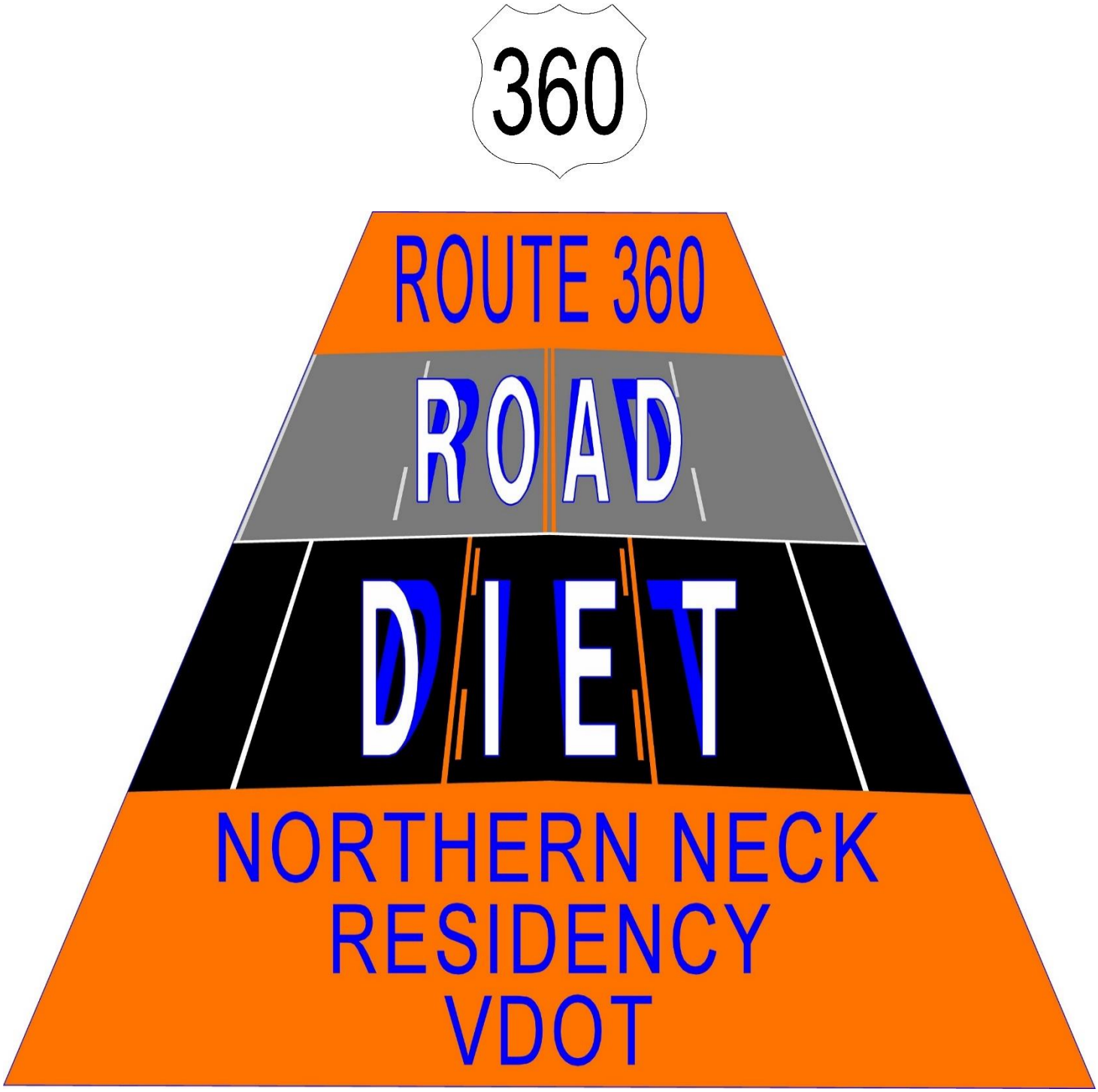


VIRGINIA DEPARTMENT OF TRANSPORTATION

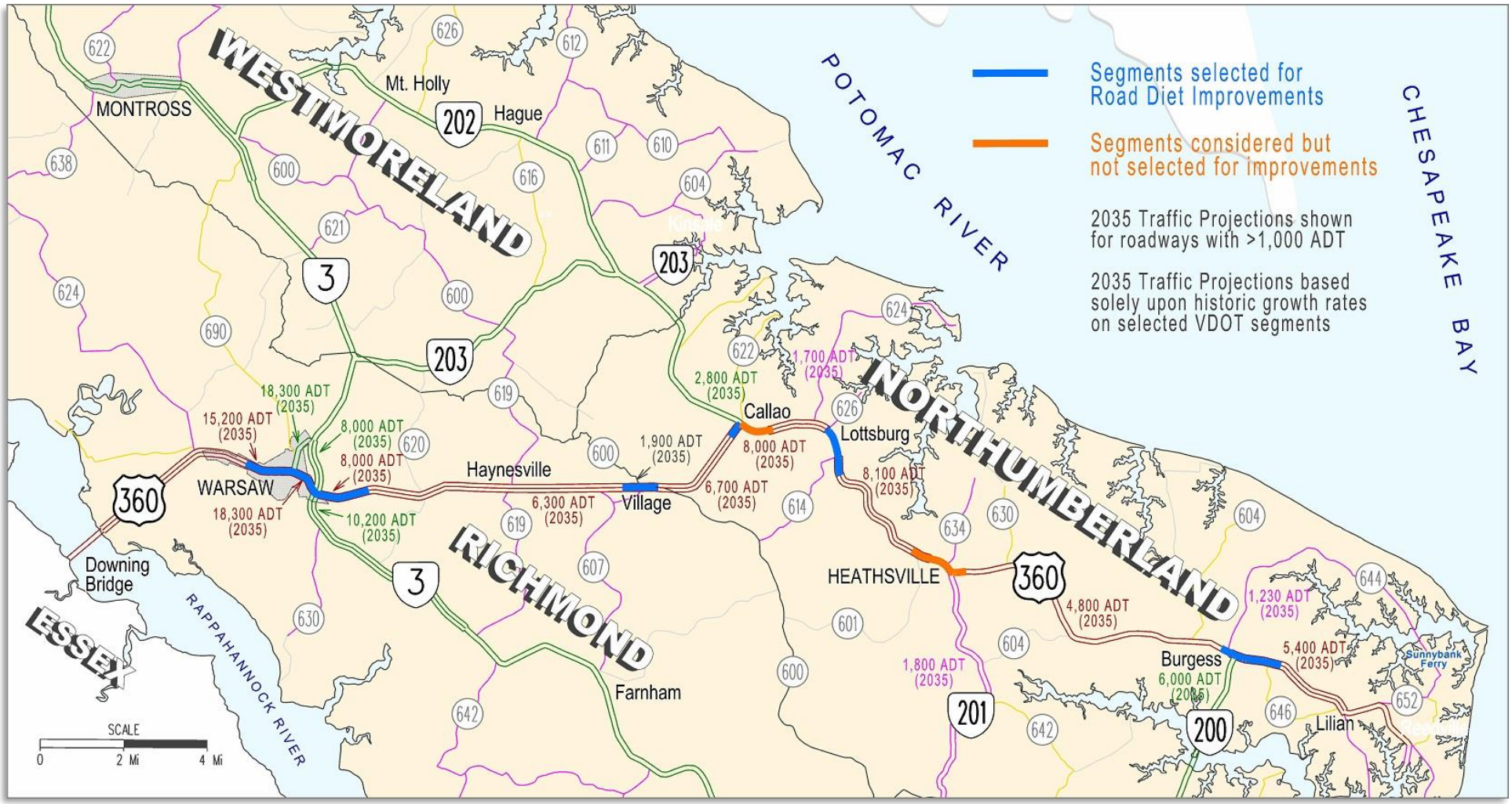
FREDERICKSBURG DISTRICT PLANNING SECTION

FREDERICKSBURG DISTRICT TRAFFIC ENGINEERING

FREDERICKSBURG DISTRICT NORTHERN NECK RESIDENCY

ROUTE 360 ROAD DIET – NORTHERN NECK RESIDENCY

LOCATION MAP



Introduction

Route 360 in the Northern Neck of Virginia is a Principal Arterial Highway serving Richmond and Northumberland counties. The highway is approximately 38 miles from the Downing Bridge over the Rappahannock River to its eastern terminus in Reedville. Both county seats, Warsaw and Heathsville, are located on Route 360. Major portions of the facility are rural, four-lane divided sections. In the more populated areas, many sections are wide, undivided roadways, often with curb and gutter. Most of Route 360 is marked to have four travel lanes, with a few exceptions. In the eastern area, Route 360 has some lengthy rural, two-lane segments.

This road diet study is focused on the wide, undivided segments within Warsaw and the Village of Burgess, and the towns and villages between them. These locations are:

1. Warsaw (Three distinct segments: West of Route 3 Business, Between Route 3 Business and Route 3, East of Route 3)
2. Village
3. Callao (Two distinct segments: West of Route 202, East of Route 202)
4. Lottsburg
5. Heathsville
6. Burgess (Two distinct segments: West of Route 200, East of Route 200)

Traffic volumes along Route 360 in the Northern Neck generally range from an average of 3,000 and 8,000 vehicles per day (vpd). The exception is in the Town of Warsaw and westward, where volumes exceed an average of 13,000 vehicles a day on some segments. A road's Level of Service (LOS) is a concept defined in the Highway Capacity Manual (HCM) as the qualitative measure of a road's operational conditions within a traffic stream and the resulting traveler perception. A road's Level of Service is rated using six letter grades, from A to F. A Level of Service A represents the best operating condition, and Level of Service F represents the worst operating condition. Existing levels of service on Route 360 are good to excellent throughout the corridor, with Levels of Service B or better, with one exception. Route 360 in the village of Heathsville and a portion of the two-lane segment between Heathsville and Burgess have a Level of Service C.

Levels of Service
A: Free flow, with low congestion and high speeds.
B: Reasonably free flow, but speeds beginning to be restricted by traffic conditions.
C: Stable flow, but most drivers are restricted in the freedom to select their own speeds.
D: Approaching unstable flow; drivers have little freedom to select their own speeds.
E: Unstable flow; may be short stoppages.
F: Forced or breakdown flow; unacceptable congestion; stop-and-go

Because there are long sections of four-lane, divided highway between most of the towns and villages, there is ample opportunity for passing on Route 360. (Within the study area, the exception is the 7.5-mile, two-lane segment between Heathsville and Burgess, which has a few short opportunities for passing.) The presence of passing opportunities *between* the towns and villages allows us to consider removing passing opportunities *within* the towns and villages to improve safety and reduce crashes through a road diet.

A "road diet" would keep two travel lanes, and install a two-way left turn lane in the center. A secondary benefit of the road diet would be the installation of paved shoulders. Installing paved shoulders would enhance safety for pedestrians and motorists, and improve the stability of the pavement structure. A two-way left turn lane also serves to reinforce the lower speed limits and more developed character of these locations.

The primary focus of this study is the consideration of potential safety improvements that may be realized by implementing a road diet (modifying the road from four travel lanes to three lanes) on selected segments. VTRANS, Virginia's statewide transportation plan, identifies locations on highways where there is a potential for safety improvements. Along the study area, three locations are identified as a VTrans Needs: Potential for Safety Improvements (PSI). Please see page 18 for specific identified needs.

Mitigating these particular safety problems is the first priority of this study. For potential road diet segments without an identified safety need under VTRANS, the crash histories of the individual segments are being considered to determine whether proposed center two-way left turn lanes or other modifications would likely reduce the incidence of future crashes.

The implementation of a four-to-three-lane road diet is most easily and economically achieved by incorporating the recommended re-designation of lanes into the Virginia Department of Transportation's paving schedule. This would allow the change to be accomplished with minimal added cost. We recommend accomplishing this work as part of the paving schedule for as many recommended improvements on Route 360 as possible.

Four-lane undivided highways have a history of relatively high crash rates as traffic volumes increase, and as the inside lane is shared by higher-speed through traffic and left-turning vehicles.

A classic road diet converts an existing four-lane undivided roadway segment to a three-lane segment consisting of two through lanes and a center two-way left turn lane (TWLTL). A road diet improves safety by including a protected left-turn lane for mid-block left-turning motorists, reducing crossing distance for pedestrians, and reducing travel speeds that decrease crash severity. Additionally, the road diet provides an opportunity to allocate excess roadway width to other purposes, including bicycle lanes, on-street parking, or transit stops.[1]

Per the Federal Highway Administration (FHWA) Road Diet Informational Guide: "In addition, a common concern in implementing Road Diets is that drivers on cross-streets or driveways may have difficulty finding a suitable gap in traffic to enter the main roadway because through traffic is now using a single through lane. However, in Chicago it was found that some side street traffic had an easier time crossing the corridor after the Road Diet was installed because the traffic patterns were simpler and gaps were easier to find."

It is a reasonable expectation that motorists entering Route 360 from cross-streets will have an easier time finding gaps in the sections identified in this study. As speeds decrease, motorists need shorter gaps to safely enter the main roadway. The two-way left turn lane may also be used as a refuge for motorists, allowing left turns to be made in a phased, one lane at a time approach. This eliminates the need of motorists to align gaps from multiple lanes in order to safely enter the main roadway.

Road Diets: Advantages/Disadvantages

Road diets provide advantages that include:

- Crash reduction of 19 percent to 47 percent
- Reduction of rear-end and left-turn crashes through the use of a dedicated left-turn lane
- Fewer lanes for pedestrians to cross and an opportunity to install pedestrian refuge islands
- The opportunity to install bicycle lanes when the cross-section width is sufficient and reallocated
- Reduced right-angle crashes as side street motorists must cross only three lanes of traffic instead of four

[1] Knapp, K., Chandler, B. and Atkinson, J., 2014. *Road Diet Informational Guide*. [online] Safety.fhwa.dot.gov. Available at: <https://safety.fhwa.dot.gov/road_diets/guidance/info_guide/form.cfm> [Accessed 11 May 2021].

- Traffic calming and reduced speed differential, which can decrease the number of crashes and reduce the severity of crashes if they occur
- Overall reduction of 85th percentile speeds of 3-5 miles per hour
- The opportunity to allocate the "leftover" roadway width for other purposes, such as on-street parking or transit stops
- Encouraging a more community-focused, "Complete Streets" environment
- Simplifying road scanning and gap selection for motorists (especially older and younger drivers) making left turns from or onto the mainline[2]
- Can be installed in conjunction with scheduled pavement overlay
- A two-way left-turn lane (TWLTL) may reduce head-on crashes by dividing opposing traffic

Disadvantages of road diets include:

- Difficult to access two-way left turn lane when demand for left turns is high
- Speed can be limited by slow vehicles

Annual Average Daily Traffic

The FHWA notes that, *"*under most average daily traffic (ADT) conditions tested, road diets have minimal effects on vehicle capacity, because left-turning vehicles are moved into a common two-way left-turn lane. However, for road diets with ADTs above approximately 20,000 vehicles, there is a greater likelihood that traffic congestion will increase to the point of diverting traffic to alternate routes."[3] The maximum average annual daily traffic (AADT) on the Route 360 segments reviewed is 15,000 vehicles per day.

Crash Modification Factor (CMF)

A Crash Modification Factor (CMF) is a multiplicative factor used to estimate the predicted number of crashes after implementing a countermeasure. The Crash Modification Factor used in the crash data analysis for these locations is based on a study[4] that analyzed 37 road diet conversions by VDOT in Virginia, where the road segment was changed from four lanes to three lanes, with bike lanes. These segments were evaluated using the Empirical Bayes (EB) method to determine the Crash Modification Factors. The analysis found a CMF of 0.65 for total crashes and 0.41 for fatal/injury crashes.[5] This equates to a 35 percent reduction in total crashes and a 59 percent reduction in fatal/injury crashes.

Road Diet Locations

A total of seven segments located on Route 360 in Richmond County and Northumberland County are included in this road diet review to determine if these highway segments would benefit from the transition to a two-lane roadway with a two-way left turn. The safety review includes a review of the following:

- A three-year crash history (November 30, 2017 to November 30, 2020)
- Average Daily Traffic (ADT) counts
- Speed limit
- Crash types (property damage crashes, injury crashes)

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[2] Ibid, pp. 1-2

[3] Huang, H., Stewart, J., & Zegeer, C. (2004) Summary report: Evaluation of lane reduction "Road Diet" measures and their effects on crashes and injuries (FHWA-HRT-04-082). https://www.fhwa.dot.gov/publications/research/safety/humanfac/04082/ (Accessed 5/11/2021)

[4] Lim, L. & Fontaine, D. (2020) Development of road diet segment and intersection crash modification factors.

[5] Ibid, pp. 2

- Crash locations
- Crash Modification Factors
- Crash rate comparison with statewide rates

The following road segment locations were reviewed for a potential road diet:

1) **Warsaw (Town of Warsaw/Richmond County) –** Divided roadway west of Route 1019 (Gordon Lane) to West of Route 3 Business (Main Street) at mile marker 191.77 to mile marker 192.74
2) **Warsaw (Town of Warsaw/Richmond County) –** East of Route 3 Business (Main Street) to Route 3 (History Land Highway) at mile marker 192.74 to mile marker 193.51
3) **Warsaw (Town of Warsaw/Richmond County) –** Route 3 (History Land Highway) to the divided roadway east of Route 628 (Cole Hill Lane) at mile marker 193.51 to mile marker 194.80
4) **Village (Richmond County/Northumberland County)** – Divided roadway west of Route 617 (Normans Corner Road) to divided highway east of Route 617 (Normans Corner Road) at mile marker 201.2 to mile marker 201.9
5) **Callao (Northumberland County)** – From divided roadway southwest of Route 360/Route 202 intersection to just southwest of Route 360/Route 202 at mile marker 204.3 to 204.56
6) **Lottsburg (Northumberland County) –** From Route 624 (Lewisetta Road) to divided roadway south of Route 632 (Kingston Road) at mile marker 206.4 to mile marker 207.9
7) **Burgess (Northumberland County) –** From Route 644 (Hacks Neck Road) east to divided roadway west of Route 647 (Greenfield Road) at mile marker 219.5 to mile marker 220.8

Crash Rates: Summary Table

Review of the Crash Injury and Fatality Rates for each segment compared to the statewide rates found:

Location	Crash Rate Segment	Crash Rate Statewide	Injury Rate Segment	Injury Rate Statewide	Fatality Rate Segment	Fatality Rate Statewide
1	135.81	127.18	54.32	40.25	0.00	1.07
2	79.01	127.18	15.80	40.25	0.00	1.07
3	47.80	127.18	26.88	40.25	0.00	1.07
4	160.23	127.18	53.41	40.25	0.00	1.07
5	0	127.18	0	40.25	0.00	1.07
6	111.67	127.18	51.54	40.25	0.00	1.07
7	27.16	127.18	13.58	40.25	0.00	1.07

Crash Analysis by Roadway Segment

Crash data was obtained over three years, from November 30, 2017 to November 30, 2020. The figures and tables depict the crash locations, types of crashes, the crashes that resulted in injuries or fatalities, and the crashes that resulted in property damage only.

Warsaw (Town of Warsaw/Richmond County) – Divided roadway west of Route 1019 (Gordon Lane) to West of Route 3 Business (Main Street) at mile marker 191.77 to mile marker 192.74

Location	Crash Rate Segment	Crash Rate Statewide	Injury Rate Segment	Injury Rate Statewide	Fatality Rate Segment	Fatality Rate Statewide

1	135.81	127.18	54.32	40.25	0.00	1.07

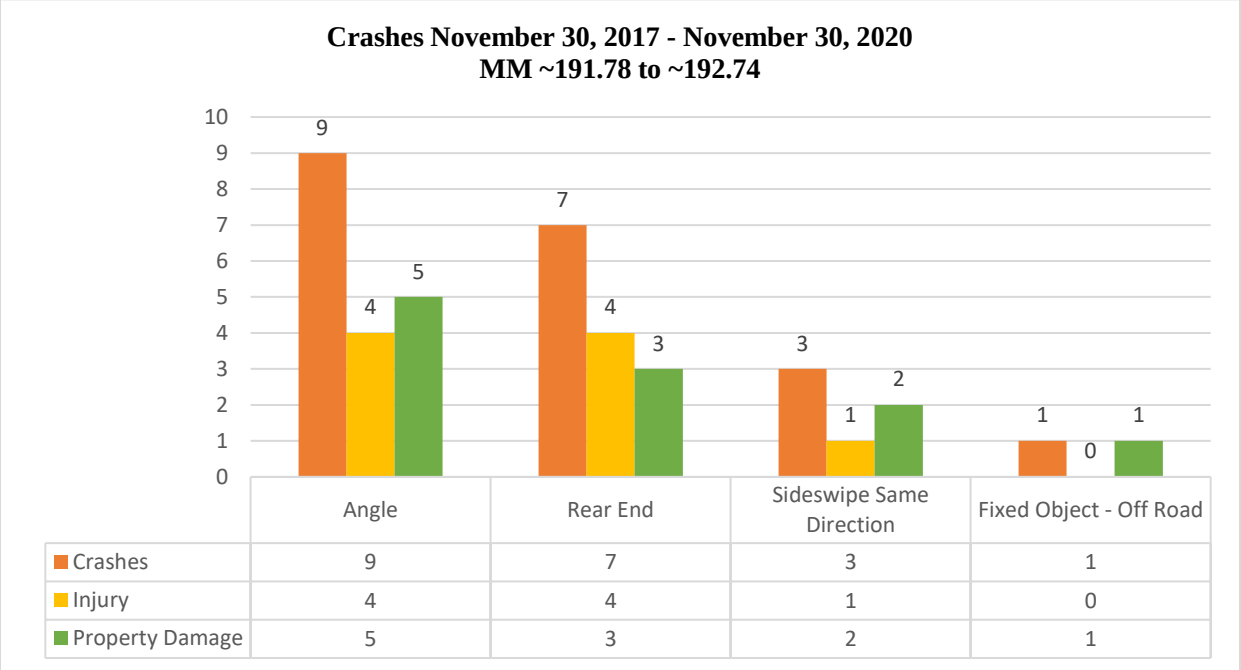
This segment of Route 360 is 0.97 miles long with an average daily traffic count of 14,000 vehicles per day and a posted speed limit of 35 mph. A total of 20 crashes (9 angle; 7 rear end; 3 sideswipe same direction; 1 fixed object off-road) occurred along this segment of Route 360. The crash rate is 135.81, which is higher than the statewide crash rate of 127.81. The injury rate of 54.32 is also higher than the statewide injury rate of 40.25. There were no fatal crashes along this segment. Further, based on a crash modification factor of 0.65 for total crashes and 0.41 for fatal/injury crashes, the predicted number of total crashes over a 3-year period may be reduced from a total of 20 crashes to 13 total crashes, and the number of fatal/injury crashes may be reduced from 9 to 4 crashes over the same period.

The majority of crash types (angle, sideswipe, and rear end) that occurred along this segment of highway may be reduced with implementation of a road diet configuration.

Crashes 20

Date	Crash Type	Injury	Property Damage
12/14/18	**Angle**		✓
11/15/19	**Angle**		✓
5/30/19	**Angle**		✓
9/17/18	**Rear End**	✓	
8/3/18	**Sideswipe - Same Direction**		✓
7/1/18	**Angle**	✓	
11/5/20	**Fixed Object – Off Road**		✓
12/22/17	**Rear End**		✓
11/30/18	**Angle**		✓
12/17/19	**Angle**		✓

7/17/18	**Rear End**		✓
1/2/20	**Rear End**	✓	
7/20/20	**Angle**	✓	
11/13/19	**Rear End**	✓	
10/20/20	**Angle**	✓	
4/18/18	**Rear End**		✓
12/8/17	**Sideswipe - Same Direction**		✓
2/4/18	**Sideswipe - Same Direction**	✓	
3/13/20	**Angle**	✓	
11/22/19	**Rear End**	✓	



Traffic Signal Warrant

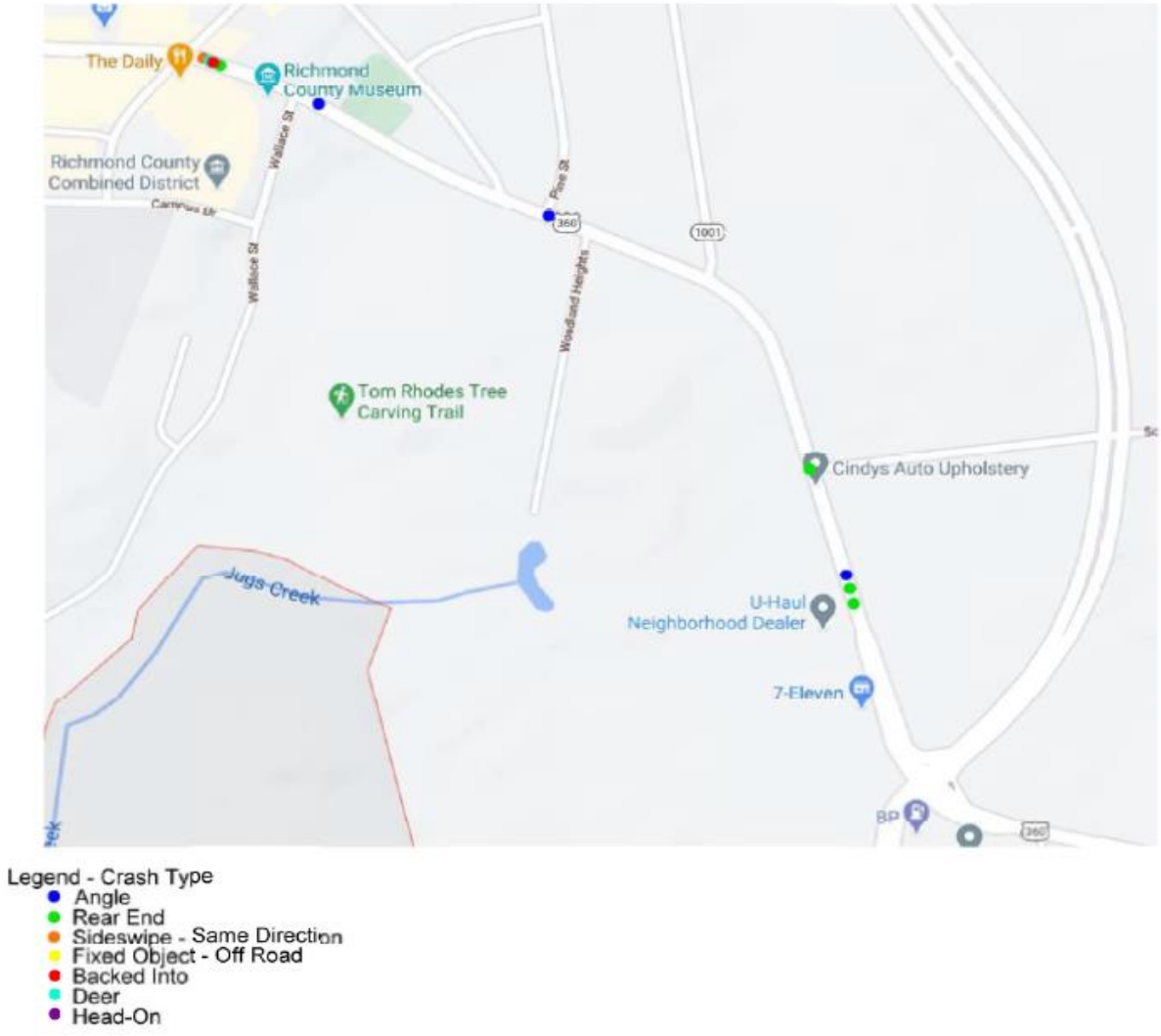
The intersection of Route 360, Route 1016 (Morgan Lane) and T1013 (Jones Lane) was reviewed for a potential traffic signal. The most recent annual average daily traffic count on Morgan Lane was 359 vehicles per day in 2016. While traffic count data is not available for Jones Lane, based on development, Morgan Lane would be expected to have a higher annual average daily traffic count than Jones Lane. Signal warrants use only the higher volume minor street approach in the analysis, so the count on Morgan Lane was used for the analysis. The 359 vehicles per day on Morgan Lane is the total number of vehicles traveling on the road, and half of those vehicles (180) represent the volume approaching the intersection. VDOT's average daily traffic (ADT) signal warrant criteria require a minimum daily approach volume of 960 vehicles per day on the minor street. Therefore, this intersection would not meet a signal warrant based on volumes.

Warsaw (Town of Warsaw/Richmond County) – East of Route 3 Business (Main Street) to Route 3 (History Land Highway) at mile marker 192.74 to mile marker 193.51

Location	Crash Rate Segment	Crash Rate Statewide	Injury Rate Segment	Injury Rate Statewide	Fatality Rate Segment	Fatality Rate Statewide
2	79.01	127.18	15.80	40.25	0.00	1.07

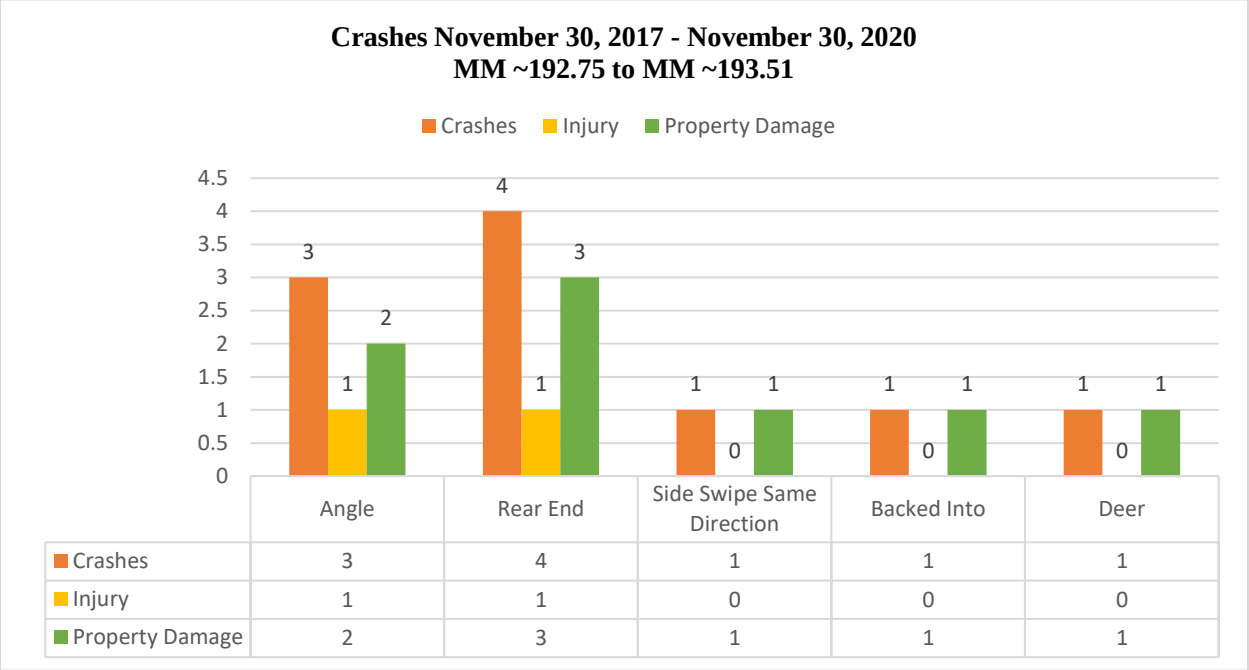
This segment of Route 360 is 0.77 miles long with an average daily traffic count of 15,000 vehicles per day and a posted speed limit of 35 mph. A total of 10 crashes (3 angle; 4 rear end; 1 sideswipe same direction; 1 backed into; 1 deer) occurred along this segment of Route 360. The crash rate is 79.01, which is lower than the statewide crash rate of 127.81. The injury rate of 15.80 is also lower than the statewide injury rate of 40.26. There were no fatal crashes along this segment. Further, based on a crash modification factor of 0.65 for total crashes and 0.41 for fatal/injury crashes, the predicted number of total crashes over a 3-year period may be reduced from a total of 10 crashes to 7 total crashes, and the number of fatal/injury crashes may be reduced from two crashes to one crash over the same period.

The majority of crash types (angle, sideswipe, and rear end) that occurred along this segment of highway may be reduced with implementation of a road diet configuration.



10 Crashes

	Crash Type	Injury	Property Damage
8/9/18	**Rear End**	✓	
2/8/20	**Angle**	✓	
10/29/20	**Sideswipe - Same Direction**		✓
10/12/18	**Rear End**		✓
6/30/18	**Angle**		✓
2/3/20	**Rear End**		✓
11/26/19	**Deer**		✓
7/23/18	**Backed Into**		✓
3/8/20	**Rear End**		✓
11/21/19	**Angle**		✓



Warsaw (Town of Warsaw/Richmond County) – Route 3 (History Land Highway) to the divided roadway east of Route 628 (Cole Hill Lane) at mile marker 193.51 to mile marker 194.80

Location	Crash Rate Segment	Crash Rate Statewide	Injury Rate Segment	Injury Rate Statewide	Fatality Rate Segment	Fatality Rate Statewide
3	47.80	127.18	26.88	40.25	0.00	1.07

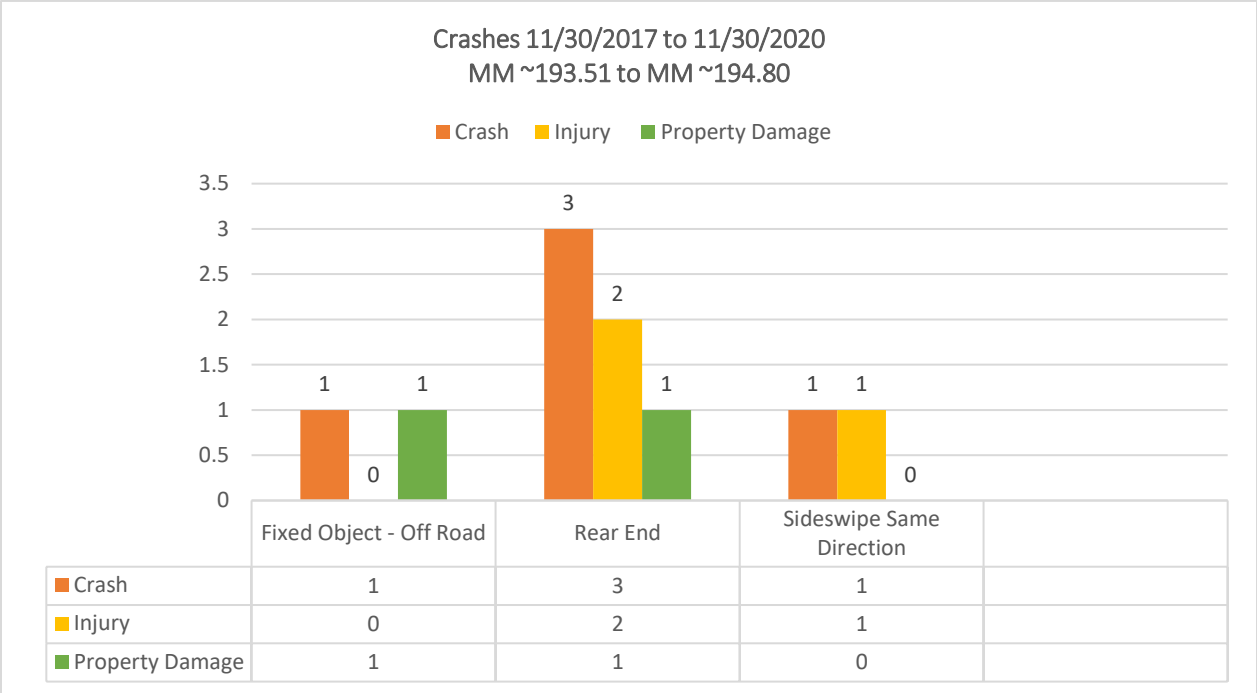
This segment of Route 360 is 1.29 miles long with an average daily traffic count of 7,400 vehicles per day, and a posted speed limit that varies from 35 mph between Route 3 and 0.1 miles west of Route 1021 (Maple Street), then transitions to 40 mph in the middle segment, and raises to 55 mph 0.13 miles west of Route 697 (Indianfield Road). Further, there is a 25 mph school zone adjacent to the Rappahannock High School within this segment. A total of 5 crashes (3 rear end, 1 sideswipe same direction, and 1 fixed object off-road) occurred along this segment of Route 360. The crash rate is 47.80, which is lower than the statewide crash rate of 127.81. The injury rate of

26.88 is also lower than the statewide injury rate of 40.26. There were no fatal crashes along this segment. Further, based on a crash modification factor of 0.65 for total crashes and 0.41 for fatal/injury crashes, the predicted number of total crashes over a 3-year period may be reduced from a total of 5 crashes to 3 total crashes, and the number of fatal/injury crashes may be reduced from 3 crashes to one crash over the same period.

The majority of crash types (sideswipe and rear end) that occurred along this segment of highway may be reduced with implementation of a road diet configuration.

5 Crashes

Date	Crash Type	Injury	Property Damage
5/20/19	**Fixed Object – Off Road**		✓
4/30/19	**Sideswipe – Same Direction**	✓	
5/1/18	**Rear End**		✓
8/12/18	**Rear End**	✓	
2/12/19	**Rear End**	✓	



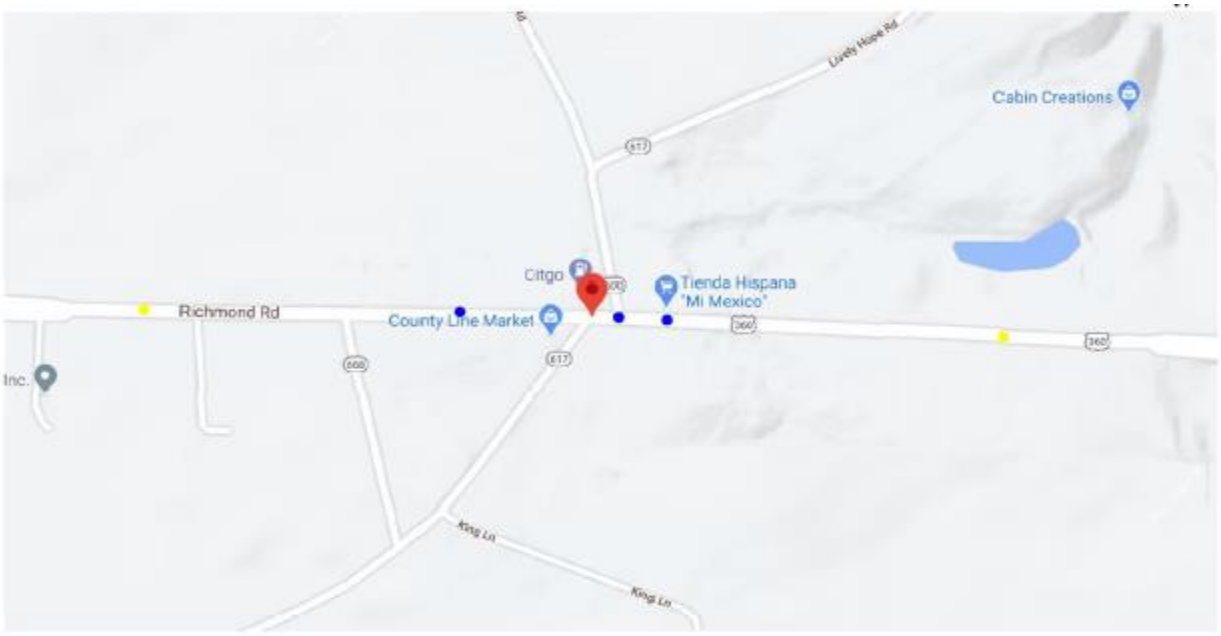
Northumberland County

Village (Richmond County/Northumberland County) – Divided roadway west of Route 617 (Normans Corner Road) to divided highway east of Route 617 (Normans Corner Road) at mile marker 201.2 to mile marker 201

Location	Crash Rate Segment	Crash Rate Statewide	Injury Rate Segment	Injury Rate Statewide	Fatality Rate Segment	Fatality Rate Statewide
4	160.23	127.18	53.41	40.25	0.00	1.07

This segment of Route 360 is 0.70 miles long with an average daily traffic count that varies between 5,700 vehicles per day on the west end of the segment to 6,000 vehicles per day to the east. The segment has a posted speed limit of 45 mph. A total of 5 crashes (3 angle; 2 fixed object off-road) occurred along this segment of Route 360. The crash rate is 160.23, which is higher than the statewide crash rate of 127.81. The injury rate of 53.41 is also higher than the statewide injury rate of 40.26. There were no fatal crashes along this segment. Further, based on a crash modification factor of 0.65 for total crashes and 0.41 for fatal/injury crashes, the predicted number of total crashes over a 3-year period may be reduced from a total of 5 crashes to 3 total crashes, and the number of fatal/injury crashes may be reduced from two crashes to one fatal/injury crash over the same period.

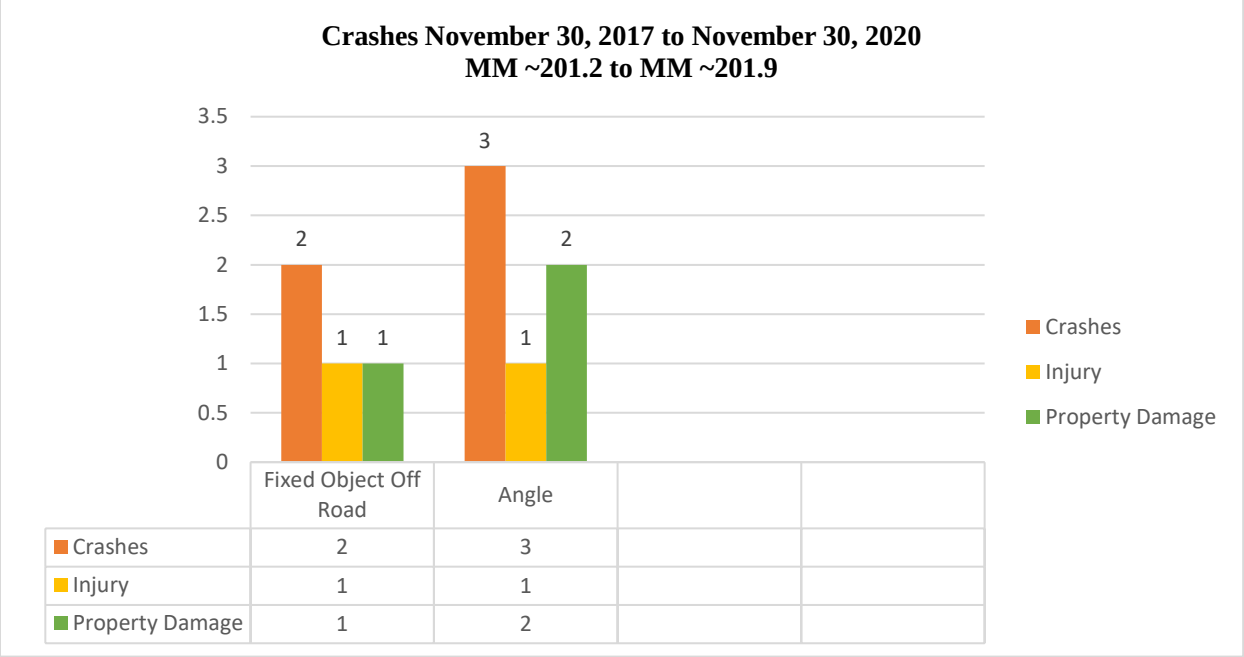
The type of crashes (angle) that occurred along this segment of highway may be reduced with implementation of a road diet configuration.



Legend - Crash Type
- Angle
- Rear End
- Sideswipe - Same Direction
- Fixed Object - Off Road
- Backed Into
- Deer
- Head-On

5 Crashes

Date	Crash Type	Injury	Property Damage
1/17/20	**Angle**		✓
11/7/18	**Fixed Object – Off Road**	✓	
3/7/19	**Angle**	✓	
9/6/19	**Fixed Object – Off Road**		✓
4/18/19	**Angle**		✓



Callao (Northumberland County) – From divided roadway southwest of Route 360/Route 202 intersection to just southwest of Route 360/Route 202 at mile marker 204.3 to 204.56

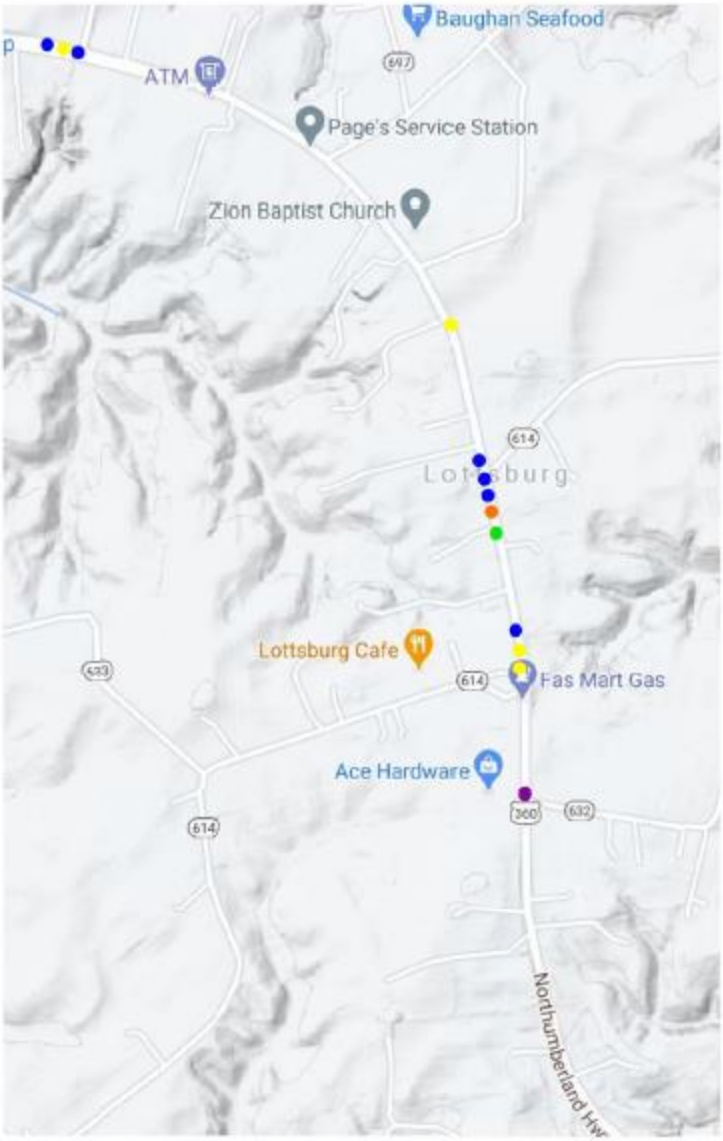
Location	Crash Rate Segment	Crash Rate Statewide	Injury Rate Segment	Injury Rate Statewide	Fatality Rate Segment	Fatality Rate Statewide
5	0	127.18	0	40.25	0.00	1.07

This segment of Route 360 is 0.26 miles long with an average daily traffic count of 5,700 vehicles per day and posted speed limit that transitions from 45 mph down to 35 mph in the middle of the segment, 0.2 miles west of Route 202. No crashes occurred along this segment of Route 360, but the predicted likelihood of total crashes would be reduced by 35 percent and 59 percent in fatal/injury crashes. Further, the majority of typical crash types (angle, sideswipe, and rear end) along this segment of highway may be reduced with implementation of a road diet configuration.

Lottsburg (Northumberland County) – From Route 624 (Lewisetta Road) to divided roadway south of Route 632 (Kingston Road) at mile marker 206.4 to mile marker 207.9

Location	Crash Rate Segment	Crash Rate Statewide	Injury Rate Segment	Injury Rate Statewide	Fatality Rate Segment	Fatality Rate Statewide
6	111.67	127.18	51.54	40.25	0.00	1.07

This segment of Route 360 is 1.5 miles long with an average daily traffic count of 7,000 vehicles per day. The speed limit varies between 55 mph at the western end of the segment and transitions down to a posted speed limit of 40 mph at a point 0.08 miles west of Route 626 (Glebe Road), and then back up to 55mph 0.07 miles west of Route 632 (Kingston Road). A total of 13 crashes (6 angle; 4 fixed object off-road; 1 sideswipe same direction; 1 rear end; 1 head-on) occurred along this segment of Route 360. The crash rate is 111.67, which is lower than



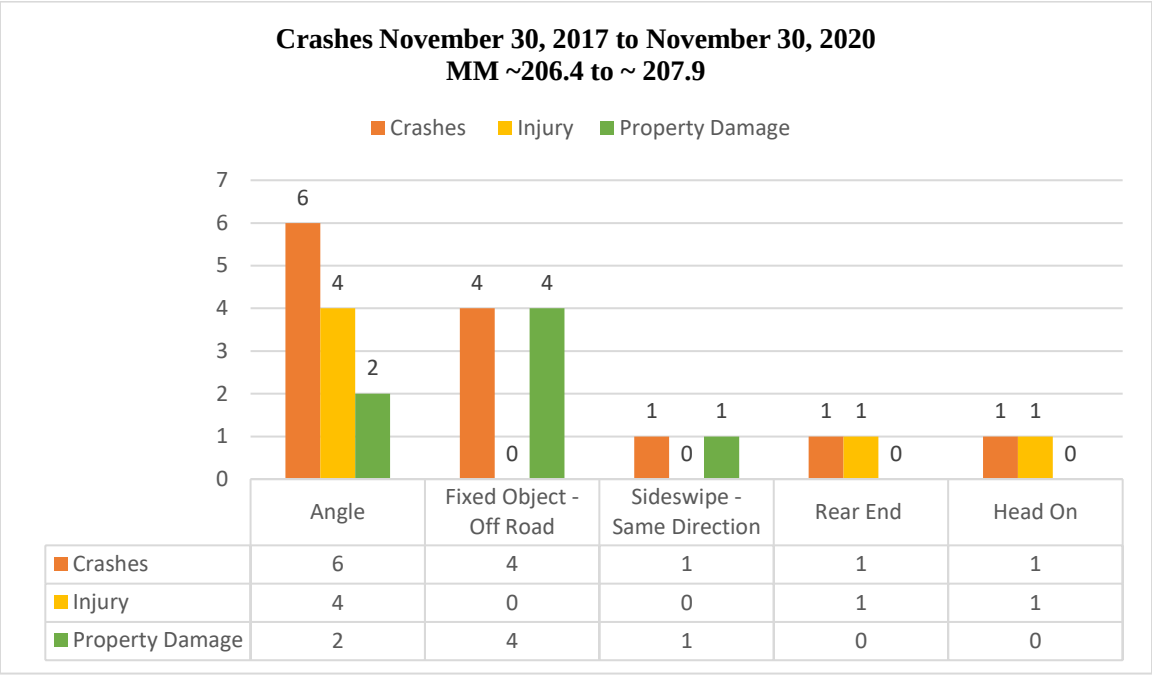
the statewide crash rate of 127.81. The injury rate of 51.54 is higher than the statewide injury rate of 40.26. There were no fatal crashes along this segment. Further, based on a crash modification factor of 0.65 for total crashes and 0.41 for fatal/injury crashes, the predicted number of total crashes over a 3-year period may be reduced from a total of 13 crashes to 8 total crashes, and the number of fatal/injury crashes may be reduced from 6 to 2 fatal/injury crashes over the same period.

The majority of crash types (angle, sideswipe, rear end, head-on) that occurred along this segment of highway may be reduced with implementation of a road diet configuration.

13 Crashes

Date	Crash Type	Injury	Property Damage
8/11/18	**Angle**	✓	
10/3/19	**Angle**		✓
9/10/19	**Fixed Object – Off Road**		✓
8/7/20	**Fixed Object – Off Road**		✓
5/31/19	**Angle**	✓	
3/15/19	**Fixed Object – Off Road**		✓
8/26/19	**Angle**		✓
2/16/18	**Sideswipe – Same Direction**		✓
8/24/20	**Rear End**	✓	
4/6/18	**Angle**	✓	

3/29/18	**Head On**	✓	
12/31/19	**Fixed Object – Off Road**		✓
8/26/20	**Angle**	✓	

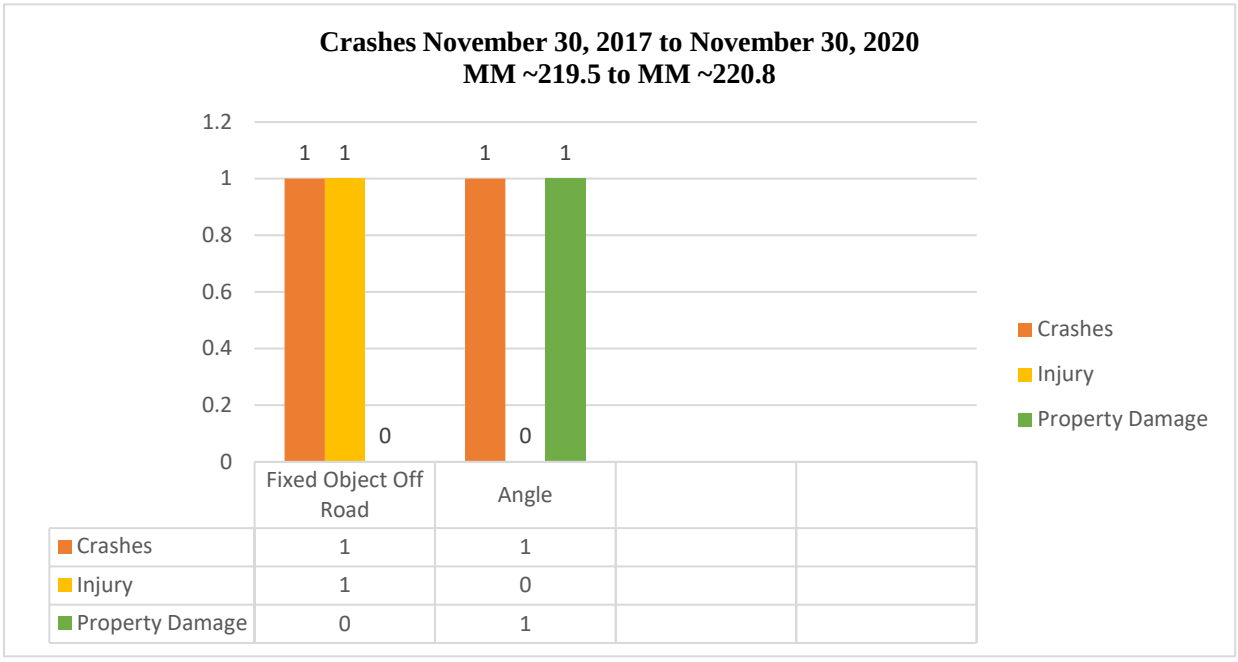


Burgess (Northumberland County) – From Route 644 (Hacks Neck Road) east to divided roadway west of Route 647 (Greenfield Road) at mile marker 219.5 to mile marker 220

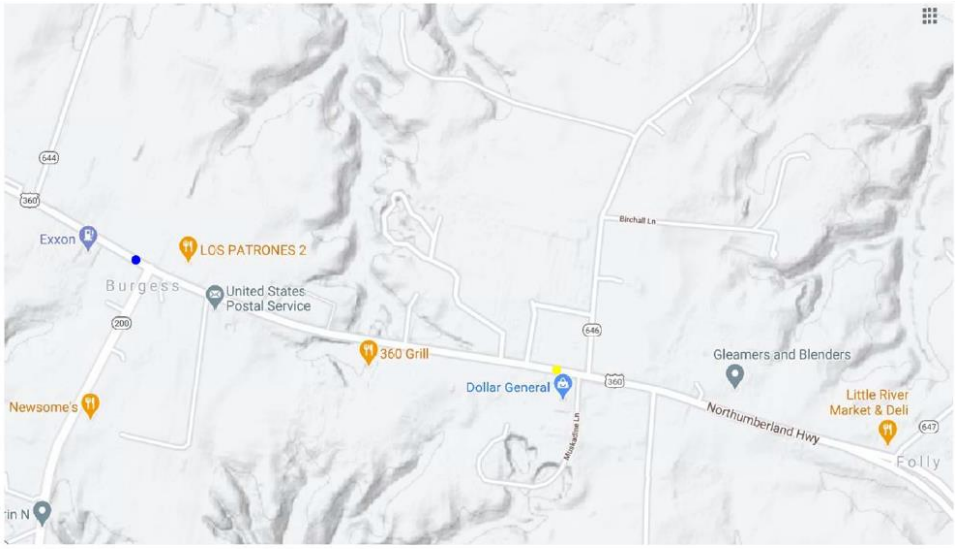
Location	Crash Rate Segment	Crash Rate Statewide	Injury Rate Segment	Injury Rate Statewide	Fatality Rate Segment	Fatality Rate Statewide
7	27.16	127.18	13.58	40.25	0.00	1.07

This segment of Route 360 is 1.30 miles long with an average daily traffic count that varies from 4,500 west of Route 200 to 4,900 vehicles per day east of Route 200. The posted speed limit transitions from 35 mph on the west end to 45 mph around 0.20 miles east of Route 200 (Jessie Dupont Memorial Highway) in the middle, and then to 55mph 0.87 miles east of Route 200 on the eastern end of the segment. A total of 2 crashes (1 angle; 1 fixed object off-road) occurred along this segment of Route 360. The crash rate is 27.16, which is lower than the statewide crash rate of 127.81. The injury rate of 13.58 is also lower than the statewide injury rate of 40.26. There were no fatal crashes along this segment. Further, based on a crash modification factor of 0.65 for total crashes and 0.41 for fatal/injury crashes, the predicted number of total crashes over a 3-year period may be reduced from a total of 2 crashes to one crash, and the number of fatal/injury crashes may be reduced from one to zero fatal/injury crashes over the same period.

The number of angle crashes may be reduced with implementation of a road diet configuration.



	Fixed Object Off Road	Angle		
Crashes	1	1		
Injury	1	0		
Property Damage	0	1		



2 Crashes

Date	Crash Type	Injury	Property Damage
9/24/19	**Angle**		✓
4/11/08	**Fixed Object – Off Road**	✓	

Recommendation

Our review of the crashes and volumes at the various potential road diet segments along Route 360 determined that these locations would see a potential 35 percent reduction in the total number of crashes and a 59 percent reduction in serious fatal and injury crashes. Based on these reductions, the total number of predicted crashes may be reduced over a 3-year period from 55 crashes to 36 crashes, and the number of number of fatal/injury crashes may be reduced from 23 to 9 crashes in the same period.

Further, all of the locations meet each of the following benchmarks:

1. Average daily traffic counts of less than 20,000 vehicles per day as recommended by the Federal Highway Administration.

2. Crash types (rear end, angle, head-on, and sideswipe) are susceptible to correction/reduction with implementation of the configuration.

3. Decreases in turning and through movement conflicts.

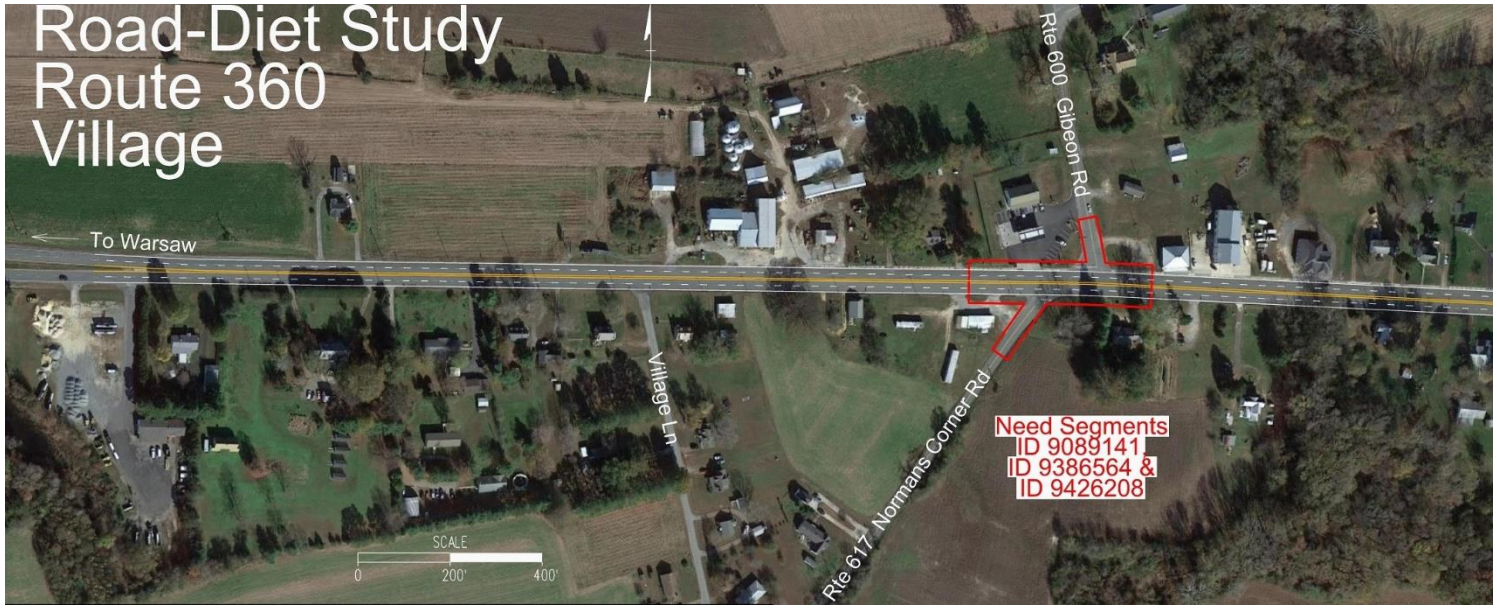
4. May be installed in conjunction with scheduled pavement overlay.

Additionally, the road diet provides an opportunity to allocate excess roadway width to other purposes, including bicycle lanes, on-street parking, or transit stops.[6]

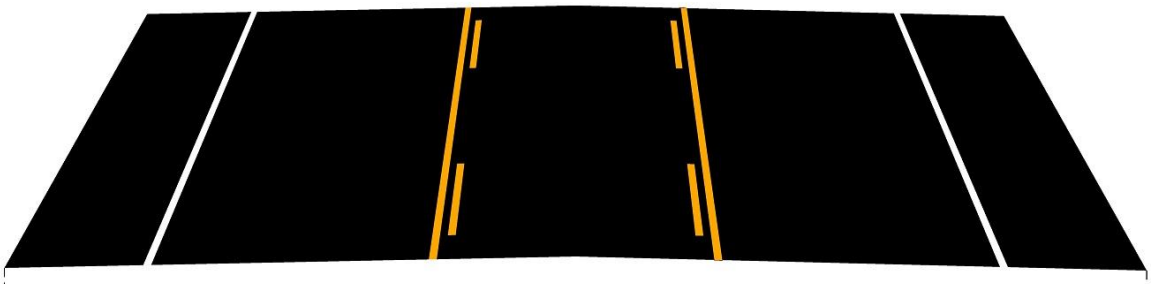
[6] Knapp.

ROUTE 360 ROAD DIET

VTrans Safety Needs Location within the study area



ROUTE 360 ROAD DIET
PROPOSED LANE WIDTHS
FOR THREE-LANE SEGMENTS



Existing Pavement Width 36'

No Edge Stripe (C&G) | 11.5' | 13' | 11.5' | No Edge Stripe (C&G)

Warsaw (Between Rte 3B and Rte 3)

Existing Pavement Width 40' to 48'

2'-6" | 12' | 12' | 12' | 2'-6"

Warsaw (West of Rte 3B)
Lottsburg (Between 500' East of Rte 626 and Walmsley Rd)

Existing Pavement Width 52'

7' | 12' | 14' | 12' | 7'

Village
Callao

Existing Pavement Width 50'-52'

6' | 12'-13' | 14' | 12'-13' | 6'

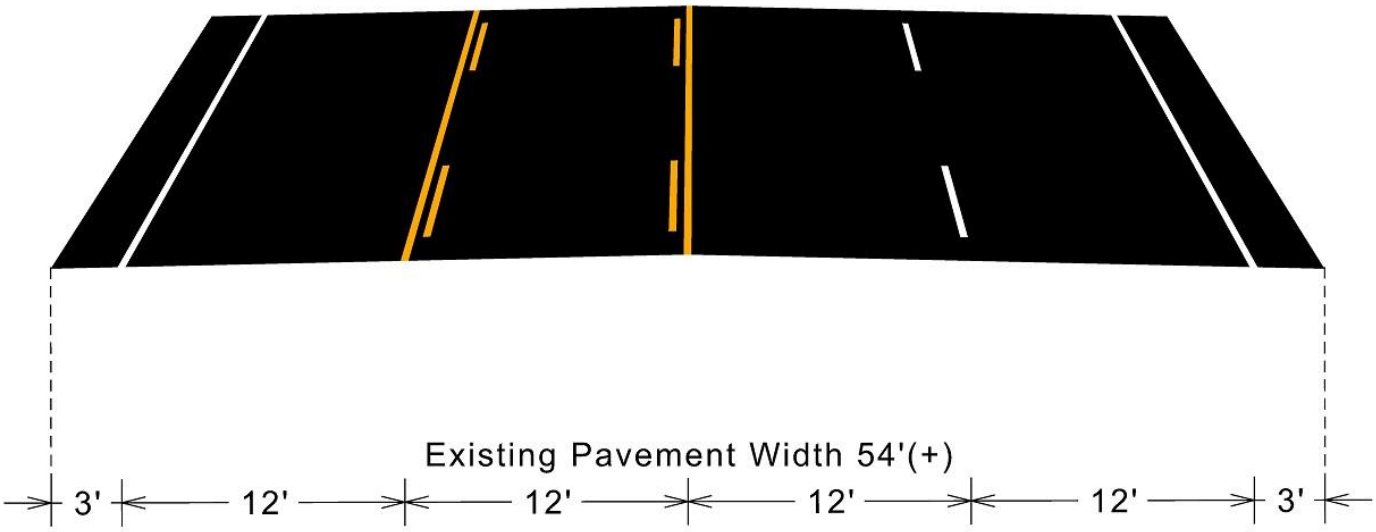
Lottsburg (East of Walmsley Rd)

Existing Pavement Width 54'(+)

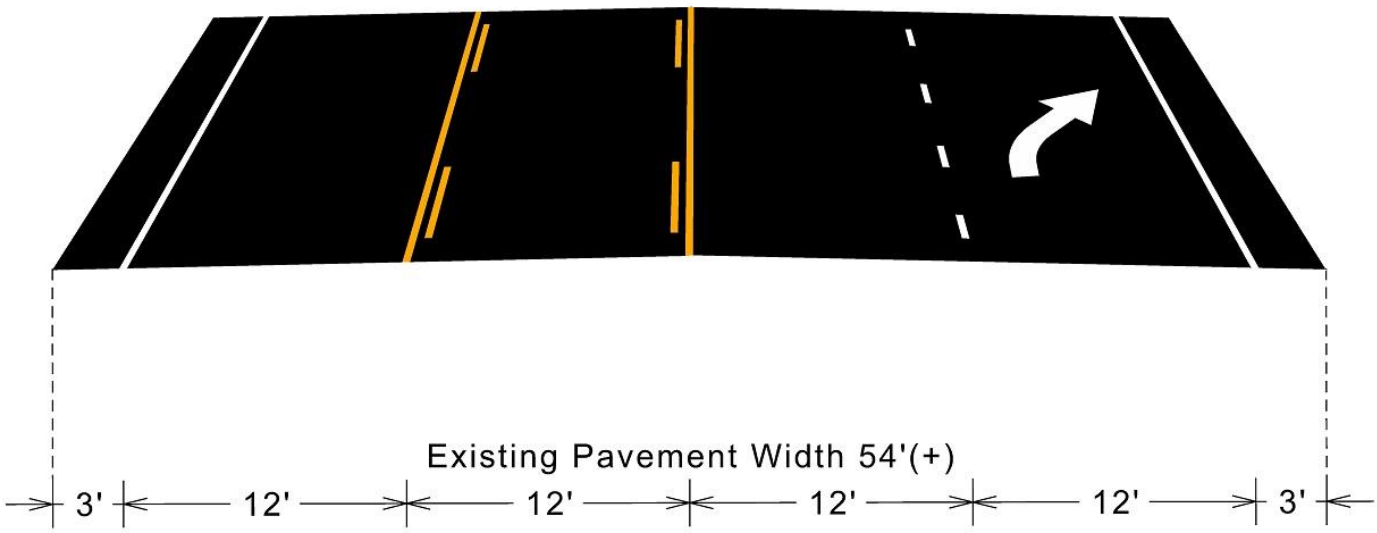
6' | 14' | 14' | 14' | 6'

Lottsburg (West of 500' East of Rte 626)
Burgess (East of Rte 200)

ROUTE 360 ROAD DIET
PROPOSED LANE WIDTHS
FOR FOUR-LANE SEGMENTS



Warsaw (East of Rte 3)



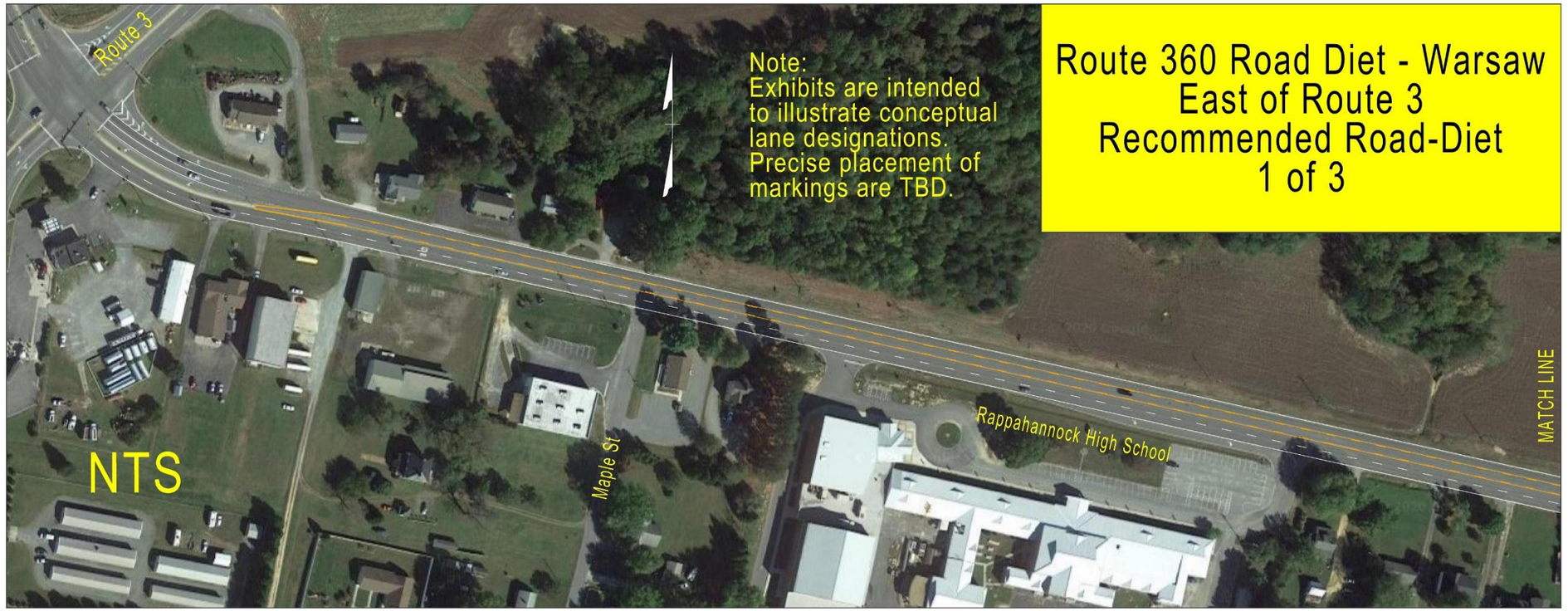
Burgess (West of Rte 200)

ROUTE 360 ROAD DIET

RECOMMENDATIONS

ROUTE 360 ROAD DIET

ROUTE 360 ROAD DIET



Note: Final striping of this section to be coordinated with county's trail project.

RECOMMENDATIONS

ROUTE 360 ROAD DIET

Route 360 Road Diet - Village
Recommended Road-Diet
1 of 2

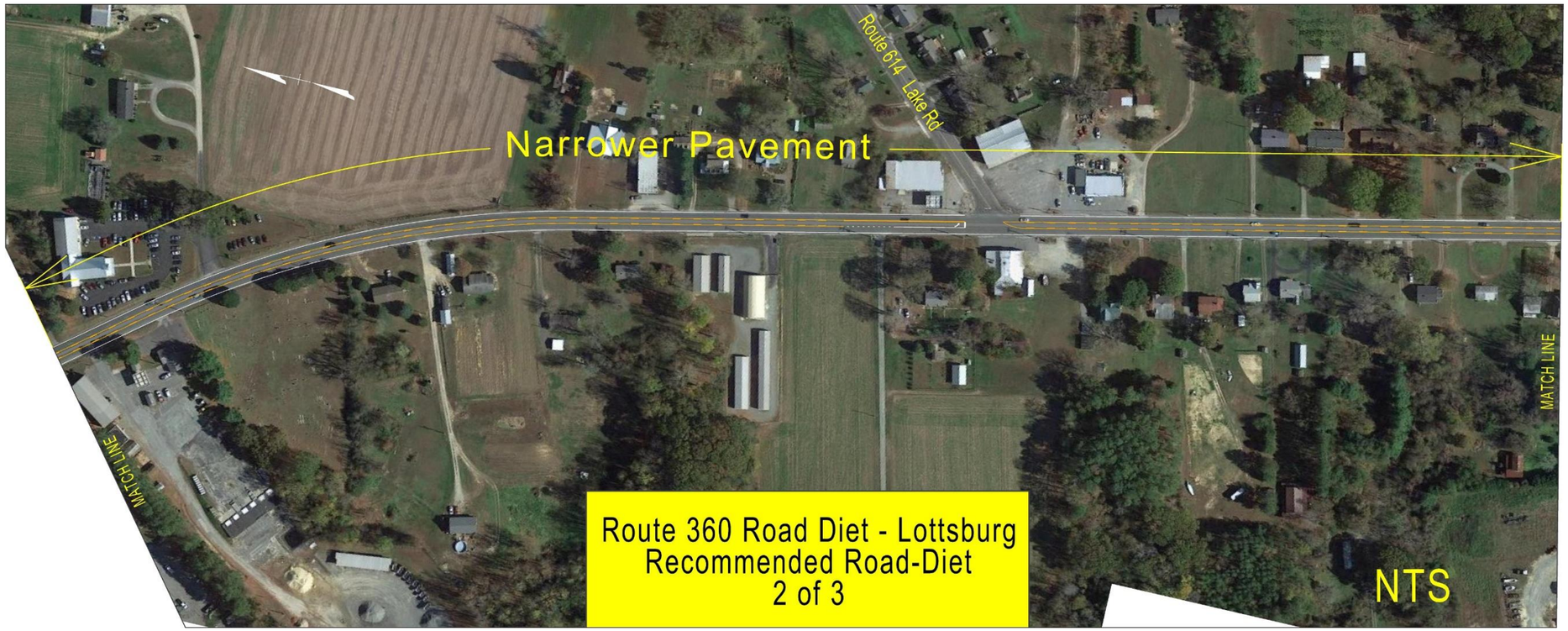
Route 360 Road Diet - Village
Recommended Road-Diet
2 of 2

NTS

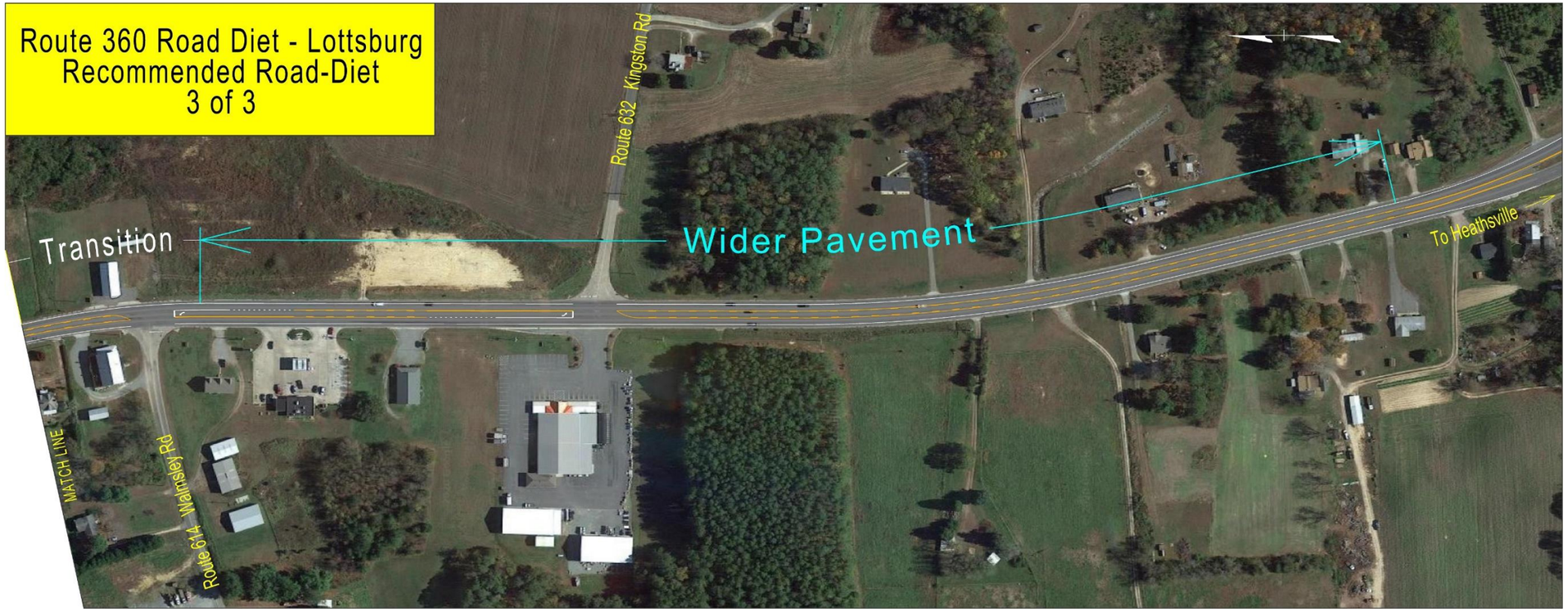
Note:
Exhibits are intended to illustrate conceptual lane designations.
Precise placement of markings are TBD.

RECOMMENDATIONS

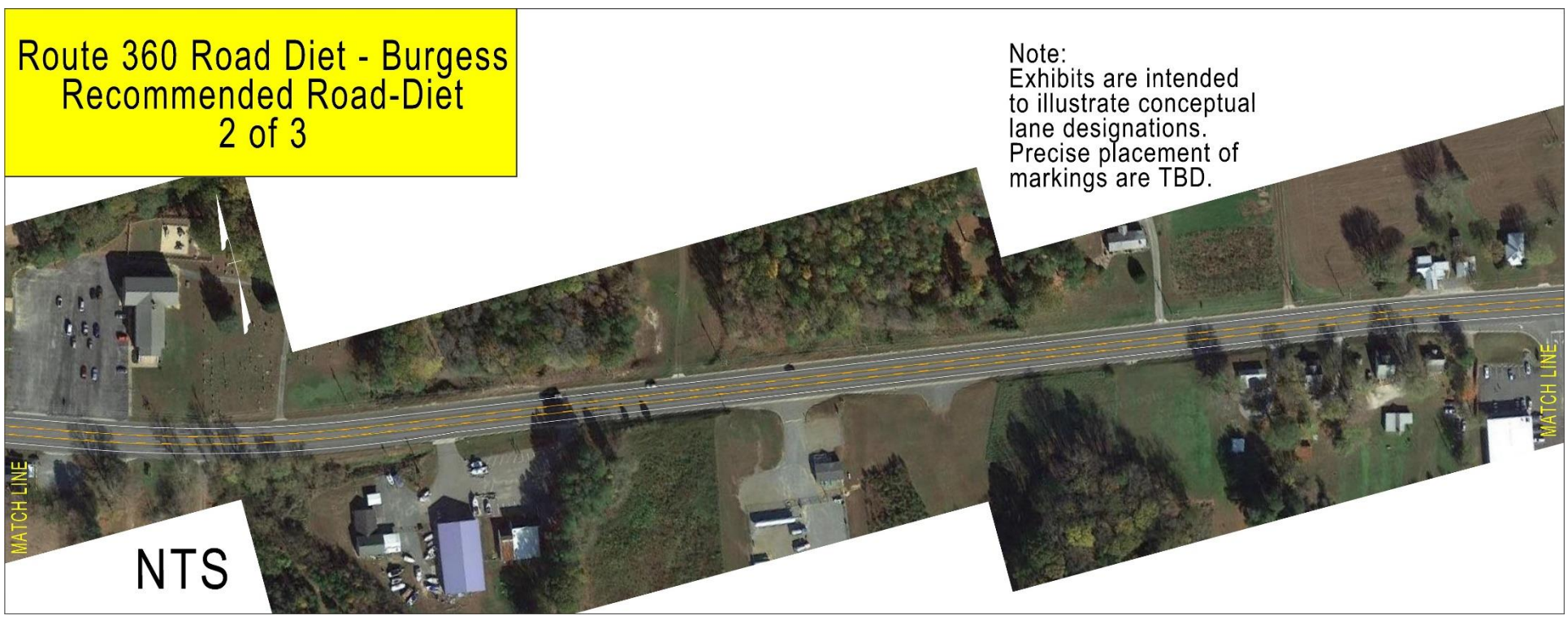
ROUTE 360 ROAD DIET



ROUTE 360 ROAD DIET


Route 360 Road Diet - Lottsburg
Recommended Road-Diet
3 of 3
Route 632 Kingston Rd
Transition
Wider Pavement
To Heathsville
MATCH LINE
Route 614 Walnsley Rd

ROUTE 360 ROAD DIET



RECOMMENDATIONS