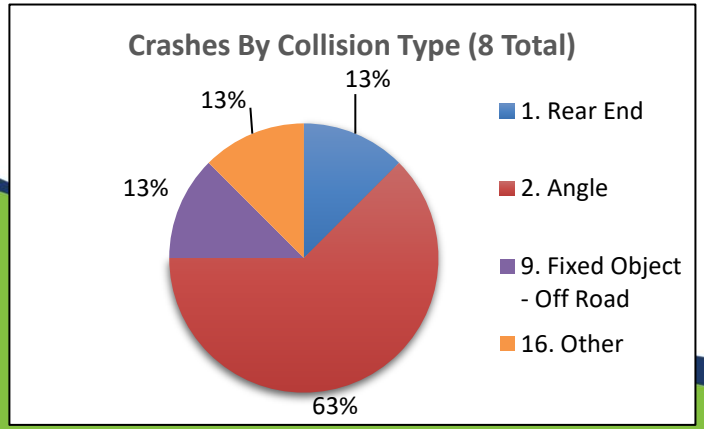
- Majority of crashes (75%) resulted in Property Damage Only
- Majority of crashes (63%) were angle crashes due to improper yielding to mainline traffic
- Majority of crashes (63%) occurred during the midday hours (9 AM to 3 PM)
- Vast majority of crashes (88%) occurred during daylight
- 2 crashes occurred due to pooled water/ice

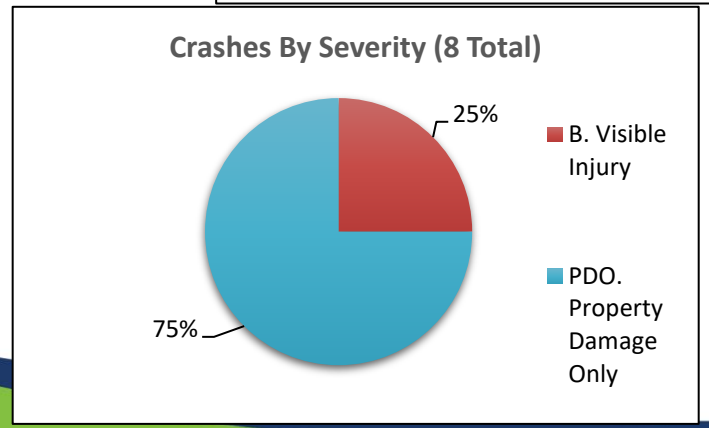


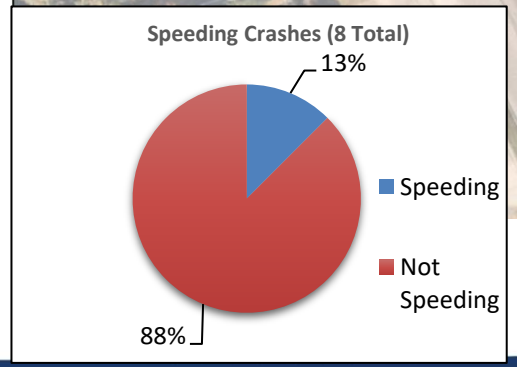












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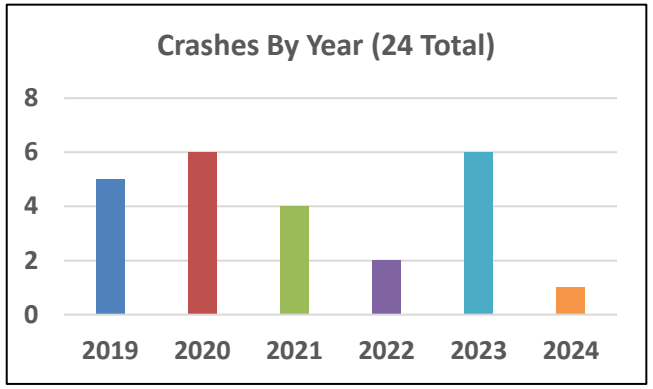
HAMPTON BOULEVARD AT LITTLE CREEK ROAD

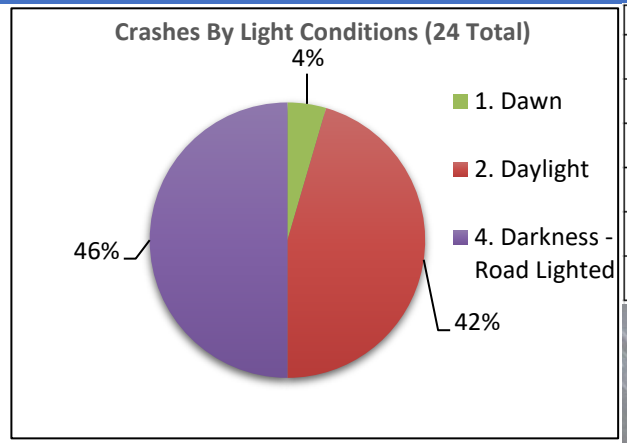
Summary of Crash Data: May 1, 2019 to April 30, 2024

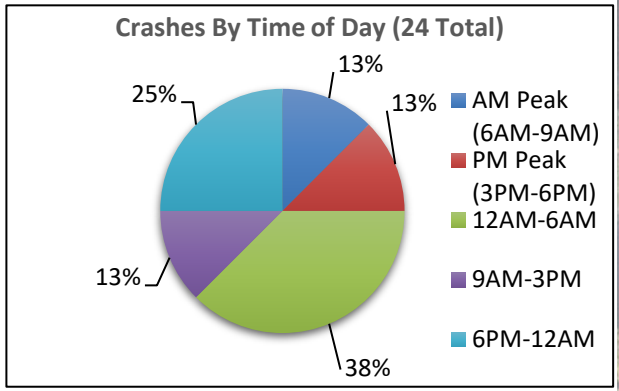
Signalized | 24 Total Crashes

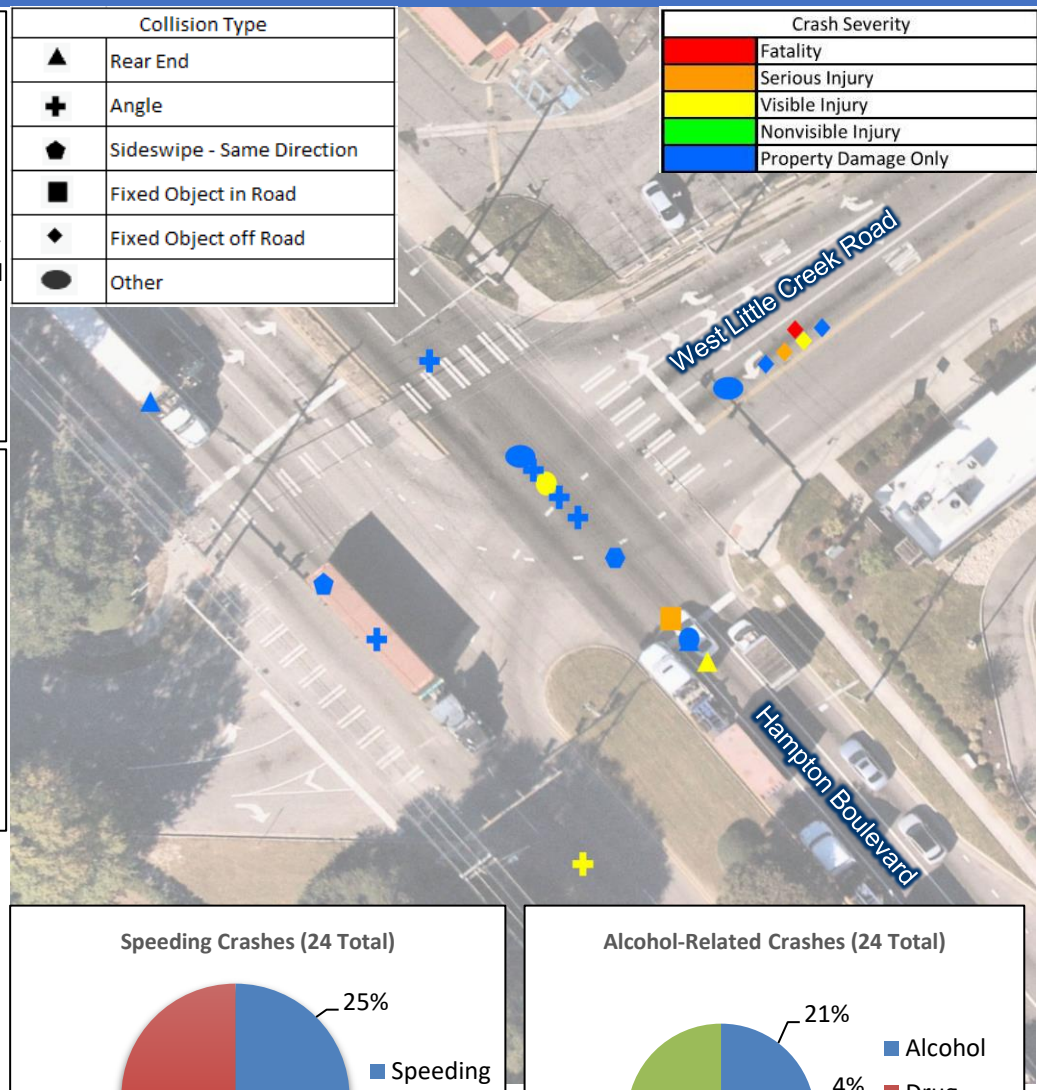
CRASH TRENDS

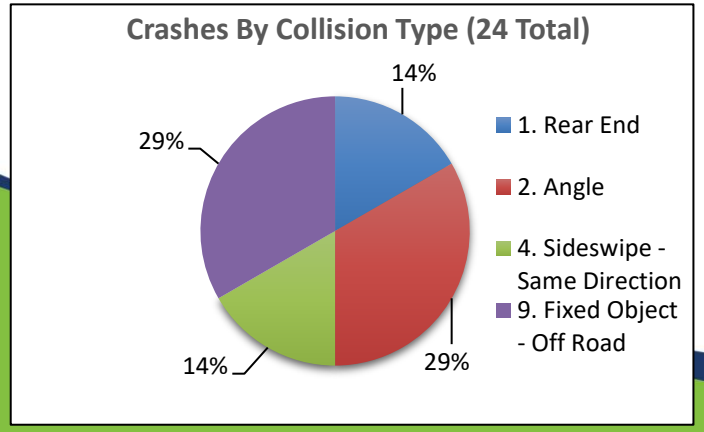
- Majority of crashes (71%) resulted in Property Damage Only
- Nearly half of crashes (46%) occurred in darkness
- More than one-third (38%) occurred during overnight hours (12 AM to 6 AM)
- 5 alcohol-related crashes with 1 being fatal
- 7 fixed object off road crashes
- 6 crashes (25%) involved speeding
- 6 crashes (25%) involved drug or alcohol use

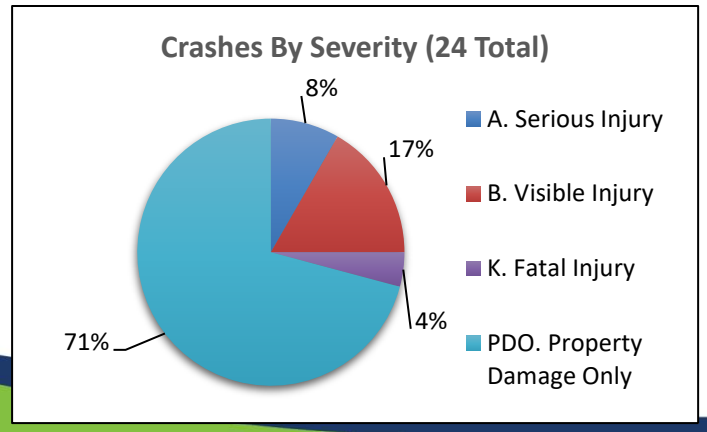


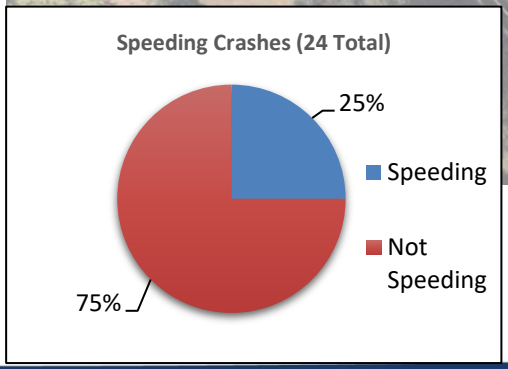


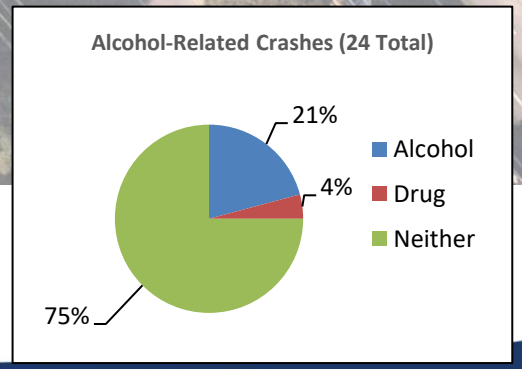






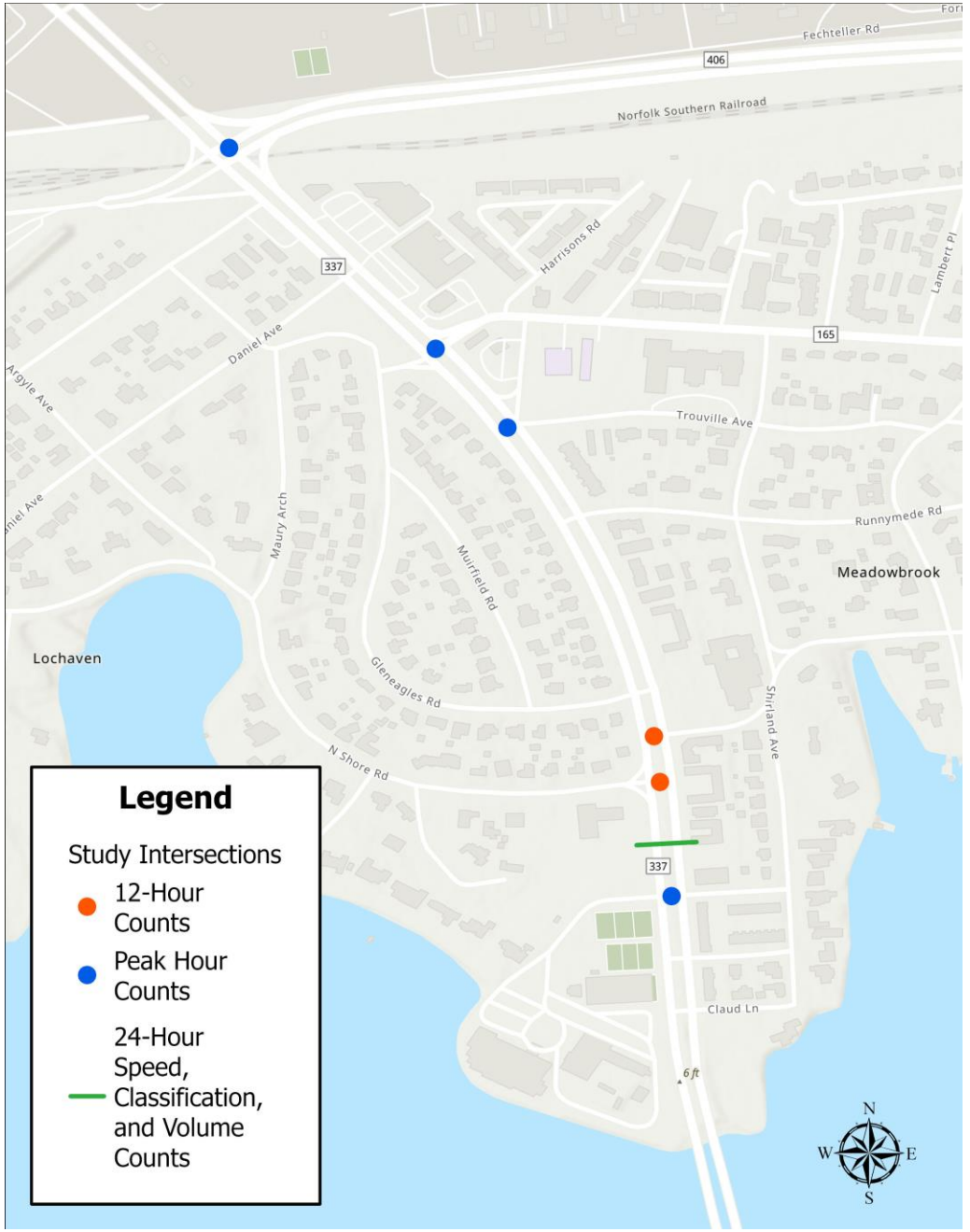






Data Collection

- Intersection turning movement counts
  - 3 signalized and 2 unsignalized intersections
  - Conducted on weekday in September 2024
- 24-hour roadway speed, classification, and volume counts
  - Collected along Hampton Blvd south of North Shore Road
  - Conducted for 7-day period in September 2024
- Peak hours for traffic analysis:
  - AM – 7:15AM – 8:15AM
  - PM – 3:30PM – 4:30PM



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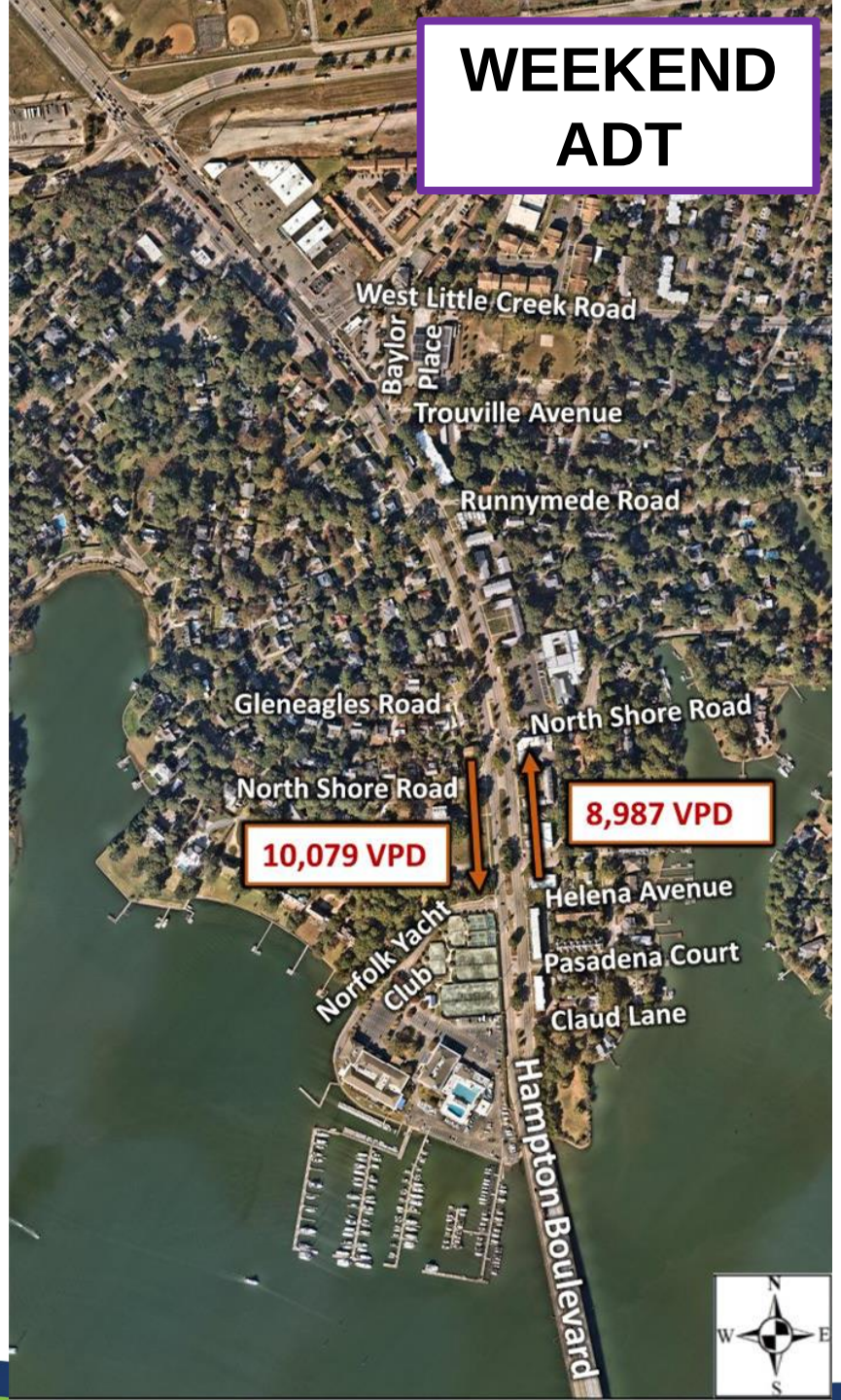

Average Daily Traffic in Vehicles per Day (2024)

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Speed Analysis

- Average Speed – statistical average of individual speeds of all vehicles observed to travel past collection point
- 85th Percentile Speed – speed at or below which 85% of all vehicles are observed to travel past collection point
- Although the speed limit is posted at 30 MPH, 85th percentile speeds along the corridor range between 45 MPH and 51 MPH
- Average number of vehicles recorded traveling over 60 MPH
  - Weekday: 225 per day
  - Weekend: 415 per day

Average Vehicle Speeds

September 2024

Posted Speed Limit: 30 mph

85th Percentile Vehicle Speeds

September 2024

Posted Speed Limit: 30 mph

Signal Warrant Analysis

Hampton Boulevard at North Shore Road

- Conducted using weekday 12-hour turning movement counts
- No signal warrants were satisfied

MUTCD Signal Warrants	Warrant Satisfied?	Notes
Warrant 1: Eight-Hour Vehicular Volume	**No**	
Warrant 2: Four-Hour Vehicular Volume	**No**	
Warrant 3: Peak Hour[1]	**No**	
Warrant 4: Pedestrian Volume	No	
Warrant 5: School Crossing	N/A	Not applicable
Warrant 6: Coordinated Signal System	No	
Warrant 7: Crash Experience[2]	No	
Warrant 8: Roadway Network	N/A	Not applicable
Warrant 9: Intersection Near a Grade Crossing	N/A	Not applicable

[1] Per MUTCD Section 4C.04, Warrant 3 shall only be applied in unusual cases, such as facilities that attract or discharge large numbers of vehicles over a short period of time.

[2] The Alternative Signal Warrant 7 – Crash Experience documented in FHWA Interim Approval #19 (IA-19) shall be used as per the Virginia Supplement to the MUTCD and the latest edition of IIM-TE-387. The most recent available three years of available crash data shall be used.

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Traffic Operations Analysis

- Existing conditions (2024) analysis
- Typical weekday AM and PM peak hour conditions
- Traffic volumes were collected in September 2024
- Traffic analysis measures:
  - Average vehicle delay and associated level of service (LOS)
  - 95th Percentile Queue Lengths

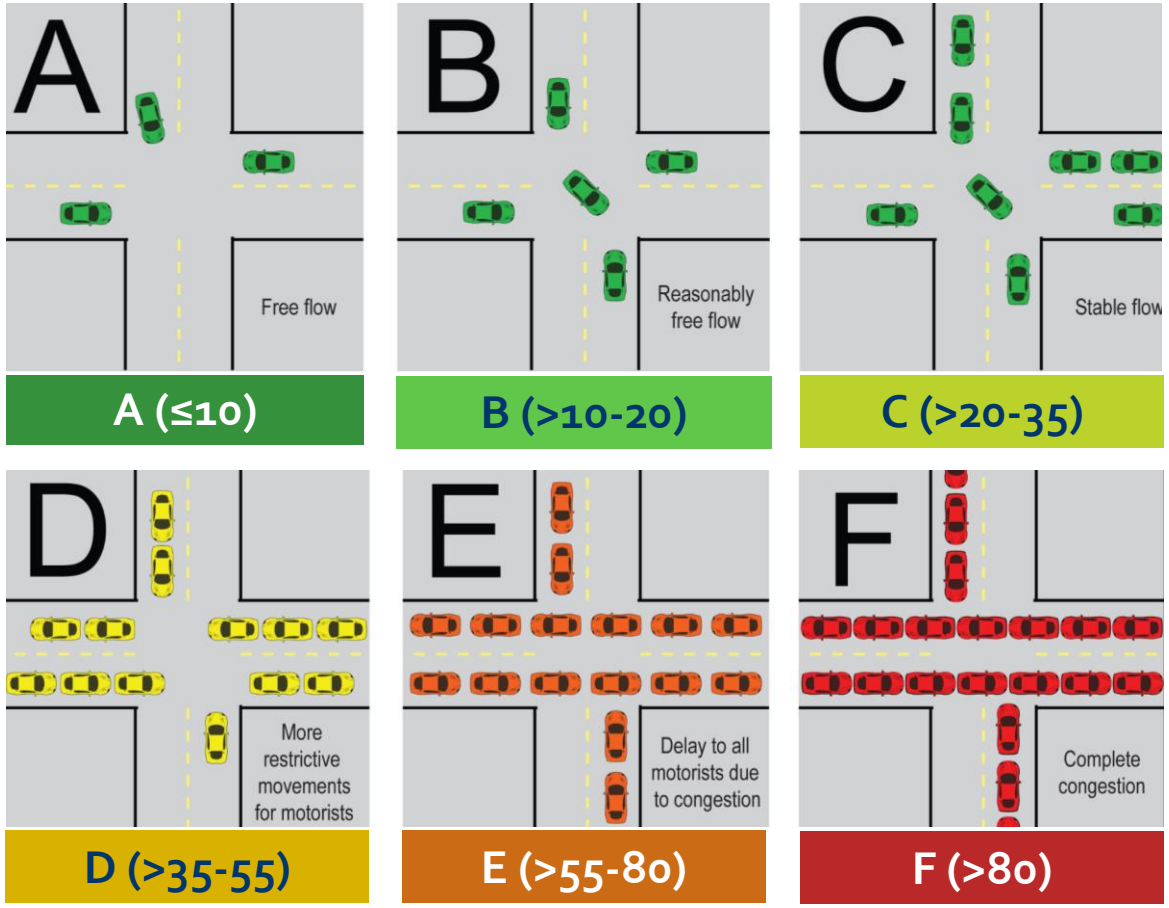
Traffic Analysis Measures

Level of Service (LOS)

The amount of traffic congestion and delay experienced by a driver at an intersection.

- Letter grade range **A** to **F**
  - **LOS A** – little to no congestion and delay
  - **LOS F** – severe congestion and long delay
  - **LOS A – LOS D** = Considered acceptable during peak hours for overall intersection
    - *Standard practice for urban areas*

Overall Signalized Intersection LOS Depiction



LOS (average delay in seconds per vehicle)

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Existing (2024) Traffic Analysis Results

AM Peak Hour

Intersection	Level of Service (Delay)				
	NB	SB	EB	WB	SWB
Hampton Blvd & Helena Ave	A (0.1)	A (0.0)	C (15.7)	F (141.5)	
Hampton Blvd & North Shore Rd (South)	A (0.1)	A (0.0)	B (14.6)		
Hampton Blvd & North Shore Rd (North)	A (0.0)	A (0.3)		F (186.0)	
Hampton Blvd & Baylor Pl / Trouville Ave	A (0.0)	A (0.0)		B (14.2)	B (14.1)
Hampton Blvd & Little Creek Rd	C (33.2)	B (14.1)	D (53.1)	F (88.1)	
Hampton Blvd & Terminal Blvd	C (31.4)	D (35.7)	D (49.9)	D (37.2)	

Level of Service Grade
(average delay in seconds per vehicle)

- A (≤10)
- B (>10–20)
- C (>20–35)
- D (>35–55)
- E (>55–80)
- F (>80)

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Existing (2024) Traffic Analysis Results

PM Peak Hour

Intersection	Level of Service (Delay)				
	NB	SB	EB	WB	SWB
Hampton Blvd & Helena Ave	A (0.4)	A (0.0)	F (66.9)	C (21.5)	
Hampton Blvd & North Shore Rd (South)	A (0.6)	A (0.0)	D (27.9)		
Hampton Blvd & North Shore Rd (North)	A (0.0)	A (0.2)		D (27.9)	
Hampton Blvd & Baylor Pl / Trouville Ave	A (0.0)	A (0.1)		A (10.0)	B (11.4)
Hampton Blvd & Little Creek Rd	C (21.3)	B (11.6)	D (53.7)	D (44.5)	
Hampton Blvd & Terminal Blvd	C (28.3)	C (33.8)	D (50.3)	C (34.7)	

Level of Service Grade
(average delay in seconds per vehicle)

- A (≤10)
- B (>10–20)
- C (>20–35)
- D (>35–55)
- E (>55–80)
- F (>80)

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Next Steps

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Next Steps

- Review input from today's meeting and associated online survey
- Finalize list of potential improvements for evaluation
- Conduct future traffic operations and safety analysis of alternatives
- Develop planning-level cost estimates and evaluation matrix

Input and Feedback on Potential Improvements

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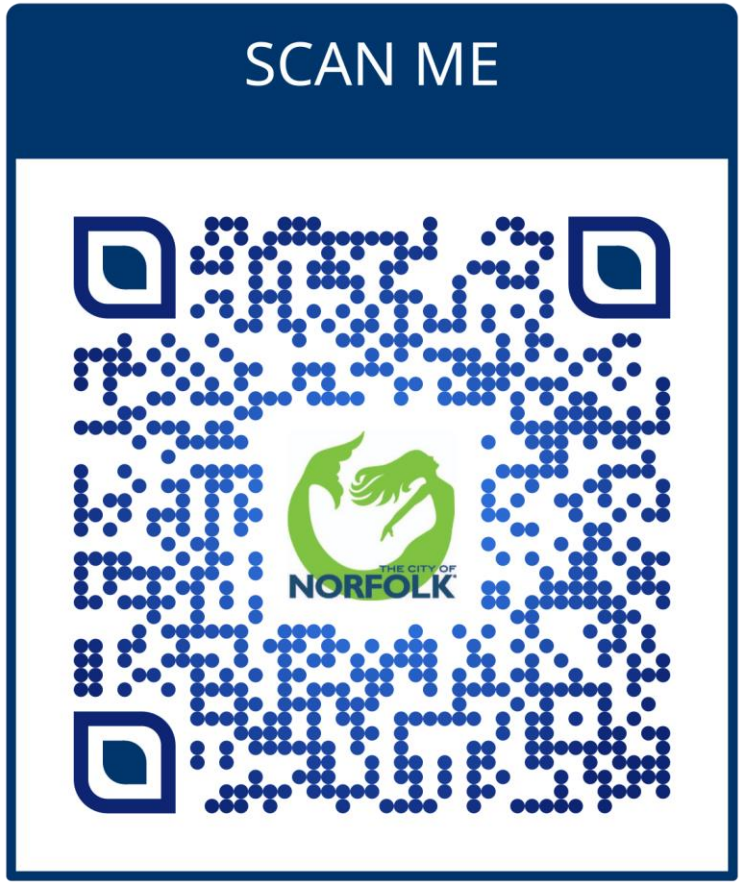
Contribute to Online Survey



https://www.norfolk.gov/NorthShoreSafety

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Potential Engineering Improvements

- Traffic signal at Hampton Boulevard intersection with North Shore Road
- Pedestrian hybrid beacon
- “Rest in red” operation at existing traffic signals (by time-of-day)
- Median, landscaping, and lighting enhancements
- Additional speed feedback signs
- Turn restrictions

WHAT ELSE?

Traffic Signal at Hampton Boulevard Intersection with North Shore Road

- Signal control of four approaches at intersection
  - Northbound and southbound Hampton Boulevard
  - Eastbound and westbound North Shore Road
- Potential construction of left-turn lane from northbound Hampton Boulevard onto North Shore Road
- Signalized pedestrian crossings
- Coordinated with other signals along Hampton Boulevard (north of Lafayette River Bridge)

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Pedestrian Hybrid Beacon (PHB)

- Provides signalized crossing **only** for pedestrians
- Overhead beacons provide sequence of red and yellow lights to warn and stop drivers when activated by push button
- Overhead beacons are dark when PHB is not active
- Typically installed midblock rather than at intersections

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“Rest in Red” Operation at Existing Traffic Signals

- Signals revert to an “all-red” phase when there is no traffic demand at the signal
- Approaching vehicles and their current speed can be detected to give a green light to those traveling at the speed limit or stay red for those who are speeding
- Can be programmed by time-of-day, typically for late night and early morning hours, to reduce travel speeds when volumes are lower

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Median, Landscaping, and Lighting Enhancements

Features could include:

- Planting additional trees along both sides of the street and in the median to visually narrow the roadway
- Reviewing existing lighting levels and installing additional fixtures where needed

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Additional Speed Feedback Signs

- Installing additional speed feedback signs at other locations along the corridor
  - Similar to those near the Lafayette River Bridge

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Turn Restrictions

- Potential restrictions could include:
  - Left-turn movement from Trouville Avenue onto Hampton Boulevard
  - Left-turn movements from North Shore Road onto Hampton Boulevard
  - Left-turn movement from Helena Avenue and/or NYCC Driveway onto Hampton Boulevard
  - Other movements to/from Hampton Boulevard
- Restrictions could be in place at all times or by time-of-day

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Discussion and Q&A

THANK YOU!

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