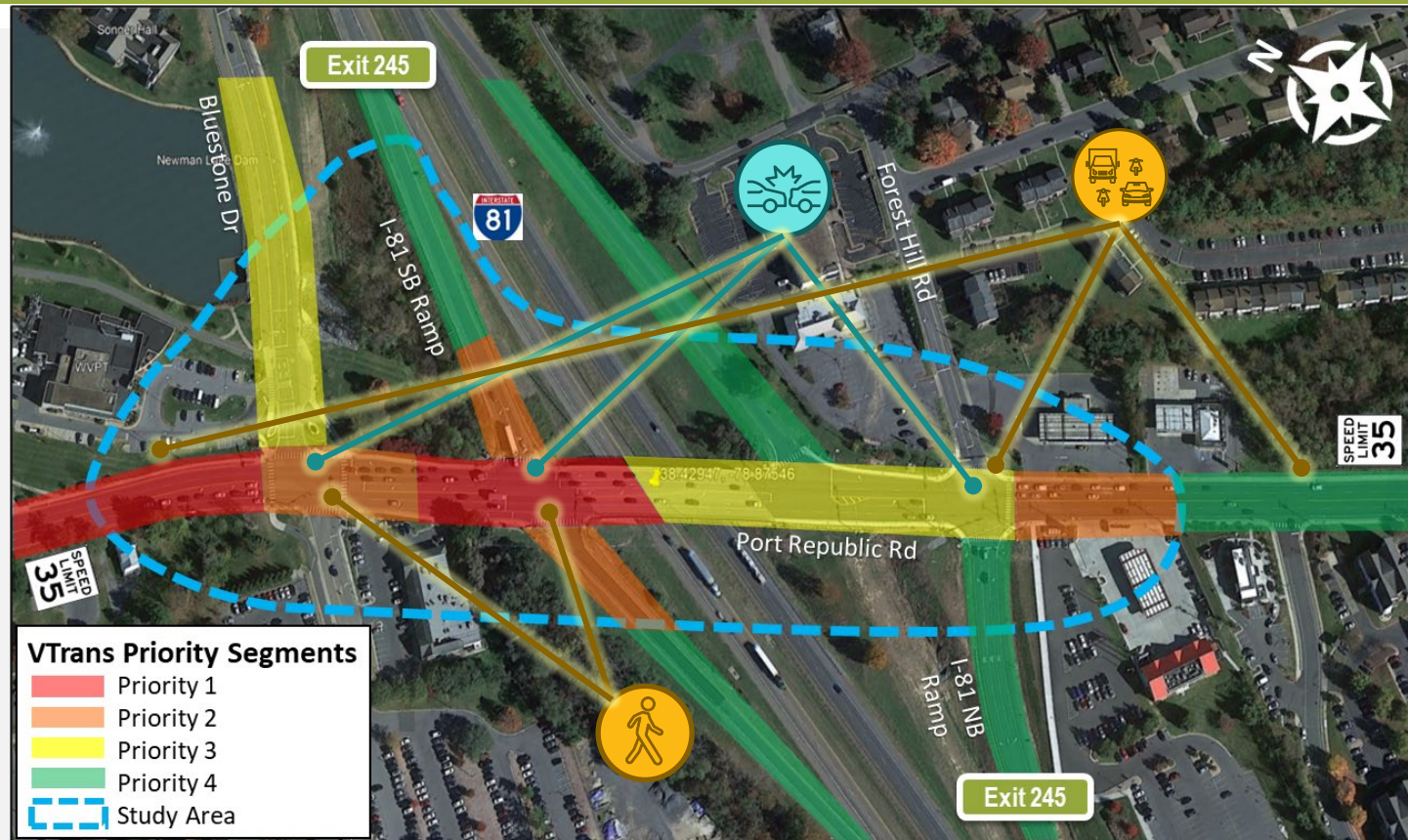


# Project Overview | ST-23-06

## Port Republic Road from Forest Hill Road to Bluestone Drive



### Existing Conditions in the Study Area

- 45 recorded angle crash incidents at I-81 southbound off-ramp, with a high proportion of red-light runners present at 71%. At the Forest Hill Road intersection, there were 25 Rear-End (RE) crashes associated with the westbound through movement (WBT) and 14 Rear-End (RE) crashes associated with the eastbound through movement (EBT) downstream from the intersection.
- There were two pedestrian crashes at the southbound off-ramp and two pedestrian crashes at the Bluestone Drive intersection, all involving left-turning vehicles not yielding to pedestrians.
- The area features significant bicycle and pedestrian traffic generators due to James Madison University and multiple transit routes. Three bike-related crashes were reported in the area, both involving right-turning vehicles hitting cyclists on Port Republic Road near Forest Hills Drive.
- Transit service is currently provided by HDPT Route 6. The closest existing park and ride lot is at Mt. Crawford (5 miles to the south). There is a funded SMART SCALE project to expand the park and ride lot to 82 parking spaces.
- Forest Hill Road intersection is operating at LOS D (average delay 35-55 seconds) for 2023 Existing PM conditions.
- Forest Hill Road and Bluestone Drive intersections operate at LOS E during both the AM and PM peak hour. Delays exceed 58 sec/vehicle in the AM peak hour and 64 sec/vehicle in the PM peak hour.
- Port Republic Road eastbound queues extend to US-11 (3,250 feet northwest of Forest Hill Road intersection) in the afternoon due to the congestion related to James Madison University at class change times.
- Port Republic Road westbound queues extend beyond Devon Lane (1,500 feet southeast of Forest Hill Road intersection) multiple times a day due to the congestion related to James Madison University at class change times.

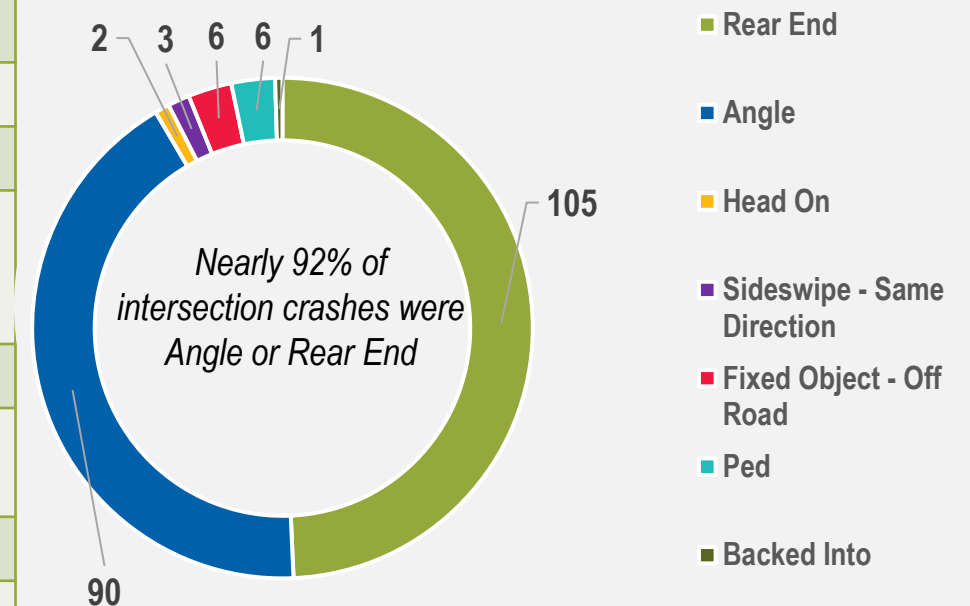
### Project Purpose, Goals, & Objectives

Analyze the operational and safety issues identified along Port Republic Road near I-81, with a focus on providing enhanced pedestrian, bicycle, and transit access.

Identify cost-effective preferred improvement alternatives that address the deficient conditions and prioritize safety and accessibility.

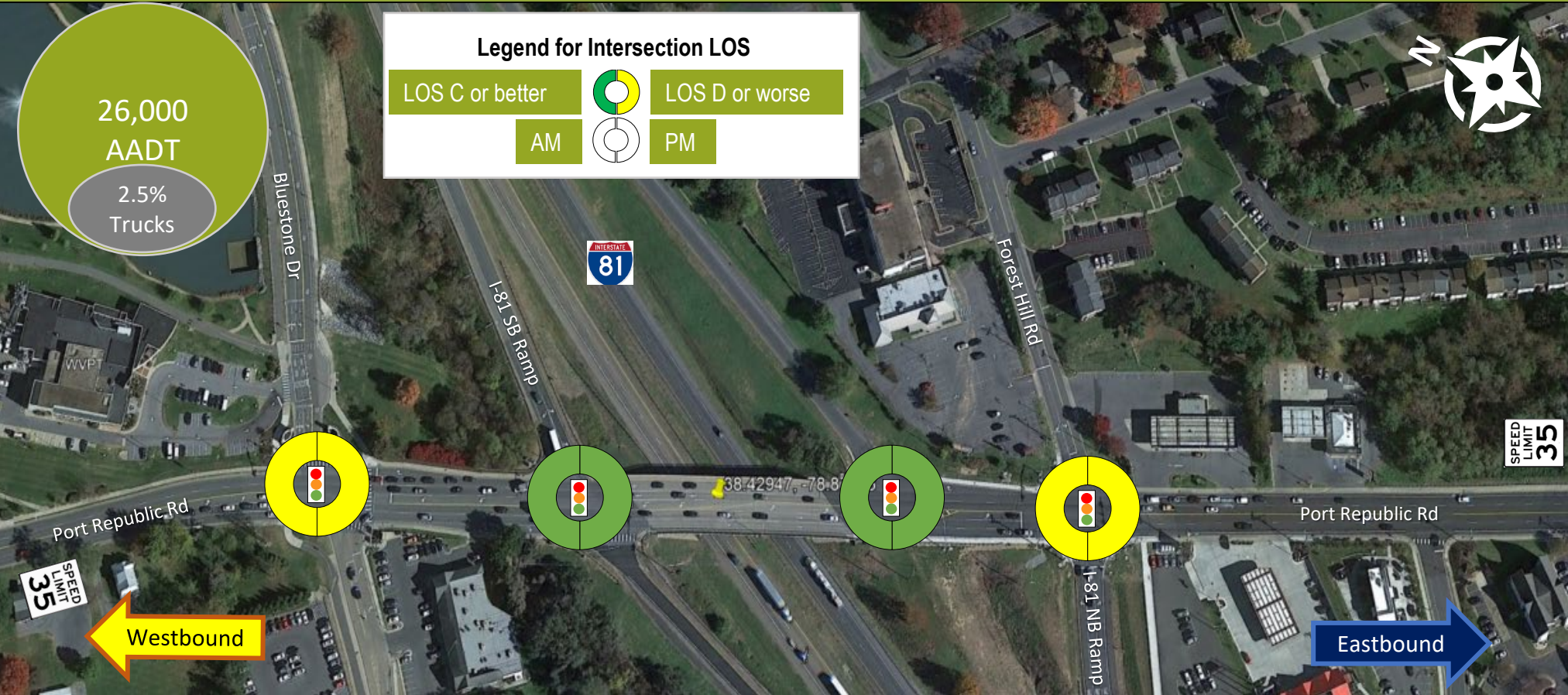
Project Fact Sheet	
VDOT District	Staunton
Locality	Harrisonburg
# of Study Intersections	4
Transit Routes	- Harrisonburg Transit Route 6 - JMU Routes - BRCC North Route (BRITE)
Nearby Transit Connections	Mt. Crawford park and ride lot (~ 5 miles to the south)
Nearby Bikeways	Bluestone Trail and Butler Street Shared Lane; Port Republic Road Bike Lanes; Shared Use Path along University Boulevard and Driver Drive
Functional Classification	Minor Arterial
Speed Limit	35 mph

### Study Area Crashes (2015-2022 Data)



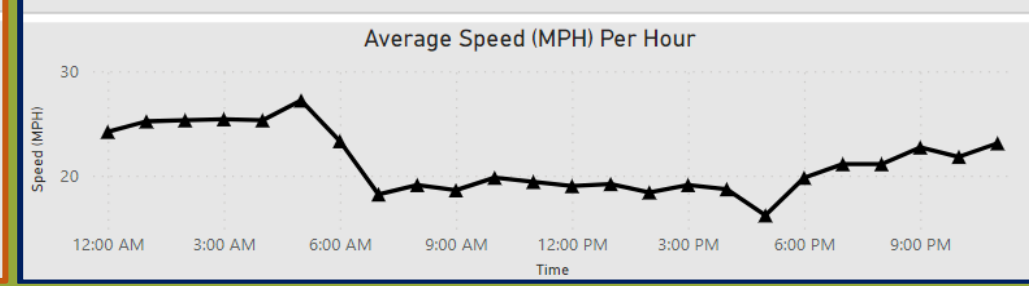
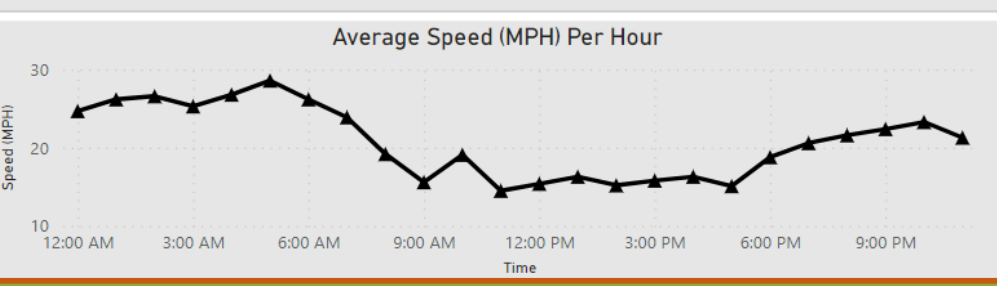
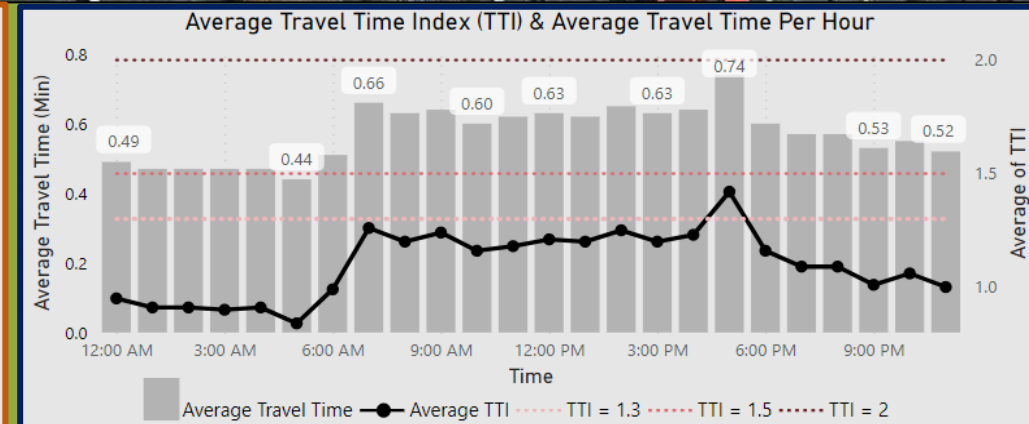
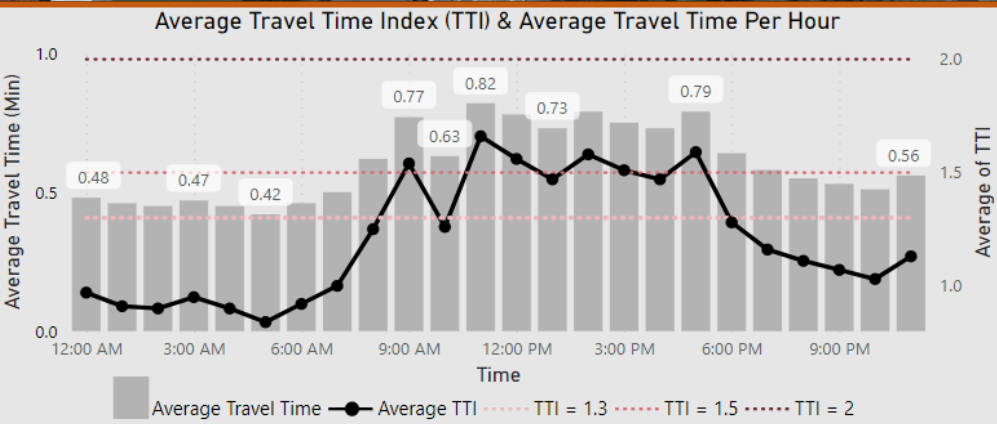
# Operations Needs

## Needs Identification Summary



### Operations Summary

1. Synchro was used existing conditions analysis for the year 2023.
2. All study intersections operate at a Level Of Service (LOS) D or better during both AM and PM peak hours in 2023.
3. Bluestone Drive Southbound and Forest Hill Road Southbound operate at LOS F during the PM peak hour.
4. All other side street approaches at the study intersections operate at LOS E during both peak hours.
5. 95<sup>th</sup> percentile queues at the following approaches are expected to exceed capacity:
  - AM Peak
    - Port Republic Road Westbound starting at Bluestone Drive extending through the study corridor
  - PM Peak
    - Port Republic Road Eastbound at Bluestone Drive
    - Bluestone Drive Southbound at Port Republic Road
    - Forest Hill Road Southbound at Forest Hill Road
6. HRMPO year 2019 "Safety and Operations Study":
  - Approach LOS E in at least one peak hour for Bluestone Drive, I-81 NB Off-Ramp, JMU Parking Lot (realigned I-81 NB Off-ramp)
  - Maximum queue extends beyond storage for the lane groups mentioned in Item 5 above, similar to this study.
  - Maximum queue lengths on I-81 southbound off-ramp storage lanes extend beyond the existing storage. Study recommended increasing the lengths of these lanes from 100 feet to 500 feet.



### Safety / Reliability Needs

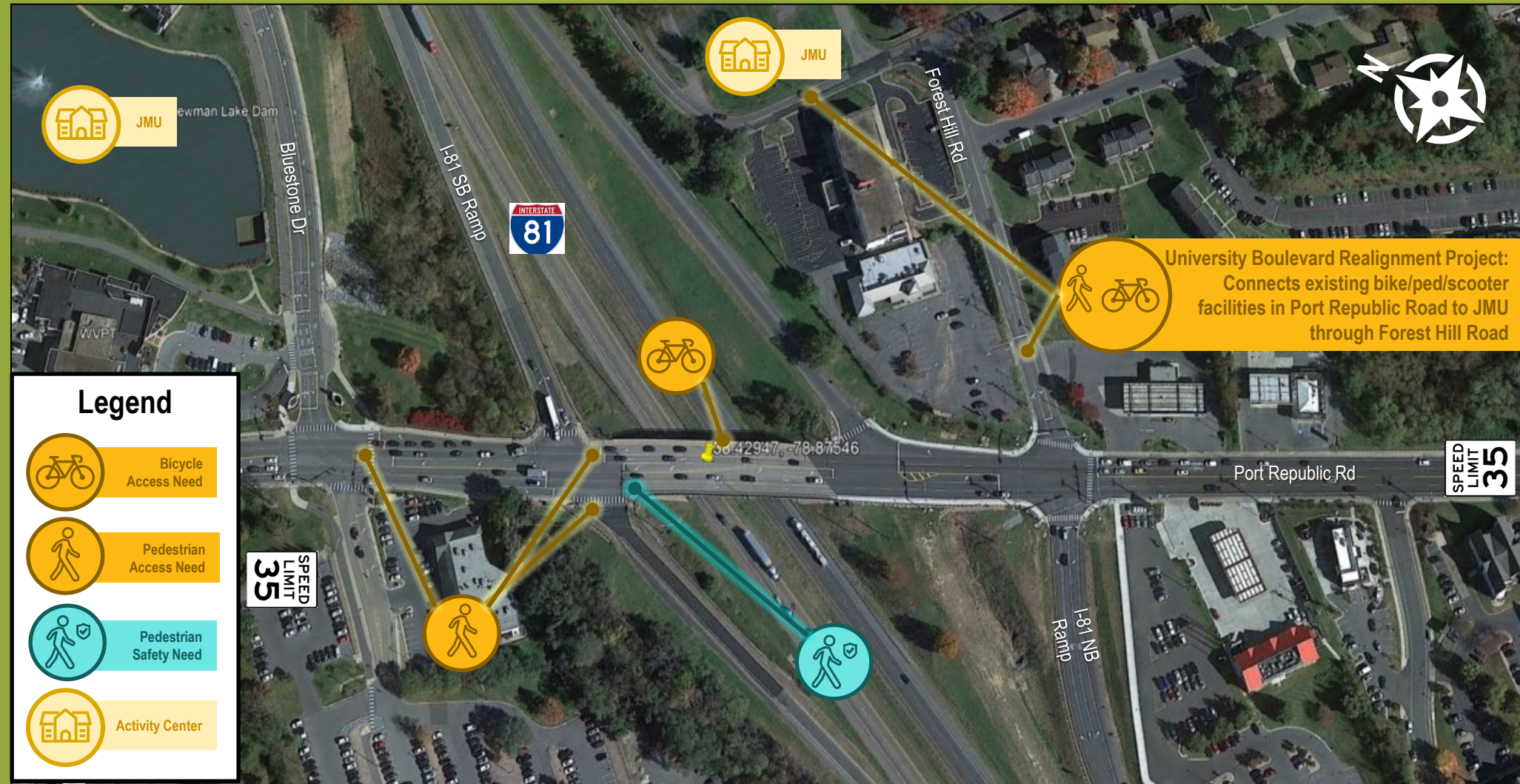
NEED	PRIORITY
Capacity Preservation	No Need
Congestion Mitigation	<b>No Need*</b>
Reliability	No Need

\*Congestion Mitigation does not show up as a VTRANS Need due to the lack of traffic congestion when the nearby JMU has Summer break. However, per Study Working Group's observations, the area is heavily congested during the remaining 9 months.

Note: Travel Time Analysis is conducted along Port Republic Road, from Bluestone Drive to Forest Hill Road.

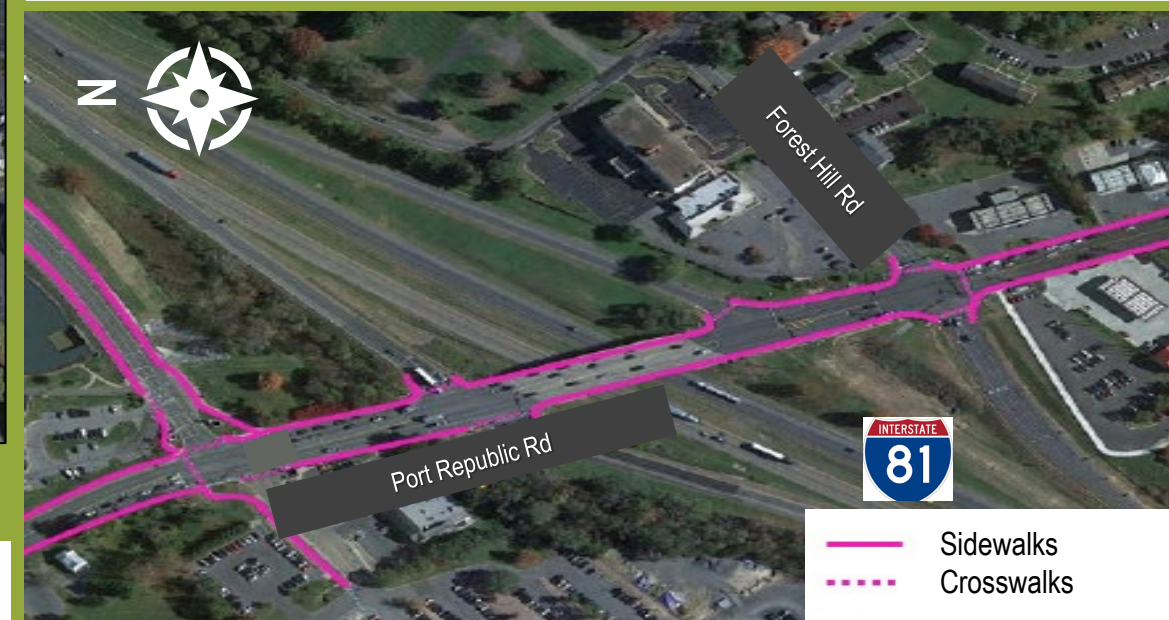
# Pedestrian and Bicycle Safety and Accessibility Needs

## Needs Identification Summary



### Bicycle and Pedestrian Safety & Accessibility Summary

- VTrans identifies this corridor as very high need for Bicycle and Pedestrian Access
  - Significant bicycle and pedestrian generators with James Madison University and multiple transit routes
  - Extensive pedestrian network: sidewalks, curb ramps, high visibility crosswalks, and pedestrian signals
  - No bike lane along Port Republic Road within the study area
  - Scooter use and parking observed throughout the area
  - A total of six pedestrian and three bicycle crashes in the study area



### Pedestrian Improvements

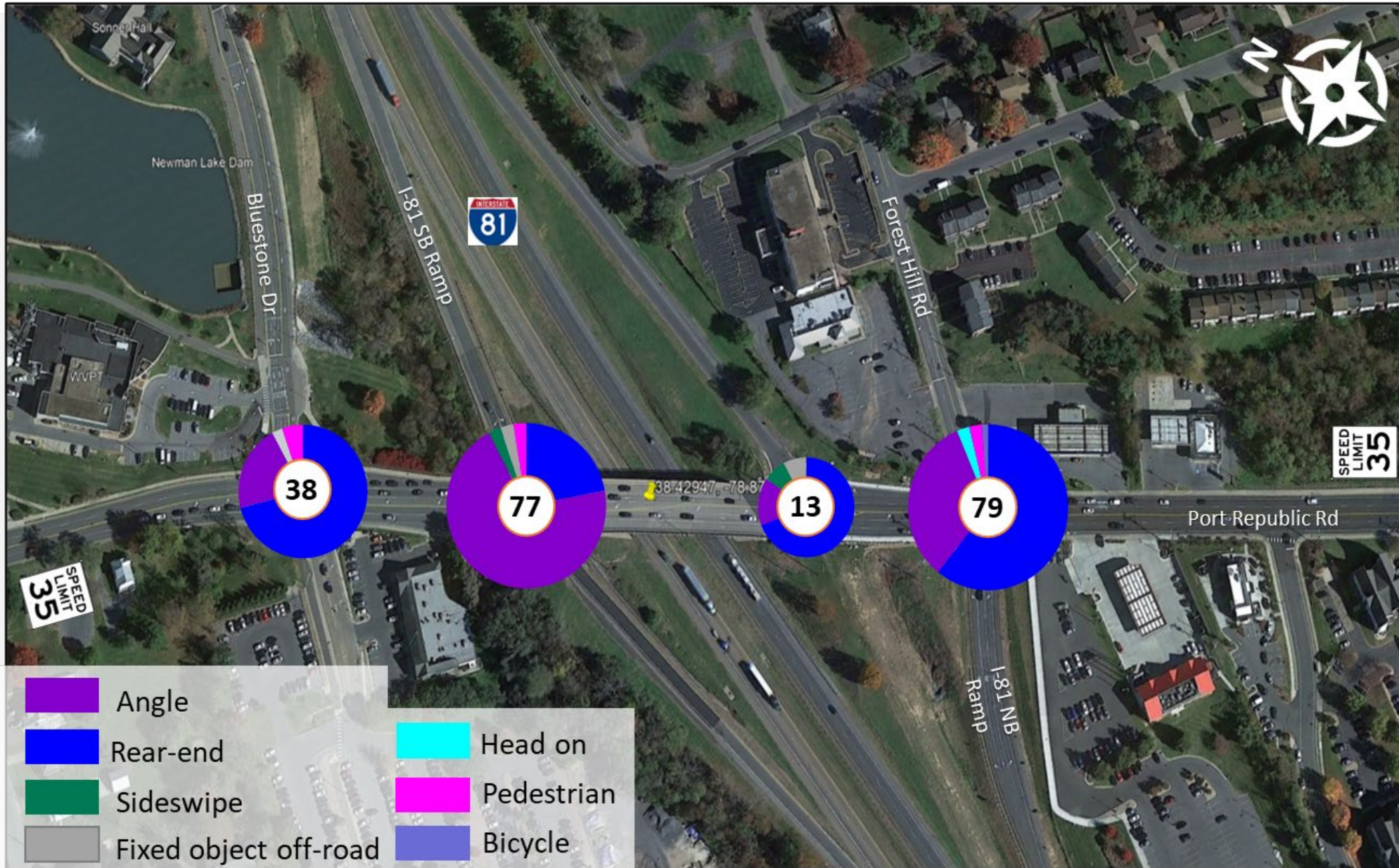
- I-81 SB On Ramp: Leading Pedestrian Interval and/or shorten pedestrian crossing
- I-81 SB Off Ramp: Restrict Right-Turn On Red (RTOR) if operationally feasible.
- Forest Hill Road: Extend the sidewalk from Port Republic Rd to the University Outpost Bookstore entrance and evaluate the lighting.
- Harrisonburg Bike-Ped Plan calls for bike lanes on Port Republic Road between Forest Hill Road and Bluestone Drive (Project #BS-17).
- HRMPO Bike-Ped Plan calls for shared-use path.
- Bridge widening is needed to provide a direct bicycle connection on Port Republic Road.

### Operations / Access Needs

NEED	PRIORITY
Bicycle Access (RN)	Very High
Pedestrian Access (RN)	Very High

# Safety Needs

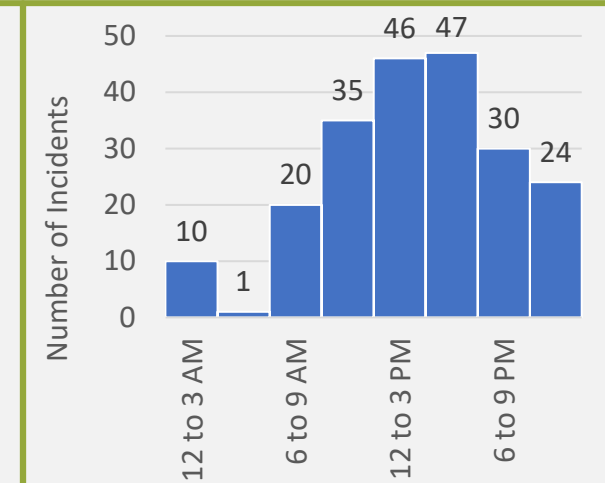
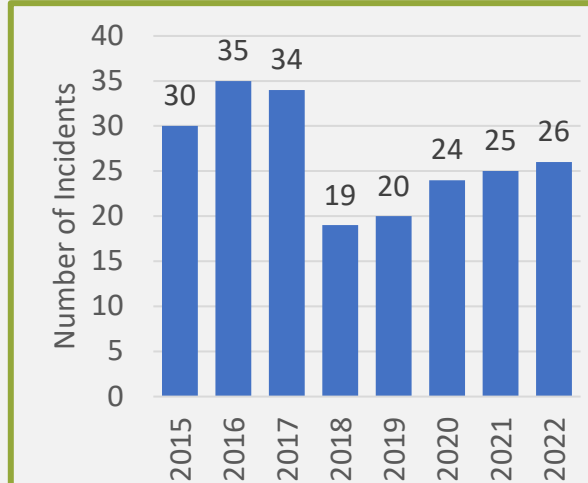
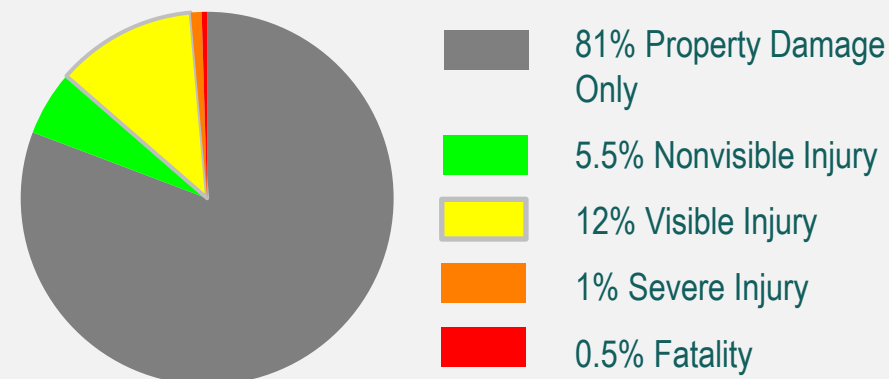
## Needs Identification Summary



### Safety Summary

- Total of **213 crashes** from **2015 to 2022**.
- Average number of annual crashes: ~ 27 crashes/year
- Angle and rear-end crashes: ~ 92% of total crashes
- About 19% of crashes resulted in injuries.
- 54 of the 77 crashes at the Port Republic Road intersection with I-81 southbound off-ramp were angle crashes, with red light running being a significant contributing factor.
- Rear end was the predominant crash type at Port Republic Road intersection with Forest Hill Road
  - 25 crashes occurred on Port Republic Road westbound upstream of Forest Hill Road; the lack of a dedicated right turn lane was a contributing factor to most of these crashes.
  - 14 crashes were reported for the Port Republic Road Eastbound downstream of I-81 Northbound off-ramp; vehicles slowing down to turn to the gas stations were a contributing factor

Safety / Reliability Needs	
NEED	PRIORITY
Reliability (RN)	No Need
Safety Improvement	<b>Very High</b>
Pedestrian Safety Improvement	No Need

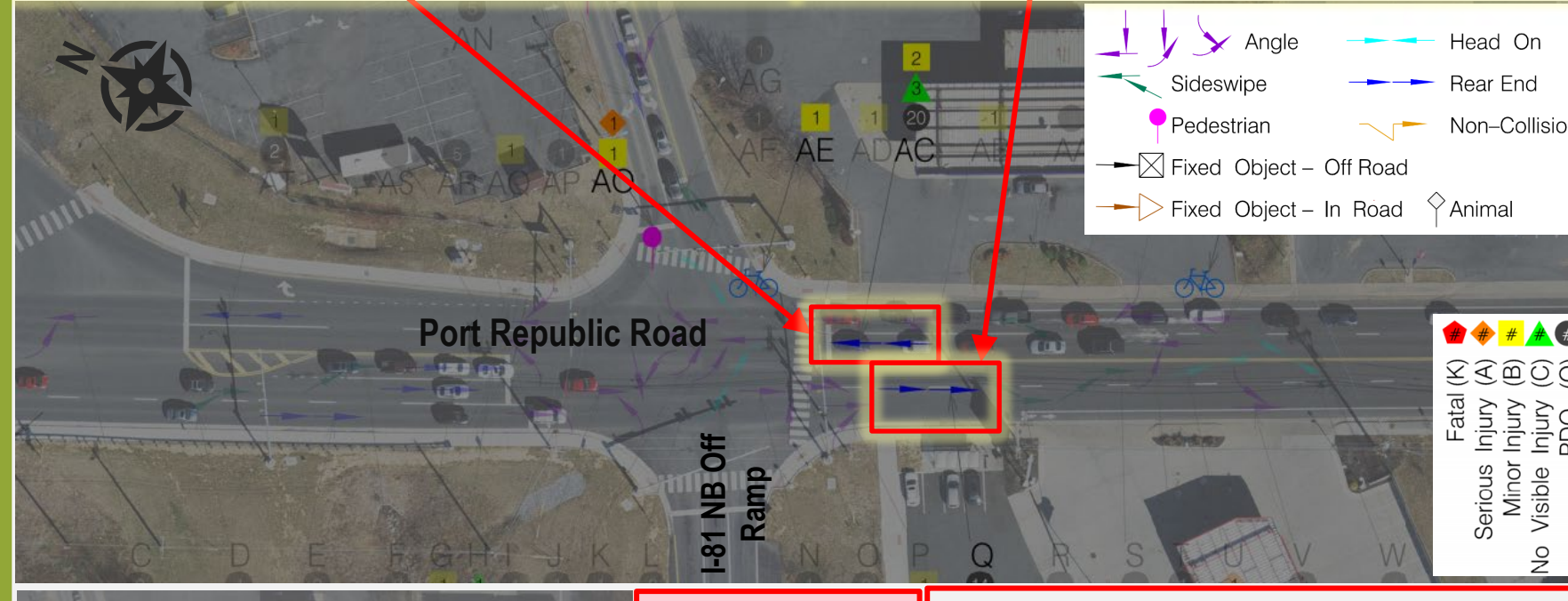
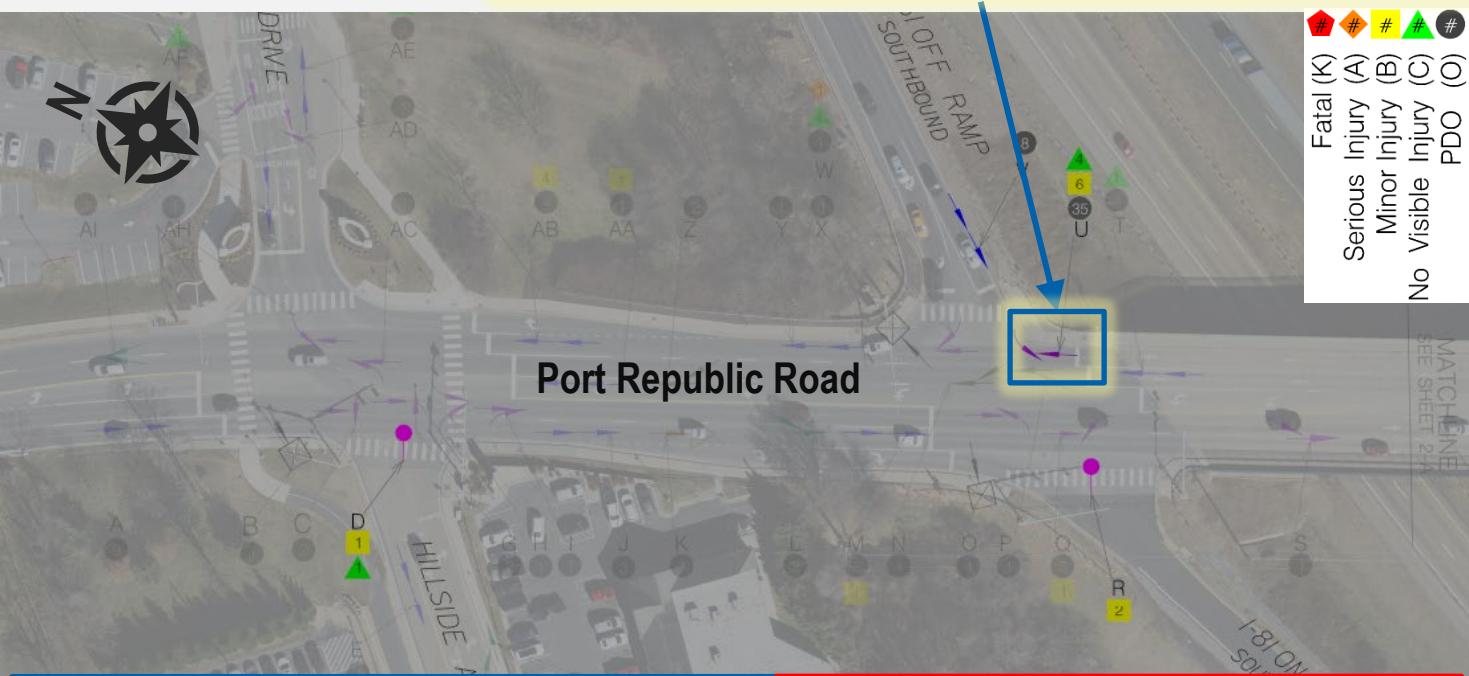
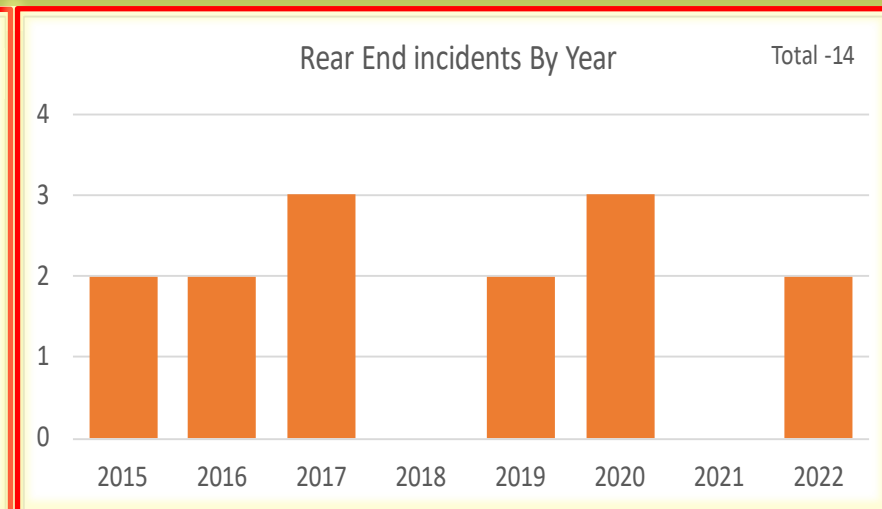
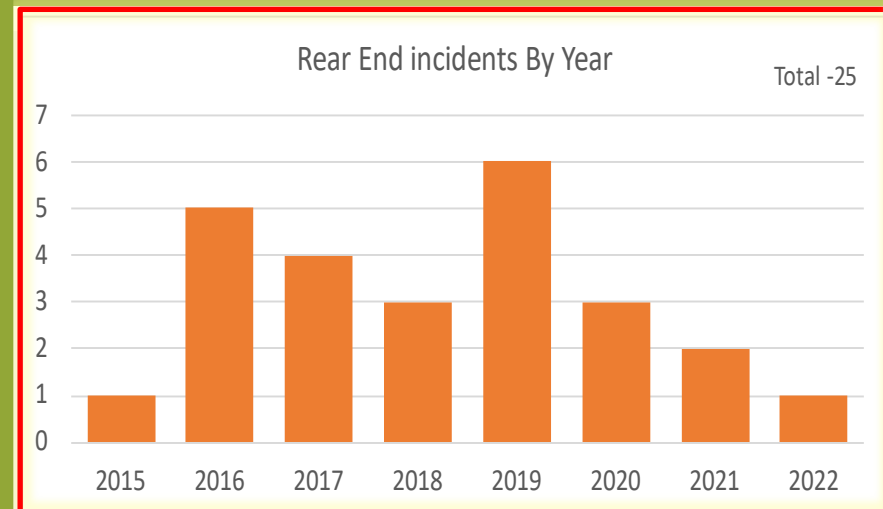
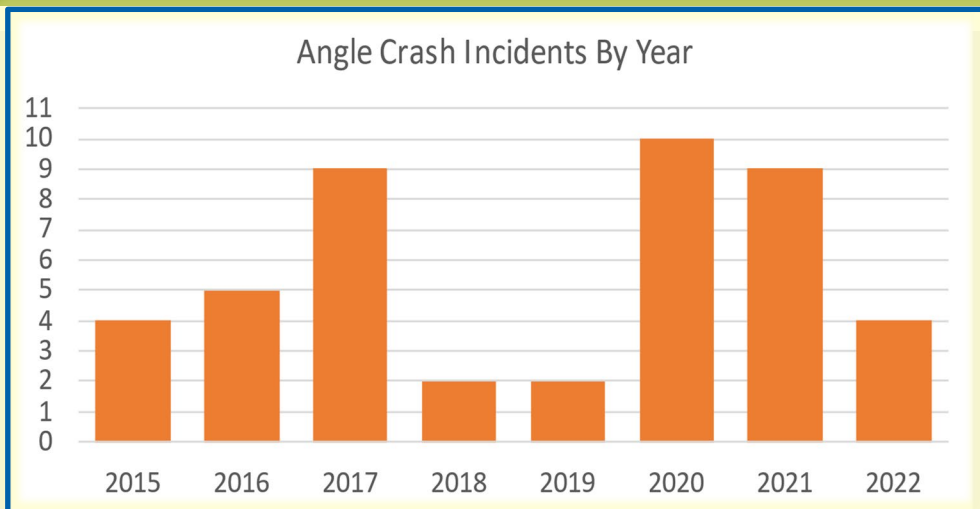
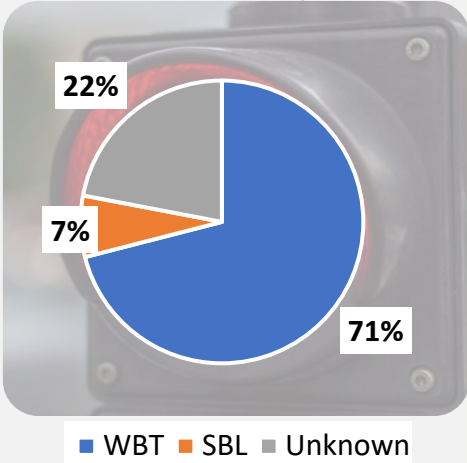


# Phase 1 Scoping-level Safety Improvement Concepts

## Crash Diagrams and Proposed Countermeasures



Proportion of Red Light Runners



Fatal (K)	Red Diamond
Serious Injury (A)	Orange Diamond
Minor Injury (B)	Yellow Diamond
No Visible Injury (C)	Green Diamond
PDO	Black Circle

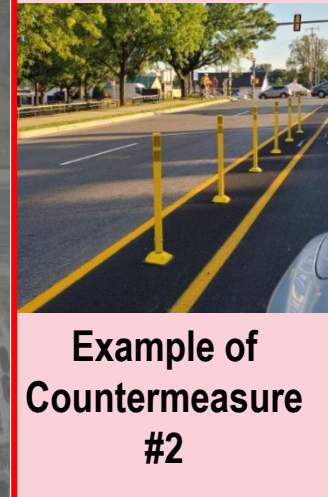
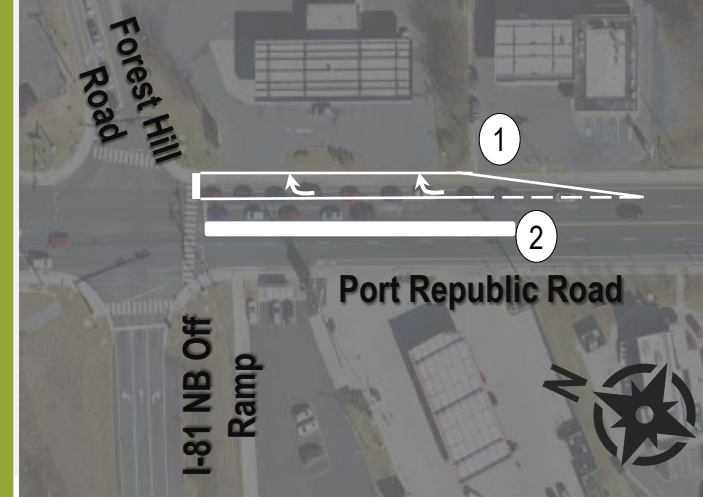
Angle	Blue Arrow
Sideswipe	Green Arrow
Pedestrian	Pink Circle
Fixed Object - Off Road	Black Square
Fixed Object - In Road	Orange Triangle
Animal	White Diamond
Head On	Red Arrow
Rear End	Blue Arrow
Non-Collision	Yellow Arrow

**Countermeasure for Angle Crashes at I-81 SB Off ramp / Port Republic Road**

1. Replace signal heads at westbound approach at the Bluestone Drive intersection with Optically Programmable signal heads

**Example of Countermeasure #1**

Existing	Proposed



**Countermeasure for Rear-end Crashes along Port Republic Road at Forest Hill Road**

1. Install a dedicated WBR lane for Port Republic Road.
2. Concrete median or flex post near Forest Hill Road / I-81N Intersection could reduce the change for rear-end and angle crashes related to adjacent closely spaced commercial entrances.