THE CITY OF NORFOLK

Hampton Boulevard Safety Study

Larchmont-Edgewater
Civic League Meeting

April 29, 2024

Welcome and Introductions

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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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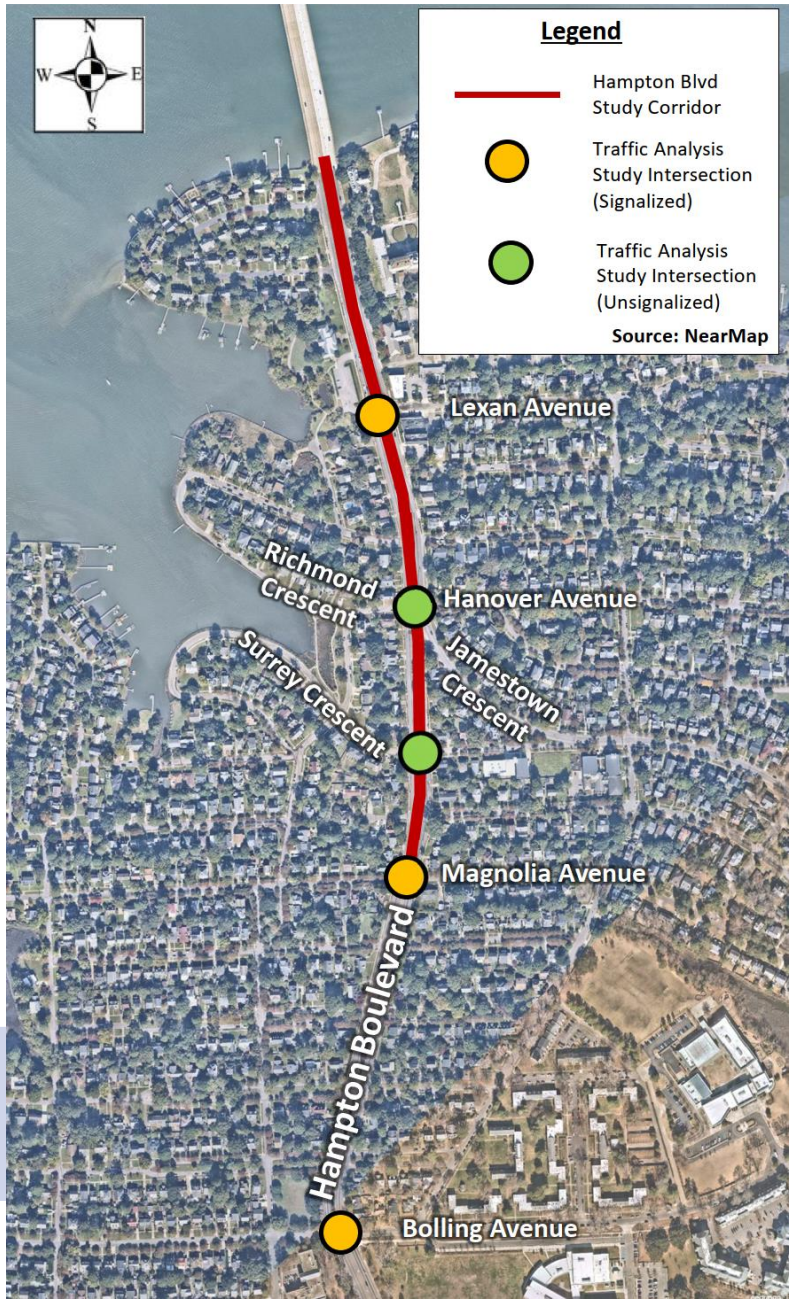
Project Overview

- Study Area – Hampton Boulevard
  - From Lafayette River Bridge to Magnolia Avenue
- We are here because of you!
- Evaluate need for traffic signal at Hampton Blvd & Jamestown Crescent and/or other alternatives to improve traffic operations and safety along the corridor

Project webpage:
www.norfolk.gov/SafetyOnHampton



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Project Scope

- Evaluate potential benefits and impacts of signalizing the intersection of Hampton Boulevard at Jamestown Crescent and Richmond Crescent/Hanover Avenue
- 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

Hampton Boulevard at Jamestown Crescent & Richmond Crescent/Hanover Avenue

- Previous traffic signal for southbound left-turn movement was knocked down during 2015 crash
- Signalization was considered based on resident concerns following fatal crash at the intersection in 2021
- Signal design and construction are funded in current CIP; design is 90% complete

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Project Background

Civic League-Initiated Survey Results March 2023

- 428 respondents (all addresses validated as Larchmont-Edgewater)
- 5-way Traffic Signal & Crosswalk Installation at Hampton Blvd & Jamestown Crescent
  - 58% not in favor of moving forward with signal installation
  - 35% in support of signal installation
  - 7% indifferent or need more information
- Jamestown Crescent Speeding Concerns
  - 58% in support of City of Norfolk traffic study to address speeding

Project Background

Considerations from Other Plans

- *VDOT Potential for Safety Improvement (PSI) Segment Rankings*
  - Rank 1,378 between Lafayette River Bridge and Bedford Avenue
  - Rank 422 between Jamestown Crescent and Magnolia Avenue
  - Rank 397 between Magnolia Avenue and Bolling Avenue
- *VDOT Pedestrian Safety Action Plan (PSAP)*
  - Statewide Top 1% Corridor
  - Hampton Roads District Top 5% Corridor
- *City of Norfolk Multimodal Transportation Master Plan*
  - Transit and Pedestrian modal emphasis on Hampton Blvd south of bridge
  - Public input suggested providing more crosswalks across Hampton Blvd

Project Background

Considerations from Other Plans (cont'd)

- *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:
    - Additional crosswalk and signage at Jamestown Crescent/Hanover Ave
    - Improve bicyclist/pedestrian visibility
    - Improve signal timing and detection
    - Improve pavement markings
    - Education and outreach
    - Increase enforcement
    - Traffic calming including pavement markings and landscaping

Project Background

Other Funded Improvements

- *Drainage Improvement Project*
  - Hampton Boulevard & Lexan Avenue signal replacement
    - Enhancements to be considered
- *Hampton Boulevard & Magnolia Avenue*
  - Signal upgrade from span wire to mast arm
  - Pedestrian signals and ADA improvements
  - VDOT Revenue Sharing FY27

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Existing Conditions Analysis

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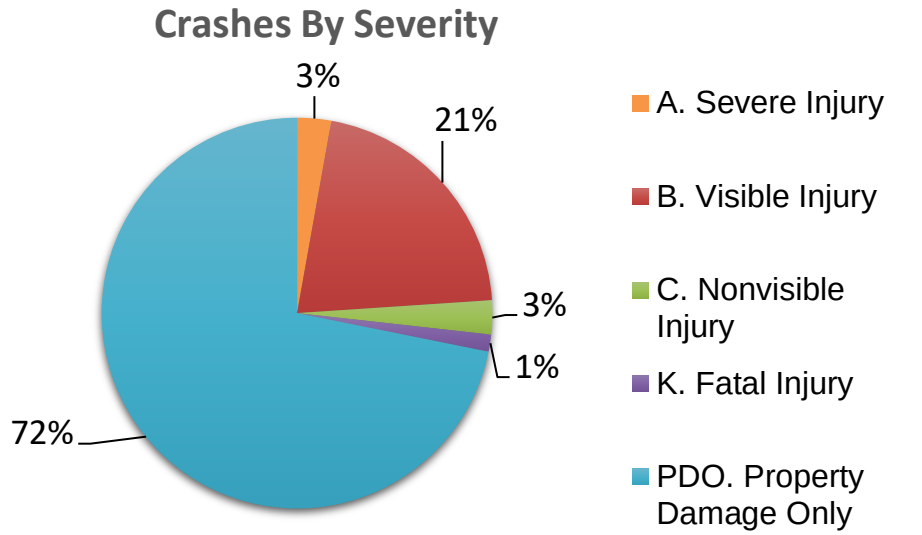
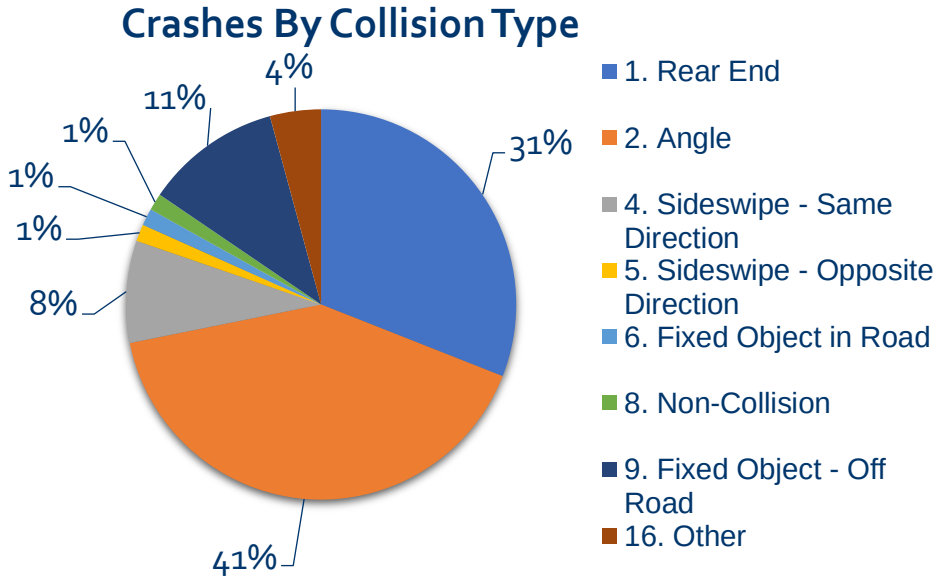
Crash Analysis (All Modes)

- 71 total crashes from September 30, 2018 to September 30, 2023
- 1 Fatality reported in 2021
  - Occurred in the southbound direction near Richmond Cres/Hanover Ave/Jamestown Cres
  - Crash involved fixed object in road (trees, pole)
- 28% of all crashes result in injury or death
- Rear end and angle type crashes account for 72% of total crashes
- 1 bike crash





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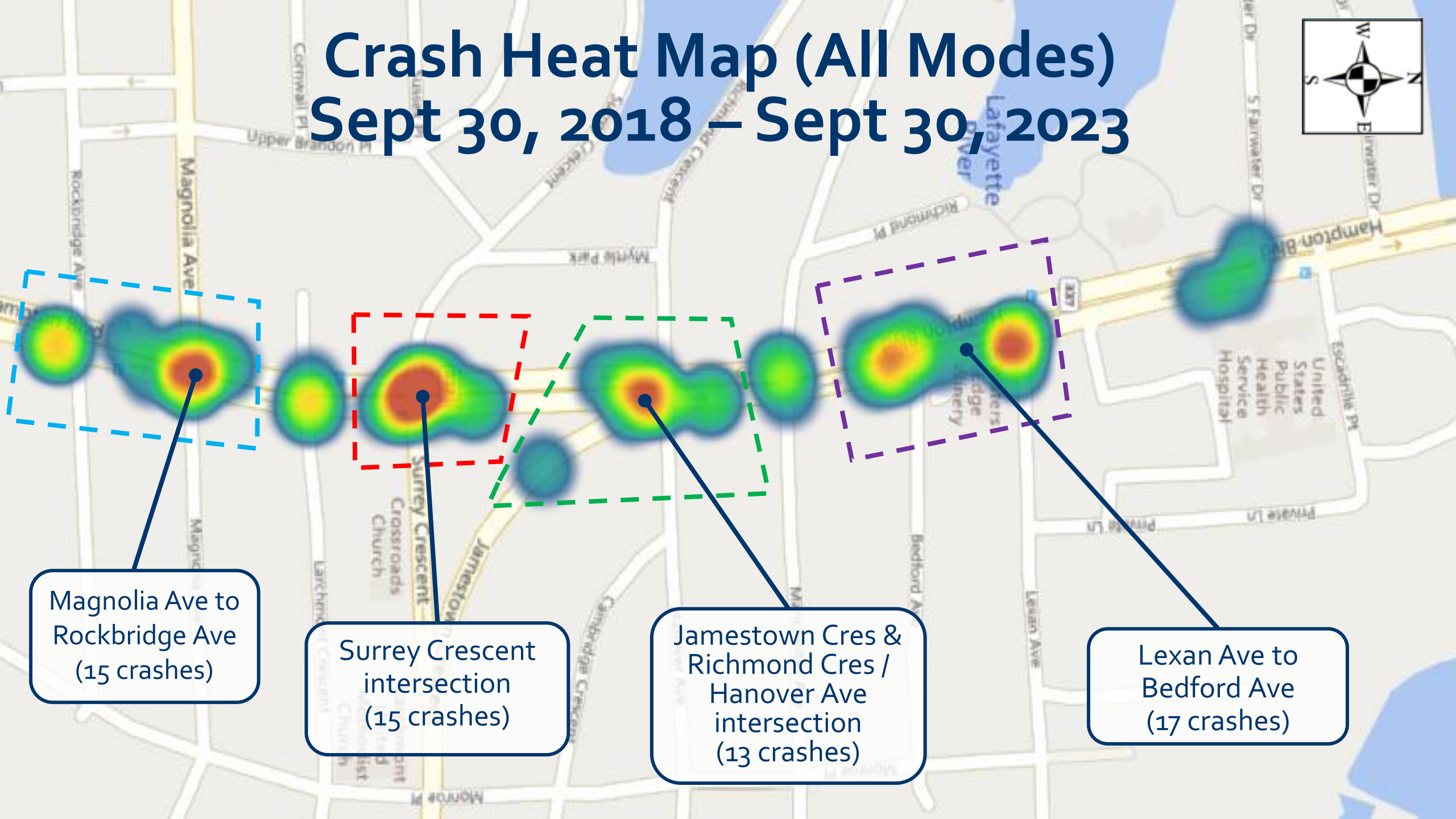
Crash Heat Map (All Modes)
Sept 30, 2018 – Sept 30, 2023



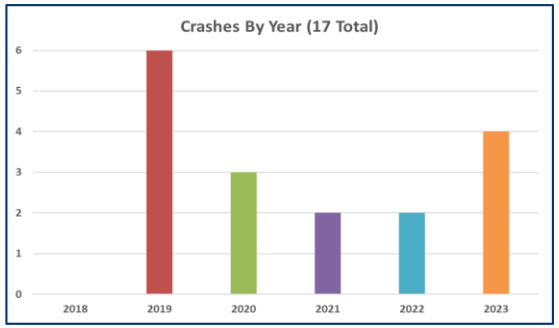
HAMPTON BOULEVARD AT LEXAN AVENUE & BEDFORD AVENUE

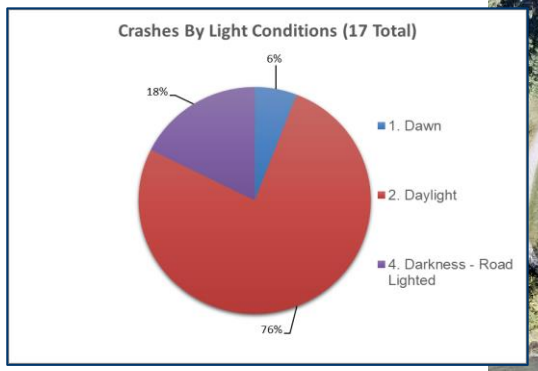
Summary of Crash Data: September 30, 2018 – September 30, 2023

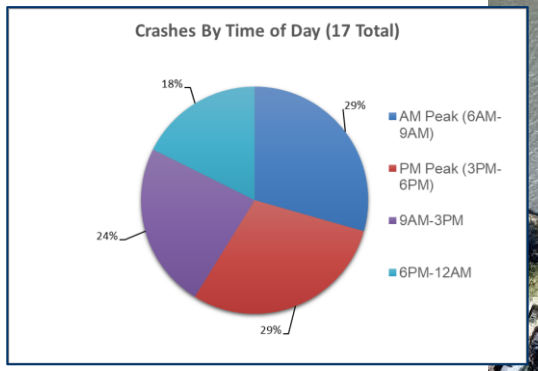
Signalized/Unsignalized | 17 Total Crashes

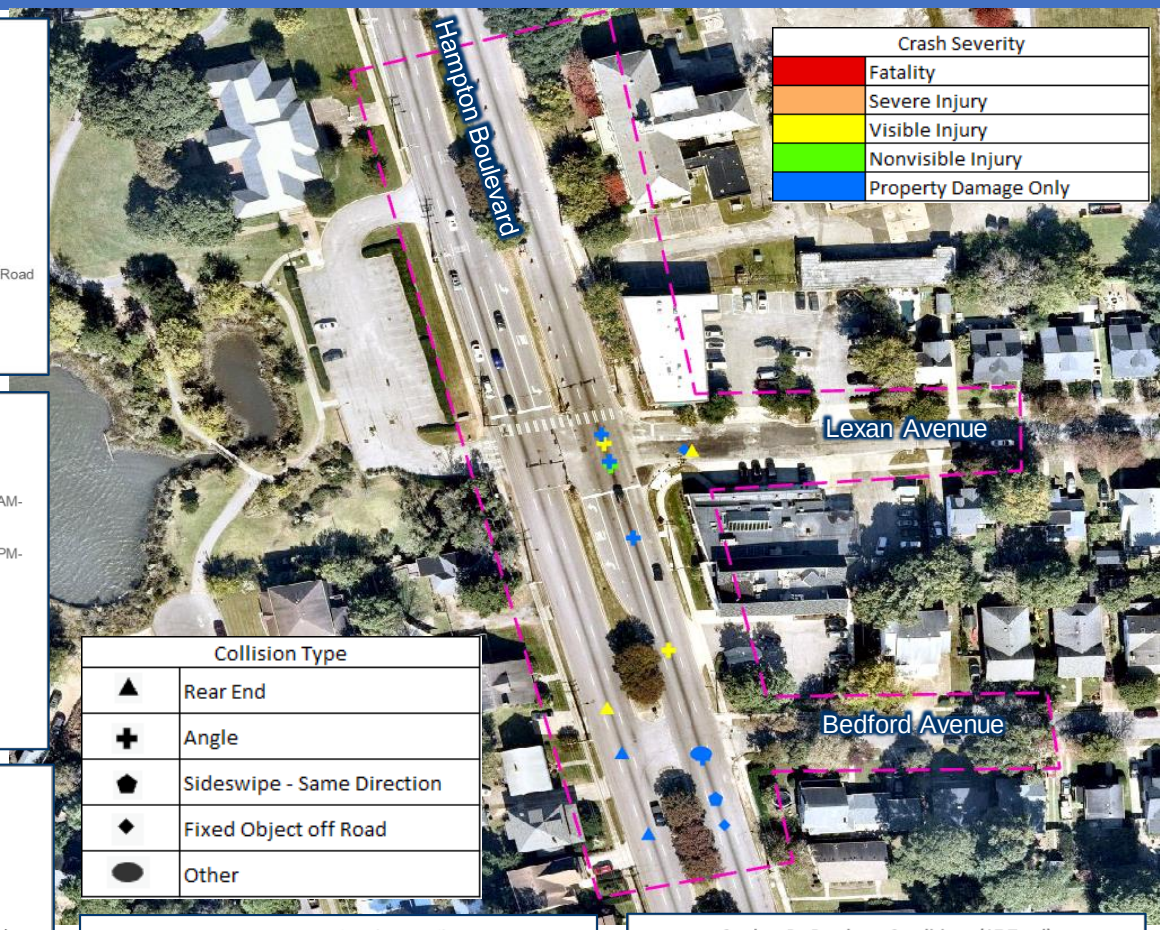
CRASH TRENDS

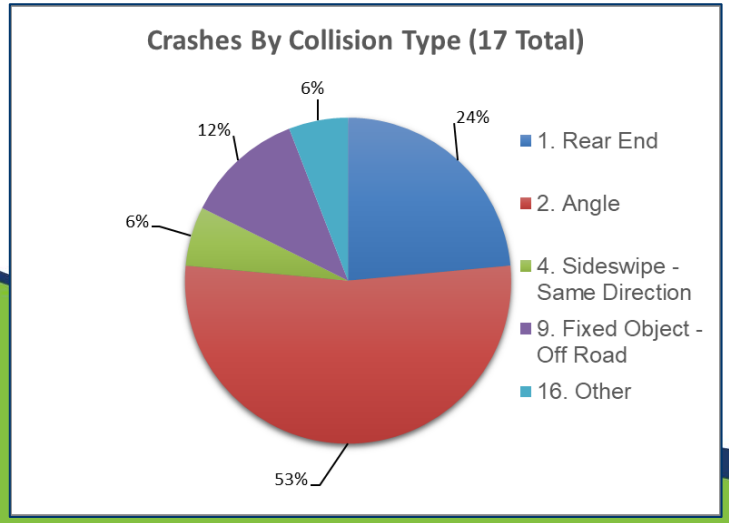
- Majority of crashes (53%) were angle crashes
- Majority of crashes (65%) resulted in Property Damage Only
- 1 crash involving water pooling in northbound lane
- Southbound queuing around Bedford Ave caused 3 rear-end crashes
- Northbound queuing in first two lanes blocks visibility of vehicles in outside lane, causing angle crash with southbound left-turning vehicles at Bedford Ave (2 crashes)
- 3 crashes involved improper lane changing

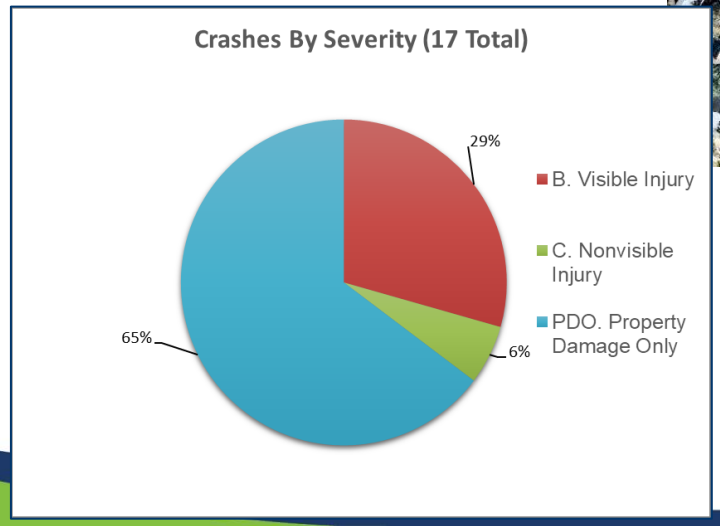


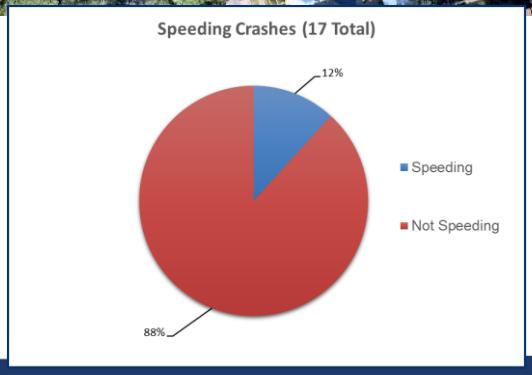


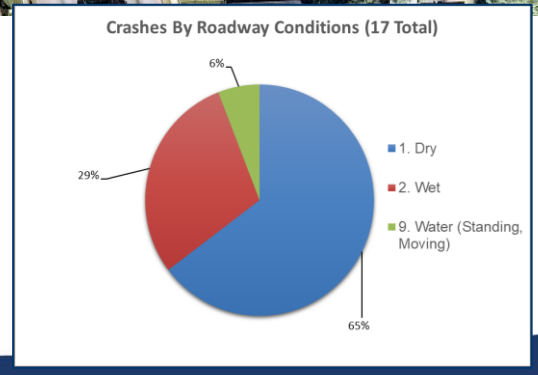












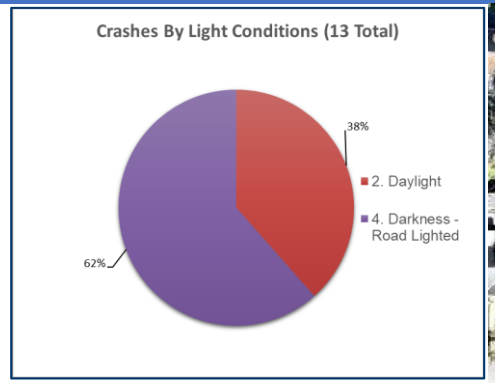
HAMPTON BOULEVARD AT JAMESTOWN CRESCENT & RICHMOND CRESCENT / HANOVER AVENUE

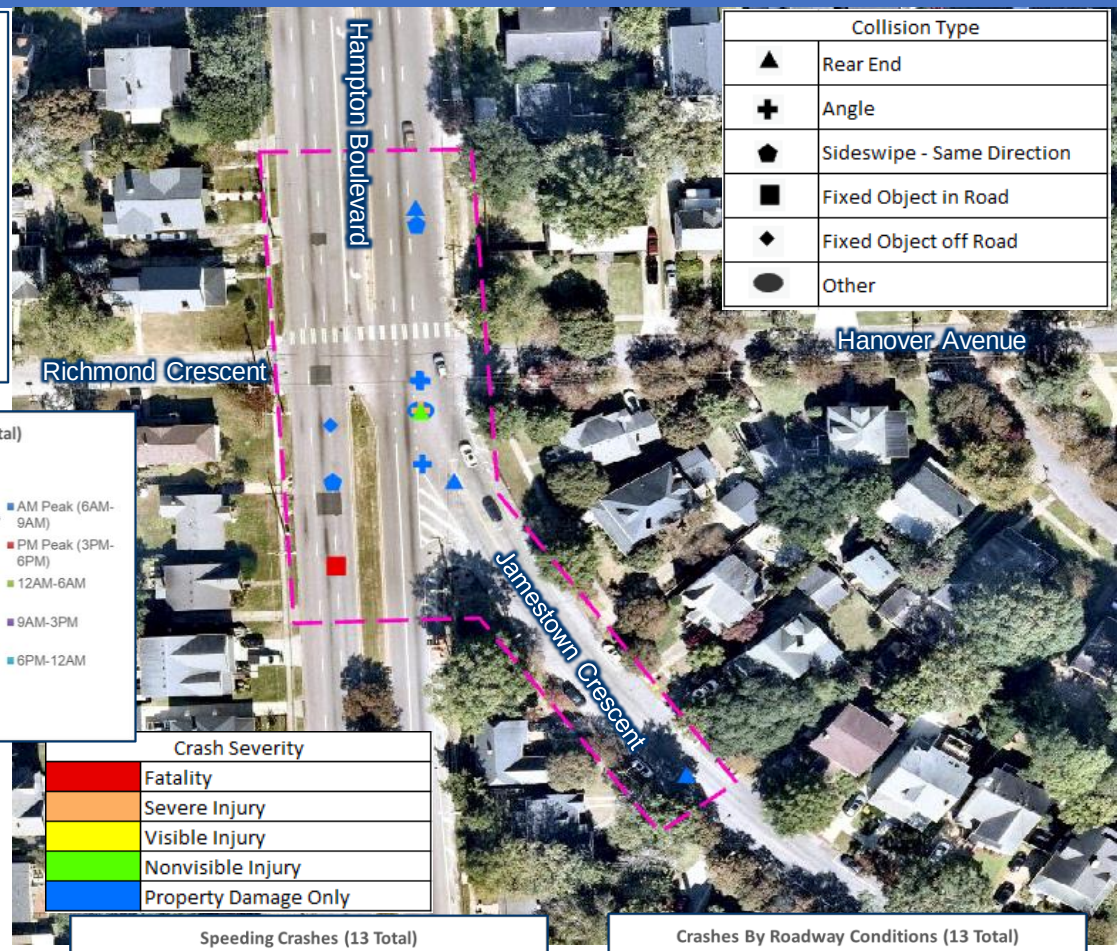
Summary of Crash Data: September 30, 2018 – September 30, 2023

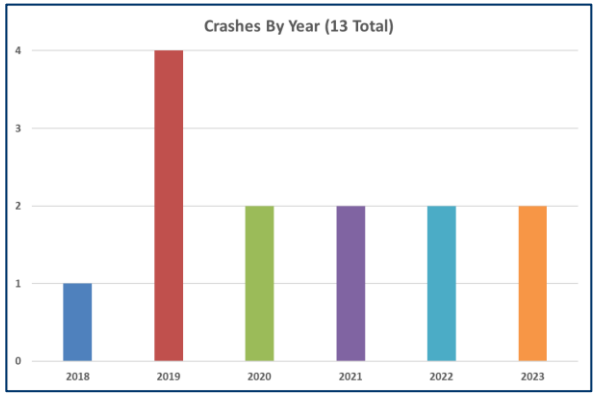
Unsignalized | 13 Total Crashes

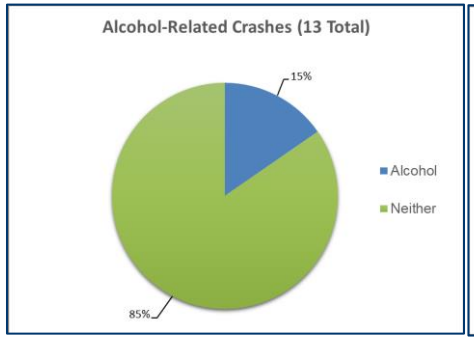
CRASH TRENDS

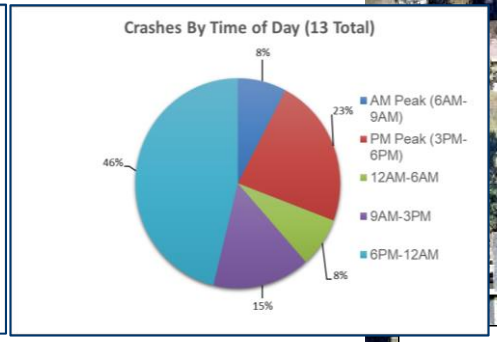
- Majority of crashes (62%) are either rear end or angle crashes
- Majority of crashes (77%) result in Property Damage Only
- Majority of crashes (62%) occurred in darkness (with roadway lighting)
- 1 Fatal Crash occurred in 2021 with a fixed object in the road (trees, utility pole); crash involved phone usage, alcohol, and speeding
- 6 crashes involve vehicles merging from or turning onto Jamestown Crescent; 2 additional crashes occur soon after turning onto Jamestown Crescent

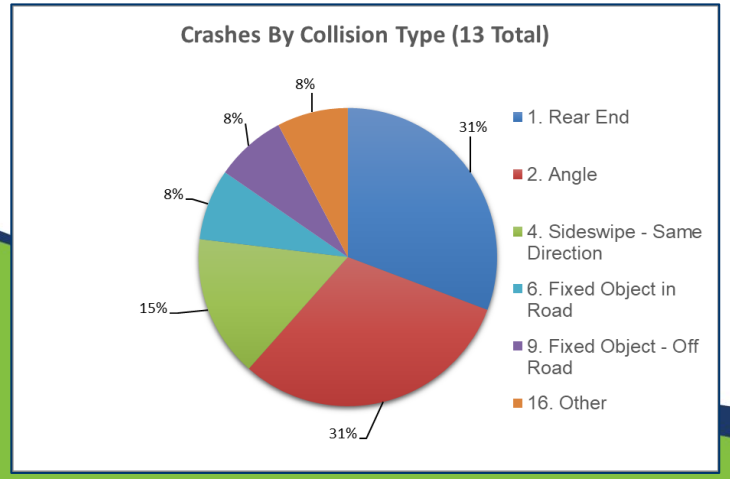


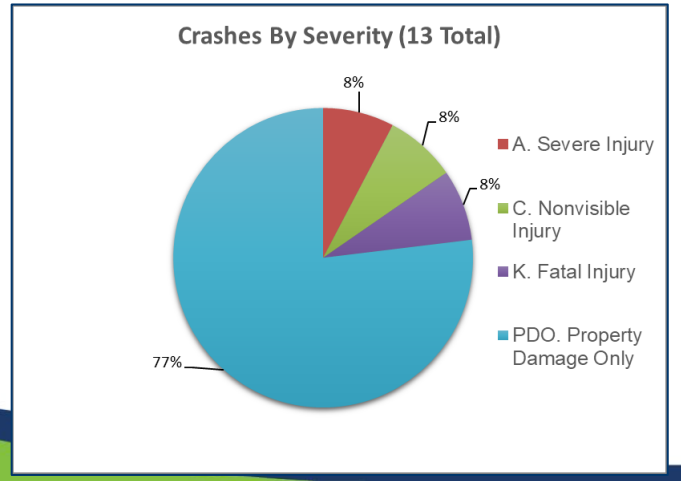


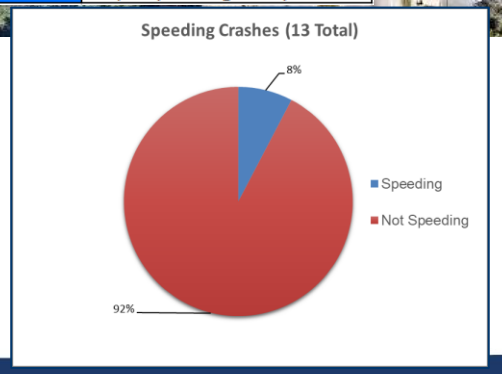


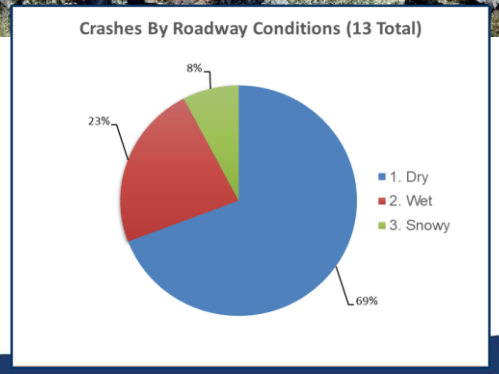












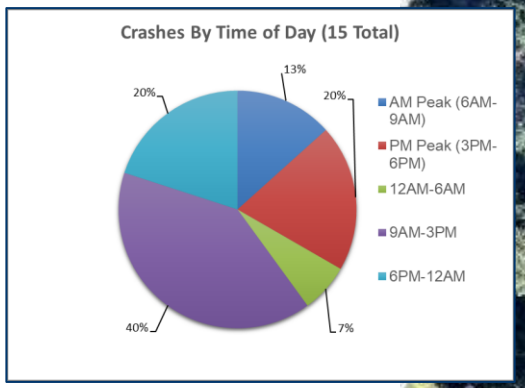
HAMPTON BOULEVARD AT SURREY CRESCENT

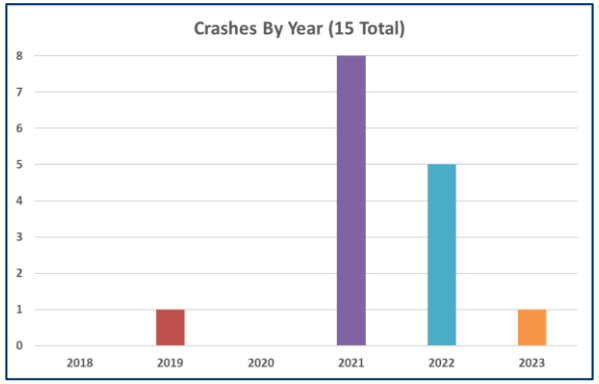
Summary of Crash Data: September 30, 2018 – September 30, 2023

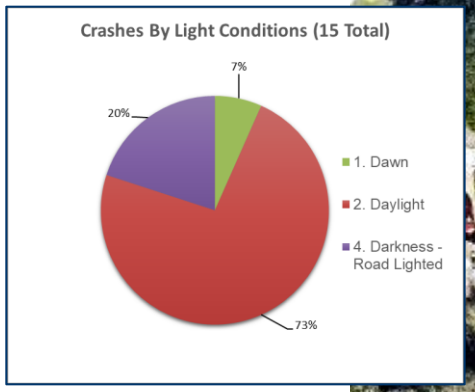
Unsignalized | 15 Total Crashes

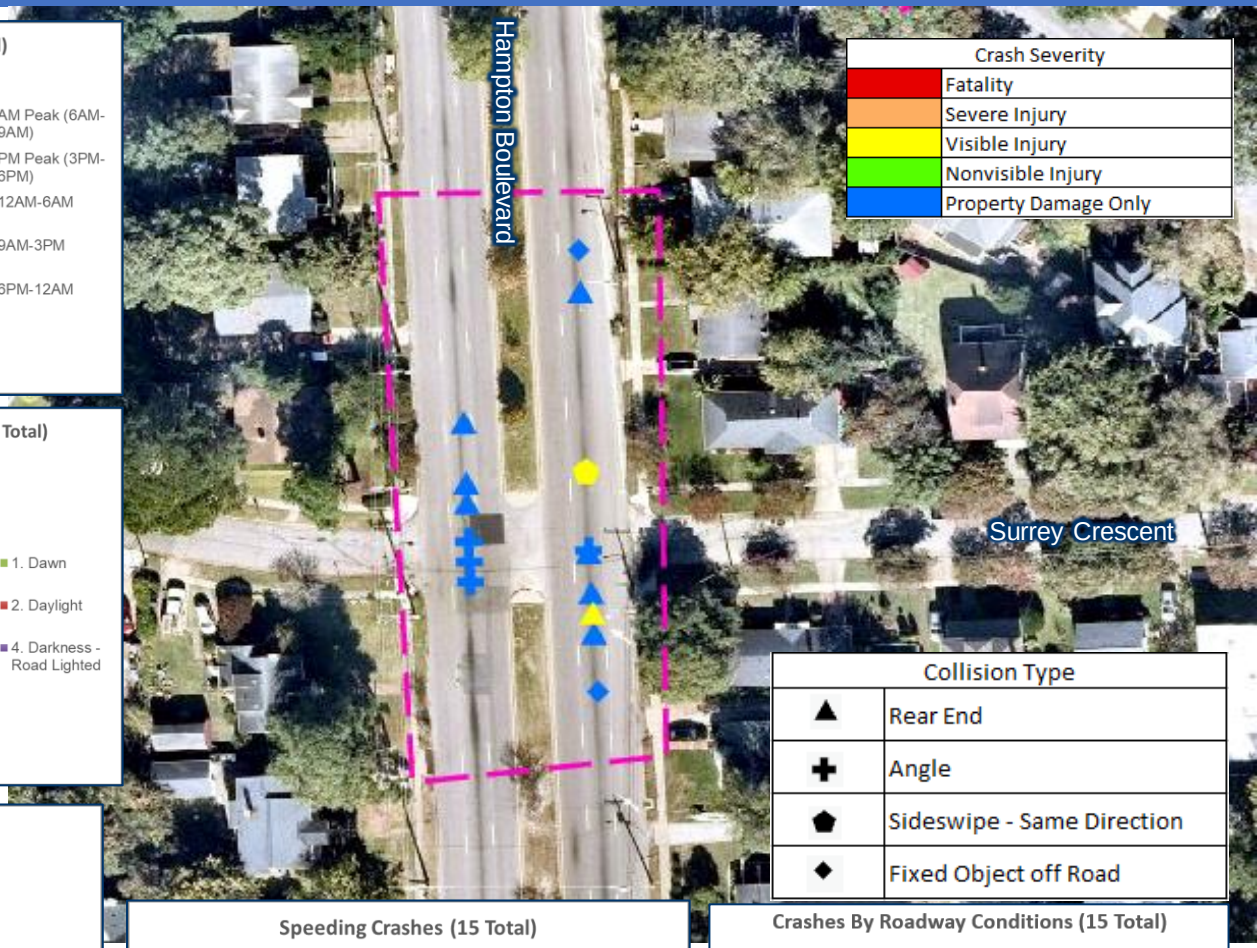
CRASH TRENDS

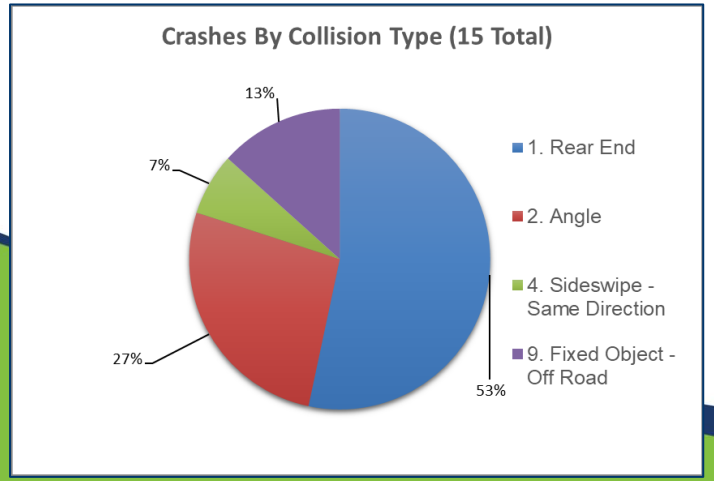
- Majority of crashes (87%) resulted in Property Damage Only
- Majority of crashes (53%, or 8 crashes) were rear-end crashes in both the northbound and southbound directions caused by either slowed traffic or sudden stops for turning vehicles
- 3 angle crashes due to improper yielding to mainline traffic
- 2 crashes occurred due to pooled water/ice
- 4 speeding crashes

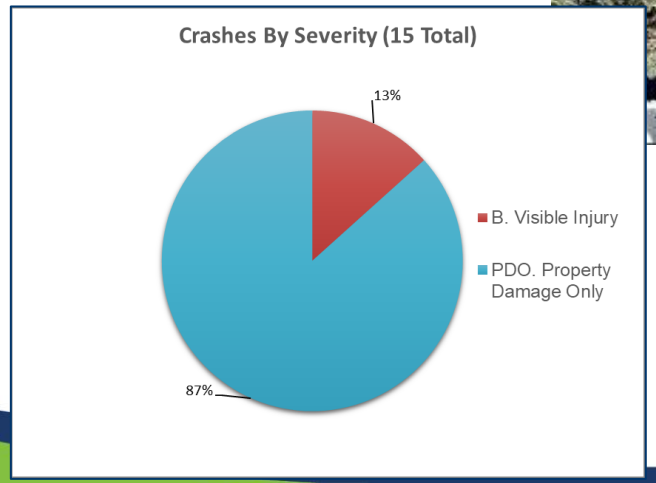


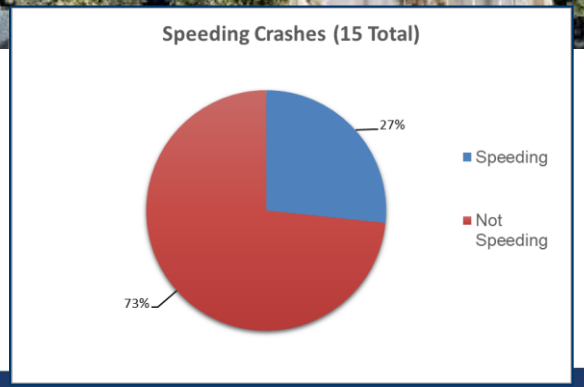


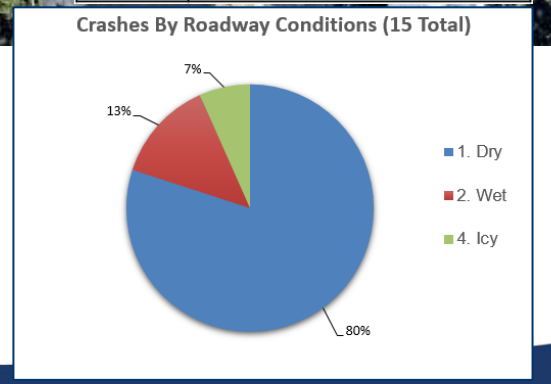












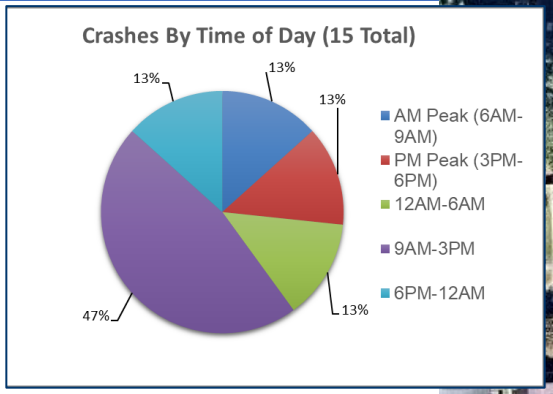
HAMPTON BOULEVARD AT MAGNOLIA AVENUE & ROCKBRIDGE AVENUE

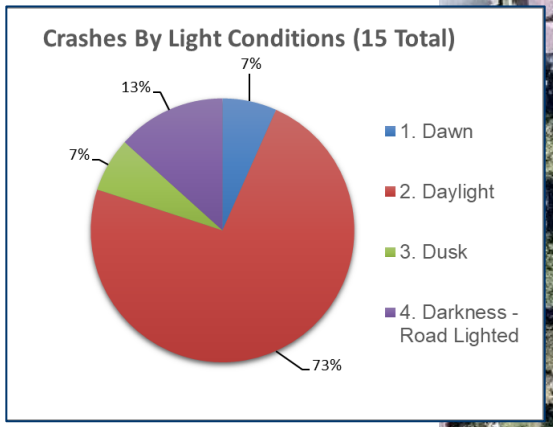
Summary of Crash Data: September 30, 2018 – September 30, 2023

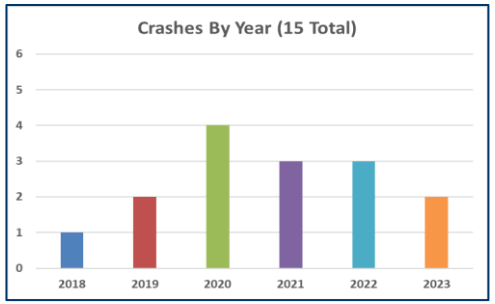
Signalized | 15 Total Crashes

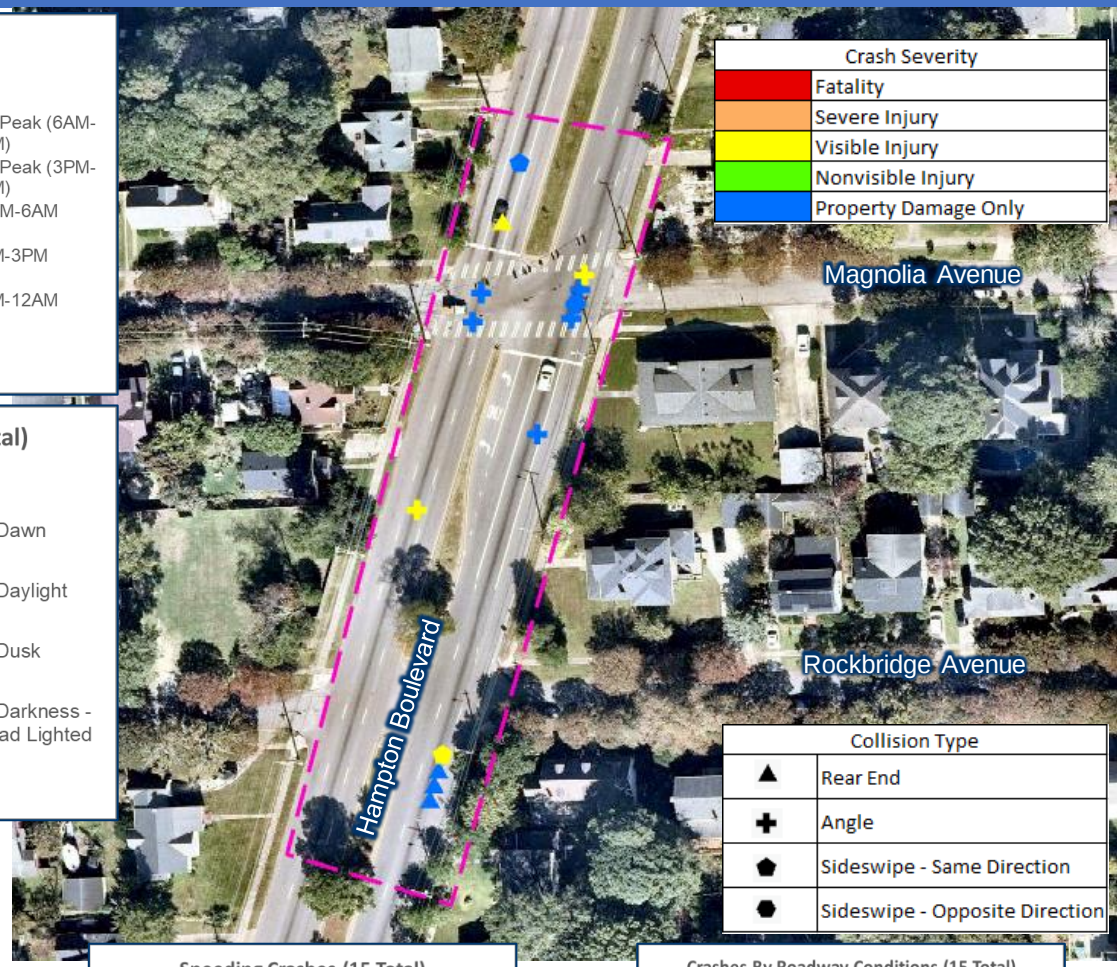
CRASH TRENDS

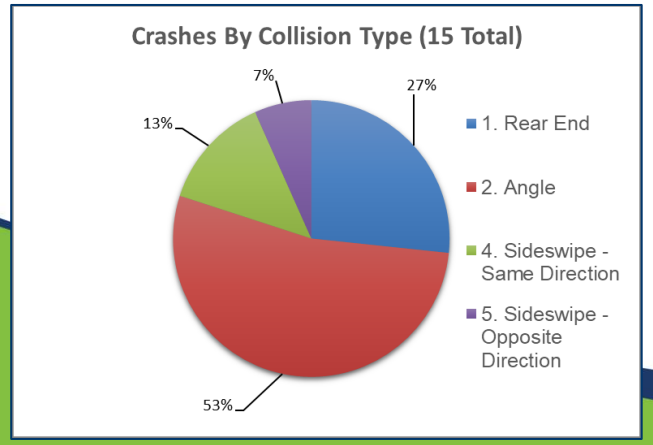
- Majority of crashes (53%) were angle crashes
- Majority of crashes (73%) resulted in Property Damage Only
- Nearly half of crashes (47%) occurred during midday (9 AM to 3 PM)
- 4 rear-end crashes along Hampton Blvd were caused by either slowed traffic queued from Magnolia Ave or sudden stops for turning vehicles
- 3 crashes involved drivers on Hampton Blvd running a red light; all occurred between 9 AM and 3 PM
- 1 crash involving child bicyclist crossing Hampton Blvd against red light

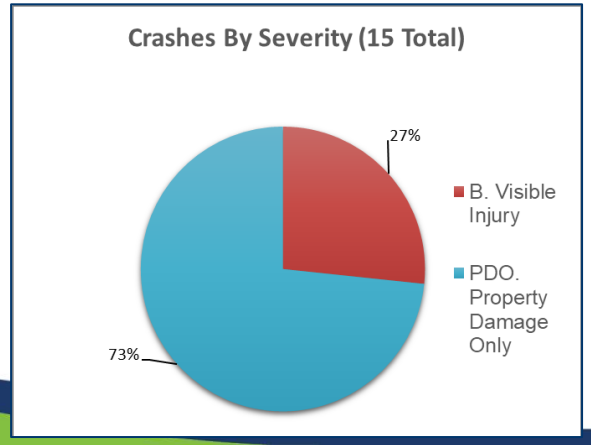


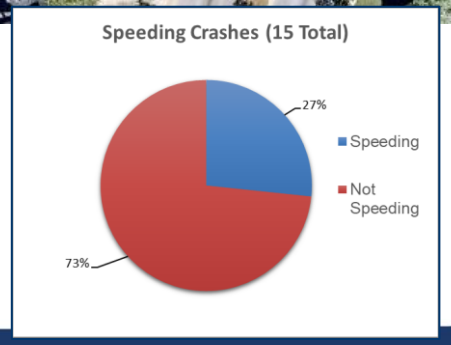


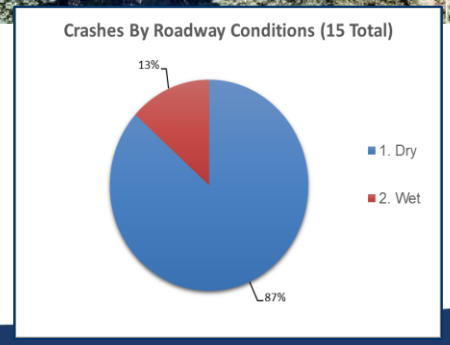






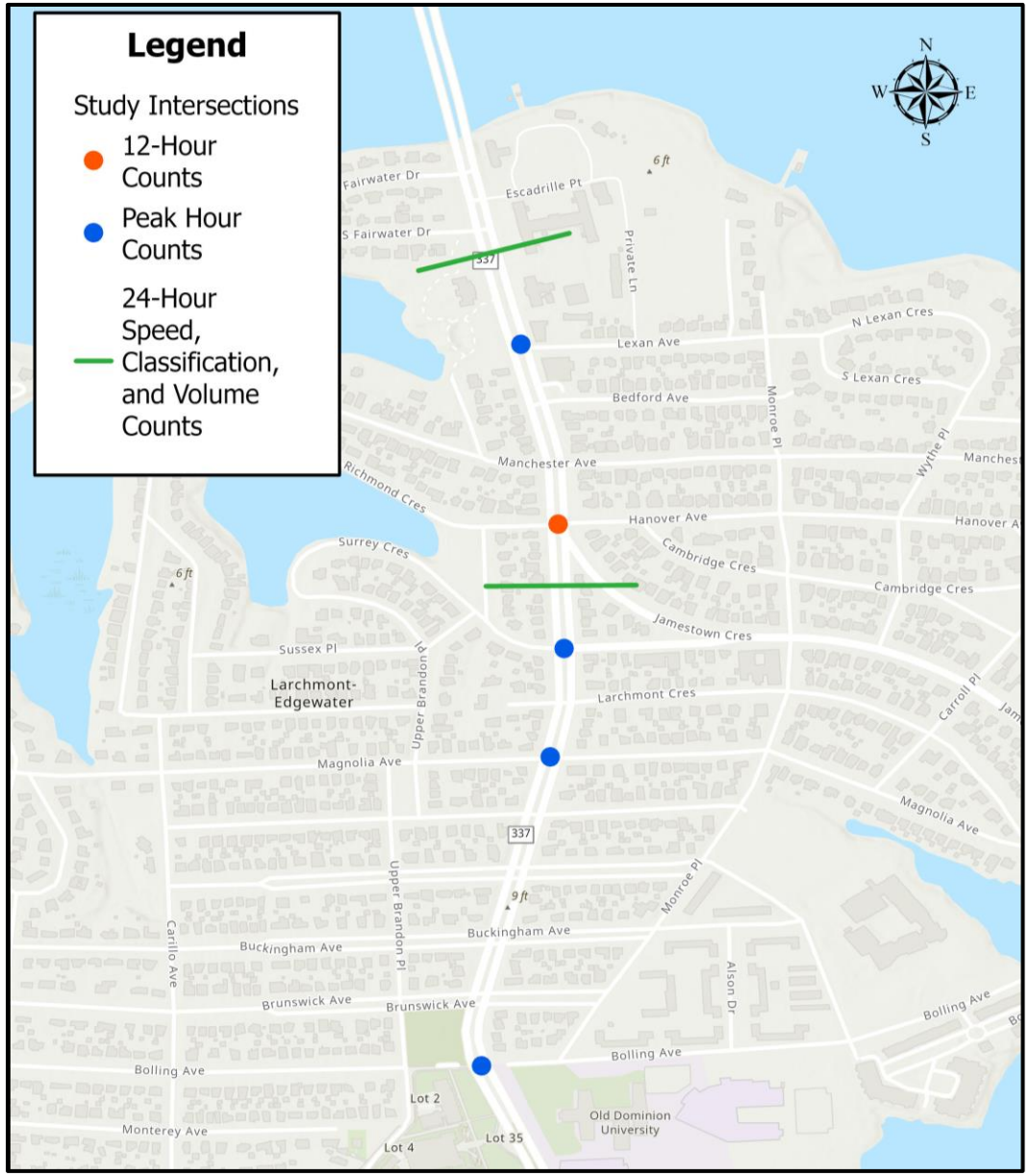






Data Collection

- Intersection turning movement counts
  - 3 signalized and 2 unsignalized intersections
  - Conducted on weekday in November 2023
- 24-hour roadway speed, classification, and volume counts
  - 2 count locations
    - Data at northern location (between Lafayette River Bridge and Lexan Avenue) was collected from VDOT permanent count station
  - Conducted for 7-day period in December 2023



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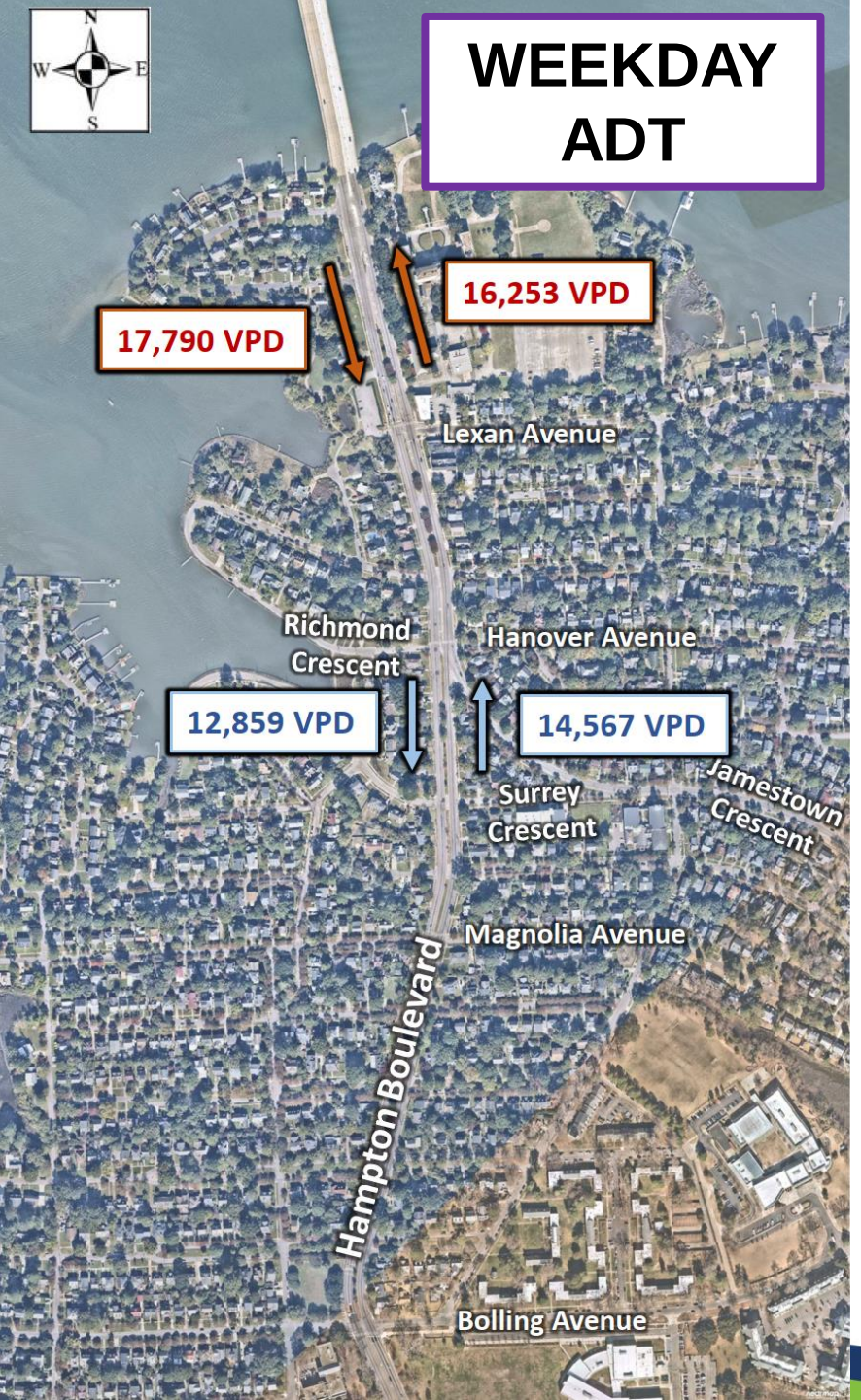

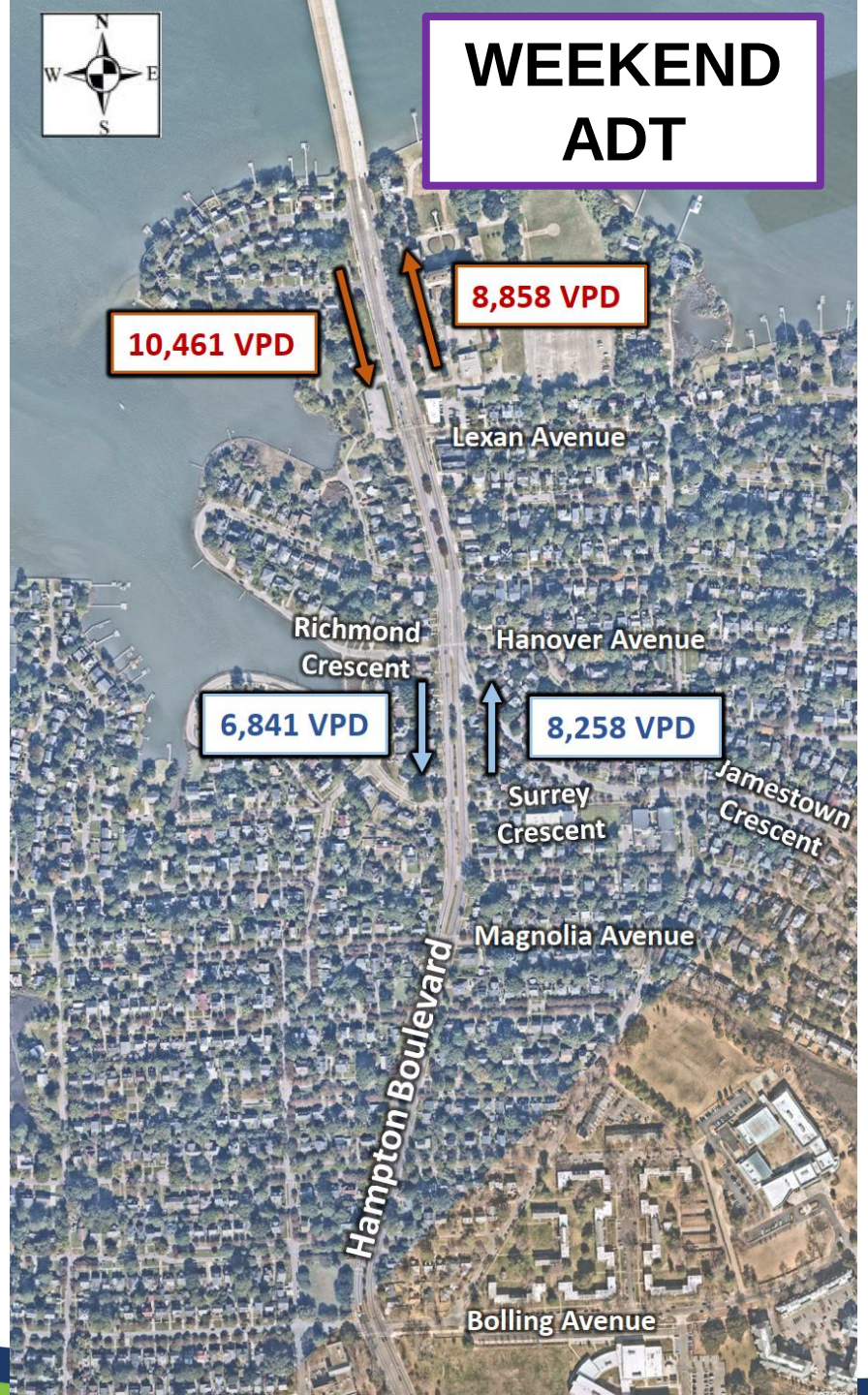

Average Daily Traffic in Vehicles per Day (2023)

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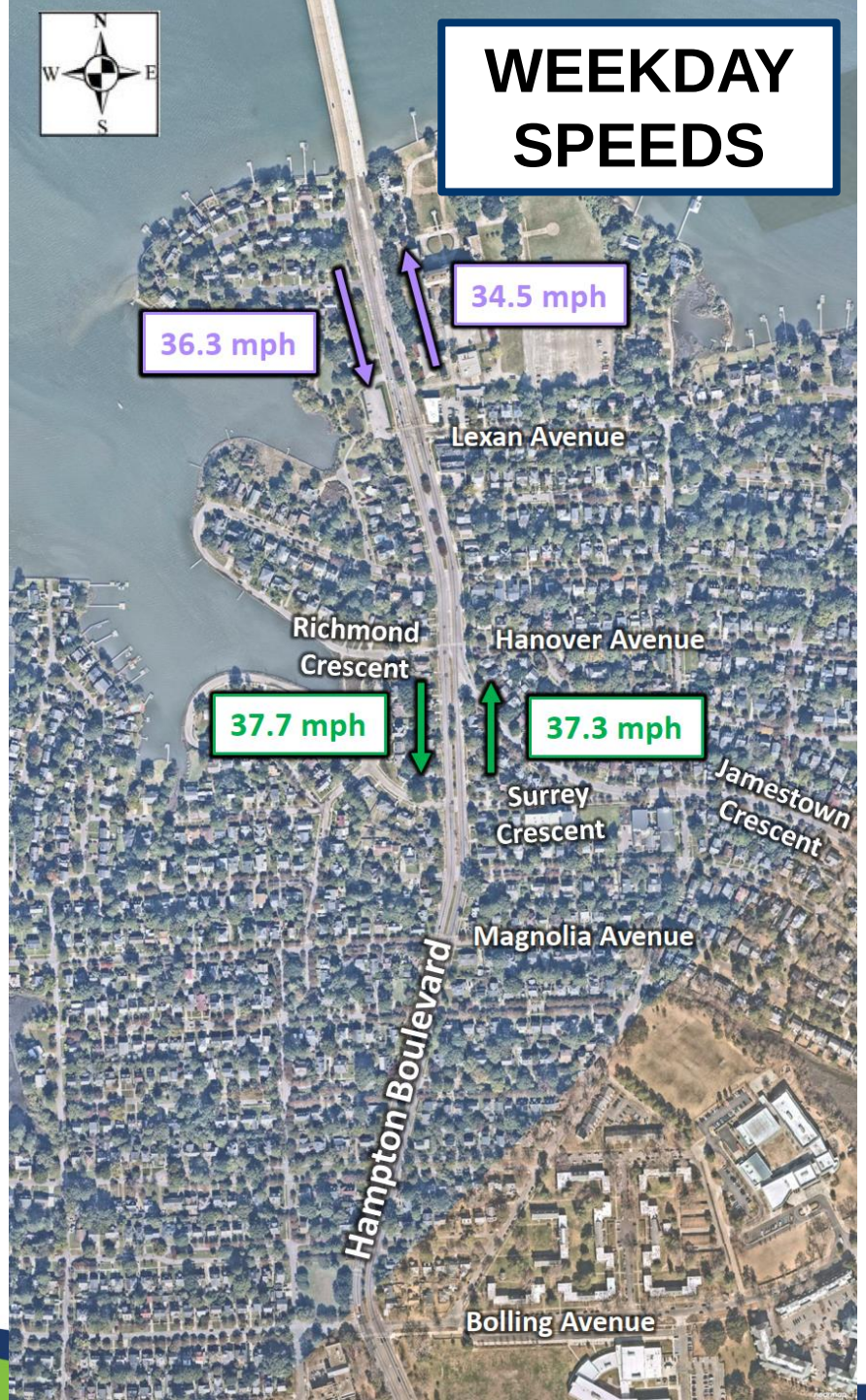
Speed Analysis

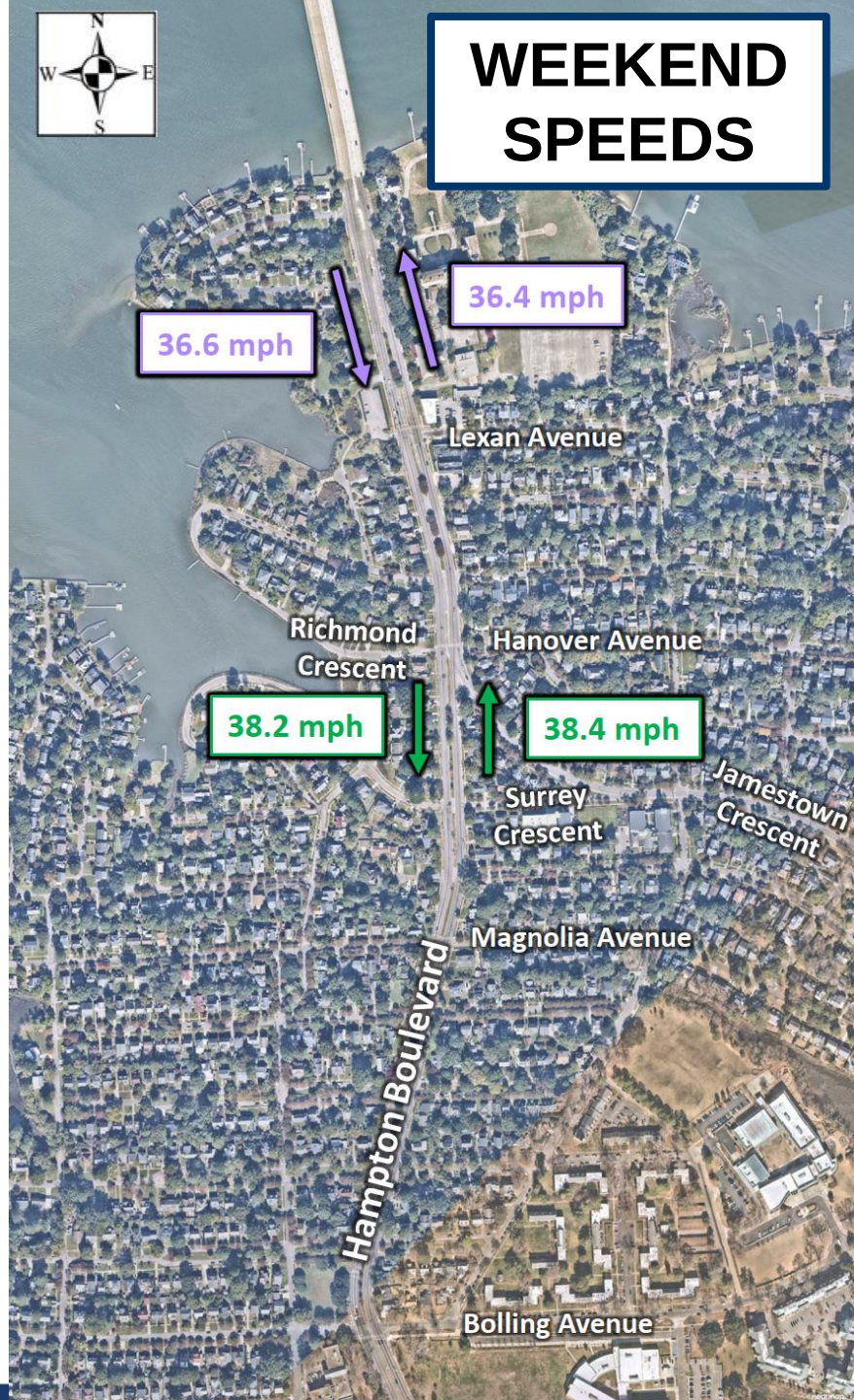
- Average Speed – statistical average of individual speeds of all vehicles observed to travel past collection point
- 85th Percentile Speed – speed at or below which 85% of all vehicles are observed to travel past collection point
- Although the speed limit is posted at 30 MPH, 85th percentile speeds along the corridor range between 41 MPH and 45 MPH
- Travel speeds are observed to be lower while police enforcement is in place

Average Vehicle Speeds

December 2023

Posted Speed Limit: 30 mph

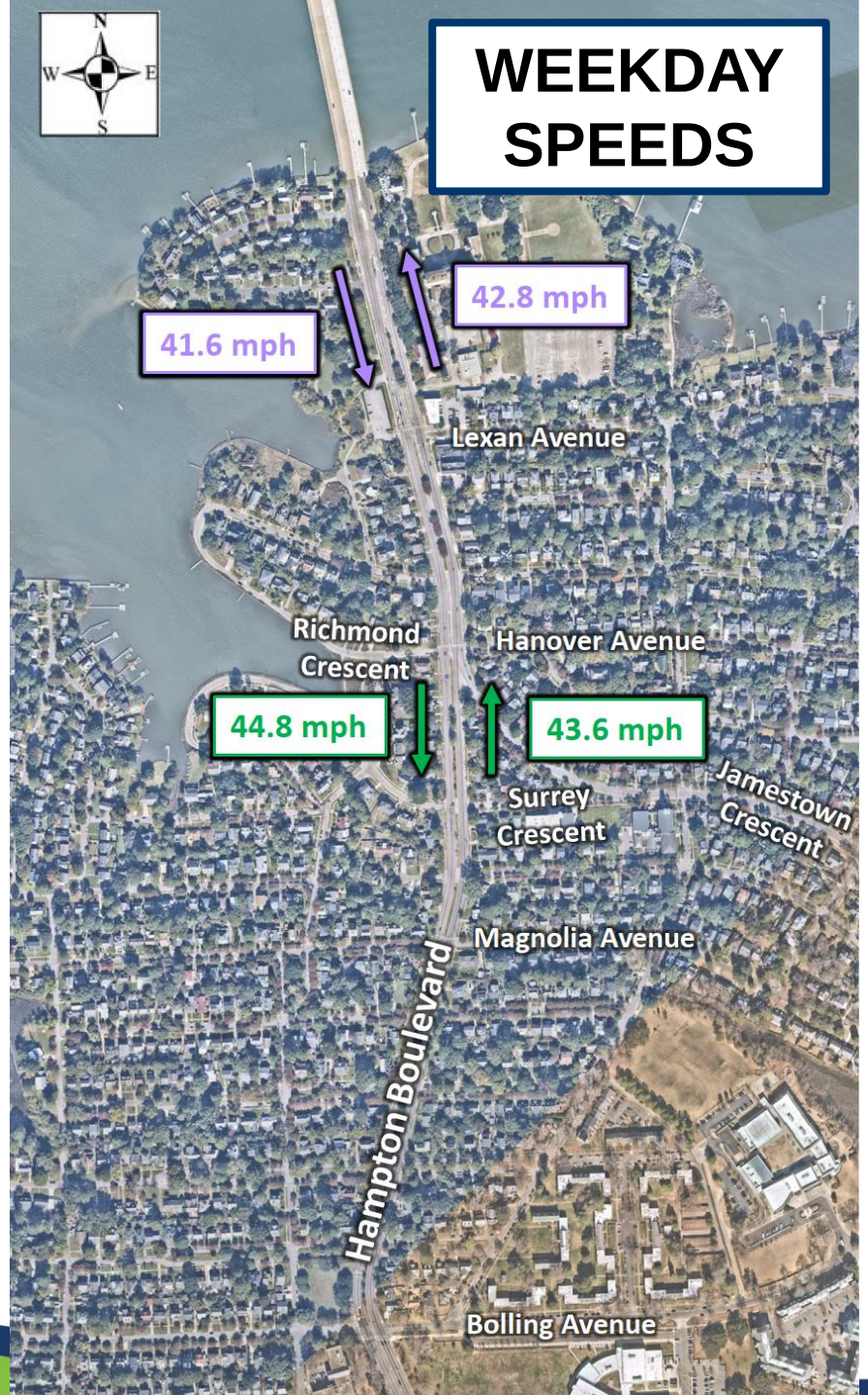


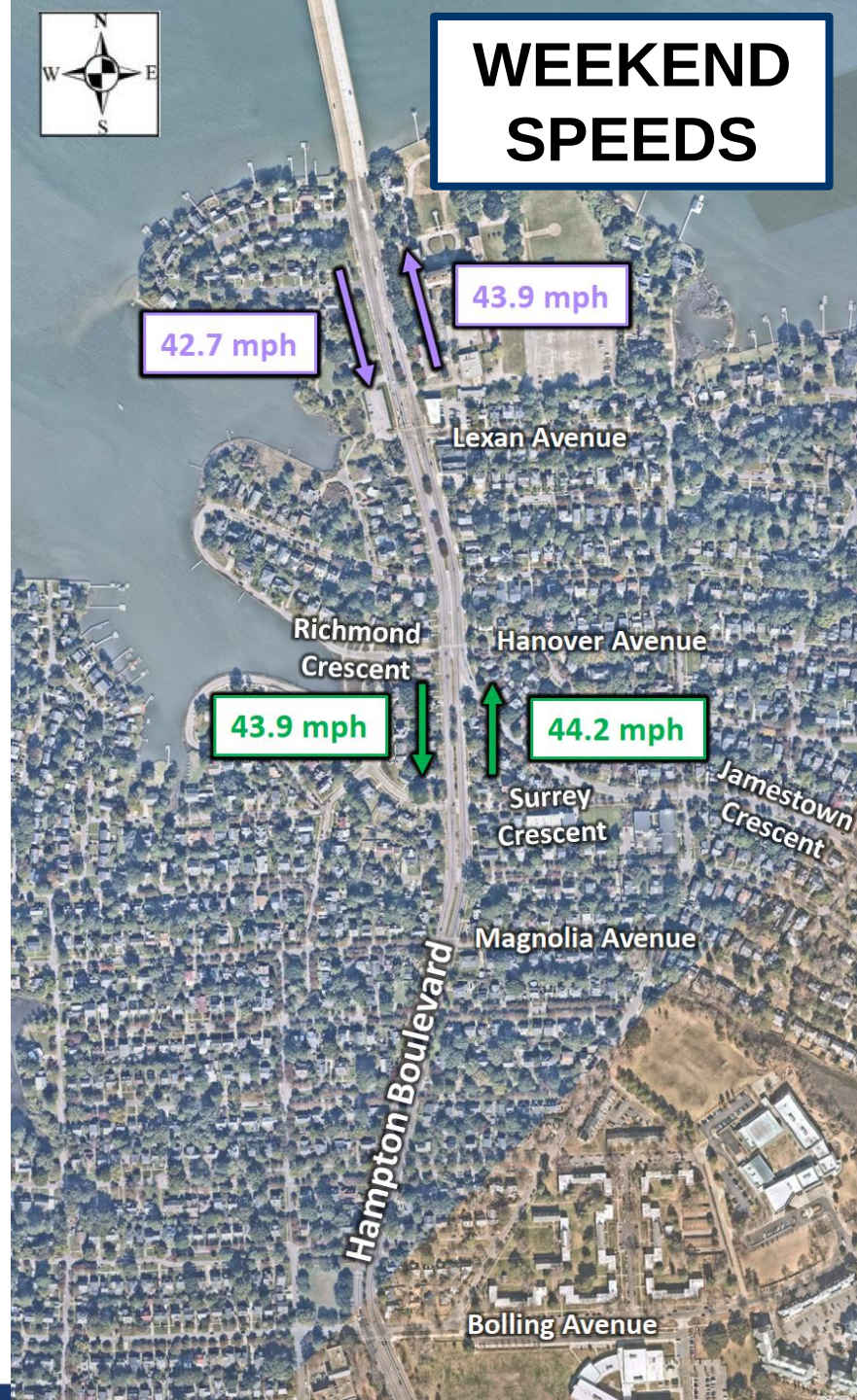


85th Percentile Vehicle Speeds

December 2023

Posted Speed Limit: 30 mph





Signal Warrant Analysis

Hampton Blvd at Jamestown Crescent & Richmond Crescent/Hanover Ave

- Conducted using weekday 12-hour turning movement counts (2023)
- Three warrants were satisfied
  - "The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal." (MUTCD)

MUTCD Signal Warrants	Warrant Satisfied?	Notes
Warrant 1: Eight-Hour Vehicular Volume	**Yes**	Condition B satisfied
Warrant 2: Four-Hour Vehicular Volume	**Yes**	
Warrant 3: Peak Hour[1]	**Yes**	The land uses do not constitute an "unusual case" and do not support use of Warrant 3.
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 (2023) analysis
- Typical weekday AM and PM peak hour conditions
- Traffic volumes were collected in November 2023
- Traffic analysis measures:
  - Average vehicle delay and associated level of service (LOS)
  - 95th Percentile Queue Lengths

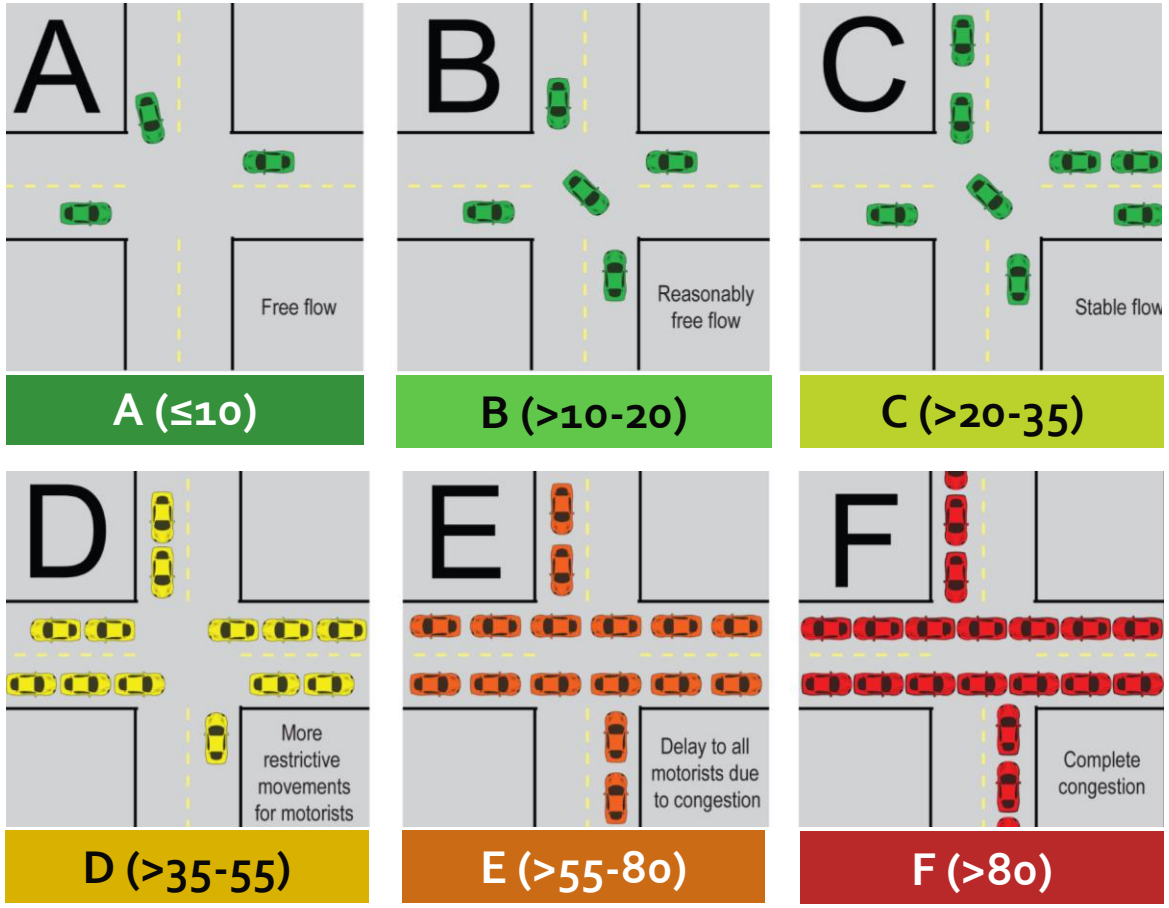
Traffic Analysis Measures

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 (2023) Traffic Analysis Results

AM Peak Hour

Intersection	Level of Service (Delay)				
	NB	SB	EB	WB	NWB
Hampton Blvd & Lexan Ave	A (7.6)	A (3.2)	D (52.7)	D (53.4)	
Hampton Blvd & Jamestown Crescent & Richmond Crescent / Hanover Ave	A (0.0)	A (3.4)	F (123)[1]	--[2]	D (27.6)[3]
Hampton Blvd & Surrey Crescent	A (0.1)	A (2.1)	C (24.0)		
Hampton Blvd & Magnolia Ave	A (1.5)	A (4.3)	D (50.1)	D (41.9)	
Hampton Blvd & Bolling Ave	A (6.0)	A (6.3)	D (47.8)	E (56.8)	

1 Richmond Crescent approach (only 1 vehicle turning left and 7 turning right)
2 Hanover Avenue approach (only 10 vehicles turning right; delay and LOS cannot be determined based on limitation of model)
3 Jamestown Crescent approach

Level of Service Grade

Average Delay in Seconds per Vehicle (unsignalized) [signalized]

A (≤10) [≤10]
B (>10-15) [>10-20]
C (>15-25) [>20-35]
D (>25-35) [>35-55]
E (>35-50) [>55-80]
F (>50) [>80]

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Existing (2023) Traffic Analysis Results

PM Peak Hour

Intersection	Level of Service (Delay)				
	NB	SB	EB	WB	NWB
Hampton Blvd & Lexan Ave	A (5.4)	A (3.6)	E (57.2)	E (58.2)	
Hampton Blvd & Jamestown Crescent & Richmond Crescent / Hanover Ave	A (0.0)	A (2.5)	F (186)[1]	--[2]	C (15.4)[3]
Hampton Blvd & Surrey Crescent	A (0.3)	A (0.7)	D (28.0)		
Hampton Blvd & Magnolia Ave	A (1.1)	A (5.1)	D (53.5)	D (49.7)	
Hampton Blvd & Bolling Ave	A (6.2)	A (6.4)	E (56.4)	D (53.3)	

1 Richmond Crescent approach (only 1 vehicle turning left and 2 turning right)
2 Hanover Avenue approach (only 9 vehicles turning right; delay and LOS cannot be determined based on limitation of model)
3 Jamestown Crescent approach

Level of Service Grade

Average Delay in Seconds per Vehicle (unsignalized) [signalized]

A (≤10) [≤10]
B (>10-15) [>10-20]
C (>15-25) [>20-35]
D (>25-35) [>35-55]
E (>35-50) [>55-80]
F (>50) [>80]

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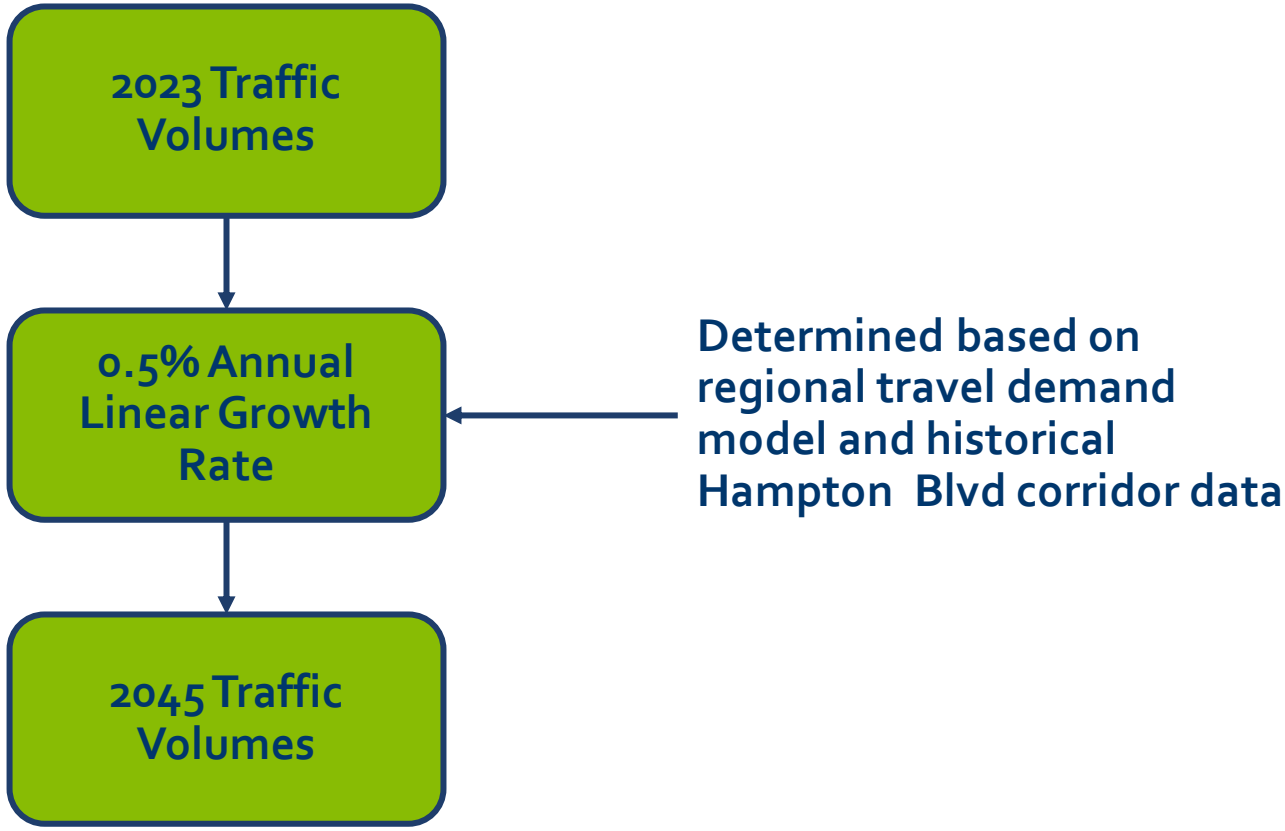
Future (2045) Traffic Volume Development



Future (2045) "No Build" Traffic Analysis Results

AM Peak Hour

Intersection	Level of Service (Delay)				
	NB	SB	EB	WB	NWB
Hampton Blvd & Lexan Ave	A (5.1)	A (3.4)	D (52.4)	D (53.1)	
Hampton Blvd & Jamestown Crescent & Richmond Crescent / Hanover Ave	A (0.0)	A (4.6)	F (508)[1]	--[2]	E (38.6)[3]
Hampton Blvd & Surrey Crescent	A (0.0)	A (3.2)	D (29.2)		
Hampton Blvd & Magnolia Ave	A (3.4)	A (4.3)	D (50.1)	D (41.9)	
Hampton Blvd & Bolling Ave	A (5.8)	A (5.0)	D (47.8)	E (56.8)	

1 Richmond Crescent approach (only 1 vehicle turning left and 7 turning right)
2 Hanover Avenue approach (only 10 vehicles turning right; delay and LOS cannot be determined based on limitation of model)
3 Jamestown Crescent approach

Level of Service Grade

Average Delay in Seconds per Vehicle (unsignalized) [signalized]

A (≤10) [≤10]
B (>10-15) [>10-20]
C (>15-25) [>20-35]
D (>25-35) [>35-55]
E (>35-50) [>55-80]
F (>50) [>80]

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Future (2045) "No Build" Traffic Analysis Results

PM Peak Hour

Intersection	Level of Service (Delay)				
	NB	SB	EB	WB	NWB
Hampton Blvd & Lexan Ave	A (3.5)	A (3.8)	E (57.2)	E (58.2)	
Hampton Blvd & Jamestown Crescent & Richmond Crescent / Hanover Ave	A (0.0)	A (3.0)	F (337)[1]	--[2]	C (17.2)[3]
Hampton Blvd & Surrey Crescent	A (0.4)	A (1.2)	E (36.4)		
Hampton Blvd & Magnolia Ave	A (1.9)	A (5.3)	D (53.5)	D (49.7)	
Hampton Blvd & Bolling Ave	A (6.0)	A (5.3)	E (56.4)	D (53.5)	

1 Richmond Crescent approach (only 1 vehicle turning left and 2 turning right)
2 Hanover Avenue approach (only 9 vehicles turning right; delay and LOS cannot be determined based on limitation of model)
3 Jamestown Crescent approach

Level of Service Grade

Average Delay in Seconds per Vehicle (unsignalized) [signalized]

A (≤10) [≤10]
B (>10-15) [>10-20]
C (>15-25) [>20-35]
D (>25-35) [>35-55]
E (>35-50) [>55-80]
F (>50) [>80]

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Next Steps

Next Steps

- Review input from today's meeting and associated online survey (April 30th through May 19th)
- 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.surveymonkey.com/r/HamptonBlvdStudy

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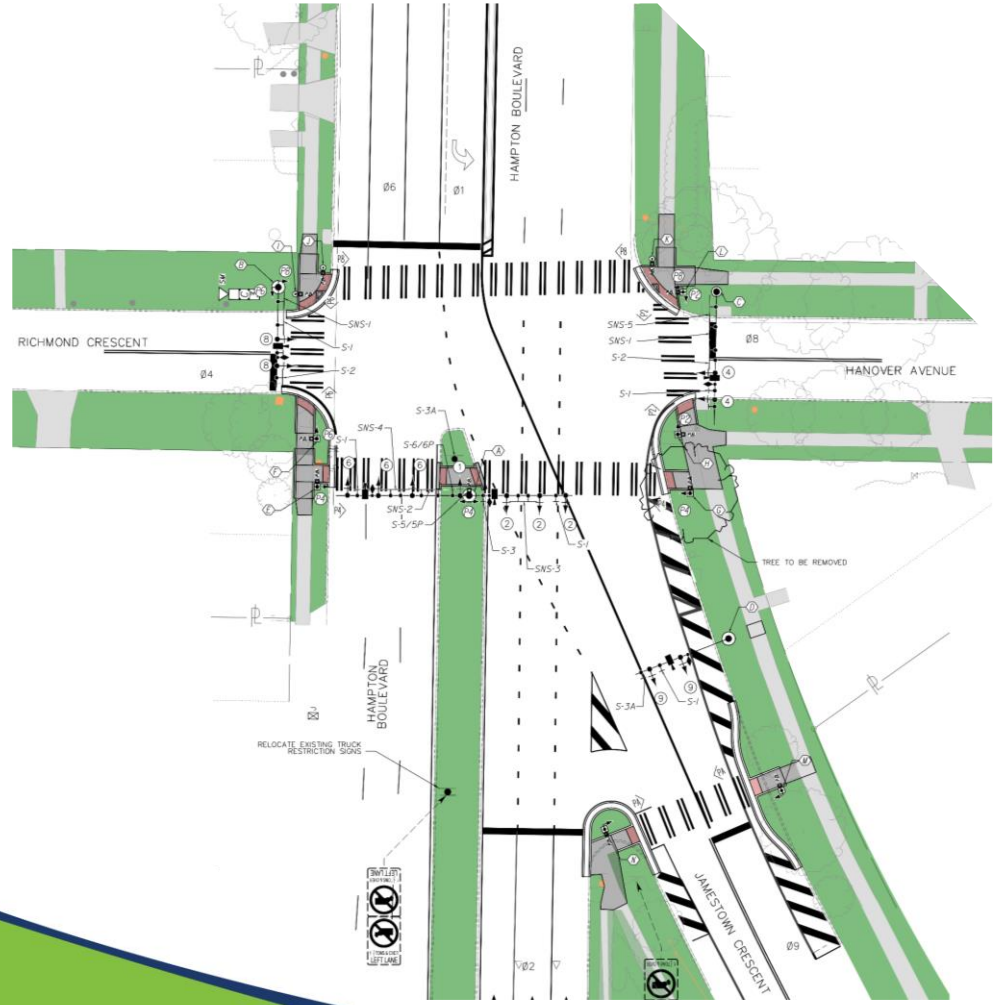
Potential Improvements

- Traffic signal at Hampton Boulevard intersection with Jamestown Crescent & Richmond Crescent / Hanover Avenue
- Pedestrian hybrid beacon
- Conflict warning system
- Channelization at Jamestown Crescent with raised islands and curb enhancements
- "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 Blvd Intersection with Jamestown Cres & Richmond Cres / Hanover Ave



- Signal control of **all** five approaches at intersection
- Several proposed left-turn prohibitions
- No turn on red allowed
- Jamestown Crescent turn onto northbound Hampton Boulevard overlaps with southbound left-turn from Hampton to Jamestown
- Signalized pedestrian crossings on **every** approach
- Coordinated with other signals along Hampton Boulevard (south 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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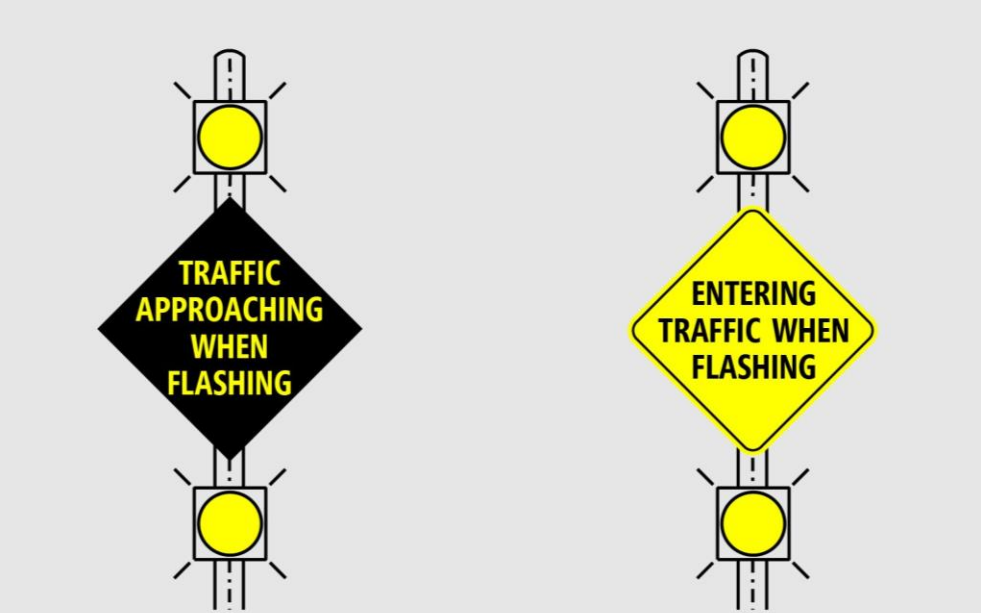
Intersection Conflict Warning System



Source: Indiana Department of Transportation

- Vehicle detection, signs, and flashing lights on both Hampton Boulevard and the side street(s)
- Drivers on Hampton Boulevard would see "**ENTERING TRAFFIC WHEN FLASHING**" sign and flashing yellow lights when a vehicle is waiting on the side street
- Drivers on side street(s), in addition to a stop sign, would see "**TRAFFIC APPROACHING WHEN FLASHING**" sign and flashing yellow lights when a vehicle is approaching the intersection on Hampton Boulevard
- Typically used in rural locations

Channelization at Jamestown Crescent

- Physical buffer (such as raised curb) north of Jamestown Crescent
  - This will separate the two through lanes on Hampton Boulevard from the outside lane for vehicles turning from Jamestown Crescent
- Potential for raised island and curb enhancements to replace the existing painted delineation between the northbound Hampton Boulevard lanes and Jamestown Crescent

"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:

- Painted or pattern-stamped crosswalk markings
- 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

- Restricting left-turn movements from Jamestown Crescent, Richmond Crescent, and Hanover Avenue onto Hampton Boulevard
- Restricting left-turn movements to Richmond Crescent and Hanover Avenue from Hampton Boulevard
- Restricting left-turn movement to and/or from Surrey Crescent from/to 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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