

Speed Limit Study–Non-Limited Access Highways

Culpeper District Traffic Engineering

Date 9/1/2026

Route 656 – Cedar Hill Road

VDOT District: Culpeper

Jurisdiction(s): Louisa County

From: Rte. 618 (Fredericks Hall Rd)

To: Rte. 33 (Jefferson Highway)

Length: 5.4 miles



Study Area Map

The study area is shown in Figure 1 below in red, with the locations of the counters marked yellow.



Figure 1: Study Area Map

Functional Class: Rural Local

Existing Speed Limit on Study Roadway: Statutory 55 MPH Trucks 45MPH (Code of Virginia §46.2-870)

Origin and Nature of Request: The Culpeper District Traffic Engineering received a request from the Louisa Residency to conduct speed study on the entire length of Rte. 656 (Cedar Hill Road), from Rte. 618 (Fredericks Hall Rd) to Rte. 33 (Jefferson Highway). The study aims to confirm or revise the statutory 55MPH speed limit based on prevailing roadway environment, roadway characteristics, geographic context, crash experience, and speed distribution of free-flowing vehicles. Signs indicating the statutory limit were installed in December 2023.

Study Results and Recommendation: Speed samples were collected on Rte. 656 (Cedar Hill Road). The speed study recorded an 85th percentile speed of 48.1MPH within a segment, increasing to 52.8 MPH and 58.5 MPH in subsequent segments, indicating a distinct change in operating speeds attributable to variations in roadway geometry and prevailing conditions.

Two (2) crashes were reported over the five-year analysis period. The first was an object-in-road crash involving a southbound driver on Rte. 656 who experienced severe sun glare, resulting in significantly impaired visibility and failure to detect a large fallen tree that fully obstructed the roadway. The second crash occurred when a southbound vehicle struck a deer. Both incidents resulted in property damage only.

Based on the observed operating speeds, roadway characteristics, surrounding environment, and safety performance, the study supports lowering the existing Statutory 55MPH speed limit and establishing two posted speed zones. A 45MPH zone for the 1.65 mi segment South of Rte. 618, followed by a 50MPH zone for the next 3.75 mi segment.

Speed Data Collection and Analysis

Data Collection

Speed data was collected using the Omega X3 traffic counter device from August 19 to August 20, 2026. A visual representation of the counter placement (marked yellow) can be seen in Figure 1.

Speed Analysis

Counter # 1

Operating (85th percentile) speed: 48.1MPH
 Median (50th percentile) speed: 41.5 MPH
 Average Speed: 41.1 MPH
 Pace Speed: 35.5 – 45.4 MPH (55.8%)
 ADT: 178

Counter # 2

Operating (85th percentile) speed: 52.8 MPH
 Median (50th percentile) speed: 43.7 MPH
 Average Speed: 44.1 MPH
 Pace Speed: 41.0 – 50.29MPH (45.5%)
 ADT: 190

Counter # 3

Operating (85th percentile) speed: 58.5 MPH
 Median (50th percentile) speed: 50.9 MPH
 Average Speed: 50.5 MPH
 Pace Speed: 45.5 – 55.4MPH (48.7%)
 ADT: 251

Counter# 1 has an 85th percentile speed of 48.1MPH, while Counters # 2 and #3 increased to 52.8 MPH and 58.5 MPH, respectively. This upward progression indicates a distinct change in driver operating behavior along the corridor. The speed data show a clear separation in operating speeds between Counters # 1 and Counters #2-#3.

The observed 85th percentile speeds for the segments monitored by Counters #1 and #2 are below the statutory 55MPH while the 85th percentile for the segment with Counter #3 is 3MPH above the statutory speed limit. The 50th percentile speeds for all three counters remained well below the statutory speed limit.

Based on the observed differences between the speed data at Counter #1 and the other two Counters, the study recommends establishing two distinct speed zones along the corridor. Study recommends posting 45MPH speed zone that would correspond to the segment represented by Counter# 1, where operating speeds are in the upper-40 MPH range. The second zone is recommended to be posted 50MPH to encompass the segments represented by Counters # 2 and #3, where operating speeds increased into the mid-50 MPH range.

Other Factors for Consideration

A. Road Characteristics

Route 645 is a two-lane two-way highway with Rural Local functional classification. A field visit was conducted on August 26, 2026, to assess existing roadway environment and roadway characteristics. The traveled way width ranges from approximately 15.4ft to 19.0ft varying throughout the segment without forming a clear transition zone.

Within the segment with Counter #1, the average traveled-way width was 16.7 ft, while the remaining segment exhibited a slightly higher average width of 17.2 ft.

Horizontal and vertical curves occur throughout Rte. 656, with the alignment alternating between curves and straight segments along most of the corridor. However, the approximately 2.5-mile section north of Route 33 is relatively uniform straight alignment with minimal horizontal curves compared to the remainder of the roadway. A bridge is located 0.63mi South of Rte. 618. The roadway currently has Stop signs, Stop Ahead, Speed limit, School Bus Stop Ahead, Curve warning, Advisory speed plaque signs posted. The entire study segment is unmarked and without shoulders.

B. Roadside development and environment:

The surrounding areas along Rte. 656 consist primarily of **large agricultural areas**, forming a continuous rural landscape dominated by farmland and pasture. Parcels adjoining the roadway are generally zoned **A1 or A2 Agricultural**.

The intersection/driveway density along the study roadway is 15 access points per mile (mostly private driveways and farm entrances). The ADT is 251 vpd.

C. Crash Analysis

Crash Records are for the period: From: 1/1/2020 To: 12/31/2025.

NOTE: Crash records are from VDOT's Roadway Network System (RNS) crash module based on the Department of Motor Vehicle's official record of reportable crashes (those involving an injury or fatality or property damage exceeding \$1,500). Due to the time required to process and code reported crashes data for the most recent 1-2 months (or more) may not be available.

For the study segment there were:

2 Crashes

0 Injury

0 Fatality

53.7 Crash Rate

0 Injury Rate

0 Fatality Rate

per 100 million VMT

per 100 million VMT

per 100 million VMT

According to VDOT's "Crash Summary Book", the 2025 Districtwide Average Rates for Rural Local:

Crash Rate was 162.37

Injury Rate is 83.08

Fatality Rate is 0.34

per 100 million VMT

per 100 million VMT

per 100 million VMT

Rte. 656 has a five-year crash, injury and fatality rates below the Districtwide Rate for Rural Local system. The crash rate in this section is 67% lower than the average of similar sections. The rate of Injury and Fatal crashes for this segment is 100% lower than the average rate of similar sections.

D. Additional comments:

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[1,1]Policy Qualifier Info:

Policy Qualifier Id=CPS

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Status

Timestamp

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