

**ROUTE 55 / US 48 (JOHN MARSHALL HIGHWAY)  
CORRIDOR STUDY**

**NOVEMBER 2025**



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# 1 EXECUTIVE SUMMARY

This study was initiated at the request of the office of Senator Timmy French on April 11, 2025, to “identify any existing safety or operational issues” along Virginia State Route 55 (US Route 48, John Marshall Highway) in the Staunton District with “insights into the contributing factors behind any safety or operational concerns along Route 55, especially how programmed projects in West Virginia may impact traffic flow, operations, or safety conditions within Virginia.” A copy of the letter can be found in **Appendix A**. The study approach is based on FHWA’s Roadway Safety Assessment process. This report includes crash analysis, traffic forecasting, and operational analysis from the West Virginia state line to the I-81 interchange.

The study area consists of an approximately 14.4-mile section of Route 55 / US 48 from the West Virginia state line (western study limit) to the I-81 interchange (eastern study limit). The posted speed limit on the corridor is 55 miles per hour (mph) with advisory speed signs between 25 and 45 mph within curved segments. There are no signalized intersections or roundabouts within the corridor; Route 55 / US 48 is uncontrolled and intersecting side streets are controlled by stop signs. Six (6) unsignalized intersections were evaluated as part of this study, including the ramps associated with the I-81 interchange. Along the corridor is a mix of residential and agricultural development land uses with commercial and industrial developments located near the interchange with I-81. The existing operations show level of service (LOS) conditions of B or better, with drivers experiencing free-flow conditions on the mainline and minimal delay on the stop-controlled approaches.

During the five-year analysis period of 2020-2024, there were 164 total crashes (averaging approximately 33 crashes per year) reported along the corridor, including two (2) fatal, fourteen (14) severe injury, and 32 visible injury crashes. The majority of the crashes were property damage only (71%). The predominant collision types were angle crashes and fixed object-off road incidents, followed by rear end crashes.

Any operational or safety mitigation measures suggested in this study are planning-level and based on aerial imagery. More detailed design would be required to implement any improvements. Conceptual design has been focused on proposed improvements for Route 55 / US 48 and adjacent intersecting roadways, but detailed design was not completed.

Notable areas along the corridor, as identified by crash trends and VDOT *Potential for Safety Improvement* (PSI) designation:

- Hot Spot Section MP 0.5-0.81 (Curve section one-half-mile from West Virginia State line near Paddy’s Cove Lane)
- Hot Spot Section MP 4.5-4.75 (Curve section between Tannery Hills Lane and Pifer Road)
- PSI RD Section at MP 5.45 – MP 6.86 (Multiple curve section between Star Tannery Road and Mile Ridge Estates, east intersection)
- PSI Intersection at MP 10.25 - Route 628 (Middle Road)

- PSI Intersection MP 11.92 - Route 623 (Back Road) / PSI RD Section MP 11.24 – MP 11.92 (Section between Cottontown Road and Back Road)
- PSI Intersection at MP 14.24 – I-81, Exit 286B SB ramp
- Hot Spot Intersection MP 14.44 I-81 NB Ramp

Maintenance-level improvements, such as replacing damaged/worn signs or pavement markings, are excluded from this study and therefore not provided in this report.

In addition, Route 55 / US 48 is identified as part of *Corridor H*, a planned but incomplete 157-mile component of the Appalachian Development Highway System, which would connect I-79 in Weston, West Virginia to I-81 in Virginia. West Virginia has been widening its portion of the corridor since the 1970s. West Virginia Department of Highways' (WVDOH) National Environmental Policy Act (NEPA) process is complete for the 5.5-mile widening project from the Town of Wardensville to the West Virginia state line, representing the final eastern section to be widened in West Virginia, with the first of four contracts expected to be advertised in early 2026, and an anticipated completion date of 2033. Virginia's Commonwealth Transportation Board (CTB) selected a location for *Corridor H* within Virginia in 1993 but rescinded its support two years later following significant public disapproval.

VDOT conducted a sensitivity analysis for the study corridor to determine operational impacts which may result from improvements along West Virginia's *Corridor H*. The analysis shows that conditions should remain acceptable through 2102, even when considering a conservative 3% growth rate, which is higher than the 1.43% growth rate stated in WVDOH's *Corridor H Supplemental Environmental Impact Statement*.

Traffic forecasting was conducted using a study planning forecast year of 2047 for the Route 55 / US 48 corridor. For the Route 55 / US 48 Corridor west of the I-81 interchange, an overall background Average Annual Growth Rate (AAGR) of 2.4% was applied based on the 10-year, field-count-only, historical data from VDOT's Pathways for Planning website. This 2.4% overall growth rate was applied to the study corridor's existing year volumes to obtain future year volumes.

Review of the corridor identified targeted opportunities for safety improvements, including low-cost, short-term actions, such as improved signage, as well as mid-term solutions, such as turn lanes or intersection geometry improvements. Operationally, conditions on the corridor were found to be acceptable and should remain so through 2102. Even when considering additional traffic driven by construction of West Virginia's *Corridor H*, it would take significant growth to reach volumes that would necessitate corridor-wide operational improvements. Therefore, no operational recommendations are needed or proposed at this time.

## 2 INTRODUCTION

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### 2.1 Purpose / Background

Virginia State Route 55 / US Route 48 (John Marshall Highway) between the West Virginia state line and the I-81 interchange, located in Frederick County and Shenandoah County, Virginia, is a modestly traveled corridor for local traffic and a connector for I-81. This study was initiated at the request of the office of Senator Timmy French on April 11, 2025, to “identify any existing safety or operational issues” along Route 55 / US Route 48 in the Staunton District and to provide “insights into the contributing factors behind any safety or operational concerns along Route 55, especially how programmed projects in West Virginia may impact traffic flow, operations, or safety conditions within Virginia.” This report includes a crash and operational analysis for the entire corridor from the West Virginia state line to the I-81 interchange.

While the West Virginia Department of Highways plans to fully construct *Corridor H*, there are no current plans to do so in Virginia. The purpose of this study is to evaluate the existing operational and safety conditions of the Route 55 / US 48 corridor, forecast future demand, and assess the potential impact of the *Corridor H* widening of Route 48 to the west of the study area in West Virginia. Existing conditions along the study corridor, a review of historical crash data and potential safety concerns, volume development and traffic forecasting methodology, and general measures to mitigate safety and operational challenges are discussed below.

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### 2.2 Study Area

The western study section of Route 55 / US 48 is located in Frederick County, north of the unincorporated community of Star Tannery, while the eastern section of Route 55 / US 48 is located in Shenandoah County, north of the Town of Strasburg (**Figure 1**). The study area consists of 14.4 miles of roadway stretching from the West Virginia state line on the west and the I-81 NB interchange ramp on the east. Within the study limits, Route 55 / US 48 is a two-lane undivided roadway (one lane in each direction) and classified by VDOT as *Other Principal Arterial*. The posted speed limit on Route 55 / US 48 is 55 mph, with varying speed advisory signs ranging between 25 and 45 mph. The land use within the study area is mostly residential and agricultural with some scattered areas of commercial and industrial development.

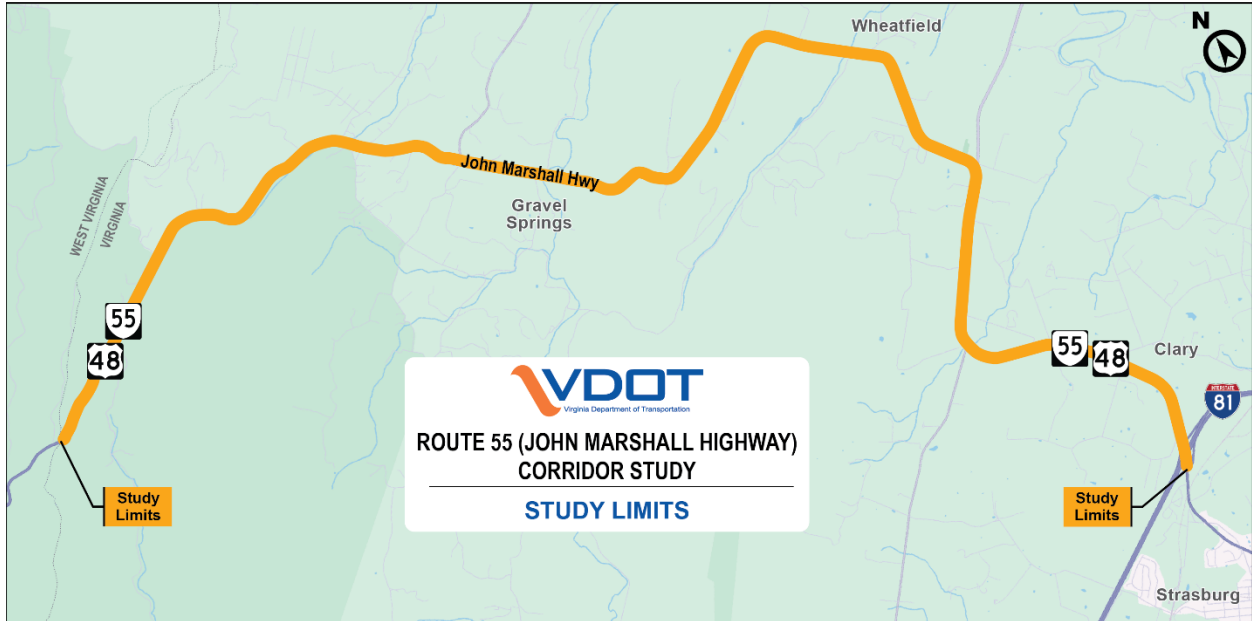


Figure 1: Study Limits

### 3 EXISTING CONDITIONS

#### 3.1 Existing Roadway Network

According to VDOT’s Pathways for Planning (P4P) website, the 2023 annual average daily traffic volume (AADT) along Route 55 / US 48 varies between 3,172 vehicles per day (vpd) at the western end of the corridor and 7,252 vpd at the eastern end of the corridor. Even with the continued development *Corridor H* in West Virginia, these volumes have remained stable over the last five years. Route 55 / US 48 is uncontrolled and intersecting side streets are controlled by stop signs. Six (6) unsignalized intersections were evaluated as part of this study including the two (2) unsignalized stop-controlled ramps at the I-81 interchange. Study intersections were selected upon consideration of PSI (Potential for Safety Improvement) rating, crash history, and expected volumes. The six (6) intersections studied along Route 55 / US 48 from west to east are shown in **Figure 2** and include the following locations:

1. Route 55 / US 48 at Post Office Road (Route 785) (Unsignalized)
2. MP 10.25 - Route 55 / US 48 at Middle Road (Route 628) (Unsignalized)
3. Route 55 / US 48 at Hockman Road (Unsignalized)
4. MP 11.92 - Route 55 / US 48 at Back Road (Route 623) (Unsignalized)
5. Route 55 / US 48 at I-81 SB Ramps (Unsignalized)
6. Route 55 / US 48 at I-81 NB Ramps (Unsignalized)

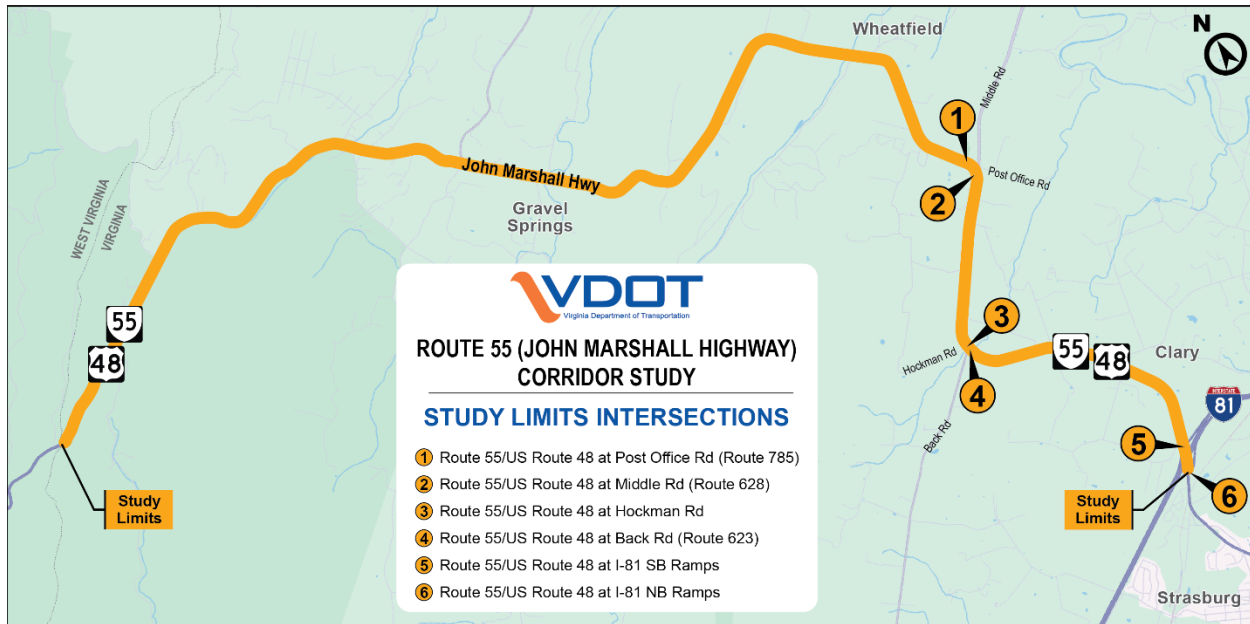


Figure 2: Study Intersections

### 3.2 Intersection Details and Field Observations

The following is a summary of traffic observations at the study intersections, conducted in June 2025. Additional details, including traffic volumes and crash analyses, are provided in subsequent sections of this report.

#### 3.2.1 Route 55 / US 48 at Post Office Road (Route 785)

The intersection at Route 55 / US 48 and Post Office Road (Route 785) is a Y-intersection with yield control along Post Office Road. Post Office Road has no pavement markings between Route 55 / US 48 and Middle Road and provides exclusive access between southbound Middle Road and eastbound Route 55 / US 48 towards Back Road. It also permits access to Middle Road from both westbound and eastbound Route 55 / US 48, however the road is aligned at an acute angle with Route 55 / US 48, as shown in **Photo 1**. There are no left- or right-turn lanes along Route 55 / US 48.



Photo 1: Post Office Road (Route 785) and Route 55 / US 48, Looking East (towards Back Road)

### 3.2.2 Route 55 / US 48 at Middle Road (Route 628)

The intersection of Route 55 / US 48 and Middle Road is a stop-controlled three-legged intersection. There are no left- or right-turn lanes along Route 55 / US 48. There are centerlines but no edge line on Middle Road. Due to severe sight distance limitations, there are two turn prohibitions at this intersection, including prohibition of southbound right movements from Middle Road onto Route 55 / US 48 WB and a left-turn prohibition of eastbound left movements from Route 55 / US 48 EB onto Middle Road. There is an uphill slope for southbound vehicles at the stop-controlled southbound movement on Middle Road and a country store and parking lot within the first 100 feet of the southbound Middle Road approach, as shown in **Photo 2**.



Photo 2: Middle Road (Route 628) SB Approach Towards Route 55 / US 48

### 3.2.3 Route 55 / US 48 at Hockman Road

The intersection of Route 55 / US 48 and Hockman Road is a stop-controlled three-legged intersection along a curved section of Route 55 / US 48. There are no left- or right-turn lanes along Route 55 / US 48. Hockman Road is paved for approximately 50 feet and then becomes a gravel roadway with guardrail, stretching approximately 100 feet into Hockman Road. Hockman Road provides access to the surrounding residential and agricultural areas before eventually becoming Cottontown Road. See **Photo 3**.

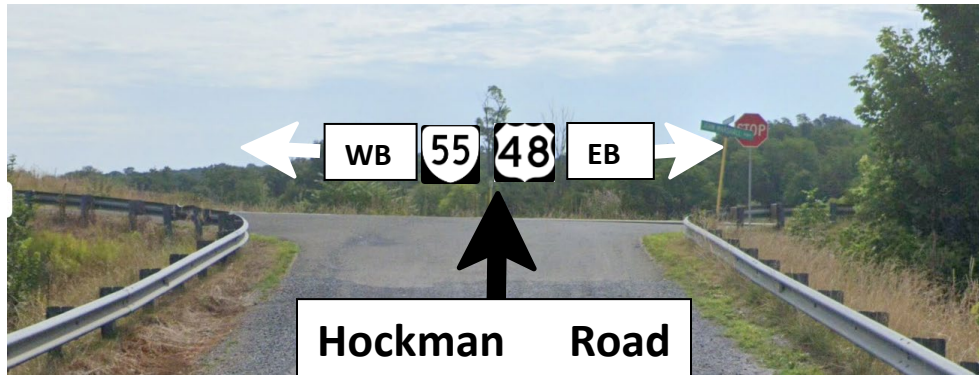


Photo 3: Hockman Road EB approach towards Route 55 / US 48

### 3.2.4 Route 55 / US 48 at Back Road (Route 623)

The intersection of Route 55 / US 48 and Back Road is approximately 150 feet east of Hockman Road and is a stop-controlled, three-legged intersection along a curved section of Route 55 / US 48. There are no left- or right-turn lanes along Route 55 / US 48. Back Road is a two-way, two-lane roadway with centerline and has a wide shoulder adjacent to a utility box within the first 100 feet of Back Road. Back Road connects agricultural and residential areas to Route 55 / US 48. See **Photo 4**.

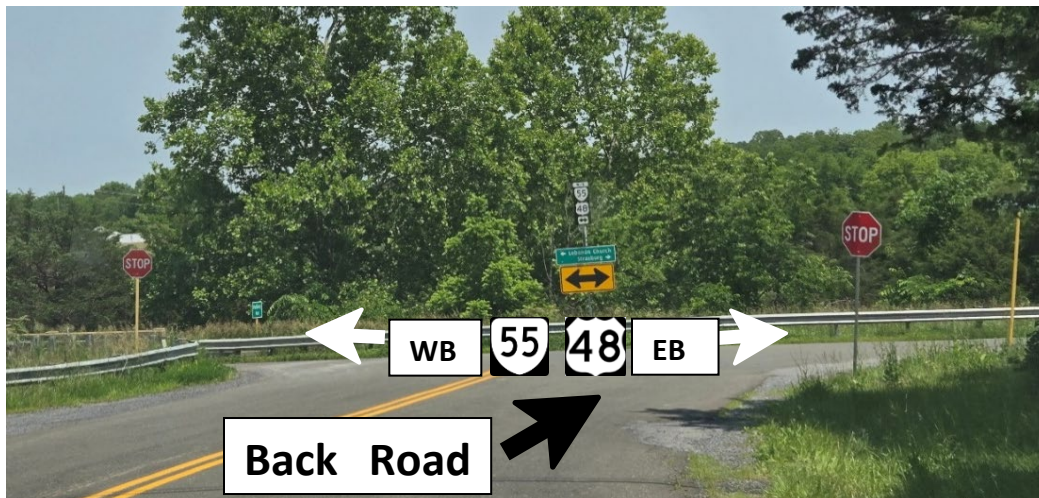


Photo 4: Back Road (Route 623) NB Approach Towards Route 55 / US 48

### 3.2.5 Route 55 / US 48 at I-81 Interchange

Route 55 / US 48 at the I-81 interchange is part of the diamond interchange facilitating movements between I-81 and Route 55 / US 48. In the eastbound direction of Route 55 / US 48, the interchange provides access to the Town of Strasburg. The single lane off-ramp splits into separated right-turn and left-through movements with two separate stop bars and stop signs at the intersection with Route 55 / US 48. There is an approximately 85' wide gap between stop bars, with no pavement markings guiding drivers along the approximately 125' between the single lane ramp and the stop bars. There is a complex pavement marking / island area at the I-81 SB on-/off-ramp section with multiple openings as shown and described in **Photos 5** and **6**:

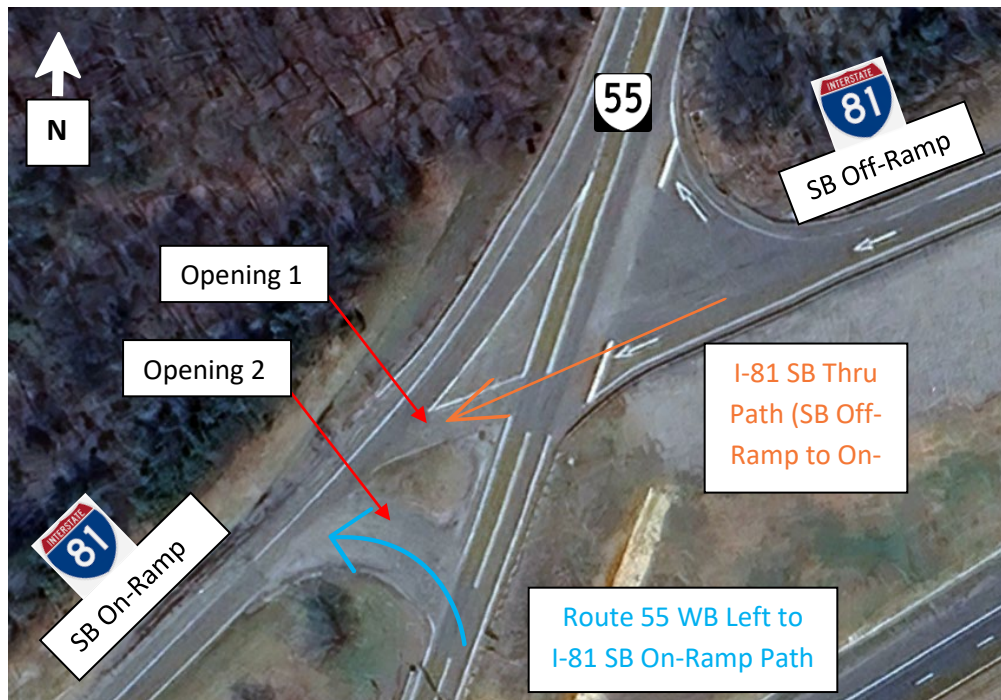


Photo 5: I-81 SB Ramps and Route 55 / US 48

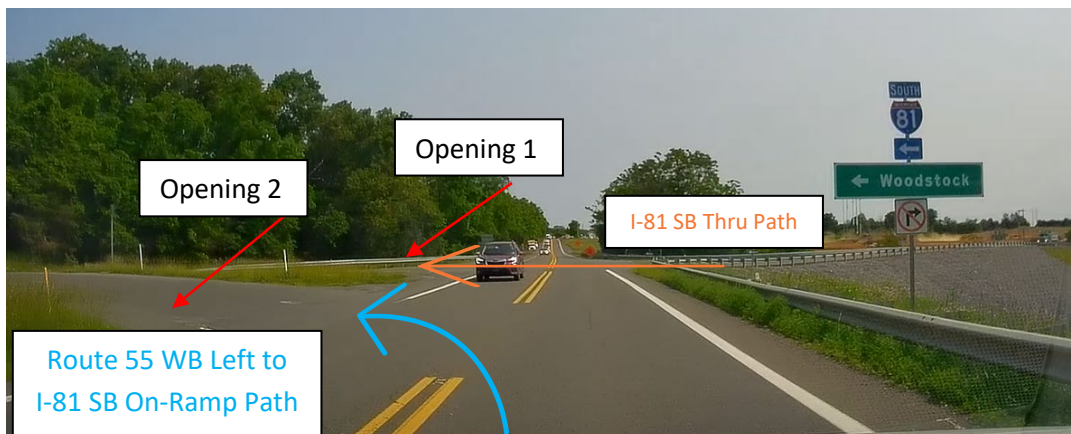


Photo 6: I-81 SB On-/Off-Ramp Section

### 3.2.6 Route 55 / US 48 at I-81 NB Interchange

Route 55 / US 48 at I-81 interchange is part of the diamond interchange facilitating movements between I-81 and Route 55 / US 48. The intersections on the ramps are unsignalized with dual stop signs at the NB on-ramp. See **Photo 7**.

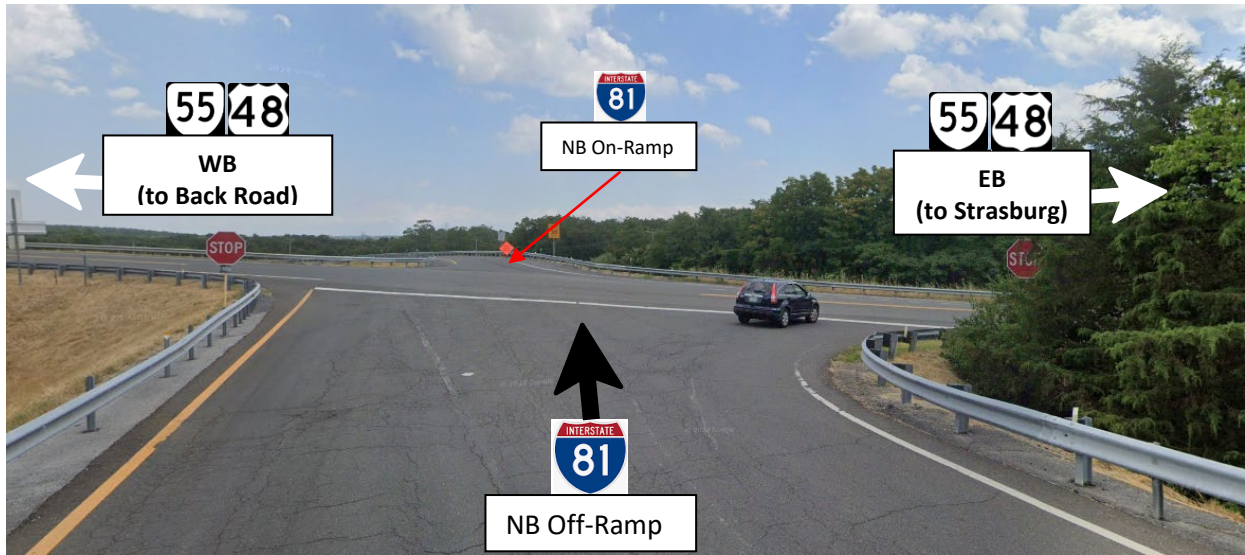


Photo 7: I-81 NB Off-Ramp Approach at Route 55/ US 48

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## 3.3 Traffic Data Collection

### 3.3.1 Traffic Data Collection

Four-hour (7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM) turning movement counts (TMC) were collected on May 20, 2025, at the six study intersections shown in **Figure 3**. The data was collected on a typical weekday (Tuesday) while schools were in session under acceptable weather conditions. In addition, forty-eight (48) hour traffic volumes were collected at the following locations:

- Route 55 / US 48 south of Clary Road
- Route 55 / US 48 north of Williams Lane
- Route 55 / US 48 north of Star Tannery Road
- Route 55 / US 48 north of Capon Springs Grade

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## 3.4 Existing Traffic Volumes

### 3.4.1 Existing Traffic Volumes

Existing traffic volumes were based on the 48-hour continuous count data and the 4-hour TMC data. Systemwide AM and PM peak hours were identified as 7:15 AM to 8:15 AM and 4:30 PM to 5:30 PM, respectively. The systemwide peak hour represents the highest traffic volume within the study area. **Figure 3** presents AM and PM peak hour intersection TMC data for the Route 55 / US 48 study area.

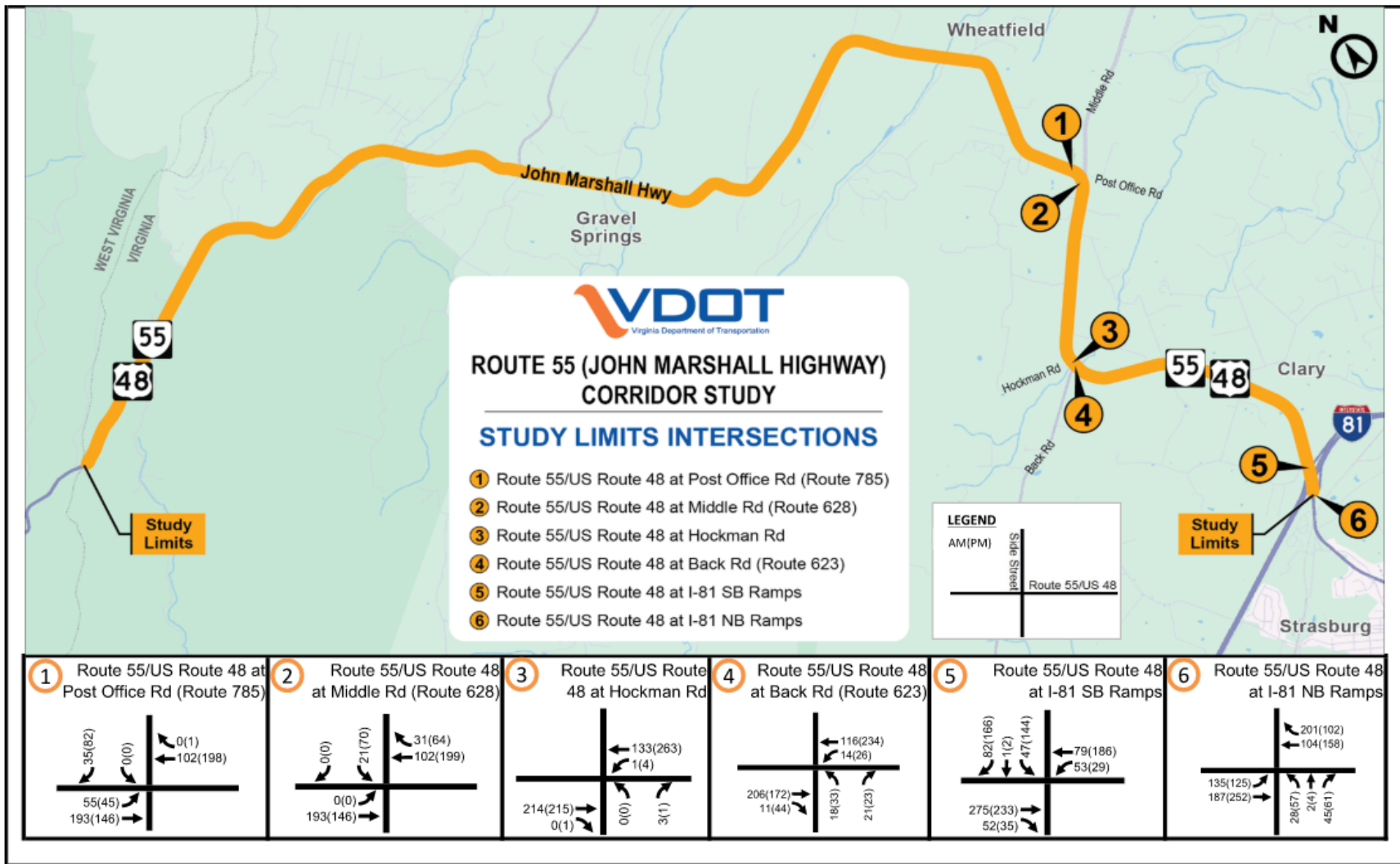


Figure 3: Existing AM & (PM) Peak Hour Traffic Volumes

## 4 FORECASTING AND GROWTH RATE DEVELOPMENT

### 4.1 Mainline Growth Rate Development and Recommendation

An assessment of future growth along the corridor was conducted to support sensitivity analyses. These analyses will assist in determining the corridor’s potential to maintain satisfactory operations should WVDOH’s development of *Corridor H* or general growth factors continue to increase travel demand in the future. The forecasting analysis was conducted to approximate the future growth rate and provide a baseline for the sensitivity analysis. The sensitivity analysis is detailed in **Section 7**.

Traffic Forecasting was conducted with a target future year of 2047 for the Route 55 / US 48 corridor (Opening Year 2027 + 20). For the Route 55 / US 48 Corridor west of the I-81 ramp sections, an overall background Average Annual Growth Rate (AAGR) of 2.40% was applied based on the 10-year, Field Count only, historical data from VDOT’s Pathways for Planning website. Using the compiled data, an overall growth rate was applied to the study corridor through the existing year volumes to obtain the future year volumes. **Table 1** shows the Pathways for Planning historical growth rate data as well as the weighted average of 2.40%.

**Table 1: Pathways for Planning Historical Growth Rates – Route 55 / US 48 Main Corridor**

MP Start	MP End	Distance (miles)	Growth Rate - 10 year (2014-2023) %
0.77	4.83	4.06	2.65
4.83	5.53	0.7	2.43
5.53	10.43	4.9	2.59
10.43	14.23	3.8	1.9
Corridor Growth Rate (Weighted Avg.)			2.40

As a comparison, the 2025 *West Virginia Corridor H Supplemental Environmental Impact Assessment* looked at 2022 *Corridor H* Opening Year Volumes and 2042 Design Year volumes along Route 55 / US 48 and applied an annual growth rate of 1.43%. The growth rate of 2.4% along the Route 55 / US 48 mainline corridor applied in this study provides a more conservative growth rate based on historical trends along the corridor.

### 4.2 I-81 Ramps Growth Rate Development and Recommendation

As the historical growth for Route 55 / US 48 at the I-81 ramps has been much lower than the rest of the corridor, based off the traffic from the town of Strasburg to the east, the growth rate at the ramp

intersections was evaluated for a more appropriate, site-specific percentage. A review of Pathways for Planning Historical Growth rates, as detailed in **Table 8**, showed that the 10-year trend was only 0.62% per year, therefore, at the ramp intersections the growth rate of 1% was applied in the westbound direction, reflecting the lower growth near Strasburg, while maintaining 2.4% in the eastbound direction. **Table 2** shows the Pathways for Planning (P4P) Historical growth rate, and the selected growth rate for the westbound direction at the ramps.

**Table 2: Pathways for Planning Historical Growth Rates – Route 55 / US 48 at I-81 Ramps**

MP Start	MP End	Distance (miles)	Growth Rate - 10 year (2014-2023)
14.23	14.47	0.24	0.62
		WB Growth Rate at Ramps	1.00

## 5 SAFETY AND CRASH ANALYSIS

### 5.1 Overall Corridor

Five-year crash data (January 1, 2020, through December 31, 2024) was obtained from VDOT’s Crash Analysis Tool, used to aggregate data based on a variety of factors that could potentially contribute to crashes. VDOT’s dataset includes all crashes reported from state and local law enforcement agencies to the Virginia Department of Motor Vehicles (DMV). Factors investigated include crash location, severity, roadway alignment, crash type, time of day, roadway condition, weather, and other potential contributors that were recorded from the official FR-300 Police Report. Detailed crash reports, including the FR-300 Police Report data including crash descriptions and collision diagrams were also obtained as needed to clarify details of the crashes along the corridor. The crash data was evaluated to identify crash patterns and possible contributing factors for crashes and to assess whether safety concerns exist. A summary of the crash data and analysis is presented below.

#### 5.1.1 Crashes by Year

A total of 164 crashes occurred along Route 55 / US 48 between West Virginia state line and the I-81 Interchange from January 1, 2020, through December 31, 2024. The highest number of crashes (38) occurred in 2024, while the fewest (26) occurred in 2020. The average number of crashes per year was 33. **Figure 4** summarizes the crashes by year in the study corridor.

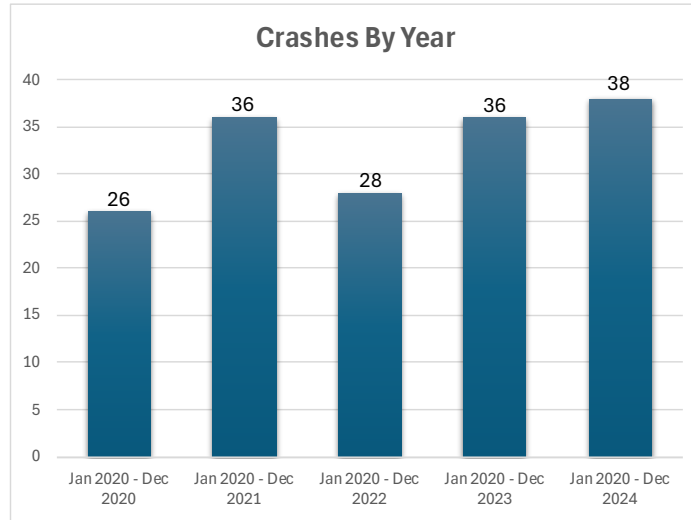


Figure 4: Route 55 / US 48 Crashes by Year

### 5.1.2 Crash Rate

The crash rate for this section of Route 55 / US 48 was calculated for each section of the corridor, divided up by section with different AADT volumes as shown in **Table 3**.

Using VDOT’s PowerBI Crash Summary Book, the crash rate for the comparable facility type of Rural Primary Principal Arterial (Other) in the Staunton District for the same period (2021-2024) was determined to be 107.27 crashes per 100M VMT, and 98.32 crashes per 100M VMT Statewide. Therefore, the crash rate for the majority of the study area is higher than similar facilities in the district and statewide.

Table 3: Crash Rates along Route 55 / US 48

Location	Total Crashes	Length (mi)	DVMT	Crash Rate (crashes per 100M VMT)
MP 0.00- MP 4.81 (State line - S Pifer Rd)	38	4.83	15,268	170.47
MP 4.81-5.53 (Pifer Rd - Star Tannery Rd)	3	0.7	3,198	64.25
MP 5.53-10.43 (Star Tannery Rd - Middle Rd)	53	4.9	30,707	118.22
MP 10.43 - MP 13.25 (Middle Rd - I-81)	70	4.01	30,927	155.03

### 5.1.3 Crashes by Location

Five-year crash density heat maps and crash maps were generated for the study corridor to determine which intersections and/or segments had the greatest density of crashes. **Figure 5** displays a crash heat map of the study area of Route 55 / US 48. Higher frequency crash locations are identified by yellow and

red colors in the figure. As shown on the figure, the highest concentration of crashes along the study corridor occurs at the I-81 interchange with additional “hotspots” which will be reviewed further.

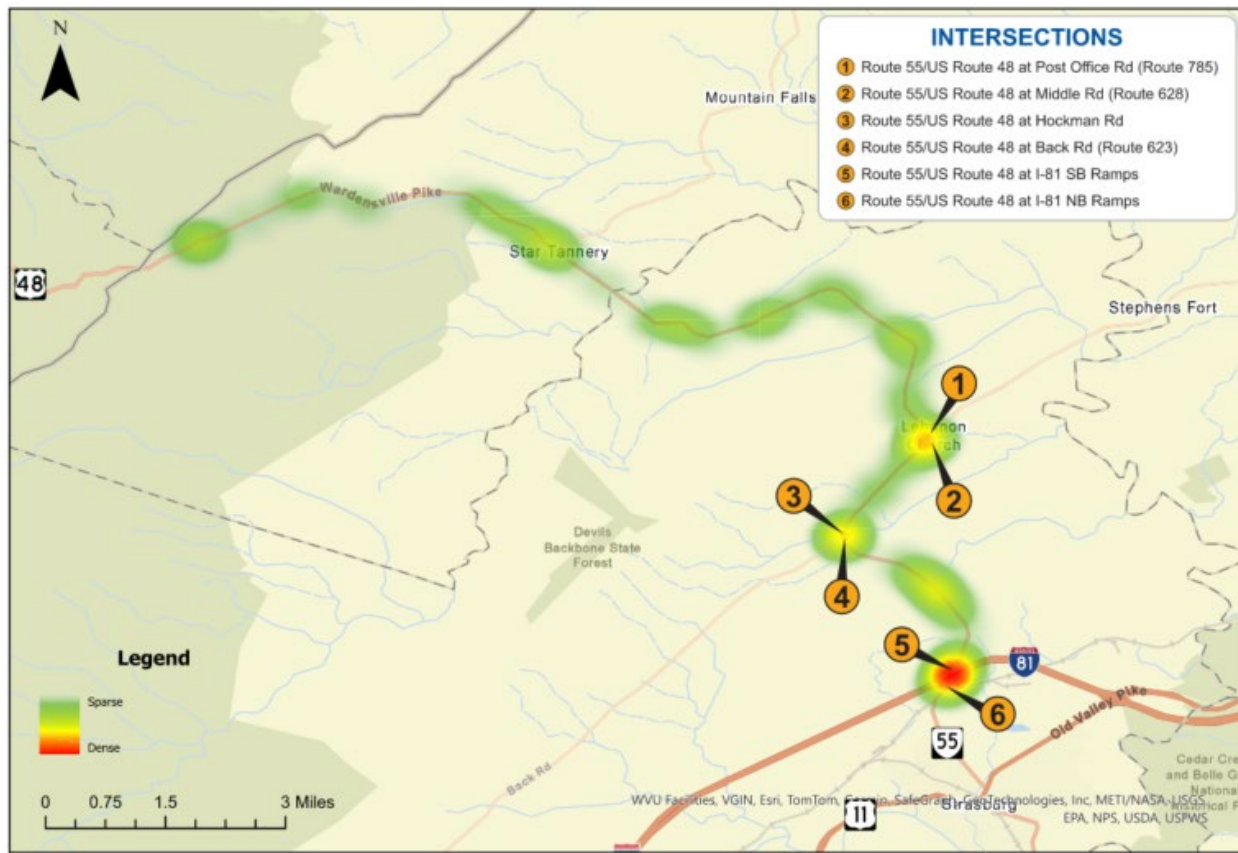


Figure 5: Crash Density Map (All Crashes)

#### 5.1.4 Crashes by Injury Severity

As shown in **Table 4**, the highest percentage of crashes for the Route 55 / US 48 study corridor were Property Damage Only (71%) and Visible Injury (19%) crashes. Within the five-year period there were two (2) fatal crashes along the study corridor. Fourteen (14) severe injury crashes were reported along the corridor. No nonvisible injuries were reported along the study corridor. The combined Fatal + Injury crash total represented 29% of all crashes reported during the study period.

Table 4: Route 55 / US 48 Crashes by Injury Severity

Crash Severity	Quantity	Percentage
K. Fatal Injury	2	1%
A. Severe Injury	14	9%
B. Visible Injury	32	19%
C. Nonvisible Injury	0	0%
PDO. Property Damage Only	116	71%

General contributing factors for crashes overall on the corridor include:

- 33% darkness (road not lighted)
- 20% speed-related
- 9% alcohol-related

### 5.1.5 Crashes by Collision Type

The most common crash collision type was Angle (vehicles hitting at or near right angles, with the front of one vehicle striking the side of the other vehicle) and Fixed Object – Off Road (single-vehicle collision with immovable object, not on roadway) collisions, each accounting for 45 crashes (27%) during the five-year period. The next highest crash types were Rear-end (one vehicle striking the rear of another vehicle) collisions with 27 crashes (17%). **Table 5** summarizes the crashes by collision types along the study corridor.

**Table 5: Route 55 / US 48 Crashes by Collision Type**

Collision Type*	Quantity	Percentage
1. Rear End	27	17%
10. Deer	17	10%
11. Other Animal	2	1%
16. Other	3	2%
2. Angle	45	27%
3. Head On	6	4%
4. Sideswipe - Same Direction	3	2%
5. Sideswipe - Opposite Direction	3	2%
6. Fixed Object in Road	3	2%
8. Non-Collision	10	6%
9. Fixed Object - Off Road	45	27%

\*Collision types excluded if 0 crashes occurred

### 5.1.6 Crashes by Driving Conditions

Crashes were also studied by the lighting conditions and surface conditions. Ninety-nine crashes (60%) occurred during daylight hours, while 54 crashes (33%) occurred at night at locations where there was no lighting along the roadway. Most crashes, 148 (90%), occurred during non-adverse weather conditions while 10 crashes (6%) occurred during rainy weather conditions.

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## 5.2 Potential Safety Improvement (PSI) Areas

### 5.2.1 PSI Intersections and PSI Roadway Departure Sections

VDOT defines *Potential for Safety Improvement* (PSI) as an area with a higher calculated risk of crashes based on crash data and roadway characteristics compared to other facilities with similar characteristics. Specifically, VDOT considers intersections, roadway segments, and roadway departure segments and

compares the five-year reported crash frequencies. Locations with higher-than-predicted numbers of crashes indicate an increased PSI and are ranked within each district to prioritize the safety needs within each region. For the Route 55 / US 48 corridor, there were a total of three PSI intersections and two corridor PSI sections.

Three intersections along this Section of Route 55 / US 48 are identified with the following PSI rankings within the Staunton District:

- MP 10.25 - Route 55 / US 48 and Route 628 (Middle Road): #105
- MP 14.24 - Route 55 / US 48 and the I-81, Exit 296 off-ramp: #124
- MP 11.92 - Route 55 / US 48 and Route 623 (Back Road): #156

This section of Route 55 / US 48 also contains two PSI corridor section locations specifically related to roadway departure crashes, and are listed in the Staunton District with the following rankings:

- Route 55 / US 48 MP 5.45 to 6.86: (multiple curve section between Star Tannery Road and Mile Ridge Estates, east intersection): #106
- Route 55 / US 48 MP 11.24 to 11.92: (section between Cottontown Road and Back Road): #440

### 5.2.2 Corridor Review for Hot Spot Screening

**Figure 6** shows the five-year crashes along the corridor, broken up by quarter-mile sections. Each quarter-mile section is shown in red if the section includes either a *Potential for Safety Improvements* (PSI) Segment and/or a PSI Intersection as identified by VDOT, where PSI Segments may span several quarter-mile sections. In addition to reviewing PSI locations for potential safety concerns, this study considered the five-year data to determine additional locations with concentrations of crashes and identified them as “Hot Spots”, which are shown in orange.

The Hot Spot locations identified are as follows:

- Intersection:
  - Route 55 / US 48 and the I-81, Exit 296 NB ramp
- Sections:
  - Route 55 / US 48 MP 0.5 – 0.81 (Curve section one-half-mile from West Virginia state line near Paddy’s Cove Lane)
  - Route 55 / US 48 MP 4.5 - 4.75 (Curve section between Tannery Hills Lane and Pifer Road)

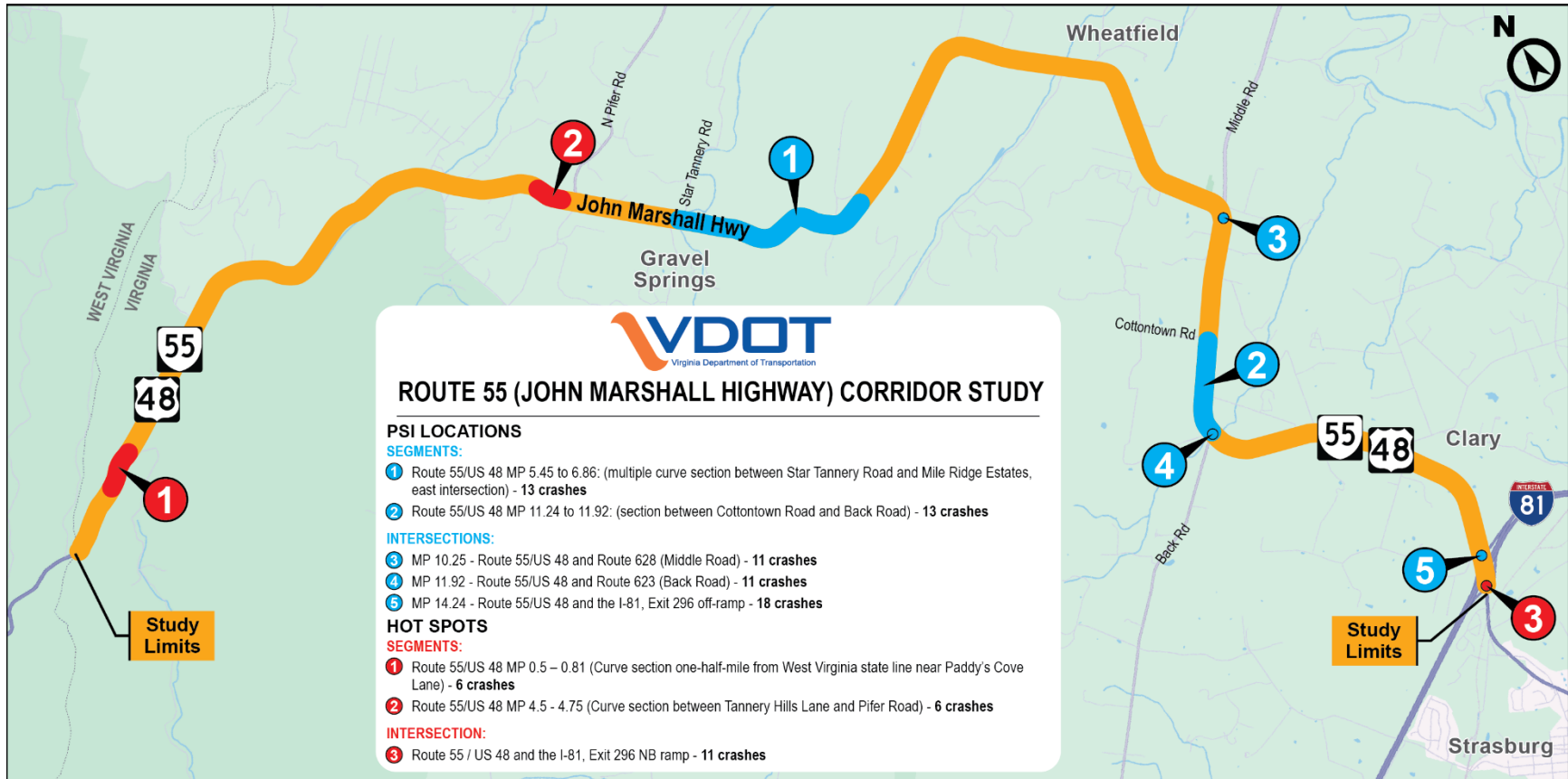


Figure 6: PSI and Hot Spots along Route 55 / US 48

### 5.2.3 Crashes at PSI Intersections

Crashes were reviewed at each PSI Intersection to determine site-specific crash trends.

#### 5.2.3.1 *PSI Intersection at MP 10.25 - Route 628 (Middle Road): #105*

At the intersection of Route 55 / US 48 at Middle Road, of the 11 crashes, Angle was the predominant crash type (55%), followed by Rear End crashes (36%). These crash types are common intersection-related crash types.

Contributing factors included two instances of speeding, one instance of alcohol as a factor, and three instances of darkness. There were five Angle crashes between SB Middle Road left-turns and WB through vehicles which included two (2) crashes at night and one (1) where alcohol was a factor. There were four crashes (one Angle and three Rear End) involving left-turning vehicles or left-turning vehicle queue at the EB direction from Route 55/US 48 to Middle Road, which is a prohibited movement, with one (1) occurring at night. Refer to **Appendix B** for the Collision Diagram and Crash Summary Table at this location.

#### 5.2.3.2 *PSI Intersection at MP 14.24 - I-81, Exit 296 SB off-ramp: #124*

At the intersection of Route 55 / US 48 at the I-81 SB Off-Ramp, Angle was the predominant crash type (56%), followed by Rear End crashes (22%). These crash types are common intersection-related crash types.

At the 1-81 SB Ramp, prominent driver action for fourteen (14) of the eighteen (18) crashes was not yielding to right-of-way or disregarding the stop sign. Four (4) of the ten (10) Angle crashes involved either a young or a senior driver. The two (2) roadway departure crashes were vehicles making the westbound left-turn onto I-81 SB on-ramp who “lost control”. There were no other significant contributing factors noted. Refer to **Appendix B** for the Collision Diagram and Crash Summary Table at this location.

#### 5.2.3.3 *PSI Intersection at MP 11.92 - Route 623 (Back Road): #156*

At Back Road, the most prevalent crash type was Fixed Object – Off Road comprising 55% of all crashes, attributed to the significant curvature of the roadway along the section of Route 55 / US 48. Contributing factors included two instances of speeding, two instances of alcohol as a factor, including the crash resulting in a fatality, three instances involving wet/icy conditions and three instances of darkness. At this T-Intersection, of the six Fixed Object crashes, four vehicles were traveling through the stop-controlled Back Road and proceeded through the intersection. Two of these crashes involved wet/icy roadways, and one (1) crash listed alcohol as a factor; there were no other driver actions or contributing factors for these crashes. Refer to **Appendix B** for the Collision Diagram and Crash Summary Table at this location.

#### 5.2.3.4 *PSI Section at MP 5.45 to 6.86: #106 (Multiple curve section between Star Tannery Road and Mile Ridge Estates east intersection)*

The most common crash type at Section MP 5.45 – MP 6.86, was Fixed Object – Off road with 38% of crashes. Contributing factors for all crash types included two instances of speeding, two instances of

alcohol as a factor, seven instances of darkness, and two instances of wet/icy road conditions. Refer to **Appendix B** for the Collision Diagram and Crash Summary Table at this location.

#### **5.2.3.5 PSI Section at MP 11.24 to 11.92: #440**

At the PSI Section MP 11.24 – MP 11.92, the most common crash type was Fixed Object – Off road with 46% of crashes. Contributing factors included three instances of speeding, one instance of alcohol as a factor, three instances of darkness, and four instances of wet/icy road conditions. The PSI Roadway Departure Section limits of MP 11.24 – 11.92 is immediately adjacent to the 2021 roadway departure crash fatality at MP 11.97 near Back Road. Refer to **Appendix B** for the Collision Diagram and Crash Summary Table at this location.

### **5.2.4 Crashes at Hot Spot Intersections**

Crashes were reviewed at each Hot Spot location to determine site-specific crash trends.

#### **5.2.4.1 Hot Spot Intersection: MP 14.44 I-81, Exit 296 NB Ramp**

At the Hot Spot intersection of Route 55 / US 48 and the stop-controlled I-81 NB on-ramp, the predominant crash type was Angle (45%), followed by Rear End (36%). Contributing factors included one instance of speeding. For all five Angle crashes, driver behavior included not yielding to right-of-way or disregarding a stop sign. Three (3) of the five (5) Angle crashes involved young driver, and two (2) involved large vehicles (Truck with 3 Axles or More). One collision involving a large vehicle was a truck making a wide left-turn maneuver from the right lane of the exit ramp into a northbound through vehicle; the other was a passenger car with a senior driver making a left turn into the large NB through vehicle. There were no other significant contributing factors noted. Refer to **Appendix B** for the Collision Diagram and Crash Summary Table at this location.

#### **5.2.4.2 Hot Spot Section: Route 55 / US 48 MP 0.5 – 0.81**

At the curve in Hot Spot section MP 0.5 – 0.81, seven of eight (88%) crashes were roadway departure type crashes (Head On, Fixed Object, Non-Collision). Contributing factors included three instances of speeding, three instances of alcohol as a factor, three instances of darkness, and one instance of wet road conditions. In addition, there was one (1) Roadway Departure crash as a result of a driver medical issue. At this location with an unprotected edge drop-off, in five (5) of the roadway departure crashes vehicles hit trees on the southeast side of roadway resulting in vehicles rolling over, including one into a steep embankment. Refer to **Appendix B** for the Collision Diagram and Crash Summary Table at this location.

#### **5.2.4.3 Hot Spot Section: Route 55 / US 48 MP 4.5 – 4.75**

At the Hot Spot reverse-curve section of MP 4.5-4.75, five of six crashes (83%) were roadway departure type crashes, all occurring in the eastbound direction along the downhill grade. Contributing factors

included three instances of speeding, one instance of alcohol as a factor, and four instances of darkness. Three (3) collisions involved large vehicles, one with a mechanical brake failure and the other two (2) speeding and failing to maintain control. Refer to **Appendix B** for the Collision Diagram and Crash Summary Table at this location.

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### 5.3 Fatal Crash Review

Two (2) fatal crashes occurred during the 2020 – 2024 study period, and one occurred (1) outside the study period in April 2025.

One of the two fatal crashes that occurred during the study period occurred near the Back Road PSI intersection (MP 11.92):

- MP 11.97 – 300 feet east of Back Road - March 2021 - Fixed Object – Off Road collision which occurred on Tuesday March 9, 2021 at 6:45 pm, in daylight, no adverse weather, where the driver was under the influence of alcohol, traveling SB at 60 MPH and collided into a rock embankment resulting in the fatality of the driver. Refer to **Appendix B** for the Collision Diagram and Crash Summary Table at this location.

The other fatal crash during the study period occurred in neither a PSI nor Hot Spot location at MP 3.94:

- MP 3.94 – Between Bushy Ridge Dr and Brill Road - Head On collision which occurred on Sunday October 27, 2024, at 1:42 pm, in daylight, no adverse weather, involving a driver under the influence of alcohol crossing the centerline WB into an EB vehicle resulting in three (3) fatalities. Refer to **Appendix B** for the Collision Diagram and Crash Summary Table at this location.

In addition, one (1) fatal crash occurred outside the study period as follows:

- MP 12.07 – 0.2 miles east of Back Road - April 2025 (not in study period) road departure collision resulting in a fatality – A three-vehicle collision involved an eastbound vehicle crossing the double solid yellow centerline, sideswiping a westbound car and colliding head-on with another westbound car. The driver of the westbound vehicle involved in the Head On collision was not wearing a seatbelt and was killed in the collision, with distracted driving as the official cause.

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### 5.4 Operational Analysis

Traffic operational analysis for the study intersections along the Route 55 / US 48 corridor was conducted using the *Synchro* (Version 11) tool. As described in VDOT's *Traffic Operations and Safety Analysis Manual* (TOSAM), *Synchro* is a deterministic tool developed by Trafficware, primarily used for analyzing traffic flow, traffic signal progression, and traffic signal timing optimization. *Synchro* can be used to analyze arterials, signalized intersections, and unsignalized intersections. The existing (2025) *Synchro* model for

Route 55 / US 48 was developed using scaled background aerial imagery to match the existing geometry and lane configuration along the study corridor, and basic input parameters (e.g. effective storage lengths, peak hour factors, link speeds etc.) were coded in accordance with TOSAM guidelines.

The measures of effectiveness (MOEs) considered for the Route 55 / US 48 corridor and intersection analyses included *Highway Capacity Manual* (HCM) control delay (seconds per vehicle) and equivalent level of service, which are used to quantify the operational performance of an intersection. **Table 6** summarizes the delay associated with each Level of Service (LOS) category for the unsignalized intersections.

**Table 6: Unsignalized Level of Service (LOS) Criteria**

LOS	Control Delay (sec/veh)
	Unsignalized Intersection
A	≤10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

Source: Transportation Research Board, Highway Capacity Manual, 6<sup>th</sup> Edition

In general, LOS A through LOS C indicates satisfactory operations (for an overall intersection, approach, or individual movement) characterized by minor delays (or no delay), minimal queues which dissipate quickly, and stable traffic flow/maneuverability for vehicles. LOS D is considered the upper threshold for “acceptable” operations on most rural facilities and corresponds to moderate delays and queuing associated with traffic volumes nearing capacity (though still below capacity). LOS E indicates that an intersection, approach, or individual movement is operating at capacity (or slightly over capacity) based on the associated volume demand. LOS F indicates failing operations, often characterized by excessive delays and queuing, gridlock conditions, and unserved volume demand at an intersection.

The Existing (2025) peak hour delay and queuing analysis results for the unsignalized intersections along the corridor are summarized in **Table 7**. During peak hours, all Route 55 / US 48 signalized intersections are expected to operate at LOS B or better during the existing conditions of 2025. Detailed *Synchro* outputs are included in **Appendix B**. Due to the favorable existing LOS across corridor intersections, and accounting for the expected growth factor associated with WVDOH’s development of *Corridor H*, it is unlikely that a significant change in LOS would occur in the future year scenario.

Table 7: Existing Conditions Intersection Summary

Study Intersection	Movement	AM Peak Hour		PM Peak Hour	
		HCM Delay (sec/veh)	LOS	HCM Delay (sec/veh)	LOS
Rt 55 & Post Office Road - Unsignalized	SBR	9.0	A	9.8	A
Rt 55 & Middle Road - Unsignalized	SBL	10.8	B	11.7	B
Hockman Road & Rt 55 - Unsignalized	NBR	9.5	A	9.4	A
Back Road & Rt 55 - Unsignalized	NBL	10.4	B	11.4	B
	NBR	10.4	B	11.4	B
I-81 SB On-Ramp & Rt 55 & I-81 SB Off-Ramp - Unsignalized	SBL	10.3	B	12.3	B
	SBT	10.3	B	12.3	B
	SBR	10.3	B	12.3	B
I-81 NB Off-Ramp/I-81 NB On-Ramp & Rt 55 - Unsignalized	NBL	12.6	B	14.3	B
	NBT	12.6	B	14.3	B
	NBR	12.6	B	14.3	B

## 6 PROGRAMMED IMPROVEMENTS AND POTENTIAL MITIGATION MEASURES

VDOT has previously identified safety improvements for portions of the Route 55 / US 48 corridor, some of which are underway or complete, and others which are to be completed by 2026 (**Section 6.1**). Additionally, this study offers potential mitigation measures (**Section 6.2**) with the primary objective of alleviating existing safety concerns as per historical and current trends. These measures were selected based on the existing conditions, data collection, crash history and the review of ongoing VDOT projects on the corridor.

### 6.1 Programmed Improvements

#### 6.1.1 Two-Lane Rural Roads

VDOT has established a safety initiative specifically designed to reduce roadway departure crashes on two-lane rural road facilities, where these crashes are the most prevalent. Roadway departure crashes involve vehicles leaving the travel way. For the Route 55 / US 48 study corridor the predominant collision types were angle crashes and fixed object-off road incidents, each comprising 27.4% (45) of the total (164) crashes. VDOT has utilized the following low-cost countermeasures on these types of facilities to address roadway departures:

- Signs
- Pavement markings
- Transverse rumble strips

- Enhanced delineation of the roadway through:
  - Centerline and/or edgeline pavement markings
  - Retroreflective elements
  - Edgeline rumble strips/stripes;
- Tree removal/vegetative pruning

Additional information can be found on VDOT’s website:

[https://www.vdot.virginia.gov/media/vdotvirginiagov/doing-business/technical-guidance-and-support/traffic-operations/vhsip/Two-Lane\\_Rural\\_Roads\\_VDOT\\_One-Pager\\_acc04182024\\_JE.pdf](https://www.vdot.virginia.gov/media/vdotvirginiagov/doing-business/technical-guidance-and-support/traffic-operations/vhsip/Two-Lane_Rural_Roads_VDOT_One-Pager_acc04182024_JE.pdf)

The following sections of Route 55 / US 48 within the study area have been included in the Two-Lane Rural Roads (TLRR) program and are programmed to receive low-cost countermeasures designed to help motorists maintain their lane of travel:

- MP 0.03- MP 2.44 (scheduled for 2027)
- MP 3.76 – MP 6.86 (scheduled for 2027)

### 6.1.2 Resurfacing

VDOT has an annual program to provide resurfacing on identified roadways to provide renewed pavement and pavement markings. The Pavement Management team rates pavement for deficiency and prioritizes sections for resurfacing as needed. As part of the resurfacing program, installation of rumble strips/stripes and updates to pavement markings may also be included. These additional enhancements may provide the additional benefit of enhancing delineation of a roadway.

VDOT’s 2026 and 2027 Resurfacing Projects include the following treatments:

- 2” Mill & Fill roadway resurfacing
- Markings
- PIMs (Plastic Inlaid Markers – providing retro-reflectivity along centerlines)
- Centerline rumble strips

The following sections of Route 55 / US 48 within the study area are scheduled for resurfacing in 2026 and 2027, as indicated below, at which point centerline and edgeline rumble strips will be installed where appropriate:

- MP 0.00 – MP 5.53 (scheduled for 2027)
- MP 10.54 – MP 13.57 (scheduled for 2026)
- MP 14.23 – 15.89 (scheduled for 2027)
- MP 16.32 – MP 17.30 (scheduled for 2026)

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## 6.2 Potential Safety Treatment Considerations

To address crash patterns and site conditions along the corridor, the following general safety treatment considerations are proposed; however, none of these improvements are currently funded. Treatment considerations have been identified as either short-term, which can be implemented within 12 months, or medium-term, which may take up to five years for implementation. Note that not all treatments are appropriate for each location, but this list provides those treatments which might be applicable across the study area.

Short-term safety treatment considerations (with approximate costs) include, but are not limited to:

- Mitigating Angle crashes and promoting Stop sign compliance via:
  - Replacing existing Stop (R1-1) sign(s) with oversized signs with Red retroreflective strip (\$2,000 per treatment per site)
  - Installing dual-indicated Stop (R1-1) signs (\$3,000 per treatment per site)
  - Installing Advanced Stop Ahead (W3-1) sign(s), with optional yellow retroreflective strip with optional supplementary “500 FEET” (W16-2P) sign (\$2,000 per treatment per site)
  - Installing dual-indicated Advanced Stop Ahead (W3-1) signs (\$3,000 per treatment per site)
  - Installing Stop Bars at appropriate locations where drivers should wait to see gap in traffic (\$1,000 per treatment per site)
  - Installing “WATCH FOR TURNING VEHICLES” signs on mainline corridor (\$3,000 per treatment per site)
- Promoting lane usage compliance and visibility at wide stop bar approaches via:
  - Separating movements with painted gore markings (\$1,000 per treatment per site)
  - Installing Stop (R1-1) signs on either side of divided lanes (\$5,000 per treatment per site)
- Improving wayfinding via:
  - Revising Route signage, including advanced Secondary Route signage (\$5,000 per treatment per site)
  - Installing W1-8L signs to guide turn maneuvers (\$5,000 per treatment per site)
  - Installing flexible delineators or other crashworthy devices to provide vehicle path guidance (\$10,000 per treatment per site)

Medium-term safety treatment considerations include, but are not limited to:

- Mitigating Angle crashes and promoting Stop sign compliance via:
  - Revising geometry of intersecting side streets to a more traditional T-intersection configuration (\$3M-\$5M per treatment per site)
  - Installing new turn lanes (may need to widen roadway) (\$3M-\$5M per treatment per site)
- Promoting lane usage compliance and visibility at wide stop bar approaches via:
  - Installing concrete median between gore separated movements into 2 stop bars (\$250k-\$750k per treatment per site)

- Installing new STOP signs in concrete median with red retroreflective strips to dual indicate each maneuver (\$250k-\$750k per treatment per site)

## 7 CORRIDOR SENSITIVITY ANALYSIS

### 7.1 Highway Capacity Software (HCS) Analysis

Route 55 / US 48 is identified as part of *Corridor H*, a planned but incomplete 157-mile component of the Appalachian Development Highway System, which would connect I-79 in Weston, West Virginia to I-81 in Virginia. West Virginia has been widening its portion of the corridor since the 1970s. The National Environmental Policy Act (NEPA) process is complete for the 5.5-mile widening project from the Town of Wardensville to the West Virginia state line, representing the final eastern section to be widened in West Virginia, with the first of four contracts expected to be advertised in early 2026, and an anticipated completion date of 2033. As previously stated, the Virginia Commonwealth Transportation Board has not approved construction of *Corridor H* in Virginia. A sensitivity analysis was conducted for the study corridor and the two intersections with the highest existing traffic demand to determine operational impacts which may result from completion of West Virginia’s portion of *Corridor H*.

Segment analysis was conducted using the two-lane highway module of the *Highway Capacity Software* (HCS). The primary measure of effectiveness was the Follower Density (followers/mile/lane). A “follower” is a vehicle representing the number of vehicles per mile per lane that are following another vehicle. Follower Density quantifies the degree of platooning or congestion on a two-lane road, accounting for impacts of segment characteristics including heavy vehicle percentage, passing zones, terrain type and curvature. A high Follower Density indicates a higher proportion of vehicles traveling closely together, potentially leading to reduced speeds and increased travel times.

For example, in a 1-mile section of a 2-way (1-lane in each direction) roadway that is 55 MPH, if there are between 2 and 4 “follower” vehicles (per mile per lane), that would represent LOS B conditions for “Follower Density”. Level of service based on Follower Density is shown in **Table 8**.

Table 88: HCS Follower Density Level of Service

LOS	Follower Density (followers/mi/ln)	
	Higher-Speed Highways Posted Speed Limit ≥ 50 mi/h	Lower-Speed Highways Posted Speed Limit < 50 mi/h
A	≤ 2.0	≤ 2.5
B	> 2.0 – 4.0	> 2.5 – 5.0
C	> 4.0 – 8.0	> 5.0 – 10.0
D	> 8.0 – 12.0	> 10.0 – 15.0
E	> 12.0	> 15.0
F	Demand exceeds capacity	

HCM Exhibit 15-6 – New LOS Criteria for Two-Lane Highways

The corridor was divided into four sub-sections based on the available Annual Traffic volume data, which was converted to peak hour volumes, where existing level of service for the 2023 volumes from the VDOT Pathways for Planning AADT resulted in LOS B or better as shown in **Table 9**.

**Table 9: Existing (2023) HCS Level of Service**

Segment	MP Start	MP End	2023 Volume	Demand Volume (veh/h)	Distance (miles)	LOS	Average Speed (mi/h)	Follower Density (followers/mi/ln)
1	0.77	4.83	3,172	289	4.06	B	56.2	2.5
2	4.83	5.53	4,568	257	0.7	A	57.8	1.8
3	5.53	10.43	5,893	354	4.9	B	54.3	3.6
4	10.43	14.47	7,252	395	4.04	B	57.1	3.9

As per the previous level of service discussion in Section 5.4, LOS D is considered the threshold for “acceptable” operations on most rural facilities and corresponds to moderate delays and queuing associated with traffic volumes nearing capacity (though still below capacity). LOS E indicates that an intersection, approach, individual movement, or roadway segment is operating at capacity based on the associated volume demand.

LOS D indicates acceptable operating conditions that remain below the facility's capacity, and where no mitigation measures are necessary for operations; however, LOS E would likely require operational improvements to ensure the facility's operation. For the sensitivity analysis, volumes were grown to determine when the corridor volumes would first cross the threshold into LOS D, and then again at the threshold of LOS E. Determining the period between LOS D and LOS E will identify a window of opportunity for future efforts to address the corridor's anticipated operational deficiencies prior to reaching LOS E “capacity” conditions.

Segment 4 (MP 10.43 -MP 14.47), which has the highest volume and Follower Density was selected for the sensitivity test as it would be first to reach LOS D. It was found that LOS D was achieved at a volume of 12,000 AADT (compared to the existing volume of approximately 7,200 vehicles per day). Considering the corridor's historical growth rate of 2.4%, a range of three different annual growth rates of more or less conservative growth was used to determine different timeframes to reach the future volume thresholds. Table 10 summarizes the different growth rates and estimated years to achieve the volume resulting in LOS D:

**Table 10: Segment 4 Sensitivity Test - HCS Target Level of Service D**

Segment	MP Start	MP End	2023 Volume	LOS D Volume threshold	Annual Growth Rate	Year LOS D Met
4	10.43	14.47	7,252	12,000	2.00%	2056
4	10.43	14.47	7,252	12,000	2.50%	2050
4	10.43	14.47	7,252	12,000	3.00%	2045

**Table 10** shows that if growth rates ranged between 2%-3% per year, it would take at least 20 years to reach the volume level that would first cross the threshold into LOS D while still maintaining acceptable conditions. The facility is expected to continue to operate at LOS D until the volumes reach LOS E, as shown by the forecast years in **Table 11**.

**Table 11: Segment 4 Sensitivity Test - HCS Target Level of Service E**

Segment	MP Start	MP End	2023 Volume	LOS E Volume threshold	Annual Growth Rate	Year LOS E Met
4	10.43	14.47	7,252	24,100	2.00%	2140
4	10.43	14.47	7,252	24,100	2.50%	2116
4	10.43	14.47	7,252	24,100	3.00%	2101

This analysis shows LOS E thresholds are not anticipated for at least 76 years, based on expected growth. The result of the HCS LOS sensitivity test shows that the corridor is expected to operate in acceptable conditions, under capacity, during which VDOT should consider operational improvements. See **Appendix B** for HCS reports.

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## 7.2 Synchro Intersection Analysis

In addition to the study corridor, two of the study intersections on the corridor with the highest existing traffic demand were analyzed to determine the future volume levels which may result in operational impacts to the study corridor due to future planned/programmed improvements on this route in West Virginia.

The highest existing volume intersections along the corridor are the I-81 SB ramp and I-81 NB ramp intersections with Route 55 / US 48. Volumes were highest during the PM Peak hour for the Stop-Controlled Off-Ramp movements, where volumes were 312 for the SB Off-ramp and 122 for the NB Off-Ramp. Route 55 / US 48 was grown to future year 2047 volumes using the aforementioned 2.4% WB and 1% EB growth factors, where ramp volumes were grown separately for the sensitivity analysis to determine the LOS E threshold for each based on stop delay for the ramp movements. The total growth

needed to reach the LOS E thresholds and the resulting LOS operations with the current ramp geometry are shown in **Tables 12** and **13**.

**Table 12: Intersection Sensitivity Summary – Volumes**

Study Intersection	2023 Off-Ramp Volume PM Peak Hour	LOS E volume threshold	Annual Growth Rate	Total Growth (Future-Existing)	Year LOS E Met
5. I-81 SB On-Ramp & Rt 55 & I-81 SB Off-Ramp - Unsignalized	312	610	1.00%	96%	<b>2119</b>
	312	610	2.00%	96%	<b>2071</b>
	312	610	2.50%	96%	<b>2062</b>
	312	610	3.00%	96%	<b>2055</b>
6. I-81 NB Off-Ramp/I-81 NB On-Ramp & Rt 55 - Unsignalized	122	260	1.00%	113%	<b>2137</b>
	122	260	2.00%	113%	<b>2080</b>
	122	260	2.50%	113%	<b>2069</b>
	122	260	3.00%	113%	<b>2061</b>

**Table 13: Intersection Sensitivity Summary – LOS Results**

Study Intersection	Movement	AM Peak Hour		PM Peak Hour	
		HCM Delay (sec/veh)	LOS	HCM Delay (sec/veh)	LOS
5. I-81 SB On-Ramp & Rt 55 & I-81 SB Off-Ramp - Unsignalized	SB	12.1	B	36.0	E
6. I-81 NB Off-Ramp/I-81 NB On-Ramp & Rt 55 - Unsignalized	NB	19.9	C	36.1	E

The intersection sensitivity analysis shows that LOS E conditions would be expected in the PM Peak hour, when volumes are essentially doubled at each ramp. Should the trend of the historical growth rate of 1% per year continue within the interchange area, it is anticipated that it would take between 96 and 113 years for the SB and NB-ramp intersections to reach LOS E, respectively.

## 8 CONCLUSIONS

This study sought to identify existing safety and operational issues along the study section of Route 55 / US 48, options to mitigate safety and/or operational issues, and to determine the potential impact of improvements along West Virginia’s portion of *Corridor H*.

Operationally, conditions on the corridor were found to be acceptable and should remain so for an extended period of time, even when considering additional traffic driven by West Virginia’s *Corridor H*. Specifically, the existing conditions should remain acceptable through 2102, even at a conservative 3% growth rate, exceeding the calculated ten-year growth rate (2.4%) and the expected growth rate (1.43%) put forth in WVDOH’s *Corridor H Supplemental Environmental Impact Statement*. In addition, recent

investments in safety enhancements have addressed several issues along the corridor. Therefore, no operational recommendations are needed or proposed at this time.

There are opportunities to continue to improve safety in the future with low-cost, short-term improvements including improved signage and enhanced delineation of the roadway, some of which are programmed for 2026 and 2027, as well as mid-term improvements, such as intersection geometry improvements or turn lanes.

**APPENDIX A – APRIL 11, 2025 LETTER FROM SENATOR FRENCH**

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# SENATE OF VIRGINIA

**TIMMY FRENCH**  
1ST SENATORIAL DISTRICT  
ALL OF CLARKE, FREDERICK, SHENANDOAH,  
AND WARREN COUNTIES; AND ALL OF THE  
CITY OF WINCHESTER  
POST OFFICE BOX 628  
WOODSTOCK, VIRGINIA 22664



COMMITTEE ASSIGNMENTS:  
AGRICULTURE, CONSERVATION AND  
NATURAL RESOURCES  
GENERAL LAWS AND TECHNOLOGY  
REHABILITATION AND SOCIAL SERVICES

April 11, 2025

Mr. Stephen C. Brich, P.E.  
Commissioner  
Virginia Department of Transportation (VDOT)  
1401 E. Broad Street  
Richmond, VA 23219

Subject: Request for Traffic Study on Route 55 (John Marshall Hwy)

Dear Commissioner Brich:

I am writing to respectfully request that the Virginia Department of Transportation (VDOT) conduct a comprehensive safety and traffic study of Route 55 (John Marshall Highway) between I-81 and the West Virginia state line in Shenandoah and Frederick counties. This corridor serves as a critical route for both local and regional travel, and the study is intended to identify any existing safety or operational issues along this stretch of roadway.

In addition, I ask that VDOT coordinate with the West Virginia Division of Highways to determine what projects are currently programmed along Route 55 as it approaches the Virginia–West Virginia border. I am particularly interested in gaining insights into the contributing factors behind any safety or operational concerns along Route 55, especially how programmed projects in West Virginia may impact traffic flow, operations, or safety conditions within Virginia.

I respectfully request that VDOT complete the study and provide a report of its findings to me by December 1, 2025.

Stephen C. Brich, P.E.

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April 11, 2025

Thank you for your attention to this important matter. Should you need any additional information, please do not hesitate to contact me at (540) 335-4640 or via email at [senatorfrench@senate.virginia.gov](mailto:senatorfrench@senate.virginia.gov).

Sincerely,

A handwritten signature in cursive script, appearing to read "Timmy French".

Timmy F. French

cc:

Evan Vass, Shenandoah County Administrator

Mike Bollhoefer, Frederick County Administrator

Brandy Hawkins Boies, Town of Strasburg Mayor

Thomas "Ty" Moore Lawson, Commonwealth Transportation Board

John P. Good Jr., Commonwealth Transportation Board

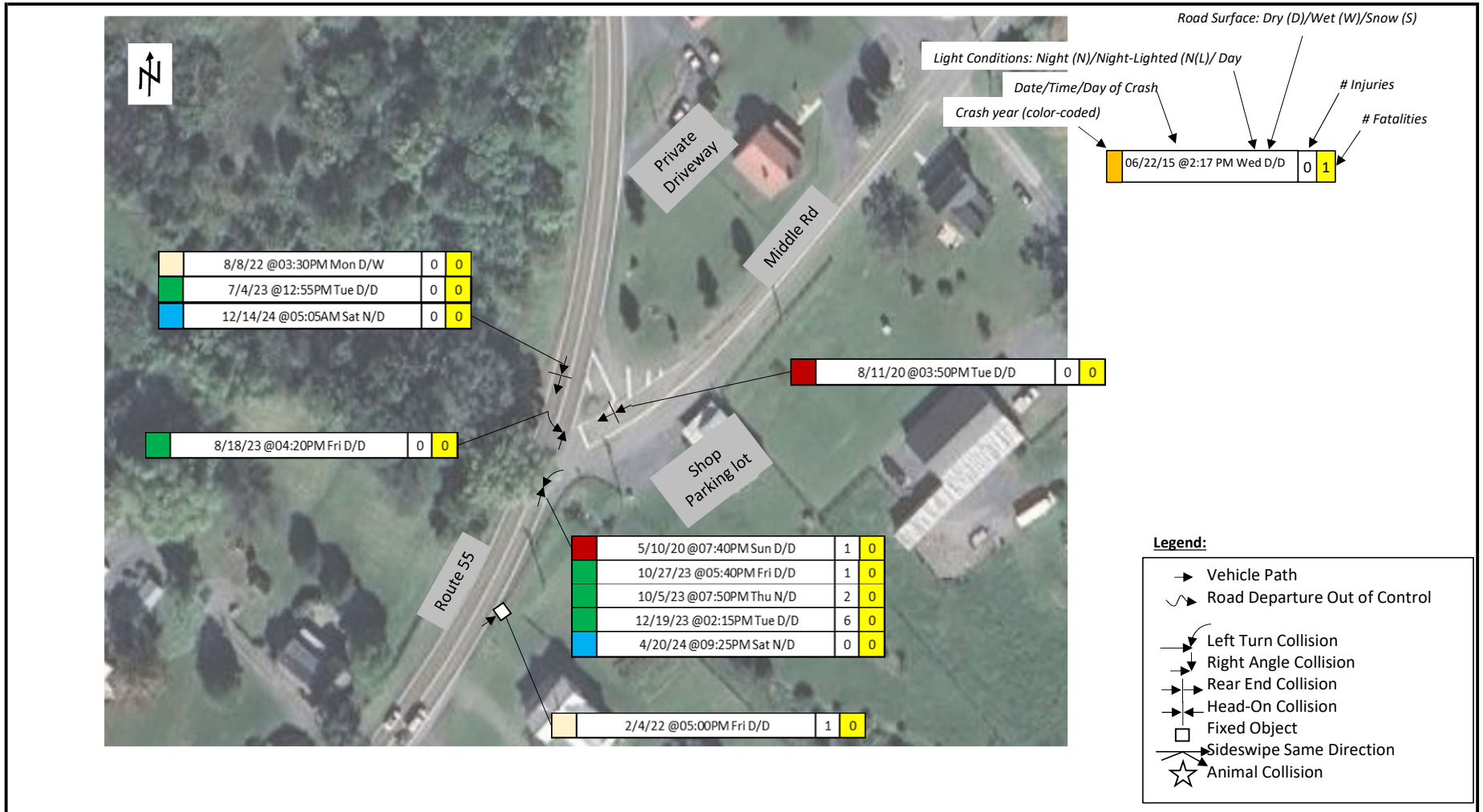
## **APPENDIX B – TRAFFIC AND SAFETY ANALYSIS DOCUMENTATION**

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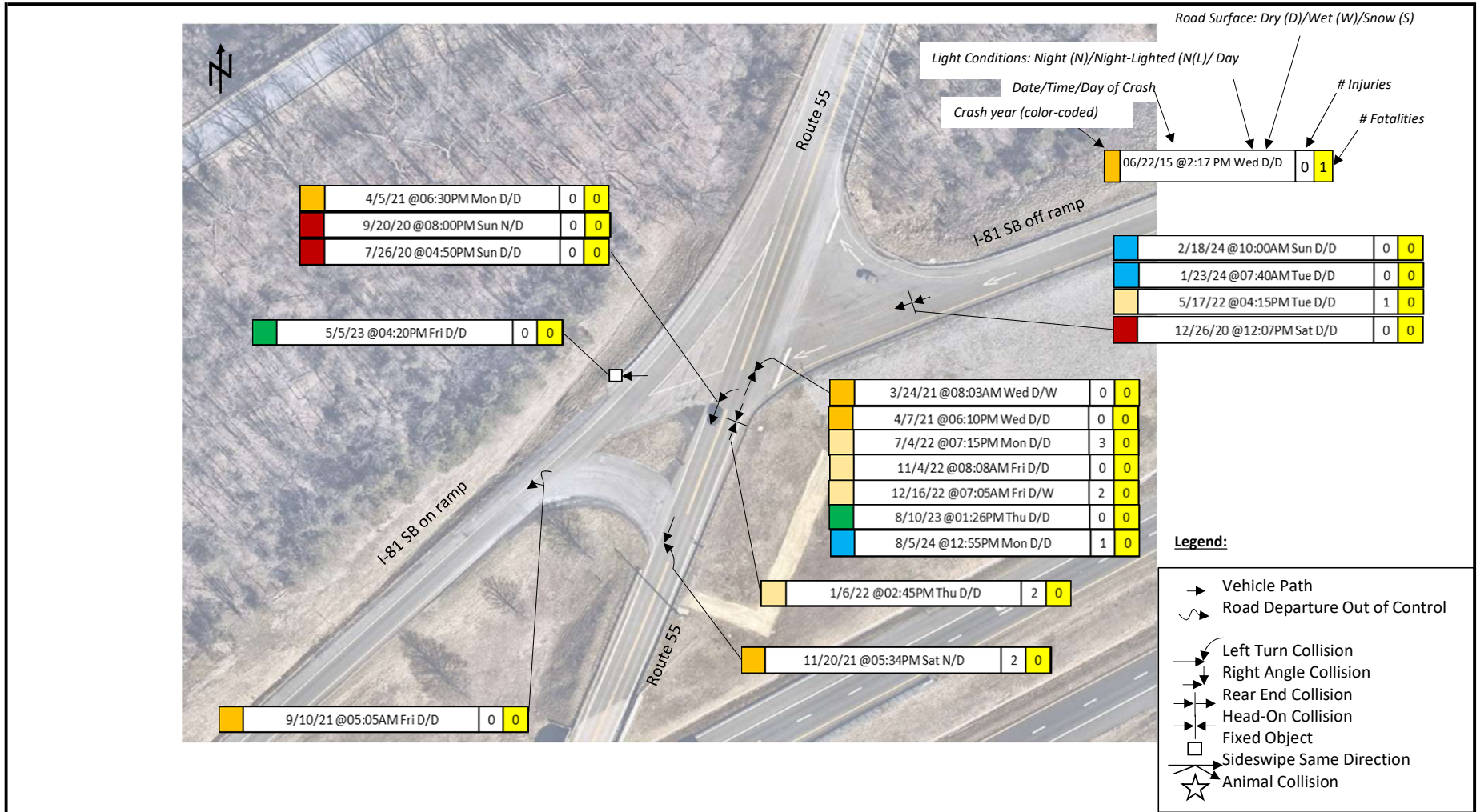
## **ROUTE 55 / US 48 CRASH LAYOUTS**

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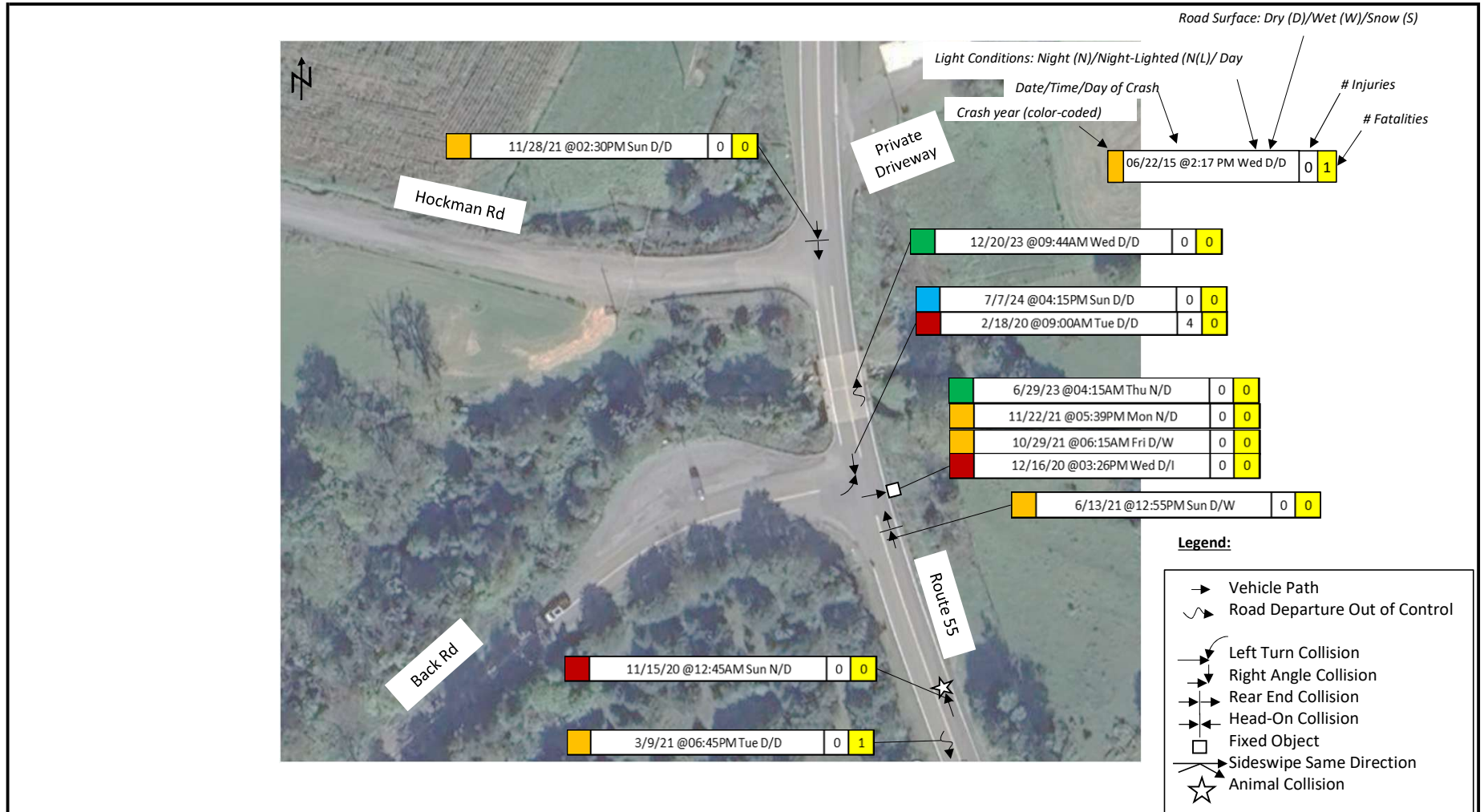
Rt55\_Middle Rd.xlsm  
Collision



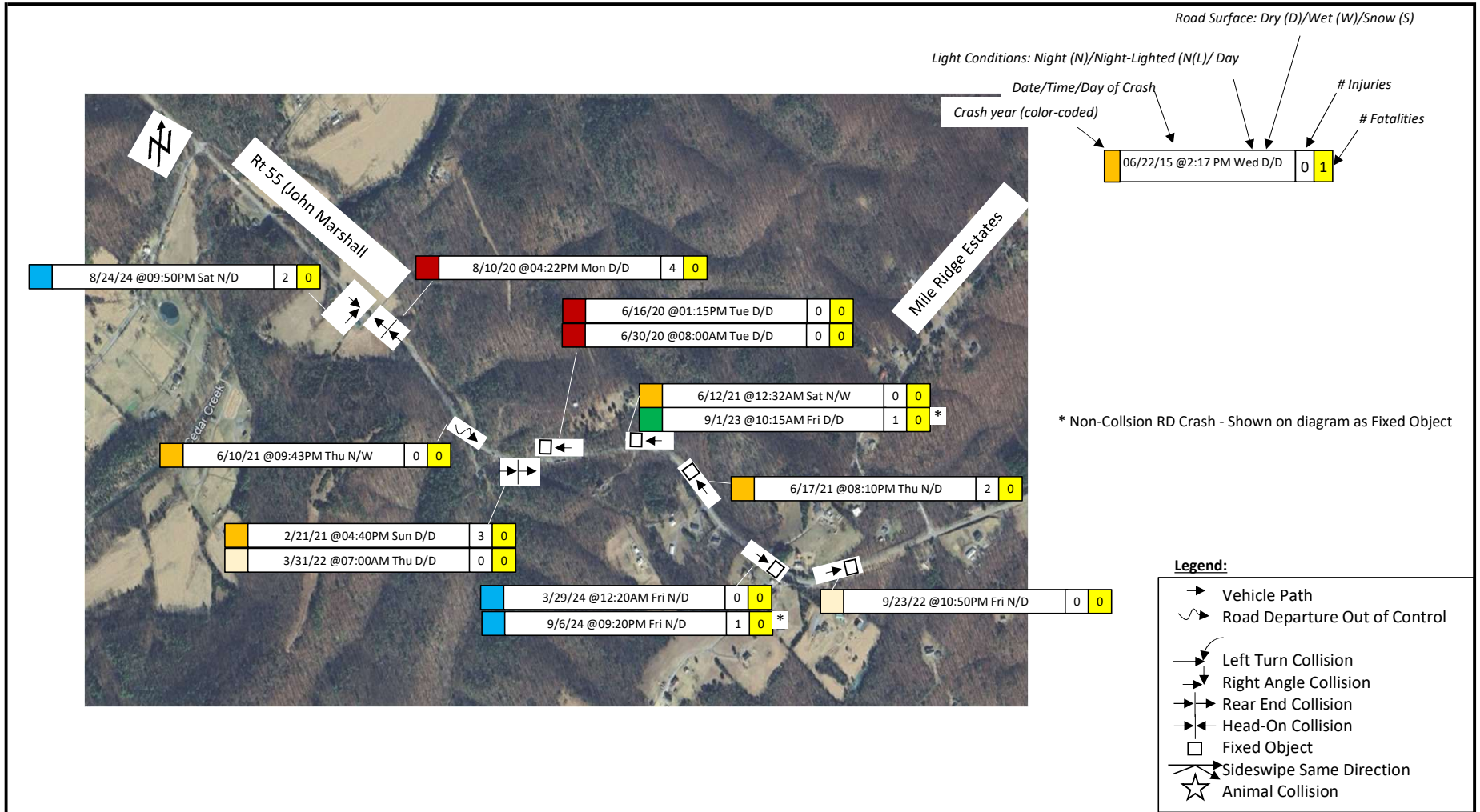
Rt55\_I-81 SB Ramp.xlsm  
Collision



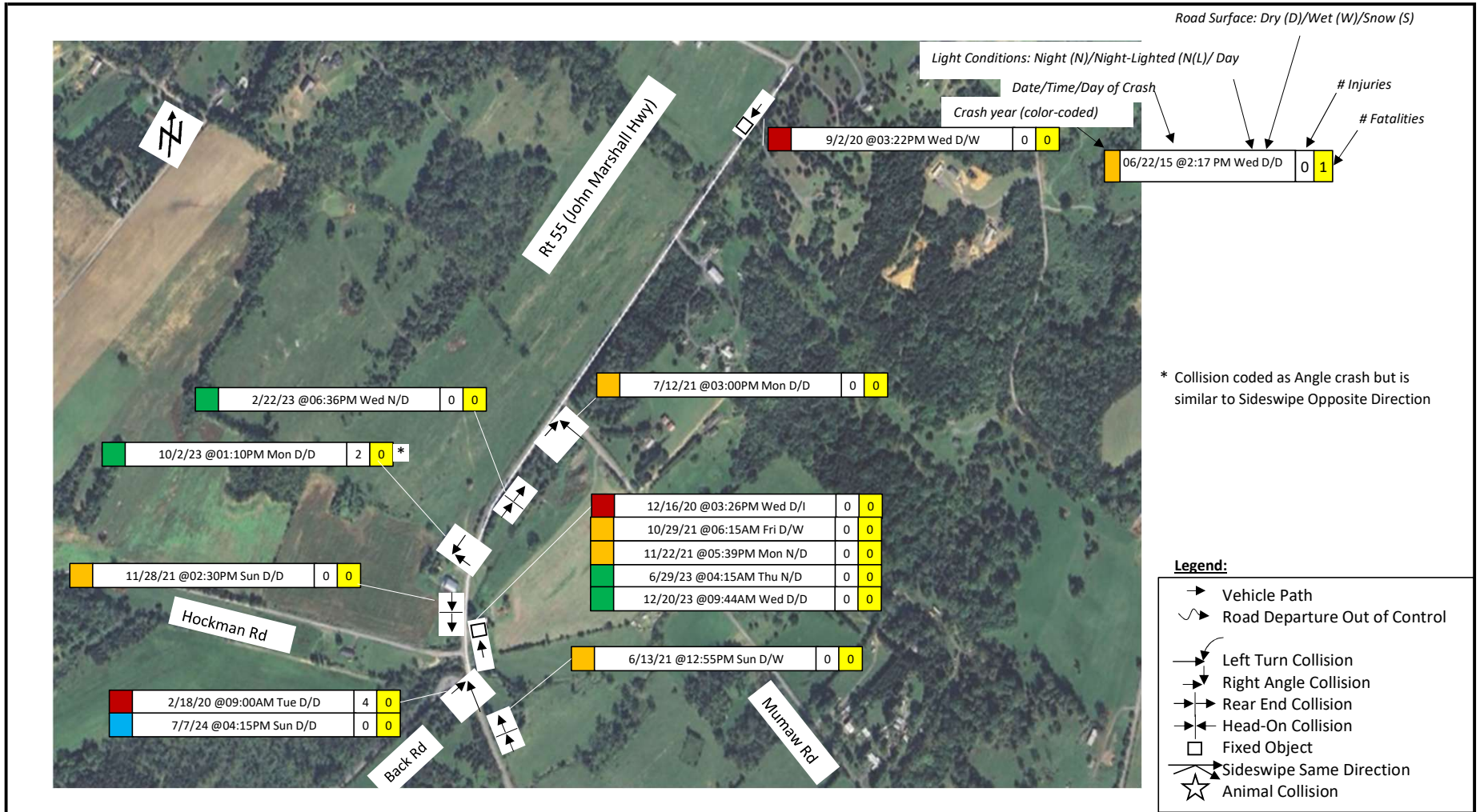
Rt55\_Back Rd.xlsm  
Collision



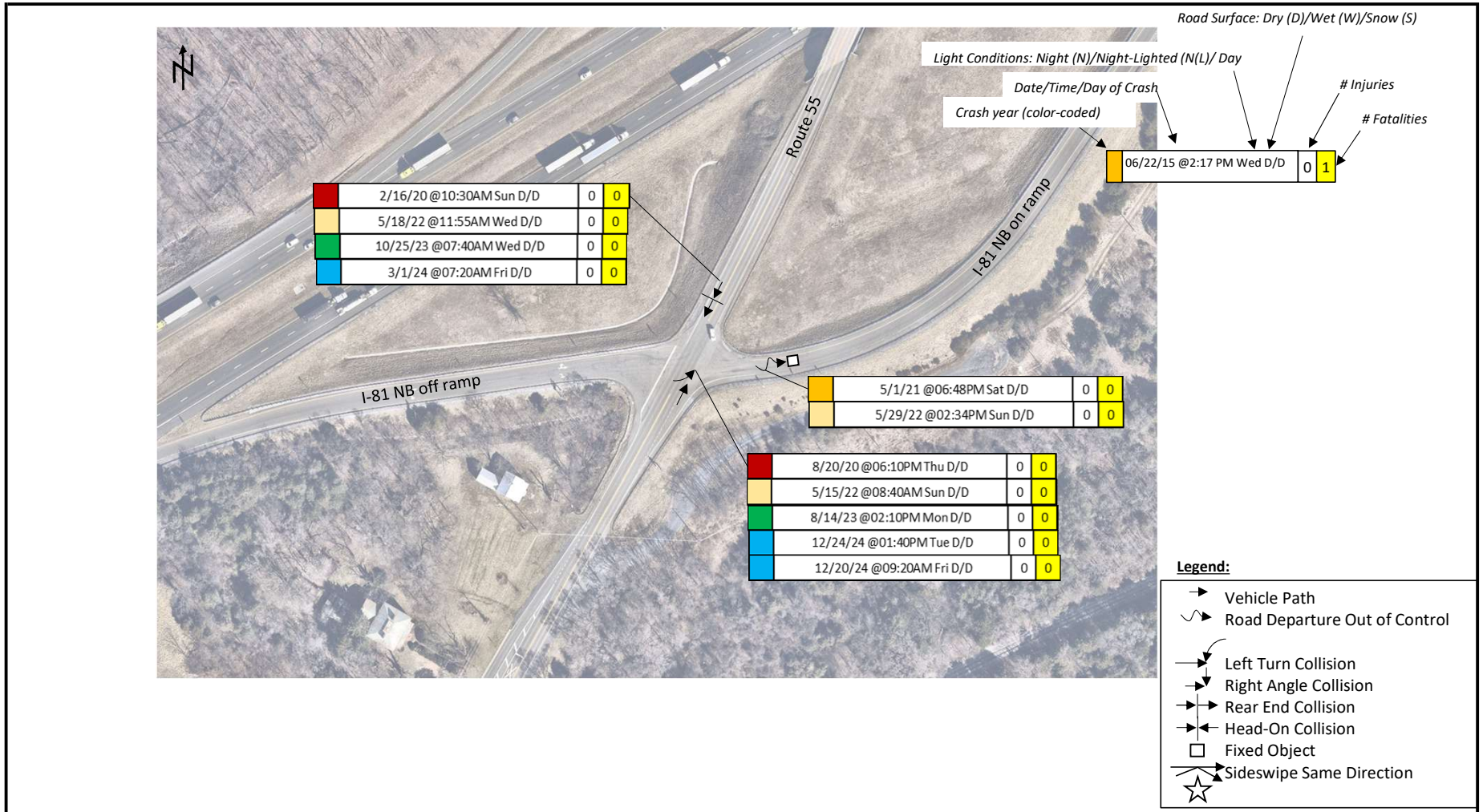
Rt55\_MP5.45-6.86.xlsm  
Collision



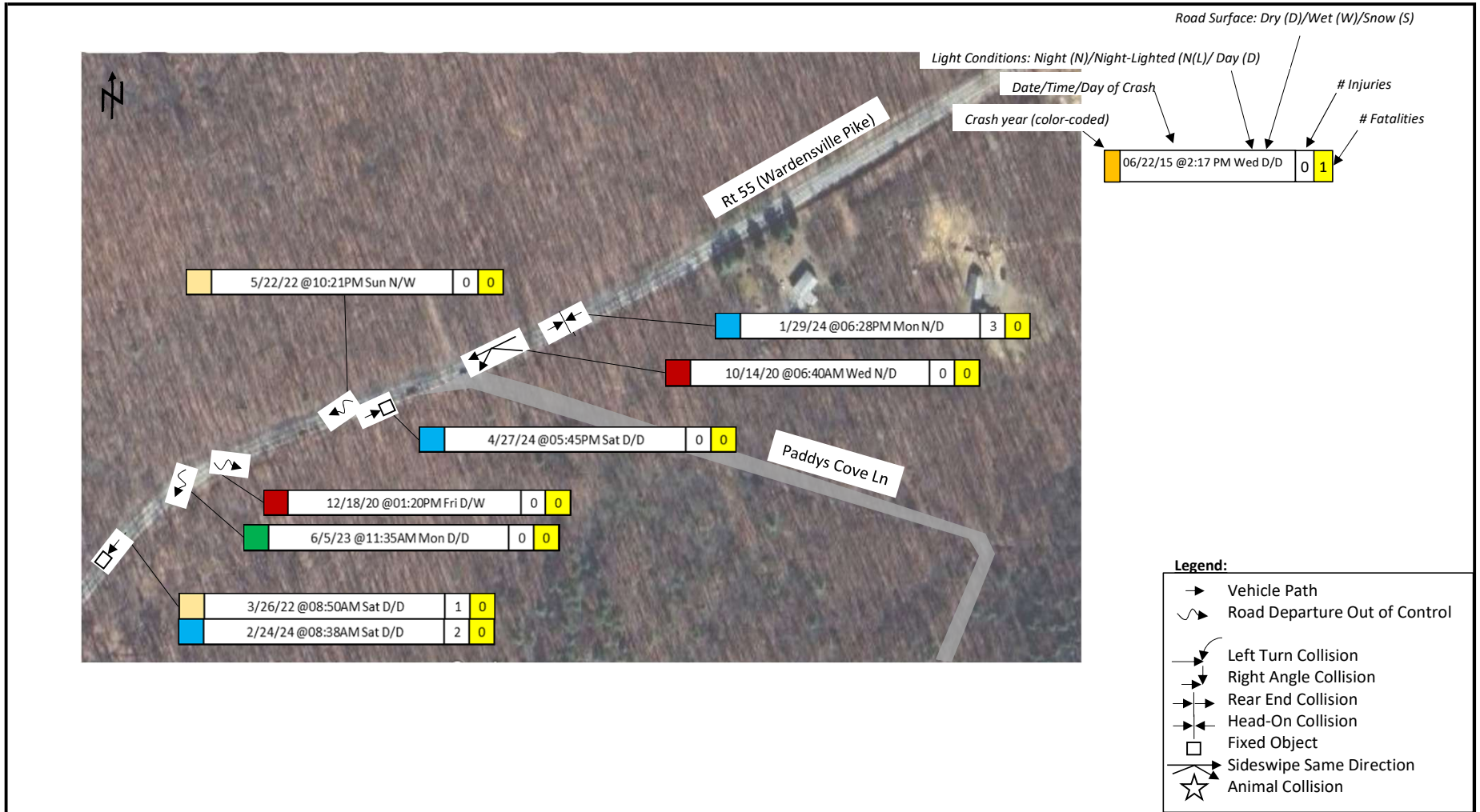
Collision



Rt55\_I-81 NB Ramp.xlsm  
Collision



Rt55\_MPO.5-0.81.xlsm  
Collision



Rt55\_BushyRidge\_Fatal.xlsm  
Collision



## **CRASH SUMMARY TABLES**

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**Table 1: Crash Summary at PSI Intersection at MP 10.25 - Route 628 (Middle Road)**

Crash Information for the intersection		Number of Crashes Per Year					5 Year Total Crashes	Average Crashes Per Year	% of Total Crashes
		2020	2021	2022	2023	2024			
CRASH TYPE*	Rear End	1	0	1	1	1	4	0.8	36%
	Angle	1	0	0	4	1	6	1.2	55%
	Fixed Object - Off Road	0	0	1	0	0	1	0.2	9%
	Total Crashes	2	0	2	5	2	11	2.3	100%
SEVERITY	K. Fatal Injury	0	0	0	0	0	0	0.0	0%
	A. Severe Injury	1	0	0	0	0	1	0.0	9%
	B. Visible Injury	0	0	1	3	0	4	1.0	36%
	C. Nonvisible Injury	0	0	0	0	0	0	0.0	0%
	PDO. Property Damage Only	1	0	1	2	2	6	1.3	55%

\*Crash types with zero (0) reported crashes were excluded from the table

**Table 2: Crash Summary at PSI Intersection at MP 14.24 - I-81, Exit 296 SB Off-Ramp**

Crash Information for the intersection		Number of Crashes Per Year					5 Year Total Crashes	Average Crashes Per Year	% of Total Crashes
		2020	2021	2022	2023	2024			
CRASH TYPE*	Rear End	1	0	1	0	2	4	0.8	22%
	Angle	2	4	2	1	1	10	2.0	56%
	Head On	0	0	2	0	0	2	0.4	11%
	Non-Collision	0	1	0	0	0	1	0.2	6%
	Fixed Object - Off Road	0	0	0	1	0	1	0.2	6%
	Total Crashes	3	5	5	2	3	18	3.8	100%
SEVERITY	K. Fatal Injury	0	0	0	0	0	0	0.0	0%
	A. Severe Injury	0	0	1	0	0	1	0.3	6%
	B. Visible Injury	0	1	3	0	1	5	1.3	28%
	C. Nonvisible Injury	0	0	0	0	0	0	0.0	0%
	PDO. Property Damage Only	3	4	1	2	2	12	2.3	67%

\*Crash types with zero (0) reported crashes were excluded from the table

**Table 3: Crash Summary at PSI Intersection at MP 11.92 - Route 623 (Back Road)**

Crash Information for the intersection		Number of Crashes Per Year					5 Year Total Crashes	Average Crashes Per Year	% of Total Crashes
		2020	2021	2022	2023	2024			
CRASH TYPE*	Rear End	0	2	0	0	0	2	0.4	18%
	Angle	1	0	0	0	1	2	0.4	18%
	Fixed Object - Off Road	1	3	0	2	0	6	1.2	55%
	Deer	1	0	0	0	0	1	0.2	9%
	Total Crashes	3	5	0	2	1	11	2.0	100%
SEVERITY	K. Fatal Injury	0	1	0	0	0	1	0.3	9%
	A. Severe Injury	1	0	0	0	0	1	0.0	9%
	B. Visible Injury	0	0	0	0	0	0	0.0	0%
	C. Nonvisible Injury	0	0	0	0	0	0	0.0	0%
	PDO. Property Damage Only	2	4	0	2	1	9	1.8	82%

\*Crash types with zero (0) reported crashes were excluded from the table

**Table 4: Crash Summary at PSI Section at MP 5.45 to 6.86**

Crash Information for the intersection		Number of Crashes Per Year					5 Year Total Crashes	Average Crashes Per Year	% of Total Crashes
		2020	2021	2022	2023	2024			
CRASH TYPE*	Rear End	1	1	1	0	0	3	0.6	23%
	Angle	0	0	0	0	1	1	0.2	8%
	Non-Collision	0	1	0	1	1	3	0.6	23%
	Fixed Object - Off Road	2	1	1	0	1	5	1.0	38%
	Other	0	1	0	0	0	1	0.2	8%
	Total Crashes	3	4	2	1	3	13	2.5	100%
SEVERITY	K. Fatal Injury	0	0	0	0	0	0	0.0	0%
	A. Severe Injury	0	1	0	0	1	2	0.5	15%
	B. Visible Injury	1	1	0	1	1	4	0.8	31%
	C. Nonvisible Injury	0	0	0	0	0	0	0.0	0%
	PDO. Property Damage Only	2	2	2	0	1	7	1.3	54%

\*Crash types with zero (0) reported crashes were excluded from the table

**Table 5: Crash Summary at PSI Section at MP 11.24 to 11.92**

Crash Information for the intersection		Number of Crashes Per Year					5 Year Total Crashes	Average Crashes Per Year	% of Total Crashes
		2020	2021	2022	2023	2024			
CRASH TYPE*	Rear End	0	2	0	1	0	3	0.6	23%
	Angle	1	1	0	1	1	4	0.8	31%
	Fixed Object - Off Road	2	2	0	2	0	6	1.2	46%
	Total Crashes	3	5	0	4	1	13	2.5	100%
SEVERITY	K. Fatal Injury	0	0	0	0	0	0	0.0	0%
	A. Severe Injury	1	0	0	0	0	1	0.0	8%
	B. Visible Injury	0	0	0	1	0	1	0.3	8%
	C. Nonvisible Injury	0	0	0	0	0	0	0.0	0%
	PDO. Property Damage Only	2	5	0	3	1	11	2.3	85%

\*Crash types with zero (0) reported crashes were excluded from the table

**Table 6: Crash Summary at Hot Spot Intersection: MP 14.44 I-81, Exit 296 NB Ramp**

Crash Information for the intersection		Number of Crashes Per Year					5 Year Total Crashes	Average Crashes Per Year	% of Total Crashes
		2020	2021	2022	2023	2024			
CRASH TYPE*	Rear End	1	0	1	1	1	4	0.8	36%
	Angle	1	0	1	1	2	5	1.0	45%
	Fixed Object - Off Road	0	1	1	0	0	2	0.4	18%
	Total Crashes	2	1	3	2	3	11	2.3	100%
SEVERITY	K. Fatal Injury	0	0	0	0	0	0	0.0	0%
	A. Severe Injury	0	0	0	0	0	0	0.0	0%
	B. Visible Injury	0	0	0	0	0	0	0.0	0%
	C. Nonvisible Injury	0	0	0	0	0	0	0.0	0%
	PDO. Property Damage Only	2	1	3	2	3	11	2.3	100%

\* Crash types with zero (0) reported crashes were excluded from the table

**Table 7: Crash Summary at Hot Spot Section: Route 55 / US 48 MP 0.5 – 0.81**

Crash Information for the intersection		Number of Crashes Per Year					5 Year Total Crashes	Average Crashes Per Year	% of Total Crashes
		2020	2021	2022	2023	2024			
CRASH TYPE*	Angle	1	0	0	0	0	1	0.2	13%
	Head On	0	0	0	0	1	1	0.2	13%
	Fixed Object in Road	0	0	1	0	0	1	0.2	13%
	Non-Collision	1	0	1	1	0	3	0.6	38%
	Fixed Object - Off Road	0	0	0	0	2	2	0.4	25%
	Total Crashes	2	0	2	1	3	8	1.5	100%
SEVERITY	K. Fatal Injury	0	0	0	0	0	0	0.0	0%
	A. Severe Injury	0	0	1	0	1	2	0.5	25%
	B. Visible Injury	0	0	0	0	1	1	0.3	13%
	C. Nonvisible Injury	0	0	0	0	0	0	0.0	0%
	PDO. Property Damage Only	2	0	1	1	1	5	0.8	63%

\* Crash types with zero (0) reported crashes were excluded from the table

**Table 8: Crash Summary at Hot Spot Section: Route 55 / US 48 MP 4.5 – 4.75**

Crash Information for the intersection		Number of Crashes Per Year					5 Year Total Crashes	Average Crashes Per Year	% of Total Crashes
		2020	2021	2022	2023	2024			
CRASH TYPE*	Non-Collision	1	0	0	0	0	1	0.2	17%
	Fixed Object - Off Road	0	2	0	1	1	4	0.8	67%
	Deer	1	0	0	0	0	1	0.2	17%
	Total Crashes	2	2	0	1	1	6	1.0	100%
SEVERITY	K. Fatal Injury	0	0	0	0	0	0	0.0	0%
	A. Severe Injury	0	0	0	0	0	0	0.0	0%
	B. Visible Injury	0	0	0	0	1	1	0.3	17%
	C. Nonvisible Injury	0	0	0	0	0	0	0.0	0%
	PDO. Property Damage Only	2	2	0	1	0	5	0.8	83%

\* Crash types with zero (0) reported crashes were excluded from the table

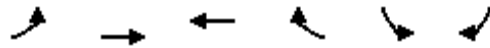
## ***SYNCHRO* REPORTS**

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# HCM Unsignalized Intersection Capacity Analysis

## 101: Rt 55 & Post Office Rd

08/14/2025

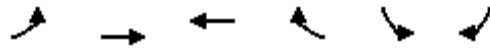


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔			↔
Traffic Volume (veh/h)	55	193	102	0	0	35
Future Volume (Veh/h)	55	193	102	0	0	35
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	60	212	112	0	0	38
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	112			444	112	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	112			444	112	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	96			100	96	
cM capacity (veh/h)	1490			552	938	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	272	112	38			
Volume Left	60	0	0			
Volume Right	0	0	38			
cSH	1490	1700	938			
Volume to Capacity	0.04	0.07	0.04			
Queue Length 95th (ft)	3	0	3			
Control Delay (s)	1.9	0.0	9.0			
Lane LOS	A		A			
Approach Delay (s)	1.9	0.0	9.0			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			2.1			
Intersection Capacity Utilization		23.2%		ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 102: Rt 55 & Middle Rd

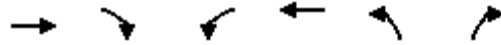
08/14/2025



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (veh/h)	0	193	102	31	21	0
Future Volume (Veh/h)	0	193	102	31	21	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	212	112	34	23	0
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	146				341	129
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	146				341	129
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	100
cM capacity (veh/h)	1448				649	926
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	212	146	23			
Volume Left	0	0	23			
Volume Right	0	34	0			
cSH	1700	1700	649			
Volume to Capacity	0.12	0.09	0.04			
Queue Length 95th (ft)	0	0	3			
Control Delay (s)	0.0	0.0	10.8			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.8			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			0.6			
Intersection Capacity Utilization			20.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 103: Hockman Rd & Rt 55

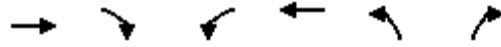
08/14/2025



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Traffic Volume (veh/h)	214	0	1	133	0	3
Future Volume (Veh/h)	214	0	1	133	0	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	235	0	1	146	0	3
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			235		383	235
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			235		383	235
tC, single (s)			5.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			3.1		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			920		623	809
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	235	147	3			
Volume Left	0	1	0			
Volume Right	0	0	3			
cSH	1700	920	809			
Volume to Capacity	0.14	0.00	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.1	9.5			
Lane LOS		A	A			
Approach Delay (s)	0.0	0.1	9.5			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			21.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 104: Back Rd & Rt 55













08/14/2025



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↘	↙
Traffic Volume (veh/h)	206	11	14	116	18	21
Future Volume (Veh/h)	206	11	14	116	18	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	226	12	15	127	20	23
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			238			389
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			238			389
tC, single (s)			4.1			6.4
tC, 2 stage (s)						
tF (s)			2.2			3.5
p0 queue free %			99			97
cM capacity (veh/h)			1341			612
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	238	142	43			
Volume Left	0	15	20			
Volume Right	12	0	23			
cSH	1700	1341	705			
Volume to Capacity	0.14	0.01	0.06			
Queue Length 95th (ft)	0	1	5			
Control Delay (s)	0.0	0.9	10.4			
Lane LOS			A			B
Approach Delay (s)	0.0	0.9	10.4			
Approach LOS				B		
<b>Intersection Summary</b>						
Average Delay			1.4			
Intersection Capacity Utilization			27.8%	ICU Level of Service	A	
Analysis Period (min)			15			


















HCM Unsignalized Intersection Capacity Analysis  
 105: I-81 SB On-Ramp/I-81 SB Off-Ramp & Rt 55

08/14/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗		↑						↖	↗
Traffic Volume (veh/h)	0	275	52	0	79	0	0	0	0	47	1	82
Future Volume (Veh/h)	0	275	52	0	79	0	0	0	0	47	1	82
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	302	57	0	87	0	0	0	0	52	1	90
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												2
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	87			302			390	389	302	389	389	87
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	87			302			390	389	302	389	389	87
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.4
p0 queue free %	100			100			100	100	100	91	100	90
cM capacity (veh/h)	1522			1270			518	549	742	551	549	942
Direction, Lane #	EB 1	EB 2	WB 1	SB 1								
Volume Total	302	57	87	143								
Volume Left	0	0	0	52								
Volume Right	0	57	0	90								
cSH	1700	1700	1700	1485								
Volume to Capacity	0.18	0.03	0.05	0.10								
Queue Length 95th (ft)	0	0	0	8								
Control Delay (s)	0.0	0.0	0.0	10.3								
Lane LOS				B								
Approach Delay (s)	0.0		0.0	10.3								
Approach LOS				B								
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			24.5%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 106: I-81 NB Off-Ramp/I-81 NB On-Ramp & Rt 55

08/14/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	187	0	0	104	201	28	2	45	0	0	0
Future Volume (Veh/h)	135	187	0	0	104	201	28	2	45	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	148	205	0	0	114	221	31	2	49	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									16			
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	335			205			615	836	205	640	615	114
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	335			205			615	836	205	640	615	114
tC, single (s)	4.1			4.1			7.3	7.0	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.7	4.5	3.4	3.5	4.0	3.3
p0 queue free %	88			100			91	99	94	100	100	100
cM capacity (veh/h)	1224			1378			342	225	818	331	360	944
Direction, Lane #												
	EB 1	WB 1	WB 2	NB 1								
Volume Total	353	114	221	82								
Volume Left	148	0	0	31								
Volume Right	0	0	221	49								
cSH	1224	1700	1700	833								
Volume to Capacity	0.12	0.07	0.13	0.10								
Queue Length 95th (ft)	10	0	0	8								
Control Delay (s)	4.2	0.0	0.0	12.6								
Lane LOS	A			B								
Approach Delay (s)	4.2	0.0		12.6								
Approach LOS				B								
Intersection Summary												
Average Delay			3.2									
Intersection Capacity Utilization			43.1%	ICU Level of Service		A						
Analysis Period (min)			15									

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Intersection Sign configuration not allowed in HCM analysis.

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Intersection Sign configuration not allowed in HCM analysis.

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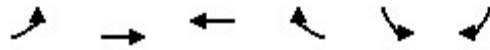
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Intersection Sign configuration not allowed in HCM analysis.

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HCM Unsignalized Intersection Capacity Analysis  
 101: Rt 55 & Post Office Rd

08/14/2025

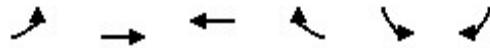


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗			↘
Traffic Volume (veh/h)	45	146	198	1	0	82
Future Volume (Veh/h)	45	146	198	1	0	82
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	47	152	206	1	0	85
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	207				452	206
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	207				452	206
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				100	90
cM capacity (veh/h)	1376				549	839
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	199	207	85			
Volume Left	47	0	0			
Volume Right	0	1	85			
cSH	1376	1700	839			
Volume to Capacity	0.03	0.12	0.10			
Queue Length 95th (ft)	3	0	8			
Control Delay (s)	2.0	0.0	9.8			
Lane LOS	A		A			
Approach Delay (s)	2.0	0.0	9.8			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			2.5			
Intersection Capacity Utilization			27.3%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 102: Rt 55 & Middle Rd

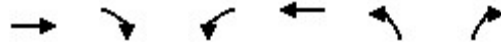
08/14/2025



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (veh/h)	0	146	199	64	70	0
Future Volume (Veh/h)	0	146	199	64	70	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	152	207	67	73	0
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	274				392	240
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	274				392	240
tC, single (s)	4.6				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.7				3.5	3.3
p0 queue free %	100				88	100
cM capacity (veh/h)	1057				614	803
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	152	274	73			
Volume Left	0	0	73			
Volume Right	0	67	0			
cSH	1700	1700	614			
Volume to Capacity	0.09	0.16	0.12			
Queue Length 95th (ft)	0	0	10			
Control Delay (s)	0.0	0.0	11.7			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	11.7			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			1.7			
Intersection Capacity Utilization			24.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 103: Hockman Rd & Rt 55

08/14/2025

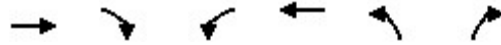


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	215	1	4	263	0	1
Future Volume (Veh/h)	215	1	4	263	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	224	1	4	274	0	1
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			225		506	224
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			225		506	224
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1356		528	820
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	225	278	1			
Volume Left	0	4	0			
Volume Right	1	0	1			
cSH	1700	1356	820			
Volume to Capacity	0.13	0.00	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.1	9.4			
Lane LOS		A	A			
Approach Delay (s)	0.0	0.1	9.4			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			27.0%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 104: Back Rd & Rt 55


















08/14/2025



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↗
Traffic Volume (veh/h)	172	44	26	234	33	23
Future Volume (Veh/h)	172	44	26	234	33	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	179	46	27	244	34	24
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			225		500	202
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			225		500	202
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		94	97
cM capacity (veh/h)			1356		523	844
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	225	271	58			
Volume Left	0	27	34			
Volume Right	46	0	24			
cSH	1700	1356	621			
Volume to Capacity	0.13	0.02	0.09			
Queue Length 95th (ft)	0	2	8			
Control Delay (s)	0.0	0.9	11.4			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.9	11.4			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			1.6			
Intersection Capacity Utilization			38.8%	ICU Level of Service	A	
Analysis Period (min)			15			

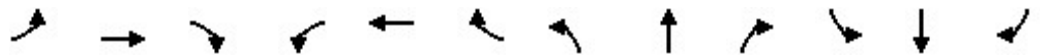
HCM Unsignalized Intersection Capacity Analysis  
 105: I-81 SB On-Ramp/I-81 SB Off-Ramp & Rt 55

08/14/2025

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	0	233	35	0	186	0	0	0	0	144	2	166						
Future Volume (Veh/h)	0	233	35	0	186	0	0	0	0	144	2	166						
Sign Control		Free			Free			Stop			Stop							
Grade		0%			0%			0%			0%							
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96						
Hourly flow rate (vph)	0	243	36	0	194	0	0	0	0	150	2	173						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)												2						
Median type				None		None												
Median storage (veh)																		
Upstream signal (ft)																		
pX, platoon unblocked																		
vC, conflicting volume	194				243		438		437		243		437		437		194	
vC1, stage 1 conf vol																		
vC2, stage 2 conf vol																		
vCu, unblocked vol	194				243		438		437		243		437		437		194	
tC, single (s)	4.1				4.1		7.1		6.5		6.2		7.1		6.5		6.2	
tC, 2 stage (s)																		
tF (s)	2.2				2.2		3.5		4.0		3.3		3.5		4.0		3.3	
p0 queue free %	100				100		100		100		100		72		100		79	
cM capacity (veh/h)	1391				1335		422		516		801		532		516		840	
Direction, Lane #																		
	EB 1	EB 2	WB 1	SB 1														
Volume Total	243	36	194	325														
Volume Left	0	0	0	150														
Volume Right	0	36	0	173														
cSH	1700	1700	1700	1136														
Volume to Capacity	0.14	0.02	0.11	0.29														
Queue Length 95th (ft)	0	0	0	30														
Control Delay (s)	0.0	0.0	0.0	12.3														
Lane LOS				B														
Approach Delay (s)	0.0		0.0	12.3														
Approach LOS				B														
Intersection Summary																		
Average Delay			5.0															
Intersection Capacity Utilization			27.0%			ICU Level of Service				A								
Analysis Period (min)			15															

HCM Unsignalized Intersection Capacity Analysis  
 106: I-81 NB Off-Ramp/I-81 NB On-Ramp & Rt 55

08/14/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↑	↗		↕	↗			
Traffic Volume (veh/h)	125	252	0	0	158	102	57	4	61	0	0	0
Future Volume (Veh/h)	125	252	0	0	158	102	57	4	61	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	130	262	0	0	165	106	59	4	64	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	271			262			687	793	262	721	687	165
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	271			262			687	793	262	721	687	165
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			100			82	99	92	100	100	100
cM capacity (veh/h)	1287			1314			327	291	782	289	335	885
Direction, Lane #												
Volume Total	392	165	106	127								
Volume Left	130	0	0	59								
Volume Right	0	0	106	64								
cSH	1287	1700	1700	655								
Volume to Capacity	0.10	0.10	0.06	0.19								
Queue Length 95th (ft)	8	0	0	18								
Control Delay (s)	3.3	0.0	0.0	14.3								
Lane LOS	A			B								
Approach Delay (s)	3.3	0.0		14.3								
Approach LOS				B								
Intersection Summary												
Average Delay			4.0									
Intersection Capacity Utilization			41.9%		ICU Level of Service				A			
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

107: Middle Rd

08/14/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	0	0	0	0	0	0	64	0	0	70	82
Future Volume (Veh/h)	46	0	0	0	0	0	0	64	0	0	70	82
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	48	0	0	0	0	0	0	67	0	0	73	85
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	182	182	116	182	225	67	158			67		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	182	182	116	182	225	67	158			67		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	100	100	100	100	100	100			100		
cM capacity (veh/h)	779	712	937	779	674	997	1422			1535		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	48	0	67	158								
Volume Left	48	0	0	0								
Volume Right	0	0	0	85								
cSH	779	1700	1700	1700								
Volume to Capacity	0.06	0.00	0.04	0.09								
Queue Length 95th (ft)	5	0	0	0								
Control Delay (s)	9.9	0.0	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	9.9	0.0	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			1.7									
Intersection Capacity Utilization			18.7%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 1051: I-81 SB On-Ramp

08/14/2025



Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations	↩			↪		
Sign Control	Yield			Yield	Stop	
Traffic Volume (vph)	29	0	0	37	0	0
Future Volume (vph)	29	0	0	37	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	30	0	0	39	0	0
Direction, Lane #	SB 1	SE 1				
Volume Total (vph)	30	39				
Volume Left (vph)	30	0				
Volume Right (vph)	0	0				
Hadj (s)	0.20	0.22				
Departure Headway (s)	4.2	4.2				
Degree Utilization, x	0.03	0.05				
Capacity (veh/h)	840	847				
Control Delay (s)	7.3	7.4				
Approach Delay (s)	7.3	7.4				
Approach LOS	A	A				
<b>Intersection Summary</b>						
Delay			7.4			
Level of Service			A			
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)			15			

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Intersection Sign configuration not allowed in HCM analysis.

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## **HCS REPORTS**

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307	-	0.94	6.00	1700	0.18	53.3	50.6	2.9	B
Segment 6: Passing Constrained									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
307	-	0.94	6.00	1700	0.18	57.6	44.3	2.4	B
Segment 7: Passing Constrained									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
307	-	0.94	6.00	1700	0.18	57.6	44.3	2.4	B
Segment 8: Passing Constrained									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
307	-	0.94	6.00	1700	0.18	55.7	50.1	2.8	B
Segment 9: Passing Constrained									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
307	-	0.94	6.00	1700	0.18	51.1	44.1	2.7	B

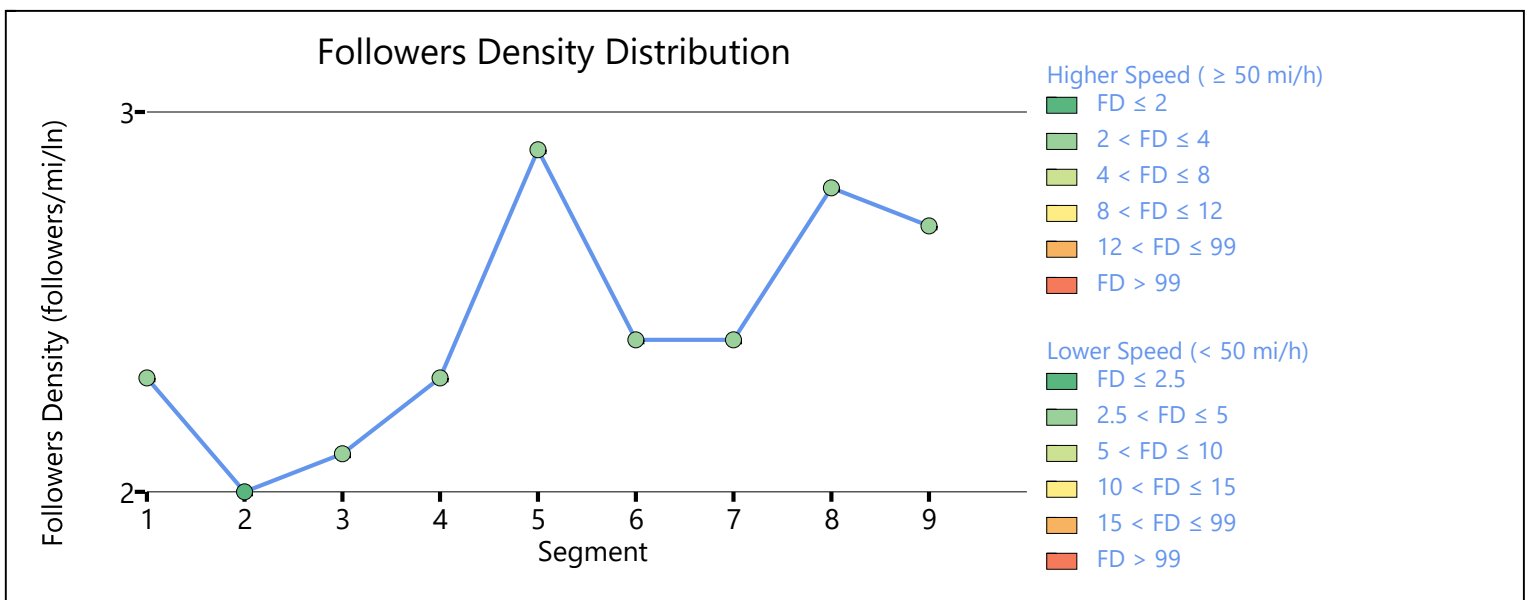
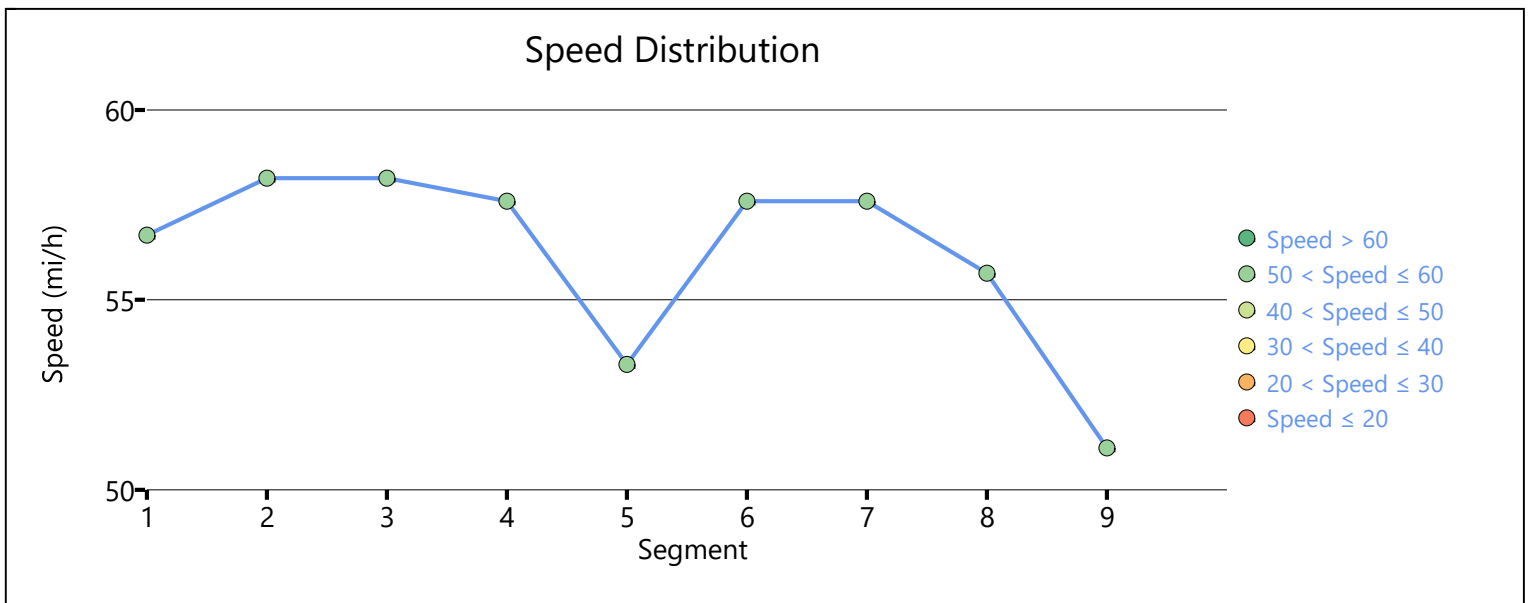
#### Facility Results

VMT veh-mi/AP	VHD veh-h/AP	Follower Density followers/mi/ln	Travel Time min	LOS
349	0.46	2.5	5.20	B

#### Messages

WARNING 1	Bicycle methodology developed for speeds between 25-50 mi/h on segment 1. Use caution when applying methodology at higher speeds.
WARNING 2	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 1. Use caution when applying methodology at higher percentages.
WARNING 3	Bicycle methodology developed for speeds between 25-50 mi/h on segment 2. Use caution when applying methodology at higher speeds.
WARNING 4	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 2. Use caution when applying methodology at higher percentages.
WARNING 5	Bicycle methodology developed for speeds between 25-50 mi/h on segment 3. Use caution when applying methodology at higher speeds.
WARNING 6	Segment Length Over/Under recommended lengths on segment 3. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.
WARNING 7	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 3. Use caution when applying methodology at higher percentages.
WARNING 8	Bicycle methodology developed for speeds between 25-50 mi/h on segment 4. Use caution when applying methodology at higher speeds.
WARNING 9	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 4. Use caution when applying methodology at higher percentages.
WARNING 10	Bicycle methodology developed for speeds between 25-50 mi/h on segment 5. Use caution when applying methodology at higher speeds.
WARNING 11	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 5. Use caution when applying methodology at higher percentages.
WARNING 12	Bicycle methodology developed for speeds between 25-50 mi/h on segment 6. Use caution when applying methodology at higher speeds.
WARNING 13	Segment Length Over/Under recommended lengths on segment 6. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.
WARNING 14	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 6. Use caution

	when applying methodology at higher percentages.
WARNING 15	Bicycle methodology developed for speeds between 25-50 mi/h on segment 7. Use caution when applying methodology at higher speeds.
WARNING 16	Segment Length Over/Under recommended lengths on segment 7. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.
WARNING 17	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 7. Use caution when applying methodology at higher percentages.
WARNING 18	Bicycle methodology developed for speeds between 25-50 mi/h on segment 8. Use caution when applying methodology at higher speeds.
WARNING 19	Segment Length Over/Under recommended lengths on segment 8. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.
WARNING 20	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 8. Use caution when applying methodology at higher percentages.
WARNING 21	Bicycle methodology developed for speeds between 25-50 mi/h on segment 9. Use caution when applying methodology at higher speeds.
WARNING 22	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 9. Use caution when applying methodology at higher percentages.
<b>Comments</b>	





# HCS Two-Lane Highway Facility Report

## Project Information

Analyst		Date	7/29/2025
Agency		Analysis Year	2025
Jurisdiction		Time Analyzed	
Facility Name		Units	U.S. Customary
Project Description	Route 55 Section 2		

## Facility Segment Data

No.	Name	Type	Length ft	Lane Width ft	Shoulder Width ft	Speed Limit mi/h	Access Point Density pts/mi
1		Passing Constrained	3273	12	3	55	-

### Segment 1: Passing Constrained

Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
273	-	0.94	5.90	1700	0.16	57.8	39.1	1.8	A

## Facility Results

VMT veh-mi/AP	VHD veh-h/AP	Follower Density followers/mi/ln	Travel Time min	LOS
40	0.03	1.8	0.60	A

## Messages

WARNING 1	Bicycle methodology developed for speeds between 25-50 mi/h on segment 1. Use caution when applying methodology at higher speeds.
WARNING 2	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 1. Use caution when applying methodology at higher percentages.

## Comments

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# HCS Two-Lane Highway Facility Report

## Project Information

Analyst		Date	7/29/2025
Agency		Analysis Year	2025
Jurisdiction		Time Analyzed	
Facility Name		Units	U.S. Customary
Project Description	Route 55 Section 3		

## Facility Segment Data

No.	Name	Type	Length ft	Lane Width ft	Shoulder Width ft	Speed Limit mi/h	Access Point Density pts/mi
1	MP 5.45 to 5.53	Passing Constrained	422	12	3	55	-
2	MP 5.53 to 6.66	Passing Constrained	5956	12	3	55	-
3	MP 6.66 to 6.72	Passing Constrained	317	12	3	55	-
4	MP 6.72 to 6.86	Passing Zone	739	12	3	55	-
5	MP 6.86 to 7.04	Passing Zone	950	12	3	55	-
6	MP 7.04 to 7.2	Passing Constrained	845	12	3	55	-
7	MP 7.2 to 7.24	Passing Constrained	211	12	3	55	-
8	MP 7.24 to 7.77	Passing Zone	2777	12	3	55	-
9	MP 7.77 to 8.1	Passing Constrained	2059	12	3	55	-
10	MP 8.1 to 8.41	Passing Constrained	1637	12	3	55	-
11	MP 8.41 to 8.84	Passing Constrained	2270	12	3	55	-
12	MP 8.84 to 9	Passing Constrained	845	12	3	55	-
13	MP 9 to 9.49	Passing Constrained	2587	12	3	55	-
14	MP 9.49 to 9.71	Passing Constrained	1162	12	3	55	-
15	MP 9.71 to 9.85	Passing Constrained	739	12	3	55	-
16	MP 9.85 to 9.92	Passing Constrained	370	12	3	55	-
17	MP 9.92 to 10.32	Passing Constrained	2112	12	3	55	-
18	MP 10.32 to 10.43	Passing Constrained	581	12	3	55	-

### Segment 1: Passing Constrained

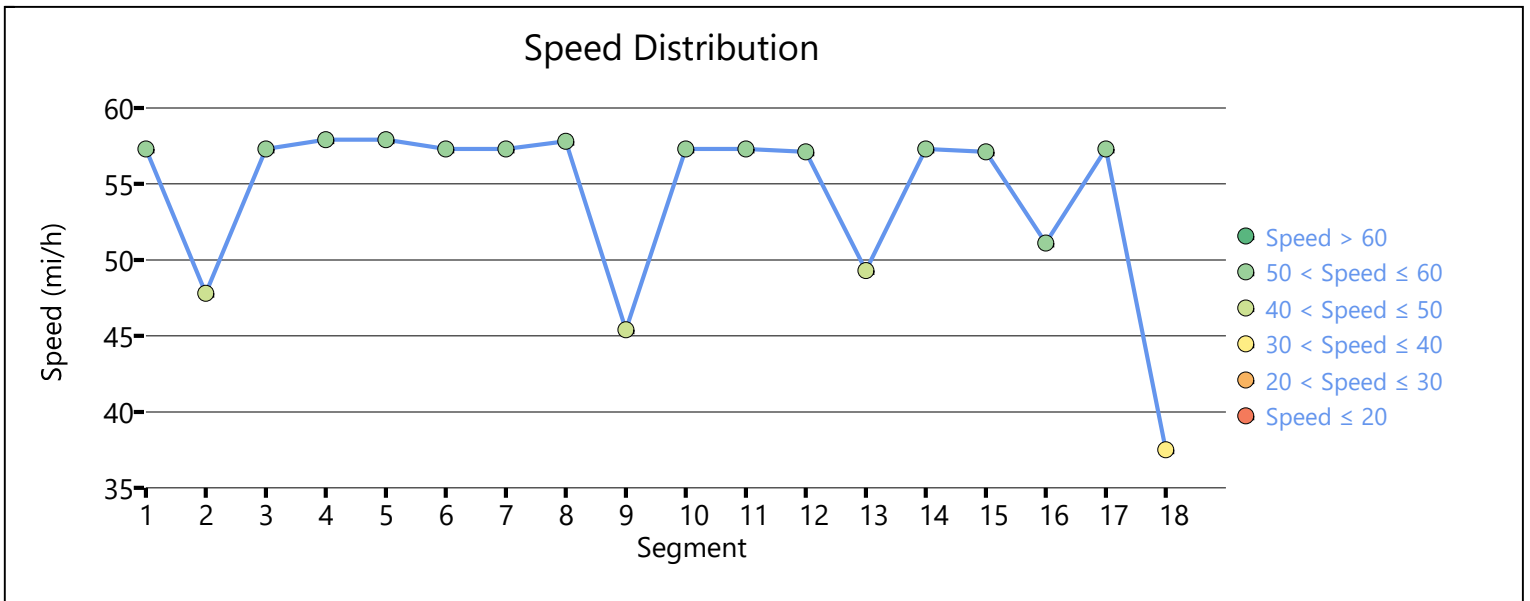
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
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377	-	0.94	5.95	1700	0.22	57.3	49.3	3.2	B
<b>Segment 2: Passing Constrained</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	-	0.94	5.95	1700	0.22	47.8	55.6	4.4	C
<b>Segment 3: Passing Constrained</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	-	0.94	5.95	1700	0.22	57.3	49.3	3.2	B
<b>Segment 4: Passing Zone</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	188	0.94	5.95	1700	0.22	57.9	45.4	3.0	B
<b>Segment 5: Passing Zone</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	188	0.94	5.95	1700	0.22	57.9	45.4	3.0	B
<b>Segment 6: Passing Constrained</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	-	0.94	5.95	1700	0.22	57.3	49.3	3.2	B
<b>Segment 7: Passing Constrained</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	-	0.94	5.95	1700	0.22	57.3	49.3	3.2	B
<b>Segment 8: Passing Zone</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	188	0.94	5.95	1700	0.22	57.8	43.3	2.8	B
<b>Segment 9: Passing Constrained</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	-	0.94	5.95	1700	0.22	45.4	50.6	4.2	C
<b>Segment 10: Passing Constrained</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	-	0.94	5.95	1700	0.22	57.3	48.7	3.2	B
<b>Segment 11: Passing Constrained</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	-	0.94	5.95	1700	0.22	57.3	47.8	3.1	B
<b>Segment 12: Passing Constrained</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	-	0.94	5.95	1700	0.22	57.1	52.3	3.4	B
<b>Segment 13: Passing Constrained</b>									

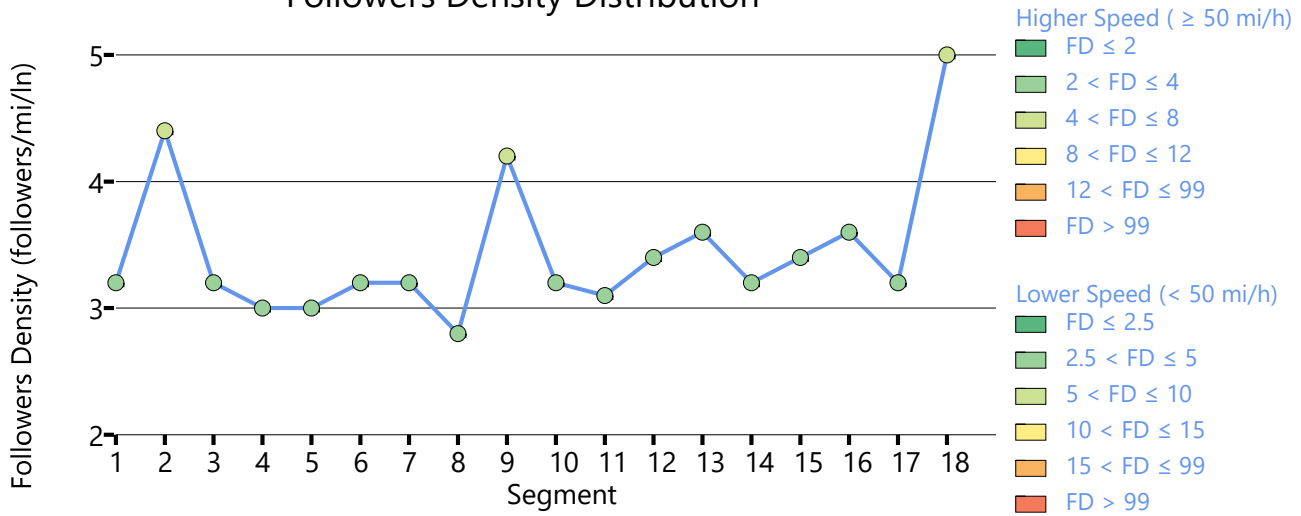
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	-	0.94	5.95	1700	0.22	49.3	47.4	3.6	B
<b>Segment 14: Passing Constrained</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	-	0.94	5.95	1700	0.22	57.3	49.3	3.2	B
<b>Segment 15: Passing Constrained</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	-	0.94	5.95	1700	0.22	57.1	52.3	3.4	B
<b>Segment 16: Passing Constrained</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	-	0.94	5.95	1700	0.22	51.1	49.3	3.6	B
<b>Segment 17: Passing Constrained</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	-	0.94	5.95	1700	0.22	57.3	48.0	3.2	B
<b>Segment 18: Passing Constrained</b>									
Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
377	-	0.94	5.95	1700	0.22	37.5	49.3	5.0	C
<b>Facility Results</b>									
VMT veh-mi/AP		VHD veh-h/AP		Follower Density followers/mi/ln		Travel Time min		LOS	
446		1.06		3.6		5.80		B	
<b>Messages</b>									
WARNING 1		Bicycle methodology developed for speeds between 25-50 mi/h on segment 1. Use caution when applying methodology at higher speeds.							
WARNING 2		Segment Length Over/Under recommended lengths on segment 1. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.							
WARNING 3		Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 1. Use caution when applying methodology at higher percentages.							
WARNING 4		Bicycle methodology developed for speeds between 25-50 mi/h on segment 2. Use caution when applying methodology at higher speeds.							
WARNING 5		Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 2. Use caution when applying methodology at higher percentages.							
WARNING 6		Bicycle methodology developed for speeds between 25-50 mi/h on segment 3. Use caution when applying methodology at higher speeds.							
WARNING 7		Segment Length Over/Under recommended lengths on segment 3. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.							
WARNING 8		Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 3. Use caution when applying methodology at higher percentages.							
WARNING 9		Bicycle methodology developed for speeds between 25-50 mi/h on segment 4. Use caution when applying methodology at higher speeds.							
WARNING 10		Segment Length Over/Under recommended lengths on segment 4. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.							

WARNING 11	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 4. Use caution when applying methodology at higher percentages.
WARNING 12	Bicycle methodology developed for speeds between 25-50 mi/h on segment 5. Use caution when applying methodology at higher speeds.
WARNING 13	Segment Length Over/Under recommended lengths on segment 5. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.
WARNING 14	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 5. Use caution when applying methodology at higher percentages.
WARNING 15	Bicycle methodology developed for speeds between 25-50 mi/h on segment 6. Use caution when applying methodology at higher speeds.
WARNING 16	Segment Length Over/Under recommended lengths on segment 6. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.
WARNING 17	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 6. Use caution when applying methodology at higher percentages.
WARNING 18	Bicycle methodology developed for speeds between 25-50 mi/h on segment 7. Use caution when applying methodology at higher speeds.
WARNING 19	Segment Length Over/Under recommended lengths on segment 7. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.
WARNING 20	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 7. Use caution when applying methodology at higher percentages.
WARNING 21	Bicycle methodology developed for speeds between 25-50 mi/h on segment 8. Use caution when applying methodology at higher speeds.
WARNING 22	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 8. Use caution when applying methodology at higher percentages.
WARNING 23	Bicycle methodology developed for speeds between 25-50 mi/h on segment 9. Use caution when applying methodology at higher speeds.
WARNING 24	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 9. Use caution when applying methodology at higher percentages.
WARNING 25	Bicycle methodology developed for speeds between 25-50 mi/h on segment 10. Use caution when applying methodology at higher speeds.
WARNING 26	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 10. Use caution when applying methodology at higher percentages.
WARNING 27	Bicycle methodology developed for speeds between 25-50 mi/h on segment 11. Use caution when applying methodology at higher speeds.
WARNING 28	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 11. Use caution when applying methodology at higher percentages.
WARNING 29	Bicycle methodology developed for speeds between 25-50 mi/h on segment 12. Use caution when applying methodology at higher speeds.
WARNING 30	Segment Length Over/Under recommended lengths on segment 12. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.
WARNING 31	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 12. Use caution when applying methodology at higher percentages.
WARNING 32	Bicycle methodology developed for speeds between 25-50 mi/h on segment 13. Use caution when applying methodology at higher speeds.
WARNING 33	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 13. Use caution when applying methodology at higher percentages.
WARNING 34	Bicycle methodology developed for speeds between 25-50 mi/h on segment 14. Use caution when applying methodology at higher speeds.
WARNING 35	Segment Length Over/Under recommended lengths on segment 14. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.
WARNING 36	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 14. Use caution when applying methodology at higher percentages.

WARNING 37	Bicycle methodology developed for speeds between 25-50 mi/h on segment 15. Use caution when applying methodology at higher speeds.
WARNING 38	Segment Length Over/Under recommended lengths on segment 15. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.
WARNING 39	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 15. Use caution when applying methodology at higher percentages.
WARNING 40	Bicycle methodology developed for speeds between 25-50 mi/h on segment 16. Use caution when applying methodology at higher speeds.
WARNING 41	Segment Length Over/Under recommended lengths on segment 16. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.
WARNING 42	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 16. Use caution when applying methodology at higher percentages.
WARNING 43	Bicycle methodology developed for speeds between 25-50 mi/h on segment 17. Use caution when applying methodology at higher speeds.
WARNING 44	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 17. Use caution when applying methodology at higher percentages.
WARNING 45	Bicycle methodology developed for speeds between 25-50 mi/h on segment 18. Use caution when applying methodology at higher speeds.
WARNING 46	Segment Length Over/Under recommended lengths on segment 18. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.
WARNING 47	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 18. Use caution when applying methodology at higher percentages.
<b>Comments</b>	



# Followers Density Distribution



# HCS Two-Lane Highway Facility Report

## Project Information

Analyst		Date	7/30/2025
Agency		Analysis Year	2025
Jurisdiction		Time Analyzed	
Facility Name		Units	U.S. Customary
Project Description	Route 55 EC Section 4		

## Facility Segment Data

No.	Name	Type	Length ft	Lane Width ft	Shoulder Width ft	Speed Limit mi/h	Access Point Density pts/mi
1	MP 10.43 to 10.83	Passing Constrained	2112	12	3	55	-
2	MP 10.83 to 11.24	Passing Constrained	2165	12	3	55	-
3	MP 11.24 to 14.42	Passing Constrained	16685	12	3	55	-
4	MP 14.42 to 14.47	Passing Constrained	264	12	3	55	-

### Segment 1: Passing Constrained

Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
420	-	0.94	5.95	1700	0.25	57.1	50.8	3.7	B

### Segment 2: Passing Constrained

Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
420	-	0.94	5.95	1700	0.25	57.1	50.7	3.7	B

### Segment 3: Passing Constrained

Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
420	-	0.94	5.95	1700	0.25	57.1	53.1	3.9	B

### Segment 4: Passing Constrained

Demand veh/h	Opp. Demand veh/h	PHF	%HV	Capacity veh/h	D/C	Speed mi/h	% Followers	Follower Density followers/mi/ln	LOS
420	-	0.94	5.95	1700	0.25	57.2	52.2	3.8	B

## Facility Results

VMT veh-mi/AP	VHD veh-h/AP	Follower Density followers/mi/ln	Travel Time min	LOS
397	0.34	3.9	4.20	B

## Messages

WARNING 1	Bicycle methodology developed for speeds between 25-50 mi/h on segment 1. Use caution when applying methodology at higher speeds.
WARNING 2	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 1. Use caution when applying methodology at higher percentages.
WARNING 3	Bicycle methodology developed for speeds between 25-50 mi/h on segment 2. Use caution when applying methodology at higher speeds.
WARNING 4	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 2. Use caution when applying methodology at higher percentages.

WARNING 5	Bicycle methodology developed for speeds between 25-50 mi/h on segment 3. Use caution when applying methodology at higher speeds.
WARNING 6	Segment Length Over/Under recommended lengths on segment 3. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.
WARNING 7	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 3. Use caution when applying methodology at higher percentages.
WARNING 8	Bicycle methodology developed for speeds between 25-50 mi/h on segment 4. Use caution when applying methodology at higher speeds.
WARNING 9	Segment Length Over/Under recommended lengths on segment 4. Segment analyzed at recommended length. Split/Combine segment(s) to resolve this warning.
WARNING 10	Bicycle methodology developed for heavy vehicle percentage up to 2% on segment 4. Use caution when applying methodology at higher percentages.
<b>Comments</b>	

