



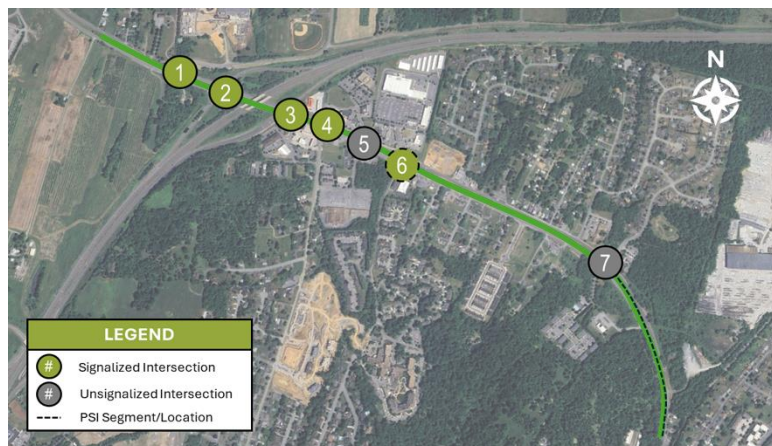
PROJECT PIPELINE NEEDS AND EXISTING CONDITIONS SUMMARY

US Route 522 from Echo Lane to Winchester City Limits (Urban)

VDOT District: Staunton / Locality: Frederick County

ST-25-03

Sheet 1 of 2



Study Purpose, Goals, and Objectives

To analyze the operational and safety issues identified on the urban segment of N. Frederick Pike (US Route 522) from Echo Lane to the Winchester City Limits, with a focus on congestion mitigation and pedestrian safety improvements.

VTrans Needs

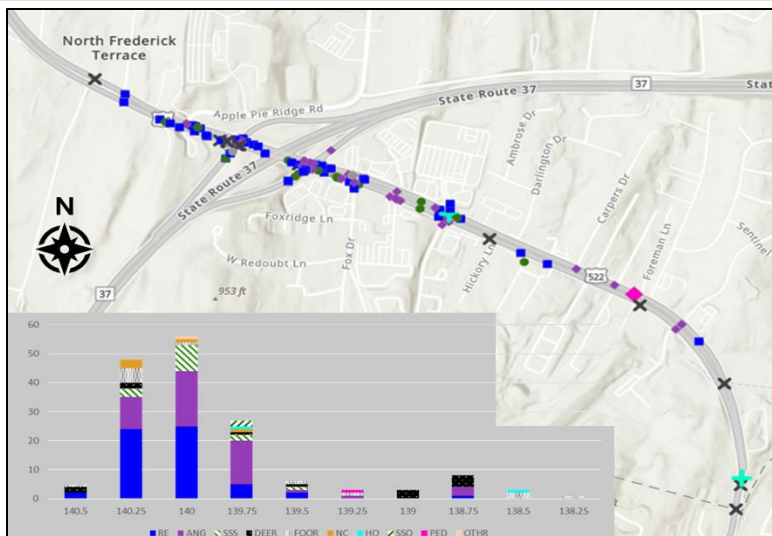
	Congestion Mitigation
	Capacity Preservation (Keep traffic flowing smoothly)
	Safety Improvement
	Pedestrian Safety Improvement
	Transportation Demand Management (TDM)
	Bicycle Access
	Transit Access

Study Facts

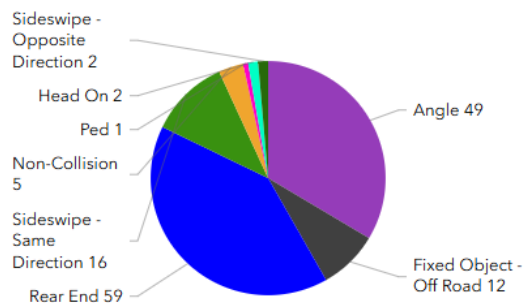
Major Study Intersections	Apple Pie Ridge Rd , VA 37 NB Ramps, VA 37 SB Ramps, Fox Dr, Rivendell Ct
Length of Study Area	1.8 miles
Classification	Oth. Principal Arterial
2022 AADT (Average Annual Daily Traffic)	11,000 (east of interchange)
Speed Limit	45/35 mph

Safety Needs

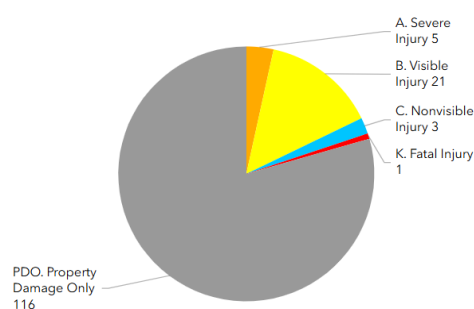
- Fifty-nine (59) Rear-End crashes and forty-nine (49) Angle crashes occurred on the segment between 2020 and 2024, with the majority occurring at the interchange or adjacent intersections.
- Several severe crashes occurred along the PSI segment, including a fatal head-on collision near the Winchester City Limits.
- One pedestrian crash in the PSI segment, although the cause, according to the FR-300, was a driver leaving their vehicle to pursue a loose pet.



Crash Type 146 Total Crashes (excluding Deer) (2020 – 2024)



Crash Severity 146 Total Crashes (excl. Deer) (2020 – 2024)



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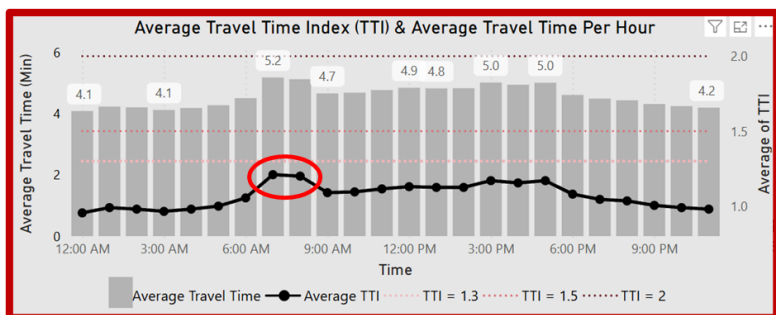
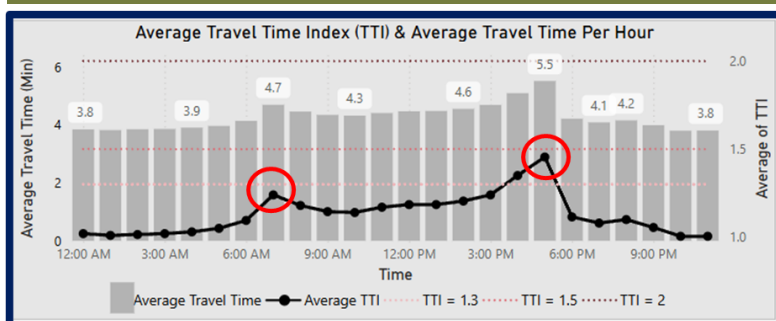
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Sheet 2 of 2

Operations Summary

- Congestion was most prevalent at interchange ramps and adjacent intersections.
- All signalized intersections have protected lefts on the mainline. Side streets operate as split phasing.
- The combination of the morning commuter rush and the high school opening time causes queue spillback northbound at Apple Pie Ridge Road and the interchange ramps.
- The peak congestion period is short, lasting only a few cycles in either peak hour.

Travel Time Index*



*Travel Time Index (TTI) is the ratio of the travel time during the referenced time period to the travel time during typical conditions. For example, a TTI of 1.5 means a trip takes 50% longer than it would in free-flow conditions.

Transit and TDM Needs

- Loss of transit access along US 522 and Westminster Canterbury Drive
- Possible further reduction in services provided by Winchester Transit
- Potential to convert government-owned shopping center parking lot into a commuter park-and-ride lot

Bike and Pedestrian Access Needs

- Consistent pedestrian need from local high school students – convenience store trips, lunch break trips, cross-country training
- Noticeable pedestrian activity through Streetlight Data to local shopping centers from residential areas on the eastern half of the study corridor.
- Limited active transportation facilities – discontinuous sidewalk, no crosswalks, no bike lanes, no shared-use paths
- The entirety of the study corridor falls within the top 5% of VDOT Pedestrian Safety Action Plan (PSAP) priority corridors

Summary of Needs Identified Through Public Outreach

- Survey date: May 5th – May 19th, 2025
- Number of participants: 444
- 86% commute daily or weekly
- Highest ranked needs: reducing congestion, improving vehicle safety, improving pedestrian safety
- Mode(s) of travel: Personal vehicle (98%), walking (12%), cycling (7%)
- Speeding/aggressive driving and lack of sidewalks/missing sidewalks were identified by participants as the greatest safety issues in the study area

Solutions to Consider Under Phase 2

- Queue management at the James Wood High School main access by reconfiguring the access on Apple Pie Ridge Rd
- Fill in sidewalk gaps and provide pedestrian facilities crossing the VA-37 interchange on US-522 under the VA-37 bridge
- Crosswalks, ADA ramps, and signalized pedestrian crossings at all signalized intersections
- Vehicle queue management improvements at the US-522 at VA-37 interchange ramp signalized intersections by adding new turn lanes and lengthening existing storage
- Installation of warning signs and improved pavement markings where needed