May 19th Public Meeting Background

Route 29 Corridor Study Intersection Concepts

May 2022

Introduction

The Route 29 corridor improvement study's purpose is to identify and vet potential operational and safety improvements along Route 29 north of Charlottesville in Albemarle County and Greene County. The study area is between Route 649 (Airport Road) in Albemarle County and Deerfield Drive in Greene County. This is the final phase of the study that started in April 2021 with gathering data, reviewing issues, opportunities, and objectives and developing an Existing and Future No-Build Condition Report.

In September, the study team conducted the first of two public meetings to refine the study's goals and objectives used to guide the study. They also conducted a public survey with 373 participants. Eighty-eight percent of the survey respondents reported that they use Route 29 for shopping and retail, 72% use the corridor to access their homes, and 62% use it to access employment. The presentation summarizing the survey results and more information about the project are on the project webpage: https://www.virginiadot.org/projects/culpeper/rt29corridorstudy.asp.

The final phase of this study will include the May 19th public meeting and an online survey to gather public input before the results are summarized. The projects offered in this study are not funded, they are potential projects that may become funded in the future to alleviate safety and congestion concerns. The purpose of this document is to provide additional information about the content of the upcoming public meeting to planners and elected officials affected by the study area.

Concepts and Cost Estimates

Following is a high-level overview of each of the concept designs produced in the Route 29 Corridor Study, noting that the cost estimates are planning level, were developed using the VDOT Culpeper Costing Tool, and have a conservative amount of contingencies. Each of the selected study intersections has several possible alternatives described.

Matthew Mill Road

Matthew Mill Road and US 29 has a total of four alternatives. The intersection is along a VDOT PSI segment, has been identified as a priority location VDOT, and has both safety and operational concerns. The only three fatalities along the study corridor within the last five years were pedestrians and occurred at or near the Matthew Mill Road intersection with US 29.

Modified Signal/Lane Configurations: This alternative modifies the existing signal to convert the minor leg from split phasing to protected-permissive phasing. Additionally, a separate left, through, and right lane are provided on the eastbound approach.

- Safety: pedestrian signals are provided for the north and west approaches.
- Operational: delay and queues are reduced, from intersection LOS D to LOS C.

- Cost: $2.61 million

RCUT: This alternative converts the intersection into an RCUT, directing all minor approach vehicles to turn right, and then make a U-turn at neighboring intersections (in this case, the unsignalized Deerfield Drive intersection and signalized Route 670/607 Connector intersection). This alternative aligns with and depends on the proposed Route 607/670 Connector project as well as recommended improvements from the Villages at Terrace Greene study.

- Safety: pedestrian signals are provided for all approaches. The existing bike lane is transitioned to use the crossing facilities. Additionally, the number of conflict points is reduced due to the restriction of minor-leg left turns. Other surrounding intersections (like Route 33 and Route 670/607 Connector) are proposed RCUTs as well, so it provides consistency along the corridor.
- Operational: delay and queues are reduced, with least amount of experienced travel time (compared to all bowtie and quadrant options initially analyzed). Intersection LOS D to LOS B.
- Cost: $6.35 million

Bowtie: This alternative converts the intersection into a bowtie, redirecting all left turns at the intersection (major and minor legs) to use the adjacent roundabouts along Matthew Mill and Cedar Grove Road and continue through or right.

- Safety: pedestrian signals are provided for the north and west approaches. Additionally, the number of conflict points is reduced due to the restriction of all left turns.
- Operational: delay and queues are reduced, from intersection LOS D to LOS C.
- Cost: $10.22 million

Partial Quadrant Roadway: This alternative redirects all minor leg left turns at the intersection to use Preddy Creek Road. Vehicles will access US 29 via the proposed Route 607/670 connector. This alternative is dependent on the Route 607/670 Connector Project and recommended improvements from the Villages at Terrace Greene study.

- Safety: pedestrian signals are provided for the north and west approaches. Additionally, the number of conflict points is reduced due to the restriction of minor-leg left turns.
- Operational: delay and queues are reduced, from intersection LOS D to LOS B.
- Cost: $5.33 million

Frays Mill Road

Frays Mill Road and US 29 has a total of three alternatives, and currently is listed as a VDOT PSI intersection. It additionally has significant operational concerns.

Modified Signal/Lane Configurations: This alternative provides a separate right-turn lane on both westbound and eastbound approaches. Additionally, the signal is modified to convert the minor legs from operating under split phasing to protected-permissive phasing.

- Safety: pedestrian signals are provided for the north and west approaches. Permissive phasing may cause confusion for left-turning vehicles.
- Operational: delay and queues are reduced, from intersection LOS F to LOS D.
- Cost: $3.03 million

RCUT: This alternative converts the intersection into an RCUT, directing all minor approach vehicles to turn right, and then make a U-turn at new signalized median breaks.

- Safety: pedestrian signals are provided for north, west, and south approaches. The number of conflict points is reduced due to the restriction of minor-leg left turns.
- Operational: delay and queues are reduced, from intersection LOS F to LOS C.
- Cost: $8.22 million

Bowtie: This alternative converts the intersection into a bowtie, redirecting all left turns at the intersection (major and minor legs) to use the adjacent roundabouts along Frays Mill Road and Burnley Station Road and continue through or right.

- Safety: pedestrian signals are provided for the north and west approaches. Additionally, the number of conflict points is reduced due to the restriction of all left turns.
- Operational: delay and queues are reduced, from intersection LOS F to LOS D.
- Cost: $8.74 million

Boulders Road

Boulders Road and US 29 has a total of two alternatives. The intersection is along an identified VDOT PSI segment, is listed as a VDOT priority location, and has significant operational concerns.

Modified Signal/Lane Configurations: This alternative modifies the existing signal to convert the minor legs from operating under split phasing to protected left-turn phasing and permissive through-right phasing.

- Safety: pedestrian signals are provided for the north and west approaches.
- Operational: delay and queues are reduced, though intersection LOS stays the same as no-build (LOS D).
- Cost: $1.19 million

RCUT: This alternative converts the intersection into an RCUT, directing all minor approach vehicles to turn right, and then make a U-turn at proposed median breaks.

- Safety: pedestrian signals are provided for north, west, and south approaches. The number of conflict points is reduced due to the restriction of minor-leg left turns.
- Operational: delay and queues are reduced, from intersection LOS D to LOS C.

- Cost: $6.41 million

Camelot Drive

Camelot Drive and US 29 is along an identified VDOT PSI segment. It has safety concerns due to the unsignalized median break and has poor operations due to delay (though there are no capacity issues). One alternative was developed for Camelot Drive, which modifies access to and from US 29. This alternative converts the intersection into somewhat of an RCUT, allowing only rights out at the minor legs. A left-in from US 29 is allowed in the southbound direction, but northbound lefts are directed north to use Briarwood Drive to access Camelot Drive.

- Safety: a pedestrian crossing is provided for the west approach. The number of conflict points is reduced due to the restriction of left turns onto US 29 and northbound left turns off US 29.
- Operational: delay and queues are reduced. Capacity is still not an issue.
- Cost: $425,000

Lewis & Clark Drive

Lewis and Clark Drive and US 29 has a total of two alternatives. The intersection is identified as a PSI and priority location and has operational concerns.

Modified Signal/Lane Configurations: This alternative adds a second left-turn lane on the eastbound approach at the signal.

- Safety: pedestrian signals are provided for the west approach.
- Operational: delay and queues are reduced, though intersection LOS stays the same as no-build (LOS C).
- Cost: $1.78 million

RCUT: This alternative converts the intersection into an RCUT, directing all minor approach vehicles to turn right, and then make a U-turn at new signalized median breaks. This RCUT assumes future development would be occurring to the east, but there is also an option showing no future development or fourth leg to the intersection.

- Safety: pedestrian signals are provided for north, west, and south approaches. The number of conflict points is reduced due to the restriction of minor-leg left turns.
- Operational: delay and queues are reduced, from intersection LOS C to LOS B.
- Cost: $6.98 million

Airport Road

Lewis and Clark Drive and US 29 has a total of two alternatives, both of which are modified signals and lane configurations. The intersection has significant operational concerns.

Modified Signal/Lane Configurations 1: This alternative adds a third receiving lane northbound and tapers off so the northbound bottleneck is shifted beyond, not at, the signal. The southbound approach is aligned with VDOT's recent restriping.

- Safety: pedestrian signals are provided for the west, north, and east approaches.
- Operational: delay and queues are reduced, from intersection LOS F to LOS D.
- Cost: $3.74 million

Modified Signal/Lane Configurations 2: This alternative is the same as the first, except adding a separate right turn lane southbound instead of the striped combined through-right lane.

- Safety: pedestrian signals are provided for the west, north, and east approaches. Provides an independent lane for southbound right turning movements.
- Operational: delay and queues are reduced, from intersection LOS F to LOS D.
- Cost: $4.57 million

Next Steps

A public meeting is scheduled for May 19th 2022. The purpose of the meeting will be to share concepts to the public and receive feedback on the designs and preferred alternatives. This public meeting is planned to be virtual as the first public meeting was. Following the public meeting a survey will be opened for two weeks following the public meeting.