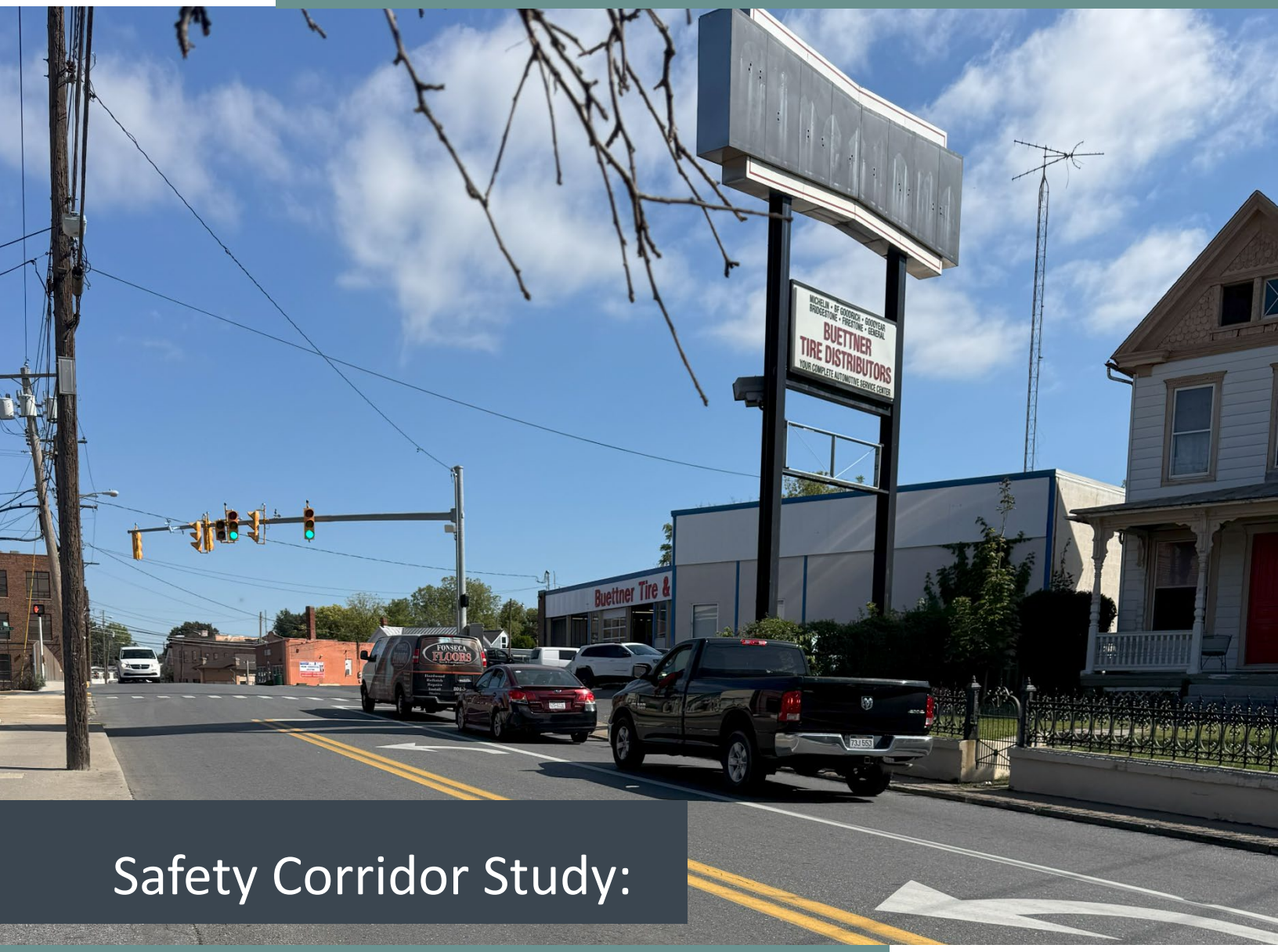
HEPMPO
CORRIDOR STUDY



Safety Corridor Study:

Winchester Avenue

June 2026

Hagerstown Eastern Panhandle MPO

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Introduction

The Hagerstown/Eastern Panhandle Metropolitan Planning Organization (HEPMPO) Regional Safety Action Plan produced a high-injury network (HIN) for the region that identified roadway segments with disproportionate fatal or serious injury crashes, especially those involving people walking, biking, or riding a motorcycle. Winchester Avenue was among the safety corridors identified along the HIN to further assess and identify safety solutions.

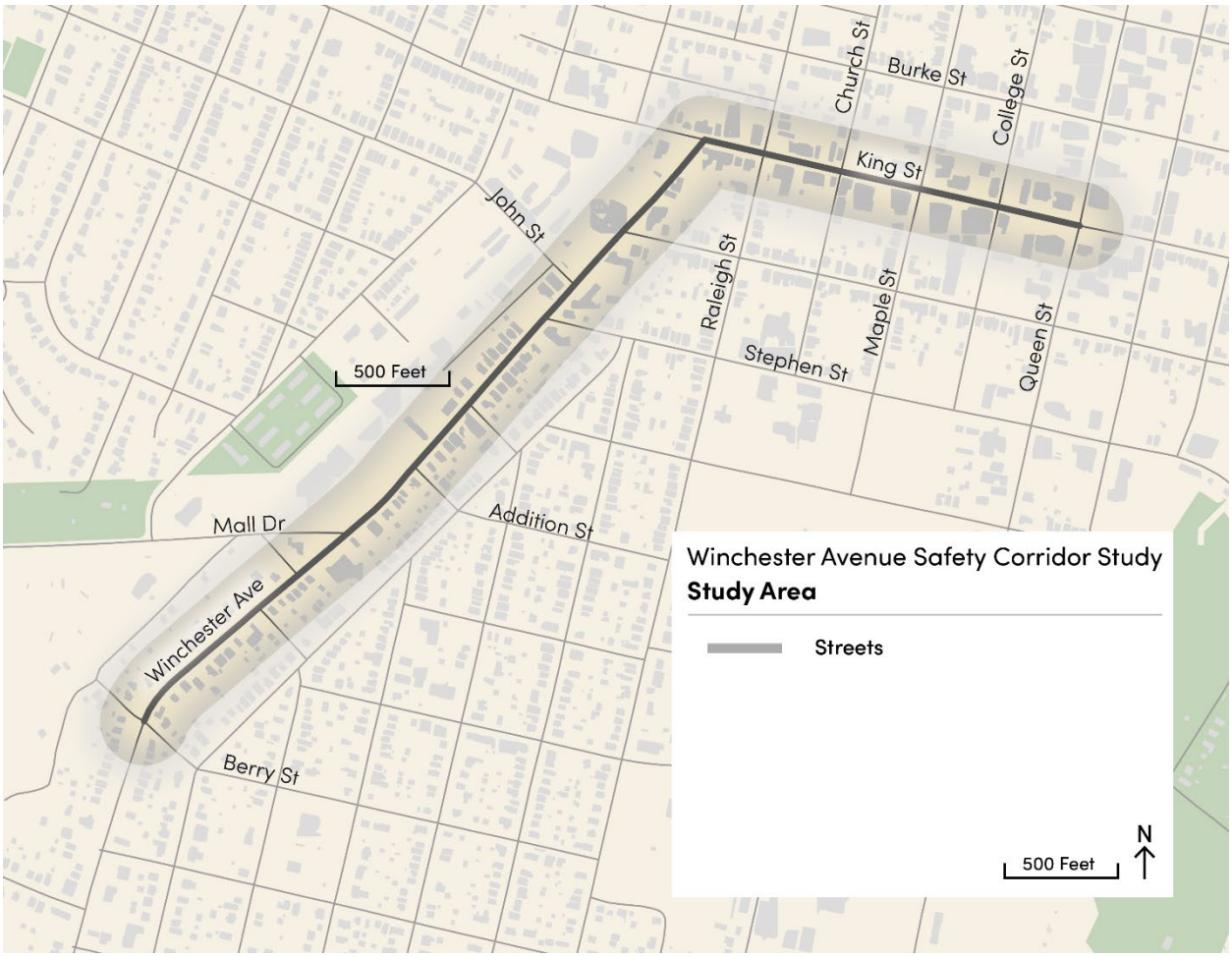
This memo summarizes the existing conditions and assesses the safety needs and risk factors for the Winchester Avenue safety corridor study area in Martinsburg, WV. The memo highlights the needs assessment process, existing conditions, future conditions, site visit, and how the findings will inform concept development and funding strategy.

About the Winchester Avenue Safety Corridor

The Winchester Avenue safety corridor is part of the State-owned US Route 11 in Berkeley County, WV. The study area includes Winchester Avenue from Berry Street to King Street, as well as King Street in downtown Martinsburg from Winchester Avenue to Queen Street, as shown in **Figure 1**. The corridor serves as a critical transportation route into downtown Martinsburg, connecting traffic from I-81 and WV-9 to the historic downtown core. The roadway consists of two travel lanes with on-street parking in select areas. Sidewalks are present on both sides of the roadway, though their quality varies highly on Winchester. Nearly all intersections have some type of control, with signals present at six intersections and stop signs on smaller side streets. The Annual Average Daily Traffic (AADT) volumes vary between 9,968 at the southern extent of the corridor and 16,194 on King Street east of the corridor near I-81, indicating moderate to high traffic activity.[1]

1 West Virginia Department of Highways. (n.d.). West Virginia Annual Average Daily Traffic (AADT) Map. Retrieved October 30, 2025, from https://gis.transportation.wv.gov/aadt/

Figure 1: Winchester Avenue Safety Corridor Study Area Map



Adjacent land uses include commercial establishments concentrated in the downtown area and residential neighborhoods south of the city center. Public transit services, operated by the Eastern Panhandle Transit Authority (EPTA), provide regional connectivity through designated stops along the corridor.

The corridor is on the HIN developed through the HEPMPO Regional Safety Action Plan, and sections of it are on the 2023 West Virginia Vulnerable Road User Assessment HIN. Recommendations developed through this plan, and through previous planning processes, seek to make the corridor safer for all road users.

HEPMPO Regional Safety Action Plan

In 2023, the HEPMPO Regional Safety Action Plan (SAP) was developed as a comprehensive effort to address roadway safety challenges across the region. The Plan was officially adopted by the HEPMPO Policy Board in May 2024, marking a significant milestone in the region's commitment to achieving zero fatalities and serious injuries. Central to the plan's development

was the identification and prioritization of strategies to enhance safety for all road users, including pedestrians, bicyclists, public transit riders, and commercial vehicle operators.

A key component of the Safety Action Plan was the creation of a HIN, which identifies roadway segments and intersections with the highest concentrations of fatal and serious injury crashes. This data-driven approach enabled HEPMPO to prioritize locations where interventions could have the greatest impact on reducing fatalities and serious injuries. Previous safety corridor studies were conducted on Washington Street in Jefferson County, WV, Edwin Miller Boulevard in Berkeley County, WV, and Virginia Avenue in Washington County, MD. This study focuses on Winchester Avenue in Berkeley County, WV, which ranked 10th among all corridors in the HEPMPO HIN.

These assessments aim to evaluate specific safety challenges and identify feasible solutions tailored to each location. By addressing these high-priority areas, HEPMPO intends to position its member jurisdictions to secure potential funding through programs like Safe Streets and Roads for All (SS4A), ensuring that actionable steps can be implemented to improve safety across the region. HEPMPO also developed recommendations that State DOT partners could implement utilizing Highway Safety Improvement Program (HSIP) funding.

Needs Assessment Process

This section outlines the primary steps taken to examine the safety needs along the Winchester Avenue safety corridor. Needs assessments steps included collecting and evaluating data and previous plans and conducting a site visit with stakeholders which applied a proactive safety tool.

Data Collection & Evaluation

The project team collected the following data to understand and evaluate the contextual and roadway characteristics of the study area:

- 2019 – 2024 Crash Data
- Future Planning Designations & Development
- HEPMPO Regional Safety Action Plan - Corridor Profiles
- Vehicle Volumes
- Existing & Future Land Use
- Roadway Characteristics (Speeds, Lanes, On-Street Parking, Loading Zones, Presence and Width of Shoulders, Lighting)
- Transit Stops & Routes
- Pedestrian & Bicycle Infrastructure (Sidewalks, Crosswalks, Curb Ramps, Bike Lanes)
- Site Visit Observations, including Signal Operations
- Right-of-Way
- Historical Public Outreach Survey Responses

Previous Plans or Work Review

The project team reviewed seven documents that provide guidance on existing and future land use and transportation vision for the study corridor:

- HEPMPO Regional Safety Action Plan
- Martinsburg Gateway Vision Plan
- Martinsburg Comprehensive Plan
- WV Vulnerable Road User Safety Assessment
- North Martinsburg Area Pedestrian Plan
- Interwoven Mill Apartments Traffic Impact Assessment
- Martinsburg-Berkeley County Parks and Recreation Master Plan

Site Visit

The project team conducted a site visit with stakeholders on October 1, 2025, to examine historical safety issues and systemically identify potential risk factors using a proactive safety lens. Site visit participants identified risk factors using criteria from the FHWA Safe System

Project-Based Alignment Framework. Criteria from the framework include variables related to exposure, such as AADT, risk factors that can increase the likelihood of a crash, such as number of conflict points at an intersection, and severity of a crash, such as speed along a corridor. The FHWA framework was released in April of 2024 to assist agencies in assessing their alignment with the Safe System Approach (SSA). FHWA adopted the SSA in 2022 as a guiding paradigm for addressing roadway safety and achieving a goal of zero traffic deaths. The SSA helps transportation agencies and stakeholders re-think and evaluate existing safety efforts and implement other intentional solutions to achieve the goal of zero deaths and serious injuries.

Through this approach, the team identified safety concerns related to multiple aspects of roadway safety, including traffic flow patterns and turning movements that have contributed to previous crashes, as well as road conditions such as pavement quality, signs, pavement markings, lighting, and roadside conditions. Additionally, they examined pedestrian and bicycle safety concerns stemming from insufficient infrastructure. Throughout the visit, the team discussed safety risks and community concerns and began to identify potential solutions to mitigate these risks.

Existing Conditions

This section summarizes the existing conditions along the Winchester Avenue safety corridor study area including previous work, roadway, active transportation, and transit facilities, as well as reviewing corridor safety and community context.

Previous Work

Seven previous studies and planning efforts were reviewed as part of the existing conditions assessment, with two studies provided a strong foundation: the HEPMPO Regional Safety Action Plan and the Martinsburg Gateway Vision Plan.

HEPMPO Regional Safety Action Plan

The 2024 HEPMPO Regional SAP emphasizes prioritizing safety improvements by identifying high-risk locations and addressing primary collision types and contributing factors. For this purpose, two key tools were developed:

1. **High-Injury Network (HIN):** This network identifies roadway segments with a high frequency of fatal and serious injury crashes. The HIN represents only 2.5% of the non-interstate road network but accounts for a significant proportion of severe crashes, including 56% of pedestrian and 32% of motorcycle fatalities and injuries.
2. **Priority Corridor Profiles:** The corridor profiles were selected based on the HIN rankings and refined through public input and state-designated priority areas. These corridors focus on addressing safety concerns for vulnerable road users (pedestrians, bicyclists, and motorcyclists) and underserved areas.

Additionally, safety improvement strategies and countermeasures were proposed for the selected priority corridors, tailored to address specific safety challenges and historical trends. The priority corridor profile for Winchester Avenue, as well as the SAP countermeasure toolbox, from the regional SAP can be found in **Appendix D**: HEPMPO SAP – Winchester Ave. Corridor Profile and Countermeasure Toolbox.

Martinsburg Gateway Vision Plan

The 2023 Martinsburg Gateway Vision Plan provided a long-term strategy to strengthen the city's identity, enhance economic development opportunities, and improve pedestrian and bicycle connections. The plan focused on key gateways including Queen Street, King Street, Raleigh Street, Winchester Avenue, and Moler Avenue. Through public engagement, site analysis, and conceptual planning, the project culminated in a block-by-block guide of improvements and future city investment.

The Martinsburg Gateway Vision Plan includes conceptual renderings to substantially change the intersections of Winchester Avenue and King Street as well as Winchester Avenue and Mall

Drive. The plan envisions this study's portion of Winchester Avenue as a multi-use innovation zone, and King Street as a downtown zone. Among the changes is a proposal to redesign the intersection at Winchester and King to allow left turns from northbound Winchester onto westbound King. This recommendation is a high priority for the city and would substantially impact traffic patterns at this intersection and along the corridor. The conceptual plans also envision closing the one-way connector from Mall Drive to Winchester Avenue and converting that roadway to a shared use path.

Additional recommendations in the Gateway Plan that would impact the Winchester Avenue safety corridor include the following:

- Repurpose on-street parking on Winchester to create space for bike facilities and wider sidewalks
- Reduce travel lanes on Winchester to 11 feet wide
- Widen sidewalks on Winchester
- Add streetscaping with planted buffers along Winchester
- Add a 10-foot wide shared use path in the alley parallel to Winchester
- Add a 10-foot wide shared use path along King
- Add landscape buffers and bump-outs along King

In addition to these design recommendations, both the Gateway Plan and the HEPMPO Regional Safety Action Plan recommend adding high visibility crosswalks and retroreflective backplates on signals. The Regional Safety Action Plan further recommends traffic signal coordination, resizing stop signs, adding reflective strips and stop bars, updating side street intersection signing and pavement markings, and adding leading pedestrian intervals and flashing yellow arrows to signals. A comparison of countermeasures and recommendations from both the Martinsburg Gateway Vision Plan and the Regional SAP can be found in **Appendix C**: Combined Previous Study Recommendations.

Roadway Facilities

The one-mile Winchester Avenue priority corridor forms part of US Route 11, extending from Berry Street at its southwestern extent and continuing on King Street to Queen Street (WV-45;). To the south, the corridor connects to both I-81 and WV-9 via Apple Harvest Drive, making it a critical regional transportation connection. The corridor receives interstate traffic diverted from I-81 and is also the primary route into downtown for delivery trucks. The corridor is an urban minor arterial with average daily traffic on Winchester Avenue just south of Berry Street estimated at 9,968 in 2023. The closest count to the corridor on King Street shows daily volumes over 16,000 vehicles; because this reading was taken close to I-81, it may be an overestimation. However, heavy traffic was observed throughout the study area during the site visit. Updated traffic counts within the study limits may be warranted.

The corridor includes six signalized intersections. All other intersections along Winchester Avenue and King Street are stop-controlled minor street approaches. T-intersections are common along Winchester Avenue.

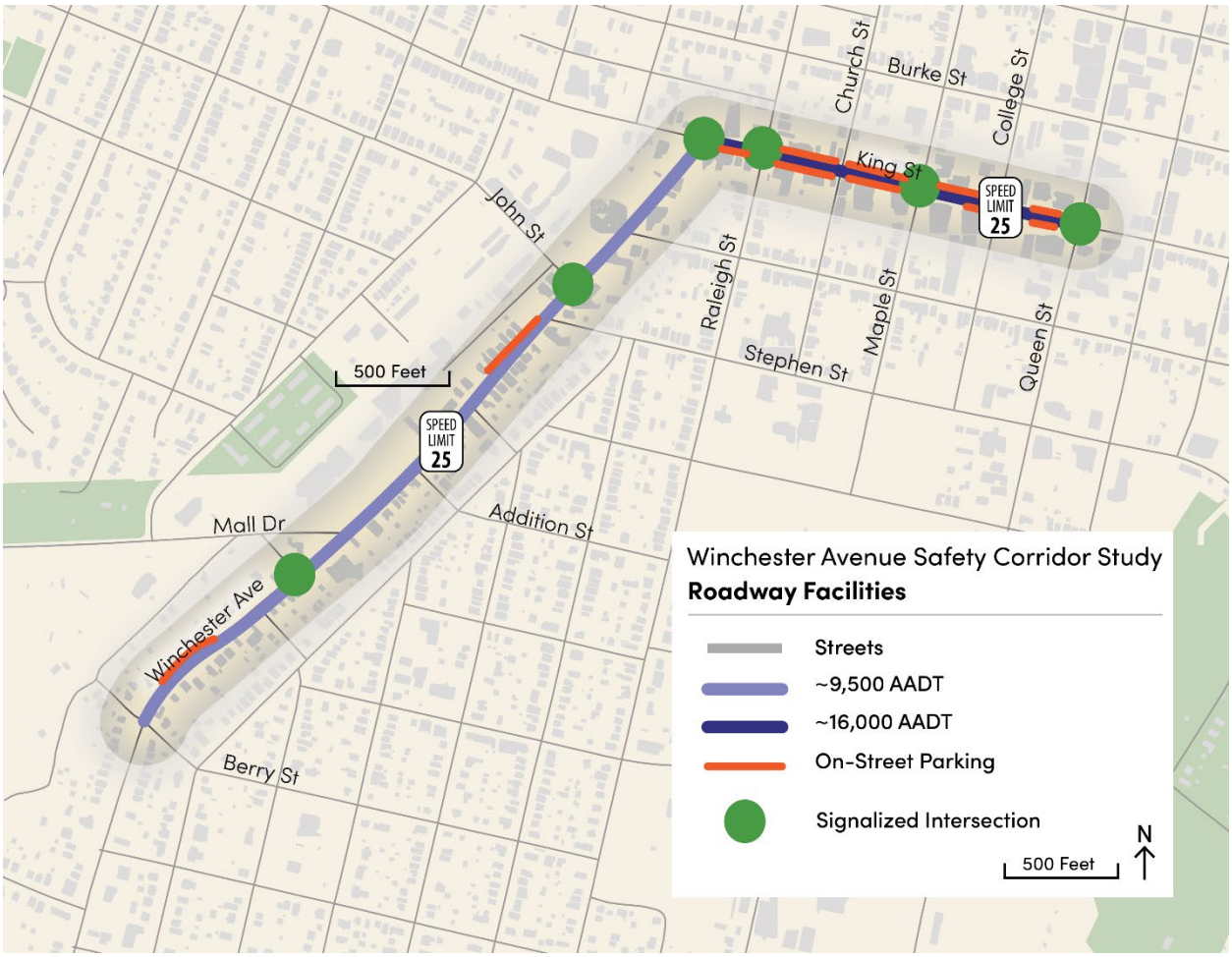
Figure 2. Roadway facilities on King Street.

Winchester Avenue is a two-lane road throughout the study extent, with left turn pockets at the signalized intersections at Mall Drive and at John Street. King Street is also two lanes, with left turn pockets at its intersections with Winchester Avenue, Raleigh Street, and Queen Street. King Street does not have turn pockets at its signalized intersection with Maple Street. Left turns are not permitted from northbound Winchester onto King Street. The posted speed limit along the corridor is 25 miles per hour.

Right of way and lane widths are widest at the southern extent of the corridor, where traffic transitions from faster speeds on I-81 and Apple Harvest Drive to the corridor's more urban context. At Winchester Avenue and Berry Street, the right of way is approximately 65 feet. The roadway is 43 feet wide, with travel lanes that are 21-22 feet wide. Moving north along Winchester, the right of way narrows. Near Addition Street, the roadway narrows to 29 feet total with lane widths narrowing to roughly 14 to 15 feet. Between John Street and King Street, the roadway narrows even further to 24 feet. Along this stretch of Winchester, historic buildings from the Interwoven site constrict the sidewalk width on the east side for about 175 feet, posing challenges for pedestrian improvements. Along King Street, roadway width is roughly 40 feet wide with ~12-13 foot lanes.

On-street parking is available on both sides of King Street except where turning lanes are present. While parking is permitted along Winchester Avenue, it is infrequently used. Due to higher utilization of on-street parking on King Street, lanes and conditions feel more compact and narrower, which can result in traffic calming.

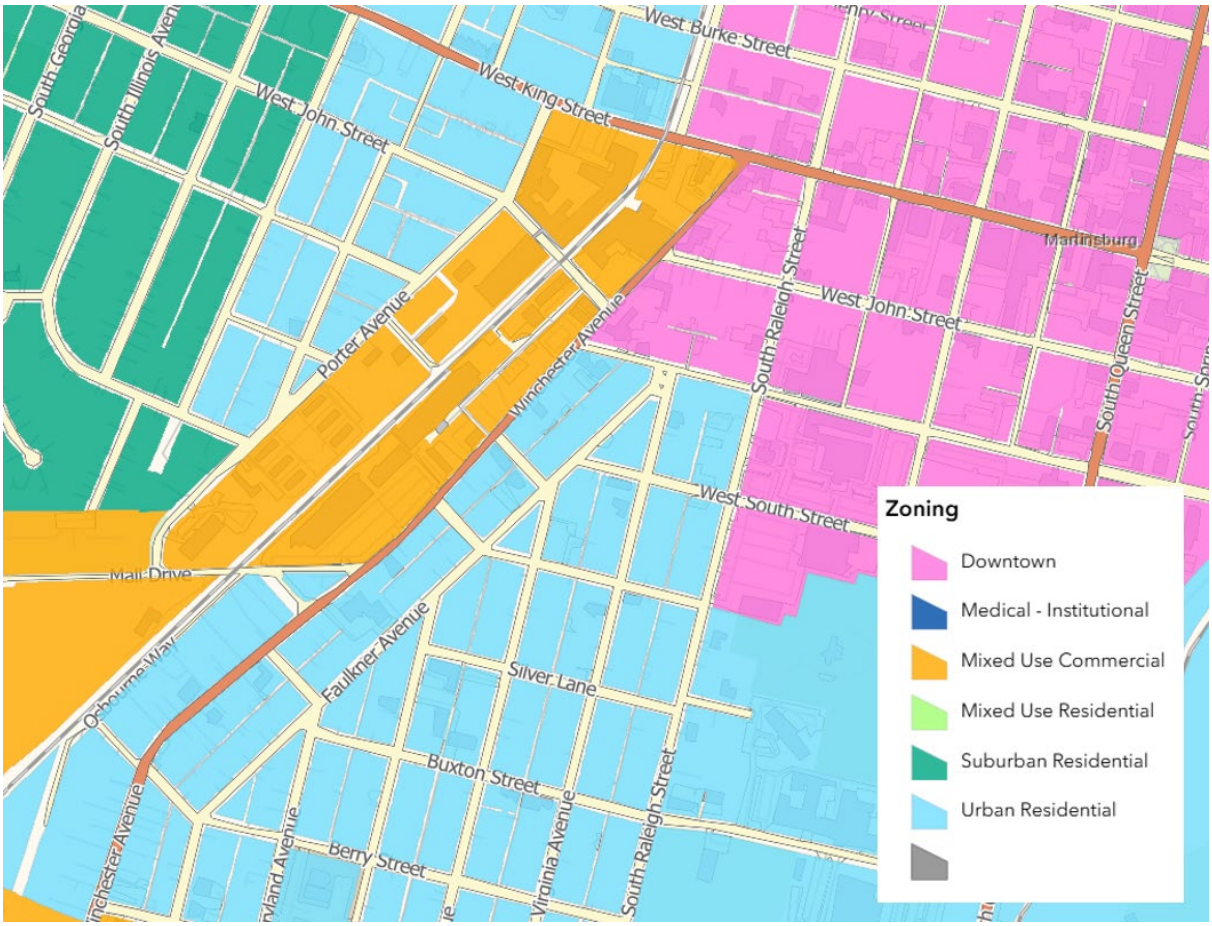
Figure 3: Winchester Avenue Safety Corridor Roadway Map



Land Use

Much of the area around the corridor is low-density residential, with commercial uses interspersed with residences along Winchester Avenue, as shown in **Figure 4**. Parcels on the west side of Winchester Avenue are zoned mixed-use commercial. Stephen Street demarcates the transition from residential zoning to downtown. Properties southeast of the Winchester Avenue and Stephen Street intersection are zoned urban residential and properties northeast of the intersection are zoned as downtown. Commercial uses along Winchester Avenue range from businesses within converted homes to a large strip mall plaza on the northwest side of Winchester Avenue between Mall Drive and South Street. King Street is zoned as downtown and falls within Martinsburg's historic district. Commercial land use predominates King Street, which is dotted with small businesses within historic buildings, community uses such as churches, and private residences.

Figure 4: Martinsburg Zoning Map[2]



[2] City of Martinsburg, online planning map (n.d), Map. Retrieved October 22, 2025, https://experience.arcgis.com/experience/100d79cef0b4424aa7dc9bae5f0d90dc/

Active Transportation and Transit

Bicycle and Pedestrian Infrastructure

The corridor currently lacks designated bicycle facilities, with no bike lanes or infrastructure to accommodate cyclists. Pedestrian infrastructure is present but varies in quality, as shown in **Figure 5**.

Figure 5: Winchester Avenue Safety Corridor Pedestrian and Bicycle Facilities Map

Along Winchester Avenue, sidewalks are generally present on both sides of the street but do not meet Americans with Disabilities Act (ADA) standards. Sidewalks are generally narrow (less than 4 feet wide) with heaving and crumbling concrete, as highlighted in **Figure 6**. Utilities, street signs, and fire hydrants obstruct the sidewalk in some places. In most locations, sidewalks are attached to the street with varying curb heights. In some locations, such as in front of Winchester Avenue Elementary School, the sidewalk is nearly at-grade with the road. In other locations, driveways cut through the sidewalks. The sidewalk disappears for about one-half block between Stephen Street and John Street, in front of Buettner Tire & Auto, which is entirely driveway for the business.

Figure 6. Deficiencies in sidewalk conditions along portions of Winchester Avenue, as shown here near 205 Winchester Avenue.

Along King Street, sidewalks are wider and in better repair, although parking meters, street trees, and utility poles encroach on pedestrian space. Parked cars provide a buffer from traffic in many locations.

Curb cuts are present at all intersections along the corridor. Crosswalks are present at all intersection legs on King Street, but missing along most minor approaches at unsignalized intersections along Winchester Avenue, including the following:

- Berry Street
- Buxton Street
- Mall Drive (unsignalized intersection only)
- Addition Street
- South Street
- John Street (northern intersection)

Crossing opportunities along Winchester Avenue are widely spread out or unevenly spaced, and uncontrolled crosswalks have limited additional safety countermeasures (e.g., in-road pedestrian crossing signs, shark teeth yield road markings, rectangular rapid flashing beacon, etc.) shown in **Table 1**. Crossing opportunities along King Street exist at every block, roughly every ~300 feet, and are primarily facilitated by signalized intersections. **Table 2** highlights

uncontrolled crossings along King Street and crosswalk support treatments at those locations. Pedestrian push buttons are present at all signalized locations. At Winchester Avenue and King Street, the pedestrian push button activates a pedestrian-only walk phase. Though short (10-second cycle), this phase provides a designated time for pedestrians to cross.

Table 1: Winchester Avenue Pedestrian Crossing Opportunities

WINCHESTER AVENUE INTERSECTION	CONTROL TYPE	DISTANCE TO NEXT CROSSWALK IN STUDY AREA	CROSSWALK SUPPORT TREATMENTS
MALL DR	Signal	~600’	Pedestrian signal heads, pedestrian push buttons, pedestrian crossing signs, continental crosswalk striping, advanced stop bars, overhead lighting
ADDITION ST	Uncontrolled	~900’	Pedestrian crossing signs, continental crosswalk striping, overhead lighting
STEPHEN ST	Uncontrolled	~180’	Pedestrian crossing signs, continental crosswalk striping, overhead lighting
JOHN ST	Signal	~875’	Pedestrian signal heads, pedestrian push buttons, continental crosswalk striping, advanced stop bars, overhead lighting

Table 2: King Street Uncontrolled Crossing Treatments

KING STREET INTERSECTION	CONTROL TYPE	CROSSWALK SUPPORT TREATMENTS
CHURCH ST	Uncontrolled	Continental crosswalk striping
COLLEGE ST	Uncontrolled	Continental crosswalk striping

Transit System

The Eastern Panhandle Transit Authority (EPTA) operates public transportation services throughout Berkeley and Jefferson Counties in West Virginia. Within Martinsburg, EPTA routes 14, 25/30, and 40 serve the Winchester Avenue corridor. Route 14 has one-hour headways on weekdays, with frequency increasing to 40-minute headways during the AM and PM peak hour. Route 25/30 runs once each evening. Route 40 has 80-minute headways between 10am and 6pm on Saturdays and holidays.

Figure 7. An EPTA shuttle in the 7-Eleven parking lot at Winchester Avenue and King Street.

Stops are located on Winchester Avenue just south of King Street, at King Street and Raleigh Street, and at King Street and Queen Street. The stop at Winchester Avenue and King Street utilizes a private parking lot (7-Eleven parking lot) rather than public right of way.

Figure 8: Winchester Avenue Safety Corridor Transit Facilities Map

Safety

Crash History

The Winchester Avenue corridor is part of the high injury network developed for the HEPMPO Regional Safety Action Plan. In addition, the 2023 West Virginia Vulnerable Road User Safety Assessment identified portions of the corridor as particularly dangerous to pedestrians, cyclists, and people using mobility devices. Specifically, the King Street segment between Maple Street and Queen Street is ranked 41st in the West Virginia High Injury Network and the Winchester Avenue / King Street segment from Stephen to Raleigh is ranked 71st.[3]

The following section summarizes crash data from 2019 through 2024 to provide trends by mode, severity, and crash type. Severity definitions follow those described in the Model Minimum Uniform Crash Criteria.[4]

Between 2019 and 2024, 154 crashes were reported in the study area. **Table 3** summarizes these crashes by injury, severity, and mode and **Figure 9** highlights the crash locations by severity along the corridor. Crashes involving cars and trucks (also referred to as Vehicle crashes) account for 93% of all crashes along the Winchester Avenue corridor. Pedestrians were involved in 6% of all crashes, and bicycles were involved in just 1% of all crashes.

Table 3: Winchester Avenue Safety Corridor - Crashes by Mode and Severity (Total) from 2019 to 2024

MODE	FATAL INJURY	SERIOUS INJURY	MINOR INJURY	POSSIBLE INJURY	NO APPARENT INJURY	TOTAL
BICYCLE	0 (0%)	0 (0%)	0 (0%)	2 (7.7%)	0 (0%)	2 (1.3%)
PEDESTRIAN	1 (100%)	1 (100%)	1 (16.7%)	5 (19.2%)	1 (0.8%)	9 (5.8%)
VEHICLE	0 (0%)	0 (0%)	5 (83.3%)	19 (73.1%)	119 (99.2%)	143 (92.9%)
TOTAL	1	1	6	26	120	154

3 West Virginia Division of Highways. (2023). West Virginia Vulnerable Road User Assessment. West Virginia Department of Transportation. https://transportation.wv.gov/highways/traffic/SiteAssets/Pages/default/WV%20VRU%20Assessment.pdf

4 National Highway Traffic Safety Administration (2025, February, Revised). MMUCC guideline: Model minimum uniform crash criteria, 6th edition (Report No. DOT HS 813 525a).

Figure 9: Winchester Avenue All Crashes by Severity 2019 - 2024

While motor vehicles crashes accounted for the largest share of both overall crashes and killed or seriously injured (KSI) crashes, when vulnerable road users (VRU) were involved in a crash (defined for the purposes of this memorandum as someone outside a vehicle, including a pedestrian, bicyclist, or motorcyclist) the risk of serious injury increased disproportionately; vulnerable road users were involved in 7% (11) of overall crashes, but 100% (2) of all fatal or serious injury crashes. Although motorcycles are considered vulnerable road users, the only crash involving a motorcycle during this time period also involved a pedestrian.

Table 4 and **Table 5** summarize the crashes based on the recorded crash type and severity for all incidents in the corridor. The most common collision types on Winchester Avenue are rear end (35) and right-angle (31) crashes. The only fatal crash observed in the corridor during the study period was a single-vehicle crash into a pedestrian. All crashes involving a VRU during the study period were recorded as single-vehicle crashes.

Table 4: Winchester Avenue Safety Corridor - Crashes by Type and Severity (Total) from 2019 to 2024

CRASH TYPE	FATAL INJURY	SERIOUS INJURY	MINOR INJURY	POSSIBLE INJURY	NO APPARENT INJURY	TOTAL
ANGLE – DIRECTION NOT SPECIFIED	0 (0%)	0 (0%)	1 (16.7%)	0 (0%)	1 (0.8%)	2 (1.3%)
ANGLE (FRONT TO SIDE) OPP. DIRECTION	0 (0%)	0 (0%)	1 (16.7%)	3 (11.5%)	7 (5.8%)	11 (7.1%)
ANGLE (FRONT TO SIDE) SAME DIRECTION	0 (0%)	0 (0%)	0 (0%)	2 (7.7%)	16 (13.3%)	18 (11.7%)
HEAD-ON	0 (0%)	0 (0%)	0 (0%)	1 (3.8%)	2 (1.7%)	3 (1.9%)
REAR END	0 (0%)	0 (0%)	1 (16.7%)	5 (19.2%)	29 (24.2%)	35 (22.7%)
REAR-TO-SIDE	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (0.8%)	1 (0.6%)
RIGHT ANGLE	0 (0%)	0 (0%)	0 (0%)	5 (19.2%)	26 (21.7%)	31 (20.1%)
SIDESWIPE, OPPOSITE DIRECTION	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (2.5%)	3 (1.9%)
SIDESWIPE, SAME DIRECTION	0 (0%)	0 (0%)	0 (0%)	0 (0%)	23 (19.2%)	23 (14.9%)
SINGLE VEHICLE CRASH	1 (100%)	1 (100%)	3 (50%)	10 (38.5%)	12 (10%)	27 (17.5%)
TOTAL	1	1	6	26	120	154

Table 5: Winchester Avenue Safety Corridor - Crashes by Type and Severity (VRU) from 2019 to 2024

CRASH TYPE	FATAL INJURY	SERIOUS INJURY	MINOR INJURY	POSSIBLE INJURY	NO APPARENT INJURY	TOTAL
ANGLE – DIRECTION NOT SPECIFIED	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
ANGLE (FRONT TO SIDE) OPP. DIRECTION	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
ANGLE (FRONT TO SIDE) SAME DIRECTION	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
HEAD-ON	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
REAR END	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
REAR-TO-SIDE	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
RIGHT ANGLE	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
SIDESWIPE, OPPOSITE DIRECTION	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
SIDESWIPE, SAME DIRECTION	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

CRASH TYPE	FATAL INJURY	SERIOUS INJURY	MINOR INJURY	POSSIBLE INJURY	NO APPARENT INJURY	TOTAL
SINGLE VEHICLE CRASH	1 (100%)	1 (100%)	1 (100%)	7 (100%)	1 (100%)	11 (100%)
TOTAL	1	1	1	7	1	11

Table 6 and **Table 7** summarize crashes at each intersection for all crashes and VRU crashes. Crashes within a 75-foot radius of an intersection were assigned to that intersection. The remaining crashes were categorized as non-intersection crashes. About 78% of all crashes occurred at intersections, with the highest number of crashes at the intersection of King Street and Raleigh Street (37), followed by the Winchester Avenue and King Street intersection (20). The only fatal crash occurred at the intersection of Winchester Avenue and Addition Street.

Table 6: Crashes by Intersection (Total)

INTERSECTION	FATAL INJURY	SERIOUS INJURY	MINOR INJURY	POSSIBLE INJURY	NO APPARENT INJURY	TOTAL
NON-INTERSECTION CRASHES	0 (0%)	0 (0%)	0 (0%)	5 (19.2%)	29 (24.2%)	34 (22.1%)
KING / MAPLE	0 (0%)	0 (0%)	0 (0%)	1 (3.8%)	3 (2.5%)	4 (2.6%)
KING / QUEEN	0 (0%)	0 (0%)	1 (16.7%)	0 (0%)	6 (5%)	7 (4.5%)
KING / RALEIGH	0 (0%)	0 (0%)	2 (33.3%)	7 (26.9%)	28 (23.3%)	37 (24%)
WINCHESTER / ADDITION	1 (100%)	0 (0%)	1 (16.7%)	4 (15.4%)	5 (4.2%)	11 (7.1%)
WINCHESTER / BERRY	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (1.7%)	2 (1.3%)
WINCHESTER / BUXTON	0 (0%)	0 (0%)	0 (0%)	2 (7.7%)	12 (10%)	14 (9.1%)
WINCHESTER / JOHN NORTH	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (0.8%)	1 (0.6%)
WINCHESTER / JOHN SOUTH	0 (0%)	0 (0%)	1 (16.7%)	2 (7.7%)	6 (5%)	9 (5.8%)
WINCHESTER / KING	0 (0%)	1 (100%)	1 (16.7%)	3 (11.5%)	15 (12.5%)	20 (13%)
WINCHESTER / MALL EXTENSION	0 (0%)	0 (0%)	0 (0%)	0 (0%)	5 (4.2%)	5 (3.2%)
WINCHESTER / SOUTH	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (2.5%)	3 (1.9%)
WINCHESTER / STEPHEN	0 (0%)	0 (0%)	0 (0%)	2 (7.7%)	5 (4.2%)	7 (4.5%)
TOTAL	1	1	6	26	120	154

The most VRU crashes occurred at the intersections of Winchester Avenue and Addition Street (4) and Winchester Avenue and King Street (3). VRU crashes were also reported at the intersections of King Street and Raleigh Street (2) and Winchester Avenue and John Street (2).

Table 7: Crashes by Intersection (VRU)

INTERSECTION	FATAL INJURY	SERIOUS INJURY	MINOR INJURY	POSSIBLE INJURY	NO APPARENT INJURY	TOTAL
NON-INTERSECTION CRASHES	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
KING / MAPLE	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
KING / QUEEN	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
KING / RALEIGH	0 (0%)	0 (0%)	1 (100%)	1 (14.3%)	0 (0%)	2 (18.2%)
WINCHESTER / ADDITION	1 (100%)	0 (0%)	0 (0%)	3 (42.9%)	0 (0%)	4 (36.4%)
WINCHESTER / BERRY	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
WINCHESTER / BUXTON	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
WINCHESTER / JOHN NORTH	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
WINCHESTER / JOHN SOUTH	0 (0%)	0 (0%)	0 (0%)	2 (28.6%)	0 (0%)	2 (18.2%)
WINCHESTER / KING	0 (0%)	1 (100%)	0 (0%)	1 (14.3%)	1 (100%)	3 (27.3%)
WINCHESTER / MALL EXTENSION	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
WINCHESTER / SOUTH	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
WINCHESTER / STEPHEN	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
TOTAL	1	1	1	7	1	11

Community Context

Demographic Context

The Winchester Avenue corridor falls completely within Census Tracts that qualify as areas of persistent poverty. The US Department of Transportation uses "Areas of Persistent Poverty" as an indicator of underserved communities. Areas of persistent poverty are defined as (1) any county where 20% or more of the population lived in poverty during the 30-year period preceding November 15, 2021, or (2) Census Tracts where 20% or more of the population lived in poverty during the 5-year period from 2014 through 2018.

The area is experiencing rapid population growth. Between the 2010 and 2020 Census, Berkeley County's population grew by 17%, more than any other county in West Virginia.[5] During this time, Martinsburg's population grew by 1,550 residents (9.2%).

Public Input

Public input collected during previous projects has found that vehicle traffic is prioritized along the corridor, creating concerns for pedestrians. Residents have flagged inadequate pedestrian facilities along Winchester Avenue, as well as a short pedestrian crossing phase at King Street and Queen Street that provides inadequate time for pedestrians to cross safely. Residents also note that high vehicle volumes and speeds along Winchester Avenue make walking or biking along the corridor feel unsafe. In addition, residents note that northbound left turns from Raleigh Street onto King Street can be challenging and at times risky, particularly during peak hours.

5 Martinsburg-Berkeley County Parks and Recreation. (2022). Martinsburg-Berkeley County Parks and Recreation Master Plan. www.mbcparks-rec.org/wp-content/uploads/2020/03/MBCPR-1.3.2022_FINAL_19DEC2022_Single-Page-Layout.pdf

Future Conditions

In addition to examining existing conditions, the project team also explored potential future conditions along the corridor. Future conditions could impact countermeasure selection and improvement recommendations.

Figure 10. The Interwoven Development, as seen from 324 Winchester Avenue.

A substantial redevelopment, the Interwoven Lofts, is converting an abandoned textile factory into 418 market-rate apartments. As of October 2025, 225 units have been completed, with an additional 193 units slated for completion by 2026. The project also includes restaurant space. The development will add 600 parking spaces across three site parking lots. One parking lot (approximately 50 spaces) has one entrance driveway and one entrance and exit driveway on Winchester Avenue. A 2023 Traffic Impact Assessment (TIA) estimated nearby intersections would continue to operate with the same level of service when the site is fully built out. The TIA recommended removing on-street parking along Winchester Avenue to increase storage for left-turning vehicles at Mall Drive and John Street. The study also recommended retiming and coordinating signals at the King Street and Winchester Avenue, and King Street and Raleigh Street intersections.

Site Visit

On Wednesday, October 1, 2025, the project team held a stakeholder presentation with HEPMPO and conducted a site visit along the corridor. The presentation provided an overview of the corridor and introduced risk factor categories from the FHWA Safe System Project-Based Alignment Framework. The site visit included strategic stops along the corridor at intersections with known safety issues.

Attendees

Stakeholders from the City, County, region, regional transit agency, state, FHWA and emergency response agencies were invited to attend the site visit. The list below highlights the organizations that attended the stakeholder presentation and/or site visit.

- City of Martinsburg Mayor
- City of Martinsburg Staff
- City of Martinsburg Police
- Eastern Panhandle Transit Authority
- Hagerstown/Eastern Panhandle Metropolitan Planning Organization
- West Virginia Department of Highways
- Civil & Environmental Consultants (CEC)
- Legend Property Group

Agenda

The presentation and site visit with stakeholders was held at Martinsburg City Hall from 9:00 AM to 1:00 PM on Wednesday, October 1, 2025. The agenda is listed below:

- 9:00 AM – 9:15 AM **Welcome and Introductions**
- 9:15 AM – 10:30 AM **Site Visit Presentation**
    - Project and meeting purpose, Previous work, Historical crash review, Existing conditions, Overview of SSA framework and project lens
- 10:30 AM – 11:00 AM **Site Visit Travel**
- 11:00 AM – 1:00 PM **Winchester Avenue Corridor Site Visit**
    - Observe existing conditions, Assess risk factors, Discuss crash history in the field

Site Visit Photos

Challenges Identified at Site Visit

Stakeholders and project team members documented safety challenges and risk factors during the site visit. **Table 8** provides a high-level summary of issues identified at intersections during the site visit.

Table 8: Winchester Avenue Intersection Safety Challenges Identified During Site Visit

LOCATION	SAFETY CHALLENGES AND RISK FACTORS
BERRY ST	• Speeding as northbound traffic transitions into more urban context • Wide travel lanes (21 to 22 feet) • Deficient pedestrian infrastructure: no crosswalks, narrow sidewalk on west side, poor lighting • Sight distance challenges due to curve, vacant business, setback of stop sign, on-street parking (if utilized)
MALL DR	• Significant pedestrian activity driven by school staff and visitors parking in plaza parking lot and crossing to the school • Deficient pedestrian infrastructure: crosswalk not located where people cross in practice, narrow sidewalk on both sides with obstructions, poor lighting, visibility obstructions from vegetation • Pedestrian signal head on western leg facing wrong direction • Right on red prohibited but not signalized properly or followed • School entrance is not signalized but within the signalized portion of the intersection • Eastbound left turns observed bypassing signal due to protected phase and turning left into Westbound channelized right
ADDITION ST	• Fatal pedestrian crash history • New pedestrian crossing does not align with where people want to cross and leads to a sidewalk that is only 31 inches wide with fire hydrant and utility pole obstructions • Limited crossing enhancements to support uncontrolled crossing (no in-street signs, no yield shark teeth markings, no Rectangular Rapid Flashing beacon, no raised crosswalk, no curb extensions, no high visibility crosswalk markings across Addition Street) • Plaza driveway offset from intersection, adding conflict point • Sight distances reduced by hill north of intersection, shopping center parking, and vegetation
STEPHEN ST	• Narrow sidewalk • Uncontrolled crosswalk exists, but less than 200’ feet from John Street signalized crossing • Limited enhancements to support uncontrolled crossing (no in-street signs, no yield shark teeth markings, no Rectangular Rapid Flashing beacon, no raised crosswalk, no curb extensions, no high visibility crosswalk markings across Stephen Street)
JOHN ST (SOUTH)	• Northbound left turns from Winchester Ave: hill crest presents sight distance challenge for permissive left turns; traffic reported to back up during peak periods

LOCATION	SAFETY CHALLENGES AND RISK FACTORS
	• Left turns from tire shop: unchannelized, unsignalized driveway coupled with limited visibility of signal head from shop driveway create significant risk • Left turns from Interwoven driveway: limited building setbacks sight distance issues • Deficient pedestrian infrastructure: massive driveway in front of tire shop instead of sidewalk
KING ST	• Observed near miss: car turning Right on Red from King St to Winchester Ave while bike crossing Winchester Ave with walk light • 7-Eleven parking lot has large, unmarked areas of pavement with substantial cut-through traffic • Deficient pedestrian infrastructure: missing sidewalks and huge driveways for 7-Eleven and Boost shops; utility poles obstruct sidewalks • Anecdotal demand for left turn phasing
RALEIGH ST	• No pavement markings on Raleigh St northbound approach • Eastbound through traffic does a weird jog around left turning vehicles • Parking on King comes right up to the crosswalk • Locals use Raleigh as an alternative to Winchester to avoid congestion • Northbound left reported to back up in afternoon • Anecdotal demand for left turn phasing
COLLEGE ST	• Limited enhancements to support uncontrolled crossing (no pedestrian crossing signs, no in-street signs, no yield shark teeth markings, no Rectangular Rapid Flashing beacon, no raised crosswalk, no curb extensions)
CHURCH ST	• Limited enhancements to support uncontrolled crossing (no pedestrian crossing signs, no in-street signs, no yield shark teeth markings, no Rectangular Rapid Flashing beacon, no raised crosswalk, no curb extensions)
WINCHESTER AVE SEGMENT	• Very limited lighting – generally only 1 light per intersection • Narrow, often obstructed sidewalks • Crosswalk locations frequently mismatched with where crossings are more convenient for pedestrians • Pedestrian crossing opportunities are widely spaced, typically more than 600’ from the nearest crosswalk • Traffic volumes felt higher than the team expected • Reportedly serves as I-81 detour and functions as a cut-through from Queen • Signals last retimed in 2018

Concept Development

The project team developed a comprehensive set of action item concepts for the Winchester Avenue safety corridor, grounded in safety challenges, operational issues, and risk factors identified during the stakeholder meeting and site visit. Recommendations focus on targeted safety enhancements for pedestrians and bicyclists, access management, lane reconfiguration, traffic signal upgrades, and corridor-wide speed management. Concept areas include:

- Winchester Avenue safety corridor
    - Winchester Avenue from Bowers Street to King Street
    - King Street from Winchester Avenue to Queen Street

Winchester Avenue Between Bowers Street and King Street Safety Focus Action Items

Corridor-Wide Treatments

- Relocate utility poles and streetscape elements impacted by new improvements, including utility poles, signs, fire hydrants, and decorative lighting.
- Stripe or restripe stop bars and high-visibility crosswalks at all minor street stop-controlled and signalized intersections.
- Add painted skip lines through minor street stop-controlled intersections to reinforce travel lane alignment.

Bicyclist Accommodations

- Add 6-foot bicycle lanes with 3-foot painted buffers on both sides of Winchester Avenue between Bowers Street and Berry Street.
- Install bicycle lane signing and pavement marking legends at the beginning and end of each bike lane between Bowers Street and Berry Street.
- Install sharrows and bicycle signs along Maiden Avenue and Cumberland Valley Place directing bicyclists to the multi-use path on the southern side of Winchester Ave, crossing to the northern side at Mall Dr and continuing on the multi-use path.
- Provide an alternate westbound bicycle route using sharrows and bicycle signs on Berry Street and Osborne Way.

Curbline Reconstruction and Sidewalk/Multi-use Path Enhancements

- Construct new curbline on both sides of Winchester Avenue between Berry Street and W John Street with 11-foot travel lanes.
    - Eliminate curbside parking between Bowers Street and Mall Drive.
    - Southern Side
        - Construct an 8-12 foot multi-use path between Berry Street and Mall Drive.

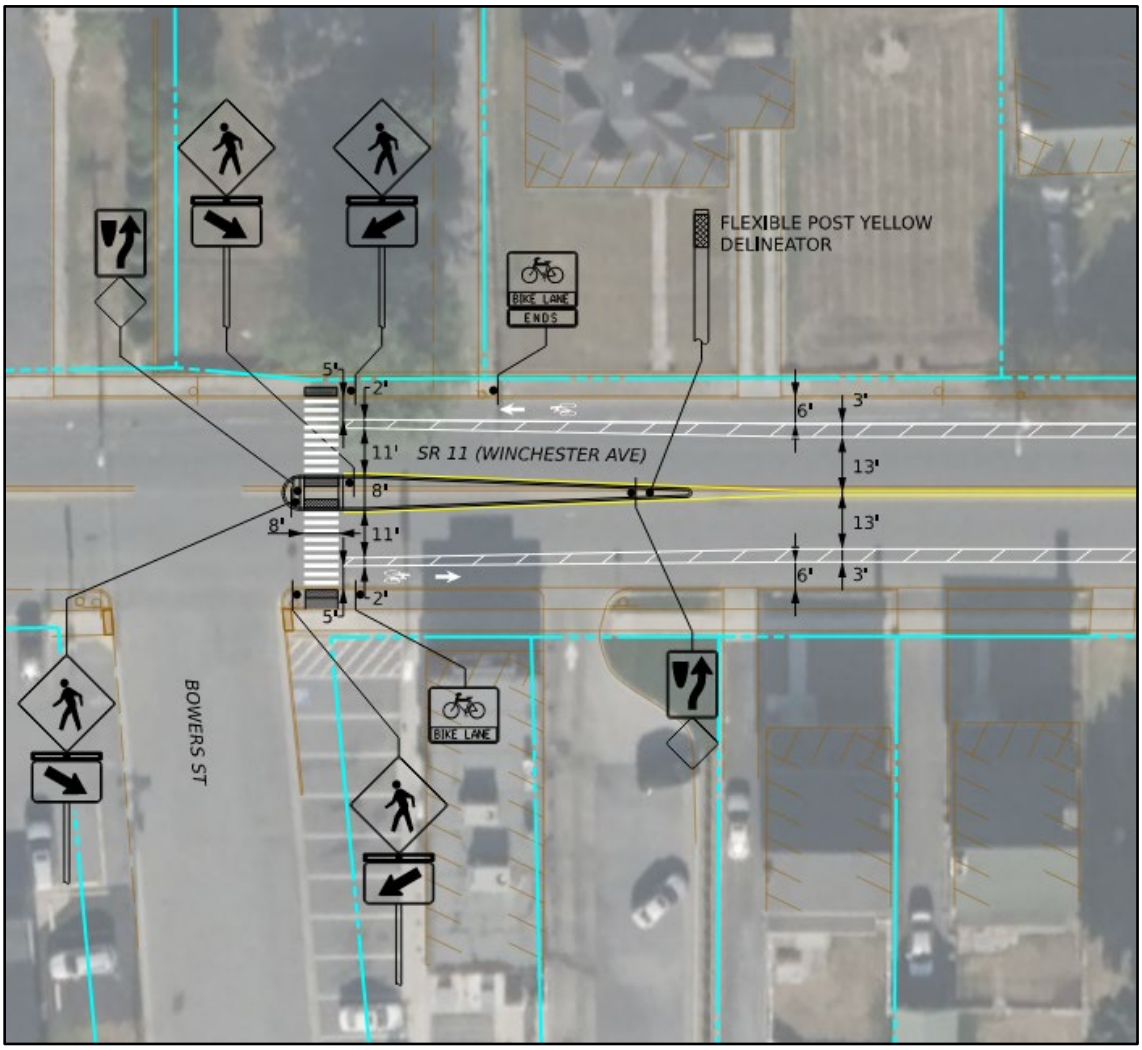
        - Reconstruct sidewalk and add a variable-width planted buffer between Mall Drive and W John Street.
    - Northern Side
        - Reconstruct sidewalk and add a variable-width planted buffer from Berry Street to Mall Drive and Maiden Avenue to approximately 350 feet east of Maiden Avenue.
        - Install a variable-width planted buffer from 350 feet east of Maiden Avenue to W John Street.
        - Construct an 8-10 foot multi-use path between Mall Drive and Maiden Avenue.
- Install ADA-compliant curb ramps at all public streets, alleys, and driveways where sidewalk or curbline modifications occur due to:
    - New or replaced sidewalk,
    - New buffered areas,
    - Relocated curblines,
    - Relocated crosswalks.

Location-Specific Treatments

Gateway Treatment (North of Bowers Street)

- Construct an 8-foot wide gateway island to encourage lower speeds and establish a streetscaped corridor transition. The median refuge island serves as a refuge area to help protect pedestrians crossing Winchester Avenue.
- The gateway treatment includes:
    - Rectangular Rapid Flashing Beacon (RRFB),
    - High-visibility crosswalk,
    - ADA ramps for both crossings and median refuge,
    - KEEP RIGHT signs with object markers,
    - Yellow flexible delineator post at the median's eastern nose,
- Transition from 11-foot travel lanes to 13-foot travel lanes widths downstream.

Figure 11: Gateway Island (North of Bowers Street)



Mall Drive – Access Management and School-Related Enhancements

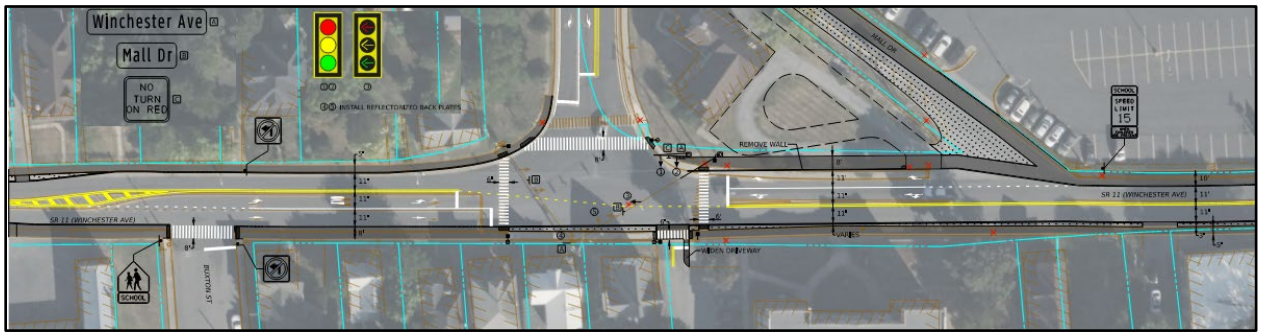
- Prohibit left turns to and from Buxton Street at Winchester Avenue (NO LEFT TURN signs).
- Add SCHOOL CROSSING ASSEMBLY signs along Mall Drive and revise signs along Winchester Avenue:
    - Replace distance plaque with SCHOOL sign at Buxton Street.
    - Add SCHOOL sign at Martinsburg Shopping Plaza Driveway.

Mall Drive –Signalized Intersection Improvements

- WVDOH requires new turning movements, data collection and operational analysis are needed before restricting or adding new turns at intersections.
- Relocate NE quadrant signal pole and extend guy wire.
- Install overhead street name signs.

- Relocate pedestrian signal heads and push buttons on NE and NW quadrants; add new equipment on SE and SW quadrants.
- Add a 3-section left-turn arrow for the Winchester Avenue eastbound left turn.
- Install reflectorized backplates on all signal heads.
- Signalize the Winchester Avenue Elementary School driveway.
    - Install a mast arm and two 3-section 12-inch signal heads.
    - Install NO RIGHT TURN ON RED sign.
    - Widen the school driveway to accommodate two-way traffic.
    - Add stop bar and lane separation markings.
- Refresh lane markings and legends on all approaches.
- Add a dedicated westbound right-turn lane on Winchester Avenue.
- Add skip lines to guide the westbound thru-lane shift.

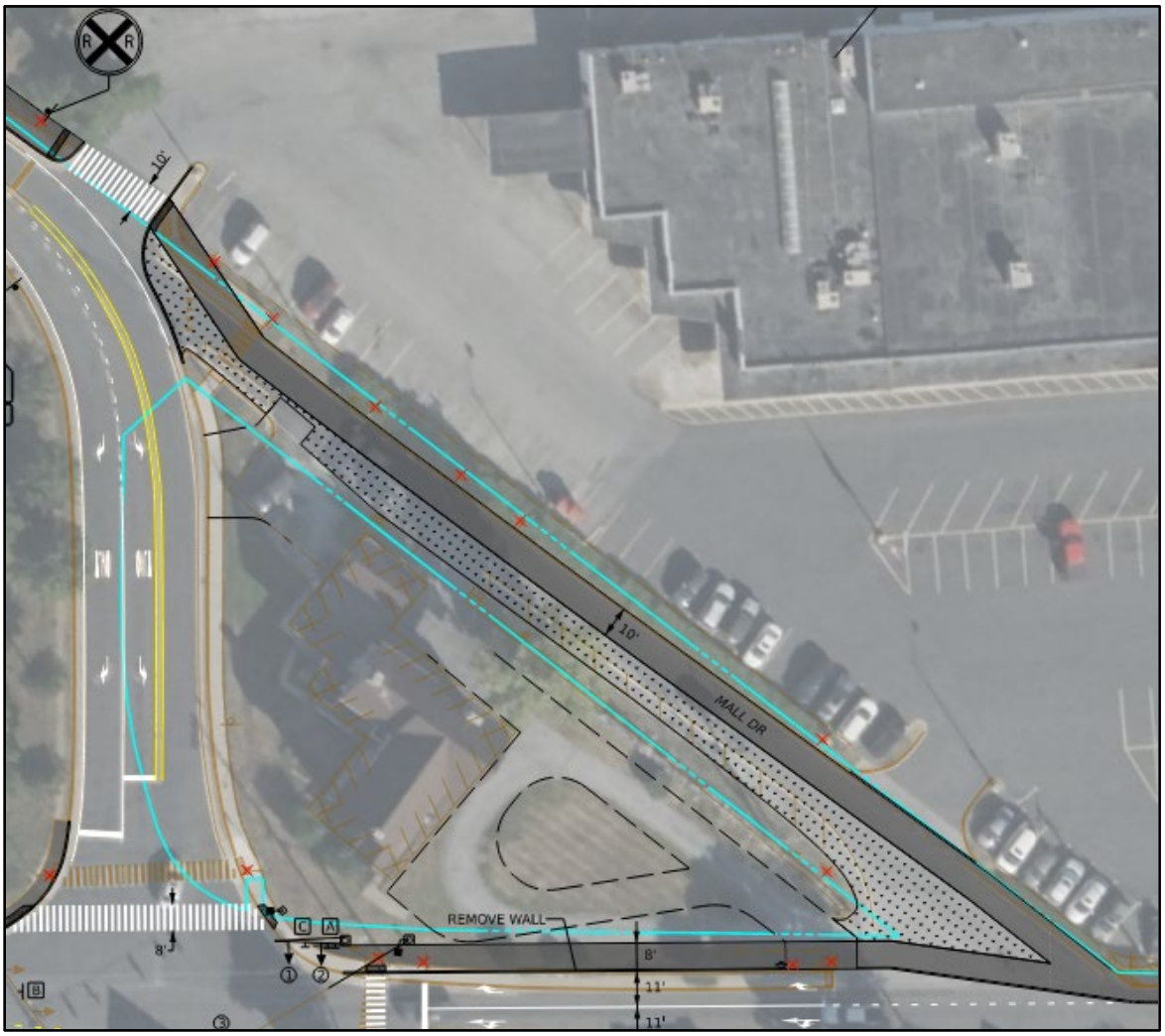
Figure 12: Winchester Avenue and Mall Drive Intersection Improvements



Mall Drive – Connector Closure

- Close the Mall Drive connector and construct a 10-foot multi-use path from Osborne Way to Winchester Avenue.
- Reconfigure the Safe Haven Advocacy Center driveways along Winchester Avenue and Mall Drive.
- Install a midblock crosswalk across Mall Drive at Osborne Way.

Figure 13: Mall Drive Connector Closure and Driveway Reconfiguration



W Addition Street / Martinsburg Shopping Plaza Driveway

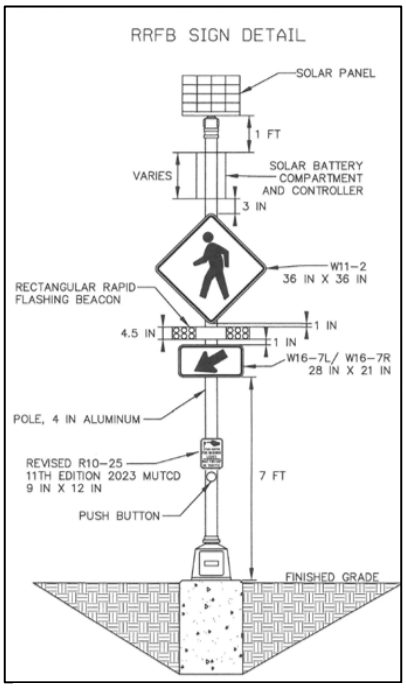
- RRFB installation planned for construction by WVDOT.
- Realign the shopping plaza driveway to align with W Addition Street.
- Install a painted buffer to prohibit parking within 20 ft of the stop bar.
- Relocate and increase the W Addition Street stop sign size; add reflectorized strip on the sign post.

Midblock Crossing West of W Stephen Street

- Install RRFB, high-visibility crosswalk, and ADA ramps.

W Stephen Street Intersection Improvements

- Construct an intersection bulb-out (i.e., curb extension) on the SW quadrant to narrow and realign the W Stephen Street approach.
- Relocate and increase stop sign size.
- Install NO PARKING sign approximately 20 feet from the stop bar.

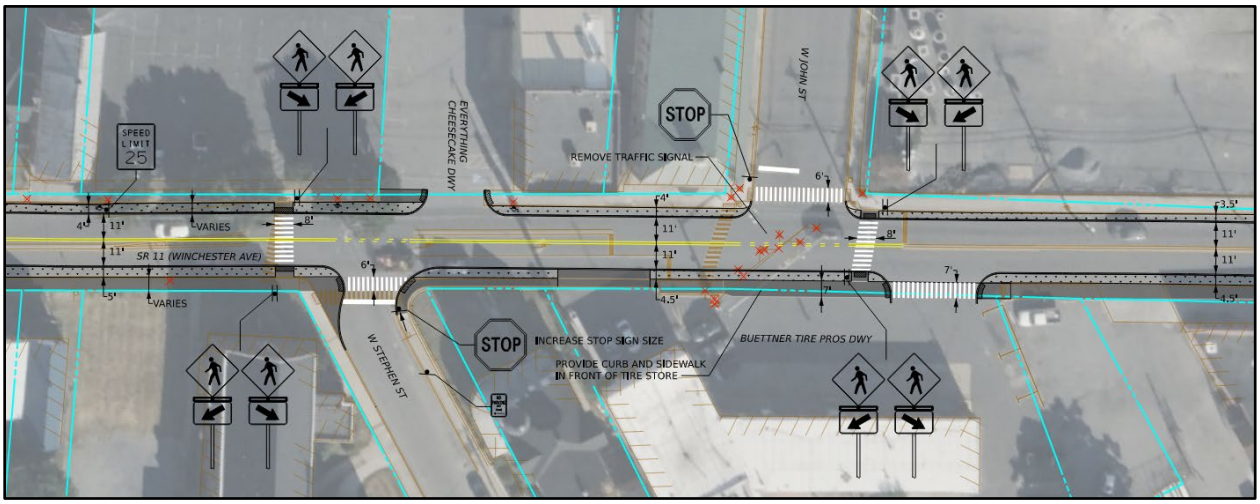


WVDOT Standard Detail - RRFB

W John Street Intersection Conversion

- Conduct traffic operations study and signal warrant analysis and collect updated turning movements for evaluating the removal of the traffic signal as required by WVDOH.
- Convert the existing signalized intersection to a minor street stop-controlled intersection.
    - Remove all existing signal equipment.
    - Install a stop sign on the W John Street approach.
    - Eliminate the eastbound left-turn lane; continue 11 ft lanes with skip lines through the intersection.
    - Remove eastbound approach crosswalk and install an RRFB with high-visibility crosswalk on the westbound approach.
    - Channelize the Buettner Tire Pros driveway by extending the curbline, sidewalk and buffered area.

Figure 14: Stephen Street RRFB and W John Street Conversion



W John Street Approach Reconstruction

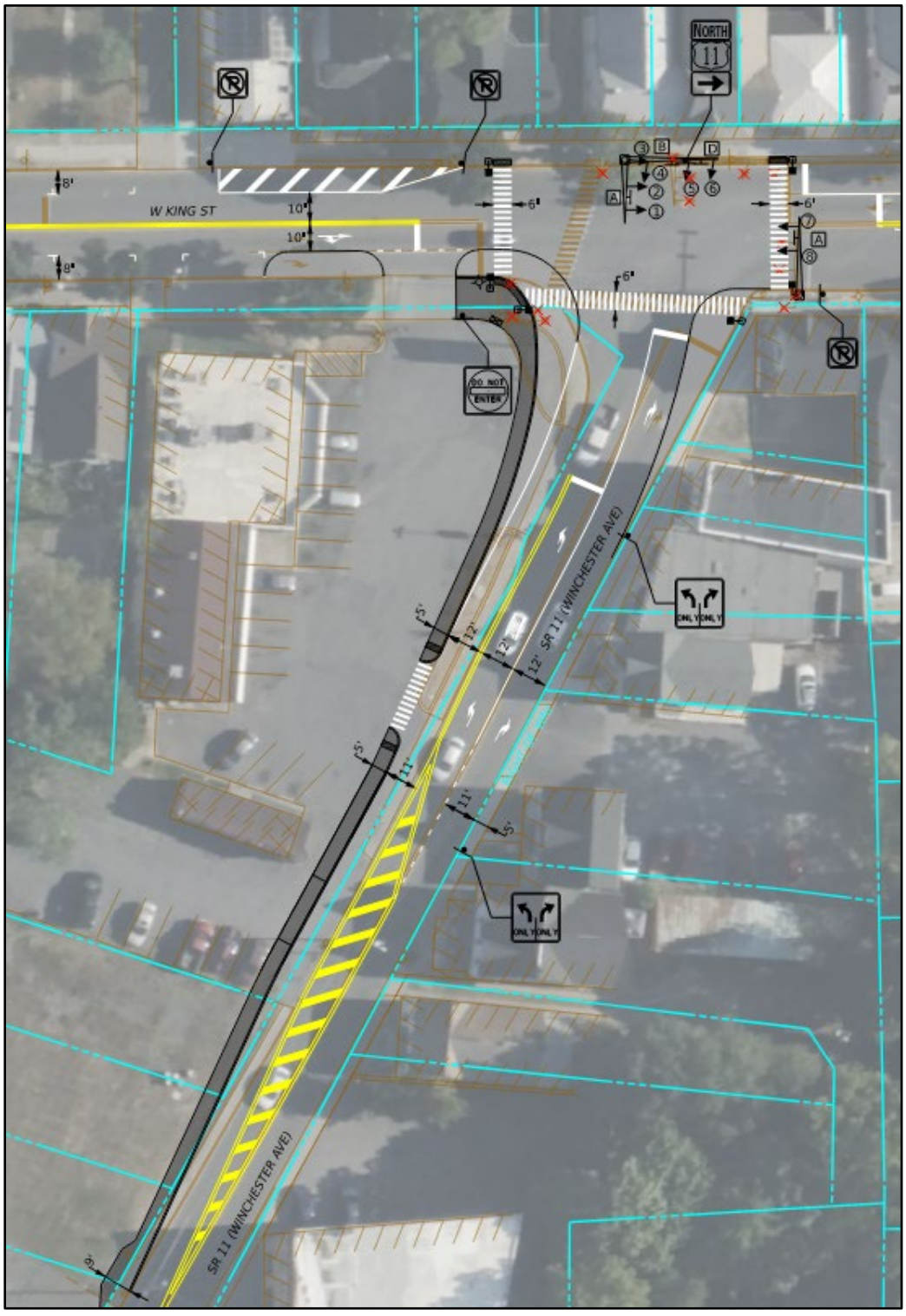
- Construct intersection bulb-outs on the southern quadrants to narrow and realign the approach.

King Street Intersection Improvements

- WVDOH requires new turning movements, data collection and operational analysis are needed before restricting or adding new turns at intersections.
- Realign the northbound approach to include a designated left-turn lane and improve truck turning accommodations; widening to the west side of Winchester Avenue.
- Add lane designation signs and pavement legends.
- Improve northbound truck turning movements:
    - Pull back eastbound and westbound King Street stop bars.
    - Construct mountable curb truck aprons on the southern quadrants.
    - Remove the two parking spaces in front of Progressive Printing and Graphics and install NO PARKING signs and markings.
- Improve eastbound truck right-turn movements:
    - Remove the dedicated right-turn lane and installing a mountable curb bulb-out.
    - Add skip line edge markings along the retail driveway.
    - Convert the retail driveway along King Street to a one-way entrance.
- Refresh King Street pavement markings west of Winchester Avenue to the railroad tracks.
- Replace and relocate traffic signal supports/equipment and install:
    - 3-section 12-inch signal heads with reflectorized backplates,
    - Protected–permissive flashing yellow arrow (4-section 12-inch signal head) for the westbound left turn from King Street,

  - Relocate and modernize the signal cabinet; update phasing for protected–permissive left turns,
  - Overhead street name signs for all approaches,
  - NO TURN ON RED for the northbound right turn.
- Upgrade pedestrian features:
  - Accessible pedestrian signals (APS),
  - Countdown pedestrian signals,
  - ADA ramps.

Figure 15: Winchester Avenue Approach Reconfiguration and King Street Signal Improvements



King Street Between Winchester Avenue and Queen Street Safety Focus Action Items

Corridor-Wide Treatments

- Relocate utility poles and streetscape elements impacted by new improvements, including utility poles, signs, fire hydrants, and decorative lighting.
- Install ADA-compliant curb ramps at all public streets, alleys, and driveways where sidewalk or curbline modifications occur due to:
    - New or replaced sidewalk,
    - New buffered areas,
    - Relocated curblines,
    - Relocated crosswalks.
- Reconfigure roadway cross section between S Raleigh Street and S Queen Street:
    - 13-foot travel lanes,
    - Intersection bulb-outs on southern quadrants to narrow the roadway, shorten crossing distances, and increase road user visibility,
    - Restripe pavement markings on all minor street approaches,
    - Relocate curbline along the northern side of King Street with a 6-11 foot variable-width planted buffer,
    - 10-foot high-visibility crosswalks at southbound approaches.
- Conduct additional study to evaluate stormwater runoff issues along King Street from Tuskeffe east to Church Street intersection of potential road profiling, grading or issues with the City's existing infrastructure.

King Street Signalized Intersections (S Raleigh Street and S Maple Avenue)

- Install NO TURN ON RED for all approaches.
- Install overhead street name signs.
- Replace traffic signals with 12-inch signal heads with reflectorized backplates.
- Replace all pavement markings and legends.
- Eliminate on-street parking within 30-feet of the signalized intersections.

Minor Street Stop-Controlled Intersections (S Church Street and S College Street)

- Install pedestrian crosswalk signs.
- Eliminate on-street parking within 20-feet of the intersection using bulb-outs and painted markings.
- Paint skip lines through the intersections to maintain lane alignment.

Figure 16: Typical Minor Street – Stop-Controlled Improvements

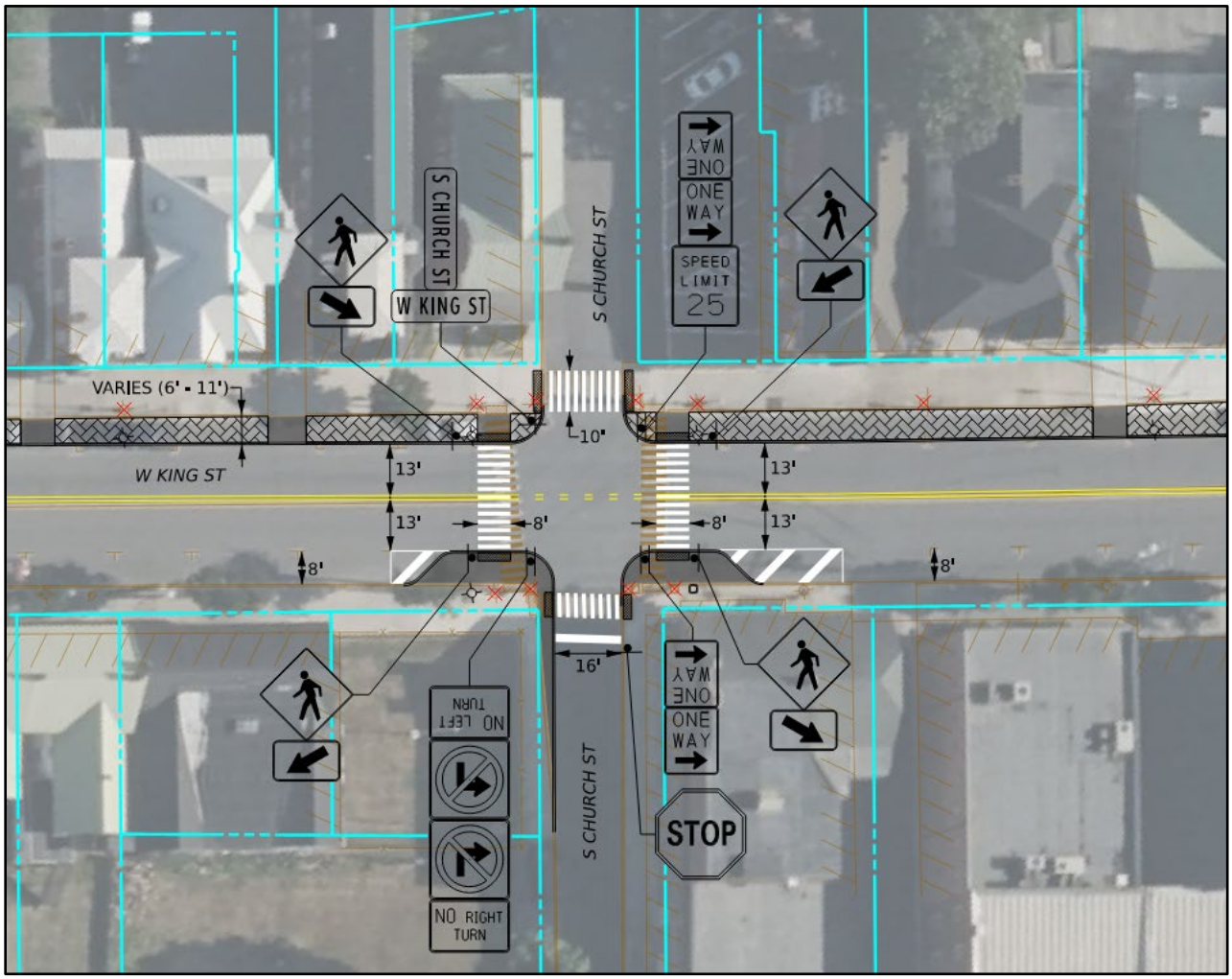


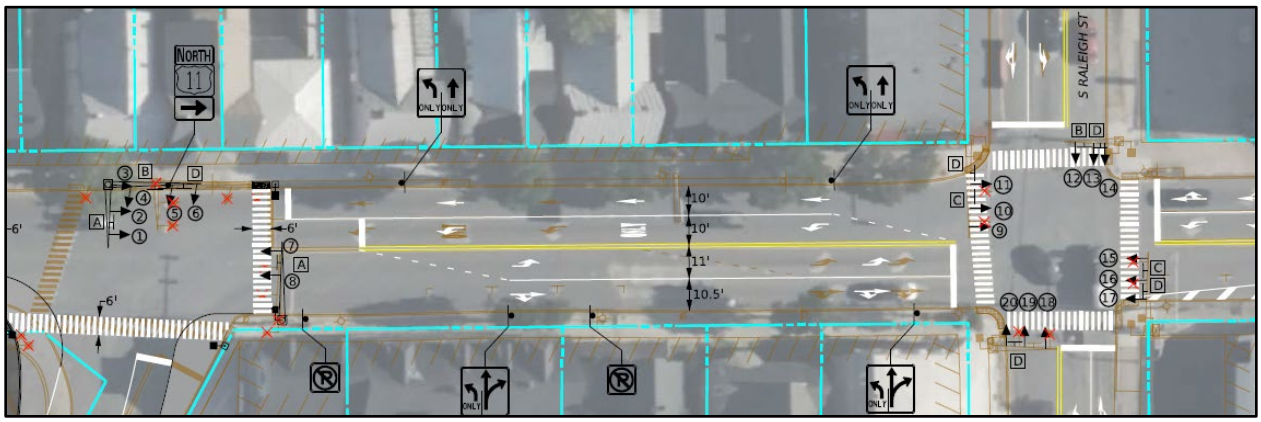
Figure 17: King Street Between Winchester Avenue and S Queen Street

Location-Specific Treatments

King Street – Between Winchester Avenue and S Raleigh Street

- Extend left-turn lanes.
- Install roadside lane designation signs.
- Eliminate on-street parking on the southern side of King Street to provide additional left-turn lane storage.

Figure 18: King Street Lane Reconfiguration between Winchester Avenue and S Raleigh Street



King Street and S Raleigh Street – Signalized Intersection Improvements

- WVDOH requires new turning movements, data collection and operational analysis are needed before restricting or adding new turns at intersections.
- Install protected-permissive flashing yellow arrows for all left-turn lane movements.
- Improve traffic signal coordination between the Winchester Avenue and S Raleigh Street signals to prevent gridlock and resolve midblock queuing of left-turning vehicles.
- Transition roadway cross section east of S Raleigh Street by:
    - Striping travel lane shifts,
    - Constructing a curbed intersection bulb-out at the end of the southern lane shift.

King Street – S Raleigh Street to S Maple Avenue Improvements

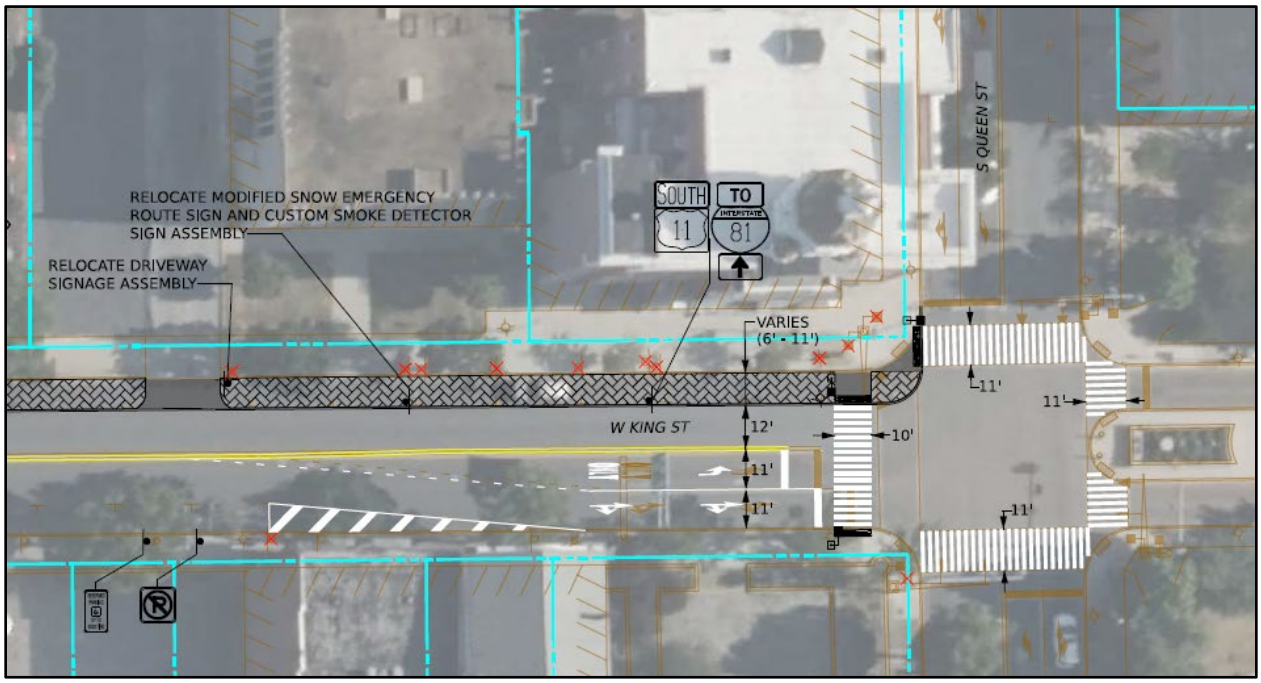
- Widen driveway and reconstruct sidewalk east of The Garage on King Food Hall.
- Reconstruct the curbline on the northbound approach of S Church Street to eliminate the tapered curbline.
- Implement Leading Pedestrian Intervals (LPI) at the King Street and S Maple Avenue signalized intersection.

King Street and S Queen Street – Intersection Improvements

- Install high-visibility crosswalks.
- Relocate the west leg crosswalk along with associated pedestrian signal heads and push buttons.

- Adjust the King Street eastbound left-turn stop bar to match the revised lane configuration.
- Modify the thru/right-turn lane shift to accommodate the relocated left-turn lane.
- Eliminate the easternmost on-street parking spot (existing handicap stall) and install NO PARKING signs; relocate the handicap stall upstream before the lane shift begins.

Figure 19: King Street and S Queen Street Intersection Improvements



Funding Opportunities

The implementation of recommended safety countermeasures will require a combination of federal and state funding, along with local matching funds. **Table 8** identifies potential grant programs and funding sources that could support improvements along the Winchester Avenue corridor.

Table 8: Potential Funding Programs

Program	Level	Best For
Surface Transportation Block Grant (STBG)	Federal / State	Roadway safety improvements
Highway Safety Improvement Program (HSIP)	Federal / State	Safety projects to achieve significant reductions in fatalities and serious injuries
Transportation Alternatives (TAP)	Federal / State	Sidewalks, bike lanes, shared-use paths
Congestion Mitigation and Air Quality (CMAQ)	Federal	Active transportation project and traffic flow improvements
Better Utilizing Investments to Leverage Development (BUILD)	Federal	Multimodal safety corridor projects
Safe Streets for All (SS4A)	Federal	Safety Planning, Demonstration and Implementation Grants to fund projects to prevent fatalities and serious injuries
Congressional Directed Spending Request (CDSR)	Federal	Transportation and infrastructure improvements, economic development and community projects
Appalachian Regional Commission (ARC)	Federal / Regional	Economic development

Monitoring and Evaluation

To support the ongoing evaluation of the Winchester Avenue corridor, the project team defined a set of performance metrics to assess the change in crash rates over time. As part of this effort, the team developed a crash data monitoring tool for the Hagerstown/Eastern Panhandle Metropolitan Planning Organization (HEPMPO). The tool allows staff to update and maintain corridor-level data and analyze trends in crash rates, severity, and mode. The tool emphasizes crashes involving vulnerable road users and those that result in someone being killed or seriously injured, while also capturing vehicle-only and non-KSI crashes.

Key features of the tool include:

- An inputs tab labeled “Crashes”, which organizes crash data. Users enter 5 year crash counts segregated by mode and severity into designated cells, and the tool calculates

the mode percent shares. The tables are formatted to help visualize the distribution of crashes involving VRUs and the share that resulted in KSI.

- An outputs tab labeled “Summary Stats”, which calculates Annual Average Crash Rates to help identify long-term trends. A rolling average is used to smoothen any seasonal or one-time variations. This tab also calculates the percent change between the data being evaluated and the baseline or previous iteration of this process. This method provides a practical and feasible way for HEPMPO to monitor changes in crashes over time using existing data sources. **Table 9** shows the Annual Average Crash Rates for the **2020-2024** Baseline Crashes. As the agency starts to keep track of crashes in the corridor this table will expand to show the new crash rates and percent changes.

Table 9: Baseline Annual Average Crash Rates

CRASH TYPE	BASELINE
VRU – KSI	0.2
VRU-nonKSI	1.4
Vehicle-KSI	0
Vehicle-nonKSI	26.0
All Crashes	27.6

Disclaimer

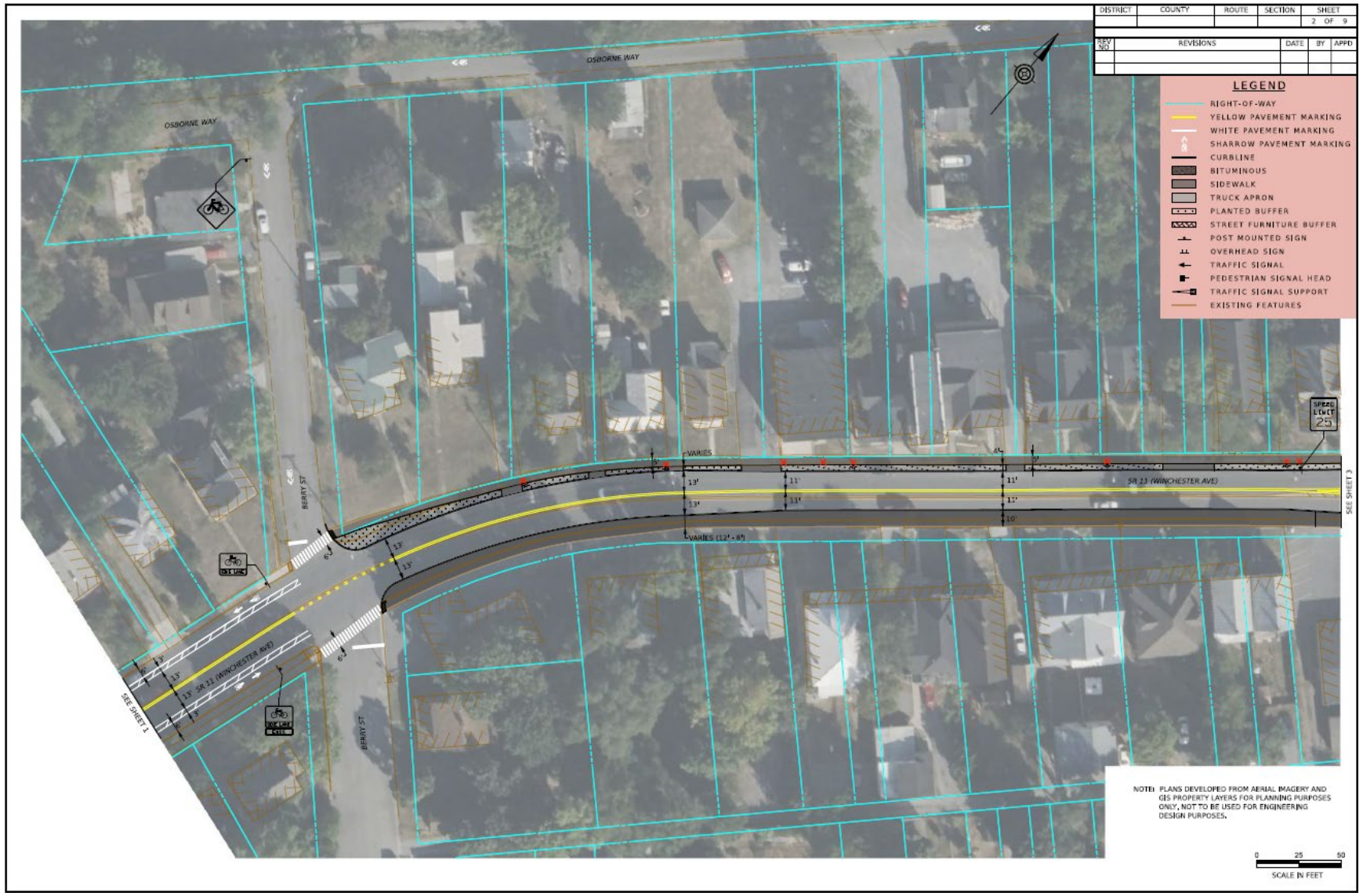
Under 23 U.S. Code § 409 and 23 U.S. Code § 148, safety data, reports, surveys, schedules, lists compiled or collected for the purposes of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damage arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

The analysis and recommendations in this report are conceptual in nature based upon limited information, and before implementing any changes, or using any of its information for design or construction, HEPMPO or local jurisdiction, should conduct a more detailed analysis and make sure that the design or construction documents reflect specific, detailed, local and field conditions.

The scope of this work, including study locations, time frame, and topics, was determined by the client. While it is possible that some locations or issues were not addressed in this report, nothing should be inferred by their omission.

Appendix A: Winchester Avenue Corridor Study Plan Sheets


DISTRICT
COUNTY
ROUTE
SECTION
SHEET
1 OF 9
REV NO
REVISIONS
DATE
BY
APPD
FLEXIBLE POST YELLOW DELINEATOR
SR 11 (WINCHESTER AVE)
SR 11 (WINCHESTER AVE)
BOWERS ST
SEE SHEET 2
LEGEND
RIGHT-OF-WAY
YELLOW PAVEMENT MARKING
WHITE PAVEMENT MARKING
SHARROW PAVEMENT MARKING
CURBLINE
BITUMINOUS
SIDEWALK
TRUCK APRON
PLANTED BUFFER
STREET FURNITURE BUFFER
POST MOUNTED SIGN
OVERHEAD SIGN
TRAFFIC SIGNAL
PEDESTRIAN SIGNAL HEAD
TRAFFIC SIGNAL SUPPORT
EXISTING FEATURES
NOTE: PLANS DEVELOPED FROM AERIAL IMAGERY AND GIS PROPERTY LAYERS FOR PLANNING PURPOSES ONLY, NOT TO BE USED FOR ENGINEERING DESIGN PURPOSES.
0 25 50
SCALE IN FEET


DISTRICT
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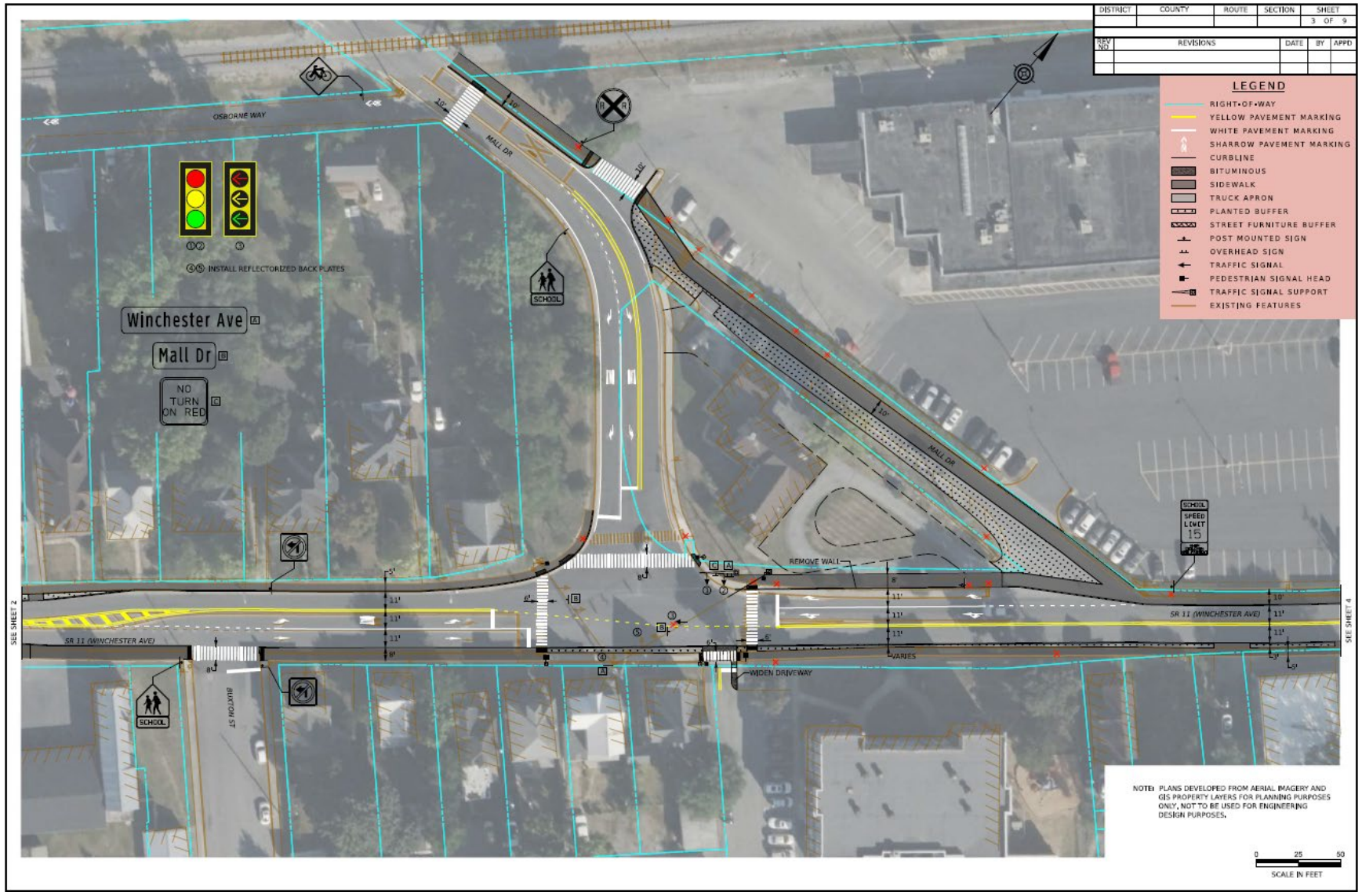
APPD
LEGEND
RIGHT-OF-WAY
YELLOW PAVEMENT MARKING
WHITE PAVEMENT MARKING
SHARROW PAVEMENT MARKING
CURBLINE
BITUMINOUS
SIDEWALK
TRUCK APRON
PLANTED BUFFER
STREET FURNITURE BUFFER
POST MOUNTED SIGN
OVERHEAD SIGN
TRAFFIC SIGNAL
PEDESTRIAN SIGNAL HEAD
TRAFFIC SIGNAL SUPPORT
EXISTING FEATURES
OSBORNE WAY
OSBORNE WAY
BERRY ST
BERRY ST
SR 13 (WINCHESTER AVE)
SR 13 (WINCHESTER AVE)
VARIES
VARIES (12' - 8')
SPEED LIMIT 25
SEE SHEET 1
SEE SHEET 3
NOTE: PLANS DEVELOPED FROM AERIAL IMAGERY AND GIS PROPERTY LAYERS FOR PLANNING PURPOSES ONLY, NOT TO BE USED FOR ENGINEERING DESIGN PURPOSES.
0 25 50
SCALE IN FEET


DISTRICT
COUNTY
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SHEET
3 OF 9
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REVISIONS
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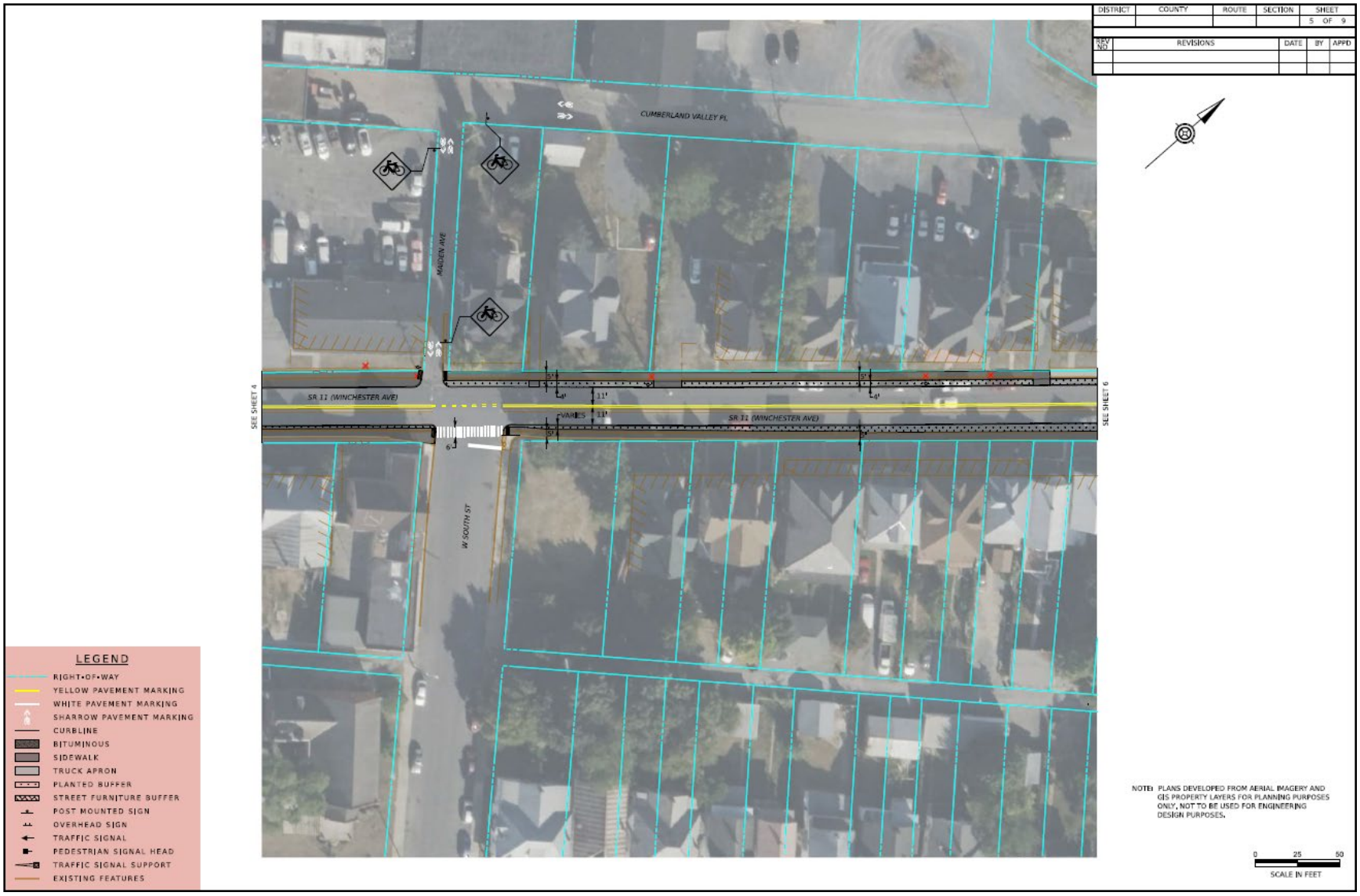
LEGEND
RIGHT-OF-WAY
YELLOW PAVEMENT MARKING
WHITE PAVEMENT MARKING
SHARROW PAVEMENT MARKING
CURBLINE
BITUMINOUS
SIDEWALK
TRUCK APRON
PLANTED BUFFER
STREET FURNITURE BUFFER
POST MOUNTED SIGN
OVERHEAD SIGN
TRAFFIC SIGNAL
PEDESTRIAN SIGNAL HEAD
TRAFFIC SIGNAL SUPPORT
EXISTING FEATURES
OSBORNE WAY
MALL DR
INSTALL REFLECTORIZED BACK PLATES
Winchester Ave
Mall Dr
NO TURN ON RED
SCHOOL
REMOVE WALL
SR 11 (WINCHESTER AVE)
VARIES
WIDEN DRIVEWAY
BUXTON ST
SCHOOL SPEED LIMIT 15
SEE SHEET 2
SEE SHEET 4
NOTE: PLANS DEVELOPED FROM AERIAL IMAGERY AND GIS PROPERTY LAYERS FOR PLANNING PURPOSES ONLY, NOT TO BE USED FOR ENGINEERING DESIGN PURPOSES.
0 25 50
SCALE IN FEET


DISTRICT
COUNTY
ROUTE
SECTION
SHEET
4 OF 9
REV NO
REVISIONS
DATE
BY
APPD
SCHOOL
AHEAD
RELOCATE DRIVEWAY
MARTINSBURG SHOPPING PLAZA DWY
COMMERCIAL DWY
SR 11 (WINCHESTER AVE)
SEE SHEET 3
SEE SHEET 5
PROVIDE CLEAR SIGN TRIANGLE
STOP
INCREASE STOP SIGN SIZE REFLTORIZED POST STRIP
W ADDITION ST
LEGEND
RIGHT-OF-WAY
YELLOW PAVEMENT MARKING
WHITE PAVEMENT MARKING
SHARROW PAVEMENT MARKING
CURBLINE
BITUMINOUS
SIDEWALK
TRUCK APRON
PLANTED BUFFER
STREET FURNITURE BUFFER
POST MOUNTED SIGN
OVERHEAD SIGN
TRAFFIC SIGNAL
PEDESTRIAN SIGNAL HEAD
TRAFFIC SIGNAL SUPPORT
EXISTING FEATURES
NOTES: PLANS DEVELOPED FROM AERIAL IMAGERY AND GIS PROPERTY LAYERS FOR PLANNING PURPOSES ONLY. NOT TO BE USED FOR ENGINEERING DESIGN PURPOSES.
DASHED BOXES REPRESENT RRFB ASSEMBLIES AND SIGNAGE ALREADY PLANNED FOR CONSTRUCTION.
0 25 50
SCALE IN FEET


DISTRICT
COUNTY
ROUTE
SECTION
SHEET
5 OF 9
REV NO
REVISIONS
DATE
BY
APPD
CUMBERLAND VALLEY PL
MAIDEN AVE
SR 11 (WINCHESTER AVE)
VARIES
SR 11 (WINCHESTER AVE)
W SOUTH ST
SEE SHEET 4
SEE SHEET 6
LEGEND
RIGHT-OF-WAY
YELLOW PAVEMENT MARKING
WHITE PAVEMENT MARKING
SHARROW PAVEMENT MARKING
CURBLINE
BITUMINOUS
SIDEWALK
TRUCK APRON
PLANTED BUFFER
STREET FURNITURE BUFFER
POST MOUNTED SIGN
OVERHEAD SIGN
TRAFFIC SIGNAL
PEDESTRIAN SIGNAL HEAD
TRAFFIC SIGNAL SUPPORT
EXISTING FEATURES
NOTE: PLANS DEVELOPED FROM AERIAL IMAGERY AND GIS PROPERTY LAYERS FOR PLANNING PURPOSES ONLY, NOT TO BE USED FOR ENGINEERING DESIGN PURPOSES.
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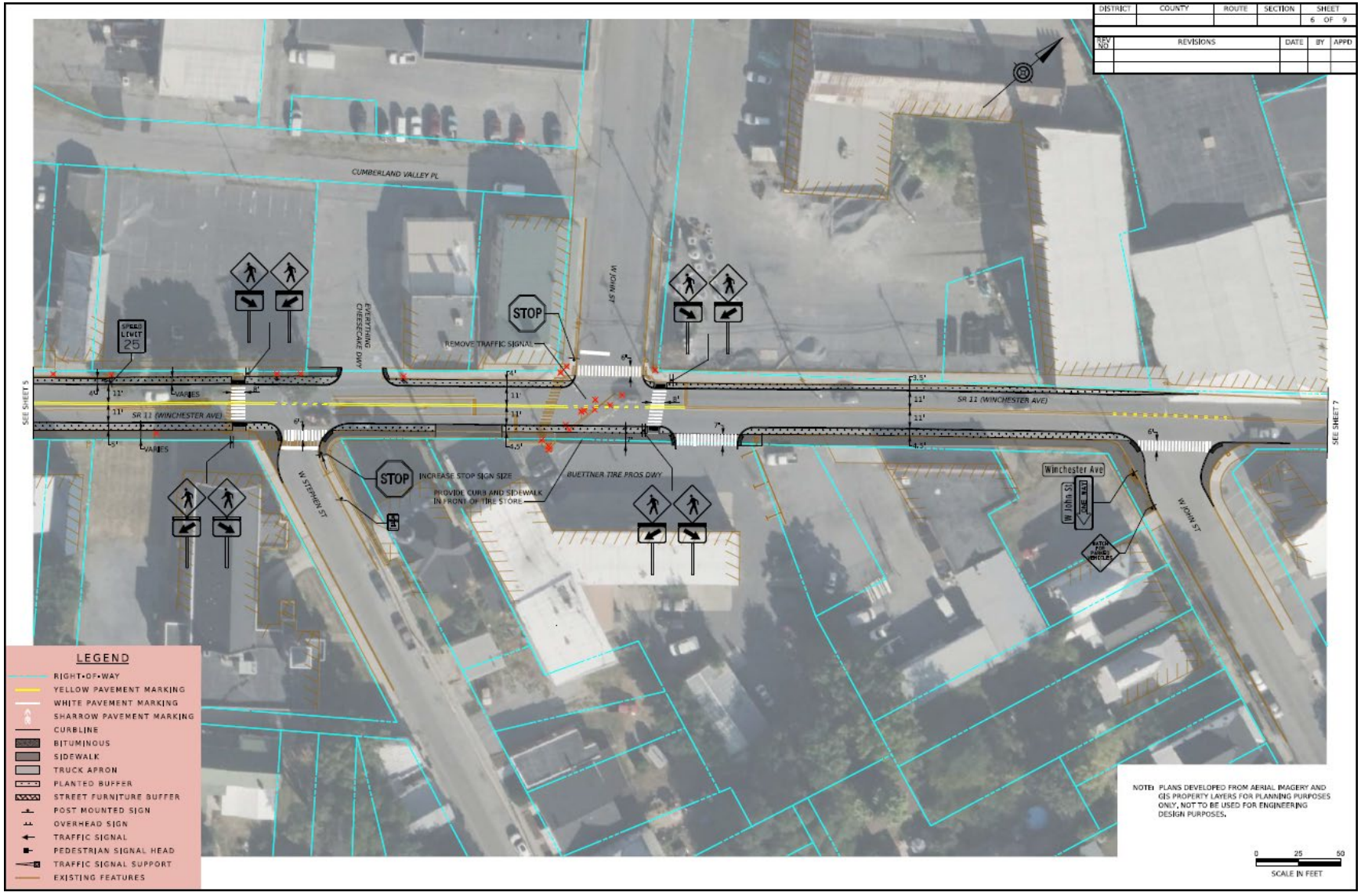
SCALE IN FEET


DISTRICT
COUNTY
ROUTE
SECTION
SHEET
6 OF 9
REVISIONS
DATE
BY
APPD
CUMBERLAND VALLEY PL
W JOHN ST
STOP
REMOVE TRAFFIC SIGNAL
SPEED LIMIT 25
SR 11 (WINCHESTER AVE)
VARIES
SEE SHEET 5
SEE SHEET 7
W STEPHEN ST
INCREASE STOP SIGN SIZE
PROVIDE CURB AND SIDEWALK IN FRONT OF TIRE STORE
BUETTNER TIRE PROS DWY
Winchester Ave
W John St
ONE WAY
W JOHN ST
WATCH FOR PARKED VEHICLES
LEGEND
RIGHT-OF-WAY
YELLOW PAVEMENT MARKING
WHITE PAVEMENT MARKING
SHARROW PAVEMENT MARKING
CURBLINE
BITUMINOUS
SIDEWALK
TRUCK APRON
PLANTED BUFFER
STREET FURNITURE BUFFER
POST MOUNTED SIGN
OVERHEAD SIGN
TRAFFIC SIGNAL
PEDESTRIAN SIGNAL HEAD
TRAFFIC SIGNAL SUPPORT
EXISTING FEATURES
NOTE: PLANS DEVELOPED FROM AERIAL IMAGERY AND GIS PROPERTY LAYERS FOR PLANNING PURPOSES ONLY, NOT TO BE USED FOR ENGINEERING DESIGN PURPOSES.
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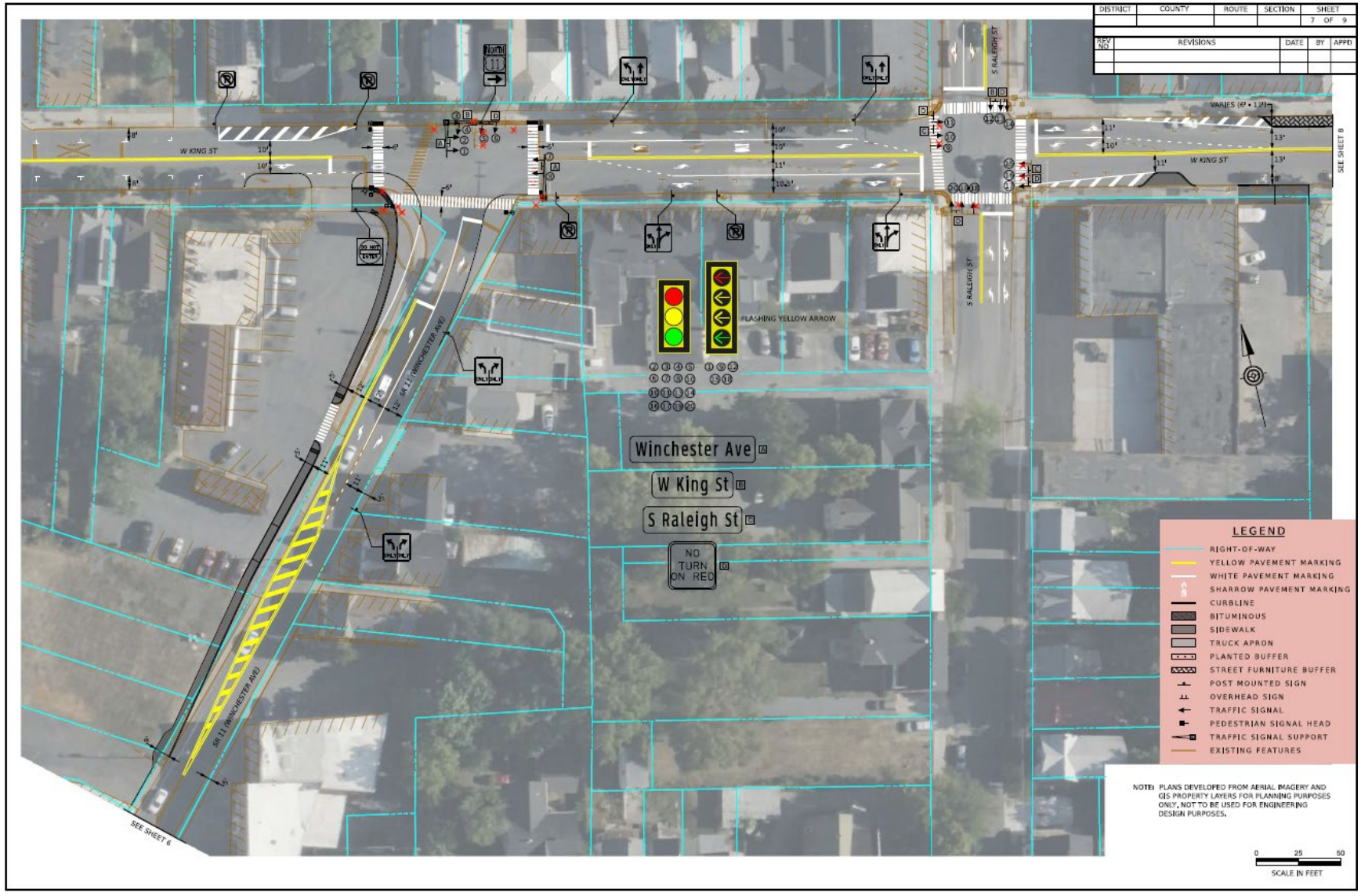
SCALE IN FEET


DISTRICT
COUNTY
ROUTE
SECTION
SHEET
7 OF 9
REVISIONS
DATE
BY
APPD
W KING ST
S RALEIGH ST
SR 11 (WINCHESTER AVE)
FLASHING YELLOW ARROW
Winchester Ave
W King St
S Raleigh St
NO TURN ON RED
SEE SHEET 6
SEE SHEET 8
LEGEND
RIGHT-OF-WAY
YELLOW PAVEMENT MARKING
WHITE PAVEMENT MARKING
SHARROW PAVEMENT MARKING
CURBLINE
BITUMINOUS
SIDEWALK
TRUCK APRON
PLANTED BUFFER
STREET FURNITURE BUFFER
POST MOUNTED SIGN
OVERHEAD SIGN
TRAFFIC SIGNAL
PEDESTRIAN SIGNAL HEAD
TRAFFIC SIGNAL SUPPORT
EXISTING FEATURES
NOTE: PLANS DEVELOPED FROM AERIAL IMAGERY AND GIS PROPERTY LAYERS FOR PLANNING PURPOSES ONLY, NOT TO BE USED FOR ENGINEERING DESIGN PURPOSES.
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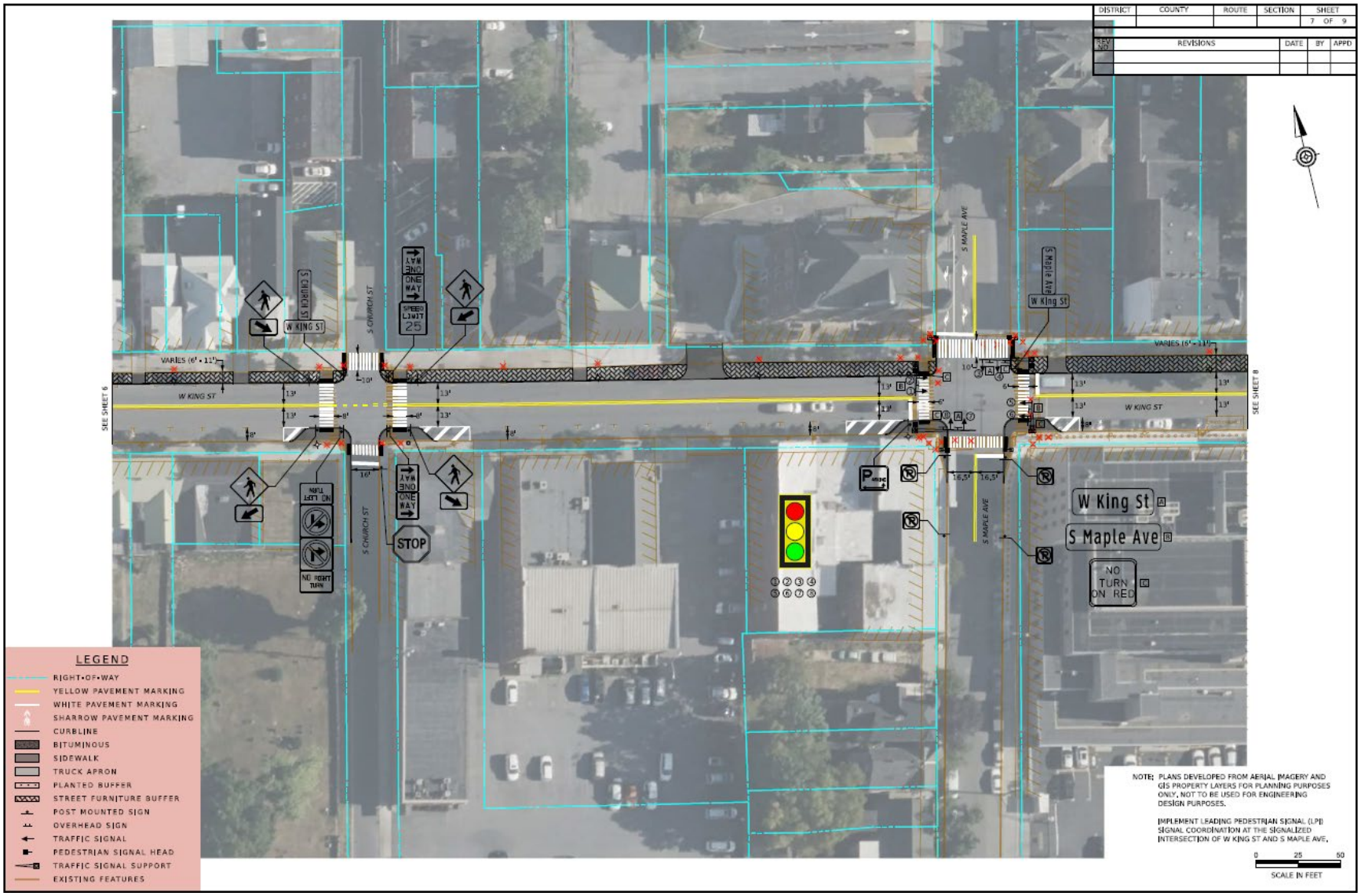
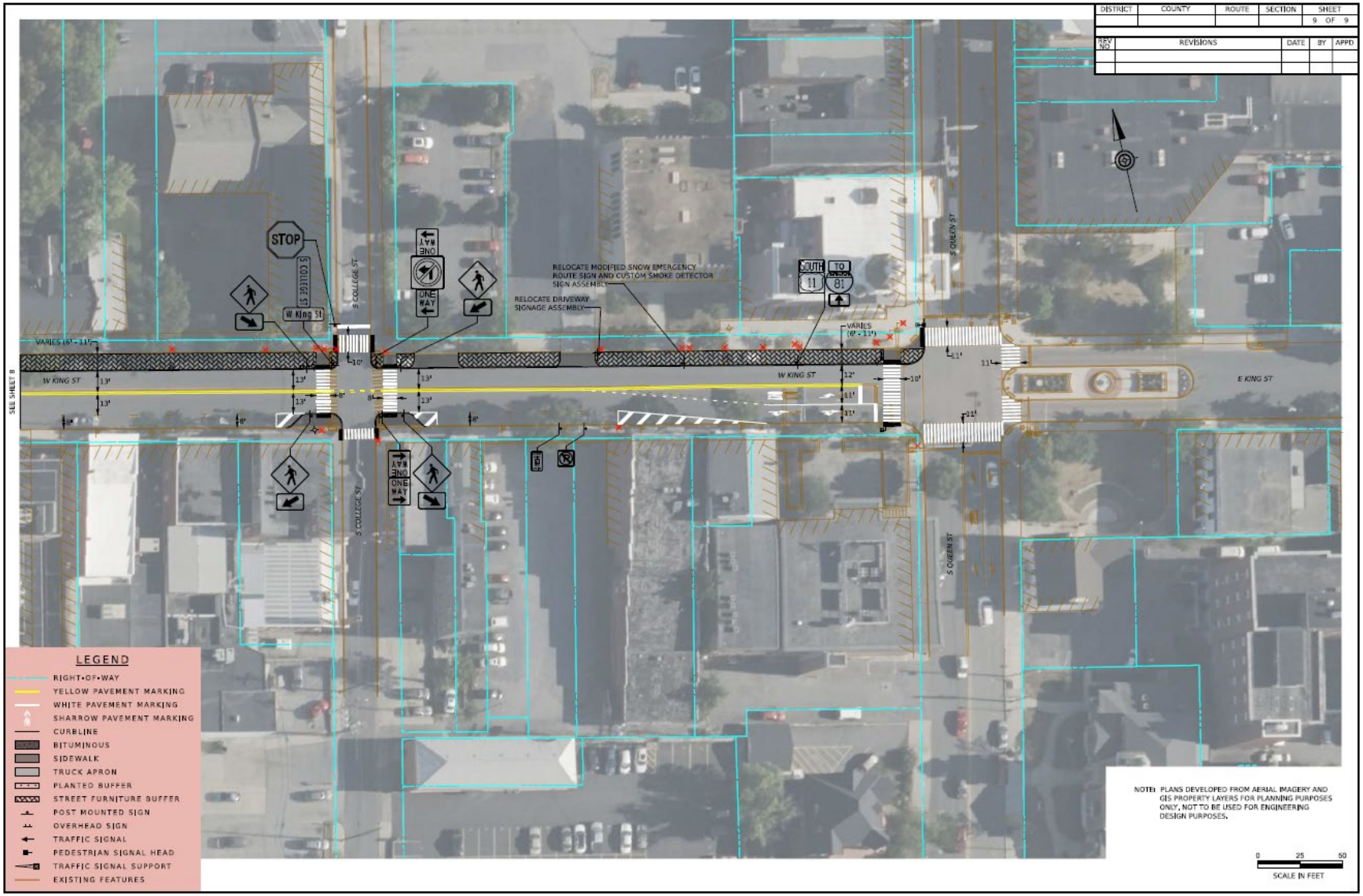
SCALE IN FEET


DISTRICT
COUNTY
ROUTE
SECTION
SHEET
7 OF 9
REVISIONS
DATE
BY
APPD
W KING ST
S CHURCH ST
S MAPLE AVE
ONE WAY
SPEED LIMIT 25
STOP
NO RIGHT TURN
NO TURN ON RED
W King St
S Maple Ave
SEE SHEET 6
SEE SHEET 8
LEGEND
RIGHT-OF-WAY
YELLOW PAVEMENT MARKING
WHITE PAVEMENT MARKING
SHARROW PAVEMENT MARKING
CURBLINE
BITUMINOUS
SIDEWALK
TRUCK APRON
PLANTED BUFFER
STREET FURNITURE BUFFER
POST MOUNTED SIGN
OVERHEAD SIGN
TRAFFIC SIGNAL
PEDESTRIAN SIGNAL HEAD
TRAFFIC SIGNAL SUPPORT
EXISTING FEATURES
NOTE: PLANS DEVELOPED FROM AERIAL IMAGERY AND GIS PROPERTY LAYERS FOR PLANNING PURPOSES ONLY, NOT TO BE USED FOR ENGINEERING DESIGN PURPOSES.
IMPLEMENT LEADING PEDESTRIAN SIGNAL (LPI) SIGNAL COORDINATION AT THE SIGNALIZED INTERSECTION OF W KING ST AND S MAPLE AVE.
0 25 50
SCALE IN FEET


DISTRICT
COUNTY
ROUTE
SECTION
SHEET
9 OF 9
REV NO
REVISIONS
DATE
BY
APPD
STOP
W King St
S COLLEGE ST
ONE WAY
RELOCATE MODIFIED SNOW EMERGENCY ROUTE SIGN AND CUSTOM SMOKE DETECTOR SIGN ASSEMBLY
RELOCATE DRIVEWAY SIGNAGE ASSEMBLY
SOUTH 11
TO 81
S QUEEN ST
VARIES (6' - 11')
VARIES (6' - 11')
W KING ST
E KING ST
SEE SHEET 8
LEGEND
RIGHT-OF-WAY
YELLOW PAVEMENT MARKING
WHITE PAVEMENT MARKING
SHARROW PAVEMENT MARKING
CURBLINE
BITUMINOUS
SIDEWALK
TRUCK APRON
PLANTED BUFFER
STREET FURNITURE BUFFER
POST MOUNTED SIGN
OVERHEAD SIGN
TRAFFIC SIGNAL
PEDESTRIAN SIGNAL HEAD
TRAFFIC SIGNAL SUPPORT
EXISTING FEATURES
NOTE: PLANS DEVELOPED FROM AERIAL IMAGERY AND GIS PROPERTY LAYERS FOR PLANNING PURPOSES ONLY, NOT TO BE USED FOR ENGINEERING DESIGN PURPOSES.
0 25 50
SCALE IN FEET

Appendix B: Cost Estimates

IMPROVEMENT/TREATMENT	CORRIDOR-WIDE COST	MALL DRIVE SIGNAL COST	JOHN STREET SIGNAL COST	KING STREET SIGNAL COST	RALEIGH STREET SIGNAL COST	MAPLE AVENUE SIGNAL COST	QUEEN STREET SIGNAL COST
Signs and Pavement Markings	$219,600.00	-	-	-	-	-	-
RRFB	$60,000.00	-	-	-	-	-	-
Inlets and Drainage	$84,000.00	-	-	-	-	-	-
Excavation/Grading and Soil/Seed	$972,000.00	-	-	-	-	-	-
Driveway reconstruction	$100,000.00	-	-	-	-	-	-
Sidewalk and Curb	$2,837,500.00	-	-	-	-	-	-
ADA Ramps	$910,000.00	-	-	-	-	-	-
Traffic Signal Modification	-	$150,000.00	$10,000.00	$220,000.00	$37,000.00	$250,000.00	$48,000.00
Light Pole Relocation	$140,000.00	-	-	-	-	-	-
Project Items (Equipment Package, Surveying, Schedule, Pollution Control, Etc.)	$14,000.00	-	-	-	-	-	-
Utility Relocations	$540,000.00	-	-	-	-	-	-
PERCENTAGE ITEMS							
Mobilization (4%)	$177,084.00	$6,000.00	$400.00	$8,800.00	$1,480.00	$10,000.00	$1,920.00
Maintenance and Protection of Traffic (10%)	$442,710.00	$15,000.00	$1,000.00	$22,000.00	$3,700.00	$25,000.00	$4,800.00
Contingencies (25%)	$1,106,775.00	$37,500.00	$2,500.00	$55,000.00	$9,250.00	$62,500.00	$12,000.00
Inspection (12%)	$531,252.00	$18,000.00	$1,200.00	$26,400.00	$4,440.00	$30,000.00	$5,760.00
Engineering (25%)	$1,106,775.00	$37,500.00	$2,500.00	$55,000.00	$9,250.00	$62,500.00	$12,000.00
TOTAL	$9,241,696.00	$264,000.00	$17,600.00	$387,200.00	$65,120.00	$440,000.00	$84,480.00
TOTAL (ROUNDED) - $10,500,000							

Appendix C: Combined Previous Study Recommendations

Martinsburg Gateway Vision Plan Recommendations for Winchester Ave Corridor

1) South of Study Area

- Install gateway treatment / median island / pedestrian refuge

1) South of Study Area
2) Berry St Intersection

<u>Roadway Reconfiguration</u>
- Relocate curb lines
- Widen sidewalks/provide sidewalk buffer
- Install buffered bike lanes
- Eliminate on street/curbside parking
- Edgeline striping

<u>Side Street Intersection</u>
- Relocate and increase stop sign size
- Add reflective strips, stop bar, and high visibility crosswalk

1) South of Study Area
2) Berry St Intersection
3) Winchester Ave between Berry St and Mall Dr

Roadway Reconfiguration
- Relocate curb lines
- Widen sidewalks (5')/provide sidewalk buffer (5')
- Repurpose on street/curbside parking for buffered bike lanes
- Narrow travel lanes
- Edgeline striping

1) South of Study Area
2) Berry St Intersection
3) Winchester Ave between Berry St and Mall Dr
4) Mall Dr Intersection

Close Connector
- Build and tie into shared use trail

Reconfigure and Update Signal
- Flashing yellow arrow for left turns
- Full signalization for school driving with split phasing
- Relocate Mall Dr crosswalk
- No Right Turn on Red for all approaches
- OH SNS
- Leading pedestrian interval

VRU Amenities
- Relocate curb line for buffered sidewalk along SE side of roadway
- Designated pedestrian path from shopping center parking lot to school

1) South of Study Area
2) Berry St Intersection
3) Winchester Ave between Berry St and Mall Dr
4) Mall Dr Intersection
5) Winchester Ave between Mall Dr and Addition St

Roadway Reconfiguration
- Relocate curb lines
- Shared use path along NW side of Winchester Ave
- Buffered sidewalk along SE side of Winchester Ave
- Eliminate curbside parking

Improve Sight Distance
- Work with shopping center to eliminate parking stalls along back of sidewalk area

1) South of Study Area
2) Berry St Intersection
3) Winchester Ave between Berry St and Mall Dr
4) Mall Dr Intersection
5) Winchester Ave between Mall Dr and Addition St
6) Addition St Intersection

Relocate
- Shopping center entrance to be opposite Addition St.
- Utilities
- Side street stop sign closer to intersection

Side Street Crossing
- Stripe side street with high visibility crosswalk and stop bar
- Clear vegetation in front yards adjacent to intersection

1) South of Study Area
2) Berry St Intersection
3) Winchester Ave between Berry St and Mall Dr
4) Mall Dr Intersection
5) Winchester Ave between Mall Dr and Addition St
6) Addition St Intersection
7) Winchester Ave between Addition St and John St

Roadway Reconfiguration
-Relocate curb lines
-Shared use path along NW side of Winchester Ave
-Buffered sidewalk along SE side of Winchester Ave
-Eliminate curbside parking

VRU Amenities
-Install high visibility crosswalks and stop bars at side streets.
- Stripe uncontrolled crosswalks, install pedestrian signing, and construct ADA intersection ramps for crossing Winchester Ave.

8) Stephen St Intersection

Roadway Reconfiguration
- Revise Stephen St to a single shared lane at stop sign

VRU Amenities
- Install RRFB at high visibility crosswalk between parking lot and church
- Install bulb outs

8) Stephen St Intersection
9) John St Intersection A

Reconfigure and Update Signal
- Protected only for NB Winchester Ave approach left turns
- Reflectorized backplates
- 12" signal head for all approaches
- OH SNS
- Leading pedestrian interval
- Traffic coordination with King St

Access Management
- Relocate tire store driveway to behind Winchester SB/WB stop bar

Geometric Improvements
- Relocate utility pole and increase corner radius on NW corner

8) Stephen St Intersection
9) John St Intersection A
10) John St Intersection B

VRU Amenities
- Tighten up curb radii
- Improve one-way signing
- Stripe high visibility crosswalk

8) Stephen St Intersection
9) John St Intersection A
10) John St Intersection B
11) Winchester Ave between John St and King St

Utilities Update
- Move utilities underground

VRU Amenities
- Widen sidewalk
- Consolidate driveways

8) Stephen St Intersection
9) John St Intersection A
10) John St Intersection B
11) Winchester Ave between John St and King St
12) King St Intersection

Reconfigure and Update Signal
- Allow left turns
- Flashing yellow arrow variable mode for left turns
- Reflectorized backplates
- 12" signal head for all approaches
- Prohibit right turn on red
- Traffic coordination with Raleigh St/King St and Raleigh St/Burke St signals
- Overhead Street Name Signs
- Leading pedestrian interval

8) Stephen St Intersection
9) John St Intersection A
10) John St Intersection B
11) Winchester Ave between John St and King St
12) King St Intersection
13) King St between Winchester Ave and Raleigh St

Roadway Reconfiguration
- Repurpose curbside parking along south side of King St
- Utilize new space to add left turn lane and through lane for eastbound King St direction

14) Raleigh St Intersection

Reconfigure and Update Signal
- Flashing yellow arrow variable mode for left turns
- Reflectorized backplates
- 12" signal head for all approaches
- Prohibit right turn on red
- Traffic coordination with Winchester Ave/King St and Raleigh St/Burke St signals
- Overhead Street Name Signs
- Leading pedestrian interval

Roadway Reconfiguration
- Repurpose curbside parking along west side of northbound Raleigh St approach and utilize new space to allow longer left turn queueing and lane sorting
- Reconfigure southbound Raleigh St approach to a thru/right and left only lane to allow for flashing yellow arrow variable mode
- Update pavement markings and eliminate curbside parking on all approaches to extend left turn bays to accommodate updated traffic volumes

Improve Site Distance
- Eliminate curbside parking within 30' of crosswalks on eastern King St downstream leg

14) Raleigh St Intersection
15) King St between Raleigh St and Queen St

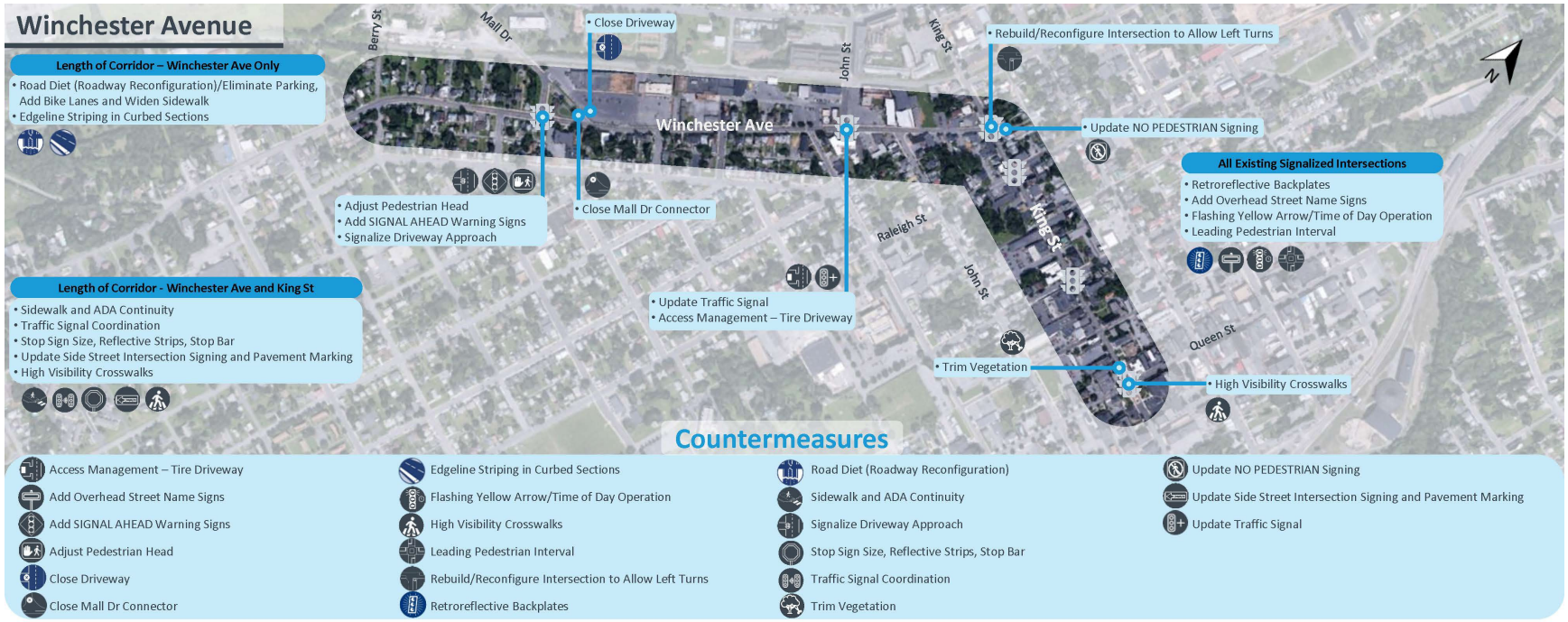
Reconfigure and Update Signal
- Flashing yellow arrow variable mode where turn bays exist
- Reflectorized backplates
- 12" signal head for all approaches
- Overhead Street Name Signs
- Leading pedestrian interval
- Traffic signal coordination along corridor

Install Streetscape Elements
- Corner bulbouts
- Widened sidewalks
- Pedestrian crosswalk signs at uncontrolled striped crosswalks

14) Raleigh St Intersection
15) King St between Raleigh St and Queen St
16) Queen St Intersection

VRU Amenities
- Install high visibility crosswalks

Appendix D: HEPMPO SAP – Winchester Ave. Corridor Profile and Countermeasure Toolbox



Collision History (2018-2022)

	Total Collisions	Fatal or Severe Injury
	128	1
	1	0
	1	0
	9	2

Notable Collision Patterns

Rear End Not at Signal

Angle at Signal

Planning References

- Existing Plus Committed Projects
  - B2016-04 Martinsburg Signal System
- Bike/Pedestrian
  - Designated VRU Corridor

Table 10: HEPMPO - Road Safety Infrastructure Countermeasures for Winchester Avenue Safety Corridor

Location	Countermeasure	FHWA Proven Safety Countermeasure	Countermeasure Description	Implementation Horizon	2024 Planning Level Cost
Length of Corridor (Winchester Ave and King St)	Traffic Signal Coordination	No	Revise traffic signal timing to provide coordination to correspond with speed limit, progression speed and queue clearance based on time of day traffic volumes and turning movements	Short Term	$60,000 - $75,000
	Update Side Street Intersection Signing and Pavement Marking	No	Update to provide MUTCD recommended ONE WAY signing or add double yellow centerline pavement marking and Stop bars as applicable on all side streets	Short Term	$1,500-$2,000 / intersection
	Sidewalk and ADA Continuity	Yes	Complete sidewalk gaps and ADA compliant driveway crossing features through existing sidewalk areas	Medium Term	$400,000 - $500,000
	STOP Sign Size, Reflective Strips, and Stop Bars	Yes (partial)	Increase STOP sign size, add reflective strip and stop bars at all stop controlled side streets and major driveways	Short Term	$60,000 - $75,000
	High Visibility Crosswalks	Yes	Install high visibility crosswalks on all side streets and at uncontrolled crossings of Winchester Ave. Add pedestrian signing for Winchester Ave uncontrolled crosswalks	Short Term	$55,000 - $70,000
Length of Corridor (Winchester Ave)	Road Diet (Roadway Reconfiguration)	Yes	Adjust curb line and striping as necessary to provide ADA compliant sidewalk on both sides of Winchester Ave, eliminate curbside parking and provide bike lanes.	Long Term	$8,500,000 - $11,000,000

Location	Countermeasure	FHWA Proven Safety Countermeasure	Countermeasure Description	Implementation Horizon	2024 Planning Level Cost
	Bicycle Lanes	Yes	Include Bicycle Lanes with Road Diet	Long Term	Included
	Edge line Striping in Curbed Sections	No	Install edge line pavement markings (solid past driveways and skips past public side streets) to define and reduce travel lane width and bring awareness to edge of travel lane for vehicles entering from driveways. Reduce speeds by contextual changes and lane width reduction	Short Term	$10,000 - $13,000
All Signalized Intersections	Retroreflective Backplates	Yes	Install backplates with retroreflective borders on all vehicular traffic signal heads	Short Term	$19,000 - $24,000
	Leading Pedestrian Interval (LPI)	Yes	Retime/rephase traffic signals at intersections with heavier pedestrian volumes to provide a leading pedestrian interval of 3 to 6 seconds for pedestrian actuations	Short Term	$100,000 - $125,000
	Flashing Yellow Arrow(FYA)/ Time of Day Operation	No	Install FYA left turn traffic signal heads at all approaches with dedicated left turn lanes. Update traffic signal timing and phasing accordingly. Investigate running time of day variable mode phasing	Medium Term	$200,000 - $250,000
	Add Overhead Street Name Signs	No	Install overhead street name signs to assist unfamiliar motorists with navigation and provide positive guidance. Reduce motorist indecision	Short Term	$27,000 - $34,000

Location	Countermeasure	FHWA Proven Safety Countermeasure	Countermeasure Description	Implementation Horizon	2024 Planning Level Cost
Mall Dr Intersection	Adjust Pedestrian Head	No	Adjust pedestrian head on south side of roadway to face pedestrians crossing Winchester Ave	Short Term	$1,500 - $2,000
	Add SIGNAL AHEAD Warning Sign	No	Install SIGNAL AHEAD warning sign for curved approach on Mall Dr (Per MUTCD)	Short Term	$1,500 - $2,000
	Signalize Driveway Approach Within Intersection	No	Update traffic signal to provide detection, phasing and signal heads for the driveway. The Winchester Ave Elementary School driveway is within the signalized intersection and as such is required by MUTCD guidelines to be signalized. Also provide pedestrian indications for crossing driveway	Medium Term	$60,000 - $75,000
Mall Dr Connector	Access Management - Close Driveway	No	Close Shopping Center Driveway at end of Mall Dr connector. Rework curb line at connector tie in to Winchester Ave to reinforce one-way flow by geometric changes and discourage 'sneakers'	Long Term	$90,000- $110,000
	Access Management - Close Mall Dr Connector	No	Close Mall Dr connector. Doe not appear to be a needed access or ROW. Adjacent properties all have other access points	Long Term	$230,000 - $290,000
John St Intersection	Access Management - Tire Driveway	Yes	Reduce /channelize tire business driveway on south side of intersection so that there is no unsignalized access to center area of intersection. Driveway entrance should be located as far north on	Long Term	$85,000 - $100,000

Location	Countermeasure	FHWA Proven Safety Countermeasure	Countermeasure Description	Implementation Horizon	2024 Planning Level Cost
			property as possible. If some portion of driveway remains within the 'intersection', it should be signalized		
	Update Traffic Signal	No	Update traffic signal configuration, signal heads, and phasing if tire business driveway remains within intersection and requires a signalized phase	Long Term	$60,000 - $75,000
Winchester Ave and King St Intersection	Update Signing	No	Post NO PEDESTRIAN signing on Eastern leg of intersection since no provision for pedestrians has been included with the traffic signal operation across this leg	Short Term	$2,500 - $3,000
	Rebuild / Reconfigure Intersection	No	Study / reevaluate why left turns are prohibited at this intersection. Consider effect on cut through traffic at other preceding intersections with local streets. Consider effect on pedestrian expectation and indecision here and at John St. Reconfigure and reconstruct approach angle to allow better left turn turning movements.	Long Term	$13,000,000 - $16,500,000
King St and Queen St Intersection	Trim Vegetation	No	Trim vegetation and foliage in advance of overhead signing on EB King St. overhead sign legends are obstructed by tree foliage	Short Term	$2,500 - $3,000

Location	Countermeasure	FHWA Proven Safety Countermeasure	Countermeasure Description	Implementation Horizon	2024 Planning Level Cost
	High Visibility Crosswalks	Yes	Install high visibility crosswalks over ornamental brick crosswalks	Short Term	$14,000 - $18,000

Appendix E: Outreach & Meetings

Public Comments

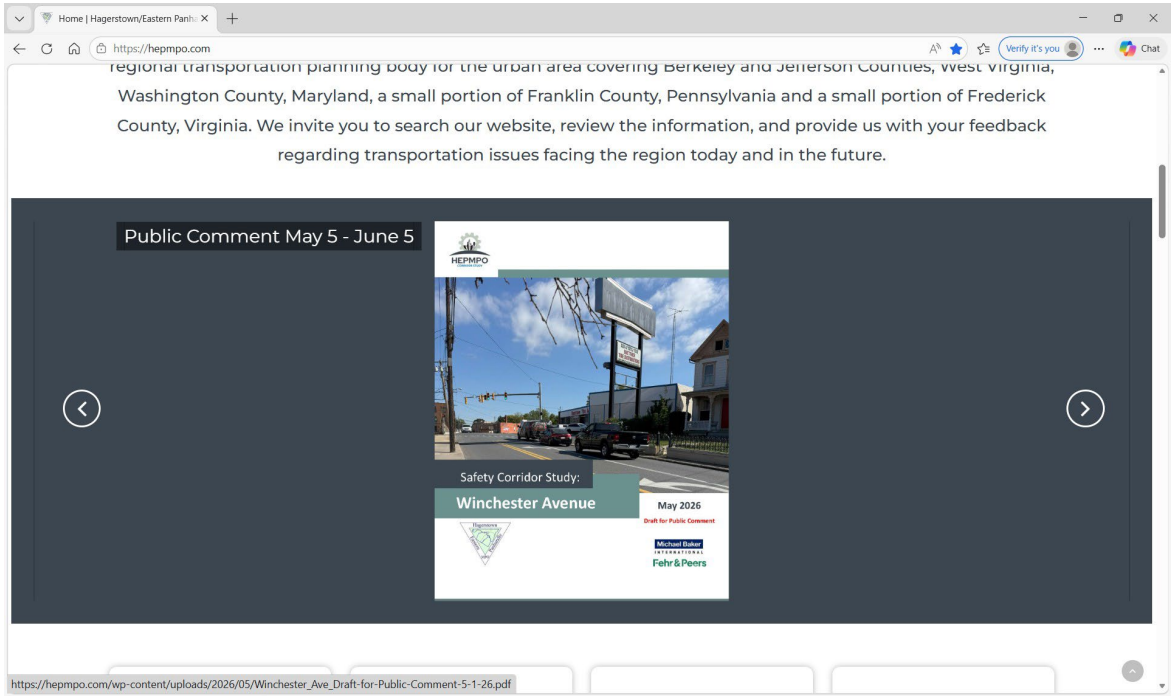
COMMENT	RESPONSE
Observation on King Street during the Winchester Ave Safety Corridor Public Meeting on 5/21/26. For the record, there is no underground rain drainage on the north side of King Street from west of the railroad tracks at Tuskegee Dr all the way down to Church Street. The rain runoff is directed underground under the train tracks and exits the curb in front of 530 W King. The runoff is already gravity feeding down Tuskegee Dr on its south edge from Burke Street running along the curb above ground meeting and turning the corner heading east on King Street staying on the north edge of King and meeting up with the runoff exiting onto the roadway at 530 W King. Together the runoffs stay above ground, running along the north side gutter until they get to the underground drain at Church Street. This can be very dangerous in heavy rain and or when the roadways are wet during winter and the runoff freezes in the gutter along King Street.	Thank you for your detailed comment regarding drainage conditions along King Street. We appreciate you taking the time to describe how stormwater runoff currently travels along the north side of the roadway and the potential safety concerns this creates. Your comment will be documented as part of the study record and shared with the City of Martinsburg and the West Virginia Division of Highways for further coordination. Consideration of drainage conditions and potential improvements (such as enhanced drainage infrastructure, grading adjustments, or localized stormwater management solutions) may be evaluated as part of future design and implementation phases.
Thank you for inviting me to participate in the online meeting. It was very educational for me to see how the process works and the time and effort put into the planning process by the experts. 1. W Addition St Intersection Priority: I personally prioritize correction of the various defects at the Winchester Ave/W Addition St intersection, especially: a. Some type of signal control which will reliably ensure drivers stop for pedestrians. I still think a four-way traffic signal would best solve the problem (with realignment of the parking center entrance). b. Widening the visual depth of the crosswalk markings. c. Minimizing visual obstructions for drivers turning either left or right onto Winchester Ave from W Addition St. d. Providing marked and controlled crosswalks over Winchester Ave on both sides of W Addition St. The normal preferred pedestrian/wheelchair crossing has	Thank you for your thoughtful and detailed comments and for participating in the online meeting. Your input provided valuable, location-specific insights that complement the technical analysis conducted as part of the Winchester Avenue Safety Corridor Study. Observations related to driver behavior, pedestrian experience, and day-to-day operations help ensure the study reflects real-world conditions. Several of your comments directly reinforced key safety issues identified through the study and helped refine proposed countermeasures. In particular, your feedback on the W Addition Street intersection—including the need for stronger traffic control, improved crosswalk visibility, and reduced sightline obstructions—supports its identification

COMMENT	RESPONSE
always been on the north side of W Addition St. Pedestrians have been somewhat trained to use the new crosswalk on the south side of W Addition St, but they often have to stand and wait for traffic to clear to safely cross (same as if there were no crosswalk) because most drivers simply do not notice or respect a pedestrian waiting to cross at the crosswalk. e. Be fully aware of the effect of the downhill slope toward W Addition St from both directions. 2. Parking on W King between Winchester Ave and S Raleigh St: I use those spaces fairly regularly to visit the barber on Winchester Ave near the W King St intersection, the Garage on King food court, or Good Natured Cafe down W King St and around the corner on S Raleigh St. I also turn right from Winchester Ave toward S Raleigh traveling toward downtown or to make a left on S Raleigh almost daily, so I see how parking there gums up the intersection by blocking a large section of the street to through traffic eastbound on W King St. . I agree that it is probably necessary to sacrifice these parking spaces to keep sufficient travel lane space in this short, but critical block. 3. Possible Future "Boltz Park " at 500 Winchester Ave: This is just for planning awareness. Although the City Council has not yet formally laid or approved specific plans, the vacant site of the Boltz Hardware store at the corner of Winchester Ave and W South St may eventually become a pocket park, probably with minimal infrastructure (e.g., park benches). This, combined with the long-range plans for a bike pedestrian path on the opposite side of Winchester Ave, may result in more pedestrian/bike crossings over Winchester Ave at W South St, which may call for some kind of safe pedestrian crossing (similar to the W Addition St crossing) at the W South St intersection. 4. Heavy Vehicles on Winchester Ave: On a daily basis, Winchester Ave carries some very heavy vehicles past my residence on the 500 block. This includes fully loaded dump trucks and semi-trailers, often traveling too fast to stop easily for any crosswalks. We regularly hear Jake brakes from southbound trucks traveling downhill toward the W Addition St crosswalk which means they've gathered too much speed traveling from	as a priority location for enhanced treatments such as signalization, upgraded markings, and geometric improvements. Similarly, your observations regarding pedestrian crossing challenges, heavy vehicle speeds, and downhill conditions strengthen the case for measures focused on speed management, improved yielding, and safer crossings. Your input on parking constraints near W King Street, turning movements at W John Street and Buxton Street, and neighborhood cut-through traffic ("Faulkner bypass") also provided important operational context. These comments help the project team better understand how traffic patterns and driver decisions influence safety, and they will inform coordination with the City on potential strategies such as access management, traffic calming, and neighborhood traffic controls. Finally, your note regarding potential future development, including the possible park at 500 Winchester Avenue, is especially helpful in identifying where additional pedestrian activity may occur over time. This information supports consideration of proactive safety countermeasures at locations such as W South Street. Overall, your comments have meaningfully contributed to the development of targeted, context-sensitive safety improvements along the corridor. Your comments will be included in the public record and shared with the City of Martinsburg and the West Virginia

COMMENT	RESPONSE
the traffic signal at W John St. This is one of the reasons I tend to favor completely controlled intersections at both W Addition St and W South St as ultimately the most reliable means of preventing unequal interactions between vehicles and pedestrians, wheel chairs and bicycles. 5. Right Turn from Winchester Ave Northbound onto W John St Eastbound: Residents on the first eastbound block of W John St have complained about vehicles turning at high speeds to travel eastbound on one-way eastbound W John St. I have heard of collisions or near misses with parked vehicles or pedestrians in that first block of W John St. This is sometimes used as a faster route to S Raleigh St (including by me) to bypass backup at the W King St intersection, so these drivers are in a hurry. A bulb or other device to slow traffic before making the right turn might help, including providing a shorter crossing over W John St for pedestrians traveling along Winchester Ave. 6. "Faulkner Bypass " of Winchester Ave through Neighborhood: From Wilson St in the south to W Stephen St in the north, there is a neighborhood route parallel to Winchester Ave that runs via Florida Ave (for two blocks) and Faulkner Ave (the rest of the way). The only stop sign on this entire alternate route is at the Buxton St intersection. I've sometimes observed traffic speeding north up Faulkner Ave (at the 500 block) to W Stephen St. I surmise that the drivers are using this route to bypass the traffic signal at Mall Dr, hoping for lucky timing with traffic at the W John St signal. They probably usually turn right off Winchester Ave at Buxton St as soon as they see a back-up at Mall Dr, or possibly earlier at Bowers St or Berry St, if they're planning ahead. If we maintain better control of traffic speed and install more things (e.g., controlled crosswalk(s)) to steady the flow and enhance safety on Winchester Ave, we may see more frequent and extensive use of this back "bypass. " This may call for more stop signs along this route, such as at the W Addition St and Faulkner Ave intersection, and/or at the Berry St and Faulkner/Florida Avenue intersection. More stop signs, I assume, would be a city issue. Use of this "Faulkner Bypass " puts more traffic on W Stephen St and more right turns from W Stephen St onto Winchester Ave near the W John St intersection.	Division of Highways as the project advances into future design and implementation phases. Thank you again for your continued involvement and for contributing meaningful input to improve safety along the Winchester Avenue corridor.

COMMENT	RESPONSE
7. Southbound Left Turn from Winchester Ave onto Buxton St: I'm not sure whether it's legal or not to take this turn based on pavement markings (double yellow line) or any signage I've noticed, but it's an awkward and potentially unsafe place to make such a turn so close to the Mall Dr intersection and across the northbound lanes precisely where the northbound side goes from one to two lanes. Drivers sometimes decide to make this left turn and back up traffic behind them into the Mall Dr intersection as they wait to make the turn. If it's illegal, it's not clearly marked (as I recall). If it's unsafe, it should be clearly marked as "No Left Turn " wherever it would be most visible. A physical barrier to a left turn here would probably create other unwanted safety issues, but something like the N Queen St/Woodbury Ave intersection comes to mind where a left turn from N Queen St is clearly marked as prohibited.	
I strongly support the plan, especially closing the Mall Drive connector. Too much roadway in that area. Narrowing the roadways and adding trees along Winchester Avenue and King Street will help slow traffic.	Thank you for your support. Your comments align with the study's safety focus—reducing excess roadway, calming traffic, and improving pedestrian conditions through the Mall Drive closure, narrower roadways, and added street trees.
I am commenting from the perspective of prioritizing highway improvement project funding. This corridor is not that terribly busy or dangerous, compared to all of I-81 through Berkeley County or the Apple Harvest Drive corridor from Winchester Ave to The Commons shopping center. My comment is that whatever funds were appropriate for this project should be used to improve a more dangerous corridor. I suggest these funds be used to provide warning signs about speeding, reckless driving, and trucks being in the left lane on I-81.	Thank you for your comment. While this study focuses on safety, access, and multimodal needs specific to the Winchester Avenue corridor, we recognize the importance of other regional priorities. Improvements along Apple Harvest Drive have been identified separately, with funding allocated through other programs. We acknowledge your input on broader regional priorities and will share these concerns with the appropriate agencies responsible for those facilities.

Website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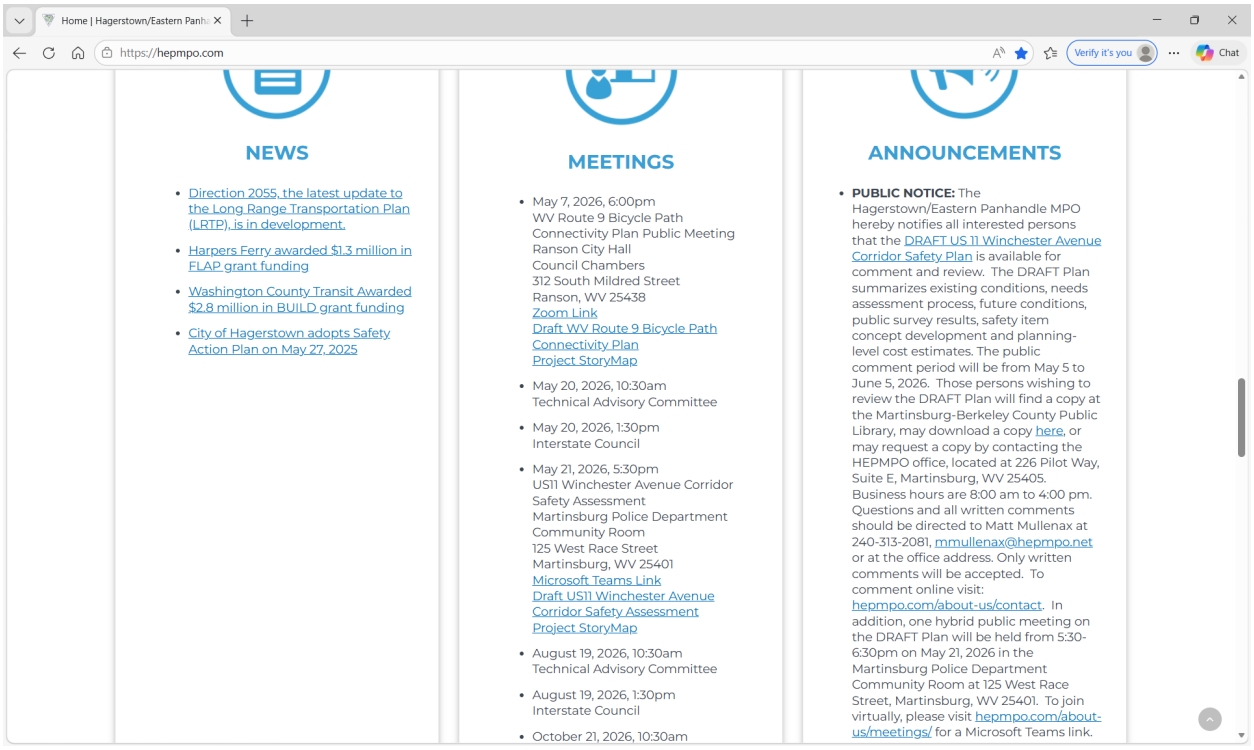
regional transportation planning body for the urban area covering Berkeley and Jefferson Counties, West Virginia, Washington County, Maryland, a small portion of Franklin County, Pennsylvania and a small portion of Frederick County, Virginia. We invite you to search our website, review the information, and provide us with your feedback regarding transportation issues facing the region today and in the future.
Public Comment May 5 - June 5
HEPMPO
Safety Corridor Study:
Winchester Avenue
May 2026
Draft for Public Comment
Michael Baker INTERNATIONAL
Fehr & Peers
https://hepmpo.com/wp-content/uploads/2026/05/Winchester_Ave_Draft-for-Public-Comment-5-1-26.pdf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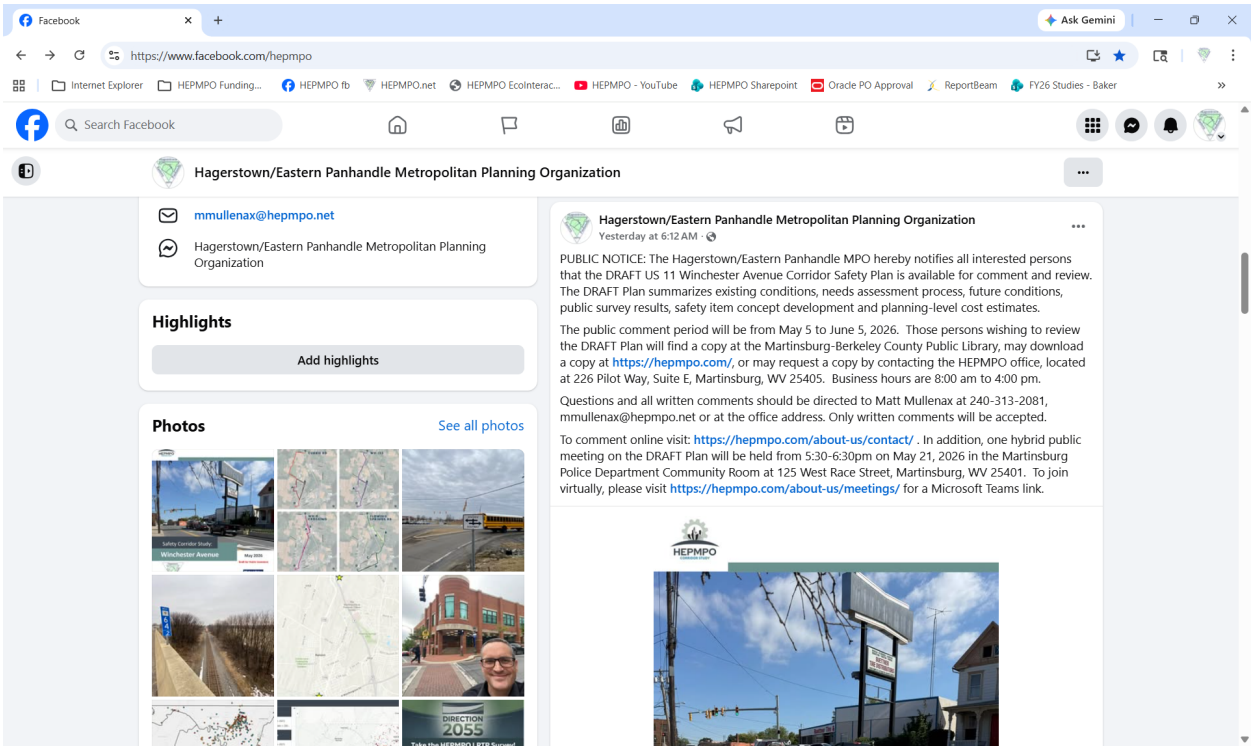
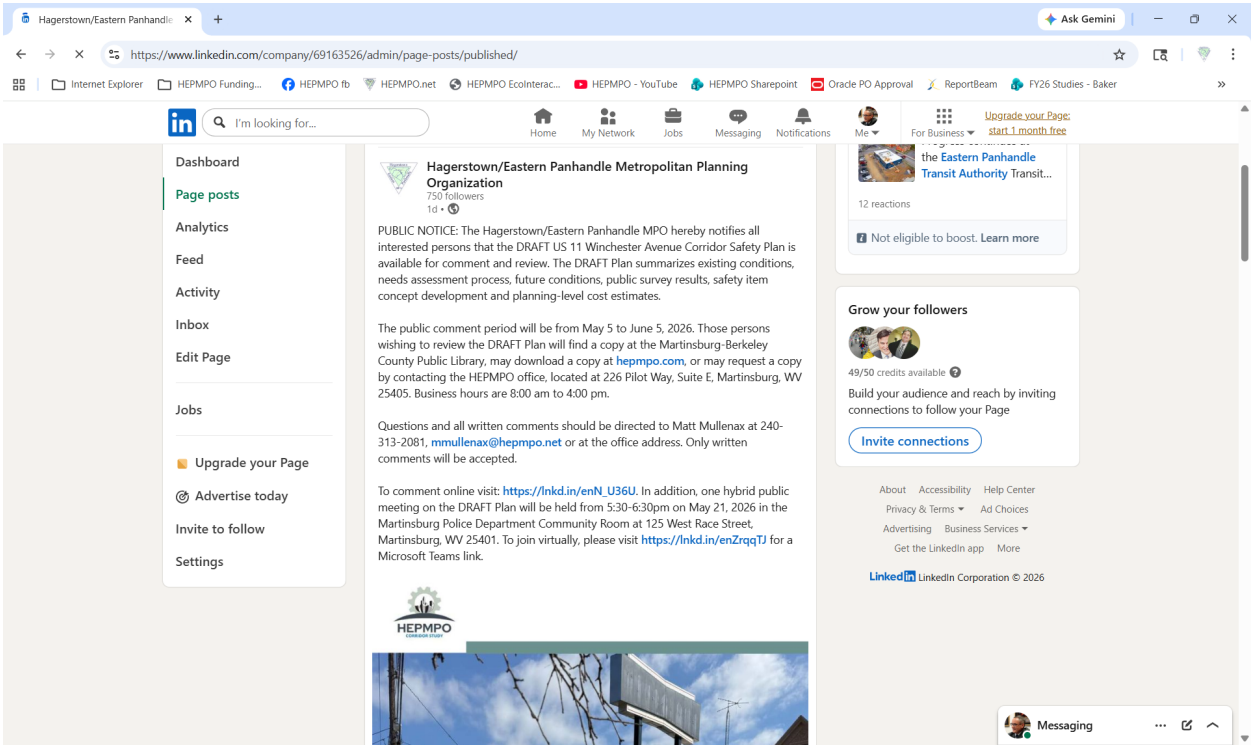
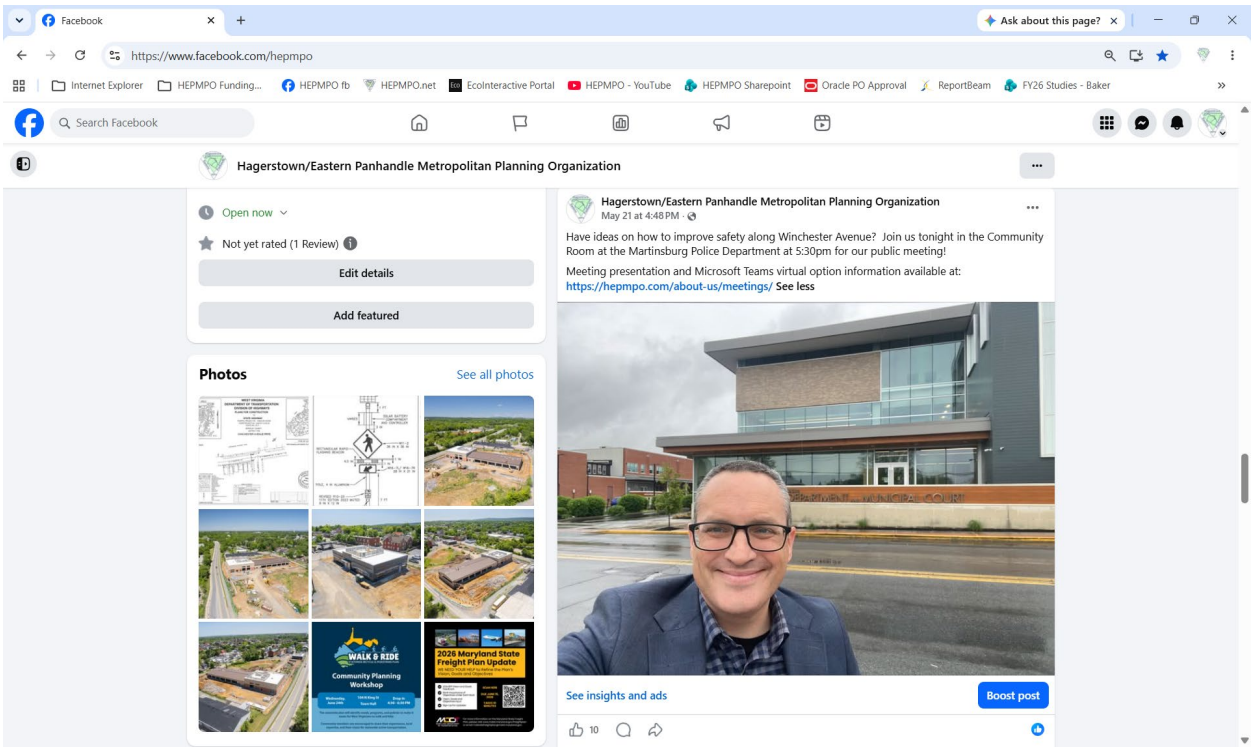
NEWS
Direction 2055, the latest update to the Long Range Transportation Plan (LRTP), is in development.
Harpers Ferry awarded $1.3 million in FLAP grant funding
Washington County Transit Awarded $2.8 million in BUILD grant funding
City of Hagerstown adopts Safety Action Plan on May 27, 2025
MEETINGS
May 7, 2026, 6:00pm
WV Route 9 Bicycle Path Connectivity Plan Public Meeting
Ranson City Hall
Council Chambers
312 South Mildred Street
Ranson, WV 25438
Zoom Link
Draft WV Route 9 Bicycle Path Connectivity Plan
Project StoryMap
May 20, 2026, 10:30am
Technical Advisory Committee
May 20, 2026, 1:30pm
Interstate Council
May 21, 2026, 5:30pm
US11 Winchester Avenue Corridor Safety Assessment
Martinsburg Police Department
Community Room
125 West Race Street
Martinsburg, WV 25401
Microsoft Teams Link
Draft US11 Winchester Avenue Corridor Safety Assessment
Project StoryMap
August 19, 2026, 10:30am
Technical Advisory Committee
August 19, 2026, 1:30pm
Interstate Council
October 21, 2026, 10:30am
ANNOUNCEMENTS
PUBLIC NOTICE: The Hagerstown/Eastern Panhandle MPO hereby notifies all interested persons that the DRAFT US 11 Winchester Avenue Corridor Safety Plan is available for comment and review. The DRAFT Plan summarizes existing conditions, needs assessment process, future conditions, public survey results, safety item concept development and planning-level cost estimates. The public comment period will be from May 5 to June 5, 2026. Those persons wishing to review the DRAFT Plan will find a copy at the Martinsburg-Berkeley County Public Library, may download a copy here, or may request a copy by contacting the HEPMPO office, located at 226 Pilot Way, Suite E, Martinsburg, WV 25405. Business hours are 8:00 am to 4:00 pm. Questions and all written comments should be directed to Matt Mullenax at 240-313-2081, mmullenax@hepmpo.net or at the office address. Only written comments will be accepted. To comment online visit: hepmpo.com/about-us/contact. In addition, one hybrid public meeting on the DRAFT Plan will be held from 5:30-6:30pm on May 21, 2026 in the Martinsburg Police Department Community Room at 125 West Race Street, Martinsburg, WV 25401. To join virtually, please visit hepmpo.com/about-us/meetings/ for a Microsoft Teams link.

Social Media



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May 21 at 4:48 PM
Have ideas on how to improve safety along Winchester Avenue? Join us tonight in the Community Room at the Martinsburg Police Department at 5:30pm for our public meeting!
Meeting presentation and Microsoft Teams virtual option information available at:
https://hepmpo.com/about-us/meetings/ See less
See insights and ads
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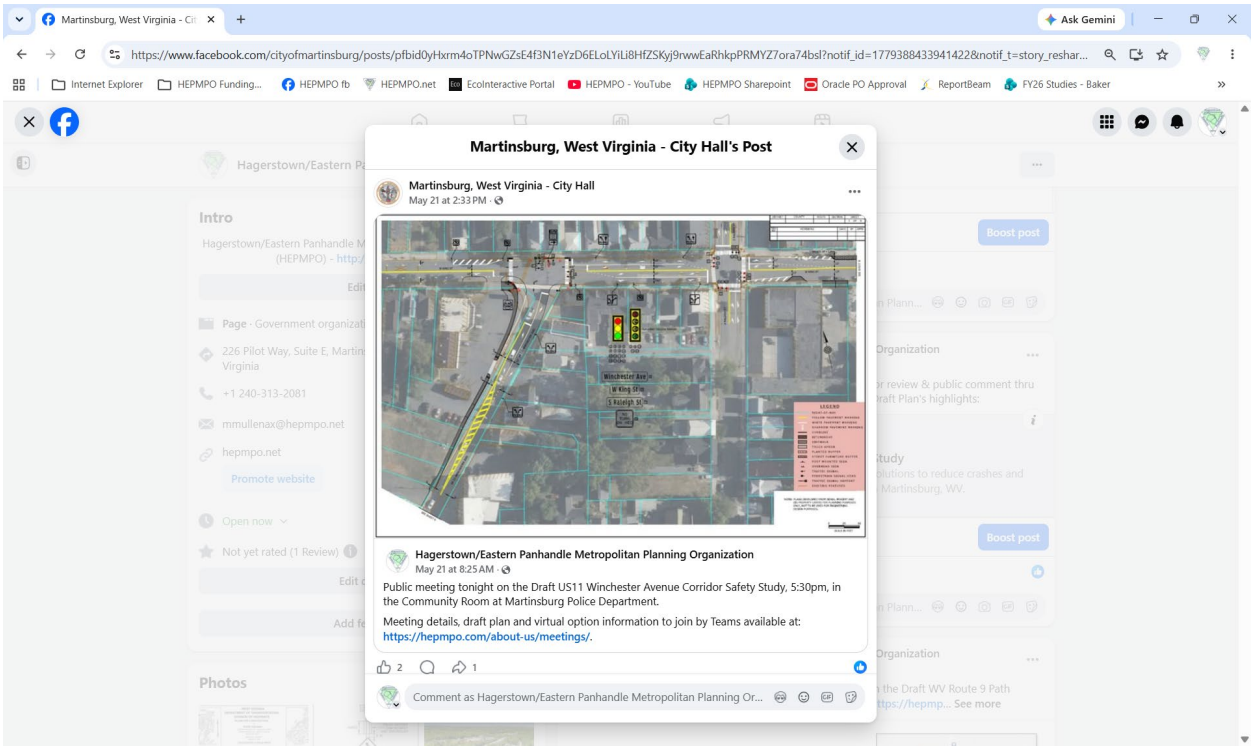
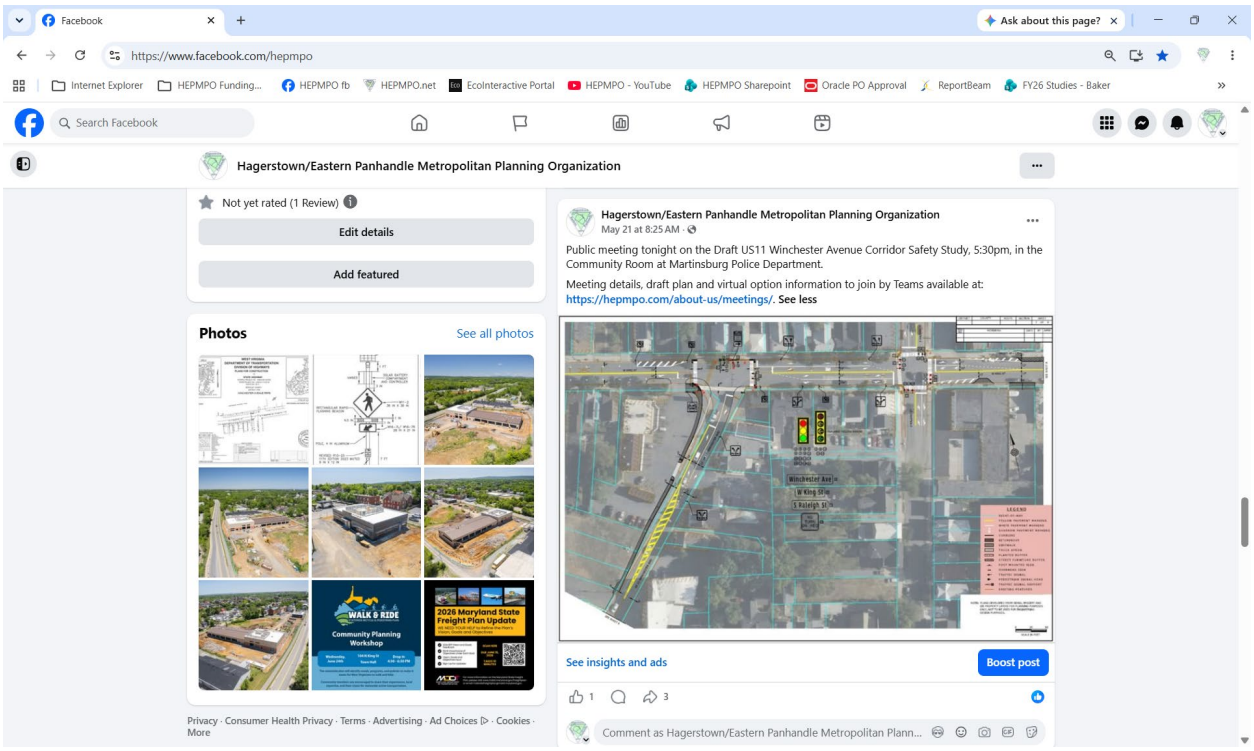

Martinsburg, West Virginia - City Hall's Post
Martinsburg, West Virginia - City Hall
May 21 at 2:33 PM
Hagerstown/Eastern Panhandle Metropolitan Planning Organization
May 21 at 8:25 AM
Public meeting tonight on the Draft US11 Winchester Avenue Corridor Safety Study, 5:30pm, in the Community Room at Martinsburg Police Department.
Meeting details, draft plan and virtual option information to join by Teams available at:
https://hepmpo.com/about-us/meetings/.
Comment as Hagerstown/Eastern Panhandle Metropolitan Planning Or...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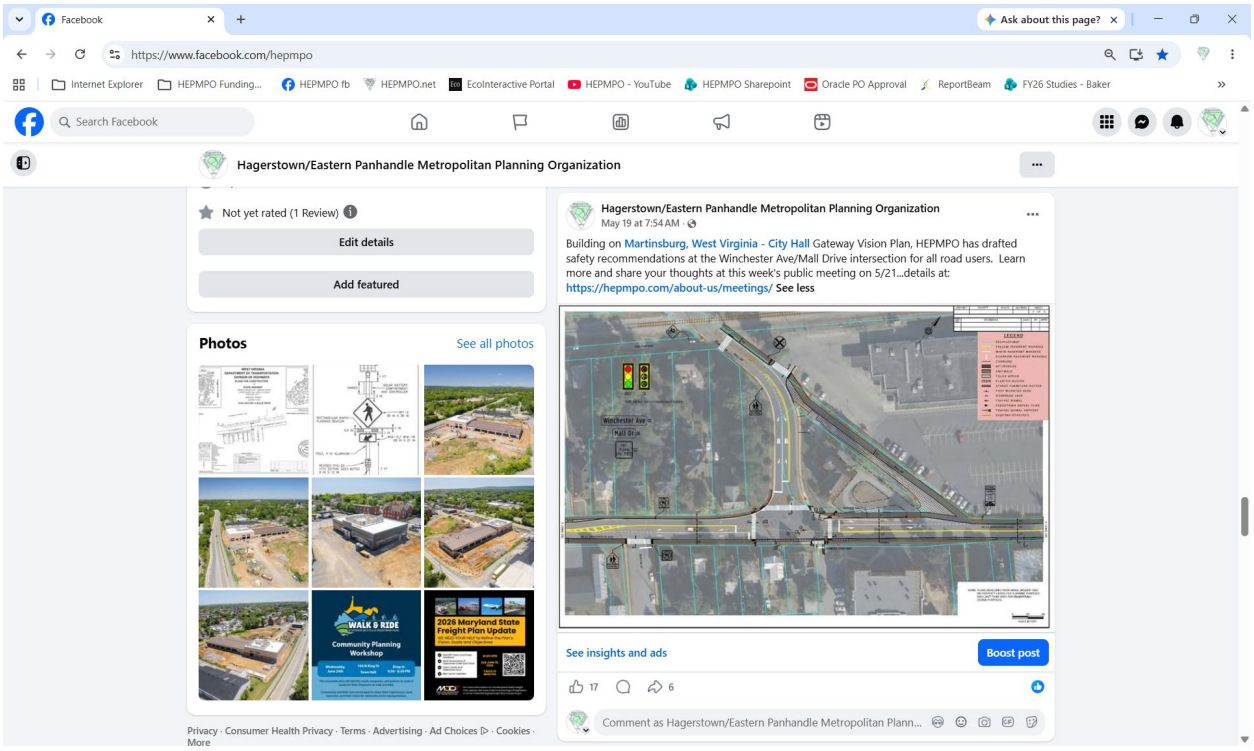
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May 19 at 7:54 AM
Building on Martinsburg, West Virginia - City Hall Gateway Vision Plan, HEPMPO has drafted safety recommendations at the Winchester Ave/Mall Drive intersection for all road users. Learn more and share your thoughts at this week's public meeting on 5/21...details at: https://hepmpo.com/about-us/meetings/ See less
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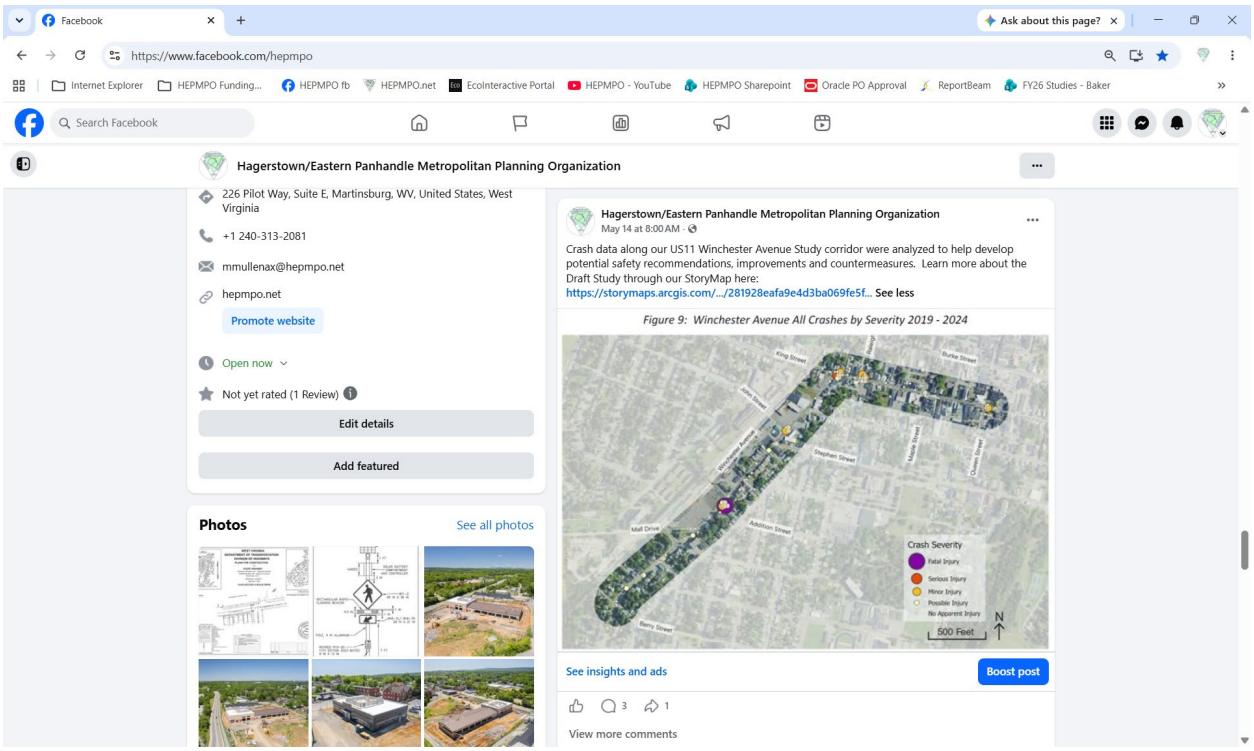
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Hagerstown/Eastern Panhandle Metropolitan Planning Organization
May 14 at 8:00 AM
Crash data along our US11 Winchester Avenue Study corridor were analyzed to help develop potential safety recommendations, improvements and countermeasures. Learn more about the Draft Study through our StoryMap here:
https://storymaps.arcgis.com/.../281928eafa9e4d3ba069fe5f... See less
Figure 9: Winchester Avenue All Crashes by Severity 2019 - 2024
Crash Severity
Fatal Injury
Serious Injury
Minor Injury
Possible Injury
No Apparent Injury
500 Feet
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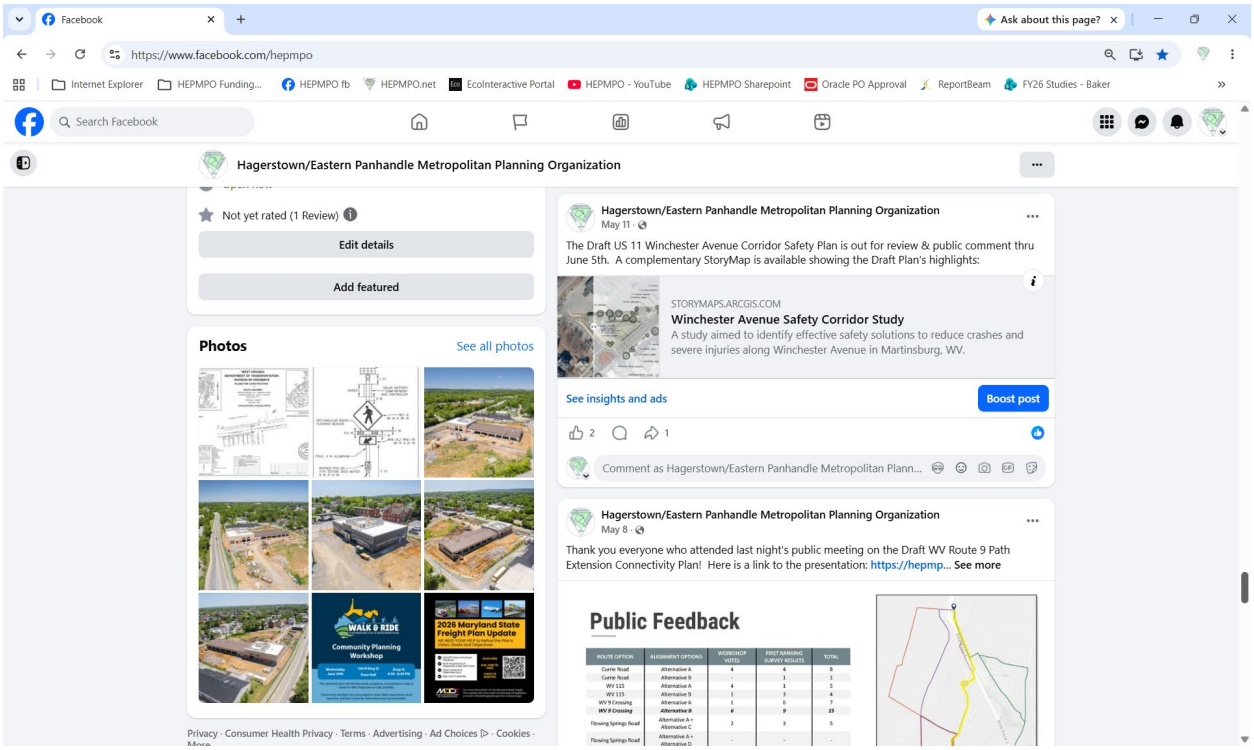
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May 11
The Draft US 11 Winchester Avenue Corridor Safety Plan is out for review & public comment thru June 5th. A complementary StoryMap is available showing the Draft Plan's highlights:
STORYMAPS.ARCGIS.COM
Winchester Avenue Safety Corridor Study
A study aimed to identify effective safety solutions to reduce crashes and severe injuries along Winchester Avenue in Martinsburg, WV.
See insights and ads
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Comment as Hagerstown/Eastern Panhandle Metropolitan Plann...
Hagerstown/Eastern Panhandle Metropolitan Planning Organization
May 8
Thank you everyone who attended last night's public meeting on the Draft WV Route 9 Path Extension Connectivity Plan! Here is a link to the presentation: https://hepmp... See more
Public Feedback
WALK & RIDE
Community Planning Workshop
2026 Maryland State Freight Plan Update
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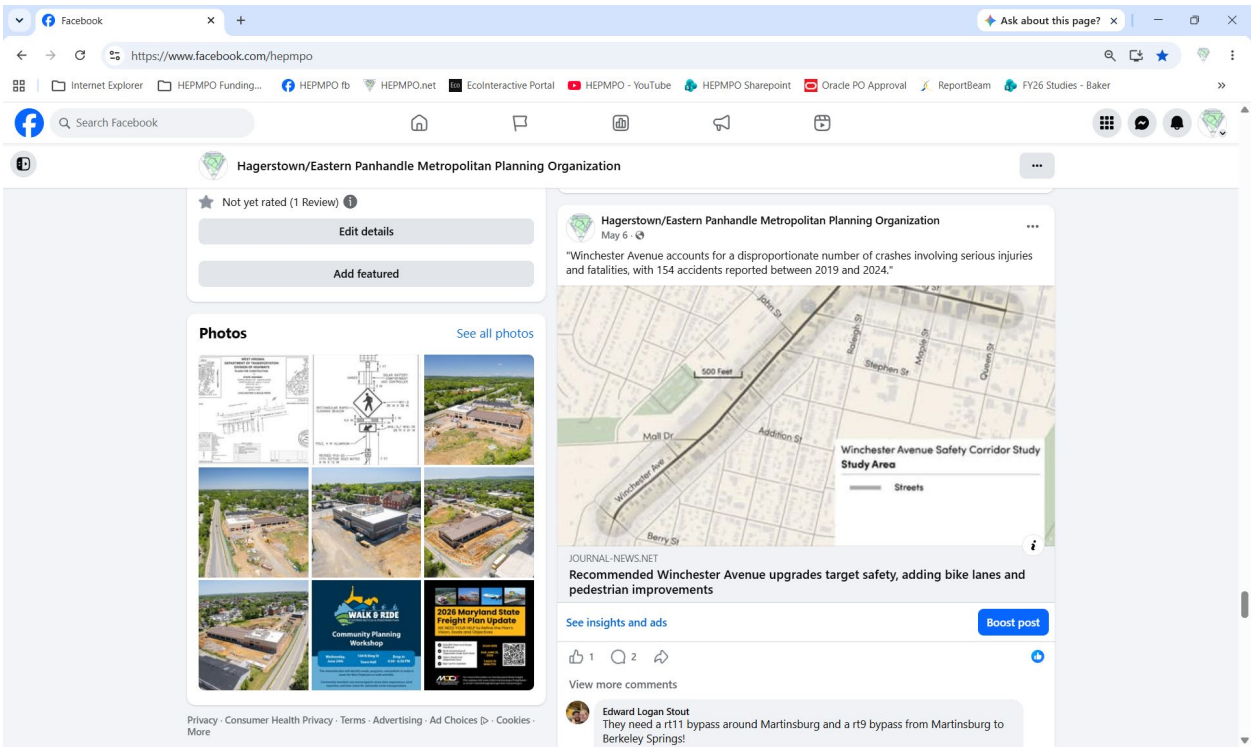
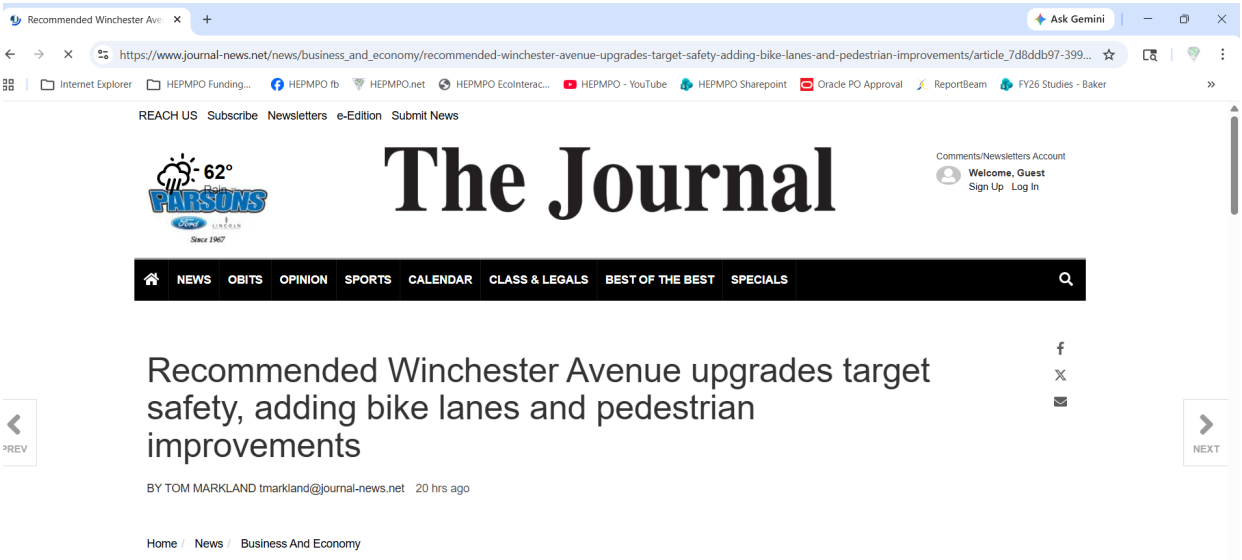
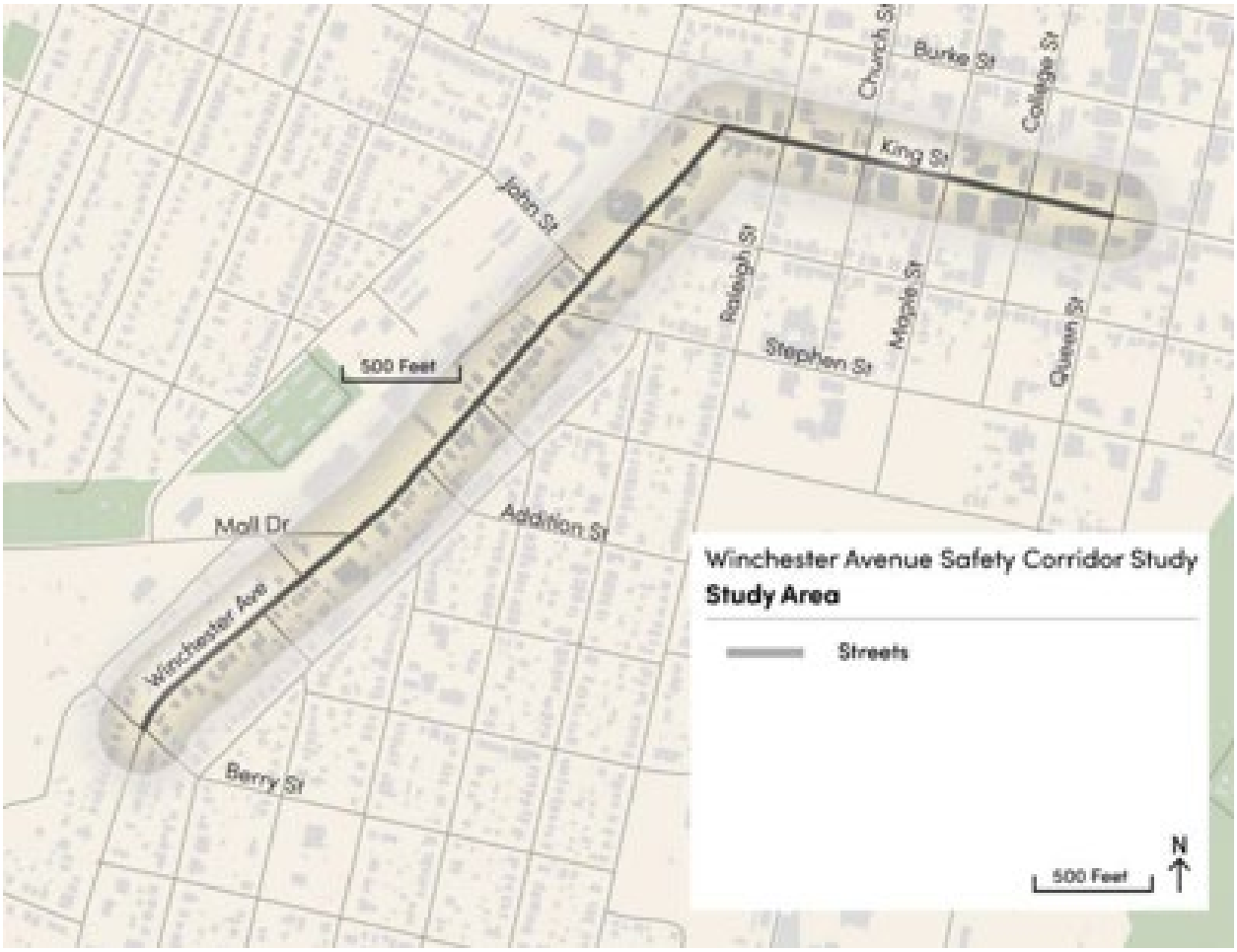


News Articles

https://www.journal-news.net/news/business_and_economy/recommended-winchester-avenue-upgrades-target-safety-adding-bike-lanes-and-pedestrian-improvements/article_7d8ddb97-399f-54f1-9e7d-6dff26a1b19b.html.





Winchester Avenue

MARTINSBURG - A draft transportation study identifies Winchester Avenue, specifically the portion running through downtown Martinsburg, as one of the most dangerous roadways in the region and outlines a series of proposed improvements aimed at reducing crashes and improving traffic flow.

According to the draft, Winchester Avenue accounts for a disproportionate number of crashes involving serious injuries and fatalities, with 154 accidents reported between 2019 and 2024. The roadway also presents risks for pedestrians and cyclists particularly in areas with heavy traffic.

Planners point to several contributing factors, including congestion, closely spaced intersections and numerous driveways that create conflict points for turning vehicles. Traffic signal timing and coordination issues also contribute to stop-and-go conditions, which can increase the likelihood of rear-end collisions and other crashes.

To address these concerns, the report outlines a range of potential improvements.

Along the corridor, planners are calling for relocating utility poles and other streetscape elements, including signs, fire hydrants and decorative lighting, where they conflict with

proposed improvements. The plan also recommends restriping stop bars and adding high-visibility crosswalks at intersections, along with painted skip lines to better guide drivers through minor street crossings.

A major component of the proposal centers on expanding bicycle infrastructure. The plan calls for adding 6-foot bicycle lanes with 3-foot painted buffers on both sides of Winchester Avenue between Bowers Street and Berry Street. Officials also recommend installing bicycle lane signage and pavement markings to clearly define the lanes.

Significant curb reconstruction and sidewalk upgrades are also outlined. The plan proposes rebuilding curbs along both sides of Winchester Avenue between Berry Street and West John Street, creating consistent 11-foot travel lanes. As part of that effort, curbside parking would be eliminated between Bowers Street and Mall Drive.

On the southern side of the roadway, planners recommend constructing an 8- to 12-foot multi-use path between Berry Street and Mall Drive, along with rebuilding sidewalks and adding planted buffer zones between Mall Drive and West John Street.

On the northern side, the proposal includes reconstructing sidewalks and installing landscaped buffer areas along multiple segments, as well as adding an 8 to 10-foot multi-use path between Mall Drive and Maiden Avenue.

The draft remains open for public comment and will help guide future transportation investments along the Winchester Avenue corridor. It will remain open until June 5. One hybrid public meeting on the DRAFT Plan will be held from 5:30-6:30pm on May 21 in the Martinsburg Police Department Community Room.

Public Meeting Sign-in

HEPMPO Long Range Transportation Plan

Public Meeting Sign-in

Location Winchester Ave. Martinsburg Date 5-21-26

Name	Email	Organization
Ken Clohan	Kenneth.l.clohan@wv.gov	WV Div. of Highways
Mark Thompson	mat1066wv@gmail.com	MRB Shade Tree Commission
Susanna Henderson	shenderson@region9wv.com	Region 9
JAMES BRIGHT	james.bright@comcast.net	neighbor
Qasim Shadahan	qasimshadahan@gmail.com	"
DAVID HARBERG	DAVIDHARBERG@GMAIL.COM	CITY COUNCIL
Lane Tobin	ltobin@ceginc.com	Civil & Environmental Consultants