



# Route 811 Thomas Jefferson Road

## Corridor Study Route 221 to Turkey Foot Rd

**Study Partners:**  
Region 2000 Local Government Council  
Bedford County  
Central Virginia MPO  
Virginia Department of Transportation  
EPR PC

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# Introduction

Route 811, or Thomas Jefferson Rd, is a two lane road in eastern Bedford County located in and nearby the community of Forest. The corridor generally has a north-south alignment and serves as a connection between US 460 and Route 221. In addition, many vehicles use the road in conjunction with Waterlick Rd as a route between Forest Rd (Rt 221) and Timberlake Rd (US 460 Business). Route 811 is functionally classified as an “Urban Minor Arterial” north of Waterlick Rd and “Urban Collector” south of Waterlick Rd.

In addition to this role as a regional connection corridor, Route 811 provides direct access to numerous homes and surrounding neighborhoods. The road also provides access to the Forest Youth Athletic Association recreation fields, the Forest Volunteer Fire Department, Thomas Jefferson Elementary School, several churches, and an emerging business and office district in the vicinity of Burnbridge Rd and Forest Rd.

## Problem Statement

The community of Forest and the surrounding area has experienced significant growth in recent decades. From 1990 to 2010, the population of Forest grew by 62%. As a result, traffic volumes on Route 811 have increased substantially and now approach the point of exceeding the effective operational capacity of the road in some areas. This often leads to congestion and significant travel delays, especially at major intersections during peak travel hours. The heavy traffic can also create safety hazards for vehicles turning on and off of the road, as well as for non-motorized travelers such as bicyclists and pedestrians.

## Purpose and Scope of Study

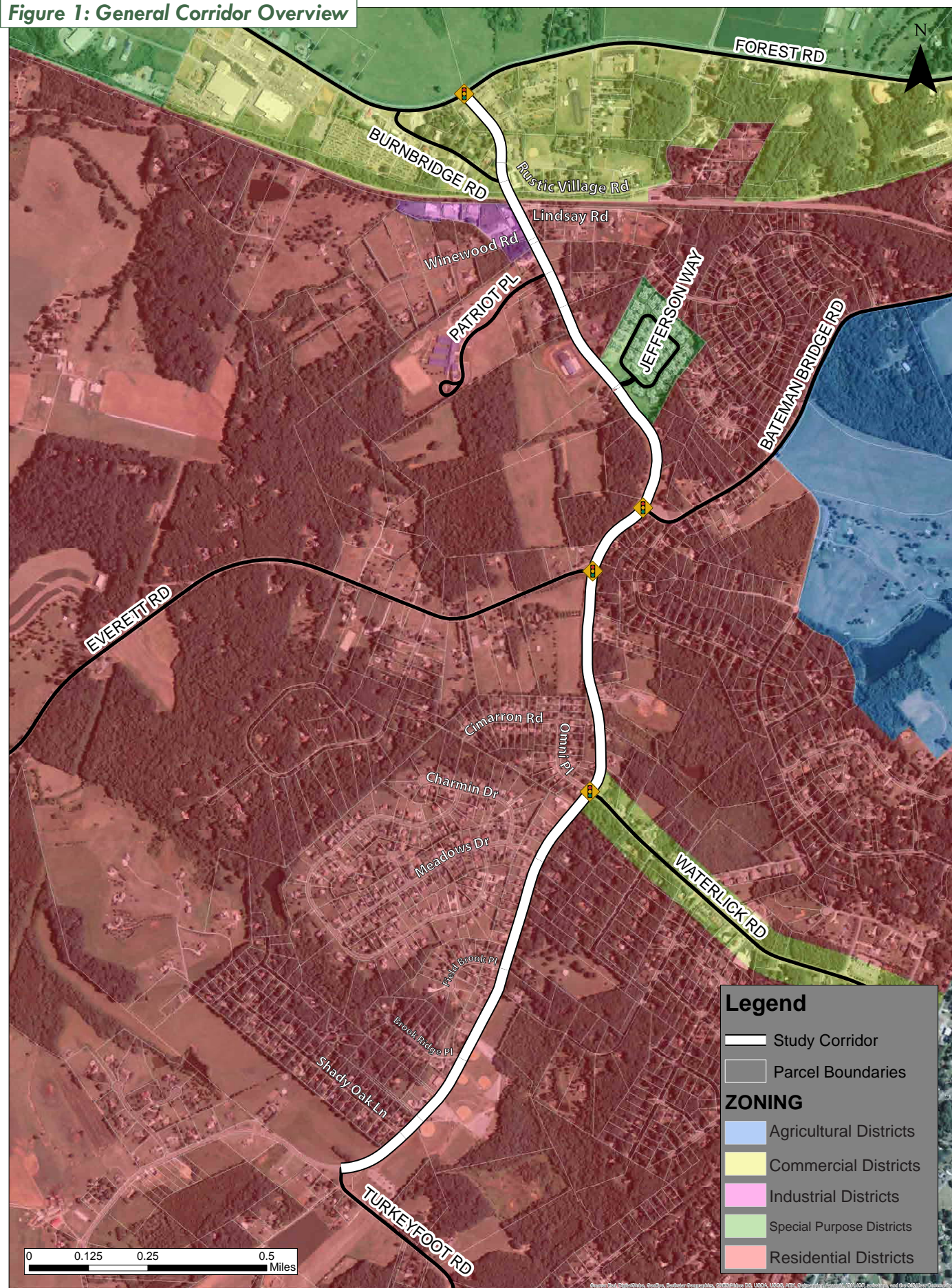
Traffic volumes on Route 811 are expected to continue steadily increasing as the population of the surrounding area continues to grow. According to the Virginia Employment Commission, the population of Bedford County is expected to increase by 59% from 2000 to 2040. If the road is to remain operationally efficient in the future, substantial improvements to the corridor will be required in some places. In order to create an effective and timely strategy for implementing these improvements, the Region 2000 Local Government Council, the Central Virginia MPO, the Virginia Department of Transportation, and Bedford County have partnered in support of this corridor study.

The scope of this study was defined as the segment of the corridor between the intersection with Turkey Foot Rd and the road’s northern terminus at the intersection with Forest Rd (Rte 221). This is the primary section of the road in which future traffic volumes are expected to exceed its existing capacity. The study models conditions through 2040 and identifies opportunities to reduce congestion, improve safety, and accommodate bicycles and pedestrians as needed.

*Through the course of the study, a question that was frequently asked in public meetings was why it did not address the section of Route 811 between Turkey Foot Rd and US 460. The reason for this was that the study partners chose to use the available project funding to conduct a comprehensive evaluation of the section of the corridor that features the highest traffic volumes and is most likely to require major future improvements in order to maintain effective operations. This section was identified as that from Turkey Foot Rd to Forest Rd.*



**Figure 1: General Corridor Overview**





# Conditions Analysis

## Traffic Operations

The analysis of traffic operations considered average daily traffic volumes (ADT), levels of service at major intersections, and traffic signal coordination possibilities.

### Average Daily Traffic

Average daily traffic volumes within the study corridor fluctuate depending on location. In general terms, the corridor can be divided into four segments that correlate with these changes.

The first segment extends from Turkey Foot Rd to Waterlick Rd. Using intersection traffic count data, the 2015 ADT is estimated to be approximately 9,700 vehicles- the lowest traffic volumes in the study corridor. By 2040, these volumes are projected to increase to approximately 14,000 vehicles per day.

The second segment extends from Waterlick Rd to Everett Rd. A large number of vehicles enter and exit the corridor at the Waterlick Rd intersection, and as a result the estimated 2015 ADT increases north of Waterlick Rd to 14,350 vehicles. By 2040, these volumes are projected to increase to almost 21,000 vehicles per day.

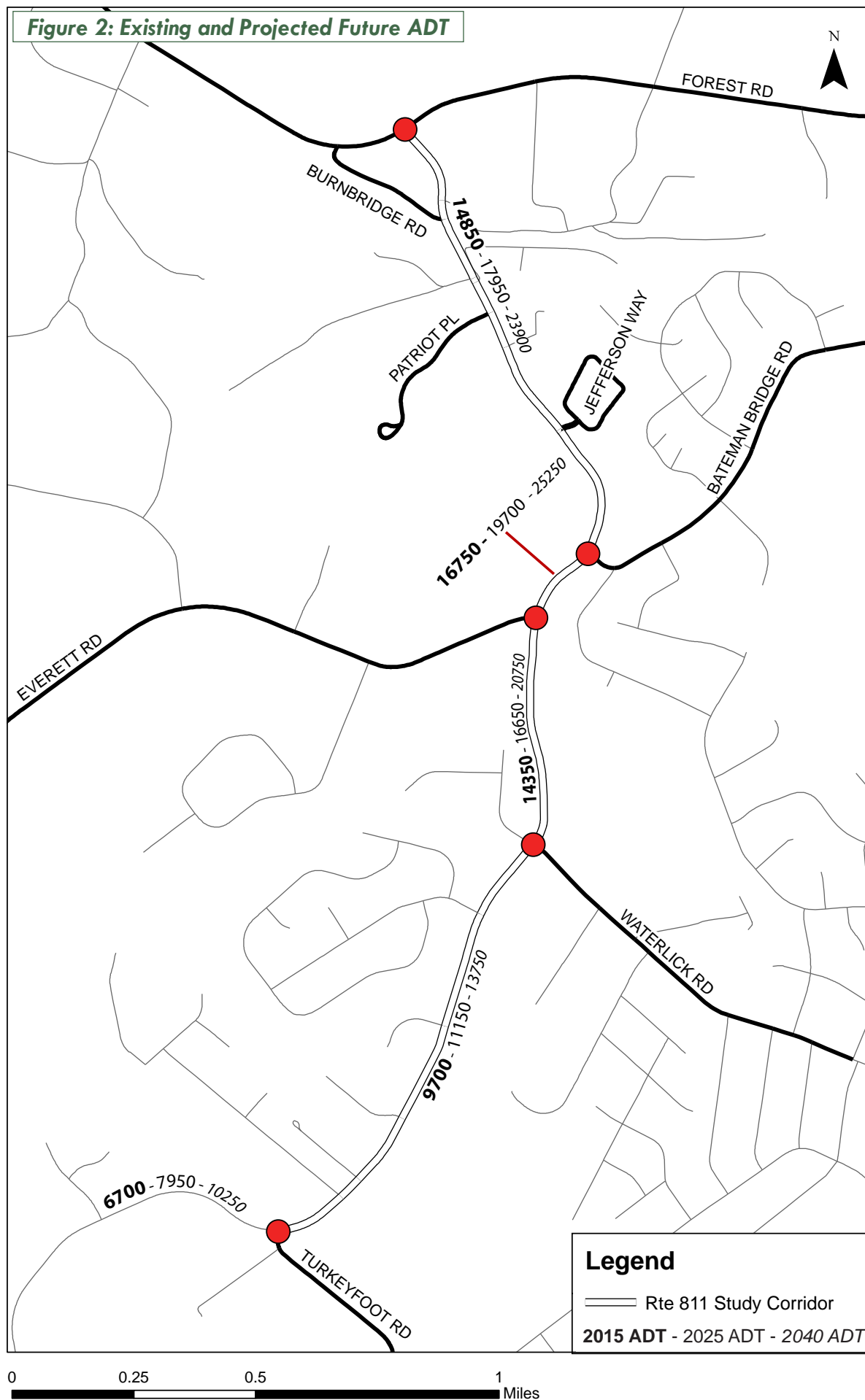
The third segment extends from Everett Rd to Bateman Bridge Rd. This short segment features the highest traffic volumes on the corridor—an estimated 16,750 vehicles per day in 2015. By 2040, these volumes are expected to increase to over 25,000 vehicles per day.

The fourth segment extends from Bateman Bridge Rd to Forest Rd. Traffic volumes decreases slightly north of Bateman Bridge Rd to an estimated 2015 ADT of 14,850 vehicles. By 2040, these volumes are expected to increase to approximately 24,000 vehicles per day.

*As a general rule, traffic engineering analyses typically suggest that a road should begin to be considered for expansion from two to four travel lanes when daily traffic volumes exceed approximately 15,000 vehicles, depending on the frequency of intersections and turns that occur along the corridor. A four lane design becomes a very strong recommendation after volumes exceed approximately 20,000 vehicles per day—a two lane road under these conditions usually becomes operationally deficient.*

*Applied to this corridor, it is suggested that Route 811 will likely need to be widened from two to four travel lanes between Forest Rd (Rt 221) and Waterlick Rd by 2040. Given the length of time required to plan, fund, design, and construct new roadways, it is important that future road improvements be identified well in advance of construction needs in order to adequately plan for implementation.*

**Figure 2: Existing and Projected Future ADT**



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## Intersection Level of Service

An intersection's level of service (LOS) is a rating that reflects the average delay experienced by vehicles passing through the intersection. Ratings range from A to F, with LOS A indicating little or no average delay and LOS F indicating severe average delays. Typically, LOS A-C are considered acceptable ratings for an intersection, while LOS D-F indicate the need for improvements.

This study analyzed eight intersections that are located in the study corridor. These include the intersections with Forest Rd (Rt 221), Burnbridge Rd, Patriot Pl, Jefferson Way, Bateman Bridge Rd, Everett Rd, Waterlick Rd, and Turkey Foot Rd. Weekday peak hour traffic counts were collected from each intersection and the results analyzed in traffic models. Models of the intersections in 2025 and 2040 were also created using projected traffic growth rates.

### Signalized Intersections

The intersections at Forest Rd, Bateman Bridge Rd, Everett Rd, and Waterlick Rd are signalized intersections. In 2015, Waterlick Rd had a LOS D during the AM peak hour. The worst delays at this intersection during the AM peak hour are experienced by southbound vehicles on Route 811 that are turning left onto Waterlick Rd. Additionally, all movements from Waterlick Rd and the northbound thru and right-turn movements on Route 811 all performed at LOS D. During the PM peak hour, however, the Waterlick Rd intersection performed at LOS C. All of the other intersections performed at an LOS C or greater during both peak hours.

In 2025, the “No Build” scenario model (“No Build” refers to the scenario in which no changes or improvements are made to the corridor) indicates that Waterlick Rd is projected to perform at LOS D in both AM and PM peak hours. All of the other intersections are projected to perform at LOS C or higher during both peak travel hours. In 2040, the “No Build” scenario model indicates that Forest Rd, Everett Rd, and Waterlick Rd are all expected to experience an LOS D or lower during the AM peak hour, while Forest Rd, Bateman Bridge Rd, and Waterlick Rd are all expected to experience an LOS D or lower during the PM peak hour.

### Unsignalized Intersections

Burnbridge Rd, Patriot Pl, Jefferson Way, and Turkey Foot Rd are all unsignalized intersections at which vehicles on Route 811 do not stop. Due to the free flow of traffic on Route 811, the average vehicle delay for the intersection is typically very small. Rather than referencing average delay, therefore, the LOS reported for these intersections is based on the longest or worst delay experienced by any single traffic movement. The worst delays are usually experienced by vehicles turning left from the intersecting streets onto Route 811.

The worst delays experienced at these intersections occur at Patriot Pl. Patriot Pl serves as the driveway entrance for Thomas Jefferson Elementary School, and facilitates buses and cars bringing children to and from school. The delays experienced by the left turns off of Patriot Pl are severe—model results indicate over 10 minutes of average delay during the 2015 AM peak hour, a fact that was verified by school officials during public meetings.

## Traffic Signal Coordination

One additional traffic operations consideration is the potential need to coordinate the traffic signals of intersections that are located nearby one another. In the Route 811 study corridor, this idea would apply specifically to the intersections with Bateman Bridge Rd and Everett Rd. During public meetings, multiple attendees commented upon the lack of coordination between these lights and the subsequent delays that this created on Route 811.

Coordinated signals are timed so that the dominant traffic movements at all participating intersections will have “green” phases in a sequential order that will allow vehicles to progress through the signals in an optimized manner. In this example, the signals at Bateman Bridge Rd and Everett Rd could be timed so that thru traffic on Route 811 would be more likely to encounter green lights at both intersections, rather than potentially stopping at one or both intersections.

**Figure 3: Intersection Peak Hour Levels of Service**

### Intersection Peak Hour Levels of Service

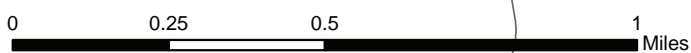
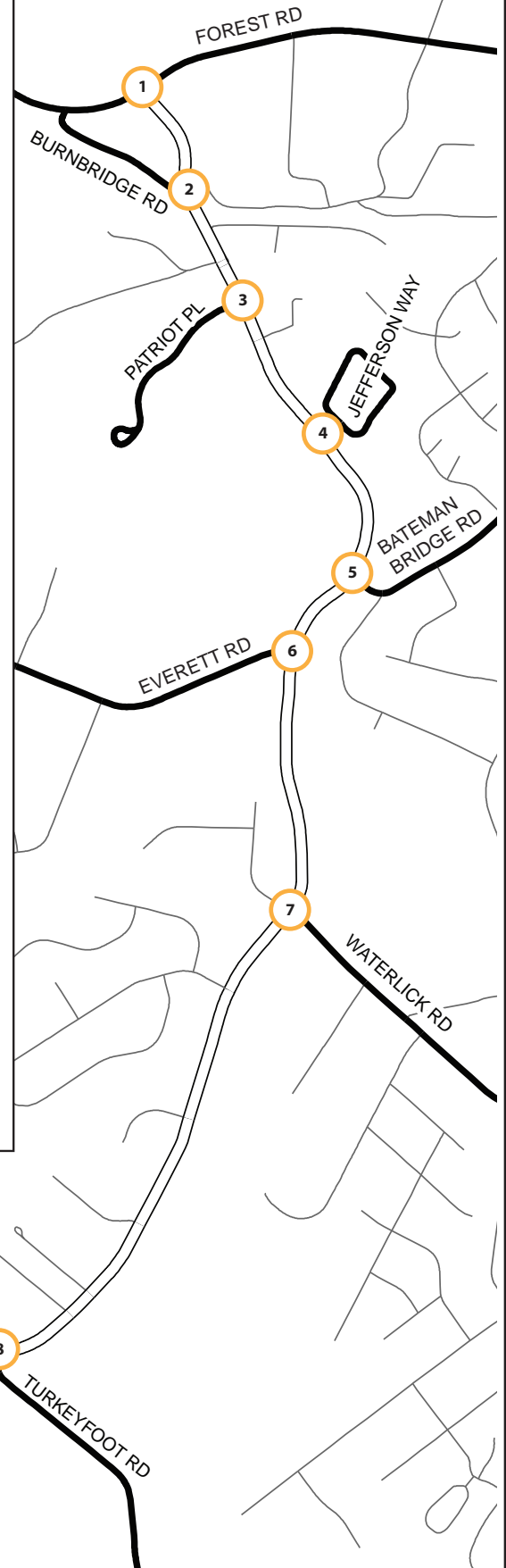
Existing and Projected (No Build): 2015, 2025, 2040

	2015	2025	2040
1 Route 811 at Forest Rd	Green	Green	Red
2 Route 811 at Burnbridge Rd**	Orange	Orange	Orange
3 Route 811 at Patriot Pl**	Red	Red	Red
4 Route 811 at Jefferson Way**	Red	Red	Red
5 Route 811 at Bateman Bridge Rd	Green	Green	Orange
6 Route 811 at Everett Rd	Green	Green	Orange
7 Route 811 at Waterlick Rd	Orange	Red	Red
8 Route 811 at Turkey Foot Rd**	Green	Green	Orange

#### Key

Green	LOS C or higher during both peak hours
Orange	LOS D or lower during one peak hour
Red	LOS D or lower during both peak hours

**\*\* Unsignalized Intersections:** The LOS reported for unsignalized intersections is not determined by average vehicle delay, but by the **worst** intersection movement's delay.



# Safety

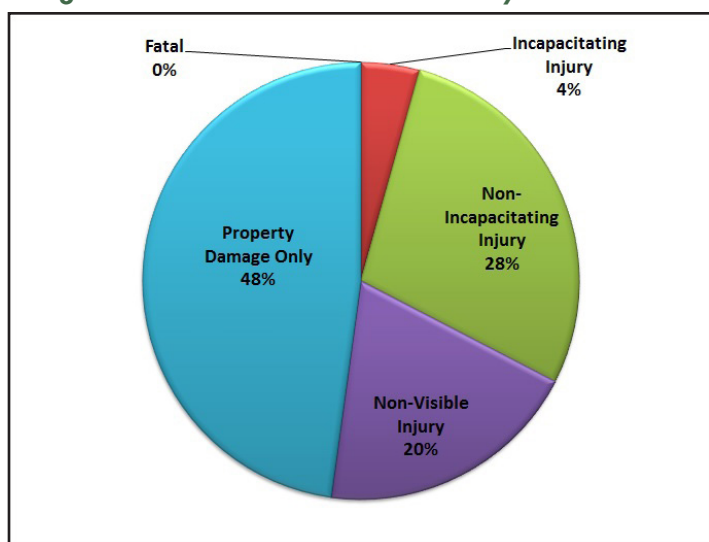
## Crash History

The study reviewed the information from every recorded crash that occurred on the corridor from January 2012-July 2015.

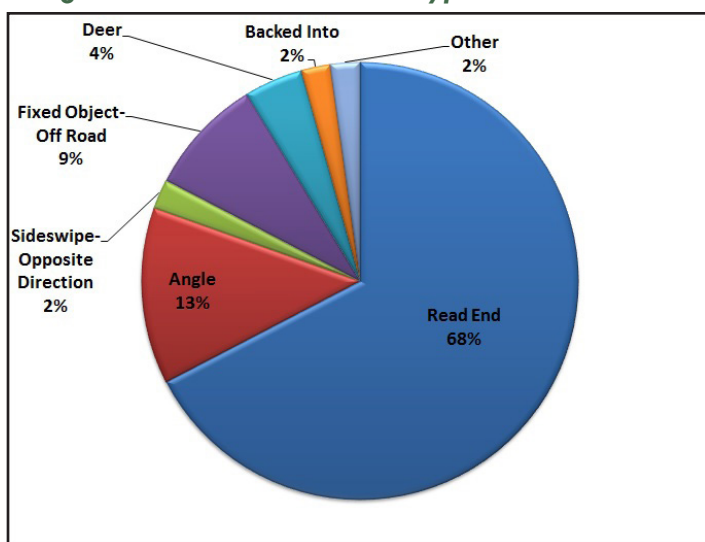
46 crashes were recorded during this period. Rear end collisions were the most common type of crash (68% or 31 crashes). The second most common type of crash was an “angle” collision (13%, or 6 crashes), and the third most common type was a “Fixed Object- Off Road” collision (9%, or 4 crashes).

None of the crashes during this period resulted in a fatality, and only 4% (or two crashes) resulted in an incapacitating injury. 48%, or 22 crashes, only resulted in property damage, while all the remaining crashes resulted in non-visible or non-incapacitating injuries.

**Figure 4: 2012-2015 Crash Severity**



**Figure 5: 2012-2015 Crash Types**



Most of the rear end crashes occurred directly preceding intersections or driveways, presumably as a result of inattentive drivers colliding with vehicles in front of them that had stopped for a red light or to make a turn. Over ¼ of the rear end crashes occurred at a single location- directly preceding Burnbridge Rd intersection in the northbound lanes of Route 811.

The only notable concentration of non-rear-end crashes occurred at the intersection with Waterlick Rd. Four “angle” collisions and one sideswipe collision were recorded there—all presumably involving vehicles that were turning through the intersection. Recently, however, a flashing yellow arrow signal was added to replace the standard “green ball” signal for yielding turn movements at this intersection. This improvement may reduce the number of angle collisions at this location.

## Driveway Access

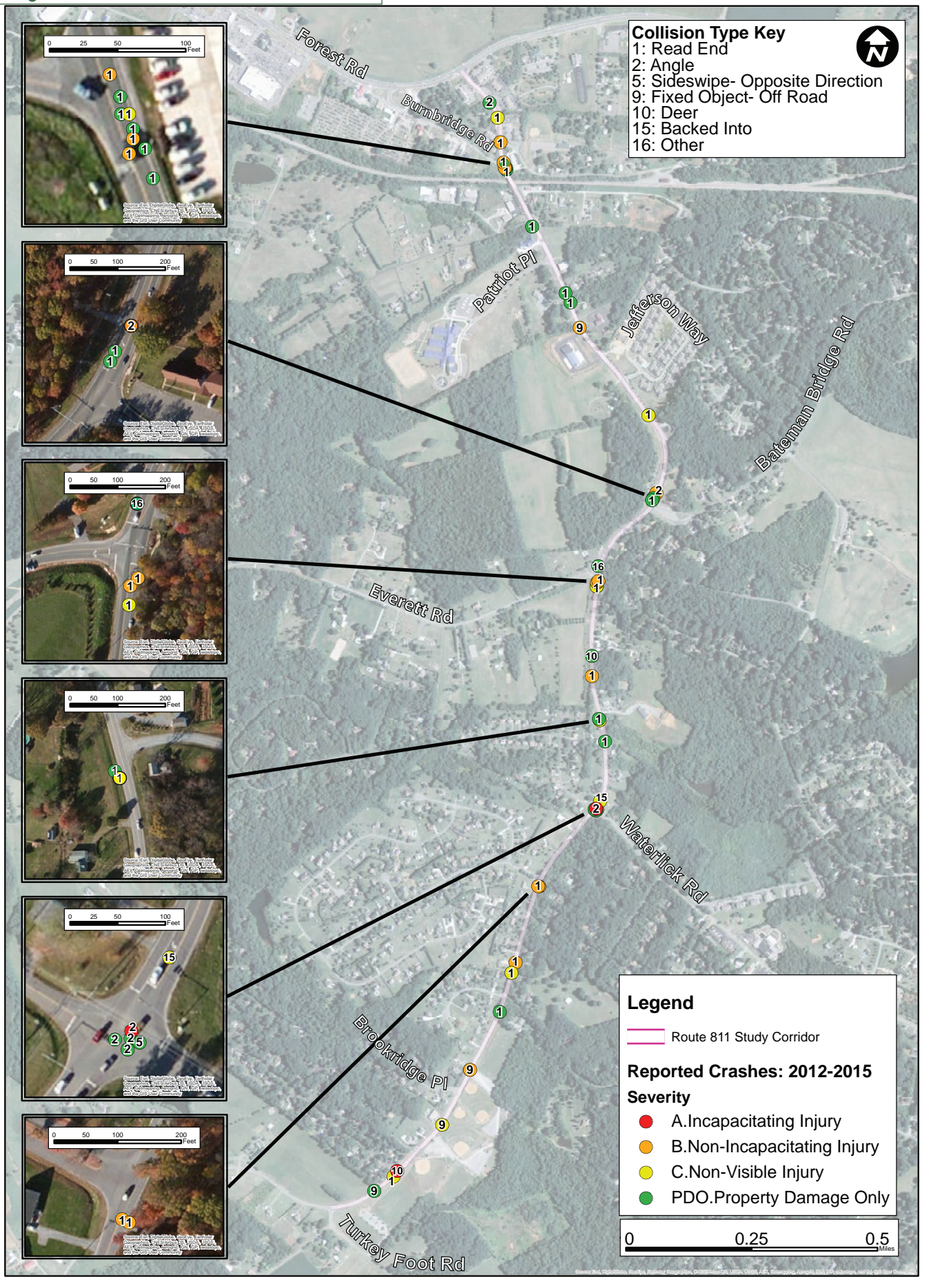
Several public meeting attendees who live in homes directly on Route 811 commented on the challenge and danger of turning in and out of their driveways. These people indicated that performing a left turn out of their driveways was often very difficult—especially during peak travel hours. They also commented on vehicles that follow too closely on Route 811 itself, posing a danger to the cars ahead of them that must slow down or stop in order to turn onto their driveways.

## Speed

One of the most common safety-related comments made by all public meeting attendees was the perceived



**Figure 6: 2012-2015 Crash Locations**





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excessive speed of vehicles traveling on Route 811. Some people suggested that the speed limits should be lowered to address this problem, while many others commented that law-enforcement officers should make a greater effort to enforce speed limits on the corridor.

## Multimodal Transportation

Route 811 is not currently used by any bus routes and pedestrian activity is very limited. The major multi-modal concern for the Route 811 study corridor is bicycle travel.

Route 811 is frequently used as a travel route for road bicyclists. The Region 2000 Bicycle Plan included the road as a recommended accommodation route for future bicycle infrastructure. Public meeting attendees confirmed that they frequently encounter bicyclists while traveling on the corridor.

Bicycle travel was one of the most contentious issues discussed by public meeting attendees. Some people expressed strong support for bicycle travel and recommended the addition of bicycle lanes or a separated bicycle path. Other attendees, however, expressed strong opposition to bicycle travel and stated the opinion that the road should be used exclusively for automobile travel.

Regardless of their support or opposition, however, public feedback expressed nearly unanimous consensus that the existing road conditions are not conducive of a safe interaction between vehicles and bicyclists.

## Land Use

The Route 811 study corridor is predominantly surrounded by properties that have been developed with single-family residential homes. There are some notable exceptions to this, however. At the northern end of the study corridor between Forest Rd and Burnbridge Rd, the land has been zoned for commercial development and features several businesses and small office buildings. Moving south, Thomas Jefferson Elementary School is located on the west side of corridor at Patriot Pl. The Forest Volunteer Fire Department is also located on the west side of the corridor immediately south of Patriot Pl. A development of duplex condominiums called the Jefferson Villas is located on the east side of the corridor at Jefferson Way, which is across the street from the fire department. Finally, at the southern end of the study corridor, the Forest Youth Athletic Association Recreation Fields are located on the east side of Route 811, immediately north of Turkey Foot Rd.

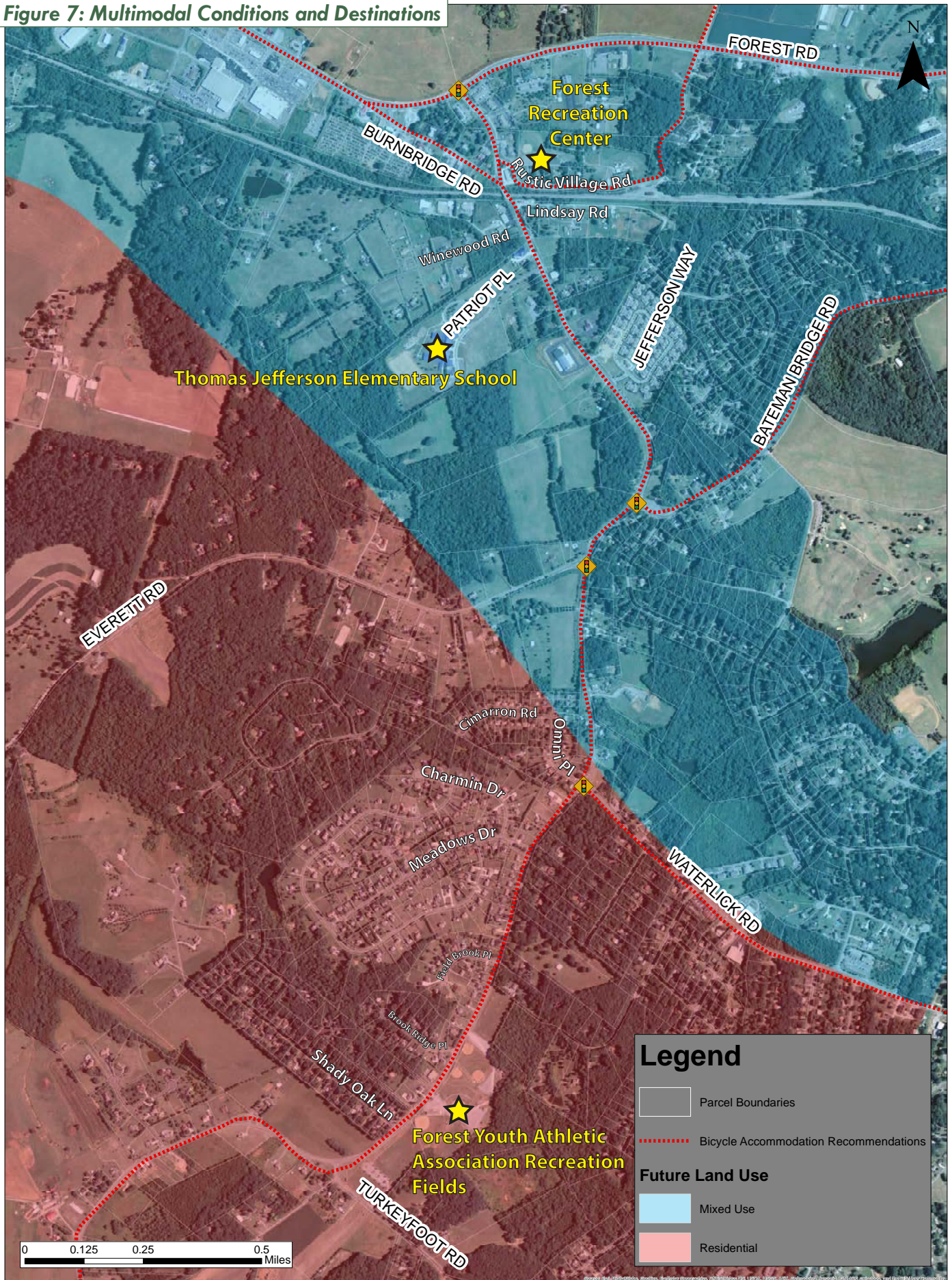
Bedford County's future land use plan indicates that this area will primarily remain residential, but some mixed use developments may eventually be permitted north of Waterlick Rd. The area between Burnbridge Rd and Forest Rd at the northern end of the corridor will presumably continue to be the location of most future commercial developments.

Although the majority of homes developed in the surrounding area were developed along adjacent residential streets, there are a substantial number that have direct frontage and driveway access onto Route 811 itself. Most of these homes are located south of Jefferson Way, with the highest concentration located between Waterlick Rd and Turkey Foot Rd.

These homes located directly on Route 811 will be directly and potentially negatively affected by any future efforts that may be made to widen Route 811. Not only would they be subject to the increased volumes and speed of vehicles on a widened road, but they may also be forced to lose a substantial amount of their property to the public right of way. These changes may be beneficial for overall traffic operations, but the county and MPO must ultimately weigh these benefits against the potential negative consequences that would be experienced by these residents.



**Figure 7: Multimodal Conditions and Destinations**





# Improvement Recommendations

The recommendations provided in this study have been divided into several different categories based both on the nature and the expected time frame of the improvements.

**Short-term recommendations** are provided in the sections “Short Term Recommendations” and “Primary Corridor Improvements- Phase I.” These improvements are all relatively inexpensive and simple in nature and do not require significant additions or alterations to the paved road surface.

**Mid-term recommendations** are provided in “Primary Corridor Improvements- Phase II.” These improvements involve significant, but concentrated, additions or alterations to the paved road surface. These improvements may be referred to as “spot improvements” that redesign intersections or add turn lanes to improve traffic operations at specific problematic locations.

**Long-term recommendations** are provided in “Primary Corridor Improvements- Phase III, Phase IV, and Phase V.” These improvements involve the widening of the entire road corridor through the addition of travel lanes, center turn lanes, and shared-use paths. The road widening process is divided into three phases, each of which corresponds to a section of the corridor, and which are ordered in terms of priority.

A final set of recommendations are provided in “Peripheral Recommendations.” These improvement recommendations involve properties or streets that are not directly included in the study corridor, but which may indirectly affect traffic operations on Route 811.

Documentation of the technical analysis performed on these recommendations, as well as additional detailed information regarding current and projected traffic volumes and a summary of the project’s public meetings are all available in the appendix to this report.

## Short Term Recommendations

The short term recommendations provided here are relatively low in cost and require no new paved surface area. These are small improvements that can potentially improve travel conditions on the corridor in the near future, before any major projects can be completed.

### Short Term Recommendation 1: Extend Right Turn Lane onto Bateman Bridge Rd

The right turn lane for vehicles traveling north on Route 811 and turning onto Bateman Bridge Rd can be extended by 100 ft on the existing pavement by re-stripping the lane markings. Currently, the traffic queue

**Figure 8: Extended Right Turn Lane onto Bateman Bridge Rd**



Note: Orange lines indicate existing pavement markings

that develops for the north-bound thru lane extends beyond the right turn lane, which prevents right turning vehicles from separating from the queue. This further extends the queue for the thru-lane, as well as increasing the delays experienced for right turning vehicles. An extended right turn lane would allow these turning vehicles to exit from the thru-lane earlier and thus decrease both queues and delays.

### Short Term Recommendation 2: Extend Right Turn Lane onto Everett Rd

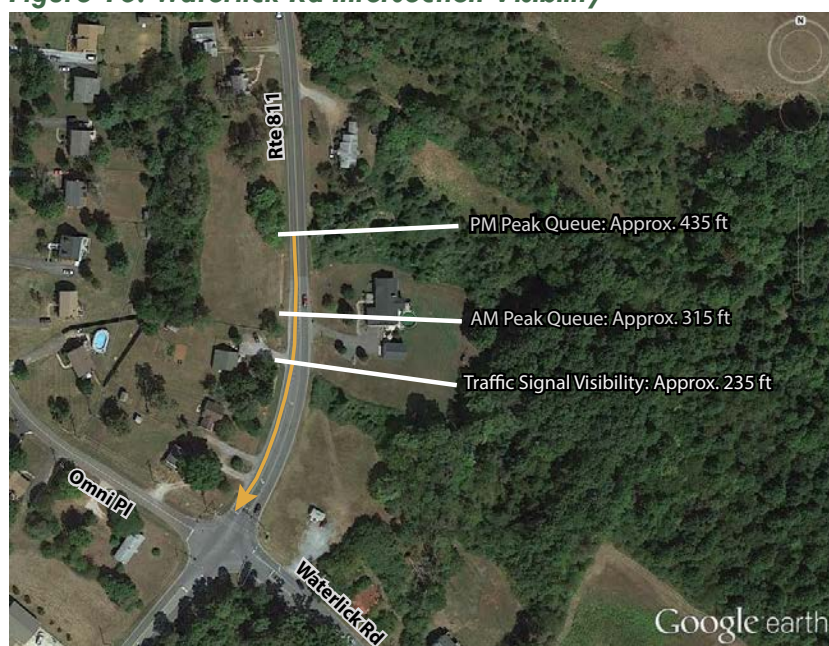
The right turn lane for vehicles traveling south on Route 811 and turning onto Everett Rd can be extended by at least 75 ft on the existing pavement by re-stripping the lane markings. Currently, the traffic queue that develops for the south-bound thru lane extends beyond the right turn lane, which prevents right turning vehicles from separating from the queue. This further extends the queue for the thru-lane, as well as increasing the delays experienced for right turning vehicles. An extended right turn lane would allow these turning vehicles to exit from the thru-lane earlier and thus decrease both queues and delays.

### Short Term Recommendation 3: Add Flashing Warning Sign for Waterlick Rd Traffic Signal

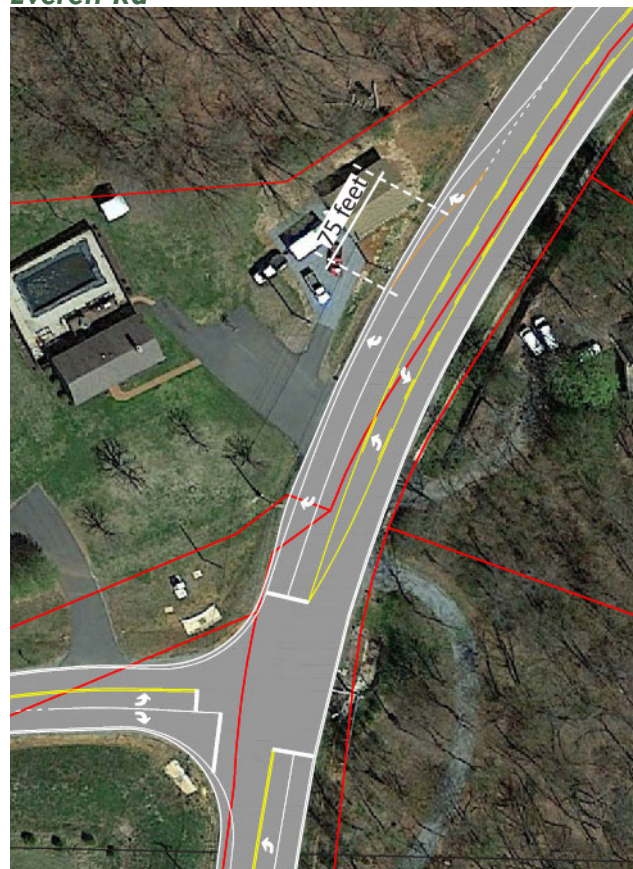
Due to the curvature of the road and the presence of trees, the traffic signal at the intersection of Route 811 and Waterlick Rd does not become visible to southbound vehicles on Route 811 until approximately 235 ft before the intersection.

This condition may cause a vehicle to unexpectedly encounter stopped vehicles in front of them—especially during peak hours when traffic queues may extend beyond the point of signal visibility. Maximum traffic queues during the AM peak hour extend approximately 80 ft beyond signal visibility, while queues during the PM peak hour extend approximately 200 ft beyond signal visibility.

**Figure 10: Waterlick Rd Intersection Visibility**



**Figure 9: Extended Right Turn Lane onto Everett Rd**



Note: Orange lines indicate existing pavement markings

In order to warn southbound vehicles of the upcoming traffic signal, the study recommends the installation of a warning sign that includes flashing warning lights that are activated when the traffic signal at Waterlick Rd has turned red.

### Short Term Recommendation 4: Burnbridge Rd Congested Area Warning Sign

From 2012-2015, there were 9 rear-end crashes that occurred in the north-bound lane of Route 811 directly south of Burnbridge Rd. This was the highest concentration of crashes at any single point along the corridor. Most, if not all, of these were presumably caused



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by inattentive drivers colliding with a vehicle in front of them that had slowed down or stopped to make a left turn onto Burnbridge Rd.

The FHWA/VDOT turn lane guidelines indicate that at today's volumes, a left turn lane is warranted at this intersection. Per field observations, it is evident that northbound motorists are using the shoulder to move around the vehicles that are stopped to make a left turn onto Burnbridge Rd. Due to the proximity of the railroad overpass bridge in conjunction with adjacent developments, however, it is not immediately feasible to construct a left turn lane at this location.

The crash situation here should be monitored. If conditions worsen, it is recommended that a flashing "Watch for Stopped Vehicle" sign be installed for the north-bound lane preceding this intersection in order to draw the attention of drivers to the possibility of stopped vehicles at this point in the road. Additionally, consideration should be given to coordinating with AEP to install a "Cobrahead" luminaire in the vicinity of the intersection to illuminate it during evening hours.

Another improvement alternative would be to conduct a speed study in that section of roadway to evaluate the possibility of dropping the speed limit from 45 to 35 mph south of the bridge. If a roundabout is constructed in the future at the intersection with Patriot Pl (see Primary Corridor Improvement Phase II, p. 19), it may be effective to use that intersection as the speed limit transition point.

Finally, as development continues to occur along Burnbridge Road, the resulting traffic studies should continue to measure the impact of new development on this intersection. If the crash situation continues to worsen, additional strategies for access to Burnbridge Road may need to be considered that would allow access to evolve with future development in the parcels. This could include construction of a new connector road north of Burnbridge Road where a left turn lane could be constructed. This arrangement would maintain a strong connection between the two roads while prohibiting left turns in or out of the existing Burnbridge Road intersection. This, however, would only occur if or when a new connection is established, and/or the crash situation worsens.

### **Short Term Recommendation 5: Lane Re-Striping**

Numerous public comments were made about the poor visibility of the lane markings at night and in the rain. As a result, the study recommends that the road be prioritized for re-striping with a more highly-reflective thermoplastic.

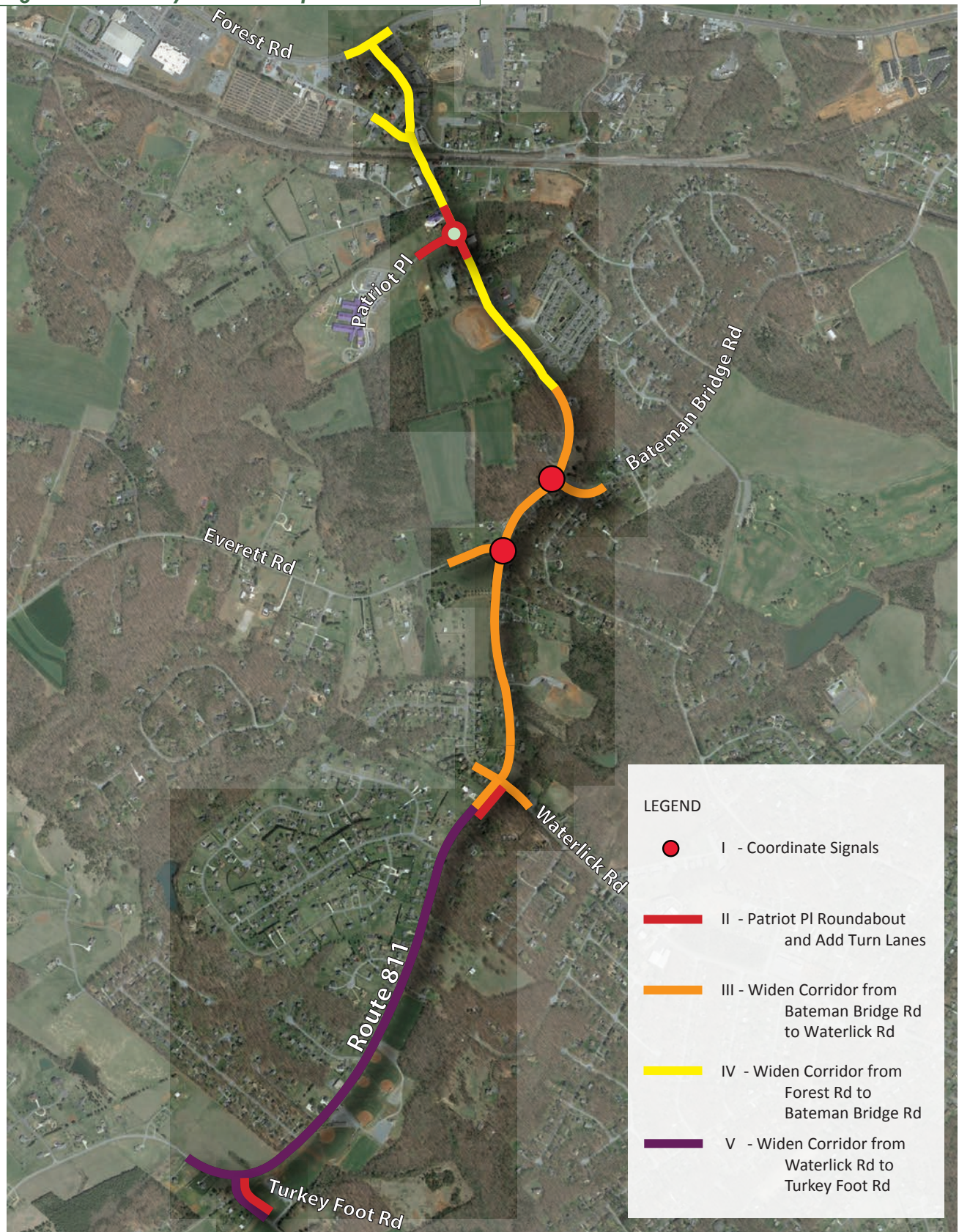
### **Short Term Recommendation 6: Speed Limit Education and Enforcement**

Numerous public comments were made about the excessive speed of vehicles on Route 811 and a perceived lack of speed limit enforcement. In response to these comments, the study recommends that the road be prioritized for speed "education" (such as temporary speed-reader trailers) and speed enforcement efforts. These efforts should be included as part of a community-wide initiative to raise awareness of speeding issues, which would include discussion and interaction with media outlets, civic organizations, neighborhood associations, and other groups still to be determined.

# Primary Corridor Improvements

Major recommended improvements for the Route 811 Study Corridor have been divided into five phases, which are shown on the map below and described in greater detail on the following pages.

**Figure 11: Primary Corridor Improvement Phases**





# Primary Corridor Improvement Phase I: Coordinate Traffic Signals at Bateman Bridge Rd and Everett Rd

The longest travel delays on the corridor are typically experienced between Waterlick Rd and Bateman Bridge Rd. One major cause of this problem is the proximity of the traffic signals at Bateman Bridge Rd and Everett Rd. Currently, these signals are not coordinated, which frequently prevents traffic on Route 811 from passing through both intersections without stopping.

The first phase of the corridor improvement process is recommended to be the coordination of these signals in order to create a more continuous flow of traffic on Route 811 through these two intersections. This will reduce the average vehicle delay at each intersection, as well as reducing the number of vehicles that will be forced to stop at each intersection. These benefits are summarized in Table X below.

**Table 1: Bateman Bridge Rd and Everett Rd Traffic Signal Coordination Benefits**

Route 811 at Bateman Bridge Rd- Traffic Signal Coordination Benefits						
	AM Peak Hour			PM Peak Hour		
	Existing	Coordinated Signals	Improvement	Existing	Coordinated Signals	Improvement
Intersection Delay (s)	9.6	6.4	33%	10.8	8.7	19%
Total Stops	1343	833	38%	1445	965	33%

Route 811 at Everett Rd- Traffic Signal Coordination Benefits						
	AM Peak Hour			PM Peak Hour		
	Existing	Coordinated Signals	Improvement	Existing	Coordinated Signals	Improvement
Intersection Delay (s)	10.5	8.4	20%	7.9	5.1	35%
Total Stops	1172	780	33%	1058	602	43%



# Primary Corridor Improvement Phase II: Patriot PI Roundabout and Additional Turn Lanes

Phase II of the primary corridor improvements consist of significant, but concentrated, additions or alterations to the paved road area that are specifically focused on problematic intersections. These proposed changes are directed at the intersections with Patriot PI, Waterlick Rd, and Turkey Foot Rd.

## Patriot Place Roundabout

Vehicles that are leaving Thomas Jefferson Elementary School and are making a left turn from Patriot PI onto Route 811 during the AM peak hour—many of which are school buses—must often wait more than 10 minutes to complete the turn. This movement is both time consuming and dangerous.

In order to improve this situation, this study recommends the installation of a roundabout at the Patriot PI intersection during Phase II. A roundabout would significantly reduce vehicle delays, as well as briefly reducing the speed of traffic on Route 811 in front of Thomas Jefferson Elementary School.

Any roundabout installed at this location will need to be specifically designed to allow for the passage of emergency vehicles traveling to and from the Forest Volunteer Fire Department. As currently envisioned, the roundabout would be constructed to be compatible with the existing two-lane design of Route 811, but could also be expanded to “fit” the ultimate four-lane road typical section recommended in the future (as described in Phase IV).

**Figure 12: Patriot PI Roundabout (3-Lane Version)**



**Table 2: Patriot PI 2025 No Build LOS**

3. Rte 811/ Patriot PI		2025 No Build			
		AM		PM	
		LOS	Delay (s)	LOS	Delay (s)
Route 811	NBL	A	9.1	B	10.8
Route 811	NBT	A	0	A	0
Route 811	SBT	A	0	A	0
Route 811	SBR	A	0	A	0
Patriot PI	EBL	F	254.1	F	62.1
Patriot PI	EBR	B	13.7	C	20.1
Intersection		B	13.3	A	0.8

**Table 3: Patriot PI 2025 Phase II Build LOS**

3. Rte 811/ Patriot PI		2025 3-Lane Roundabout			
		AM		PM	
		LOS	Delay (s)	LOS	Delay (s)
Route 811	NBL	B	11.7	B	11.3
Route 811	NBT	A	4.8	A	4.4
Route 811	SBT	A	5.2	A	4.4
Route 811	SBR	A	6.1	A	5.4
Patriot PI	EBL	B	13.7	B	19.6
Patriot PI	EBR	A	7.8	B	13.7
Intersection		A	6.1	A	4.7

### Waterlick Rd: Addition of Right Turn Lane

This improvement would create a new right turn lane for vehicles traveling north on Route 811 and turning onto Waterlick Rd. Currently, northbound thru vehicles and right turning vehicles share a single lane, which prevents right turning vehicles from separating from the queue. This further extends the queue for the thru-lane, as well as increasing the delays experienced for right turning vehicles. The addition of a right turn lane would allow these turning vehicles to separate themselves from thru traffic as they approach the intersection and thus decrease both queues and delays.

This improvement would extend the pavement over major underground communications utilities, and would need to be designed to permit continued access to this infrastructure.

**Figure 13: Waterlick Rd Right Turn Lane Addition**



### Turkey Foot Rd: Addition of Right Turn Lane

This improvement would add a right turn lane to Turkey Foot Rd at its intersection with Route 811 in order to separate left and right turning vehicles. Left turns from Turkey Foot Rd onto Route 811 can experience significant delays, especially during peak travel hours. Currently, these delays have an impact on both left and right turning movements, as right turning vehicles are unable to pass around the left turning vehicles in front of them. The addition of a right turn lane on Turkey Foot Rd would separate these two movements in order to eliminate this problem and reduce the average delays for this intersection approach.

**Figure 14: Turkey Foot Rd Right Turn Lane Addition**



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## Phases III-V: Corridor Widening

### Corridor Widening: Pros and Cons

As explained previously, projected traffic volumes in 2040 significantly exceed the existing capacity of the road in many areas. In order to maintain a functionally efficient roadway, therefore, the recommendation is to widen the road in order to build additional travel lanes and thereby increase the capacity of the road, while also providing center left turn lanes throughout the corridor. These recommendations are outlined in Phases III-V, below.

These improvements will provide the benefits of reducing congestion, increasing safety, improving intersection levels of service, and providing multimodal access. Due to the corridor's role as an arterial facility that serves as a regional connector for Bedford County and the Lynchburg metro area, these factors should be regarded as important considerations.

At the same time, however, some members of the community raised concerns about the potential road widening during the study process that also deserve the consideration of public officials. Two such concerns include:

**Right of Way:** In many places, the existing right-of-way is not sufficient to accommodate a significantly wider roadway, meaning that additional right-of-way will need to be acquired. Given the primarily residential character of the surrounding areas, this will mean that some residents will be losing portions of their yards and the spatial buffer that exists between their homes and the road. Public officials should be sensitive to these concerns, as well as willing to explore alternatives such as installing bicycle and pedestrian infrastructure in surrounding neighborhoods where possible, rather than along the primary corridor itself. For further discussion on this point, see the “Neighborhood Connectivity” section on page 33.

**Uncertain Futures:** The growth projections that inform these recommendations assume that basic travel conditions in 2040 will be generally consistent with those existing today. Emerging transportation technologies such as self-driving vehicles, possible major changes in fuel prices, or other unforeseen developments could, however, potentially render these assumptions obsolete.

Although these are important ideas for public officials to consider before final decisions are made on any of these projects, the study still considers it to be important for the county, the MPO, and VDOT to be prepared for the probability of widening the road in the future.

### Corridor Widening: Phasing

Due to the scope and expense of this effort, it may be necessary to approach the road widening as a series of smaller projects, rather than as a single large project. As a result, the study has divided the corridor widening process into three parts, which are presented in order of priority.

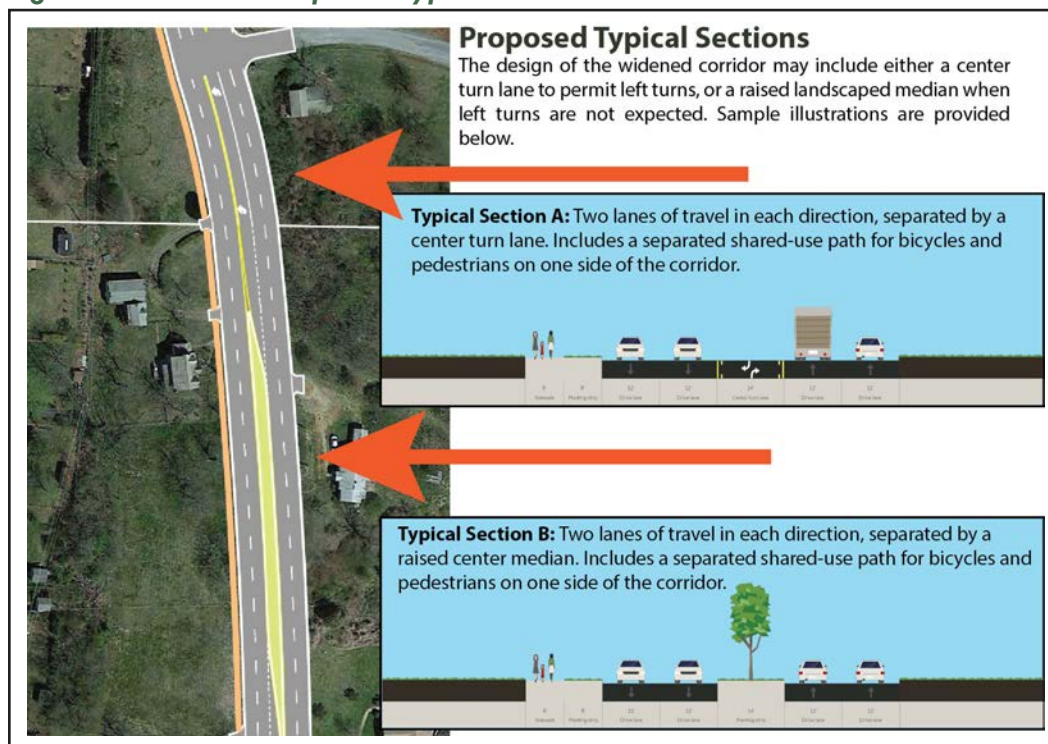


## Primary Corridor Improvement Phase III: Widen Corridor from Waterlick Rd to Bateman Bridge Rd

This study recommends that the first section of the corridor to be widened is the middle section between Waterlick Rd and Bateman Bridge Rd. This part of the corridor has the highest volumes of traffic and is responsible for creating the longest travel delays as a result of both the congestion and the consecutive signalized intersections. Beginning at the Waterlick Rd intersection, it is recommended that Route 811 be widened to a five-lane road with two lanes for each direction of travel and center lane that can feature either a raised and landscaped median or a center turn lane, depending on traffic needs. This five lane section would extend from Waterlick Rd to Bateman Bridge Rd, and then gradually taper back to the existing two lane road between Bateman Bridge Rd and Jefferson Pl.

In addition to the new vehicular travel lanes, it is also recommended that the widened corridor include a separated 10' shared use path on one side of the road for dual-direction bicycle and pedestrian travel. The separation between the path and the vehicular travel lanes would increase the safety of bicycle travel and would also allow the path to be used by pedestrians.

**Figure 15: Phase III Proposed Typical Street Sections**



The primary reason that this study recommends beginning the widening process in this center section, rather in the northern section between Forest Rd and Bateman Bridge Rd (Phase IV), is due to the traffic signals at Waterlick Rd, Everett Rd, and Bateman Bridge Rd. At all three locations, thru traffic on Route 811 is periodically stopped in order to allow the vehicles to turn to and from these side streets. These stops are responsible for the most major travel delays on the corridor.

Once the corridor is widened in this section, however, dual left turn lanes can be installed for three major turning movements at these intersections: west-bound left turns from Bateman Bridge Rd to Route 811, east-bound left turns from Everett Rd to Route 811, and south-bound left turns from Route 811 to Waterlick Rd. These dual turn lanes will allow the same number of vehicles to move through the intersections in approximately half of the time required for single turn lanes, thereby significantly reducing the amount of time that thru-traffic on Route 811 must be stopped. This will provide a major improvement to the overall flow of traffic on the Route 811 corridor.

**Figure 16: Phase III Sample Corridor Rendering**

**Route 811 at Bateman Bridge Rd**

- Addition of one southbound and one northbound thru lane
- Addition of one westbound (Bateman Bridge Rd) left turn lane

**Route 811 at Everett Rd**

- Addition of one southbound and one northbound thru lane
- Addition of one eastbound (Everett Rd) left turn lane

**Route 811 at Waterlick Rd**

- Addition of one northbound (Route 811) thru lane
- Addition of one westbound (Waterlick Rd) right turn/thru lane
- Addition of one southbound (Route 811) left turn lane



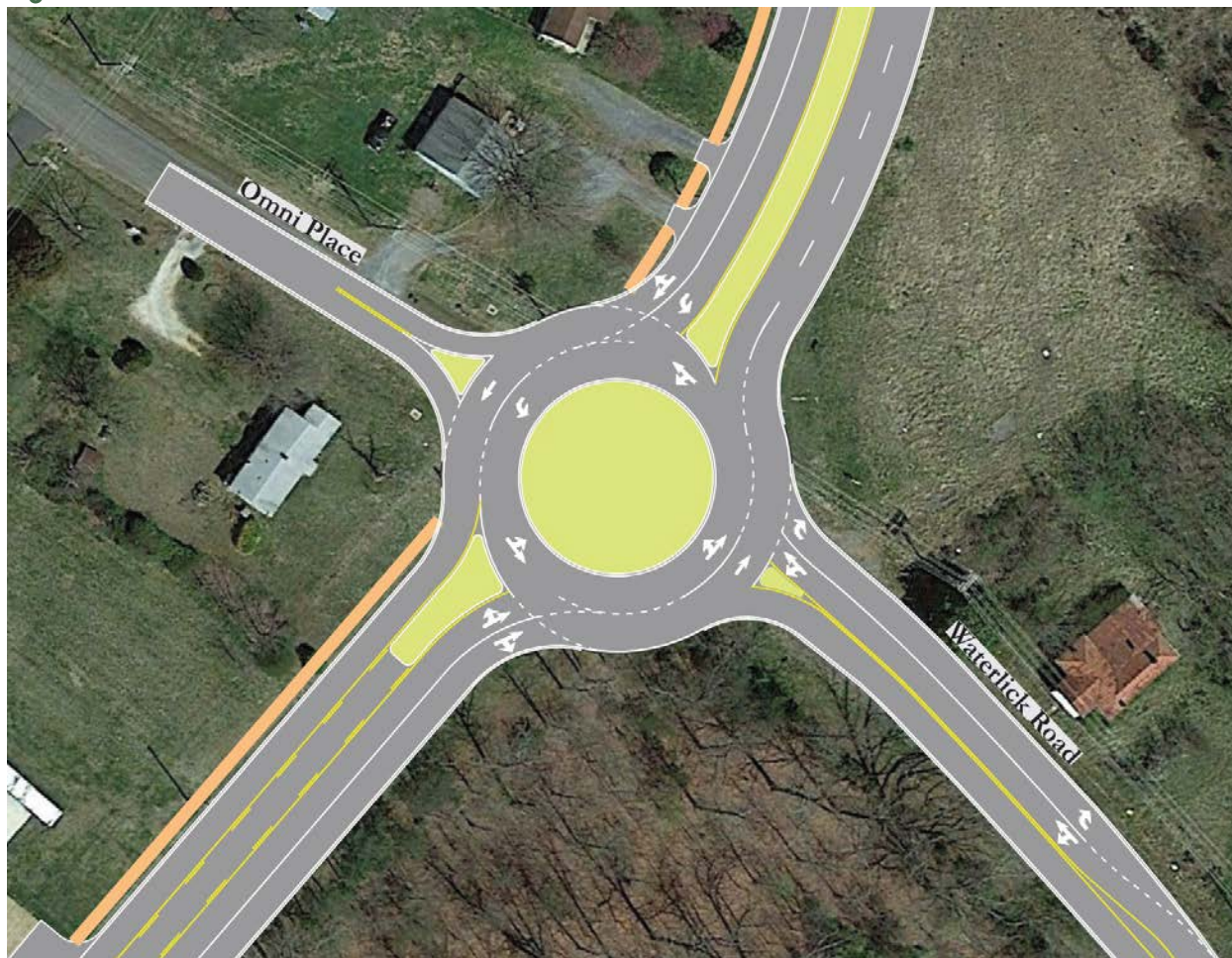


### Waterlick Rd Roundabout Alternative

One design alternative to consider during the Phase III improvements is the reconfiguration of the Waterlick Rd intersection from a typical signalized intersection to a roundabout, as shown in Figure 17.

A roundabout at this intersection could provide multiple benefits. First, from a traffic operations standpoint, models indicate that the roundabout design operates at a higher level of service than the typical traffic signal intersection. Secondly, roundabout intersections are proven to have significantly lower crash rates and reduced crash severities compared to signalized intersections—a fact that is especially relevant for an intersection that witnessed five crashes, including one causing incapacitating injuries, from 2012-2015. Finally, a roundabout at this intersection could serve as a visual landmark and traffic calming device that could help decrease the speed of southbound vehicles on Route 811 before they pass the residential areas and recreation fields south of Waterlick Rd.

**Figure 17: Waterlick Rd Intersection Roundabout Alternative**



## Signalized Intersection 2040 Level of Service Comparison: No Build vs. Phase III Build

**Table 4: Bateman Bridge Rd 2040 No Build LOS**

5. Rte 811/ Bateman Bridge Rd		2040 No Build			
		AM		PM	
		LOS	Delay (s)	LOS	Delay (s)
Route 811	NBT	B	19.8	C	22
Route 811	NBR	A	5.9	A	9.8
Route 811	SBL	C	27.8	B	16.4
Route 811	SBT	A	3.8	F	72.4
Bateman Bridge Rd	WBL	F	102	F	136.7
Bateman Bridge Rd	WBR	E	74.9	D	47.9
Intersection		B	16.8	E	58.9

**Table 5: Bateman Bridge Rd 2040 Phase III Build LOS**

5. Rte 811/ Bateman Bridge Rd		2040 Full Build Out			
		AM		PM	
		LOS	Delay (s)	LOS	Delay (s)
Route 811	NBT	A	0.8	C	31.3
Route 811	NBR	A	0.7	B	17.2
Route 811	SBL	A	4.1	B	17.6
Route 811	SBT	A	3.3	A	5.9
Bateman Bridge Rd	WBL	D	43.5	D	45.5
Bateman Bridge Rd	WBR	D	48.8	D	40.8
Intersection		A	4.6	B	18.5

**Table 6: Everett Rd 2040 No Build LOS**

6. Rte 811/ Everett Rd		2040 No Build			
		AM		PM	
		LOS	Delay (s)	LOS	Delay (s)
Route 811	NBL	B	13.8	F	83.7
Route 811	NBT	C	25	A	3.8
Route 811	SBT	C	20.4	D	40.7
Route 811	SBR	B	12	A	6.5
Everett Rd	EBL	F	91.8	F	118.7
Everett Rd	EBR	D	49.1	E	55.7
Intersection		D	35.1	C	33.7

**Table 7: Everett Rd 2040 Phase III Build LOS**

6. Rte 811/ Everett Rd		2040 Full Build Out			
		AM		PM	
		LOS	Delay (s)	LOS	Delay (s)
Route 811	NBL	B	14.1	A	3
Route 811	NBT	A	7.2	A	2.4
Route 811	SBT	C	20.2	A	0.7
Route 811	SBR	A	0	A	0.3
Everett Rd	EBL	C	22.5	D	47.5
Everett Rd	EBR	C	25.2	D	45.2
Intersection		B	14.6	A	4.1

**Table 8: Waterlick Rd 2040 No Build LOS**

7. Rte 811/ Waterlick Rd		2040 No Build			
		AM		PM	
		LOS	Delay (s)	LOS	Delay (s)
Route 811	NBL	C	23	C	32.2
Route 811	NBT/NBR	F	96.2	E	55.8
Route 811	SBL	E	75.6	F	64.2
Route 811	SBT/SBR	A	7	D	38
Waterlick Rd	WBL/WBT	F	86.2	F	94.1
Waterlick Rd	WBR	F	87.7	E	58
Omni Pl	EB L/T/R	F	88.1	E	71.5
Intersection		E	74.2	D	54.8

**Table 9: Waterlick Rd 2040 Phase III Build LOS**

7. Rte 811/ Waterlick Rd		2040 Full Build Out			
		AM		PM	
		LOS	Delay (s)	LOS	Delay (s)
Route 811	NBL	A	0	B	17.3
Route 811	NBT/NBR	C	32	C	21.3
Route 811	SBL	B	15.1	B	13.1
Route 811	SBT/SBR	A	8.5	C	24.6
Waterlick Rd	WBL	C	30.7	D	48.7
Waterlick Rd	WBT/WBR	C	29.4	C	28.7
Omni Pl	EB L/T/R	D	36.2	D	39.7
Intersection		C	23.8	C	22.3

**Table 10: Waterlick Rd 2040 Phase III Build LOS- Roundabout Alternative**

7. Rte 811/ Waterlick Rd		2040 Full Build Out (Roundabout Alternative)			
		AM		PM	
		LOS	Delay (s)	LOS	Delay (s)
Route 811	NBL	C	21.0	C	15.1
Route 811	NBT	C	20.9	C	15.1
Route 811	NBR	C	20.8	C	15.1
Route 811	SBL	A	8.0	B	12.5
Route 811	SBT	A	7.3	C	17.6
Route 811	SBR	A	7.3	C	17.6
Waterlick Rd	WBL	A	7.4	A	7.0
Waterlick Rd	WBT	A	7.4	A	7.0
Waterlick Rd	WBR	C	21.1	B	12.5
Omni Pl	EBL	A	6.6	A	9.6
Omni Pl	EBT	A	6.6	A	9.6
Omni Pl	EBR	A	6.6	A	9.6
Intersection		C	15.8	B	14.3



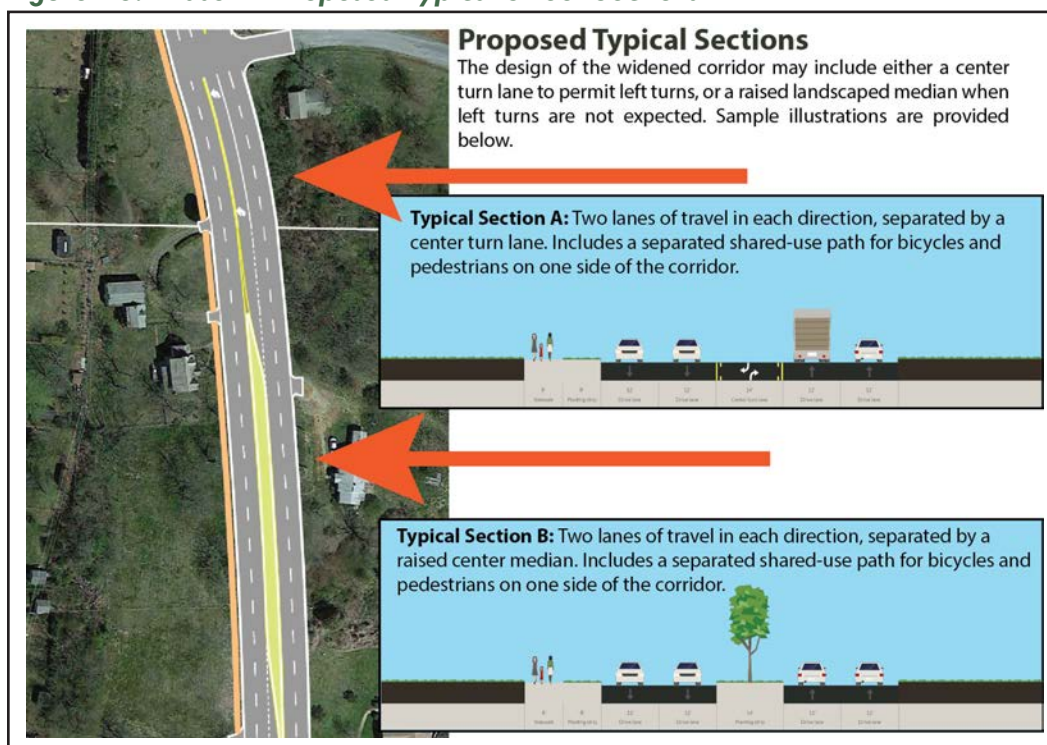
## Primary Corridor Improvement Phase IV: Widen Corridor from Forest Rd to Bateman Bridge Rd

The second section of the corridor that is recommended to be widened is the northern section between Bateman Bridge Rd and Forest Rd. This section of the corridor has the second highest volumes of traffic and provides access to Thomas Jefferson Elementary School, the Jefferson Villa Condominiums, and the commercial district adjacent to Forest Rd.

This phase of improvements would extend the widened corridor from Bateman Bridge Rd to Forest Rd. As with Phase III, it is recommended that Route 811 be widened to a five-lane road with two lanes for each direction of travel and center lane that can feature either a raised and landscaped median or a center turn lane, depending on traffic needs.

Also like Phase III, it is recommended that a separated 10' shared use path be installed on one side of the corridor for dual-direction bicycle and pedestrian travel. In order to enhance the practical function of the trail for all users, it will be important for Bedford County to explore ways to connect this trail to popular destinations in this section of the corridor, including Thomas Jefferson Elementary School, the Forest Public Library, businesses on Bateman Bridge Rd, the shopping center located west of Route 811 on Forest Rd, and potentially the high school on Perrowville Rd.

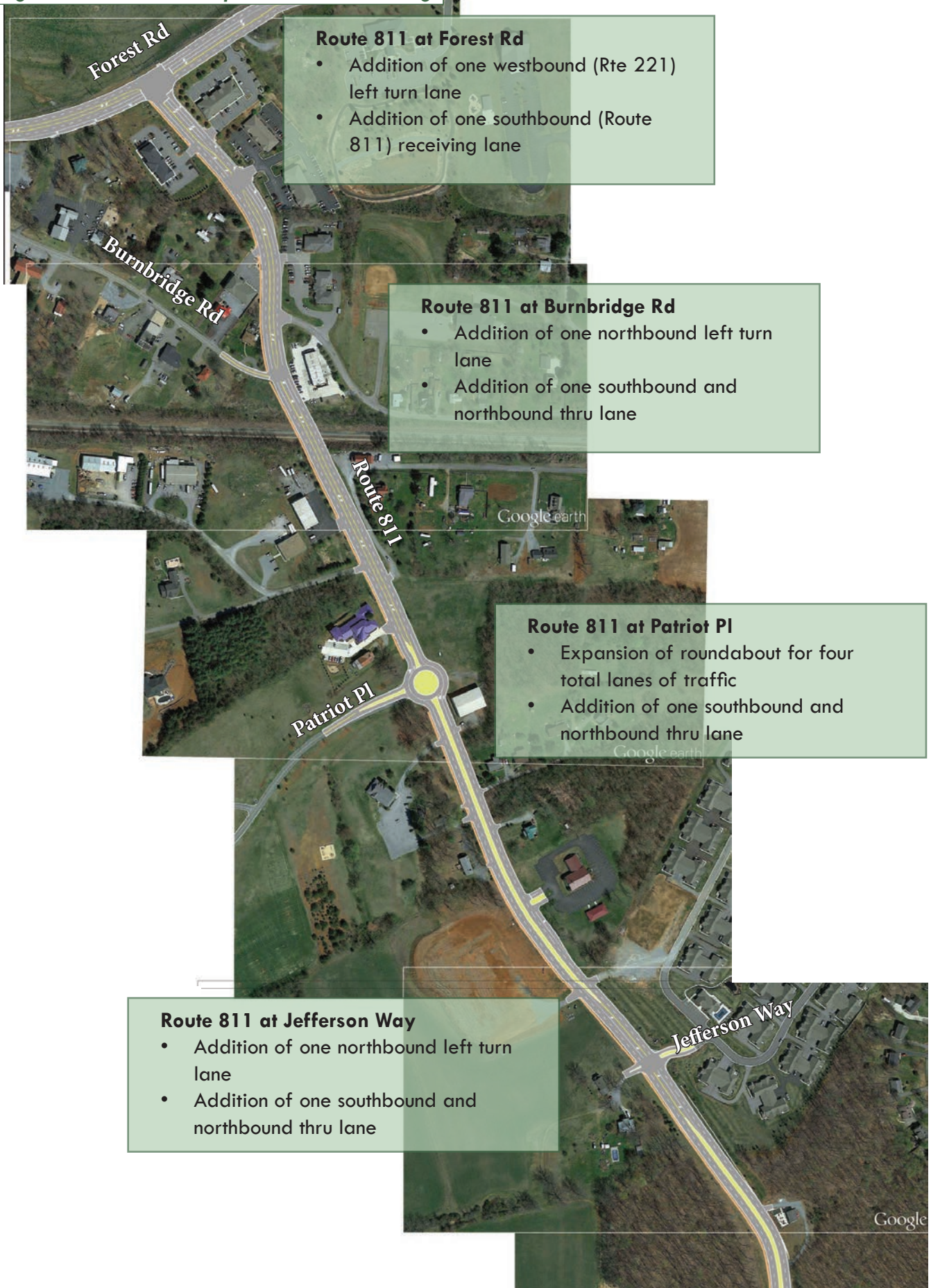
**Figure 18: Phase IV Proposed Typical Street Sections**



### Forest Rd (Route 221) Intersection

In order to fully utilize the new five lane corridor design on Route 811 and accommodate very high projected future left turn volumes from Forest Rd, it is recommended that an additional west-bound left turn lane be added on Forest Rd for vehicles turning onto Route 811.

**Figure 19: Phase IV Sample Corridor Rendering**



## Signalized Intersection 2040 Level of Service Comparison: No Build vs. Phase IV Build

**Table 11: Forest Rd 2040 No Build LOS**

1. Rte 811/ Forest Rd		2040 No Build			
		AM		PM	
		LOS	Delay (s)	LOS	Delay (s)
Route 811	NBL	E	71.9	E	68.5
Route 811	NBR	E	56.4	D	46.5
Forest Rd	WBL	F	154	F	215.5
Forest Rd	WBT	B	17.5	B	15.9
Forest Rd	EBT	D	49.4	D	43.8
Forest Rd	EBR	C	25	C	32.6
Intersection		D	51.4	E	62.5

**Table 12: Forest Rd 2040 Phase IV Build LOS**

1. Rte 811/ Forest Rd		2040 Full Build Out			
		AM		PM	
		LOS	Delay (s)	LOS	Delay (s)
Route 811	NBL	F	79	E	67.4
Route 811	NBR	C	29.2	B	17.6
Forest Rd	WBL	E	76.7	E	66.2
Forest Rd	WBT	B	14.9	B	13.7
Forest Rd	EBT	D	52.7	D	44
Forest Rd	EBR	A	5.3	B	11.8
Intersection		D	47.9	D	37.6

**Table 13: Patriot Pl 2040 No Build LOS**

3. Rte 811/ Patriot Pl		2040 No Build			
		AM		PM	
		LOS	Delay (s)	LOS	Delay (s)
Route 811	NBL	B	10	B	13.2
Route 811	NBT	A	0	A	0
Route 811	SBT	A	0	A	0
Route 811	SBR	A	0	A	0
Patriot Pl	EBL	F	1111.2	F	235.3
Patriot Pl	EBR	C	17.6	D	31.5
Intersection		E	44.4	A	2.1

**Table 14: Patriot Pl 2040 Phase IV Build LOS**

3. Rte 811/ Patriot Pl		2040 Full Build Out (4-Lane Roundabout)			
		AM		PM	
		LOS	Delay (s)	LOS	Delay (s)
Route 811	NBL	B	11.7	B	11.3
Route 811	NBT	A	4.8	A	1.8
Route 811	SBT	A	5.0	A	4.4
Route 811	SBR	A	6.1	A	5.6
Patriot Pl	EBL	B	13.5	B	15.1
Patriot Pl	EBR	A	7.6	A	9.2
Intersection		A	5.9	A	4.5



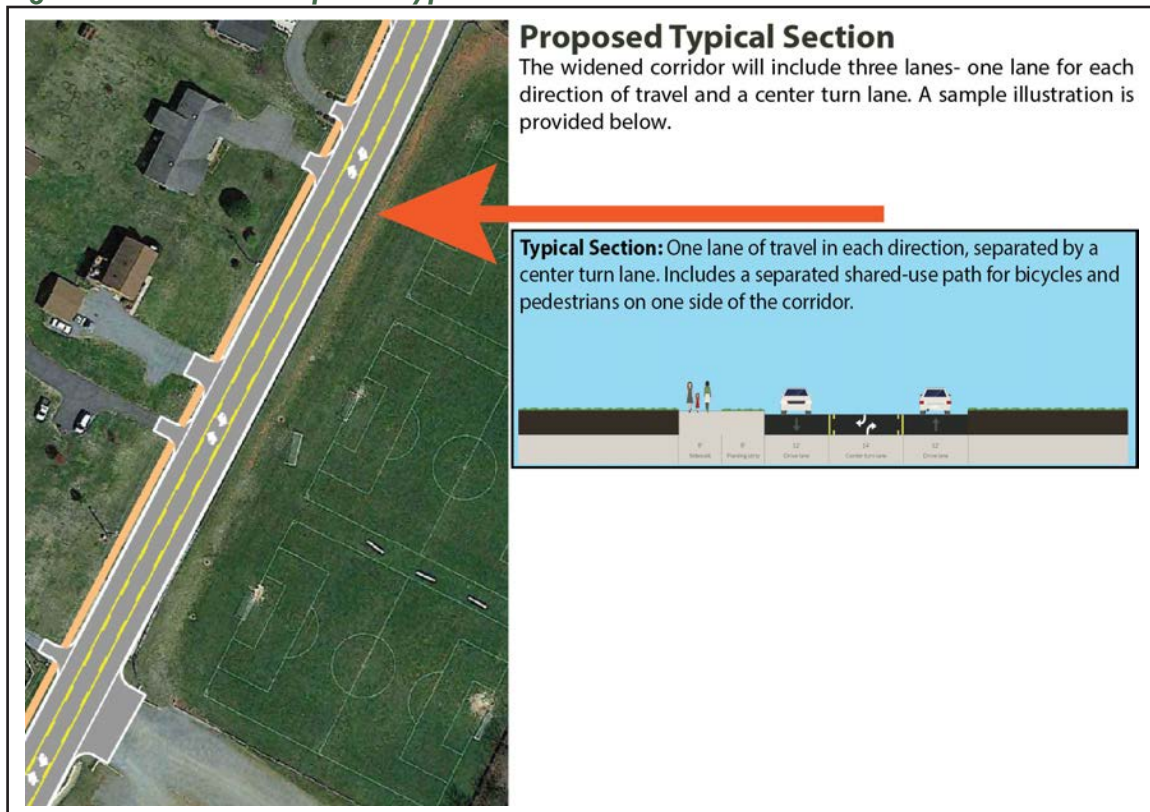
## Primary Corridor Improvement Phase V: Widen Corridor from Waterlick Rd to Turkey Foot Rd

The final section of the corridor that is recommended to be widened is that between Waterlick Rd and Turkey Foot Rd. This section of the corridor features the lowest traffic volumes in the study corridor, and the road here assumes a distinctly residential character. Numerous homes have direct frontage and driveway access onto the road, and a large youth athletic field complex is located just north of Turkey Foot Rd.

Unlike the segment between Forest Rd and Waterlick Rd (Phases III and IV), future traffic volumes are not projected to exceed the existing capacity of the road. Instead of widening the corridor to a five lane road, therefore, this study recommends that the corridor be widened to a three lane road with one travel lane in each direction and a center turn lane in this section. The center turn lane would be added to increase the safety of vehicles making left turns into driveways and neighborhood streets.

Finally, as with Phases III and IV, the Phase V recommendation includes the addition of a separated 10' shared use path for dual direction bicycle and pedestrian travel on one side of the corridor. This path should be connected to the surrounding neighborhoods, as well as the recreation fields.

**Figure 20: Phase V Proposed Typical Street Section**



**Figure 21: Phase IV Sample Corridor Rendering**



# Full Build Level of Service Analysis

Figure 22, below, provides a summary of the LOS analysis comparison between the 2040 “No Build” Scenario and the 2040 “Full Build” Scenario, which includes all of the improvements recommended in this report.

**Figure 22: No Build vs Full Build LOS Comparison**

## Intersection Peak Hour Levels of Service

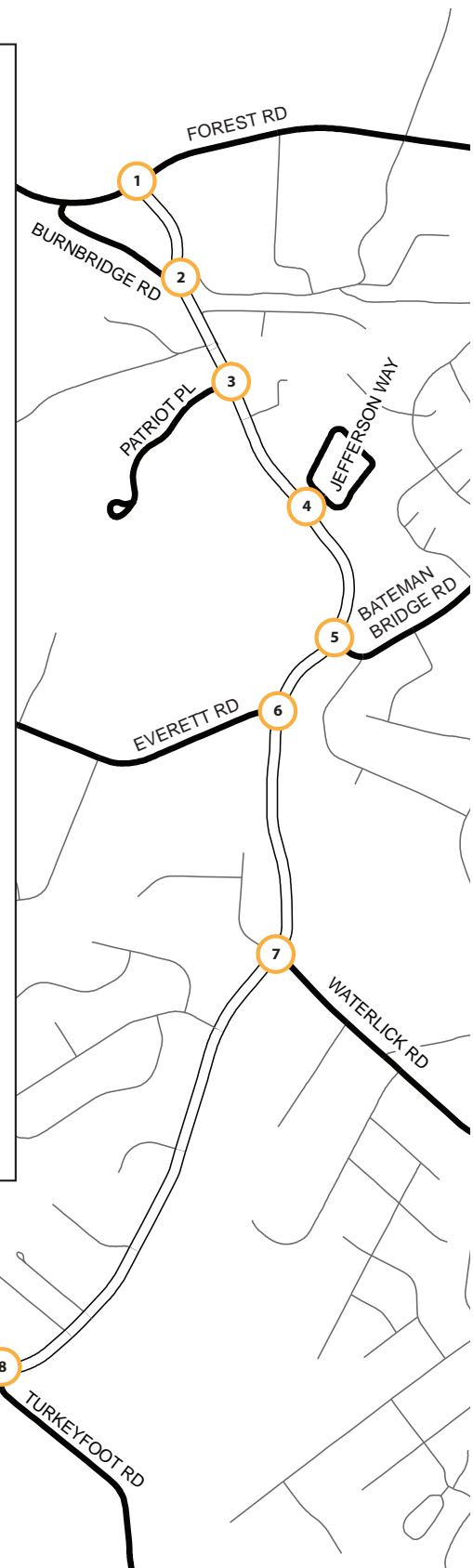
Projected 2040 LOS: No Build vs Full Build

	No Build	Full Build
1 Route 811 at Forest Rd	Red	Red
2 Route 811 at Burnbridge Rd**	Orange	Orange
3 Route 811 at Patriot Pl**	Red	Green
4 Route 811 at Jefferson Way**	Red	Red
5 Route 811 at Bateman Bridge Rd	Orange	Green
6 Route 811 at Everett Rd	Orange	Green
7 Route 811 at Waterlick Rd	Red	Green
8 Route 811 at Turkey Foot Rd**	Orange	Orange

### Key

- LOS C or higher during both peak hours
- LOS D or lower during one peak hour
- LOS D or lower during both peak hours

**\*\* Unsignalized Intersections:** The LOS reported for unsignalized intersections is not determined by average vehicle delay, but by the **worst** intersection movement’s delay.





## Peripheral Improvements

In addition to the improvements recommended for the Route 811 corridor itself, the study has also identified several improvements that could be made in the surrounding area that could indirectly improve traffic operations on Route 811.

### Burnbridge Rd Small Area Plan

Future traffic conditions in the area around Forest Rd, Burnbridge Rd, and Route 811 will be significantly affected by the emerging business and office district in that area. The study recommends that Bedford County consider creating a Small Area Plan (or similar) to guide this development and help plan ahead for factors such as traffic access, walkability, and roadway context.

**Figure 23: Burnbridge Rd Commercial District**



### Recreation Field Access Management

Multiple public comments were made regarding the safety and congestion issues that are created by traffic entering and exiting the Forest Youth Athletic Association Recreation Fields. Of particular concern are vehicles that make left turns in and out of the recreation field driveways on Route 811.

One possible solution to this problem would be to change the primary entrance for the athletic fields to the driveway on Turkey Foot Rd and to reconstruct the driveways on Route 811 as right-in, right-out designs. As part of this change, it may be necessary to construct a new access road connecting the Turkey Foot Rd parking lot at the southern end of the fields with the parking lots surrounding the baseball diamonds at the northern end of the fields.

**Figure 24: FYAA Recreation Fields Proposed Access Management**





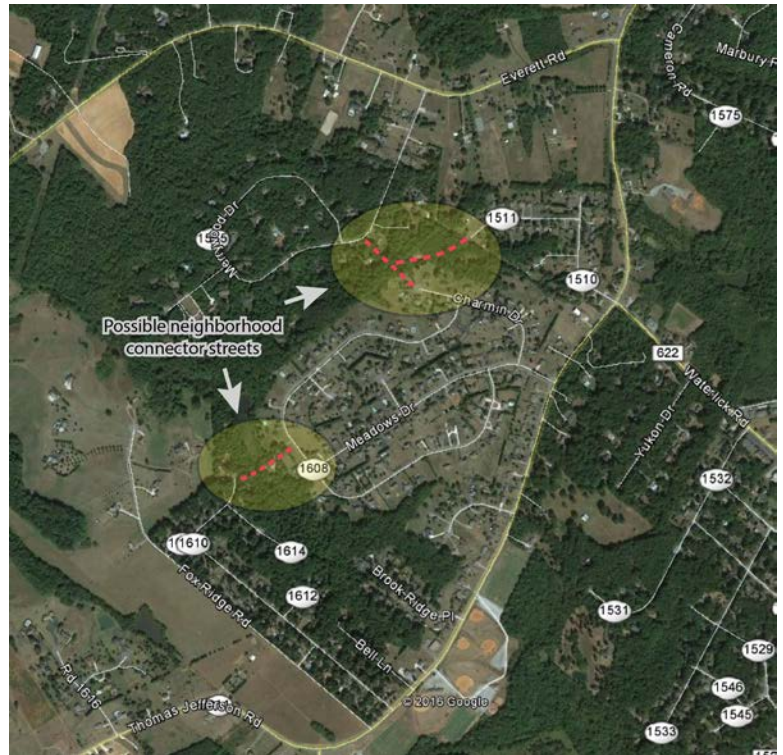
## Neighborhood Connectivity

The residential area south of Everett Rd and west of Route 811 includes several neighborhood developments that are directly adjacent to one another but are not connected by an internal road network. As a result, residents of each development can only enter and exit their neighborhoods from a single point, with no alternative options to avoid congested points along Route 811 or to enter and exit at a signalized intersection. Additionally, this lack of connectivity serves as an obstacle to opportunities to establish safe and convenient walking and bicycle routes off of the Route 811 corridor.

This situation could be improved by the addition of short connector streets between the neighborhoods. One, illustrated in Figure 26, would connect Crestview Dr and Meadow Down Dr. A second, illustrated in Figure 27, would create a three way connection between Charmin Dr, Cimarron Rd, and Merrywood Dr. If completed, these roads would provide all of the neighborhoods with multiple points of entry and exit—including the signalized intersection at Route 811 and Omni Pl (Waterlick Rd) and onto the less heavily traveled Everett Rd.

This study recommends that Bedford County and neighborhood residents discuss the possibility of building these new internal connector roads in order to increase the ease and safety of neighborhood access, as well as to reduce overall traffic on Route 811. If it is not feasible to construct new connector roads, the possibility of acquiring easements for multi-use trails at these locations could also be considered.

**Figure 25: Proposed Neighborhood Connections**



**Figure 26: Proposed Connection 1- Crestview Dr to Meadow Down Dr**



**Figure 27: Proposed Connection 2- Charmin Dr to Merrywood Dr to Cimarron Rd**



# Implementation Strategies

## Project Cost Estimates

**Table 15: Project Cost Estimates**

Project	2016 Cost Estimate	HSIP B/C Ratio*
<b>Short Term Improvements</b>		
Short Term Improvement 1: Extend Right Turn Lane for Bateman Bridge Rd	\$11,600	
Short Term Improvement 2: Extend Right Turn Lane for Everett Rd	\$4,900	
Short Term Improvement 3: Flashing Warning Sign for Waterlick Rd	\$10,000	5.19**
Short Term Improvement 4: Flashing Warning Sign for Burnbridge Rd	\$10,000	20.21**
Short Term Improvement 5: Enhanced Lane Striping	\$161,876	0.14
Short Term Improvement 6: Increased Speed Education and Enforcement	\$20,000	
<b>Primary Corridor Improvements</b>		
Primary Improvement Phase I: Signal Coordination	\$250,000	0.92**
Primary Improvement Phase II: Patriot Pl Roundabout	\$1,960,000	
Primary Improvement Phase II: Waterlick Rd Right Turn Lane	\$510,000	
Primary Improvement Phase II: Turkey Foot Rd Right Turn Lane	\$510,000	
Primary Improvement Phase III: Waterlick Rd to Bateman Bridge Rd Corridor Widening	\$19,160,000	
Primary Improvement Phase IV: Bateman Bridge Rd to Forest Rd Corridor Widening	\$27,340,000	
Primary Improvement Phase V: Waterlick Rd to Turkey Foot Rd Corridor Widening	\$14,150,000	
<b>Peripheral Improvements</b>		
Peripheral Improvement 1: Burnbridge Rd Small Area Plan	\$35,000	
Peripheral Improvement 2: Neighborhood Connectivity	\$3,700,000	
Peripheral Improvement 3: Athletic Fields Access Management	\$125,000	

\*Consistent with the HSIP funding program, a B/C Ratio estimate was calculated for projects that (1) Were safety-oriented improvements (2) Had an estimated cost less than \$3,000,000

\*\*Project may be eligible for HSIP Funding



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## Funding Sources

*Table 16: House Bill 2 Funding Summary*

House Bill 2 (HB2)	
<b>Purpose</b>	HB2 is a statewide program that intends to distribute funding based on a standard and objective evaluation of projects that will determine to how effectively they help the state achieve its transportation goals.
<b>Funding</b>	There are two main pathways to funding within the HB2 process—the Construction District Grant Program (CDGP) and the High Priority Projects Program (HPPP). A project applying to funds from the CDGP is prioritized with projects from the same construction district. A project applying for funds from the HPPP is prioritized with projects statewide. The CTB then makes a final decision on which projects to fund.
<b>Eligible Projects</b>	Projects must address improvements to a Corridor of Statewide Significance, Regional Network, or Urban Development Area (UDA). Project types can include highway improvements such as widening, operational improvements, access management, and intelligent transportation systems, transit and rail capacity expansion, and transportation demand management including park and ride facilities.
<b>Eligible Applicants</b>	Projects may be submitted by regional entities including MPOS and PDCs, along with public transit agencies, counties, cities, and towns that maintain their own infrastructure. Projects pertaining to UDAs can only be submitted by localities.
<b>Evaluation Criteria</b>	There are five factors evaluated for all projects: Safety, Congestion Mitigation, Accessibility, Environmental Quality, and Economic Development. MPOs with a population greater than 200,000 are also evaluated by land use policy consistency.
<b>Website</b>	<a href="http://www.virginiahb2.org/">http://www.virginiahb2.org/</a>

**Table 17: Highway Safety Improvements Program Funding Summary**

<b>Highway Safety Improvements Program (HSIP)</b>	
<b>Purpose</b>	Established by the federal transportation legislation MAP-21, this program is structured and funded to make significant progress in reducing highway fatalities and injuries on all public roads.
<b>Funding</b>	The Federal share for highway safety improvements is 90%, with certain types of projects (including, as relevant to this study, maintaining retro-reflectivity of pavement markings and the installation of traffic signs) eligible to be funded at 100%. If project cost is higher than what was originally submitted, the project manager and sponsor will be responsible for identifying sources for funding those estimates.
<b>Eligible Projects</b>	Projects involve the identification of high-crash spots or corridor segments, an analysis of crash trends and existing conditions, and the prioritization and scheduling of improvement projects
<b>Eligible Applicants</b>	Local governments, VDOT District and Regional Staff
<b>Evaluation Criteria</b>	<ul style="list-style-type: none"><li>• Evaluated on a statewide basis rather than on a local or district basis</li><li>• Locations or corridors where a known “substantive safety” problem exists as indicated by location-specific data on severe crashes, and where it is determined that the specific project action can with confidence produce a measurable and significant reduction in the number and/or consequences of severe crashes</li><li>• To achieve the maximum benefit, the focus of the program is on cost-effective use of funds allocated for safety improvements</li><li>• Priority will be given to projects having higher total number of deaths and serious injuries</li></ul>
<b>Website</b>	<a href="http://www.virginiadot.org/business/ted_app_pro.asp">http://www.virginiadot.org/business/ted_app_pro.asp</a>



**Table 18: Transportation Alternatives Program Funding Summary**

Transportation Alternatives Program	
<b>Purpose</b>	This program is intended to help local sponsors fund community based projects that expand non-motorized travel choices and enhance the transportation experience by improving the cultural, historical, and environmental aspects of transportation infrastructure. It focuses on providing pedestrian and bicycle facilities and other community improvements.
<b>Funding</b>	TAP is not a traditional grant program and funds are only available on a reimbursement basis. It is therefore important to have the necessary funding available to pay for services and materials until appropriate documentation can be submitted and processed for reimbursement. The program will allow a maximum federal reimbursement of 80% of the eligible project costs and requires a 20% local match.
<b>Eligible Projects</b>	<ul style="list-style-type: none"><li>• Pedestrian and bicycle facilities such as sidewalks, bike lanes, and shared use paths</li><li>• Pedestrian and bicycle safety and educational activities such as classroom projects, safety handouts and directional signage for trails (Safe Routes to School)</li><li>• Preservation of abandoned railway corridors such as the development of a rails-to-trails facility</li></ul>
<b>Eligible Applicants</b>	Any local governments, regional transportation authorities, transit agencies, natural resource or public land agencies, school districts, local educational agencies, or school, tribal government, and any other local or regional government entity with responsibility for oversight of transportation or recreation trails
<b>Evaluation Criteria</b>	<ul style="list-style-type: none"><li>• Number of federal enhancement categories</li><li>• Inclusion in a state, regional, or local plan</li><li>• Public/private venture-cooperation (multi-jurisdictional)</li><li>• Total cost and matching funds in excess of minimum</li><li>• Demonstrable need, community improvement</li><li>• Community support and public accessibility</li><li>• Compatibility with adjacent land use</li><li>• Environmental and ecological benefits</li><li>• Historic criteria met, significant aesthetic value to be achieved and visibility from a public right of way</li><li>• Economic impact and effect on tourism</li></ul>
<b>Website</b>	<a href="http://www.virginiadot.org/business/prehancegrants.asp">http://www.virginiadot.org/business/prehancegrants.asp</a>

**Table 19: VDOT Revenue Share Program Funding Summary**

VDOT Revenue Share Program	
<b>Purpose</b>	This program provides additional funding for use by a county, city, or town to construct, reconstruct, improve, or maintain the highway systems within such county, city, or town and for eligible rural additions in certain counties of the Commonwealth. Locality funds are matched, dollar for dollar, with state funds, with statutory limitations on the amount of state funds authorized per locality.
<b>Funding</b>	Application for program funding must be made by resolution of the governing body of the jurisdiction requesting funds. Project funding is allocated by resolution of the CTB. Project costs are divided equally between the Revenue Share Fund and locality funding.
<b>Eligible Projects</b>	<ul style="list-style-type: none"> <li>• Supplemental funding for projects listed in the adopted in the six-year plan</li> <li>• Construction, reconstruction, or improvement projects not including in the adopted six-year plan</li> <li>• Improvements necessary for the specific subdivision streets otherwise eligible for acceptance into the secondary system for maintenance (rural additions)</li> <li>• Maintenance projects consistent with the department's operating policies</li> <li>• New hardsurfacing (paving)</li> <li>• New roadway</li> <li>• Deficits on completed construction, reconstruction, or improvement projects</li> </ul>
<b>Eligible Applicants</b>	Any county, city, or town in the Commonwealth
<b>Evaluation Criteria</b>	<ul style="list-style-type: none"> <li>• Priority 1: Construction projects that have previously received Revenue Sharing funding</li> <li>• Priority 2: Construction projects that meet a transportation need identified in the Statewide Transportation Plan or projects that will be accelerated in a locality's capital plan</li> <li>• Priority 3: Projects that address deficient pavement resurfacing and bridge rehabilitation</li> <li>• Priority 4: All other projects</li> </ul>
<b>Website</b>	<a href="http://www.virginiadot.org/business/local-assistance-access-programs.asp#Revenue_Sharing">http://www.virginiadot.org/business/local-assistance-access-programs.asp#Revenue_Sharing</a>



Table 20: VDOT Road Maintenance Funding Summary

VDOT Road Maintenance	
The VDOT Road Maintenance category of funding covers a wide variety of maintenance and operations activities. Road maintenance funds comprise the majority of VDOT’s scheduled funding (versus new construction). Road maintenance funding addresses needs having to do with pavement management, signals, pavement markings, signs, stripes, guardrails, and ITS (Intelligent Transportation Systems) assets that are considered to be of critical safety and operational importance. Maintenance funding also addresses operation services comprising ordinary and preventative maintenance work such as cleaning ditches, washing bridge decks, patching pot-holes, debris removal, snow and ice removal, emergency response, incident management, mowing, and equipment management.	

Table 21: Proffer Funding Summary

Development Proffer	
Purpose	Developer contributions, known as proffers, provide one source of funding for capital facilities. Proffers are typically cash amounts, dedicated land, and/or in-kind services that are voluntarily granted to the County to partially offset future capital facility costs associated with specific land developments. Recent legislation has limited the ability of local governments to receive proffers, but through the rezoning process developers may still consider providing infrastructure improvements.
Funding	The cost of the program can be financed with developer contributions
Eligible Projects	<ul style="list-style-type: none"><li>-- Rezoning requests that permit residential and/or commercial uses in accordance with this policy</li><li>- Limited to offsetting impacts that are directly attributable to new development</li><li>- To "require" a proffer, a county must have completed an exhaustive study to document the real project costs</li></ul>
Eligible Applicants	Any land developers seeking a rezoning

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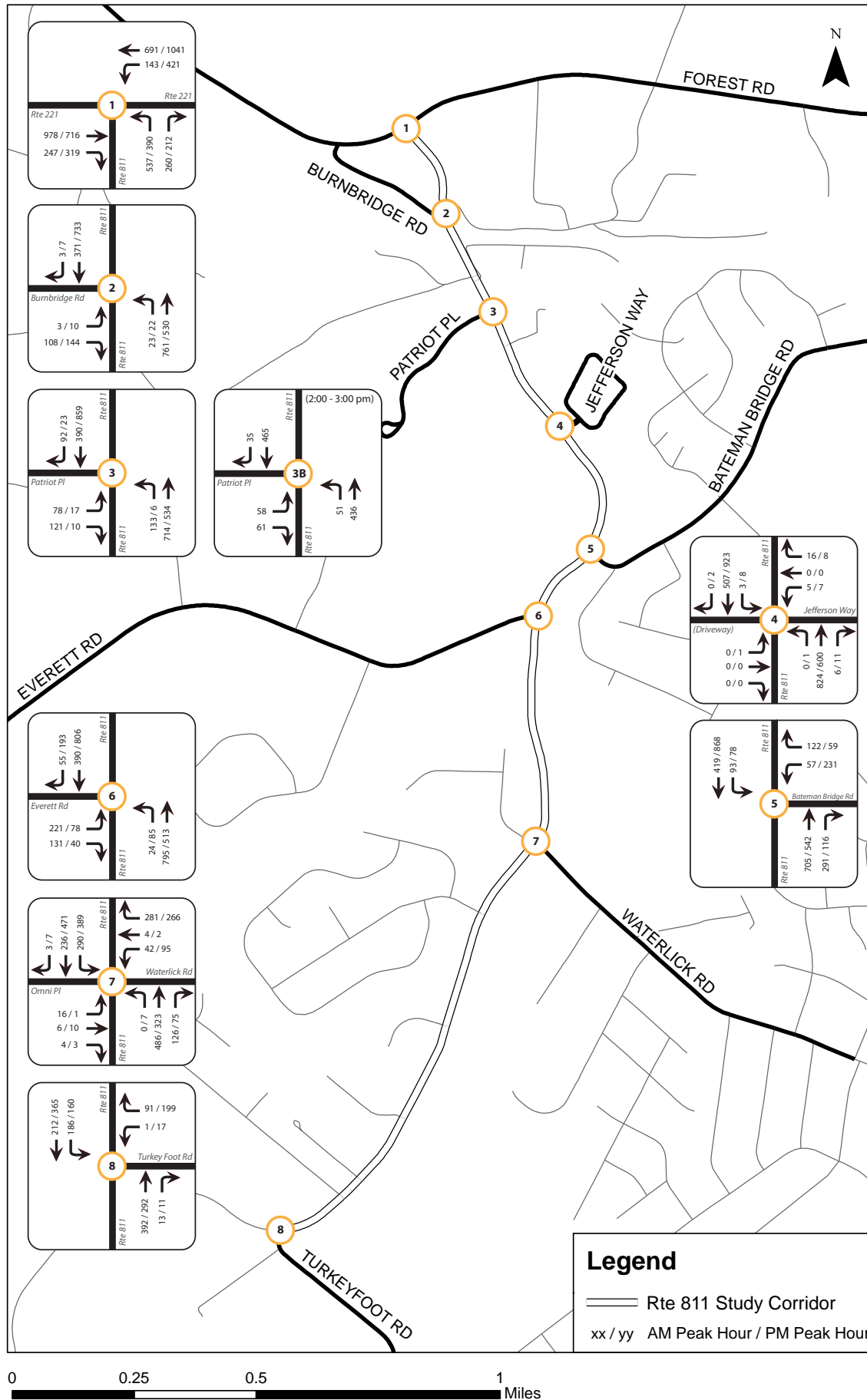
# Technical Appendices



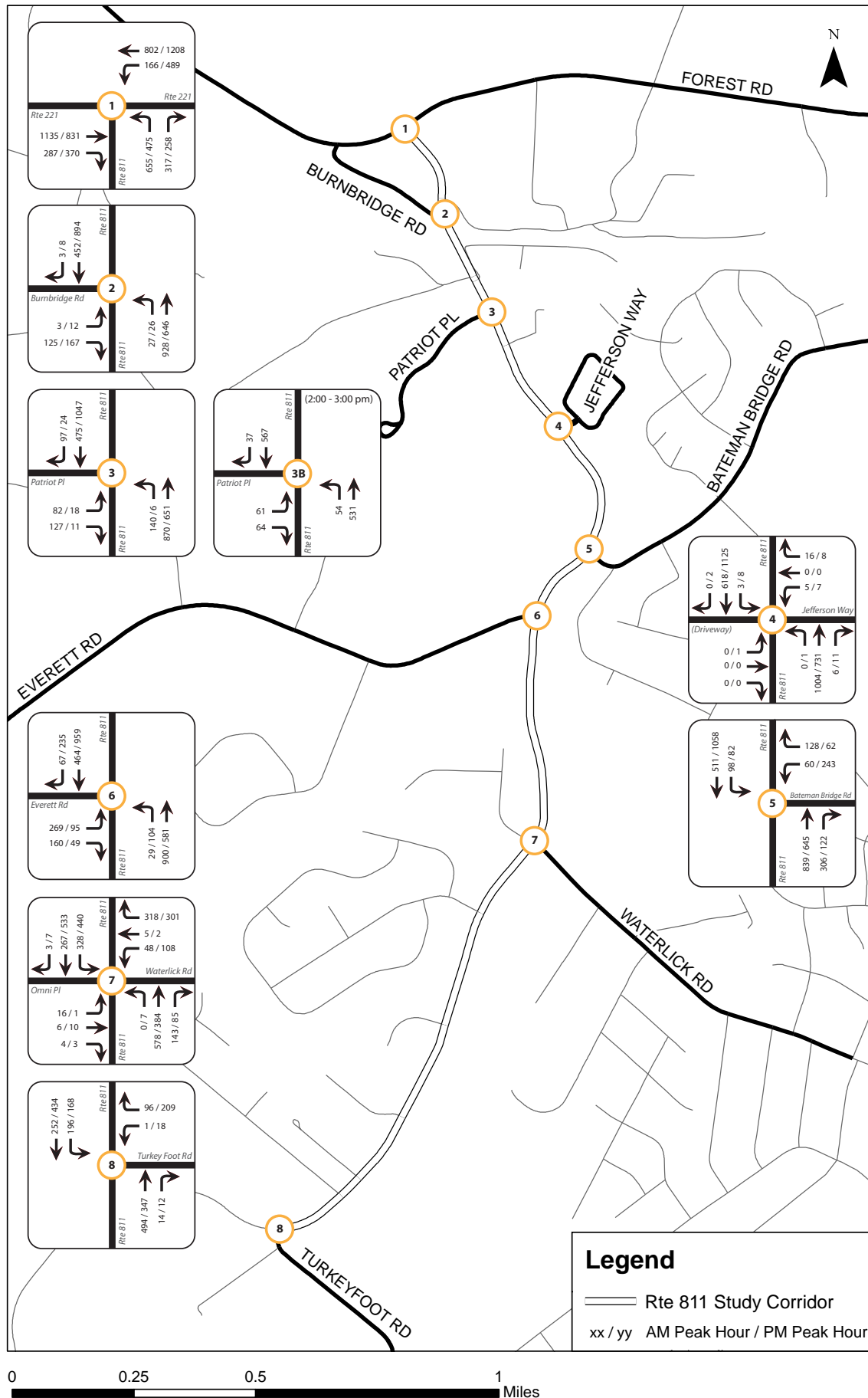
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## **Appendix 1: Current and Projected Future Intersection Vehicle Movement Counts**

# Intersection Traffic Counts

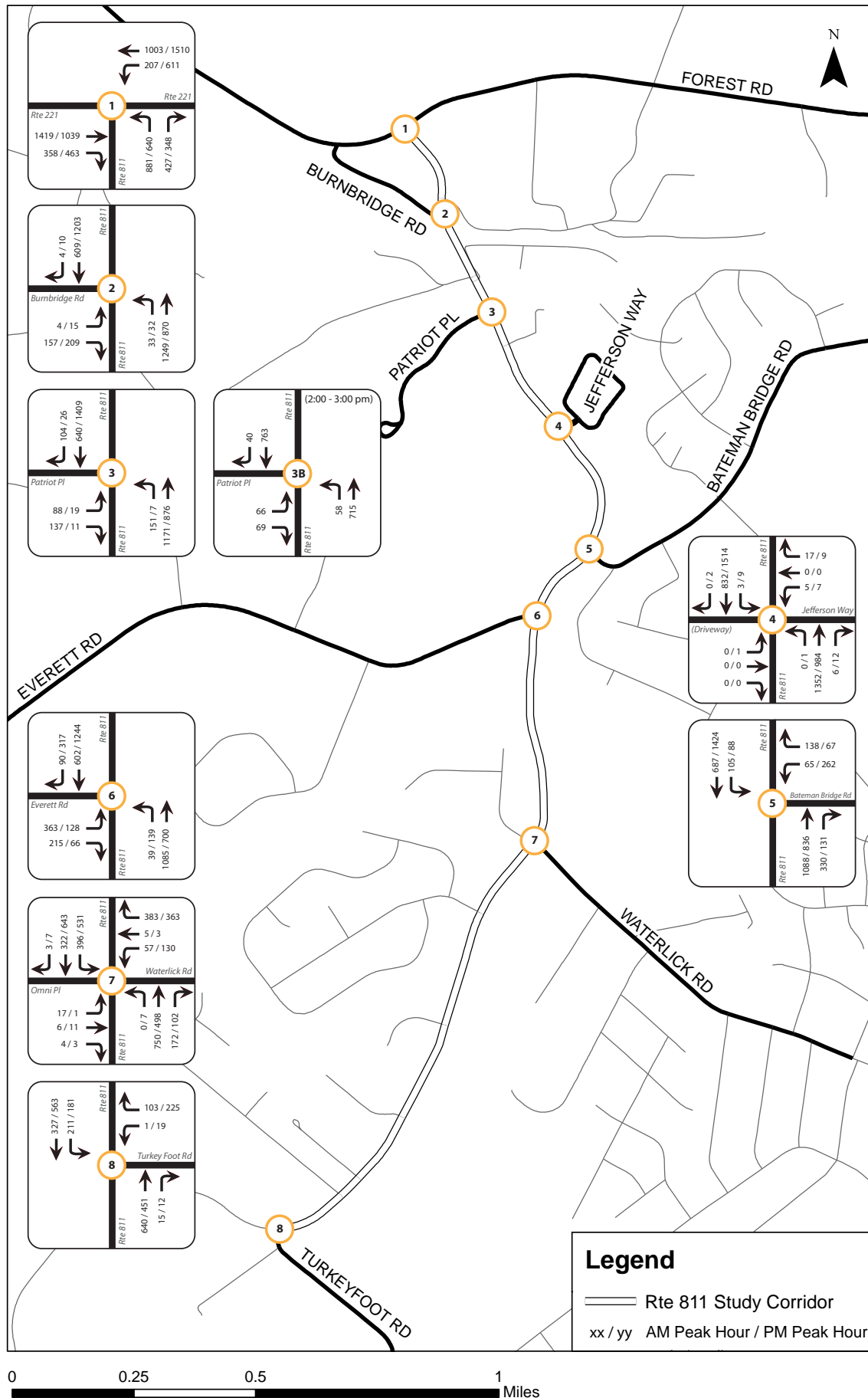


# Intersection Traffic Counts: 2025





# Intersection Traffic Counts: 2040



## Appendix 2: Traffic Growth Projection Methodology

### Route 811 Corridor Study Projected Traffic Volume Growth Rates

The growth rates that were used to project future traffic volumes on the Route 811 study corridor were primarily derived from the Virginia Department of Transportation's annual traffic data reports and the Central Virginia MPO's Travel Demand Models (TDM). The VDOT historic annual growth rate was calculated by comparing AADT figures in 2004 and 2014. Likewise, the TDM growth rate was calculated by comparing the AADT information from the 2007 model to the projected 2040 model. In the case that AADT information was not provided for a road in one or both of the years, the growth rate was listed as NA.

The "suggested study growth rate" that was used in this study's calculation of future year traffic volumes is listed in the fourth column of the table. The column following that provides the reasoning that was used to select that growth rate.

#### Route 811 Project Growth Rates

Segment	VDOT Historic Growth Rate	CVMPO TDM Growth Rate	Suggested Study Growth Rate	Logic
Forest Rd to Bateman Bridge Rd	2.66%	1.55%	2.00%	Reasonable mid-point between model rate and VDOT rate
Bateman Bridge Rd to Everett Rd	2.26%	1.38%	1.75%	Reasonable mid-point between model rate and VDOT rate
Everett Rd to Waterlick Rd	1.55%	1.03%	1.25%	Reasonable mid-point between model rate and VDOT rate
Waterlick Rd to Turkey Foot Rd	1.75%	1.21 - 2.36%	1.75%	Reasonable mid-point between model rates and VDOT rate

#### Intersecting Road Growth Rates

Road	VDOT Historic Growth Rate	CVMPO TDM Growth Rate	Suggested Study Growth Rate	Logic
Forest Rd	1.00%	1.65%	1.50%	Between model rate and VDOT growth rate; bias towards TDM rate due to expected long-term growth along Rte 221 corridor.
Burnbridge Rd	3.10%	NA	1.50%	Mature development on adjacent parcels expected to limit long-term traffic growth; some growth still expected due to possible development growth along adjacent Rte 221 corridor
Patriot Pl	NA	NA	0.50%	Patriot Pl serves as a driveway for Thomas Jefferson Elementary School. The overall number of students and staff attending the school is not expected to increase significantly.
Jefferson Way	NA	NA	0.25%	Jefferson Way serves a planned residential development that has been fully constructed. Traffic volumes are therefore expected to remain relatively consistent into the future.
Bateman Bridge Rd	-0.60%	NA	0.50%	Mature development on adjacent parcels. Traffic may gradually increase as a result of overall growth in surrounding area.
Everett Rd	1.28%	NA	2.00%	Steady housing development on adjacent parcels is expected to continue due to a large amount of undeveloped property.
Waterlick Rd	0.45%	0.90%	1.25%	Mature development on adjacent parcels, but with potential for increasing development densities and corridor expansion.
Turkey Foot Rd	-0.68%	NA	0.50%	Some adjacent parcels remain undeveloped; surrounding area is expected to continue experiencing steady growth
Rte 811 (South of study corridor)	1.18%	2.45%	1.75%	Reasonable mid-point between model rate and VDOT rate

The following pages show how these growth rates were used to predict future year traffic volumes at major intersections.

Route 811 Corridor Study  
Projected Traffic Volume Growth Rates

1. Rte 811/ Forest Rd		Traffic Volumes							
		AM				PM			
		2015	Growth Rate	2025	2040	Existing	Growth Rate	2025	2040
Route 811	NBL	537	2%	655	881	390	2%	475	640
Route 811	NBR	260	2%	317	427	212	2%	258	348
Forest Rd	WBL	143	1.50%	166	207	421	1.50%	489	611
Forest Rd	WBT	691	1.50%	802	1003	1041	1.50%	1208	1510
Forest Rd	EBT	978	1.50%	1135	1419	716	1.50%	831	1039
Forest Rd	EBR	247	1.50%	287	358	319	1.50%	370	463

2. Rte 811/ Burnbridge Rd		Traffic Volumes							
		AM				PM			
		2015	Growth Rate	2025	2040	Existing	Growth Rate	2025	2040
Route 811	NBL	23	1.50%	27	33	22	1.50%	26	32
Route 811	NBT	761	2.00%	928	1249	530	2.00%	646	870
Route 811	SBT	371	2.00%	452	609	733	2.00%	894	1203
Route 811	SBR	3	1.50%	3	4	7	1.50%	8	10
Burnbridge Rd	EBL	3	1.50%	3	4	10	1.50%	12	15
Burnbridge Rd	EBR	108	1.50%	125	157	144	1.50%	167	209

3. Rte 811/ Patriot Pl		Traffic Volumes							
		AM				PM			
		2015	Growth Rate	2025	2040	Existing	Growth Rate	2025	2040
Route 811	NBL	133	0.50%	140	151	6	0.50%	6	7
Route 811	NBT	714	2.00%	870	1171	534	2.00%	651	876
Route 811	SBT	390	2.00%	475	640	859	2.00%	1047	1409
Route 811	SBR	92	0.50%	97	104	23	0.50%	24	26
Patriot Pl	EBL	78	0.50%	82	88	17	0.50%	18	19
Patriot Pl	EBR	121	0.50%	127	137	10	0.50%	11	11

PM-2 (2:00 - 3:00pm)

Existing		Growth Rate		2025	2040
Route 811	NBL	51	0.50%	54	58
Route 811	NBT	436	2.00%	531	715
Route 811	SBT	465	2.00%	567	763
Route 811	SBR	35	0.50%	37	40
Patriot Pl	EBL	58	0.50%	61	66
Patriot Pl	EBR	61	0.50%	64	69



Route 811 Corridor Study  
Projected Traffic Volume Growth Rates

4. Rte 811/ Jefferson Way		Traffic Volumes								
		AM				PM				
		2015	Growth Rate	2025	2040	Existing	Growth Rate	2025	2040	
	Route 811	NBL	0	0.00%	0	0	1	0.00%	1	1
	Route 811	NBT	824	2.00%	1004	1352	600	2.00%	731	984
	Route 811	NBR	6	0.25%	6	6	11	0.25%	11	12
	Route 811	SBL	3	0.25%	3	3	8	0.25%	8	9
	Route 811	SBT	507	2.00%	618	832	923	2.00%	1125	1514
	Route 811	SBR	0	0.00%	0	0	2	0.00%	2	2
	Jefferson Way	WBL	5	0.25%	5	5	7	0.25%	7	7
	Jefferson Way	WBT	0	0.25%	0	0	0	0.25%	0	0
	Jefferson Way	WBR	16	0.25%	16	17	8	0.25%	8	9
	(Driveway)	EBL	0	0.00%	0	0	1	0.00%	1	1
	(Driveway)	EBT	0	0.00%	0	0	0	0.00%	0	0
	(Driveway)	EBR	0	0.00%	0	0	0	0.00%	0	0

5. Rte 811/ Bateman Bridge Rd		Traffic Volumes							
		AM			PM				
		2015	Growth Rate	2025	2040	Existing	Growth Rate	2025	2040
Route 811	NBT	705	1.75%	839	1088	542	1.75%	645	836
Route 811	NBR	291	0.50%	306	330	116	0.50%	122	131
Route 811	SBL	93	0.50%	98	105	78	0.50%	82	88
Route 811	SBT	419	2.00%	511	687	868	2.00%	1058	1424
Bateman Bridge Rd	WBL	57	0.50%	60	65	231	0.50%	243	262
Bateman Bridge Rd	WBR	122	0.50%	128	138	59	0.50%	62	67

6. Rte 811/ Everett Rd		Traffic Volumes							
		AM				PM			
		2015	Growth Rate	2025	2040	Existing	Growth Rate	2025	2040
Route 811	NBL	24	2.00%	29	39	85	2.00%	104	139
Route 811	NBT	795	1.25%	900	1085	513	1.25%	581	700
Route 811	SBT	390	1.75%	464	602	806	1.75%	959	1244
Route 811	SBR	55	2.00%	67	90	193	2.00%	235	317
Everett Rd	EBL	221	2.00%	269	363	78	2.00%	95	128
Everett Rd	EBR	131	2.00%	160	215	40	2.00%	49	66

**Route 811 Corridor Study**  
**Projected Traffic Volume Growth Rates**

7. Rte 811/ Waterlick Rd		Traffic Volumes							
		AM				PM			
		2015	Growth Rate	2025	2040	Existing	Growth Rate	2025	2040
Route 811	NBL	0	0.25%	0	0	7	0.25%	7	7
Route 811	NBT	486	1.75%	578	750	323	1.75%	384	498
Route 811	NBR	126	1.25%	143	172	75	1.25%	85	102
Route 811	SBL	290	1.25%	328	396	389	1.25%	440	531
Route 811	SBT	236	1.25%	267	322	471	1.25%	533	643
Route 811	SBR	3	0.25%	3	3	7	0.25%	7	7
Waterlick Rd	WBL	42	1.25%	48	57	95	1.25%	108	130
Waterlick Rd	WBT	4	1.25%	5	5	2	1.25%	2	3
Waterlick Rd	WBR	281	1.25%	318	383	266	1.25%	301	363
Omni PI	EBL	16	0.25%	16	17	1	0.25%	1	1
Omni PI	EBT	6	0.25%	6	6	10	0.25%	10	11
Omni PI	EBR	4	0.25%	4	4	3	0.25%	3	3

8. Rte 811/ Turkey Foot Rd		Traffic Volumes							
		AM				PM			
		2015	Growth Rate	2025	2040	Existing	Growth Rate	2025	2040
Route 811	NBT	415	1.75%	494	640	292	1.75%	347	451
Route 811	NBR	13	0.50%	14	15	11	0.50%	12	12
Route 811	SBL	186	0.50%	196	211	160	0.50%	168	181
Route 811	SBT	212	1.75%	252	327	365	1.75%	434	563
Turkey Foot Rd	WBL	1	0.50%	1	1	17	0.50%	18	19
Turkey Foot Rd	WBR	91	0.50%	96	103	199	0.50%	209	225

**Route 811 Corridor Study**  
**Projected Traffic Volume Growth Rates**

The following pages provide the information that was used to calculate the AADT of the Route 811 corridor in 2015, 2025, and 2040. The peak hour traffic volume for each corridor segment is separated by direction of travel and is based on PM peak hour traffic counts performed at the 8 intersections that serve as segment end points. The "K-Factor" for each segment, which represents the estimated percentage of daily traffic that occurs during the peak hour, was provided by the Bedford County 2014 VDOT Traffic Data.

**Forest Rd to Burnbridge Rd**

2015			2025			2040		
SB		NB	SB		NB	SB		NB
Peak Hour	740	571	Peak Hour	880.5	695.5	Peak Hour	1143.5	936.5
K Factor	0.097	0.097	K Factor	0.097	0.097	K Factor	0.097	0.097
AADT	13515		AADT	16247		AADT	21443	



Route 811 Corridor Study  
Projected Traffic Volume Growth Rates

Everett Rd to Waterlick Rd

2015			2025			2040		
SB			SB			SB		
Peak Hour	856.5		Peak Hour	994		Peak Hour	1245.5	
K Factor	0.101		K Factor	0.101		K Factor	0.101	
AADT	14361		AADT	16629		AADT	20752	
NB			NB			NB		
Peak Hour	594		Peak Hour			Peak Hour		
K Factor	0.101		K Factor			K Factor		
AADT	14361		AADT	16629		AADT	20752	
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K Factor			K Factor			K Factor		
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Peak Hour			Peak Hour			Peak Hour		
K Factor			K Factor			K Factor		
AADT			AADT			AADT		
NB			NB			NB		
Peak Hour								

Waterlick Rd to Turkey Foot Rd

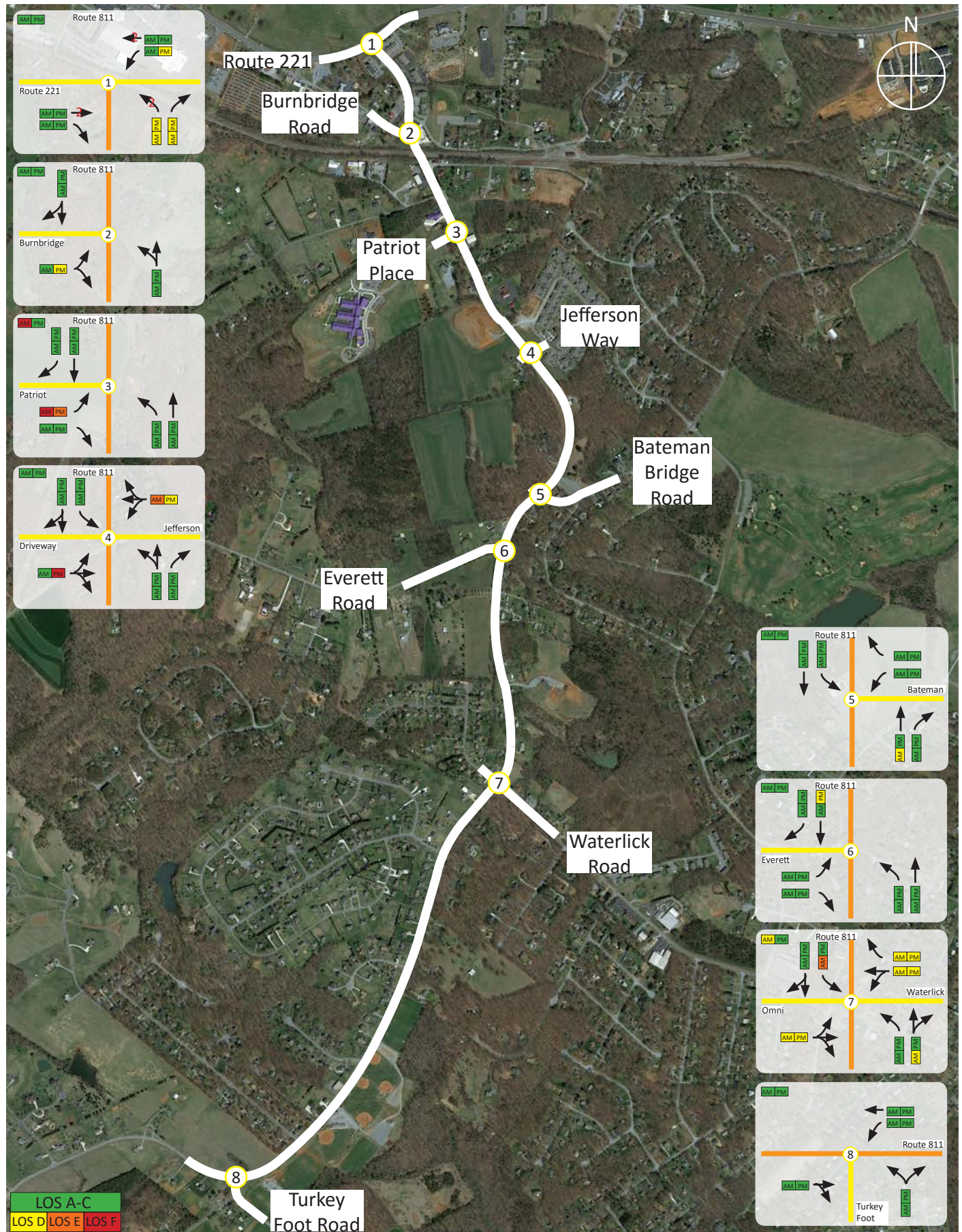
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SB			SB			SB		
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K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
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K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
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AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
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AADT	9721		AADT	11167		AADT	13740	
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AADT	9721		AADT	11167		AADT	13740	
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AADT	9721		AADT	11167		AADT	13740	
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Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
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AADT	9721		AADT	11167		AADT	13740	
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Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
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K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
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Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
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K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
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Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
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AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
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Peak Hour	547		Peak Hour	623		Peak Hour	760	
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AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	547		Peak Hour	623		Peak Hour	760	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	9721		AADT	11167		AADT	13740	
NB			NB			NB		
Peak Hour	444.5		Peak Hour	516		Peak Hour		

South of Turkey Foot Rd

2015			2025			2040		
SB			SB			SB		
Peak Hour	382		Peak Hour	452		Peak Hour	582	
K Factor	0.102		K Factor	0.102		K Factor	0.102	
AADT	6716		AADT	7951		AADT	10245	
NB			NB			NB		
Peak Hour	303		Peak Hour	359		Peak Hour		
K Factor	0.102		K Factor	0.102		K Factor		
AADT	6716		AADT	7951		AADT	10245	

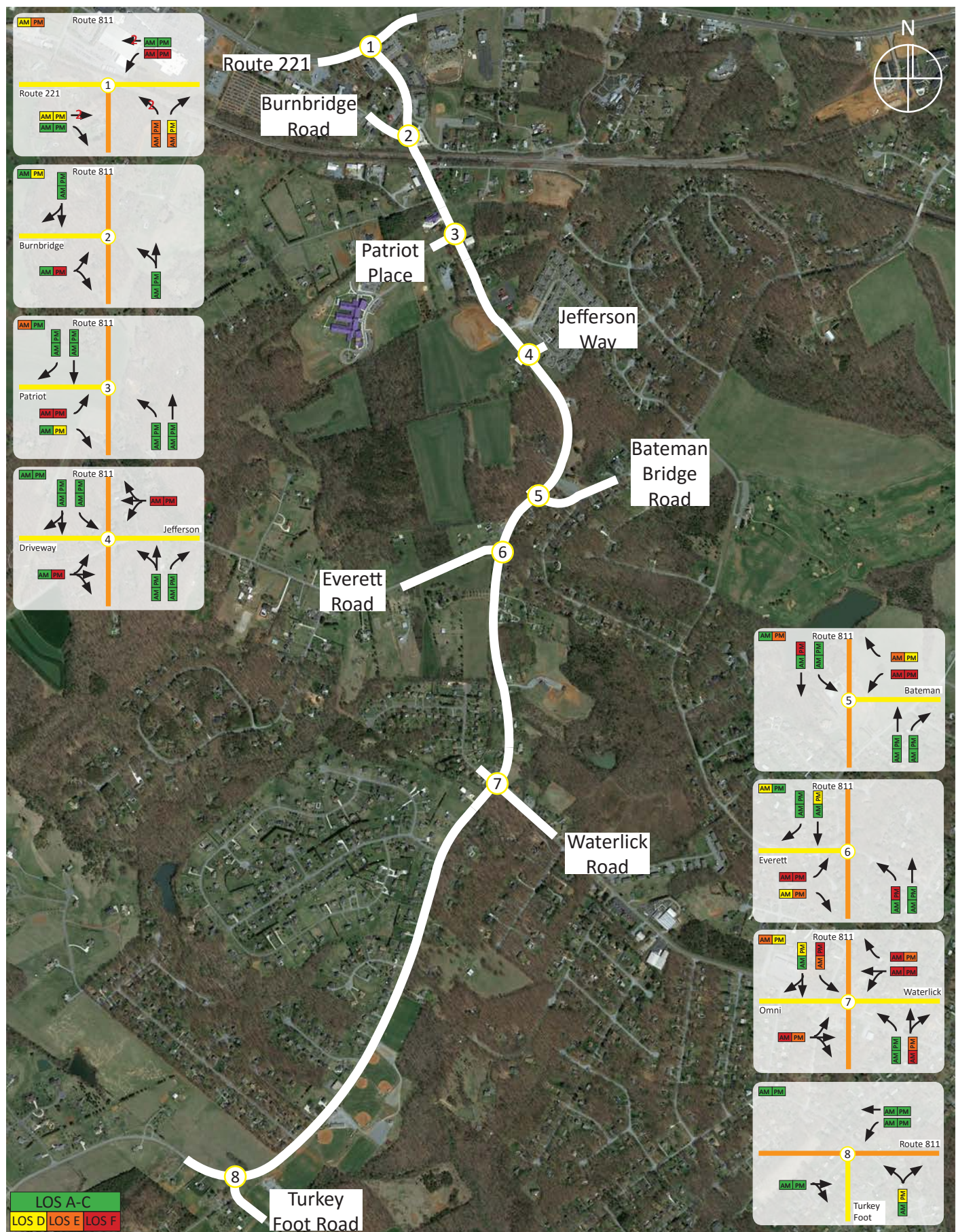
## Appendix 3: Intersection LOS

### Route 811 Corridor Study Traffic Operation Summary - Existing



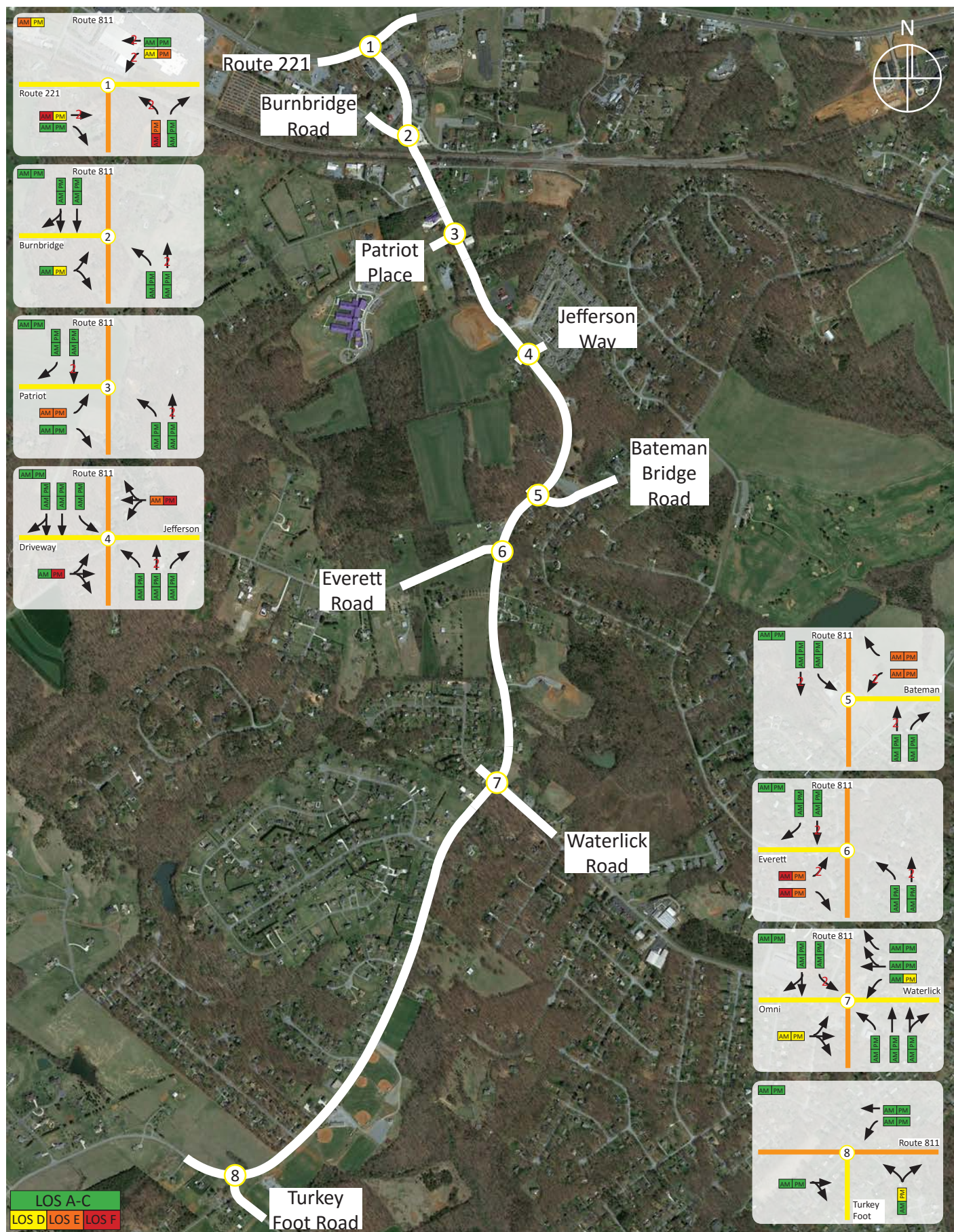


# Route 811 Corridor Study Traffic Operation Summary - 2040 No Build





# Route 811 Corridor Study Traffic Operation Summary - 2040 Full Build Out



# Route 811: Intersection Operation and Level of Service (LOS) Reports

## Projected LOS: 2025

### Patriot PI

#### No Build

3. Rte 811/ Patriot PI		2025 No Build					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBL	A	9.1	110	B	10.8	34
Route 811	NBT	A	0	0	A	0	0
Route 811	SBT	A	0	6	A	0	0
Route 811	SBR	A	0	32	A	0	2
Patriot PI	EBL	F	254.1	268	F	62.1	75
Patriot PI	EBR	B	13.7	399	C	20.1	27
Intersection		B	13.3		A	0.8	

#### Phase II Build

3. Rte 811/ Patriot PI		2025 3-Lane Roundabout					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBL	B	11.7	16	B	11.3	1
Route 811	NBT	A	4.8	114	A	4.4	71
Route 811	SBT	A	5.2	71	A	4.4	149
Route 811	SBR	A	6.1	71	A	5.4	149
Patriot PI	EBL	B	13.7	31	B	19.6	7
Patriot PI	EBR	A	7.8	31	B	13.7	7
Intersection		A	6.1		A	4.7	

## Projected LOS: 2040

### Forest Rd (Route 221)

#### No Build

1. Rte 811/ Forest Rd		2040 No Build					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBL	E	71.9	1034	E	68.5	1032
Route 811	NBR	E	56.4	675	D	46.5	675
Forest Rd	WBL	F	154	321	F	215.5	350
Forest Rd	WBT	B	17.5	426	B	15.9	980
Forest Rd	EBT	D	49.4	731	D	43.8	538
Forest Rd	EBR	C	25	450	C	32.6	350
Intersection		D	51.4		E	62.5	

#### Full Build

1. Rte 811/ Forest Rd		2040 Full Build Out					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBL	F	79	1061	E	67.4	688
Route 811	NBR	C	29.2	672	B	17.6	481
Forest Rd	WBL	E	76.7	241	E	66.2	340
Forest Rd	WBT	B	14.9	291	B	13.7	425
Forest Rd	EBT	D	52.7	705	D	44	472
Forest Rd	EBR	A	5.3	448	B	11.8	261
Intersection		D	47.9		D	37.6	

### Burnbridge Rd

#### No Build

2. Rte 811/ Burnbridge Rd		2040 No Build					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBT/NBL	A	9.2	1075	B	12.2	981
Route 811	SBT/SBR	A	0	0	A	0	11
Burnbridge Rd	EBL/EBR	C	22.1	396	F	320.1	676
Intersection		A	1.9		D	31.3	



## Full Build

2. Rte 811/ Burnbridge Rd		2040 Full Build Out					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBL	A	9.3	125	B	12.4	56
Route 811	NBT	A	0	1106	A	0	0
Route 811	SBT/SBR	A	0	0	A	0	6
Burnbridge Rd	EBL/EBR	B	12.7	239	D	29.4	267
Intersection		A	1.1		A	3	

## Patriot Pl

### No Build

3. Rte 811/ Patriot Pl		2040 No Build					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBL	B	10	350	B	13.2	133
Route 811	NBT	A	0	1363	A	0	603
Route 811	SBT	A	0	6	A	0	71
Route 811	SBR	A	0	33	A	0	36
Patriot Pl	EBL	F	1111.2	300	F	235.3	148
Patriot Pl	EBR	C	17.6	712	D	31.5	84
Intersection		E	44.4		A	2.1	

## Full Build

3. Rte 811/ Patriot Pl		2040 Full Build Out (4-Lane Roundabout)					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBL	B	11.7	79	B	11.3	40
Route 811	NBT	A	4.8	79	A	1.8	40
Route 811	SBT	A	5.0	36	A	4.4	65
Route 811	SBR	A	6.1	36	A	5.6	64
Patriot Pl	EBL	B	13.5	27	B	15.1	4
Patriot Pl	EBR	A	7.6	27	A	9.2	4
Intersection		A	5.9		A	4.5	

## Jefferson Way

### No Build

4. Rte 811/ Jefferson Way		2040 No Build					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBT/NBL	A	0	781	B	13.9	180
Route 811	NBR	A	0	120	A	0	42
Route 811	SBL	B	12.8	27	B	10.6	120
Route 811	SBT/SBR	A	0	0	A	0	677
Jefferson Way	WB L/T/R	F	84.3	109	F	231.1	106
(Driveway)	EB L/T/R	A	0	781	F	305.8	21
Intersection		A	0.8		A	1.7	

### Full Build

4. Rte 811/ Jefferson Way		2040 Full Build Out					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBL	A	0	0	B	14	11
Route 811	NBT	A	0	162	A	0	0
Route 811	NBR	A	0	18	A	0	0
Route 811	SBL	B	12.8	25	B	10.6	34
Route 811	SBT/SBR	A	0	0	A	0	0
Jefferson Way	WB L/T/R	E	39.5	66	F	57.2	57
(Driveway)	EB L/T/R	A	0	0	F	149.4	26
Intersection		A	0.4		A	0.5	

## Bateman Bridge Rd

### No Build

5. Rte 811/ Bateman Bridge Rd		2040 No Build					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBT	B	19.8	576	C	22	489
Route 811	NBR	A	5.9	125	A	9.8	125
Route 811	SBL	C	27.8	190	B	16.4	350
Route 811	SBT	A	3.8	223	F	72.4	544
Bateman Bridge Rd	WBL	F	102	151	F	136.7	497
Bateman Bridge Rd	WBR	E	74.9	229	D	47.9	324
Intersection		B	16.8		E	58.9	

## Full Build

5. Rte 811/ Bateman Bridge Rd		2040 Full Build Out					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBT	A	0.8	346	C	31.3	265
Route 811	NBR	A	0.7	125	B	17.2	125
Route 811	SBL	A	4.1	107	B	17.6	103
Route 811	SBT	A	3.3	121	A	5.9	274
Bateman Bridge Rd	WBL	D	43.5	112	D	45.5	246
Bateman Bridge Rd	WBR	D	48.8	96	D	40.8	59
Intersection		A	4.6		B	18.5	

## Everett Rd

### No Build

6. Rte 811/ Everett Rd		2040 No Build					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBL	B	13.8	237	F	83.7	208
Route 811	NBT	C	25	874	A	3.8	203
Route 811	SBT	C	20.4	410	D	40.7	416
Route 811	SBR	B	12	210	A	6.5	225
Everett Rd	EBL	F	91.8	880	F	118.7	236
Everett Rd	EBR	D	49.1	175	E	55.7	168
Intersection		D	35.1		C	33.7	

## Full Build

6. Rte 811/ Everett Rd		2040 Full Build Out					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBL	B	14.1	71	A	3	169
Route 811	NBT	A	7.2	262	A	2.4	127
Route 811	SBT	C	20.2	159	A	0.7	275
Route 811	SBR	A	0	67	A	0.3	189
Everett Rd	EBL	C	22.5	348	D	47.5	160
Everett Rd	EBR	C	25.2	175	D	45.2	104
Intersection		B	14.6		A	4.1	



## Waterlick Rd

### No Build

7. Rte 811/ Waterlick Rd		2040 No Build					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBL	C	23	6	C	32.2	131
Route 811	NBT/NBR	F	96.2	2256	E	55.8	677
Route 811	SBL	E	75.6	225	F	64.2	225
Route 811	SBT/SBR	A	7	2100	D	38	985
Waterlick Rd	WBL/WBT	F	86.2	125	F	94.1	125
Waterlick Rd	WBR	F	87.7	850	E	58	552
Omni Pl	EB L/T/R	F	88.1	91	E	71.5	48
Intersection		E	74.2		D	54.8	

### Full Build

7. Rte 811/ Waterlick Rd		2040 Full Build Out					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBL	A	0	0	B	17.3	24
Route 811	NBT/NBR	C	32	348	C	21.3	202
Route 811	SBL	B	15.1	130	B	13.1	154
Route 811	SBT/SBR	A	8.5	167	C	24.6	334
Waterlick Rd	WBL	C	30.7	94	D	48.7	151
Waterlick Rd	WBT/WBR	C	29.4	182	C	28.7	196
Omni Pl	EB L/T/R	D	36.2	66	D	39.7	56
Intersection		C	23.8		C	22.3	

### Full Build- Roundabout Alternative

7. Rte 811/ Waterlick Rd		2040 Full Build Out (Roundabout Alternative)					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBL	C	21.0	138	C	15.1	71
Route 811	NBT	C	20.9	139	C	15.1	71
Route 811	NBR	C	20.8	139	C	15.1	71
Route 811	SBL	A	8.0	56	B	12.5	103
Route 811	SBT	A	7.3	42	C	17.6	191
Route 811	SBR	A	7.3	42	C	17.6	191
Waterlick Rd	WBL	A	7.4	7.8	A	7.0	14
Waterlick Rd	WBT	A	7.4	7.8	A	7.0	14
Waterlick Rd	WBR	C	21.1	86	B	12.5	56
Omni Pl	EBL	A	6.6	3.1	A	9.6	2.5
Omni Pl	EBT	A	6.6	3.1	A	9.6	2.5
Omni Pl	EBR	A	6.6	3.1	A	9.6	2.5
Intersection		C	15.8		B	14.3	

## Turkey Foot Rd

### No Build

8. Rte 811/ Turkey Foot Rd		2040 No Build					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBT/NBR	A	0	14	A	0	6
Route 811	SBL	B	10.5	129	A	9.1	93
Route 811	SBT	A	0	0	A	0	0
Turkey Foot Rd	WBL/WBR	C	16.6	89	D	25.6	177
Intersection		A	3		A	5.4	

### Full Build

8. Rte 811/ Turkey Foot Rd		2040 Full Build Out					
		AM			PM		
		LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
Route 811	NBT/NBR	A	0	8	A	0	6
Route 811	SBL	B	10.5	135	A	9.1	96
Route 811	SBT	A	0	0	A	0	0
Turkey Foot Rd	WBL/WBR	C	16.6	86	D	25.6	162
Intersection		A	3		A	5.4	

# Appendix 4: HSIP B/C Ratio Calculations



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**Safety Improvement Proposal (FY16-17)**  
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## PROJECT INFORMATION

Agency	Project Sponsor	Address	City	State	Zip
CMPO	VDOT		Salem	VA	
Email Address	Phone	Priority Number	State Milepoint	VDOT District	VDOT Region
				Salem	
Program Type	Project Type	Functional Class Code	Area Location Code	Study Period Begins	Study Period Ends
	Intersection	Rural Minor Arterial	Small Urban (5,000 - 49,999)	1/1/2016	1/1/2040
County	Safety Proposal Location / Route	System	Traffic Control	From / Major Road	To / Cross Street
Bedford	Route 811 (Include Name)	Primary	Traffic Signal	Advance of Waterlick	

## STEP 1 :: CRASH HISTORY (Define crashes by type and severity)

### APPLICABLE CRASH TYPE AND SEVERITY

Crash Type Categories	Crash Severity					Automated Check	Link to SHSP
	Fatal (K)	Incapacitating Injury (A)	Minor Injury (B+C)	Property Damage (D)	Not specified		
	All	1	1	2	0		
<b>Total Crashes</b>	4	1	1	2	0	Yes	
<b>Primary Crash Categories (sum of all 3 must equal total crashes)</b>							
Cross median	0	0	0	0	0	Yes	
Fixed object	0	0	0	0	0	Yes	
Run off road	0	0	0	0	0	Yes	
Head on	0	0	0	0	0	Yes	
Non-Collision	0	0	0	0	0	Yes	✓
Sideswipe	0	0	0	0	0	Yes	
Angle	0	0	0	0	0	Yes	
Left turn	0	0	0	0	0	Yes	
Right turn	0	0	0	0	0	Yes	
Rear end	4	1	1	2	0	Yes	
Pedestrian	0	0	0	0	0	Yes	
Bicycle	0	0	0	0	0	Yes	

### Secondary Crash Categories

Environmental Factors	Nighttime	0	0	0	0	0	Yes
	Wet weather	0	0	0	0	0	Yes
Number of Vehicles	Single vehicle	0	0	0	0	0	Yes
	Multiple vehicle	4	1	4	2	0	No
Driver Behavior	Speed related	0	0	0	0	0	Yes
	Unbelted	0	0	0	0	0	Yes
	Alcohol related	0	0	0	0	0	Yes

### Automated Check (i.e., does total crashes match the sum of RD, INT, and NM crash types?)

Yes	Yes	Yes	Yes	Yes	Yes
Number of years in crash history:	3.5	Discount Rate:	3%		



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**STEP 2 :: COST** (Compute the economic cost of each improvement)

Proposed Improvement	Service Life	PE Cost + \$5000 (*)	Right-of-Way & Utility Cost	Construction Cost	Total Construction Cost (PV)	Contingency (10%)	Annual Maintenance	Maintenance Cost (PV)	Total Cost (PV)
Advance warning sign with flashers	20	\$5,000	\$0	\$11,000	\$16,000	\$1,100	\$250	\$3,719	\$20,819
					\$0	\$0		\$0	\$0
					\$0	\$0		\$0	\$0

**STEP 3 :: BENEFIT** (Compute the economic benefit of each improvement)

Proposed Improvement	CMF Value	Applicable Crash Type	Applicable Crash Severity Type	Include CMF in Final Analysis? (Yes/No)	Reference Link to CMF ID from CMF Clearinghouse	Other Notes
Advance warning sign with flashers	0.792	Rear end	All	Yes	<a href="http://www.cmfclearinghouse.org/detail.cfm?accl">http://www.cmfclearinghouse.org/detail.cfm?accl</a>	4199
0	0	All	All	Yes		
0						

**STEP 4 :: B/C RATIO** (Compute the B/C ratio for specific combinations of CMFs)

Proposed Improvement	Include in Analysis? (Yes/No)	Present Value of Benefit	Present Value of Cost	B/C by CMF	B/C Ratio	Annual Estimated Lives Saved and Injuries Prevented	Other Notes
Advance warning sign with flashers	Yes	\$108,022	\$20,819	5.19		0	1. VDOT District and Central Office personnel charge review and administration time to project managed by localities. Safety Projects not managed by VDOT shall include a minimum of \$5,000 for VDOT PE costs.
0	Yes	\$0	\$0	-	5.19	0	
0	Yes	\$0	\$0	-		0	

**PROJECT SCHEDULE (AFTER STIP APPROVAL)**

Begin PE	Target Advert.	Begin Construction	Estimated Complete Date	Type of Plan	Project Administered By

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Name (Print):  
Signature:

Date:

### Safety Improvement Proposal (FY16-17)

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#### PROJECT INFORMATION

Agency	Project Sponsor	Address	City	State	Zip
CVMPD	VDOT		Salem	VA	
Email Address	Phone	Priority Number	State Milepoint	VDOT District	VDOT Region
Program Type	Project Type	Functional Class Code	Fed. Sys. Code	Study Period Begins	Study Period Ends
Intersection	Rural/Minor Arterial	Small Urban (5,000 - 49,999)		1/1/2016	1/1/2040
County	Safety Proposal Location / Route	System	From / Major Road	To / Cross Street	
Bedford	Route 811 (Include Name)	Primary	Advance of Burnbridge		

#### STEP 1 :: CRASH HISTORY (Define crashes by type and severity)

##### APPLICABLE CRASH TYPE AND SEVERITY

Crash Type Categories	Crash Severity					Automated Check	Link to SHSP
	All	Fatal (K)	Incapacitating Injury (A)	Minor Injury (B+C)	Property Damage (D)		
Total Crashes	9	0	2	2	7	No	

##### Primary Crash Categories (sum of all 3 must equal total crashes)

Cross median	0	0	0	0	0	0	Yes
Fixed object	0	0	0	0	0	0	Yes
Run off road	0	0	0	0	0	0	Yes
Head on	0	0	0	0	0	0	Yes
Non-Collision	0	0	0	0	0	0	Yes
Sideswipe	0	0	0	0	0	0	Yes
Angle	0	0	0	0	0	0	Yes
Left turn	0	0	0	0	0	0	Yes
Right turn	0	0	0	0	0	0	Yes
Rear end	9	0	2	2	7	0	No
Pedestrian	0	0	0	0	0	0	Yes
Bicycle	0	0	0	0	0	0	Yes

##### Secondary Crash Categories

Nighttime	0	0	0	0	0	0	Yes
Wet weather	0	0	0	0	0	0	Yes
Single vehicle	0	0	0	0	0	0	Yes
Multiple vehicle	9	0	2	2	7	0	No
Speed related	0	0	0	0	0	0	Yes
Unbelted	0	0	0	0	0	0	Yes
Alcohol related	0	0	0	0	0	0	Yes

##### Automated Check (i.e., does total crashes match the sum of RD, INT, and NM crash types?)

Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Number of years in crash history:						3.5	Discount Rate: 3%

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**STEP 2 :: COST** (Compute the economic cost of each improvement)

Proposed Improvement	Service Life	PE Cost + \$5000 (*)	Right-of-Way & Utility Cost	Construction Cost	Total Construction Cost (PV)	Contingency (10%)	Annual Maintenance	Maintenance Cost (PV)	Total Cost (PV)
Advance warning sign with flashers	20	\$5,000	\$0	\$11,000	\$16,000	\$1,100	\$250	\$3,719	\$20,819
					\$0	\$0		\$0	\$0
					\$0	\$0		\$0	\$0

**STEP 3 :: BENEFIT** (Compute the economic benefit of each improvement)

Proposed Improvement	CMF Value	Applicable Crash Type	Applicable Crash Severity Type	Include CMF in Final Analysis? (Yes/No)	Reference Link to CMF ID from CMF Clearinghouse	Other Notes
Advance warning sign with flashers	0.64	Rear end	All	Yes	<a href="http://www.cmfclearinghouse.org/detail.cfm?accl">http://www.cmfclearinghouse.org/detail.cfm?accl</a>	1672
0	0	All	All	Yes		
0						

**STEP 4 :: B/C RATIO** (Compute the B/C ratio for specific combinations of CMFs)

Proposed Improvement	Include in Analysis? (Yes/No)	Present Value of Benefit	Present Value of Cost	B/C by CMF	B/C Ratio	Annual Estimated Lives Saved and Injuries Prevented	Other Notes
Advance warning sign with flashers	Yes	\$420,661	\$20,819	20.21		0	1. VDOT District and Central Office personnel charge review and administration time to project managed by localities. Safety Projects not managed by VDOT shall include a minimum of \$5,000 for VDOT PE costs.
0	Yes	\$0	\$0	-	20.21	0	
0	Yes	\$0	\$0	-		0	

**PROJECT SCHEDULE (AFTER STIP APPROVAL)**

Begin PE	Target Advert.	Begin Construction	Estimated Complete Date	Type of Plan	Project Administered By

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**Safety Improvement Proposal (FY16-17)**

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**PROJECT INFORMATION**

Agency	Project Sponsor	Address	City	State	Zip
CVIMPO	VDOT		Salem	VA	
Email Address	Phone	Priority Number	State Milepoint	VDOT District	VDOT Region
				Salem	
Program Type	Project Type	Functional Class Code	Area Location Code	Study Period Begins	Study Period Ends
	Intersection	Rural Minor Arterial	Small Urban (5,000 - 49,999)	1/1/2016	1/1/2040
County	Safety Proposal Location / Route	System	From / Major Road	To / Cross Street	
Bedford	Route 811 (Include Name)	Primary	Burnbridge		
				(RHS Node-Offset If Applicable)	

**STEP 1 :: CRASH HISTORY (Define crashes by type and severity)**

**APPLICABLE CRASH TYPE AND SEVERITY**

Crash Type Categories	Crash Severity					Automated Check		Link to SHSP
	All	Fatal (K)	Incapacitating Injury (A)	Minor Injury (B+C)	Property Damage (O)	Not specified	Yes	
<b>Total Crashes</b>	All	9	0	3	1	5	0	Yes
<b>Primary Crash Categories (sum of all 3 must equal total crashes)</b>								
Cross median	0	0	0	0	0	0	0	Yes
Fixed object	0	0	0	0	0	0	0	Yes
Run off road	0	0	0	0	0	0	0	Yes
Head on	0	0	0	0	0	0	0	Yes
Non-Collision	0	0	0	0	0	0	0	Yes
Sideswipe	0	0	0	0	0	0	0	Yes
Angle	0	0	0	0	0	0	0	Yes
Left turn	0	0	0	0	0	0	0	Yes
Right turn	0	0	0	0	0	0	0	Yes
Rear end	9	0	3	1	5	0	0	Yes
Pedestrian	0	0	0	0	0	0	0	Yes
Bicycle	0	0	0	0	0	0	0	Yes
<b>Secondary Crash Categories</b>								
Nighttime	0	0	0	0	0	0	0	Yes
Wet weather	0	0	0	0	0	0	0	Yes
Single vehicle	0	0	0	0	0	0	0	Yes
Multiple vehicle	6	1	1	0	5	0	0	No
Speed related	0	0	0	0	0	0	0	Yes
Unbelted	0	0	0	0	0	0	0	Yes
Alcohol related	0	0	0	0	0	0	0	Yes

**Automated Check (i.e., does total crashes match the sum of RD, INT, and NM crash types?)**

Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of years in crash history:	3.5	Discount Rate:	3%			

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**STEP 2 :: COST** (Compute the economic cost of each improvement)

Proposed Improvement	Service Life	PE Cost + \$5000 (*)	Right-of-Way & Utility Cost	Construction Cost	Total Construction Cost (PV)	Contingency (10%)	Annual Maintenance	Maintenance Cost (PV)	Total Cost (PV)
Left turn lane (requires widening bridge)	20	\$530,700	\$530,700	\$3,538,000	\$4,599,400	\$353,800	\$0	\$0	\$4,953,200
					\$0	\$0	\$0	\$0	\$0
					\$0	\$0	\$0	\$0	\$0

**STEP 3 :: BENEFIT** (Compute the economic benefit of each improvement)

Proposed Improvement	CMF Value	Applicable Crash Type	Applicable Crash Severity Type	Include CMF in Final Analysis? (Yes/No)	Reference Link to CMF ID from CMF Clearinghouse	Other Notes
Left turn lane (requires widening bridge)	0.79	All	All	Yes		cmf table online
0		All	All	Yes		
0						

**STEP 4 :: B/C RATIO** (Compute the B/C ratio for specific combinations of CMFs)

Proposed Improvement	Include in Analysis? (Yes/No)	Present Value of Benefit	Present Value of Cost	B/C by CMF	B/C Ratio	Annual Estimated Lives Saved and Injuries Prevented	Other Notes
Left turn lane (requires widening bridge)	Yes	\$183,091	\$4,953,200	0.04		0	1. VDOT District and Central Office personnel charge review and administration time to project managed by localities. Safety Projects not managed by VDOT shall include a minimum of \$5,000 for VDOT PE costs.
0	Yes	\$0	\$0	-	0.04	0	
0	Yes	\$0	\$0	-		0	

**PROJECT SCHEDULE (AFTER STIP APPROVAL)**

Begin PE	Target Advert.	Begin Construction	Estimated Complete Date	Type of Plan	Project Administered By

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Signature:  
Date:

**Safety Improvement Proposal (FY16-17)**

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**PROJECT INFORMATION**

Agency	Project Sponsor	Address	City	State	Zip
CVMPQ	VDOT		Salem	VA	
Email Address	Phone	Priority Number	State Milepoint	VDOT District	VDOT Region
Program Type	Project Type	Functional Class Code	Area Location Code	Fed. Sys. Code	Study Period Begins
	Intersection	Rural Minor Arterial	Small Urban (5,000 - 49,999)		1/1/2016
County	Safety Proposal Location / Route	System	Traffic Control	From / Major Road	Study Period Ends
Bedford	Route 811 (Include Name)	Primary	> 35MPH Segment	Remarking	1/1/2040
(RHS Note-Offset (If Applicable))					

**STEP 1 :: CRASH HISTORY (Define crashes by type and severity)**

**APPLICABLE CRASH TYPE AND SEVERITY**

Crash Type Categories	Crash Severity					Automated Check	Link to SHSP
	All	Fatal (K)	Incapacitating Injury (A)	Minor Injury (B+C)	Property Damage (D)		
Total Crashes	5	0	1	1	3	0	Yes

**Primary Crash Categories (sum of all 3 must equal total crashes)**

Roadway Departure or Intersection	Cross median	0	0	0	0	0	0	Yes
	Fixed object	0	0	0	0	0	0	Yes
	Run off road	4	0	1	1	2	0	Yes
	Head on	0	0	0	0	0	0	Yes
	Non-Collision	0	0	0	0	0	0	Yes
	Sideswipe	1	0	0	0	1	0	Yes
	Angle	0	0	0	0	0	0	Yes
	Left turn	0	0	0	0	0	0	Yes
	Right turn	0	0	0	0	0	0	Yes
	Rear end	0	0	0	0	0	0	Yes
	Pedestrian	0	0	0	0	0	0	Yes
	Bicycle	0	0	0	0	0	0	Yes
	Non-Motorized	0	0	0	0	0	0	Yes
								✓

**Secondary Crash Categories**

Environmental Factors	Nighttime	0	0	0	0	0	0	Yes
	Wet weather	0	0	0	0	0	0	Yes
	Single vehicle	0	0	0	0	0	0	Yes
	Multiple vehicle	0	0	0	0	0	0	Yes
Driver Behavior	Speed related	0	0	0	0	0	0	Yes
	Unbelted	0	0	0	0	0	0	Yes
	Alcohol related	0	0	0	0	0	0	Yes

**Automated Check (i.e., does total crashes match the sum of RD, INT, and NM crash types?)**

Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of years in crash history:							3%



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STEP 2 :: COST (Compute the economic cost of each improvement)

Proposed Improvement	Service Life	PE Cost + \$5000 (*)	Right-of-Way & Utility Cost	Construction Cost	Total Construction Cost (PV)	Contingency (10%)	Annual Maintenance	Maintenance Cost (PV)	Total Cost (PV)
high reflectivity markings	5	\$10,000	\$0	\$165,000	\$175,000	\$16,500	\$1,000	\$4,580	\$196,080
high reflectivity markings	5			\$165,000	\$165,000	\$16,500	\$1,000	\$4,580	\$186,080
					\$0	\$0		\$0	\$0

STEP 3 :: BENEFIT (Compute the economic benefit of each improvement)

Proposed Improvement	CMF Value	Applicable Crash Type	Applicable Crash Severity Type	Include CMF in Final Analysis? (Yes/No)	Reference Link to CMF ID from CMF Clearinghouse	Other Notes
high reflectivity markings	0.9	Run off road	All	Yes	<a href="http://www.cmfclearinghouse.org/detail.cfm?faci">http://www.cmfclearinghouse.org/detail.cfm?faci</a>	2374
		Cross median				
		Head on				
high reflectivity markings	0.9	Sideswipe	All	Yes		
		Fixed object				
0						

STEP 4 :: B/C RATIO (Compute the B/C ratio for specific combinations of CMFs)

Proposed Improvement	Include in Analysis? (Yes/No)	Present Value of Benefit	Present Value of Cost	B/C by CMF	B/C Ratio	Annual Estimated Lives Saved and Injuries Prevented	Other Notes
high reflectivity markings	Yes	\$49,549	\$196,080	0.25		0	1. VDOT District and Central Office personnel charge review and administration time to project managed by localities. Safety Projects not managed by VDOT shall include a minimum of \$5,000 for VDOT PE costs.
high reflectivity markings	Yes	\$4,449	\$186,080	0.02	0.14	0	
0	Yes	\$0	\$0	-		0	

PROJECT SCHEDULE (AFTER STIP APPROVAL)

Begin PE	Target Advert.	Begin Construction	Estimated Complete Date	Type of Plan	Project Administered By

SIGNATURE OF SPONSOR

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Name (Print):  
Signature:  
Date:



FOR OFFICE USE ONLY  
Project #: xxxxxxxxxx  
Receive #: xxxxxxxx  
HSP File: xxxxxxxx  
Date Received: Month x, 2015

### Safety Improvement Proposal (FY16-17)

[View Read-Me File for methodology for considering multiple CMVs](#)

#### PROJECT INFORMATION

Agency	Project Sponsor	Address	City	State	Zip
CVMPD	VDOT		Salem	VA	
Email Address	Phone	Priority Number	State Milepoint	VDOT District	VDOT Region
				Salem	
Program Type	Project Type	Functional Class Code	Area Location Code	Fed. Sys. Code	Study Period Begins
	Intersection	Rural Minor Arterial	Small Urban (5,000 - 49,999)		1/1/2016
County	Safety Proposal Location / Route	System	Traffic Control	From / Major Road	To / Cross Street
Bedford	Route 811 (Include Name)	Primary	Traffic Signal	Banbridge and Everett	

#### STEP 1 :: CRASH HISTORY (Define crashes by type and severity)

##### APPLICABLE CRASH TYPE AND SEVERITY

Crash Type Categories	Crash Severity					Automated Check	Link to SHSP
	All	Fatal (K)	Incapacitating Injury (A)	Minor Injury (B+C)	Property Damage (O)		
Total Crashes	All	6	0	3	1	2	0
Primary Crash Categories (sum of all 3 must equal total crashes)							
Roadway Departure or Intersection	Cross median	0	0	0	0	0	Yes
	Fixed object	0	0	0	0	0	Yes
	Run off road	0	0	0	0	0	Yes
	Head on	0	0	0	0	0	Yes
	Non-Collision	0	0	0	0	0	Yes
	Sideswipe	0	0	0	0	0	Yes
	Angle	0	0	0	0	0	Yes
	Left turn	0	0	0	0	0	Yes
	Right turn	0	0	0	0	0	Yes
	Rear end	6	0	3	1	2	0
	Pedestrian	0	0	0	0	0	Yes
	Bicycle	0	0	0	0	0	Yes
Secondary Crash Categories							
Environmental Factors	Nighttime	0	0	0	0	0	Yes
	Wet weather	0	0	0	0	0	Yes
Number of Vehicles	Single vehicle	0	0	0	0	0	Yes
	Multiple vehicle	6	1	1	0	5	No
Driver Behavior	Speed related	0	0	0	0	0	Yes
	Unbelted	0	0	0	0	0	Yes
Automated Check (i.e., does total crashes match the sum of RD, INT, and NM crash types?)	Alcohol related	0	0	0	0	0	Yes

Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of years in crash history:				3.5	Discount Rate:	
					3%	

View Read-Me File for methodology for considering multiple CMFs

**STEP 2 :: COST** (Compute the economic cost of each improvement)

Proposed Improvement	Service Life	PE Cost + \$5000 (*)	Right-of-Way & Utility Cost	Construction Cost	Total Construction Cost (PV)	Contingency (10%)	Annual Maintenance	Maintenance Cost (PV)	Total Cost (PV)
Signal Coordination (significant upgrades)	20	\$15,000	\$0	\$200,000	\$215,000	\$20,000	\$1,500	\$22,316	\$257,316
Signal Coordination (only install in-sync and radio comm)	20	\$10,000		\$120,000	\$130,000	\$12,000	\$1,500	\$22,316	\$164,316
					\$0	\$0		\$0	\$0

**STEP 3 :: BENEFIT** (Compute the economic benefit of each improvement)

Proposed Improvement	CMF Value	Applicable Crash Type	Applicable Crash Severity Type	Include CMF in Final Analysis? (Yes/No)	Reference Link to CMF ID from CMF Clearinghouse	Other Notes
Signal Coordination (significant upgrades)	0.75	Rear end	All	Yes		prior applications - Insync literature, and Wards Road experience
Signal Coordination (only install in-sync and radio comm)	0.75	Rear end	All	Yes		
0						

**STEP 4 :: B/C RATIO** (Compute the B/C ratio for specific combinations of CMFs)

Proposed Improvement	Include in Analysis? (Yes/No)	Present Value of Benefit	Present Value of Cost	B/C by CMF	B/C Ratio	Annual Estimated Lives Saved and Injuries Prevented	Other Notes
Signal Coordination (significant upgrades)	Yes	\$194,750	\$257,316	0.76		0	1. VDOT District and Central Office personnel charge review and administration time to project managed by localities. Safety Projects not managed by VDOT shall include a minimum of \$5,000 for VDOT PE costs.
Signal Coordination (only install in-sync and radio comm)	Yes	\$194,750	\$164,316	1.19	0.92	0	
0	Yes	\$0	\$0	-		0	

**PROJECT SCHEDULE (AFTER STIP APPROVAL)**

Begin PE	Target Advert.	Begin Construction	Estimated Complete Date	Type of Plan	Project Administered By

**SIGNATURE OF SPONSOR**

Please submit an electronic copy of this spreadsheet and a scanned digital copy with signature to HSPProgram@virginiaidot.org. Paper copies of reference materials may be mailed Attn: HSP BCR Improvement Proposal Mr. Raymond Khoury, P.E., State Traffic Engineer, Virginia Department of Transportation 1401 East Broad Street, Richmond, Virginia 23219.

Name (Print):  
Signature:  
Date:

**Safety Improvement Proposal (FY16-17)**  
**View Read-Me File for methodology for considering multiple CMVs**

**PROJECT INFORMATION**

Agency	Project Sponsor	Address	City	State	Zip
CVMPD	VDOT		Salem	VA	
Email Address	Phone	Priority Number	State Milepoint	VDOT District	VDOT Region
				Salem	
Program Type	Project Type	Functional Class Code	Area Location Code	Fed. Sys. Code	Study Period Begins
	Intersection	Rural/Minor Arterial	Small Urban (5,000 - 49,999)		1/1/2016
County	Safety Proposal Location / Route	System	Traffic Control	From / Major Road	To / Cross Street
Bedford	Route 811 (Include Name)	Primary	Traffic Signal		
(BNS Node Offset If Applicable)					

**STEP 1 :: CRASH HISTORY (Define crashes by type and severity)**

**APPLICABLE CRASH TYPE AND SEVERITY**

Crash Type Categories	Crash Severity					Automated Check		Link to SHSP
	All	Fatal (K)	Incapacitating Injury (A)	Minor Injury (B+C)	Property Damage (D)	Not specified	Yes	
Total Crashes	6	0	1	0	5	0	Yes	
<b>Primary Crash Categories (sum of all 3 must equal total crashes)</b>								
Cross median	0	0	0	0	0	0	Yes	
Fixed object	0	0	0	0	0	0	Yes	
Run off road	0	0	0	0	0	0	Yes	
Head on	0	0	0	0	0	0	Yes	
Non-Collision	0	0	0	0	0	0	Yes	
Sideswipe	1	0	0	0	1	0	Yes	✓
Angle	4	0	1	0	3	0	Yes	
Left turn	0	0	0	0	0	0	Yes	
Right turn	0	0	0	0	0	0	Yes	
Rear end	1	0	0	0	1	0	Yes	
Pedestrian	0	0	0	0	0	0	Yes	
Bicycle	0	0	0	0	0	0	Yes	

**Secondary Crash Categories**

Environmental Factors	Nighttime	0	0	0	0	0	0	Yes
	Wet weather	0	0	0	0	0	0	Yes
Number of Vehicles	Single vehicle	0	0	0	0	0	0	Yes
	Multiple vehicle	6	1	1	0	5	0	No
Driver Behavior	Speed related	0	0	0	0	0	0	Yes
	Unbelted	0	0	0	0	0	0	Yes
	Alcohol related	0	0	0	0	0	0	Yes

**Automated Check (i.e., does total crashes match the sum of RD, INT, and NM crash types?)**

Yes	Yes	Yes	Yes	Yes	Yes	Yes	3%
Number of years in crash history: 3.5							Discount Rate:





View Read-Me File for methodology for considering multiple CMFs

STEP 2 :: COST (Compute the economic cost of each improvement)

Proposed Improvement	Service Life	PE Cost + \$5000 (*)	Right-of-Way & Utility Cost	Construction Cost	Total Construction Cost (PV)	Contingency (10%)	Annual Maintenance	Maintenance Cost (PV)	Total Cost (PV)
Roundabout	20	\$250,000	\$250,000	\$1,800,000	\$2,300,000	\$180,000	\$0	\$0	\$2,480,000
Additional left turn lane and receiving lane	20	\$250,000	\$150,000	\$1,000,000	\$1,400,000	\$100,000	\$0	\$0	\$1,500,000
					\$0	\$0	\$0	\$0	\$0

STEP 3 :: BENEFIT (Compute the economic benefit of each improvement)

Proposed Improvement	CMF Value	Applicable Crash Type	Applicable Crash Severity Type	Include CMF in Final Analysis? (Yes/No)	Reference Link to CMF ID from CMF Clearinghouse	Other Notes
Roundabout	0.74	All	All	Yes		
Additional left turn lane and receiving lane	0.71	Angle	All	Yes		inv log equation
0						

STEP 4 :: B/C RATIO (Compute the B/C ratio for specific combinations of CMFs)

Proposed Improvement	Include in Analysis? (Yes/No)	Present Value of Benefit	Present Value of Cost	B/C by CMF	B/C Ratio	Annual Estimated Lives Saved and Injuries Prevented	Other Notes
Roundabout	Yes	\$151,123	\$2,480,000	0.06		0	
Additional left turn lane and receiving lane	Yes	\$276,609	\$1,500,000	0.18	0.11	0	
0	Yes	\$0	\$0	-		0	1. VDOT District and Central Office personnel charge review and administration time to project managed by localities. Safety Projects not managed by VDOT shall include a minimum of \$5,000 for VDOT PE costs.

PROJECT SCHEDULE (AFTER STIP APPROVAL)

Begin PE	Target Advert.	Begin Construction	Estimated Complete Date	Type of Plan	Project Administered By

SIGNATURE OF SPONSOR

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Name (Print):  
Signature:

Date:

## Appendix 5: Public Meeting Announcement Mailing Flyers



### Public Meeting- Open House

Thursday, November 12<sup>th</sup>, 2015

3:00 – 6:00 PM

Forest Recreation Center

A public information workshop for the Route 811 Corridor Study will be held on Thursday November 12th, 2015 at the Forest Recreation Center in Forest, Virginia. The address is 1088 Rustic Village Rd, Forest VA 24551.

The meeting will be conducted in an open house format between the hours of 3:00 and 6:00PM. The purpose of the meeting is share data and information about the corridor, and to gather feedback from the public regarding safety concerns, congestion, walking and bicycling, and ideas for improving the corridor. Information about the corridor will be displayed, and maps and comment boards provided to received feedback from the public.

If you would like more information about this meeting or the project, or if you need special accommodations under the Americans with Disabilities Act of 1990, please contact Bob White (Deputy Director, Region 2000 Local Government Council) prior to the meeting at 434-845-3491 or by email at [bwhite@region2000.org](mailto:bwhite@region2000.org).

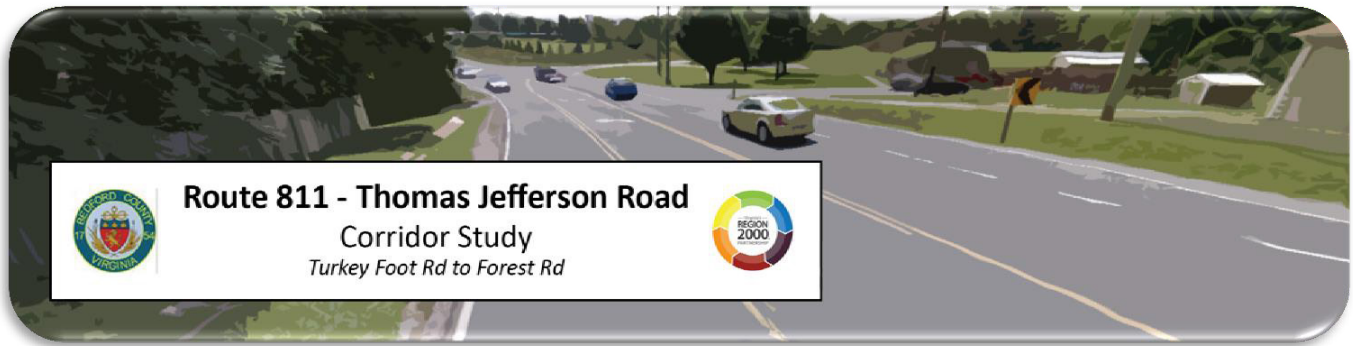
#### PROJECT DESCRIPTION

The Region 2000 Local Government Council and Central Virginia MPO, in partnership with Bedford County and with assistance from EPR, P.C., are in the process of studying travel conditions along the Route 811 (Thomas Jefferson Road) corridor between Turkey Foot Road and Forest Road. The study began in September of 2015 and will be concluded in May of 2016.

*The purpose of the study is to identify and document opportunities to reduce congestion, improve safety, and accommodate bicycles and pedestrians as needed.*

The purpose of the study is to identify and document opportunities to reduce congestion, improve safety, and accommodate bicycles and pedestrians as needed. The final study document will identify projects to be addressed in the short, mid, and longer term timeframes, along with potential funding sources for implementation.

This is the first of two public meetings and it is critically important to hear from those who travel the corridor. A second public meeting is anticipated for February and at that time we will share our draft recommendations for public comment.



## Public Meeting- Open House

Thursday, February 25, 2016

3:00 – 6:00 PM

### Forest Recreation Center

A public information workshop for the Route 811 Corridor Study will be held on Thursday, February 25, 2016 at the Forest Recreation Center in Forest, Virginia. The address is 1088 Rustic Village Rd, Forest VA 24551.

The meeting will be conducted in an open house format between the hours of 3:00 and 6:00PM. The purpose of the meeting is to share the draft improvement recommendations that are being considered for the corridor in response to traffic data analysis and public comments received to date. Attendees will be encouraged to provide feedback regarding both the perceived effectiveness and appropriateness of these recommendations for the corridor. These comments will be a major consideration in the selection of the final study recommendations.

If you would like more information about this meeting or the project, or if you need special accommodations under the Americans with Disabilities Act of 1990, please contact Bob White (Deputy Director, Region 2000 Local Government Council) prior to the meeting at 434-845-3491 or by email at [bwhite@region2000.org](mailto:bwhite@region2000.org).

#### PROJECT DESCRIPTION

The Region 2000 Local Government Council and Central Virginia MPO, in partnership with Bedford County and with assistance from EPR, P.C., are in the process of studying travel conditions along the Route 811 (Thomas Jefferson Road) corridor between Turkey Foot Road and Forest Road. The study began in September of 2015 and will be concluded in May of 2016.

The purpose of the study is to identify and document opportunities to reduce congestion, improve safety, and accommodate bicycles and pedestrians as needed. The final study document will identify projects to be addressed in the short, mid, and longer term timeframes, along with potential funding sources for implementation.

This is the second of two public meetings and it is critically important to hear from those who travel the corridor. The final study recommendations will be presented to the Bedford County Board of Supervisors in April and considered for adoption by the Central Virginia MPO in May.

*The purpose of the meeting is to share draft improvement recommendations that are being considered for the corridor in response to traffic data analysis and public comments.*

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## Appendix 6: Public Meeting #1 Summary

### Route 811 Corridor Study

#### Public Meeting #1- November 12, 2015

##### Meeting Summary

The first public meeting for the Route 811 Corridor Study was held on Thursday, November 12, 2015 from 3:00-6:00pm at the Bedford County Recreation Center. The meeting was structured as an open house. It was announced on the Region 2000 Local Government Council website, on two variable message boards that were set up along the corridor, as well as through a mailing to properties that are adjacent to the corridor.

The meeting was well attended. Fifty people signed in at the door, and an estimated 5-10 others attended but chose not to sign in. Staff representatives from Bedford County, Region 2000, EPR P.C., and VDOT were available to answer questions and help record comments and concerns.

Comments were recorded on a note board, large scale aerial imagery, and on comment sheets. The following provides a summary of the topics and ideas that were identified by multiple attendees. Following this general summary are attachments that are direct transcriptions of the notes along with photographs of the comments provided on the aerial imagery.

**Light Synchronization-** Many people indicated that the most significant delays on the corridor were a result of the series of traffic lights at Bateman Bridge Rd, Everett Rd, and Waterlick Rd. Several people commented that the lights were poorly synchronized, thus preventing a steady flow of traffic.

**Bicycle Safety-** The frequent presence of bicyclists on the corridor was acknowledged by many people. A wide range of suggested changes were made. Some people believe that bicyclists should be discouraged from using the corridor at all and strongly opposed the addition of bike lanes. Others, however, strongly supported bicycle lanes, commenting that they didn't oppose bicycle users but felt that they posed a safety hazard when sharing a narrow road with heavy traffic. Still others suggested that a completely separate bicycle path parallel to the road would be a safer and more desirable alternative.

**Turn Lanes-** Many people suggested that some of the long queues that form at intersections along the corridor could be reduced by the addition or extension of turn lanes. Suggestions included an extension of the right turn lane onto Everett Rd for southbound traffic, an extension of the right turn lane onto Bateman Bridge Rd for northbound-traffic, additional lanes turning from Route 811 onto Forest Road, and the addition of a right turn lane onto Waterlick Rd for northbound traffic. Also, the addition of a middle turn lane next to the ballfields on the southern end of the corridor was suggested for southbound traffic turning left into the sports complex and northbound traffic turning left into the adjacent neighborhoods.

**Speed Limit Enforcement-** Multiple comments were made about the excessive speed of traffic on Route 811 and the perceived lack of police enforcement for the speed limit. Suggestions were made to increase the frequency of law enforcement and/or to install signs that alert vehicles when they are



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exceeding the speed limit. There were also comments about reducing the speed limit near the ball fields, as well as north of Burnbridge Rd approaching Forest Road.

**Patriot Pl Left Turn-** Attendees verified traffic model results that indicated major delays for vehicles turning left from Patriot Pl onto Route 811 during the AM peak hour—frequently upwards of ten minutes. Representatives from the Bedford County school district added that requests for police traffic control at the intersection have been denied in the past.

**Connectivity-** In discussions about ways to reduce traffic congestion, some suggestions were made regarding ways that the street networks between surrounding neighborhoods could be connected in order to allow residents of those neighborhoods to bypass some or all of the corridor. In particular, connections between the neighborhoods south of Everett Rd in a manner that would provide direct access to Everett Rd were discussed.

**Line of Sight-** Frequent comments were made regarding the limited line of sight for southbound traffic approaching the intersection with Waterlick Rd. Suggestions were made either to add a flashing warning to alert drivers of the upcoming traffic signal or to remove the trees on the west side of the road that block visibility of the traffic light. There was a comment regarding sight distance looking north from Shady Oak Lane.

**Burnbridge Rd Cut-Through-** Multiple people commented that some vehicles, traveling both east and west-bound on Route 221 (Forest Rd), will use Burnbridge Rd as a cut-over to avoid the intersection of Forest Rd and Route 811. These vehicles subsequently create delays and long queues at the intersection of Burnbridge Rd and Route 811. In order to minimize these problems, suggestions were made to prevent or significantly slow through-vehicles on Burnbridge Rd in order to discourage the use of this cut-over. It was also noted that motorists will cut through the neighborhoods east of Route 811 to access Burnbridge Rd, due to the congestion on Route 811.

**Proposed Montessori School-** Several attendees voiced concerns about the traffic impact of the proposed Montessori school that has been approved for a location immediately south of Turkey Foot Rd on Route 811.

**Fire Department Access-** Representatives from the Fire and Rescue Station located south of Patriot Pl on the west side of the corridor attended the meeting. They requested that any recommended changes to the corridor specifically consider the impact of the change on the movement of rescue vehicles. (including, especially, any potential recommendations for roundabouts) They also noted that the sight distance looking north from their entrance is impacted by the knoll (vertical curvature) of the road. It was suggested that any major road reconstruction include changing the profile of the road to the north.

**Truck Traffic-** The noticeable increase of truck traffic on the corridor in recent years was noted several times during the meeting. Several people inquired into ways that truck volumes could be reduced.

**Lane Markings-** Multiple people commented on the poor visibility of lane striping at night or during rainy weather.

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**Crashes/Safety** – Several comments confirmed the crash mapping that was provided at the meeting. Specific comments were made regarding the frequency of rear-end type crashes, road departure crash locations, and a dangerous curve where Bellevue Road intersects Route 811. It was noted that there needs to be a taller fence adjacent to the ball fields to prevent the need for kids to interact with traffic to retrieve the balls.

**Overall Congestion-** Many comments were made regarding the intense congestion that occurs during the peak hours of the day. There are frequent long queues at the intersections. The queuing at Patriot Pl can be extensive when the school traffic is occurring. Several people noted that it was very hard for them to enter onto Route 811 from their sidestreets or driveways.

Attached is a direct transcription of the notes along with photographs of the notes made on the aerial imagery.

### Comment Sheets

**Sheet 1:**

Add pedestrian bridge over RR tracks near Burnbridge.

**Sheet 2:**

People shortcut on Burnbridge Road to avoid light at 811 and Forest Rd (221). This happens in both directions, but when folks come from Kroger to turn right to travel south, it makes it all the more difficult for me to exit Winewood Rd onto 811. These folks pull out as soon as the slug of cars coming from this 811/221 light clear. Especially bad at rush hour.

Suggest Reducing speed limit to 20 mph on Burnbridge and posting “No Thru Traffic” signs. A small deterrent perhaps, but better than nothing.

Make burnbridge a one way road? Close Burnbridge to thru traffic (barrier near the center).

**Sheet 3:**

Traffic from Bedford turns on Burnbridge to get on Thomas Jefferson to miss light—sometimes exceeding the speed limit at high rate of speed.

Some coming from Lynchburg, also turn on Burnbridge to get on Thomas Jefferson to miss light.

Need longer left turn lane from Thomas Jefferson to Waterlick and longer right turn lane from Thomas Jefferson to Bateman Bridge.

**Sheet 4:**

Moratorium on apartments and high traffic businesses on 811 especially.

**Sheet 5:**

811 5 Lane Road- Forest Rd to Waterlick

Waterlick 5 Lane Road- Waterlick to Leesville

811 5 Lane Road- Waterlick to 460

Bateman Bridge Rd- 5 lanes to Enterprise

Some of the above seems inevitable

**Sheet 6:**

Widen and add turning lane at Bateman Bridge Rd!

Traffic would flow much better if persons wanting to turn right for shortcut to Windhurst and Forest Rd at Walgreen

**Sheet 7:**

No bikes at all.

Work on turn lane at Fire Dept

Repaint stripes on road

Cut trees on TJ Rd near Waterlick light.

Would be nice to limit size of trucks.

No trucks on Bateman Bridge Rd

Why stop study at Waterlick Rd? This makes another Greenview Dr- half finished?

**Sheet 8:**

A separate bike and pedestrian lane would be very useful (more than just an extra ½ lane and a white line). Right now it is worth your life to try to walk down TJ Rd and isn't any better for bikes.

**Sheet 9:**

- 1) Reline center lane (NB) at Bateman Bridge so people can turn right and minimize backups
- 2) Turn lane at Waterlick (NB) to turn right
- 3) At night poor lighting- impossible to see edge/center lines of road in RAIN/wet conditions. Use special paint to see where lanes are
- 4) Bushes in curve of road before Waterlick (SB)- can't tell if light is red or green or soon to turn. Possible flasher before intersection?
- 5) Redirect trucks going through 460 to 221 to Timberlake to avoid recreation area
- 6) Truck Jake brake- LOUD and unnecessary

**Sheet 10:**

Add one lane to west side of 811 between Bateman Bridge Rd and Everett Rd and dedicate it to turn right onto Everett Rd.

**Sheet 11:**

Have had 10-12 wrecks in our yard since 2000.



We do not believe a school zone should be added in addition to the two already in place.

**Sheet 12:**

1. Concerns about Montessori school- blatant disregard for public comments and suspected false/misleading information about traffic impacts, etc. Many consider this an inappropriate approval of a special use permit. "Shouldn't be a problem" isn't an adequate answer. Process lacked due diligence—possible to change decision?
2. Many people don't think that the county will listen to or consider public input and will not participate in public meetings.
3. Add left turn lane for Shady Oak Dr.
4. Widen Turkey Foot Rd at intersection with Rte 811 to create designated left and right turn lanes (or simply paint lanes in existing space).
5. If adding bike lanes, consider creating entirely separate bike paths.

### Comment Boards

1. Everett to Bateman needs right turn lane, all the way back to Everett light.
2. Stop lights not sync'd. (Everett and Bateman Bridge)
3. Speed limit should be decreased. (*Additional comment: "?"*) (*Additional comment: "To 35/mph"*)
4. More speed enforcement
5. Sight distance concern SB north of Shady Oak Lane- grading on adjacent parcel.
6. Bike Path?
7. Traffic goes from Everett and Bateman.
8. Traffic control am and pm at Patriot Place. To allow traffic to leave/enter school grounds safely. Buses/parents have a hard time turning left.
9. No bikes.
10. Lanes at F.D. (turn lane) (*Note- F.D. = Fire Department*)
11. No bike lanes
12. No tractor trailer trucks (thru) (*Additional comment: "\*"*)
13. Police for speeders
14. Add Turkey Foot to 460, to study.
15. Turn lanes into ball fields (Forest Recreation Park) (Opposite side of 811 from Brookridge Pl.)
16. Re-paint lines on 811 between Everett and Bateman Br. Roads to make better use of the pavement width existing now. (*Additional Comment: "\*"*)
17. Roundabouts instead of stop lights. Big enough for fire trucks.
18. Sync the lights to minimize backups.
19. Change road designation instead of Urban Hwy (revert to lower level)
20. Do not need additional school zones- added 2 already.
21. Fix curve/intersection at 811/Bellvue. Very dangerous. Needs turn lanes.

22. Add bike lanes.
23. Add connector road from 811 to Everett to 221 around Turkey Foot intersection.
24. A lot of bikes use this road.
25. Cars are not stopping for the school bus (Thomas Jefferson Rd)
26. Cars and trucks are driving too Fast on Thomas Jefferson Rd. (Had several accidents of cars plowing through residential homes!)
27. Reduce speed limit Burnbridge north.
28. Discourage traffic on Burnbridge- drop speed limit.
29. Ped features!! (*Additional Comment: "✓"*)
30. Concern about Montessori school and traffic and access
31. See lots of bikes. Need more enforcement. Need lower speed limit. Limit truck traffic.
32. Extend/lengthen NB 811 right turn lane on to Bateman Bridge Rd
33. Extend length of green light at Bateman Bridge and 811.
34. Middle turn lane for ball parks
35. Line of sight approaching Waterlick (SB)
36. Right turn lane onto Waterlick (NB)
37. Right turn lane onto Everett (Lengthen)
38. Right turn lane onto Bateman Bridge (NB)

### Corridor Maps

(Following Pages)









Comment Map #3











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## Appendix 7: Public Meeting #2 Summary

### Route 811 Corridor Study

#### Public Meeting #2- February 25, 2016

##### Meeting Summary

The second public meeting for the Route 811 Corridor Study was held on Thursday, February 25, 2016 from 3:00-6:00pm at the Bedford County Recreation Center. The meeting was structured as an open house. It was announced on the Region 2000 Local Government Council website, on two variable message boards that were set up along the corridor, as well as through a mailing to properties that are adjacent to the corridor.

The meeting was well attended. Forty five people signed in at the door, and an estimated 15 others attended but chose not to sign in. Staff representatives from Bedford County, Region 2000, EPR P.C., and VDOT were available to answer questions and help record comments and concerns.

Comments were recorded on large flip-sheet note boards and comment sheets. The following provides a summary of feedback received during the meeting. Following this general summary are direct transcriptions of the notes.



**Traffic Signal Coordination-** Attendees were in virtually unanimous support of Phase I- the coordination of the traffic signals at Bateman Bridge Rd and Everett Rd. Multiple people encouraged this project to be completed as soon as possible.

**Patriot PI Roundabout-** Phase II—the addition of a roundabout at Patriot PI—was well received by attendees. This support seemed to be based on the fact that the intersection is the entrance to Thomas Jefferson Elementary School, as well as an acknowledgment of the safety concerns and delays experienced there during the AM peak hour.

**Waterlick Rd Roundabout Alternative-** The roundabout at the intersection of Rte 811 and Waterlick Rd, presented as one design alternative during Phase III, was met with mixed reactions. Some people supported the idea, but unlike the Patriot PI roundabout, there were also several people who opposed the idea and strongly favored a traditional signalized intersection.

**Shared Use Path-** The shared use path recommendation was probably the most contentious subject of the meeting. Several people strongly supported the idea, but there were also many who strongly opposed it. Those opposed typically expressed frustration with bicycle riders on the corridor in general and voiced concern over the additional right of way that the path would require. Those who supported



the idea suggested that the paths be extended to connect directly to destinations along or near Rte 221 such as the Forest Public Library, the brewery, and the Kroger.



**Road Widening: Property Impacts-**

Residents who live on Rte 811 itself expressed two primary concerns. One was the increased difficulty and danger that they would experience when turning left out of their properties onto Rte 811 if it was a 5 lane, rather than 2 lane, road. Others also expressed concern about the additional right of way that would be required if the road was widened to include new travel lanes and a shared-use path. They believed that this would encroach excessively on their property and leave them with very little space between their homes and the road.

**Road Widening: Traffic Impacts-** Apart from the right of way concerns, the concept of widening Rte 811 to 5 lanes between Rte 221 and Waterlick Rd was met with generally positive reactions. Most people acknowledged this as a necessary improvement to accommodate increasing traffic volumes. Some, however, did express concern that widening the road would simply encourage more traffic, more trucks, and higher speeds along the corridor. These people generally supported focusing time and resources on smaller spot improvements to enhance safety or basic operations, rather than a full expansion of the road.

**Tractor-Trailer Traffic-** Several attendees again expressed frustration with the increasing numbers of heavy trucks that use the road. Many inquiries were made into the possibility of restricting truck use of the road. When explained that this is not legally possible, attendees encouraged the county and VDOT to explore ways to discourage truck traffic using means such as road design or speed limit reduction.

**Study Scope-** Several attendees again expressed confusion with the scope of the study, believing that it should have extended all the way from Rte 221 to US 460, rather than stopping at Turkey Foot Rd. Concerns between Turkey Foot Rd and US 460 include increasing truck traffic, road alignment (curves), and the traffic impact of the proposed Montessori School.

### Comment Sheets

#### Sheet 1:

Where concrete curbing needs to be installed (for example, inside center of traffic circle or at entry points of the circle), provide spacing between yellow solid striping and the curbing—approximately 1 foot of pavement between yellow solid striping and the curbing.

Consider the same approach when any concrete lane guides are installed.

Thanks!

#### Sheet 2:

Don't think that roundabouts are the answer.

More turn lanes (add lanes)

Limit trucks- notice that I said LIMIT.

Bike lanes are not needed.

Add turn lane at 811 and 221 turning right off 811.

Waiting too long to re-stripe 811.

### Comment Boards

#### Board 1

- Restrict tractor trailers on 811 (*Additional Comment: AGREE!!*)
- Connect bike/pedestrian path to Forest Library, Kroger Shopping Center, and Brewery on Burnbridge. (*Additional Comment: I second this! Yes!*)
- Adding lanes (4 wide rather than 2) will increase traffic through the 811 pathway (including large trucks), and will make it nearly impossible for 811 residents to make left turns out of their driveways. (*Additional Comment: I second!*)
- In addition to center turn lane in front of ballfields, have the ballfields provide right turn (deceleration) lanes for a vehicle on 811 going north to turn into ballfield entrance without slowing any cars/trucks behind the turning vehicle.
- I believe that the purpose of this entire study was not to help vehicle traffic—it would have addressed the entire corridor from 460 to 221 if this was true—but to add bicycle accommodations to the road. As a resident who lives on 811, I will not give up my land for the sake of helping bicycle riders. Is it fair for the people who live on the road to suffer for the sake of people who live in other places and only use the road to pass through the community? If you want to give bicycle riders a path to ride, consider something like creating a path between Lynchburg and Bedford next to 460. Don't force this on us. Think bigger!
- Add right turn lane to Turkey Foot on 811 sooner than Phase IV.

- Lower speed limits and enforce speed limits
- Bike lanes are wanted

**Board 2**

1. Patriot PI- check resulting southbound queues from roundabout
2. Bike/ped path is very important
3. Left turn onto 811 from Jefferson Villas- long wait
4. No current plans for Turkey Foot issues
5. No plans for complete Route 460 to 221!
6. Maintain residential areas
7. Left turn driveways during peak commute times are life/property threatening.
8. Speed, especially on turns
9. Root cause of nearly all safety issues on 811 is excessive driver speed. Anything that speeds—and does not slow—the flow of traffic will add to the safety problem.
10. Change lanes at Bateman Bridge Rd for right turning lane!!!
11. Can't see pavement markings at night/rain on 811 at 221. Can we get RPM's?

**Board 3**

- Restrict Thomas Jefferson Rd against tractor trailers.

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## Appendix 8: Online Comments



EPR, P.C. "ENGINEERING & PLANNING RESOURCES"  
637 BERKMAR CIRCLE, CHARLOTTESVILLE, VA 22901

### Route 811 Corridor Study Summary of Additional Commentary Received to Date (03-31-16)

The following comments were received via the project website, via emails to Bob White, or were taken from the comment section of the WDBJ website following the article about the project meetings:

#### **Comment 1**

**Name:** Scott

**Date:** 10-29-15

**Submission Method:** Project Website

Does the 811 corridor have enough right-of-way to do expansion up to 4 lanes, or would portions need to be placed on new location?

#### **Comment 2**

**Name:** Mike Goetz

**Date:** 10-29-15

**Submission Method:** Project Website

I would like to suggest that you broaden the study area to include Rt. 811 from Turkey Foot Rd. to US Rt. 460. That stretch of Rt. 811 gets as much traffic as the rest of Rt. 811, has multi-modal issues (because of the residential density along that stretch), and line-of-sight issues. I am especially concerned about school bus safety issues. There are many stops along that stretch, and often a stopped bus is not visible until reaching the crown of a hill, with very little stopping distance. Also, many large tractor trailers use this stretch as a cut-through between Rt. 460 and Rt. 221. There are several significant curves in the road in this stretch, with no shoulders on the road to accommodate a truck if it should cut the corner even in a small way. Thank you.

#### **Comment 3**

**Name:** Karen

**Date:** 11-12-15

**Submission Method:** Project Website

It really needs to be 4 lane road as so many use it especially in the morning work rush with many school buses using it also. The afternoons when people are getting off work is really bad also.



**Comment 4****Name:** Chris Dumond**Date:** 11-12-15**Submission Method:** Project Website

I live in a subdivision off 811. When headed south, the lines of sight for the lights at Everett and Waterlick is poor due to curves, road grade and roadside landscaping (particularly at Waterlick. These could be solved by grading, straightening out the curves (hopefully through the yard of that eyesore at Waterlick) and possibly more aggressively clearing trees/bushes in the rights of way. I was disappointed the southern end of the road was not considered. The grade and turn at Bellevue is dangerous. The road should be raised to the grade of the surrounding land to provide better line of sight for northbound drivers turning left. Roadway flooding in the dip in the road between Bellevue and the big house on the hill where the Sterling Oil people live should also be mitigated.

**Comment 5****Name:** Andrea Dukes**Date:** 11-13-15**Submission Method:** Email to Bob White

Good morning,

I was hoping to attend the meeting last evening regarding the 811 corridor, but was not able to make it. I am glad there will be further information in February. Our family travels this road several times a day and we agree there are issues, and have been for some time. Were there any materials from the meeting that could either be emailed to me or mailed? My address is as follows:

Andrea Dukes  
1357 JEB Stuart Place  
Forest, VA 24551

Thank you for looking into this situation and I look forward to hearing of possible solutions.

Andrea Dukes

**Comment 6****Name:** Andrea Dukes**Date:** 11-13-15**Submission Method:** Project Website

Thank you for studying this issue! As a resident in this area, I can attest that this project is spot-on for all of the reasons mentioned. My only addition would be to extend a bike path (or other remedy) along the corridor between Turkey Foot Road and 460. This curvy, narrow section of

road is too small and hazardous to share between cyclists/ runners and vehicles. If you would like to talk to me about this personally, please feel free to reach me at 434-444-1104. Thank you and have a good day.

**Comment 7****Name:** Al Baughman**Date:** 11-13-15**Submission Method:** Email to Bob White

Bob, my wife and I were unable to attend Thursday's workshop and I wanted to take this opportunity to share concerns with you.

We reside at 119 Shady Oak Lane in Oak Ridge subdivision. As you are aware it is a self contained subdivision with one road in and same road out.

We have resided there since the late 80's and traffic congestion has increased each year.

Rt 811 is a two lane cut thru from Rt 460 to Rt 221. It was not designed/built with the volume of traffic today. Ridership on school buses has declined and the number of passenger vehicles hauling kids to school (on each end of 811) has increased. Add the cut thru traffic and tractor trailers going to the Krogers/Forest, Walmart/Forest and all the new businesses and you have a royal mess. That's before you add Montessori school traffic. (that should have never passed Bedford Board of Supervisors). Rt. 811 is not a road designed for bicycle and vehicle use. If roads are widened, who will lose their property?

To improve access from our subdivision, a stop light is needed at Turkey Foot. That should slow traffic down enough for the subdivision traffic to get on and off 811.

Thanks for providing the opportunity for feedback. An acknowledgment of receipt of this email is appreciated!

Regards,

Al Baughman, AIM, LUTCF

**Comment 8****Name:** Pat Whorley**Date:** 11-13-15**Submission Method:** Email to Bob White

Good Afternoon –

After attending the Public Meeting-Open House yesterday for the above mentioned project, I would like to again identify the Transportation Department's concerns regarding this area.

Currently Thomas Jefferson Elementary School serves 589 students in grades pre-k through 5<sup>th</sup> grade, with approximately 420 of those students riding one of thirteen buses serving the school and the remainder being car riders. The typical arrival time at school in the morning is between 7:20 a.m. and 7:30 a.m., making the left turn from Thomas Jefferson Road onto Patriot Place is very difficult with the volume of traffic on the road at that time of the morning. The left turn lane into the school cannot accommodate the number of buses and cars waiting to turn in, so traffic begins to back up along Thomas Jefferson Road. The morning left turn from Patriot Place onto Thomas Jefferson Road is the worst, wait times vary between 10-15 minutes for buses. Bus dismissal in the afternoon is at approximately 2:45 p.m., while we still experience some left turn issues leaving the school they are not as problematic as the morning due to lower traffic volume at this time.

We understand that the volume of traffic traveling this portion of Thomas Jefferson Road will likely increase in the coming years, our biggest concern is the safety of the students and citizens traveling this road, today and in the future. A stop light or any other type of traffic control at the intersection of Thomas Jefferson Road and Patriot Place we feel would improve safety and help reduce congestion in this area.

Please feel free to contact me should you have any questions. Thank you.

Pat Whorley  
Transportation Supervisor  
Bedford County Public Schools  
310 South Bridge Street  
Bedford, VA 24523  
Phone – 540-586-1045 ext. 259  
Fax – 540-587-0026

#### **Comment 9**

**Name:** Andrea Meals Dukes

**Date:** 11-13-15

**Submission Method:** Comment on WDBJ Website (Online news story about public meeting)

I wanted to go to this meeting, but was not able to attend. I travel this road several times a day and I agree that it is not a safe road. #1 - Traffic at key times in the day is extremely heavy - to the point that one will go out of their way to avoid it. #2 - The road is much too narrow and curvy for the amount of traffic it serves. #3 - While I know that motorists and cyclists have equal right to the road, this realization will be of little solace when a tragic accident occurs. The current road is not conducive to both. It's only a matter of time before someone gets hurt or killed.

**Comment 10****Name:** Terry and Sandra Metzgar**Date:** 11-15-15**Submission Method:** Project Website

First of all, thanks for taking our input. We live on Thomas Jefferson, so our comments are based on personal experience. They would be: - Add increased enforcement of existing speed limits. Traffic is routinely moving at 45-50 mph. In addition, increased signage or even a "your speed is" sign might help since I doubt many drivers either know what the limit is or are aware of how much they're exceeding it by. - Because of the volume of bicyclists, a bike lane would be beneficial. - Providing a right turn lane for north-bound traffic at Waterlick would help congestion immensely. - Synchronizing the lights at Everett road and Bateman Bridge would reduce congestion also. - Anything (your call) to emphasize that there are many residential driveways entering the road. Thanks once again for your interest in our input. Good luck making us all happy:-)

**Comment 11****Name:** Teal Iovinetti**Date:** 02-09-16**Submission Method:** Project Website

Is there any way to limit the tractor trailer use on Rte 811? This traffic has drastically increased over the past few years and is a safety concern for both residents but also those trying to exit and enter the Recreation Center in the area being addressed.

**Comment 12****Name:** Ryan George**Date:** 02-09-16**Submission Method:** Project Website

What time is the February 25 meeting? Also, will there be any discussion of the congestion on 811 south of US-460?

**Comment 13****Name:** Robert Arney, Jr.**Date:** 02-10-16**Submission Method:** Project Website

An idea that I have had for quite some time would be an easy, inexpensive fix for the intersection of Thomas Jefferson Road and Bateman Bridge Road. In the mornings, the northbound traffic in the section of TJ Road between Everett Road and Bateman Bridge is clogged at the light at Bateman Bridge Road. A lot of this traffic turns right onto Bateman Bridge



and then the congestion is relieved after that. There is currently a third (middle) lane on TJ approaching Bateman Bridge but it is not used for any traffic. My suggestion is to simply repaint the lines to create a right turn lane and a thru lane from Everett Road to Bateman Bridge Road. This would also help with the traffic entering TJ Road from Everett because they are stopped by the traffic on TJ Road. The only cost would be for paint because the pavement already exists. One other thought would be to install a traffic light at TJ Elementary school to assist with the traffic exiting the school and turning left onto TJ. I see a lot of people who will turn right onto TJ out of the school then turn around in the church parking lot up the street to avoid waiting so long to turn left onto TJ Road. Thank you for listening.

**Comment 14****Name:** Gloria Harris**Date:** 02-20-16**Submission Method:** Project Website

Presently speed is the primary problem. Also lack of common courtesy. Big rigs going from 460 to 221.

**Comment 15****Name:** Michael G.**Date:** 02-25-16**Submission Method:** Project Website

I went to the community meeting today, and thank you for taking the time to study our neighborhood. While the study to date does a good job of addressing projected growth for the next 10-20 years, I think it ignores two major long-term trends: climate change and fuel shortages. In 50+ years we will have depleted much of the planets fossil fuels and will likely have far fewer cars on the road. And with climate change, we are already seeing more intense storms and rain events. More paved ground leads to more flooding. Fifty years from now, I will want my community to have more living soil I can grow food in and fewer paved surfaces that will cause flooding. Residential entrances: please don't block driveways with concrete medians. This would be a pain for me and many others who live right on 811. I have not noticed many cyclists on 811, but after trying it once I figured out why: pretty dangerous! We need a dedicated bike/pedestrian corridor that would connect residents to commercial/civic areas like the school, library, farmers market, and commercial cluster around Kroger. Thanks for your consideration.

**Comment 16****Name:** Julie Thomas**Date:** 03-02-16**Submission Method:** Project Website

Thank you for all your work on these proposals. They all look like good improvements. I only wanted to highlight a few that were important to me as a resident. The pedestrian/biking path

is of great importance to my family. We would love to see it extend all the way from Turkeyfoot to the Kroger shopping area and also back to the library. Getting people out of cars and on foot or bike not only reduces traffic, but produces healthier citizens. I also wanted to comment on the final phases. Given the choice between a median and a turning lane, I would prefer a turning lane. I and my family have to turn left onto 811 most mornings and the round about won't help us. But a turning lane to get into would be helpful to get into the flow of traffic. Again, thank you for the hard work in putting this together. I look forward to these wonderful improvements.