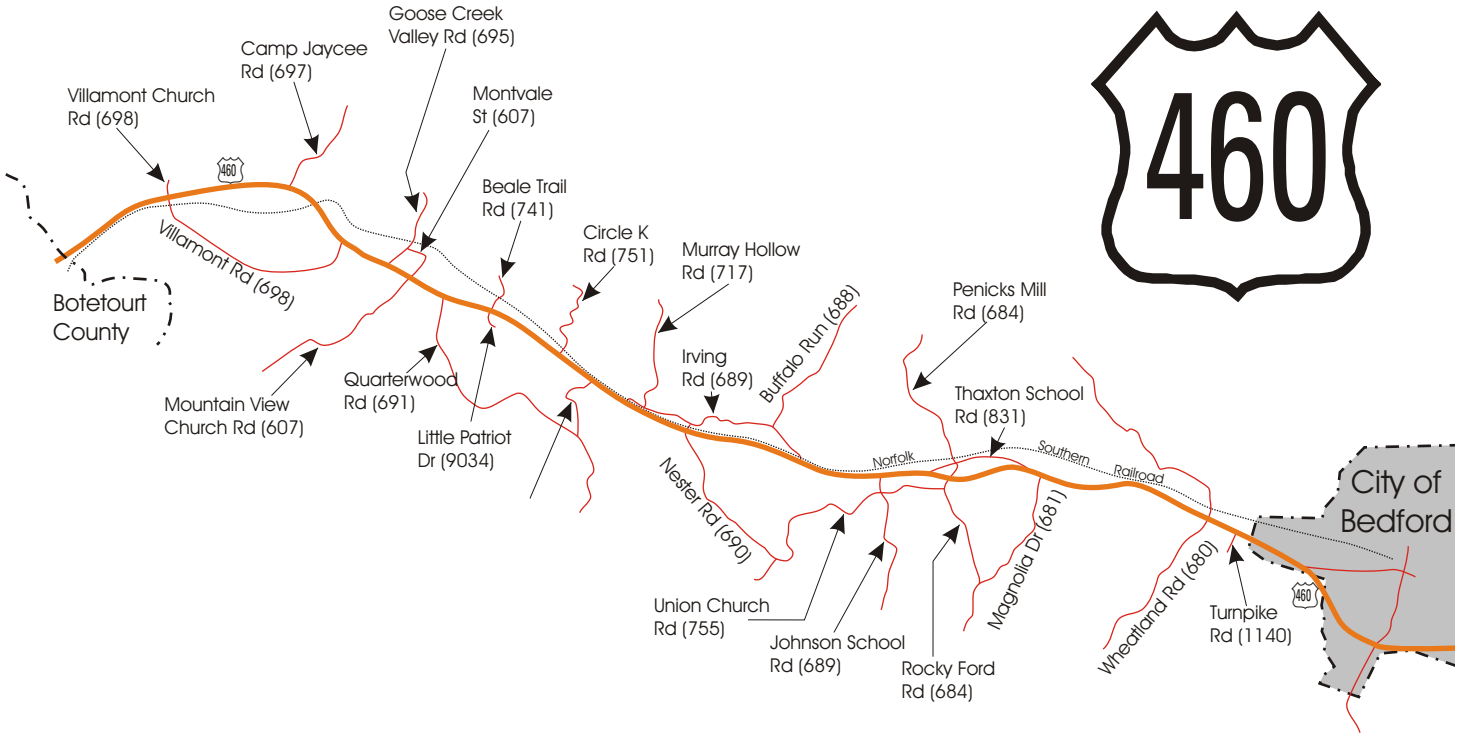
Route 460 West Corridor Study

Bedford County, Virginia



June 2005

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Executive Summary

The Route 460 West Corridor Study examines 14.55 miles of U.S. Route 460 in Bedford County; extending from the Botetourt County line to the western limits of the City of Bedford. This study complements a previous study performed in eastern Bedford County that extended from the eastern limits of the City of Bedford to Route 811 (New London/Thomas Jefferson Road). The previous study, entitled the Route 460 Corridor Study, was published in May of 2004.

Route 460 is a major east-west highway in Virginia, and this important road serves local, regional, and statewide travel demands for the movement of people and goods. It connects Bedford County and the City of Bedford to the metropolitan areas of Lynchburg and Roanoke, and to the major north-south routes of Interstate 81 and U.S. Route 29. Route 460 also plays an important role in connecting various communities in Bedford County to employment, retail, and recreational areas. Functionally classified as a rural principal arterial by the Virginia Department of Transportation (VDOT), Route 460 is a four-lane divided highway with access via at-grade intersections and multiple driveways. There are currently no access points that are controlled by traffic signals in the study corridor.

This study identified transportation concerns and recommendations based on existing roadway operations and geometrics, developed traffic projections to the year 2025, and assessed the ability of the roadway to accommodate year 2025 travel demands. The safety of the existing road was determined through analysis of motor vehicle crash records between January 2001 and December 2003, as well as through field investigations. Public involvement played a key role in the study, and outreach meetings to stakeholders and the general public were held in January and March 2005 to assist in identifying transportation concerns, and to allow for public review and comment on preliminary recommendations. Public hearings to take official comment were held as part of the review and adoption process by the Bedford County Planning Commission and Board of Supervisors.

This study found that, while traffic operations and safety were generally good in the study corridor today, there are particular locations that create major safety concerns for those who live and work in the corridor. These locations include the vicinity of Camp Jaycee Road (Route 697), the eastbound lanes of Route 460 in the vicinity of Wilkerson Mill Road (Route 726), the mix of traffic speeds and high number of access points through the community of Montvale, sight distance concerns in the vicinity of Penicks Mill Road (Route 684), and the safety of several other crossovers throughout the corridor. Attendance at public meetings for this study was quite good, and was indicative of the safety concerns of those who use Route 460.

Increased travel demands between now and the horizon year of 2025 will also put substantial pressures on the ability of many intersections in the study corridor to safely and effectively accommodate future travel demands. Motorists entering Route 460 from 5 of the 6 unsignalized intersections that were analyzed would experience travel delays in

excess of what VDOT considers acceptable by the year 2025 (VDOT considers level of service C or better acceptable). It is important to note that the delays will be the result, primarily, of the increasing traffic volumes on Route 460. Such delays, therefore, could be expected at other intersections in the corridor that were not analyzed. Increased traffic on Route 460 and side streets is also expected to exacerbate some of the existing safety concerns that were identified by the study.

There are a total of 332 access points in the existing study corridor today (counting both directions on Route 460), or an average of 22.8 access points per roadway mile. New development in the study corridor is likely to increase the number of access points, and it is the desire of Bedford County to develop plans for a rational access plan that will support growth in the corridor without undue adverse impacts to traffic flow and safety. This study assessed the potential benefits of access management in the corridor and recommends an access plan as well as improvements to better accommodate localized circulation as well as through traffic.

The study recommendations include short-, mid-, and long-term improvements. Short-term improvements are those that could be implemented within the next five years based on limited costs and environmental impacts. Mid-term recommendations are anticipated for the 5 to 10 year timeframe, while long-term recommendations would be implemented within the 10 to 20 year timeframe. Because many of the transportation concerns in the study corridor are anticipated in the future, the study recommendations would put in place plans to mitigate any future concerns. Rather than having to retro-fit solutions to major problems that are already on the ground, the study recommendations will assist Bedford County in directing growth in the corridor in an orderly manner that supports both longer-distance through traffic as well as local circulation and access concerns.

The study recommendations include a combination of roadway upgrades and planning initiatives. These upgrades and planning initiatives will allow the corridor to safely and efficiently serve multiple uses rather than function as a typical suburban corridor with closely spaced traffic signals and strip development. Route 460 is recommended to ultimately have a cross-section that includes an 11-foot paved shoulder lane, which would improve safety, assist with safe U-turns, serve bicycle travel, and provide deceleration lanes for turning traffic. Wherever possible, side roads are recommended to be consolidated to a minimum number of access points, and would align with locations where median crossovers are recommended. Locations where traffic signals would be ultimately needed (whether in the 20-year study horizon or beyond) would be ideally spaced only every 2 miles, with minimum spacing no closer than 1 mile.

The short-, mid-, and long-term recommendations of this study implement the goals described above. The recommendations are summarized below:

- Changes to the Bedford County Comprehensive Plan to provide the policy foundation for zoning and regulatory procedures that can be used to preserve the functionality and safety of Route 460.

- Update to the Corridor Overlay District portion of the Bedford County Zoning Ordinance to incorporate access management elements for this important corridor.
- Ultimate construction of an 11-foot paved shoulder lane along the entire length of Route 460.
- The construction of several sections of roadway running generally parallel to Route 460 and providing for improved access to Route 460 at a limited number of access points that are located in areas with good sight distances and where full turn lanes can be provided at the crossover.
- Designation of median crossovers at an appropriate spacing to serve both existing and future mobility and accessibility needs. The expenditure of funds to improve any median crossovers that are not so designated is not recommended, and these non-designated crossovers would ultimately be closed. Access for existing and future land uses would be focused on the designated long-term crossover locations.
- Align or re-align side roads in several locations so that two T-intersections are converted to a single 4-leg intersection, or existing 4-leg intersections are re-designed and/or shifted to safer locations. These include: the area around Camp Jaycee Road (Route 697), Roswell Lane, and Fluff Road; the area around Quarterwood Road (Route 691) and Colonial Fort Drive; the area around Thaxton School Road (Route 831 West), and Penicks Mill Road and Rocky Ford Road (Route 684); and the extension of the east end of Thaxton School Road (Route 831 East) to align with Magnolia Drive (Route 681).
- Develop parallel roads that match and tie into the concepts being considered within the City of Bedford for improving access and safety in the western part of the City.

Because the proposed improvements address a variety of transportation needs, including roadway safety, bicycle travel and safety, and access to properties, there are a number of potential funding sources. The primary sources for such funds include:

- Federal grant programs such as the Transportation Enhancement Program Funds, the Recreational Trails Program Funds, or the Transportation Community and System Preservation Funds;
- Federal Surface Transportation Funds that are designating by VDOT for either the Hazard Elimination Safety (HES) program or the Bicycle and Pedestrian Safety Program;
- The VDOT-administered Revenue Sharing Program, which shares the costs of roadway maintenance and improvements equally between the state and local governments;
- Private sources, including proffers to construct all or portions of access or circulation roads, or dedication of rights-of-way for the construction of such roadways.

Chapter 1 – Existing Conditions

US Route 460 is one of the primary east-west roadways in Virginia, extending from Norfolk to the West Virginia border just north of Bluefield, West Virginia. Approximately 31 miles of Route 460 are located in Bedford County. Functionally classified as a rural principal arterial, Route 460 plays an important role in carrying people and goods within and through Bedford County. It connects Bedford County and the City of Bedford to the metropolitan areas of Lynchburg and Roanoke, and to the major north-south routes of Interstate 81 and Route 29. As one of Bedford County's major roadway corridors, Route 460 plays an important role in connecting various communities to employment, retail, and recreational areas. Recognizing the value of this roadway, the Route 460 Corridor Management Study was performed to develop plans and recommendations that will ensure safe and efficient transportation for both today's users as well as those in the future.

This report documents the study of Route 460 in the western portions of Bedford County, between the Botetourt County line and the City of Bedford. A previous study, published in May of 2004, covered Route 460 in eastern Bedford County between the City of Bedford and Route 811 (Thomas Jefferson Road). This current study of Route 460 West mirrors the approach and methodology used for the Route 460 East Corridor.

This study identified transportation concerns and recommendations based on existing conditions (traffic and roadway geometrics), and identified recommendations to address these same concerns for a planning horizon of 20 years (the planning horizon for this study is 2025). While there are a number of current traffic and safety concerns on existing Route 460, the passage of time and increases in traffic between now and 2025 will exacerbate these concerns. Identifying recommendations to address these concerns before they become major problems allows for better overall transportation and land use planning.

Expected increases in traffic on Route 460 that mirror the traffic growth trends of the past 10 years will add to the delays that motorists experience turning onto Route 460 from side streets will increase and safety concerns will grow. New development will bring new driveways where the speed changes from vehicles entering and exiting Route 460 create new conflict points that are potential crash locations. This corridor transportation plan provides the planning framework for improvements that can be made in advance of the expected increases in development and traffic and can assist in directing how new development will access Route 460.

As shown in Exhibit 1, this study extends 14.55 miles from the Botetourt County Line to the corporate limits of the City of Bedford.

1.1 Roadway Geometry

Throughout the study area, Route 460 is a four-lane divided highway with varying median and shoulder widths. As with many four-lane highways in Virginia, two of the

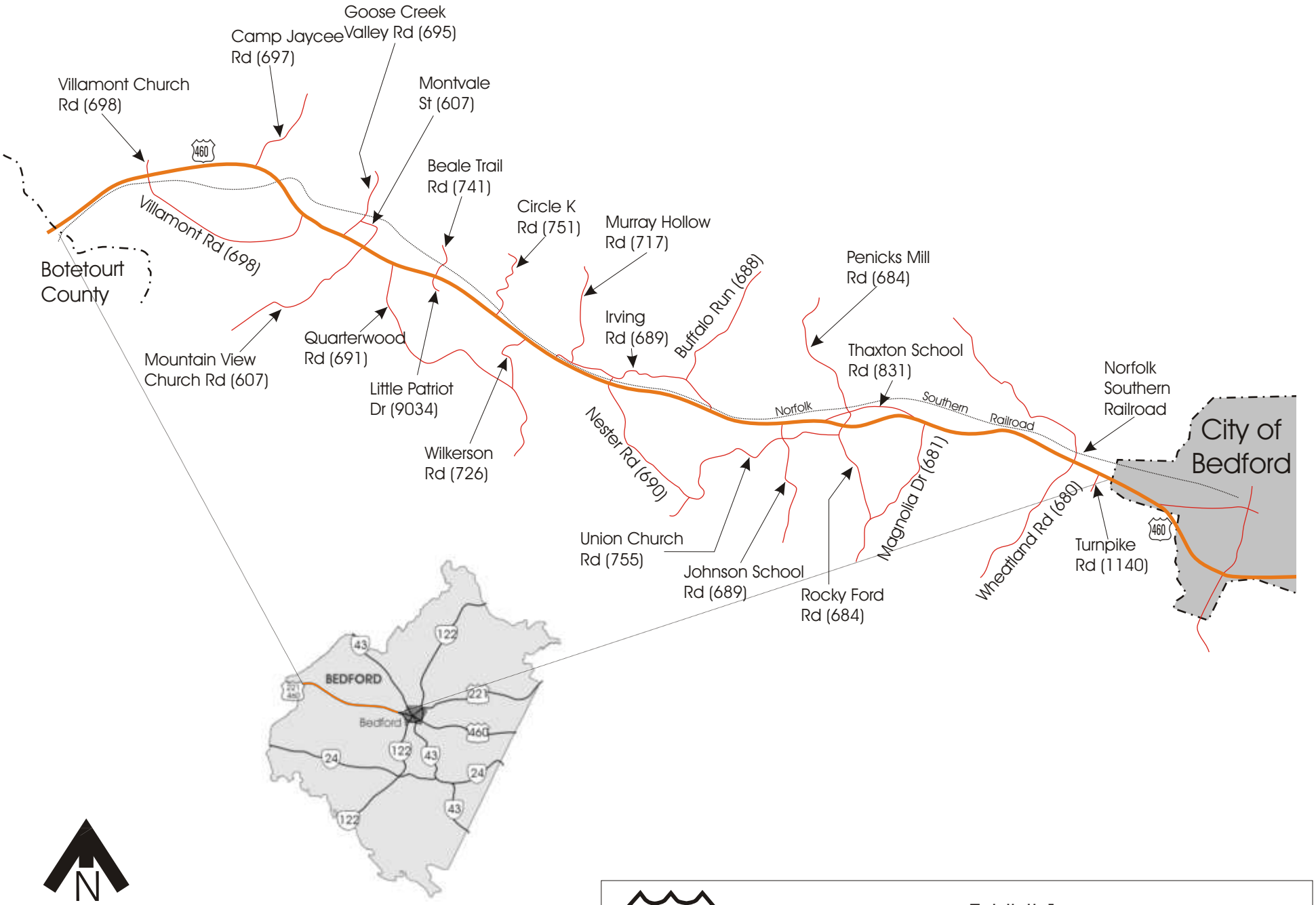


Exhibit 1

Study Corridor

Bedford County Route 460 West Corridor Study

travel lanes in portions of the study area are on the roadbed of the original two-lane highway. These two lanes were built to older vertical and horizontal geometric standards, and are generally more hilly with tighter curves. The result is that some sections of Route 460 through the study area do not meet current standards. For most of Route 460 through the study area, the posted speed limit is 55 miles per hour. The exceptions are a section near the western end of the study area near Botetourt County and portion of Route 460 through the community of Montvale. In these areas, the speed limit is reduced to 45 miles per hour.

All of the intersections on Route 460 are controlled by stop signs on the side streets. Except for Route 9034 (Little Patriot Drive), which has a right turn lane for going eastbound on Route 460, all of the side street approaches in the study corridor are single lanes with no separate turn lanes for right or left turns.

Including side roads and driveways, there are 332 access points on Route 460 through the study area. This represents an average of 22.8 access points per mile (combining both directions on Route 460). These access points are shown in Exhibit 2. In addition, there are 86 median breaks, an average of just under 6 per mile.

Exhibit 2
Summary of Access Points

From	To	Distance (miles)	Number of access points			Number of access points per mile		
			EB	WB	Total	EB	WB	Total
Botetourt County Line	Villamont Road (698)	1.39	14	15	29	10.1	10.8	20.9
Villamont Road (698)	Camp Jaycee Road (697)	1.37	17	14	31	12.4	10.2	22.6
Camp Jaycee Road (697)	Goose Creek Valley Road (695)	1.42	23	18	41	16.2	12.7	28.9
Goose Creek Valley Road (695)	Mountain View Church Rd (607)	0.30	4	7	11	13.3	23.3	36.7
Mountain View Church Rd (607)	Little Patriot Drive (9034)	0.95	8	20	28	8.4	21.1	29.5
Little Patriot Drive (9034)	Circle K Drive (751)	0.92	6	6	12	6.5	6.5	13.0
Circle K Drive (751)	Irving Road (689)	0.91	3	2	5	3.3	2.2	5.5
Irving Road (689)	Nester Road (690)	0.74	6	1	7	8.1	1.4	9.5
Nester Road (690)	Johnson School Road (689)	2.25	20	14	34	8.9	6.2	15.1
Johnson School Road (689)	Rocky Ford Road (684)	0.76	5	9	14	6.6	11.8	18.4
Rocky Ford Road (684)	Thaxton School Road (831)	0.85	7	11	18	8.2	12.9	21.2

Exhibit 2

Summary of Access Points

From	To	Distance (miles)	Number of access points			Number of access points per mile		
			EB	WB	Total	EB	WB	Total
Thaxton School Road (831)	Wheatland Road (680)	2.18	38	41	79	17.4	18.8	36.2
Wheatland Road (680)	Bedford City Line	0.51	12	11	23	23.5	21.6	45.1
	TOTALS	**14.55**	**163**	**169**	**332**	**11.2**	**11.6**	**22.8**

Note: EB – on eastbound lanes; WB – on westbound lanes

1.2 Traffic Data

Traffic counts were performed on Route 460 in October and November of 2004. Forty-eight hour machine counts were performed on three segments of Route 460 and at seven locations on side roads off of Route 460. These counts were performed on weekdays (excluding Monday mornings and Friday afternoons) and classified vehicles by type (i.e., car and truck). The locations for these 48-hour machine counts and the 24-hour volumes at each location are summarized in Exhibit 3. For all locations in the corridor, the highest daily volumes occurred between the hours of 4:00 and 6:00 p.m. The morning peak period was generally between 7:00 and 9:00 a.m.

Exhibit 3

Summary of Segment Counts

Count Location	24-Hour Traffic	AM Peak Hour Volumes		PM Peak Hour Volumes		Percent Trucks/Buses	
		East/ North-bound	West/ South-bound	East/ North-bound	West/ South-bound	Single Unit	Multi-Unit
Route 460 at Lynn Lane (Route 802) -- East of County Line	16,948	474 (40%)	723 (60%)	733 (55%)	590 (45%)	6%	16%
Route 460 west of Nester Road (Route 690) -- Middle of study corridor	14,641	504 (48%)	548 (52%)	563 (51%)	546 (49%)	7%	15%
Route 460 west of Wheatland/Patterson Mill Road (Route 680)	16,425	575 (51%)	542 (49%)	624 (49%)	645 (51%)	6%	14%
Route 695 (Goose Creek Valley Road) north of Route 460	1,911	21 (14%)	129 (86%)	128 (74%)	45 (26%)	5%	1%
Route 607 (Mountain View Church Road) south of Route 460	703	25 (51%)	24 49%)	19 (35%)	35 (65%)	6%	17%
Route 726 (Wilkerson Mill Road) south of Route 460	652	45 (87%)	7 (13%)	17 (30%)	40 (70%)	7%	1%

Exhibit 3

Summary of Segment Counts

Count Location	24-Hour Traffic	AM Peak Hour Volumes		PM Peak Hour Volumes		Percent Trucks/Buses	
		East/ North-bound	West/ South-bound	East/ North-bound	West/ South-bound	Single Unit	Multi-Unit
Route 688 (Buffalo Run) north of Irving Road (Route 689)	393	9 (35%)	17 (65%)	17 (47%)	19 (53%)	9%	1%
Route 680 (Wheatland Road) south of Route 460	1,041	52 (79%)	14 (21%)	39 (38%)	63 (62%)	5%	1%
Route 680 (Patterson Mill Road) at railroad overpass north of Route 460	628	7 (19%)	30 (81%)	37 (64%)	21 (36%)	9%	3%
Route 684 (Rocky Ford Road) south of Union Church Road (Route 755)	270	11 (61%)	7 (39%)	11 (38%)	18 (62%)	18%	4%

Notes: The percent of traffic traveling in each direction is shown in parenthesis. Multi-unit trucks are tractor trailers.

Intersection turning movement counts were performed at six locations in the corridor. These counts were conducted in November 2004. The counts were conducted on weekdays between the hours of 7:00 and 9:00 a.m. and 4:00 and 6:00 p.m. at the following locations:

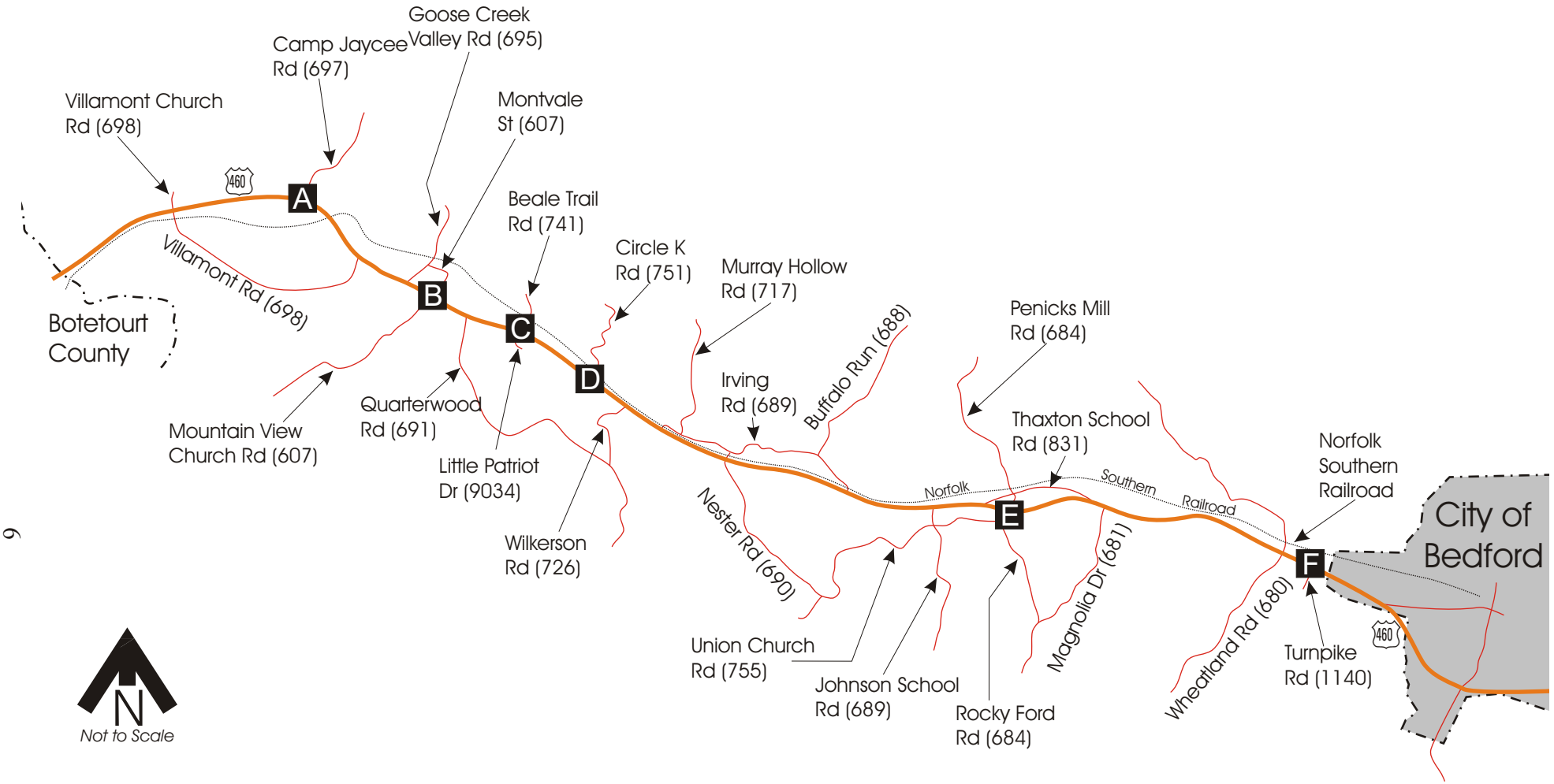
A. Route 460 at Camp Jaycee Road (697)
B. Route 460 at Mountain View Church Road/Montvale Road (607)
C. Route 460 at Circle K Road (751)
D. Route 460 at Little Patriot Drive (9034)/Beale Trail (741)
E. Route 460 at Penicks Mill Road/Rocky Ford Road (684)
F. Route 460 at Turnpike Road (1140)

Peak hour turning movements for the a.m. and p.m. peak hour are shown in Exhibits 4 and 5, respectively.

1.3 Safety Analysis

Roadway safety in the study corridor was assessed based on an analysis of vehicle crash records for the three-year period from January 2001 through December 2003. There were a total of 187 vehicular crashes during this period, with the totals in each successive year remaining approximately the same (62 in 2001, 63 in 2002, and 62 in 2003).

The analysis of accidents included assessing the total number of accidents in any calendar year and identifying trends in the number and/or types of accidents at various locations. Locations with high numbers of accidents relative to the entire study corridor were analyzed in conjunction with field investigation to determine potential causes and recom-



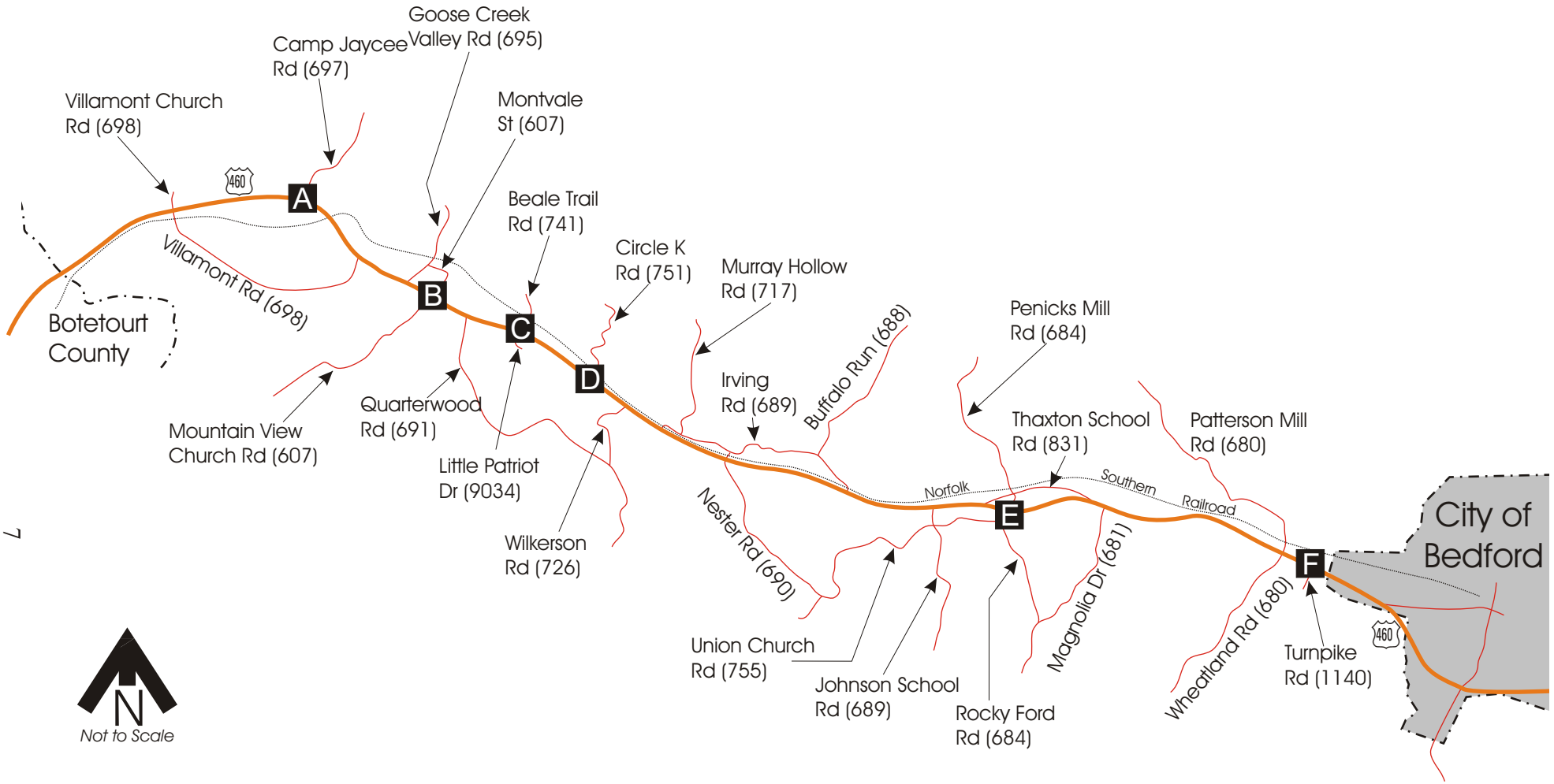
A Rt 697			B Rt 607			C Rt 9034		
		3			7			18
23	9	848	5	0 5	600	23	20 19	549
					21			44
6			8		24 5 34	10		31 11 12
512			499			476		
			11			66		

D Rt 751			E Rt 684			F Rt 1140		
		1			1			657
1	1	546	0	0 3	406			62
					1			
0			1		7 4 4			3 16
443			530			819		
			6			9		

Exhibit 4

Year 2004 AM Peak Hour Turning Movements

Bedford County Route 460 West Corridor Study



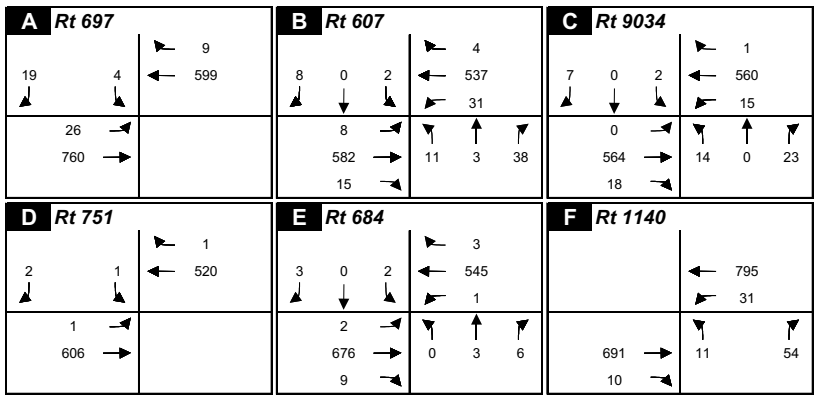


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Exhibit 5

Year 2004 PM Peak Hour Turning Movements

Bedford County Route 460 West Corridor Study

mended solutions. The analysis was also supplemented by field observations of traffic safety and by input from the general public, Bedford County officials, and the VDOT Bedford Residency.

For comparison with similar roadway facilities across the Commonwealth, accident rates were also calculated based on both total accidents per 100 million vehicle miles (MVM) and for equivalent property damage only (PDO) accidents per 100 million vehicle miles. Accident rates for intersections are based on the number of accidents as compared to the total number of vehicles that enter the intersection. The calculation is based on annual accidents as compared to annual entering vehicles (measured in millions). For roadway segments, the calculation compares total annual accidents to total vehicle miles (number of annual vehicles times the length of the segment in miles). The increased severity and cost associated with accidents involving injuries or fatalities is accounted for by calculating the PDO equivalent. Standard methodologies used by VDOT factor a fatal accident by 12, an injury accident by 3, and a PDO accident by 1 to calculate PDO equivalents.

For the entire study corridor, there were 75.15 accidents per 100 million vehicle miles and 143.48 equivalent PDO accidents per 100 million vehicle miles. This accident rate is less than average within the Commonwealth. In 2000, the average crash rate on Virginia primary arterials was 157 per 100 million vehicle miles. Additional corridor-wide accident statistics are shown in Exhibit 6.

Exhibit 6
Corridor-Wide Accident Summary

Category	Attribute	Number of Accidents	Percent
Total accidents over three years		187	
Year Breakdown	2001	62	33.2%
	2002	63	33.7%
	2003	62	33.2%
Accident Type	Rear-End	23	12.3%
	Angle	30	16.0%
	Head-On	0	0.0%
	Sideswipe	9	4.8%
	Fixed Object	113	60.4%
	Other	12	6.5%
Time of Day	Daylight	91	48.7%
	Dark	81	43.3%
	Dawn or Dusk	15	8.0%
Crash Severity	Property Damage Only	111	59.3%
	Injury	74	39.6%
	Fatality	2	0.1%

Exhibits 7 through 10 show accident statistics by segment and intersection. Exhibit 11 summarizes the accidents that occurred in the corridor by VDOT-designated milepost. This graphic sums accidents by half-mile segment centered at every 0.1-mile interval on Route 460. While this results in accidents being counted more than once (the reader is cautioned not to sum all of the accidents in this graph as it will overestimate total accidents), this graphic is useful in identifying geographically where accidents are occurring. Exhibits 7 through 10 and Exhibit 11 indicate that, relative to the study corridor as a whole, those locations with safety concerns include the following:

- the intersection and vicinity of Camp Jaycee Road (Route 697)
- the vicinity of Route 607 in Montvale (Mountain View Church Road and Montvale Street)
- the intersection and vicinity of Route 684 (Penicks Mill Road and Rocky Ford Road).

Exhibit 7

Accident Summary by Year

Location Type	From	To	Length (miles)	Accidents By Year			
				2001	2002	2003	All Years
Segment	Start Study (Botetourt County Line)	Camp Jaycee Rd (697)	2.70	11	9	9	29
Intersection	Camp Jaycee Rd (697)			2	3	1	6
Segment	Camp Jaycee Rd (697)	Mountain View Church Road (607)	1.64	6	5	9	20
Intersection	Mountain View Church Road (607)			1	1	3	5
Segment	Mountain View Church Road (607)	Little Patriot Drive (9034)	0.95	5	6	3	14
Intersection	Little Patriot Drive (9034)			1	0	0	1
Segment	Little Patriot Drive (9034)	Circle K Rd (751)	0.95	1	2	3	6
Intersection	Circle K Rd (751)			1	1	1	3
Segment	Circle K Rd (751)	Rocky Ford Rd (684)	4.41	11	11	13	35
Intersection	Rocky Ford Rd (684)			1	2	0	3
Segment	Rocky Ford Rd (684)	Turnpike Rd (1140)	3.34	21	21	18	60
Intersection	Turnpike Rd (1140)			1	1	0	2
Segment	Turnpike Rd (1140)	Bedford City Limit	0.10	0	1	2	3
			TOTALS	**62**	**63**	**62**	**187**

Exhibit 8

Accident Summary by Type

Location Type	From	To	Accident Type					
			Rear-End	Angle	Head-On	Side-swipe	Fixed Object	Other
Segment	Start Study (Botetourt County Line)	Camp Jaycee Rd (697)	4	1	0	2	20	2
Intersection	Camp Jaycee Rd (697)		2	4	0	0	0	0
Segment	Camp Jaycee Rd (697)	Mountain View Church Road (607)	1	3	0	1	10	5
Intersection	Mountain View Church Road (607)		0	5	0	0	0	0
Segment	Mountain View Church Road (607)	Little Patriot Drive (9034)	0	3	0	1	10	0
Intersection	Little Patriot Drive (9034)		0	0	0	0	1	0
Segment	Little Patriot Drive (9034)	Circle K Rd (751)	0	1	0	1	3	1
Intersection	Circle K Rd (751)		0	0	0	0	3	0
Segment	Circle K Rd (751)	Rocky Ford Rd (684)	3	3	0	1	27	1
Intersection	Rocky Ford Rd (684)		2	1	0	0	0	0
Segment	Rocky Ford Rd (684)	Turnpike Rd (1140)	10	8	0	3	36	3
Intersection	Turnpike Rd (1140)		0	0	0	0	2	0
Segment	Turnpike Rd (1140)	Bedford City Limit	1	1	0	0	1	0

Exhibit 9

Accident Summary by Light Conditions and Severity

Location Type	From	To	Light Conditions			Severity		
			Day-Light	Dark	Dawn/ Dusk	Property Damage Only	Injury	Fatality
Segment	Start Study (Botetourt County Line)	Camp Jaycee Rd (697)	12	17	0	17	12	0
Intersection	Camp Jaycee Rd (697)		5	1	0	4	1	1
Segment	Camp Jaycee Rd (697)	Mountain View Church Road (607)	12	7	1	9	10	1
Intersection	Mountain View Church Road (607)		4	0	1	4	1	0
Segment	Mountain View Church Road (607)	Little Patriot Drive (9034)	6	7	1	10	4	0
Intersection	Little Patriot Drive (9034)		0	1	0	1	0	0
Segment	Little Patriot Drive (9034)	Circle K Rd (751)	1	4	1	4	2	0
Intersection	Circle K Rd (751)		0	2	1	2	1	0
Segment	Circle K Rd (751)	Rocky Ford Rd (684)	14	17	4	20	15	0
Intersection	Rocky Ford Rd (684)		2	1	0	1	2	0

Exhibit 9

Accident Summary by Light Conditions and Severity

Location Type	From	To	Light Conditions			Severity		
			Day-Light	Dark	Dawn/ Dusk	Property Damage Only	Injury	Fatality
Segment	Rocky Ford Rd (684)	Turnpike Rd (1140)	33	22	5	37	23	0
Intersection	Turnpike Rd (1140)		0	2	0	1	1	0
Segment	Turnpike Rd (1140)	Bedford City Limit	2	0	1	1	2	0

Exhibit 10

Accident Rates

Location Type	From	To	Accidents per Million Vehicles *	Equivalent Property Damage Only Accidents per Million Vehicles *
Segment	Start Study (Botetourt County Line)	Camp Jaycee Rd (697)	61.23	111.91
Intersection	Camp Jaycee Rd (697)		30.84	97.65
Segment	Camp Jaycee Rd (697)	Mountain View Church Road (607)	69.52	177.28
Intersection	Mountain View Church Road (607)		29.41	41.17
Segment	Mountain View Church Road (607)	Little Patriot Drive (9034)	84.01	132.02
Intersection	Little Patriot Drive (9034)		5.82	5.82
Segment	Little Patriot Drive (9034)	Circle K Rd (751)	41.68	69.46
Intersection	Circle K Rd (751)		20.45	34.08
Segment	Circle K Rd (751)	Rocky Ford Rd (684)	52.37	97.27
Intersection	Rocky Ford Rd (684)		19.58	45.70
Segment	Rocky Ford Rd (684)	Turnpike Rd (1140)	105.67	186.69
Intersection	Turnpike Rd (1140)		9.17	18.35
Segment	Turnpike Rd (1140)	Bedford City Limit	176.47	411.77

** -- For segments, rate is per 100 million vehicle miles traveled (MVMT). For intersections, rate is per 100 million entering vehicles (MEV).*

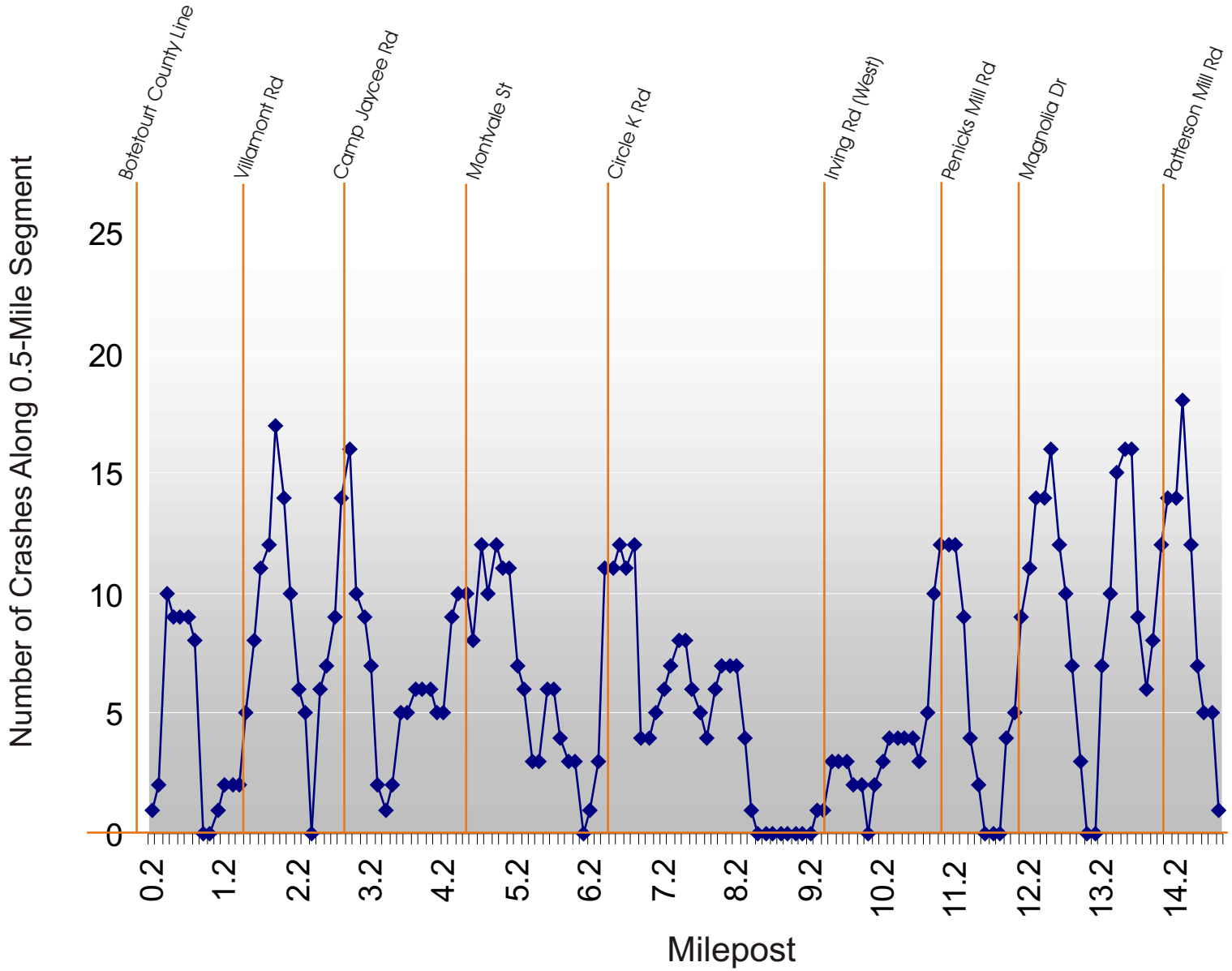
1.4 Roadway Operations Analyses

Traffic operations in the study corridor were analyzed using the concept of levels of service. The analysis grades traffic operations as a level of service rating from A to F, with A representing excellent traffic flow with minimal delays and F representing failure in traffic operations and very long delays. For most areas in the state, including the section of Route 460 examined in this study, VDOT rates levels of service A, B, or C as

Exhibit 11

Locations of Crashes (2001-2003)

Bedford County Route 460 West Corridor Study



Note: The points on this graph show the total number of motor vehicle crashes along a 0.5 mile segment of Route 460 centered on a particular milepost. These values are shown every 0.1 mile. Crashes, therefore, are shown in multiple segments.

acceptable and levels of service D, E, or F as unacceptable. The level of service analysis using grades A through F was used for all the intersections in the study corridor.

As shown in Exhibit 12, all of the roadway segments analyzed operate at level of service A for existing conditions. The intersection at Little Patriot Drive (Route 9034) and Beale Trail Road (Route 741) operates at an unacceptable level of service D as shown in Exhibit 13.

Exhibit 12
Summary of Segment Level of Service (Existing Conditions)

Segment		24-Hour Traffic	AM Peak Hour Level of Service	PM Peak Hour Level of Service
From	To			
Botetourt County East Corporate Limits	Route 751 (Circle K Road)	16,948	A	A
Route 751 (Circle K Road)	Route 831 West (Thaxton School Road)	14,641	A	A
Route 831 West (Thaxton School Road)	City of Bedford West Corporate Limits	16,425	A	A

Exhibit 13
Summary of Intersection Level of Service (Existing Conditions)

Intersection of Route 460 with:	2004	
	AM Peak	PM Peak
Route 697 (Camp Jaycee Rd)	C	B
Southbound approach delay	17.0	13.2
Route 607 (Mountain View Church/Montvale)	C	C
Southbound approach delay	19.0	13.7
Northbound approach delay	19.1	16.2
Route 751 (Circle K Rd)	B	B
Southbound approach delay	13.6	12.8
Route 9034 (Little Patriot Drive)	D	C
Southbound approach delay	28.3	13.4
Northbound approach delay	30.2	16.1
Route 684 (Penicks Mill/Rocky Ford Rd)	C	C
Southbound approach delay	17.3	15.6
Northbound approach delay	17.3	17.3
Route 1140 (Turnpike Rd)	C	C
Northbound approach delay	15.7	15.5

1.5 Public Participation and Input

The traffic engineering analysis described in this chapter provides an objective and quantitative assessment of transportation operations and safety in the study corridor. Some transportation concerns do not become apparent through engineering analyses, however, and are best identified by speaking with those who live, work, and/or travel the corridor. To collect this important input, public meetings were held in the study corridor on January 25, 2005 and March 15, 2005. Approximately 50 people attended the January meeting and several others provided comments either by e-mail or telephone. The discussions and comments are summarized below.

Safety was, in general, cited as the primary concern in the study corridor. Concerns related to crossovers, intersection alignments, curves in the roadway, and traffic speeding. Recommended improvements to address safety in general include the construction of turn lanes and the use of reflective paint to better delineate lanes and crossovers. Location-specific recommendations include:

- Add turn lanes in both directions at Camp Jaycee Road (Route 697). This location is a major safety problem. Limited sight distance looking to the east was cited as a problem at this intersection, as was the elevation difference between the eastbound and westbound lanes. The traffic speeds from vehicles going eastbound on Route 460 approaching this intersection from the vicinity of the Woodhaven Nursing Home was also cited as a concern. Consideration of adding a stop bar on Camp Jaycee Road was requested.
- A need was cited for a westbound acceleration lane at the entrance to the Boxley Materials location on the north side of Route 460 near the Botetourt County line.
- A turn lane is needed at the entrance to the Robincrest Park community just west of Nester Road (Route 690).
- A comment was made concerning the negative impact that closure of crossovers would have on businesses in the Montvale area. The study team was asked to consider the effects that such closures would have on businesses.
- The need for a turn lane at Magnolia Drive (Route 681) was cited due to heavy traffic volumes.
- Flooding from Goose Creek has occurred on Wilkerson Mill Road and also at a curved bridge near the Mount Zion Church. Suggestions were made to close the Wilkerson Mill dam and dredge underneath the bridges by the Mount Zion Church.
- It was suggested that a turn lane is needed at Hogan Road, just west of the Villamont community.
- Safety concerns were cited at Quarterwood Road (Route 691) in the community of Montvale.

- A sight distance problem was cited with respect to eastbound traffic at Johnson School Road (Route 689 East).
- It was suggested that there is an overall need to improve the definition and delineation of driveways to increase safety in the corridor.

The focus of the second study meeting was to review preliminary recommendations. Comments from the general public are summarized below.

- The Route 460 bridges over Goose Creek west of Circle K Road (Route 751) are deficient and need to be replaced. There are drainage issues related to swampy areas at this location.
- A concern was cited that new roads and crossover improvements need to be made prior to implementing many of the proposed crossover closures.
- The speed limit of 45 miles per hour through Montvale should be made mandatory rather than advisory.
- The westbound lane near the Mount Zion Church (west of Circle K Road and the Goose Creek bridges) where school buses pull off and children shift from one bus to another needs to have a right turn (deceleration) lane constructed.
- A question was asked about whether the rights-of-way for the 11-foot paved shoulder lane were already owned by the Virginia Department of Transportation (VDOT). Some of this right-of-way is owned by VDOT, but not all.
- A concern was cited about the number of crossovers proposed to be closed in the area just west of Circle K Road. A preference was cited to close the crossover at Circle K Road and leave the crossover immediately to the west of Circle K Road open with improvements.
- Woodhaven Nursing Home cited the need for a crossover to service ambulances and emergency vehicles and indicated that they were working with VDOT to shift the current crossover west to provide additional spacing between a crossover location and Camp Jaycee Road (Route 697).
- A comment was provided that the length of the school zone for Montvale Elementary was excessively long.
- Improvements such as constructing a paved shoulder lane for safety, turns, and refuge for those who make u-turns were generally supported.

All of these comments were considered in developing and/or revising the recommendations described in Chapter 3 of this report.

Chapter 2 – Year 2025 Traffic Forecasts and Operations

The transportation recommendations developed for this study are intended to accommodate both existing travel demands and demands to the year 2025. Traffic forecasts for 2025 and analysis of 2025 traffic operations were used to identify future needs and to ensure that the proposed transportation recommendations would adequately and safely accommodate future demand.

2.1 2025 Traffic Forecasts

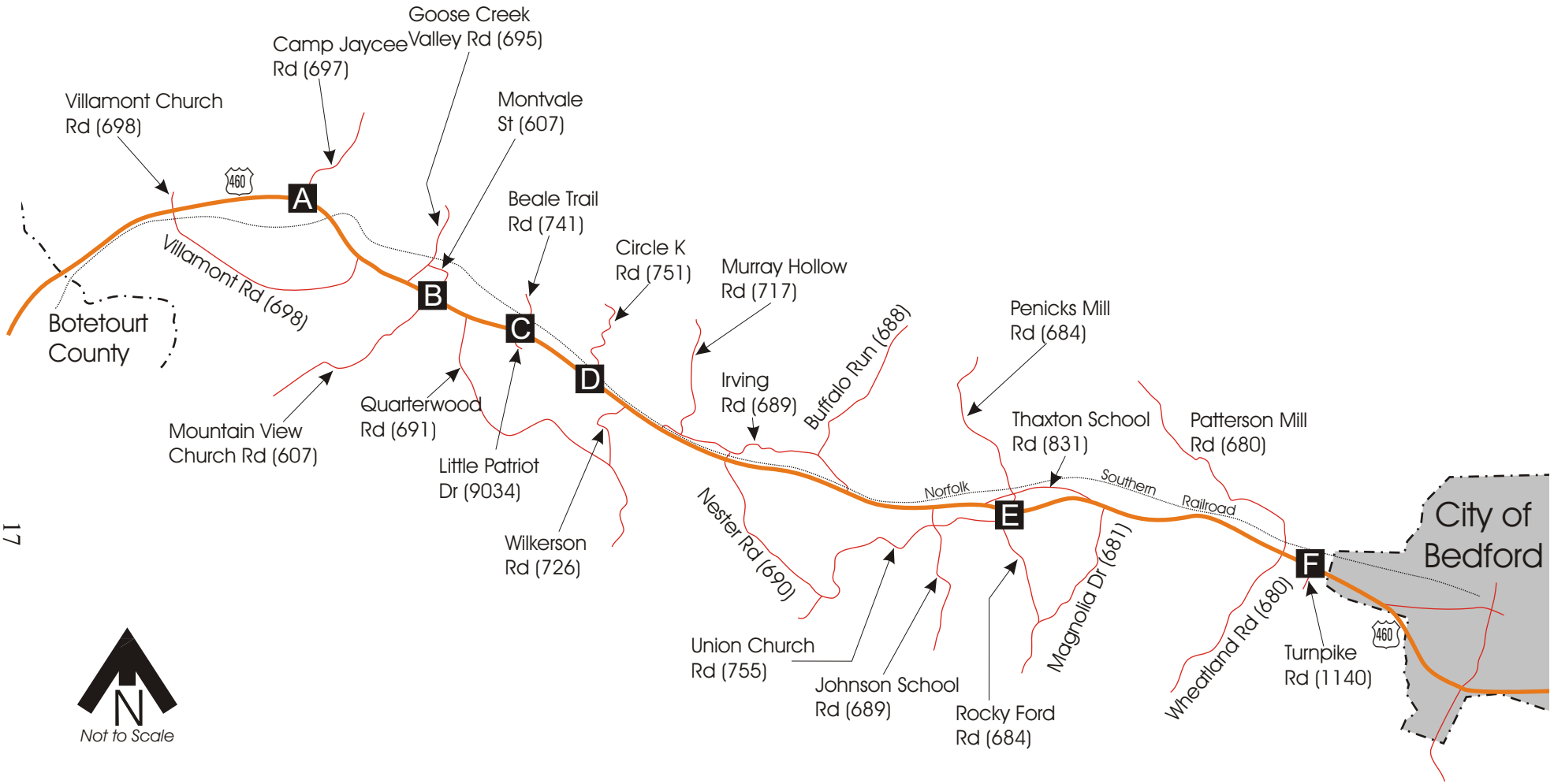
Year 2025 traffic forecasts for this study are based on historic traffic trends along with the traffic expected to be generated by several planned development projects in the corridor. To calculate expected growth in traffic between 2004 and 2025, historic traffic counts collected by VDOT were tabulated along with the 2004 traffic counts performed for this study. In coordination with the Virginia Department of Transportation, an annual growth rate of 1.75 percent per year was used for this study (this growth rate was also consistent with the rate used for the Bedford County Route 460 East Corridor Study). The growth over the 21 years between 2004 and 2025 was 36.8 percent. As is often typical for studies of this type, the growth rates were not compounded but rather multiplied. By not compounding, the growth rate is effectively a constant volume (rather than a constant percentage) per year.

Expected traffic volumes and resulting levels of service for roadway segments on Route 460 are shown in Exhibit 14. Traffic volumes in the corridor are expected to be between 19,600 and 23,600 vehicles per day in the year 2025.

Exhibit 14
Summary of Segment Volumes and Level of Service (Year 2025)

Segment		24-Hour Traffic	AM Peak Hour Level of Service	PM Peak Hour Level of Service
From	To			
Botetourt County East Corporate Limits	Route 751 (Circle K Road)	23,100	A	B
Route 751 (Circle K Road)	Route 831 West (Thaxton School Road)	19,600	A	A
Route 831 West (Thaxton School Road)	City of Bedford West Corporate Limits	23,600	A	A

Peak hour intersection turning movement volumes for the year 2025 are shown in Exhibits 15 and 16.



A Rt 697			B Rt 607			C Rt 9034		
		4			10			25
31	12	1160	7	0 7	821	31	27 26	751
					29			60
8			11			14		
700			682		33 7 46	651		42 15 16
			15			90		

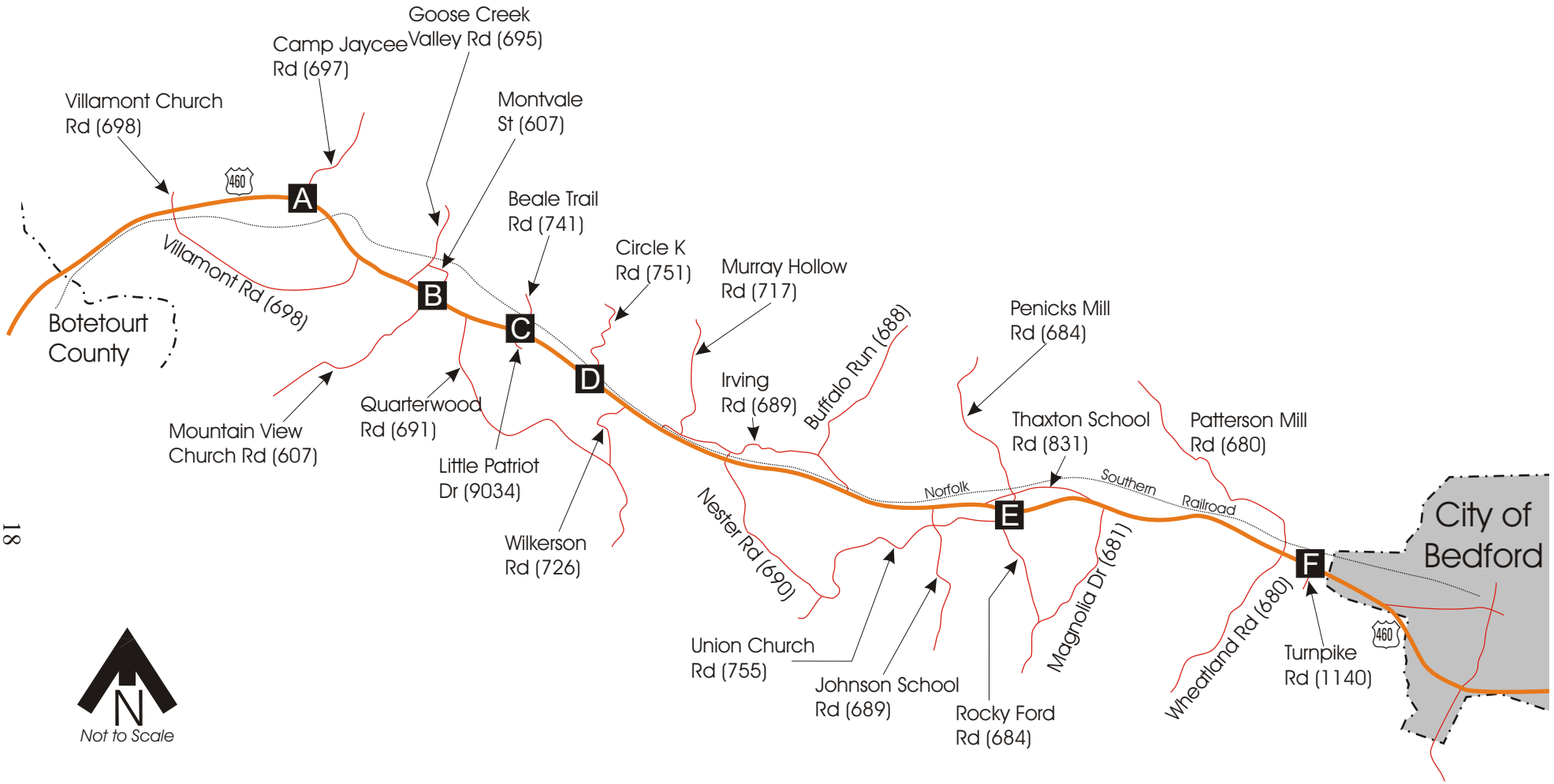
D Rt 751			E Rt 684			F Rt 1140		
		1			1			
1	1	747	0	0 4	555			898
					1			85
0			1					
606			725		10 5 5	1120		4 22
			8			12		

460

Exhibit 15

Year 2025 AM Peak Hour Turning Movements

Bedford County Route 460 West Corridor Study



A Rt 697			B Rt 607			C Rt 9034		
	12			5			1	
26	5	819	11	0 3	734	10	0 3	766
				42				21
36			11			0		
1039			796		15 4 52	771		19 0 31
			21			25		

D Rt 751			E Rt 684			F Rt 1140		
	1			4				
3	1	711	4	0 3	745			1087
				1				42
1			3					
829			924		0 4 8	945		15 74
			12			14		

Exhibit 16

Year 2025 PM Peak Hour Turning Movements

Bedford County Route 460 West Corridor Study

2.2 Year 2025 No-Build Traffic Operations

The No-Build scenario refers to the situation that would occur if no major improvements, only routine maintenance, were made in the study corridor between now and 2025. With increased travel demands and no major improvements, traffic operations in the Route 460 corridor would deteriorate. While the mainline of Route 460 would continue to function adequately (at level of service B as shown previously in Exhibit 14), several intersections in the corridor are expected to experience substantial delays for motorists turning onto Route 460 from side streets. While inadequate level of service does not necessarily indicate that a traffic signal is warranted (a separate traffic signal warrant analysis is required for signal installation), major delays are indicative of both the potential for signalization and of decreased safety as motorists sometimes take greater risks when frustrated with delays. Exhibit 17 shows the results of the intersection level of service analysis for 2025. As this table, shows, 5 of the 6 intersections analyzed are expected to operate at unacceptable levels of service by 2025. The highest levels of delay are expected at the Route 460 intersection with Patriot Drive (Route 9034) and Beale Trail Road (Route 741).

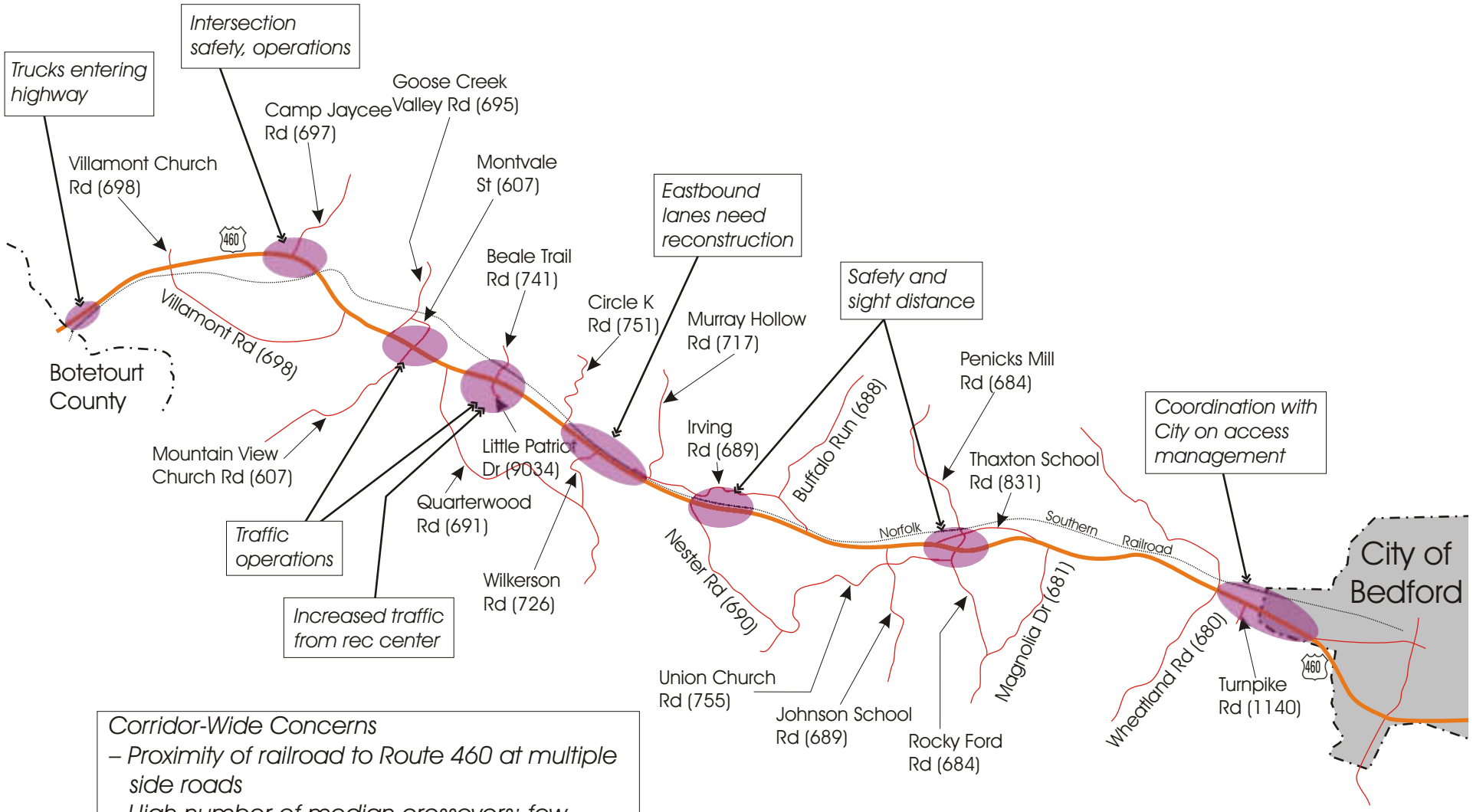
Exhibit 17
Intersection Peak Hour Level of Service (2025)

Intersection of Route 460 with:	2025	
	AM Peak	**PM Peak**
Route 697 (Camp Jaycee Rd)	D	C
Southbound approach delay	28.5	17.7
Route 607 (Mountain View Church/Montvale)	E	D
Southbound approach delay	34.1	20.5
Northbound approach delay	41.0	28.7
Route 751 (Circle K Rd)	C	B
Southbound approach delay	17.6	14.9
Route 9034 (Little Patriot Drive)	F	D
Southbound approach delay	117.0	18.6
Northbound approach delay	159.1	26.3
Route 684 (Penicks Mill/Rocky Ford Rd)	D	D
Southbound approach delay	25.0	24.2
Northbound approach delay	26.3	27.7
Route 1140 (Turnpike Rd)	D	D
Northbound approach delay	25.7	27.3

2.3 Corridor Transportation Issues

As described in Chapter 1, there are a number of existing transportation concerns in the study corridor. These concerns will be exacerbated by the year 2025 as traffic volumes

increase, and pressures for additional strip-type development occurs. It is highly likely that there will be a need for at least on traffic signal in the corridor (at Route 9034 Little Patriot Drive), which will affect overall transportation operations in the corridor as well as safety and aesthetics. The development of plans that identify appropriate locations for traffic signals if and when they are needed, as well as means to concentrate access points by simplifying and aligning intersections, will serve local residents and motorists well. Exhibit 18 summarizes some of the transportation issues and concerns raised both in this study's analysis and from the public input. Improvements to address these concerns are described in the next chapter.



Corridor-Wide Concerns

- *Proximity of railroad to Route 460 at multiple side roads*
- *High number of median crossovers; few crossovers have turn lanes*
- *As volumes increase over time, sight distance issues become a greater concern*

N

0 1 2 3 4

Approximate Scale in Miles

N

460

Exhibit 18

Corridor Transportation Issues

Bedford County Route 460 West Corridor Study

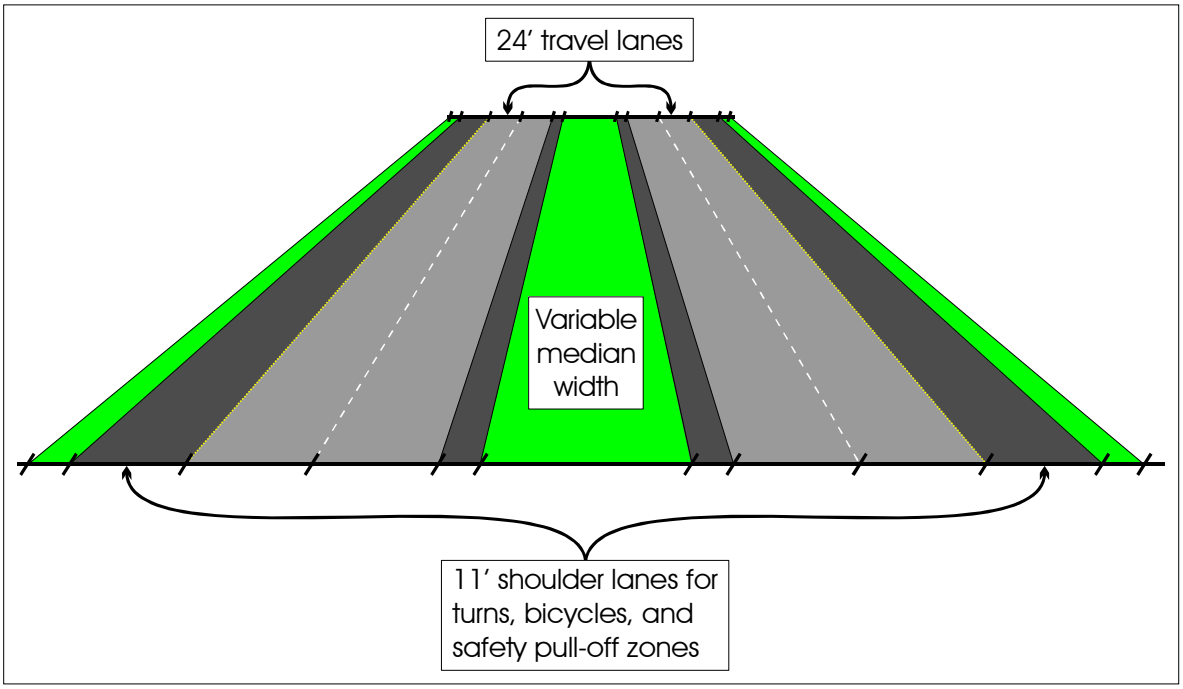
Chapter 3 – Study Recommendations

As indicated at the beginning of this report, most of the transportation problems in this study corridor are ones that are likely to occur between now and the year 2025. While there are current areas of concern, traffic flow today is generally safe and adequate. In comparison to other primary arterials in Virginia, Route 460 is relatively safe. The fact that many of the transportation concerns are expected to occur in the future makes this an excellent corridor in which to put in place plans that will mitigate future concerns. Rather than having to retro-fit solutions to major problems that are already on the ground, effective transportation planning in this corridor can help the corridor develop in an orderly manner that supports both longer-distance through traffic as well as local circulation and access concerns. Transportation plans in this corridor will also allow land-owners to make improvements to their properties that will maximize the benefits that both they and the County obtain from their land.

This study recommends a combination of roadway upgrades and planning initiatives. In this report, the recommendations are described as a Corridor Transportation Plan. This Plan envisions Route 460 as a transportation corridor that safely and efficiently serves multiple uses rather than as a suburban corridor with closely spaced traffic signals and strip development. Access would be allowed but somewhat limited based on the extent to which it affects overall travel on Route 460. For example, right-in/right-out access points that do not require a median crossover would be spaced on average about 1000 feet apart while full access points that have a median crossover would be spaced on average about 5000 feet apart. As shown in the typical cross-section in Exhibit 19, Route 460 would have 11-foot paved shoulder lanes which would improve safety, assist with safe U-turns, allow for safe bicycle travel, and act as deceleration turn lanes (although major entrances should incorporate turn lanes in addition to a narrower 6-foot paved shoulder). Wherever possible, side roads should be consolidated to a minimum number of access points, which align with the locations where median crossovers are planned. Access from adjacent land uses may, at some point, require traffic signals be installed on Route 460; however an ideal spacing of only every other median crossover location would result in signals only every 2 miles, but certainly no closer than the 5000 foot spacing between median crossovers.

The realization of this vision for Route 460 and the implementation of the Corridor Transportation Plan will include both physical improvements and planning initiatives over the course of many years. The Plan incorporates short-, mid-, and long-term recommendations. Short-term improvements are recommended to be implemented within the next 5 years, mid-term within 5-10 years, and long-term within 10-20 years. These physical improvements, along with planning initiatives, are described in the context of these three timeframes below.

Exhibit 19
Proposed Route 460 Typical Cross-Section



This Corridor Transportation Plan recommends the closure of median crossovers in each of the three timeframes (short-, mid-, and long-term). Those crossovers that are recommended for closure in the short-term are those that serve only one or two properties and were judged to provide limited benefits as compared to their impacts on roadway travel and safety. The recommendations for crossover closures in the mid- and long-term timeframes are conditional based on one of two conditions:

1. The crossover is no longer needed because the construction of recommended new roadway and/or side road re-alignments has provided necessary connections;
2. The crossover has become a problem in terms of roadway operations and safety because of higher traffic volumes or changes in traffic patterns.

Because the recommendations for closing crossovers on Route 460 are part of an overall plan for access point spacing, funds should not be expended to improve any of the crossovers that recommended for closure. When a median crossover becomes a problem, it should be closed rather have funds expended for any type of improvement.

The closure of median crossovers and the consolidation of access points are key elements of access management programs. Access management is the concept of managing and controlling access in order to preserve the transportation function and safety of a roadway. The proliferation of driveways and the connections of local roads to a roadway adversely affects its capacity because vehicles need to slow and stop to both enter the driveways and to accommodate those who are entering. Safety is also affected because the number of conflict points increases, the variation in vehicle speeds widens, and sight

distance at access points may be less than ideal. Pedestrian and bicycle safety is also substantially degraded as the number of entrance points onto a road increases. The management of access through the consolidation of access points through shared access, care in the placement of access points, appropriate spacing of access points, and the restriction of access at some locations to right-in and right-out only provides substantial long-term benefits. Access management is recommended in the Route 460 Corridor using the tools of an overlay zoning ordinance and a local circulation plan (adopted in the short-range timeframe), as well as a number of physical improvements that serve to implement the principles of access management.

In the sections below, the Corridor Transportation Plan recommendations are coded by number for each of the timeframes (i.e., Recommendation S1 is the first short-term recommendations). The improvements for all three timeframes are also depicted in Exhibits 21 through 36 using these same improvement codes.

3.1 Short-Term Recommendations

The implementation of the Corridor Transportation Plan will require that a planning and regulatory framework be established. Short-term (0 to 5 years) recommendations address this requirement, and incorporate a number of physical improvements that are relatively low-cost, including closure of a number of medians.

- S1: Adopt changes to the Bedford County Comprehensive Plan to provide the foundation for corridor preservation, corridor overlay zoning, and access management in the Route 460 Corridor. Incorporate references to the Route 460 Corridor Transportation Plan.

- S2: Begin to implement the access management and local circulation plan by incorporating additional elements into the Corridor Overlay District element of the Bedford County Zoning Ordinance. The Corridor Overlay District should extend 1,000 feet on each side of the centerline of Route 460. This will provide Bedford County with the mechanism to control the number of access points onto Route 460. The overlay zoning ordinance should:
  1. Incorporate minimum frontage requirements commensurate with this US primary highway. This study recommends a minimum parcel frontage of 850 feet for an access point and 1,250 feet of additional frontage for each additional access point (these requirements were developed based on desirable spacing to accommodate stopping sight distance).
  2. Provide incentives for shared entrances, inter-parcel access, and/or access via existing or proposed secondary roads.
  3. Support the development of local circulation systems in several of the communities along Route 460 through the study corridor so that Route 460 does not need to serve all local trips. These local circulation systems should include parallel roads that can serve localized traffic along Route 460. The parallel roadway system could evolve as properties are developed or redeveloped. As

properties develop, right-of-way to construct sections of this parallel road system should be reserved. In some cases, large developments may construct portions of the roadway to facilitate their own internal circulation in addition to serving the interests of the entire corridor. In general, the parallel roads should be located between 300 and 700 feet of the centerline of existing Route 460 along the rear, not the front, of the adjacent land parcels. These circulation systems are depicted conceptually on the drawings included as Exhibits 21 to 36.

Implementation of access management in the Route 460 Corridor would also include several changes in procedures. These are:

1. New agreements for access onto Route 460 should incorporate language stating that such access is temporary until such time that alternative access via localized internal or parallel roads, or a secondary road, is developed. Bedford County will need to coordinate with VDOT to apply these guidelines. Where agreements already exist between VDOT and landowners, both Bedford County and VDOT should seek to minimize the impacts that any new access points would have on traffic flow and safety.
2. The goals of the updated Comprehensive Plan, access management, and localized circulation should be integrated into the subdivision, site plan, and negotiation process with landowners and developers.

- S3: Close crossover at Lynn Lane (Route 802E).

- S4: Close crossover 0.15 miles east of Gross Hollow Road.

- S5 and S6: Close crossover at entrance to Woodhaven Nursing Home (improvement S6) and construct new crossover with turn lanes west of this location. If feasible, this new crossover with full turn lanes should be constructed at or near the location show at improvement S5.

- S7: At Camp Jaycee Road, construct an eastbound left turn lane and a westbound right turn lane. Should a westbound right turn lane prove to be infeasible or cost-prohibitive, improve the sight distance from Camp Jaycee Road towards the east by cutting back foliage. Lower the elevation of the eastbound lanes in order to remove the elevation difference between the eastbound and westbound lanes. It is important to note that over the long-term, vehicles using this intersection are recommended to utilize the intersection of Route 460 with Fluff Road just to the east. An access road to connect to Fluff Road is recommended over the long-term (see recommendations L5, L6, and L7).

- S8: Close crossover at Juanita Lane.

- S9: Close crossover 0.13 miles west of Industrial Park Drive.

- S10: Construct turn lanes in median and Mountain View Church Road and Montvale Street.

- S11: Close crossover 0.16 miles east of Paw Paw Road.
- S12: Close crossover 0.85 miles west of Circle K Road.
- S13: Construct turn lanes at crossover 0.22 miles west of Goose Creek.
- S14: Close crossover 0.29 miles east of Irving Road
- S15: Close crossover 0.40 miles west of Nester Road.
- S16: Close crossover 0.22 miles east of Nester Road.
- S17: Close crossover 0.44 miles west of Irving Road.
- S18: Close crossover 0.84 miles west of Johnson School Road.
- S19: Close crossover 0.56 miles west of Johnson School Road.
- S20: Close crossover at 0.34 miles west of Thaxton School Road.
- S21: Close crossover at 0.17 miles west of Thaxton School Road.
- S22: Close crossover at 0.08 miles east of Thaxton School Road.
- S23: Close crossover at 0.15 miles east of Pennicks Mill Road.
- S24: Close crossover at 0.75 miles west of Magnolia Drive.
- S25: Close crossover at 0.4 miles west of Magnolia Drive.
- S26: Close crossover at 0.18 miles west of Magnolia Drive.
- S27: Close crossover at 0.18 miles east of Magnolia Drive.
- S28: Close crossover at 0.12 miles west of Edwards Drive.
- S29: Close crossover at 0.53 miles east of Edwards Drive.
- S30: Close crossover at 0.85 miles east of Edwards Drive.
- S31: Close crossover at 0.97 miles east of Edwards Drive.
- S32: Close crossover at 0.53 miles west of Wheatland Road.
- S33: Close crossover at 0.15 miles west of Wheatland Road.

- S34: Close crossover at 0.13 miles east of Wheatland Road.

- S35: Close crossover at 0.13 miles west of Turnpike Road.

3.2 Mid-Term Recommendations

Mid-term improvements are recommended to be implemented in a 5 to 10 year timeframe.

- M1: Close crossover at Hogan Road (1.07 miles east of Botetourt County Line).

- M2: Close crossover at Lynn Lane.

- M3: Construct turn lanes at crossover at Villamont Road and improve the northbound approach of Route 698.

- M4: Close crossover 0.12 miles east of Creasy Road.

- M5: Close crossover 0.12 miles west of Goose Creek Valley Road (at Montvale Library).

- M6: Close crossover 0.19 miles east of Goose Creek Valley Road.

- M7: Close crossover at Paw Paw Road.

- M8: Close crossover between Colonial Fort Drive and Marketplace Drive.

- M9: Add turn lanes for southbound Beale Trail Road. Consider installation of traffic signal.

- M10: Construct turn lanes at crossover at Nester Road and improve Nester Road approach.

- M11: Close crossover 0.73 miles west of Irving Road.

- M12: Close crossover 0.59 miles west of Irving road.

- M13: Construct turn lanes at crossover 0.26 miles east of Irving Road, in the vicinity of Dragonfly Drive, along with other improvements in conjunction with proposed new connector road (improvement L26).

- M14: Close crossover 0.19 miles west of Johnson School Road.

- M15: Construct turn lanes at crossover at Johnson School Road.

- M16: Close crossover at 0.53 miles west of Thaxton School Road.
- M17: Construct turn lanes at crossover at Miller Lane.
- M18: Close crossover at 0.40 miles east of Edwards Drive.
- M19: Close crossover at 0.73 miles east of Edwards Drive.
- M20: Close crossover at 0.65 miles west of Wheatland Road.
- M21: Close crossover at 0.26 miles east of Wheatland Road.

3.3 Long-Term Recommendations

Long-term improvements are anticipated to be constructed within a 10 to 20 year timeframe.

- L1: Complete construction of paved shoulder lane [cost estimate reflects construction of shoulder lane on full 14.55 miles].
- L2: Close crossover 0.12 miles east of Botetourt County line.
- L3: Add westbound acceleration lane at entrance to Boxley Materials.
- L4: Construct turn lanes at crossover at Tower Road (0.44 miles west of Route 802W).
- L5: Construct connector road between Camp Jaycee Road and Fluff Road.
- L6: Construct connector road between Roswell Lane and Route 460 at Fluff Road.
- L7: Improve crossover at Fluff Road in conjunction with new connector road (improvement L5).
- L8: Construct turn lanes at crossover 0.30 miles east of Carter Hollow Road.
- L9: Close crossover at Industrial Park Drive.
- L10: Close crossover 0.10 miles east of Industrial Park Drive.
- L11: Construct connector road between Industrial Park Drive and driveway opposite Oil Terminal Road.

- L12: Improve alignment of Oil Terminal Road and driveway on north side of Route 460.

- L13: Construct connector road between driveway opposite Oil Terminal Road and Goose Creek Valley Road.

- L14: Close crossover at Goose Creek Valley Road. The ultimate closure of this crossover should occur only if an alternative long-term location is identified for the fire and rescue service.

- L15: Close crossover at Quarterwood Road.

- L16: Improve connector road (Starview Lane) between Stayman Road and Colonial Fort Drive.

- L17: Construct connector road from Quarterwood Road to crossover (27) at Colonial Fort Drive.

- L18: Improve crossover at Colonial Fort Drive in conjunction with new connector road between Quarterwood Road and Colonial Fort Drive (improvement L17).

- L19: Close crossover 0.44 miles west of Circle K Road.

- L20: Close crossover 0.18 miles west of Circle K Road.

- L21: Reconstruct eastbound lanes of 460, including reconfiguration of intersection at Cirlce K Road.

- L22: Construct turn lanes at crossover Irving Road (Route 689 West).

- L23: Close crossover 0.22 miles west of Nester Road.

- L24: Close crossover 1.07 miles west of Irving Road.

- L25: Construct turn lanes at crossover at Robincrest Park community; consider shifting crossover 450-500 feet to the east to improve sight distances.

- L26: Construct new connector road between Irving Road and Route 460.

- L27: Close Irving Road access point in conjunction with new access road (improvement L26).

- L28: Upgrade intersection in conjunction with construction of relocated Rocky Ford Road (project L29).

- L29: Relocate Rocky Ford Road to connect opposite Thaxton School Road.

- L30: Close crossover at Penicks Mill Road.

- L31: Close crossover at 0.84 miles west of Magnolia Drive.

- L32: Close crossover at 0.26 miles west of Magnolia Drive in conjunction with extension of Thaxton School Road (L33).

- L33: Extend Thaxton School Road to come in across from Magnolia Drive.

- L34: Reconstruct intersection, including turn lanes in conjunction with the extension of Thaxton School Road (L33).

- L35: Construct connector road to Moose Lodge (from across from Edwards Drive).

- L36: Construct turn lanes at crossover at Edwards Drive.

- L37: Close crossover at 0.15 miles east of Edwards Drive.

- L38: Close crossover at 0.62 miles east of Edwards Drive.

- L39: Construct/improve connector road from Edwards Drive to Wheatland Road (680). Portions of this connector road would be Haven Heights Drive

- L40: Construct new connector road between Haven Heights Drive and Route 460.

- L41: Improve crossover just east of Bishops Way with new connector road (improvement L40).

- L42: Close crossover at 0.33 miles west of Wheatland Road (680).

- L43: Extend turn lanes at Wheatland Road (Route 680).

- L44: Construct new connector road from Wheatland Road to Turnpike Road in conjunction with VDOT plans.

- L45: Upgrade intersection at Turnpike Road (Route 1140) by adding turn lanes on Turnpike Road, extending turn lanes on Route 460.

- L46: Construct new road parallel to Route 460 and extending east from Turnpike Road (Route 1140). The majority of this roadway would be in the City of Bedford. Cost estimates are based on 1,500 feet of roadway which would be located in the County.

- L47: Reconstruct Route 460 bridges over Goose Creek (west of Circle K Road, Route 751). These bridges are functionally obsolete.

3.4 Estimated Costs

Cost estimates were developed for the physical improvements described in the three previous sections using standard unit costs provided by VDOT. The resulting cost estimates were then reviewed with County and VDOT staff. These costs are in year 2003 dollars. It is important to recognize that the costs are planning-level estimates only and are subject to adjustment following more detailed engineering analysis. Unforeseen environmental impacts can also have a substantial effect on project costs.

The estimated costs for each improvement are shown in Exhibit 20. The totals for each timeframe are shown below:

Short-Term: $4.30 million
Mid-Term: $4.06 million
Long-Term: $90.78 million

Of the total estimated cost for all of the improvements of $99.1 million, 55 percent would be for the construction of the 11-foot shoulder lane for the entire 14.55-mile corridor.

Exhibit 20
Estimated Costs for Physical Improvements

Code	Description	Estimated Project Length (feet)	Roadway Cost	Other Cost	Other Cost Description	Total Estimated Cost
S3	Close crossover at Route 802E (Lynn Lane)			$25,000	Close crossover	$25,000
S4	Close crossover 0.15 miles east of Gross Hollow Road			$25,000	Close crossover	$25,000
S5	Construct/improve crossover east of Gross Hollow Road			$650,000	Construct crossover	$650,000
S6	Close crossover 0.13 miles west of Roswell Lane			$25,000	Close crossover	$25,000

Exhibit 20

Estimated Costs for Physical Improvements

Code	Description	Estimated Project Length (feet)	Roadway Cost	Other Cost	Other Cost Description	Total Estimated Cost
S7	At Camp Jaycee Road, add eastbound left turn lane, westbound right turn lane and southbound left turn lane. Adjust elevation of eastbound lanes. Note that over the long term, this crossover is proposed to be closed with access shifted to Fluff Road.	1,000	$720,000	$650,000	Improve crossover	$1,370,000
S8	Close crossover at Juanita Lane			$25,000	Close crossover	$25,000
S9	Close crossover 0.13 miles west of Industrial Park Drive			$25,000	Close crossover	$25,000
S10	Construct left turn lanes on Route 460; add turn lanes for both northbound and southbound approaches			$900,000	Construct turn lanes	$900,000
S11	Close crossover 0.16 miles east of Paw Paw Road			$25,000	Close crossover	$25,000
S12	Close crossover 0.85 miles west of Circle K Road			$25,000	Close crossover	$25,000
S13	Construct turn lanes at crossover 0.6 miles west of Circle K Road			$650,000	Construct left turn lanes	$650,000
S14	Close crossover 0.29 miles east of Irving Road			$25,000	Close crossover	$25,000
S15	Close crossover 0.40 miles west of Nester Road			$25,000	Close crossover	$25,000
S16	Close crossover 0.22 miles east of Nester Road			$25,000	Close crossover	$25,000
S17	Close crossover 0.44 miles west of Irving Road			$25,000	Close crossover	$25,000

Exhibit 20

Estimated Costs for Physical Improvements

Code	Description	Estimated Project Length (feet)	Roadway Cost	Other Cost	Other Cost Description	Total Estimated Cost
S18	Close crossover 0.84 miles west of Johnson School Road			$25,000	Close crossover	$25,000
S19	Close crossover 0.56 miles west of Johnson School Road			$25,000	Close crossover	$25,000
S20	Close crossover at 0.34 miles west of Thaxton School Road			$25,000	Close crossover	$25,000
S21	Close crossover at 0.17 miles west of Thaxton School Road			$25,000	Close crossover	$25,000
S22	Close crossover at 0.08 miles east of Thaxton School Road			$25,000	Close crossover	$25,000
S23	Close crossover at 0.15 miles east of Pennicks Mill Road			$25,000	Close crossover	$25,000
S24	Close crossover at 0.75 miles west of Magnolia Drive			$25,000	Close crossover	$25,000
S25	Close crossover at 0.4 miles west of Magnolia Drive			$25,000	Close crossover	$25,000
S26	Close crossover at 0.18 miles west of Magnolia Drive			$25,000	Close crossover	$25,000
S27	Close crossover at 0.18 miles east of Magnolia Drive			$25,000	Close crossover	$25,000
S28	Close crossover at 0.12 miles west of Edwards Drive			$25,000	Close crossover	$25,000
S29	Close crossover at 0.53 miles east of Edwards Drive			$25,000	Close crossover	$25,000
S30	Close crossover at 0.85 miles east of Edwards Drive			$25,000	Close crossover	$25,000
S31	Close crossover at 0.97 miles east of Edwards Drive			$25,000	Close crossover	$25,000

Exhibit 20

Estimated Costs for Physical Improvements

Code	Description	Estimated Project Length (feet)	Roadway Cost	Other Cost	Other Cost Description	Total Estimated Cost
S32	Close crossover at 0.53 miles west of Wheatland Road (680)			$25,000	Close crossover	$25,000
S33	Close crossover at 0.15 miles west of Wheatland Road (680)			$25,000	Close crossover	$25,000
S34	Close crossover at 0.13 miles east of Wheatland Road			$25,000	Close crossover	$25,000
S35	Close crossover at 0.13 miles west of Turnpike Road (1140).			$25,000	Close crossover	$25,000
M1	Close crossover at Hogan Road (1.07 miles east of Botetourt County Line)			$25,000	Close crossover	$25,000
M2	Close crossover at Route 802W (Lynn Lane)			$25,000	Close crossover	$25,000
M3	Add turn lanes to crossover at Route 698 (Villamont Road); improve Route 698 northbound approach.			$800,000	Improve crossover and intersection approach	$800,000
M4	Close crossover 0.12 miles east of Creasy Road			$25,000	Close crossover	$25,000
M5	Close crossover 0.12 miles west of Goose Creek Valley Road (at Montvale Library)			$25,000	Close crossover	$25,000
M6	Close crossover 0.19 miles east of Goose Creek Valley Road			$25,000	Close crossover	$25,000
M7	Close crossover at Paw Paw Road			$25,000	Close crossover	$25,000
M8	Close crossover between Colonial Fort Drive and Marketplace Drive			$25,000	Close crossover	$25,000
M9	Add turn lanes for southbound Beale Trail Road, potential traffic signal			$280,000	Construct left turn lanes	$280,000

Exhibit 20

Estimated Costs for Physical Improvements

Code	Description	Estimated Project Length (feet)	Roadway Cost	Other Cost	Other Cost Description	Total Estimated Cost
M10	Construct turn lanes at crossover at Nester Road, improve Nester Road approach			$650,000	Construct turn lanes	$650,000
M11	Close crossover 0.73 miles west of Irving Road			$25,000	Close crossover	$25,000
M12	Close crossover 0.59 miles west of Irving road			$25,000	Close crossover	$25,000
M13	Construct turn lanes at crossover and improve crossover in conjunction with new connector road (L26)			$650,000	Improve crossover and intersection approach	$650,000
M14	Close crossover 0.19 miles west of Johnson School Road			$25,000	Close crossover	$25,000
M15	Construct turn lanes at crossover at Johnson School Road			$650,000	Construct left turn lanes	$650,000
M16	Close crossover at 0.53 miles west of Thaxton School Road			$25,000	Close crossover	$25,000
M17	Construct turn lanes at crossover at Miller Lane			$650,000	Construct left turn lanes	$650,000
M18	Close crossover at 0.40 miles east of Edwards Drive			$25,000	Close crossover	$25,000
M19	Close crossover at 0.73 miles east of Edwards Drive			$25,000	Close crossover	$25,000
M20	Close crossover at 0.65 miles west of Wheatland Road (680)			$25,000	Close crossover	$25,000
M21	Close crossover at 0.26 miles east of Wheatland Road (680)			$25,000	Close crossover	$25,000

Exhibit 20

Estimated Costs for Physical Improvements

Code	Description	Estimated Project Length (feet)	Roadway Cost	Other Cost	Other Cost Description	Total Estimated Cost
L1	Complete construction of paved shoulder land [cost estimate reflects construction of shoulder lane on full 14.55 miles]	76,800	$55,290,000			$55,290,000
L2	Close crossover 0.12 miles east of Botetourt County line.			$25,000	Close crossover	$25,000
L3	Add westbound acceleration lane at entrance to Boxley Materials			$100,000	Add westbound acceleration lane	$100,000
L4	Construct turn lanes at crossover at Tower Road (0.44 miles west of Route 802W)			$650,000	Construct turn lanes	$650,000
L5	Construct connector road between Camp Jaycee Road and Fluff Road	2,248	$1,618,000			$1,618,000
L6	Construct connector road between Roswell Lane and Route 460 at Fluff Road	2,170	$1,562,000			$1,562,000
L7	Improve crossover in conjunction with new connector road (L5)			$200,000	Construct turn lanes	$200,000
L8	Construct turn lanes at crossover 0.30 miles east of Carter Hollow Road.			$650,000	Construct turn lanes	$650,000
L9	Close crossover at Industrial Park Drive			$25,000	Close crossover	$25,000
L10	Close crossover 0.10 miles east of Industrial Park Drive			$25,000	Close crossover	$25,000
L11	Construct connector road between Industrial Park Drive and driveway opposite Oil Terminal Road	1,318	$949,000			$949,000

Exhibit 20

Estimated Costs for Physical Improvements

Code	Description	Estimated Project Length (feet)	Roadway Cost	Other Cost	Other Cost Description	Total Estimated Cost
L12	Improve alignment of Oil Terminal Road and driveway on north side of Route 460		$0	$200,000	Improve intersection approach	$200,000
L13	Construct connector road between driveway opposite Oil Terminal Road and Goose Creek Valley Road	1,705	$1,227,000			$1,227,000
L14	Close crossover at Goose Creek Valley Road. The ultimate closure of this crossover should occur only if an alternative long-term location is identified for the fire and rescue service.			$25,000	Close crossover	$25,000
L15	Close crossover at Quarterwood Road (691)			$25,000	Close crossover	$25,000
L16	Improve/construct connector road (Starview Lane) between Stayman Road and Colonial Fort Drive.	1,583	$1,139,000			$1,139,000
L17	Construct connector road from Quarterwood Road (691) to crossover (#27) at Colonial Fort Drive	1,916	$1,379,000			$1,379,000
L18	Improve crossover in conjunction with new connector road (L17)			$500,000	Construct turn lanes	$500,000
L19	Close crossover 0.44 miles west of Circle K Road			$25,000	Close crossover	$25,000
L20	Close crossover 0.18 miles west of Circle K Road			$25,000	Close crossover	$25,000

Exhibit 20

Estimated Costs for Physical Improvements

Code	Description	Estimated Project Length (feet)	Roadway Cost	Other Cost	Other Cost Description	Total Estimated Cost
L21	Reconstruct eastbound lanes of 460, including reconfiguration of intersection at Cirlce K Road.			$5,200,000	VDOT estimate from Draft 6-Year Program	$5,200,000
L22	Construct turn lanes at crossover at Route 689E (Irving Road)			$650,000	Construct turn lanes	$650,000
L23	Close crossover 0.22 miles west of Nester Road			$25,000	Close crossover	$25,000
L24	Close crossover 1.07 miles west of Irving Road			$25,000	Close crossover	$25,000
L25	Construct turn lanes at crossover; consider shifting crossover 450-500 feet to the east to improve sight distances			$650,000	Construct turn lanes	$650,000
L26	Construct new connector road between Irving Road (689) and Route 460	1,250	$900,000			$900,000
L27	Close Irving Road access point in conjunction with new access road (L26)			$25,000	Close access	$25,000
L28	Upgrade intersection in conjunction with construction of relocated Rocky Ford Road (project L29)			$500,000	Upgrade intersection	$500,000
L29	Relocate Rocky Ford Road to connect opposite Thaxton School Road	1,860	$1,339,000			$1,339,000
L30	Close crossover at Pennicks Mill Road			$25,000	Close crossover	$25,000
L31	Close crossover at 0.84 miles west of Magnolia Drive			$25,000	Close crossover	$25,000

Exhibit 20

Estimated Costs for Physical Improvements

Code	Description	Estimated Project Length (feet)	Roadway Cost	Other Cost	Other Cost Description	Total Estimated Cost
L32	Close crossover at 0.26 miles west of Magnolia Drive in conjunction with extension of Thaxton School Road (project L33)			$25,000	Close crossover	$25,000
L33	Extend Thaxton School Road to come in across from Magnolia Drive	2400	$1,727,000		Extend road	$1,727,000
L34	Reconstruct intersection, add turn lanes in conjunction with extension of Thaxton School Road (project L33)			$500,000	Reconstruct intersection	$500,000
L35	Construct connector road to Moose Lodge (from across from Edwards Drive)	775	$558,000			$558,000
L36	Construct turn lanes at crossover at Edwards Drive			$650,000	Construct turn lanes	$650,000
L37	Close crossover at 0.15 miles east of Edwards Drive			$25,000	Close crossover	$25,000
L38	Close crossover at 0.62 miles east of Edwards Drive			$25,000	Close crossover	$25,000
L39	Construct road from Edwards Drive to Wheatland Road (includes improvements to portions of Haven Heights Drive)	8,611	$6,197,000			$6,197,000
L40	Construct new connector road between Haven Heights Drive and Route 460	698	$502,000			$502,000
L41	Improve intersection in conjunction with new connector road			$500,000	Reconstruct intersection	$500,000
L42	Close crossover at 0.33 miles west of Wheatland Road (680)			$25,000	Close crossover	$25,000

Exhibit 20
Estimated Costs for Physical Improvements

Code	Description	Estimated Project Length (feet)	Roadway Cost	Other Cost	Other Cost Description	Total Estimated Cost
L43	Extend turn lanes at Wheatland Road (680)			$200,000	Extend turn lanes	$200,000
L44	Construct new connector road from Wheatland Road to Turnpike Road in conjunction with VDOT plans	3,000	$2,158,000			$2,158,000
L45	Upgrade intersection at Turnpike Road (Route 1140) by adding turn lanes on Turnpike Road, extending turn lanes on Route 460.			$500,000	Reconstruct intersection	$500,000
L46	Construct new road in conjunction with VDOT plans	1,570	$1,130,000			$1,130,000
L47	Reconstruct bridges over Goose Creek			$1,056,000	Reconstruct bridges	$1,056,000

3.5 Funding Considerations

The range of improvements recommended in the Route 460 West Corridor Study provide the opportunity for a number of funding sources to be tapped into to pay for portions of the improvements. The Corridor Plan includes projects that could (and in some cases, should) be paid for by private developers as part of their planned improvements. These improvements include local access and circulation roads as well as intersection improvements. Where opportunities for proffers to pay for actual improvements are not possible, donation of rights-of-way can substantially reduce the cost of some improvements.

Public funding for the improvements in the Corridor Plan could come from a mix of federal, state, and local sources. Because the paved shoulder provides a substantial benefit to bicyclists in terms of travel quality and safety, potential sources that could cover some portion of project costs include federal grant programs such as the Transportation Enhancement Program Funds, the Recreational Trails Program Funds, or the Transportation Community and System Preservation Funds. Chances of obtaining grant funds for the paved shoulder facilities on Route 460 would be enhanced by the inclusion of this project in an overall, connected bicycle network plan for Bedford County.

Several of the recommendations in the Corridor Plan also relate directly to improving safety. VDOT's highway safety improvement program makes use of the 10 percent of

Virginia's allocation of the federal Surface Transportation Funds and designates it as follows: 50 percent to the Hazard Elimination Safety (HES) program, 10 percent for the Bicycle and Pedestrian Safety Program, and 40 percent for the Rail-Highway Grade Crossing Safety Improvement Program. Because the improvements in this Corridor Plan address both highway safety and bicycle/pedestrian safety, there is the potential for using funding from both the HES and Bicycle/Pedestrian Safety programs.

One other primary source of funding for many of these improvements is the VDOT-administered Revenue Sharing Program, which provides funding for the maintenance and improvement of the primary and secondary systems in Virginia. This program shares costs equally between the state and local governments, with application for the funds coming from resolution of the local governing body. While there are statutory limitations on the total funding available per locality, the Revenue Sharing Program is a likely source of funds for many of the improvements recommended in this study. This program requires, however, substantial local funding.

Today's fiscal climate makes many potential sources for obtaining local funds through taxes, fees, and/or assessments difficult. Options such as establishing a corridor tax district have been used in parts of Virginia, but for corridors that are much further along in terms of development and located in more dynamic development climates. General sales taxes have the benefit of having a very broad base so a very small tax increment can produce substantial revenues. Recent experience in Northern Virginia and Tidewater suggest, however, that such an initiative would be quite difficult. Potential local fees that could be considered include earmarking an incremental increase in property recordation fees or even property taxes for transportation. These are an easier sell when applied only to particular transportation corridors, but such limitations have the effect of substantially decreasing the potential funds that could be collected. County-wide application of such fees would generate greater amount of funds but would likely run into substantial opposition from those who do not believe they will benefit from the increases in fees.

While additional local taxes and fees may be difficult to put in place, the ability to dedicate some level of local funding to the improvements described in this report may be enhanced by the fact that such local funding could be leveraged in conjunction with the state Revenue Sharing Program and some of the federal programs listed above to finance significant portions of the recommendations. These local, state, and federal funds could be used in conjunction with some level of private landowner participation in constructing local circulation improvements to help in realizing the improvements included in the Route 460 Corridor West Transportation Plan.

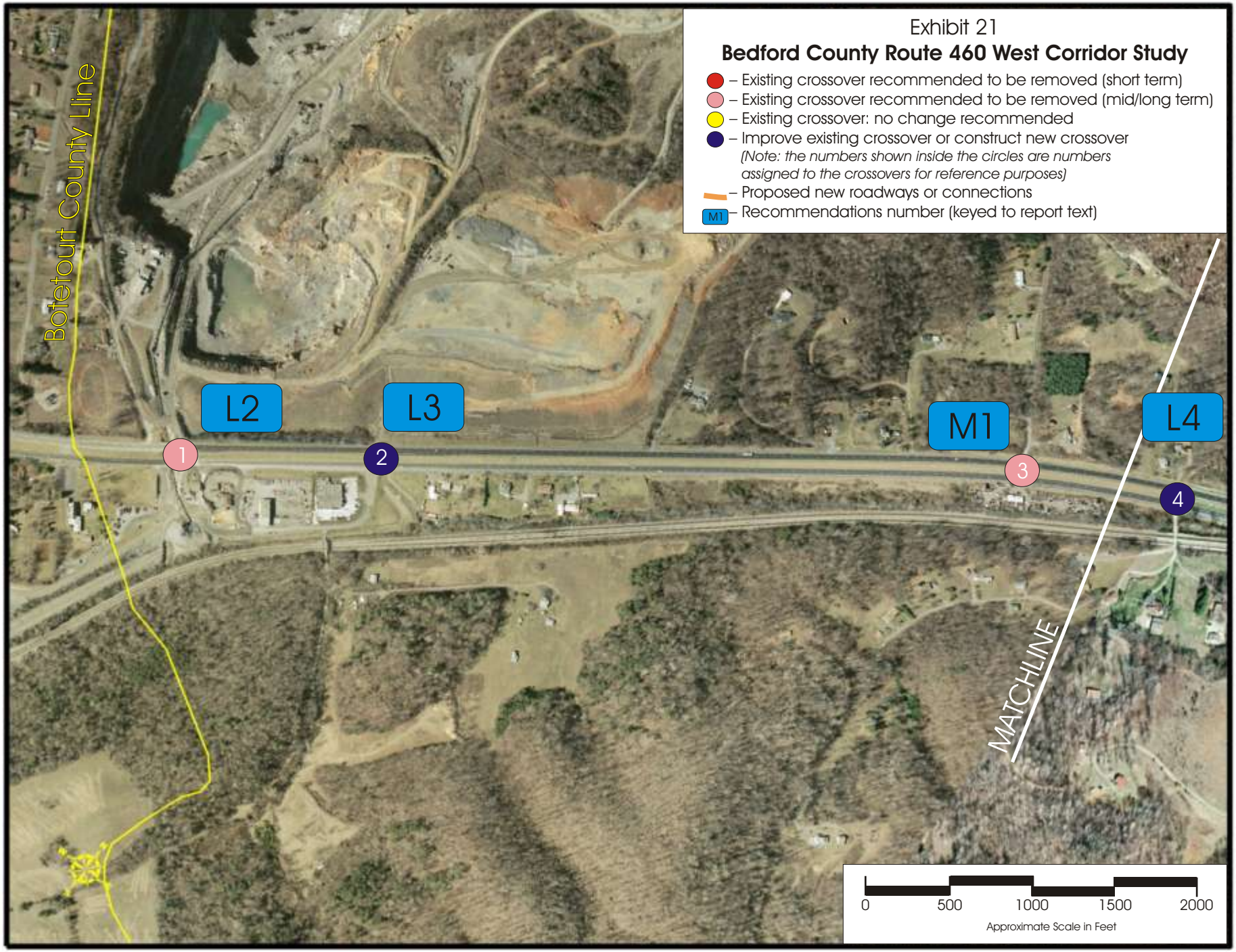


Exhibit 21
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
Botetourt County Line
L2
L3
M1
L4
1
2
3
4
MATCHLINE
0
500
1000
1500
2000
Approximate Scale in Feet

Exhibit 22
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
MATCHLINE
L4
M2
M3
S3
4
5
6
7
Lynn Lane (802)
Villamont Road (698)
MATCHLINE
0
500
1000
1500
2000
Approximate Scale in Feet

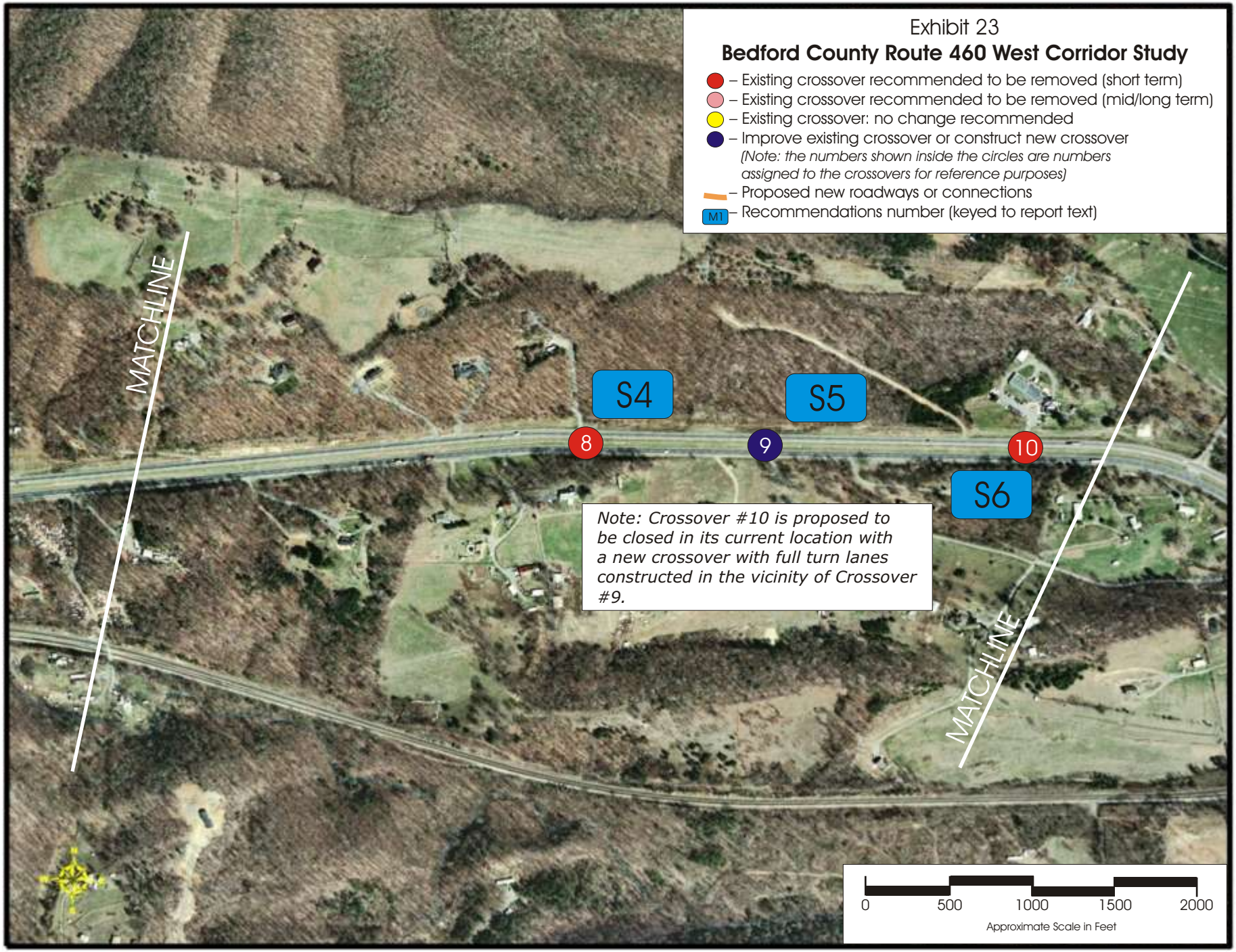


Exhibit 23
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
MATCHLINE
S4
S5
S6
8
9
10
Note: Crossover #10 is proposed to be closed in its current location with a new crossover with full turn lanes constructed in the vicinity of Crossover #9.
MATCHLINE
0
500
1000
1500
2000
Approximate Scale in Feet

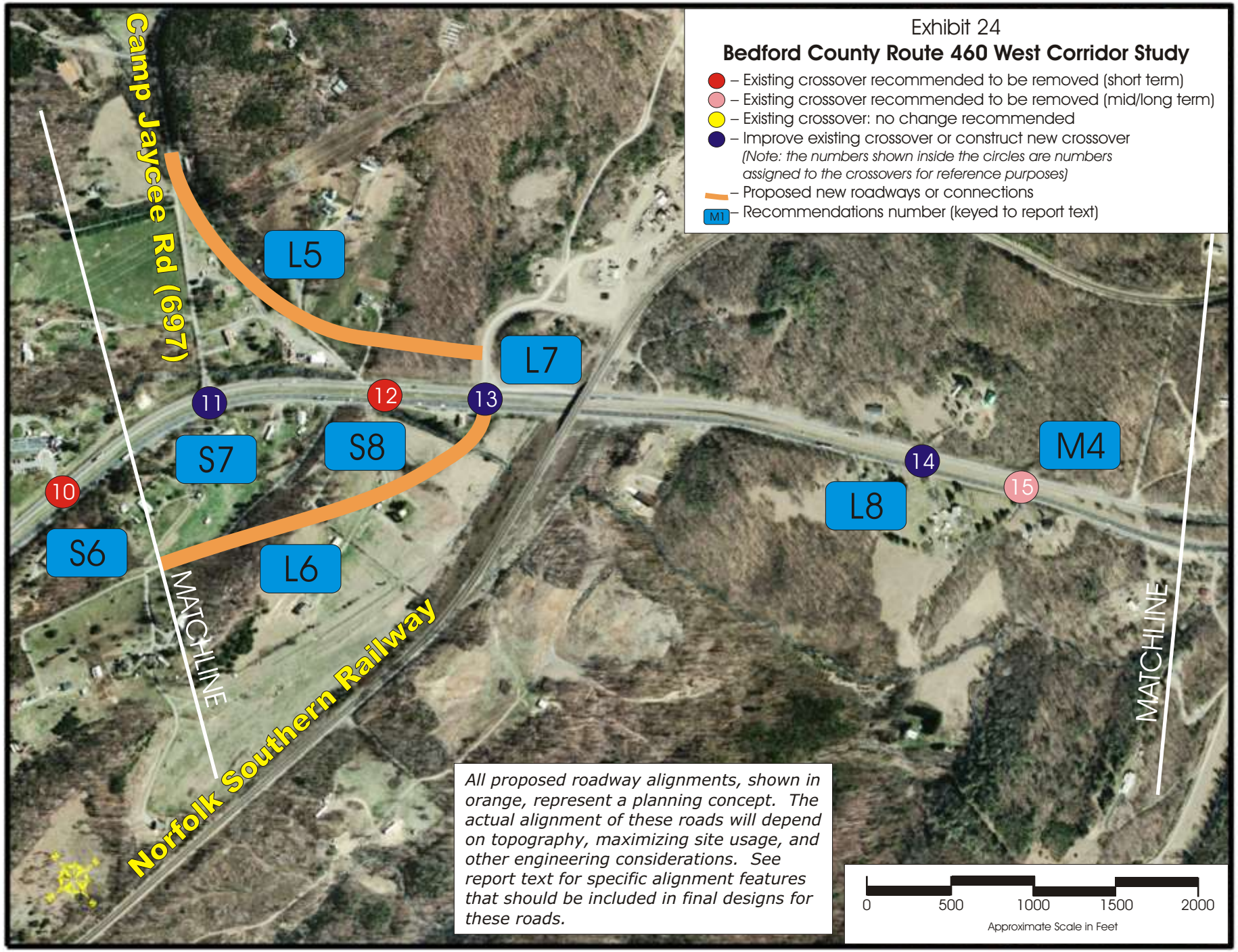


Exhibit 24
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
Camp Jaycee Rd (697)
L5
L7
11
12
13
S7
S8
10
S6
L6
14
M4
15
L8
MATCHLINE
MATCHLINE
Norfolk Southern Railway
All proposed roadway alignments, shown in orange, represent a planning concept. The actual alignment of these roads will depend on topography, maximizing site usage, and other engineering considerations. See report text for specific alignment features that should be included in final designs for these roads.
0
500
1000
1500
2000
Approximate Scale in Feet

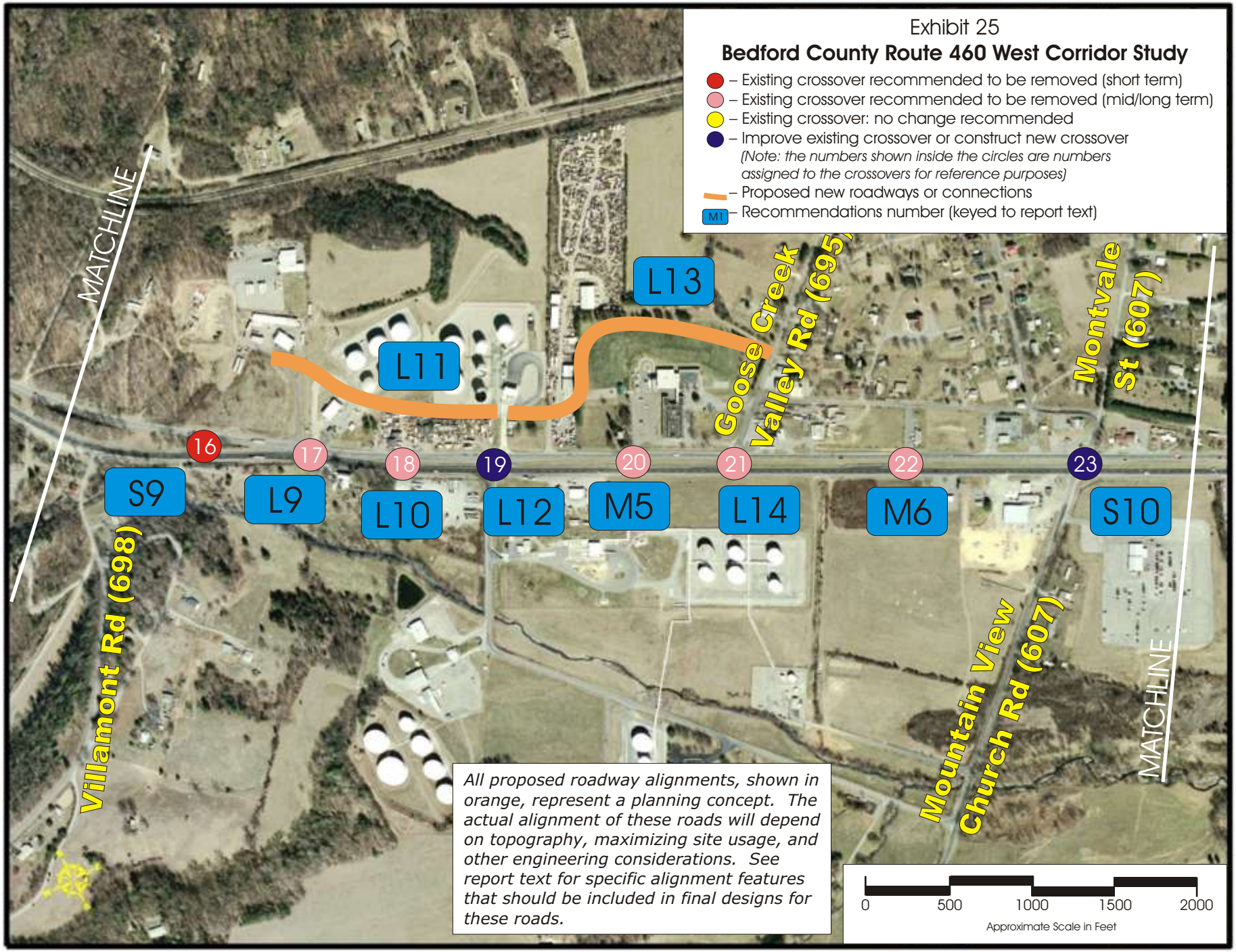


Exhibit 25
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
MATCHLINE
Villamont Rd (698)
Goose Creek Valley Rd (695)
Montvale St (607)
Mountain View Church Rd (607)
MATCHLINE
L13
L11
S9
L9
L10
L12
M5
L14
M6
S10
16
17
18
19
20
21
22
23
All proposed roadway alignments, shown in orange, represent a planning concept. The actual alignment of these roads will depend on topography, maximizing site usage, and other engineering considerations. See report text for specific alignment features that should be included in final designs for these roads.
0
500
1000
1500
2000
Approximate Scale in Feet

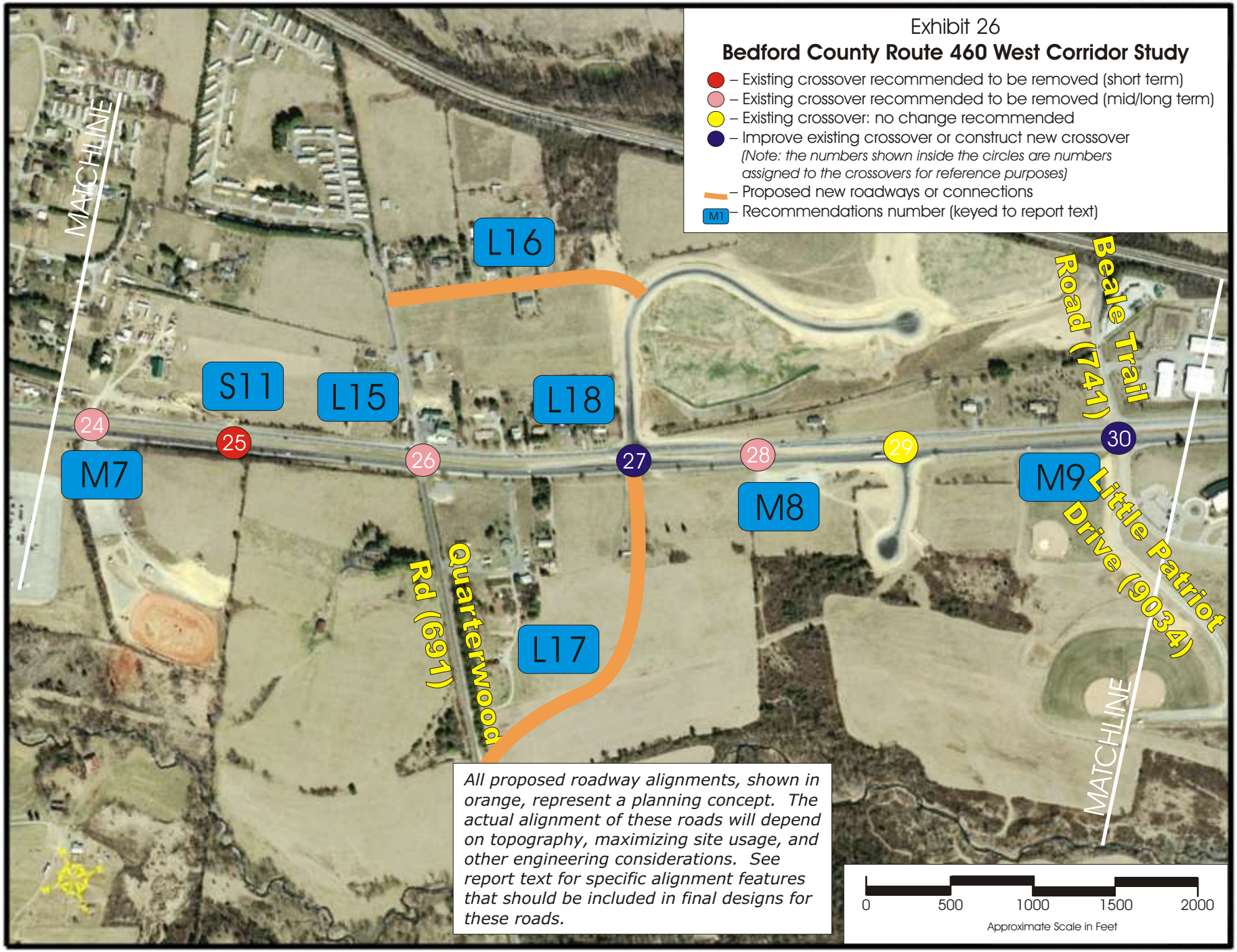


Exhibit 26
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
MATCHLINE
L16
S11
L15
L18
24
25
26
27
28
29
30
M7
M8
M9
Beale Trail Road (741)
Little Patriot Drive (9034)
Quarterwood Rd (691)
L17
MATCHLINE
All proposed roadway alignments, shown in orange, represent a planning concept. The actual alignment of these roads will depend on topography, maximizing site usage, and other engineering considerations. See report text for specific alignment features that should be included in final designs for these roads.
0
500
1000
1500
2000
Approximate Scale in Feet

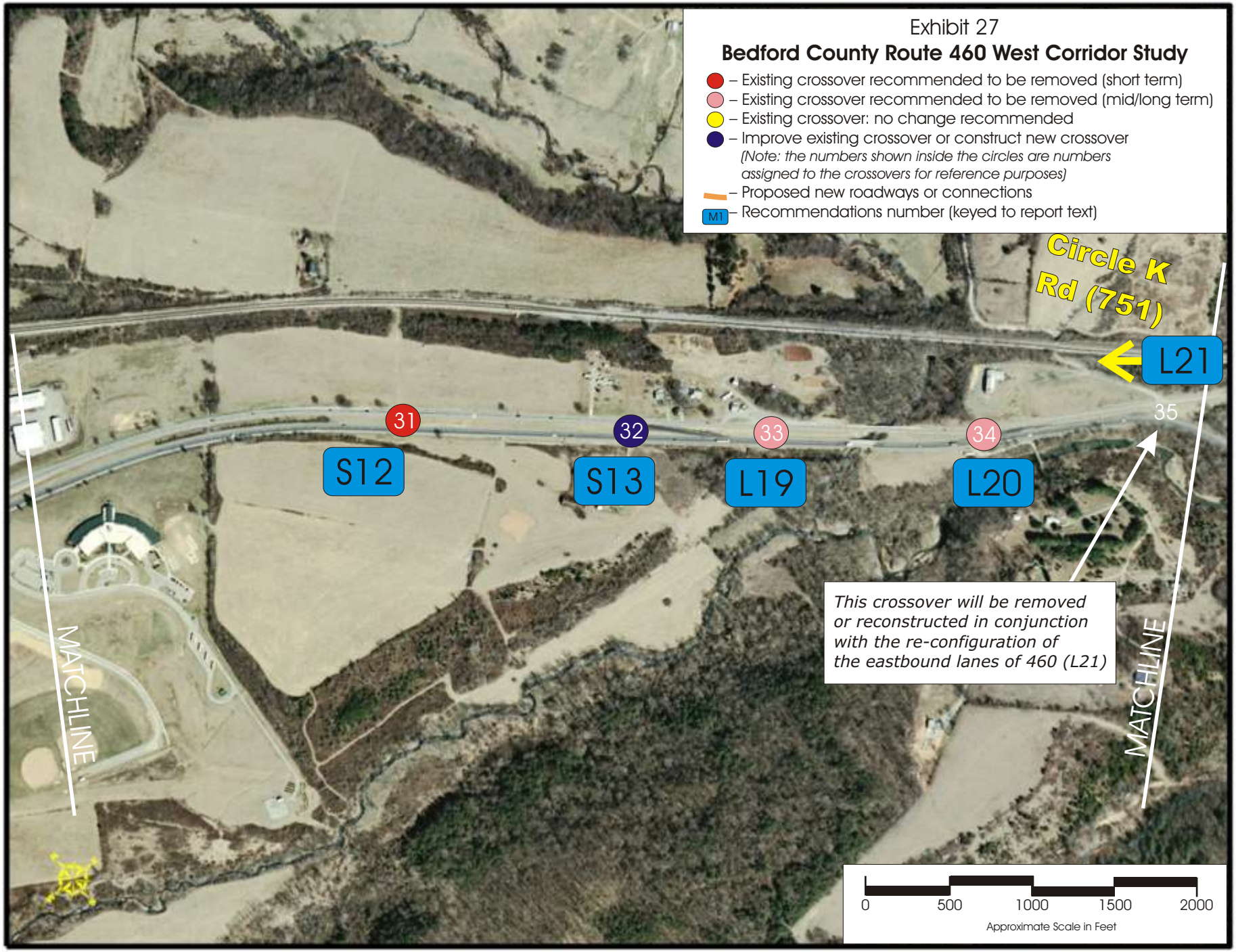


Exhibit 27
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
Circle K
Rd (751)
L21
31
32
33
34
35
S12
S13
L19
L20
This crossover will be removed or reconstructed in conjunction with the re-configuration of the eastbound lanes of 460 (L21)
MATCHLINE
MATCHLINE
0
500
1000
1500
2000
Approximate Scale in Feet

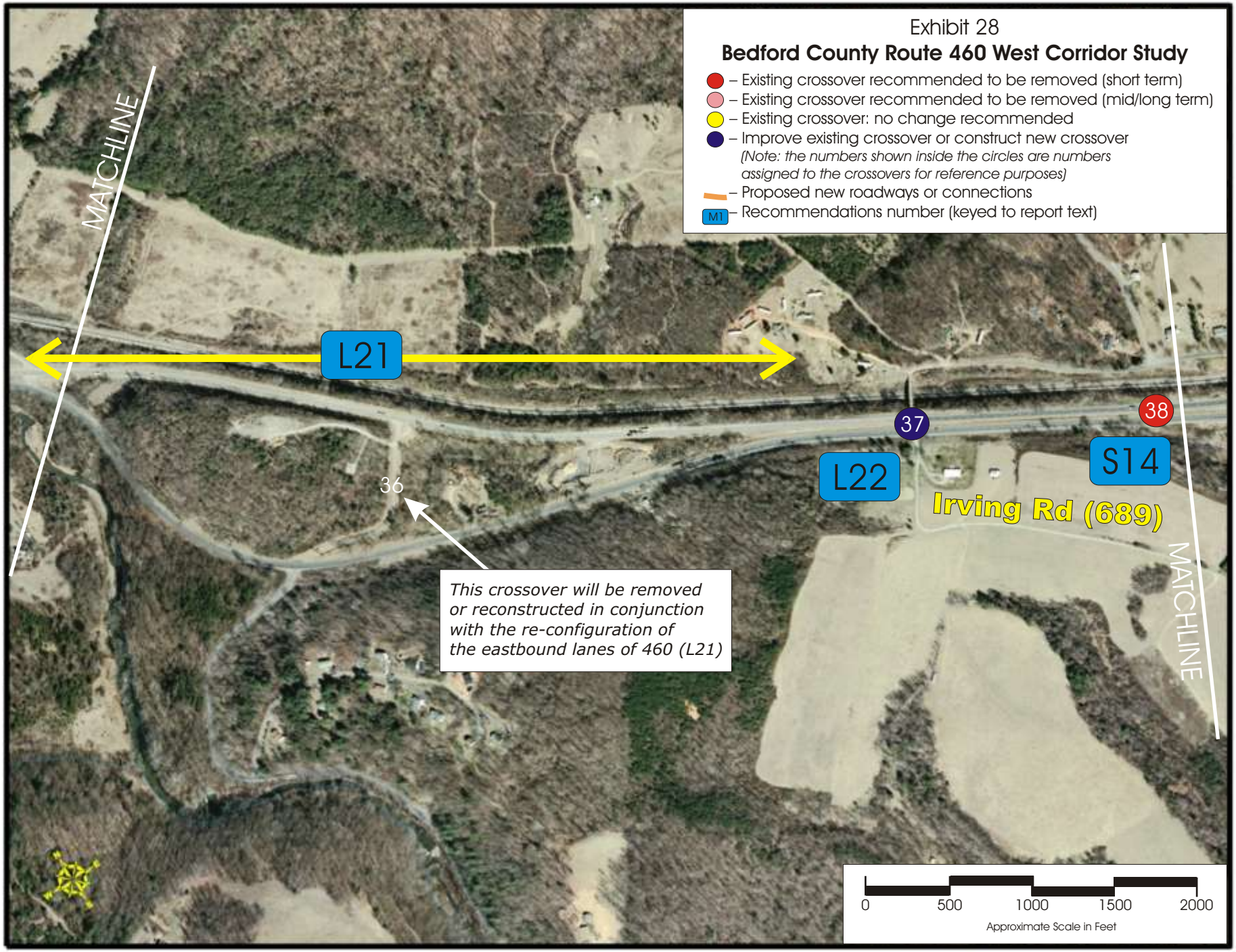


Exhibit 28
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
MATCHLINE
L21
37
38
L22
S14
Irving Rd (689)
36
This crossover will be removed or reconstructed in conjunction with the re-configuration of the eastbound lanes of 460 (L21)
MATCHLINE
0
500
1000
1500
2000
Approximate Scale in Feet

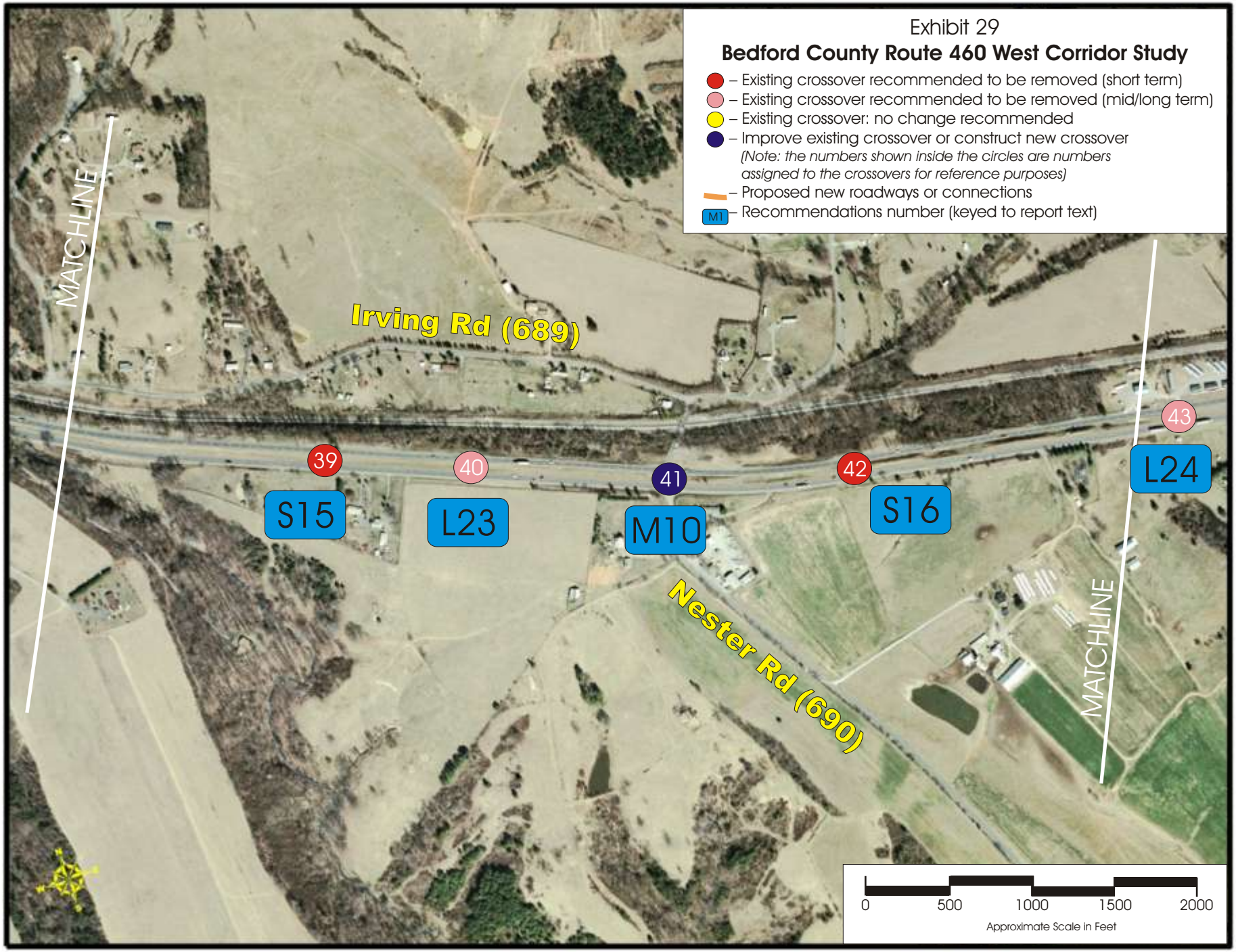


Exhibit 29
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
MATCHLINE
Irving Rd (689)
39
S15
40
L23
41
M10
42
S16
43
L24
Nester Rd (690)
MATCHLINE
0
500
1000
1500
2000
Approximate Scale in Feet

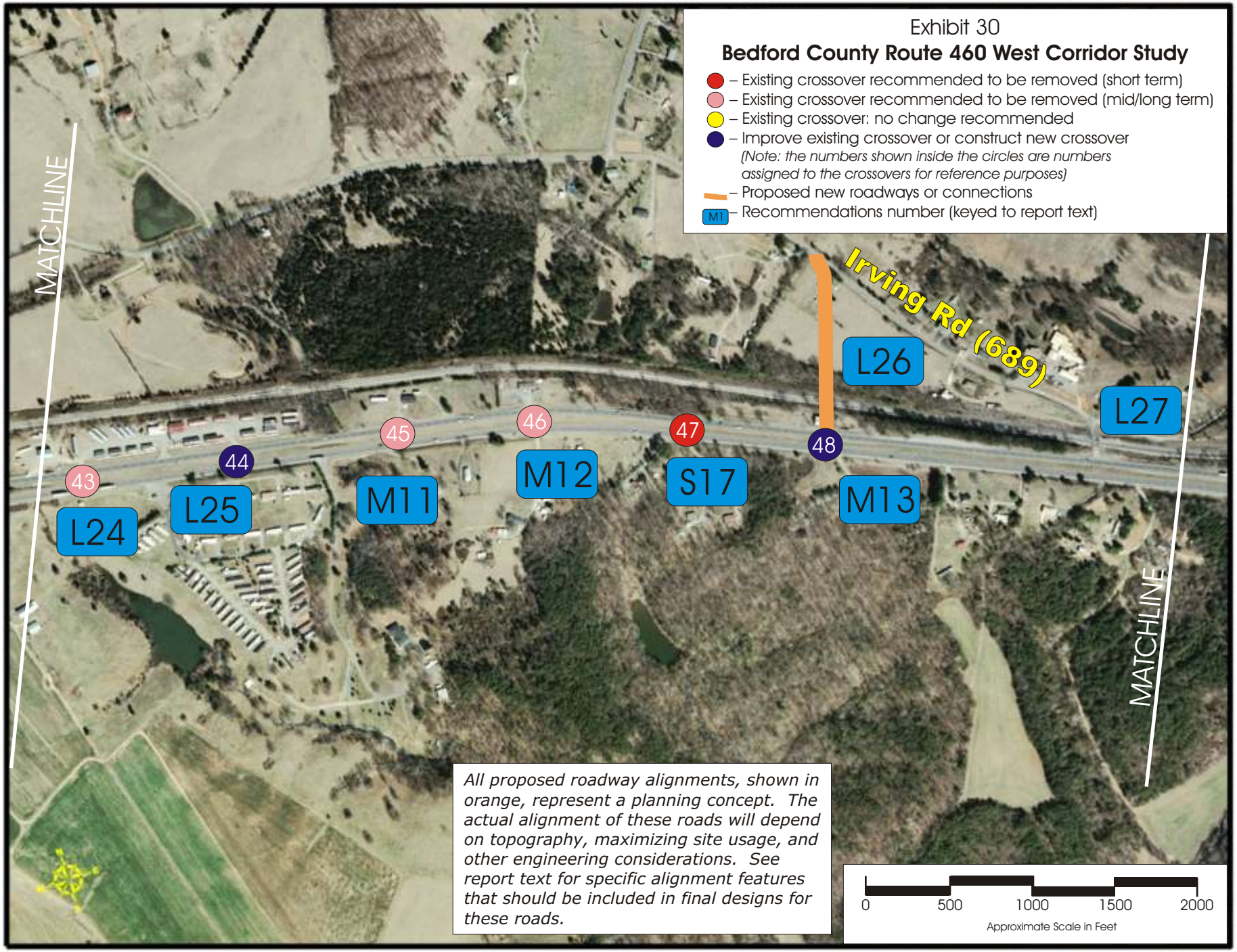


Exhibit 30
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
MATCHLINE
MATCHLINE
Irving Rd (689)
L24
L25
L26
L27
M11
M12
M13
S17
43
44
45
46
47
48
All proposed roadway alignments, shown in orange, represent a planning concept. The actual alignment of these roads will depend on topography, maximizing site usage, and other engineering considerations. See report text for specific alignment features that should be included in final designs for these roads.
0
500
1000
1500
2000
Approximate Scale in Feet

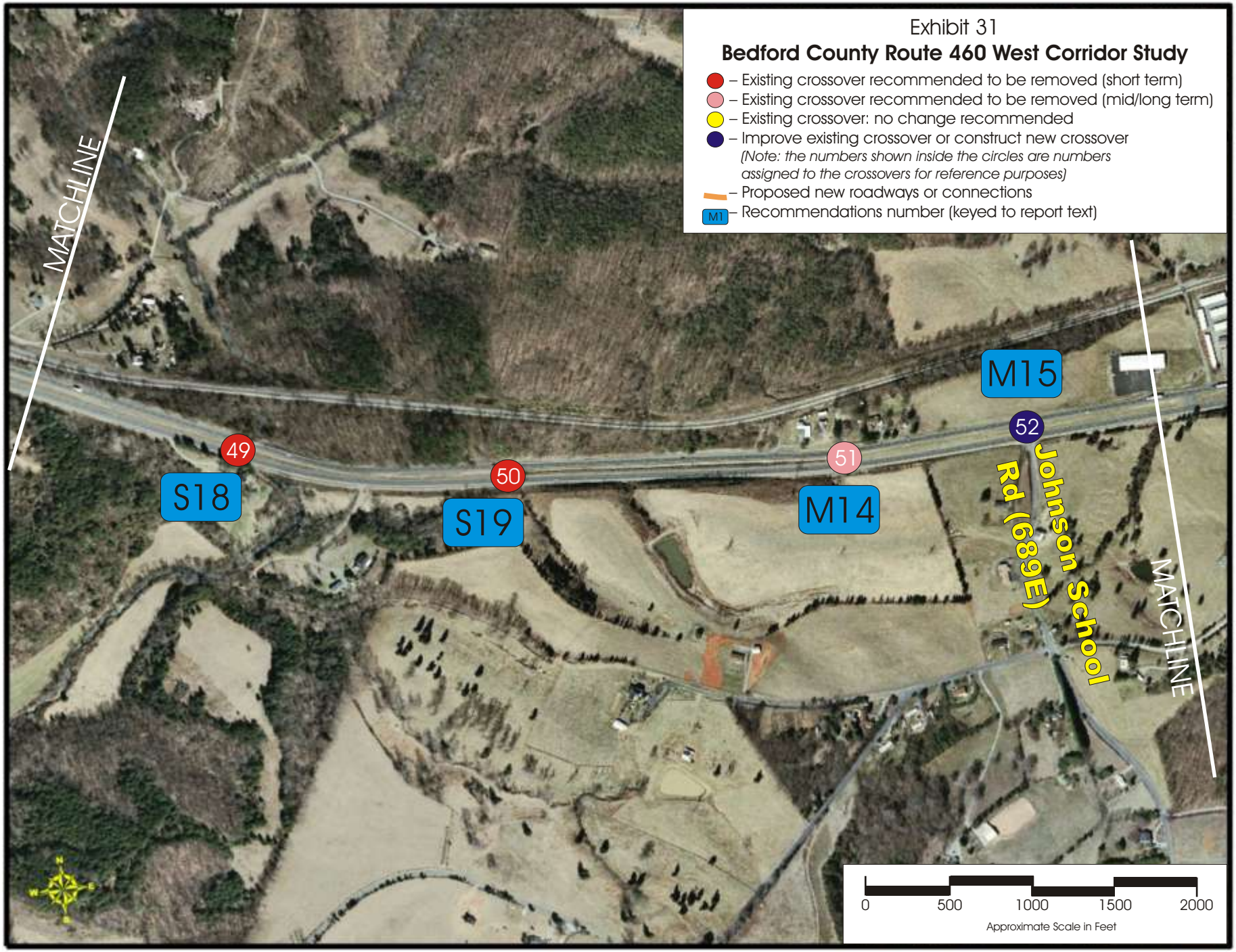


Exhibit 31
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
MATCHLINE
MATCHLINE
49
S18
50
S19
51
M14
M15
52
Johnson School Rd (689E)
0
500
1000
1500
2000
Approximate Scale in Feet

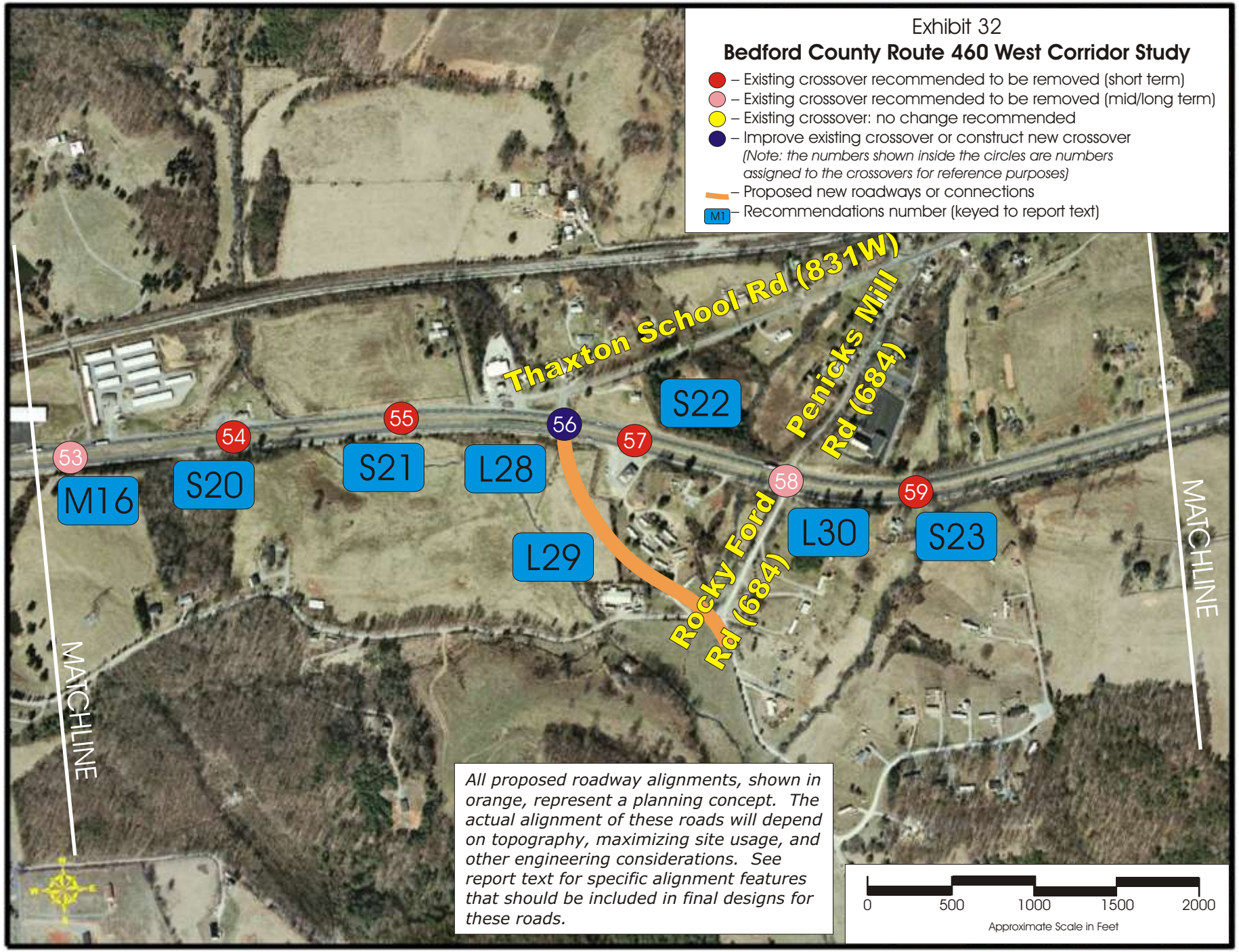


Exhibit 32
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
Thaxton School Rd (837W)
Penicks Mill Rd (684)
Rocky Ford Rd (684)
MATCHLINE
MATCHLINE
M16
S20
S21
L28
L29
S22
L30
S23
53
54
55
56
57
58
59
All proposed roadway alignments, shown in orange, represent a planning concept. The actual alignment of these roads will depend on topography, maximizing site usage, and other engineering considerations. See report text for specific alignment features that should be included in final designs for these roads.
0
500
1000
1500
2000
Approximate Scale in Feet

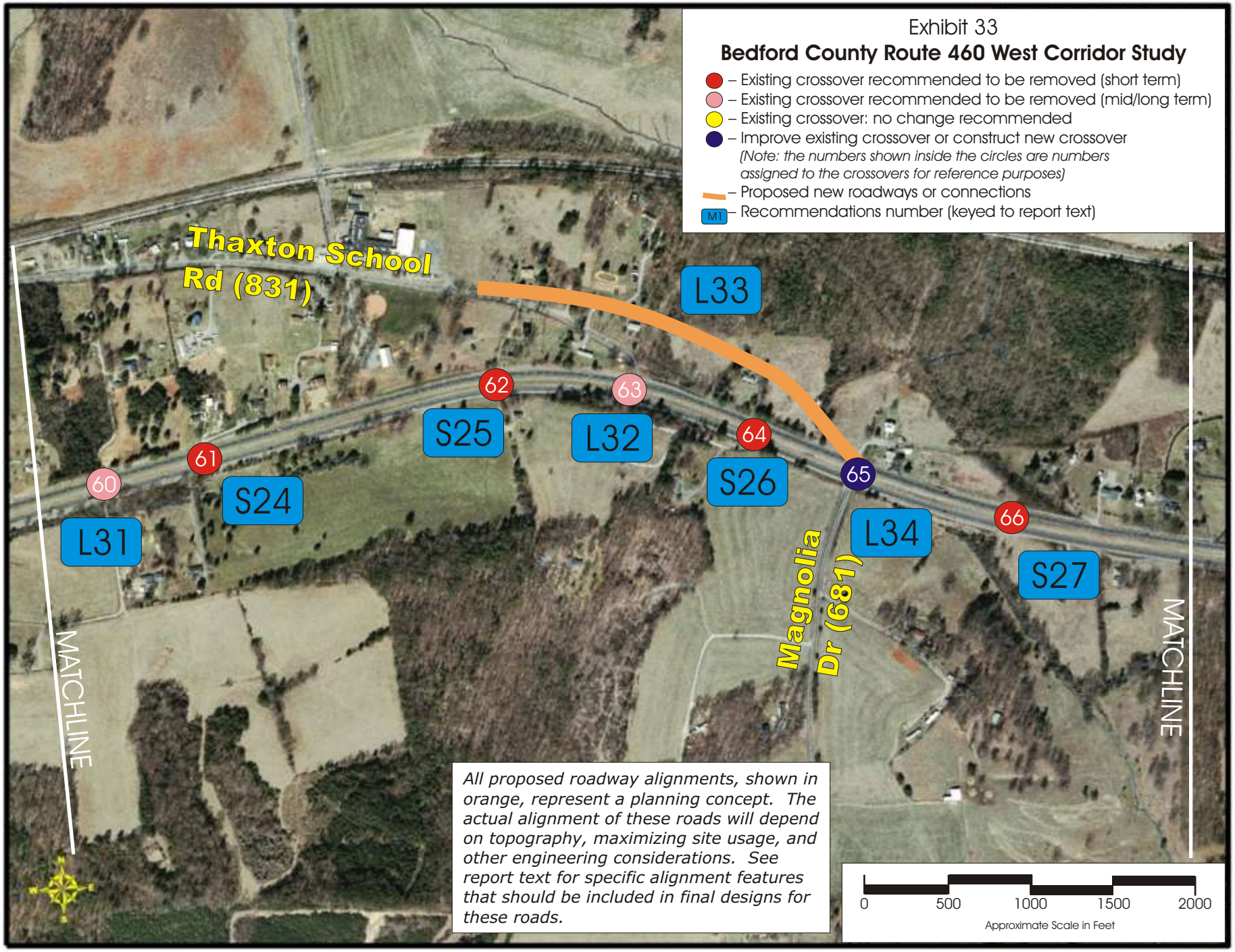


Exhibit 33
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
Thaxton School Rd (831)
L33
62
63
S25
L32
64
S26
65
60
61
S24
L31
66
L34
S27
Magnolia Dr (681)
MATCHLINE
MATCHLINE
All proposed roadway alignments, shown in orange, represent a planning concept. The actual alignment of these roads will depend on topography, maximizing site usage, and other engineering considerations. See report text for specific alignment features that should be included in final designs for these roads.
0
500
1000
1500
2000
Approximate Scale in Feet

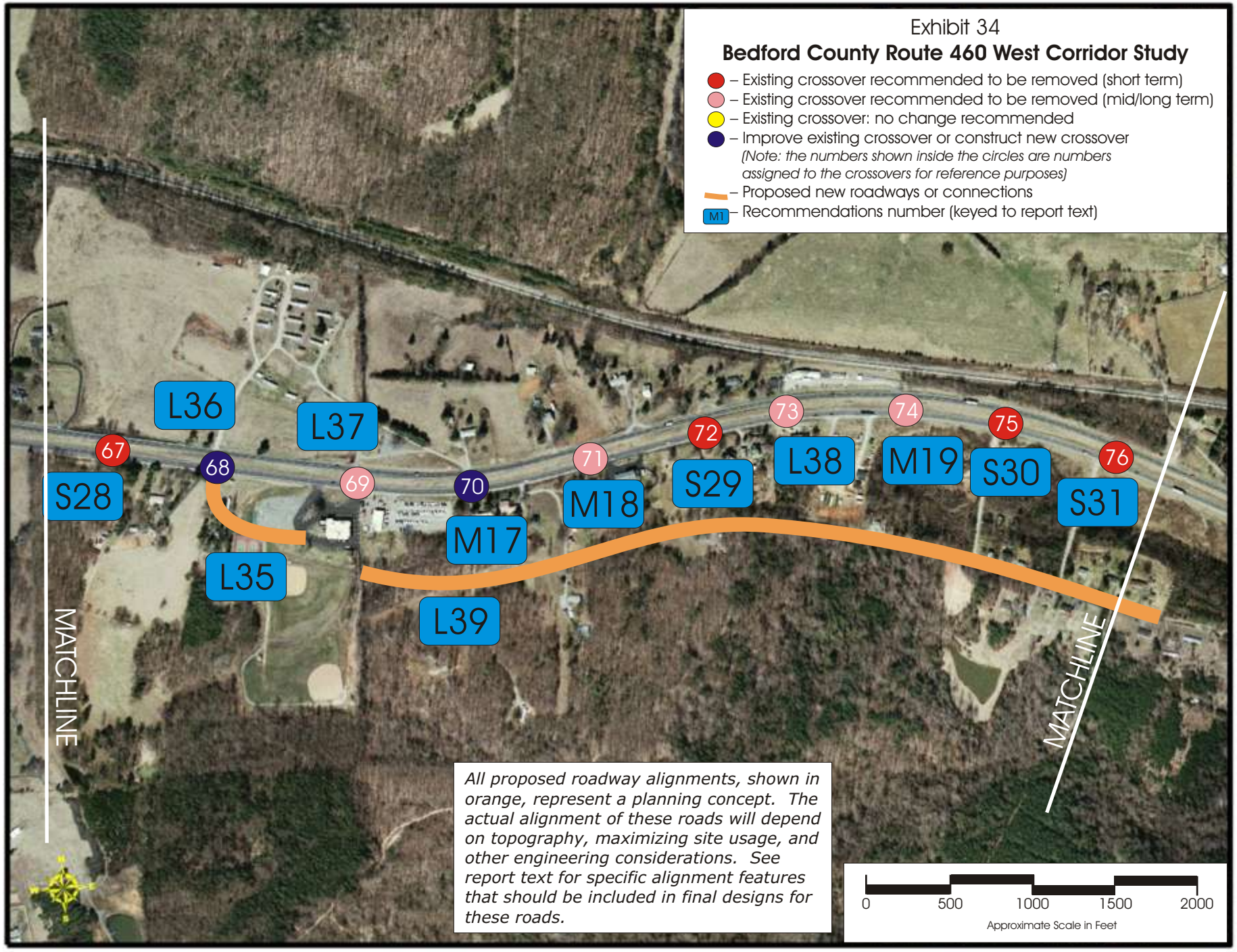


Exhibit 34
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
L36
L37
L38
L39
L35
M17
M18
M19
S28
S29
S30
S31
67
68
69
70
71
72
73
74
75
76
MATCHLINE
MATCHLINE
All proposed roadway alignments, shown in orange, represent a planning concept. The actual alignment of these roads will depend on topography, maximizing site usage, and other engineering considerations. See report text for specific alignment features that should be included in final designs for these roads.
0
500
1000
1500
2000
Approximate Scale in Feet

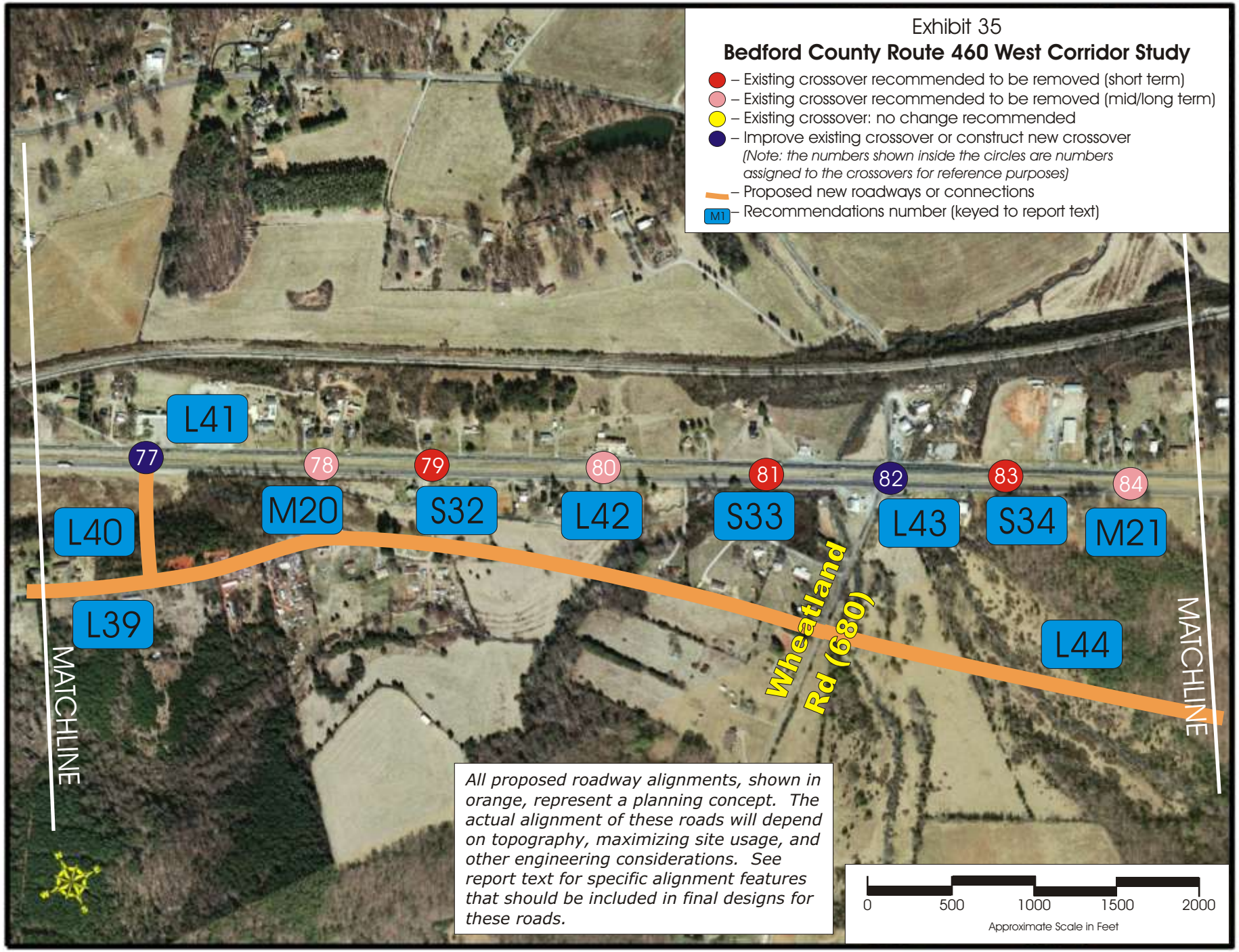


Exhibit 35
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
L41
77
78
79
80
81
82
83
84
L40
M20
S32
L42
S33
L43
S34
M21
L39
L44
Wheatland Rd (680)
MATCHLINE
MATCHLINE
All proposed roadway alignments, shown in orange, represent a planning concept. The actual alignment of these roads will depend on topography, maximizing site usage, and other engineering considerations. See report text for specific alignment features that should be included in final designs for these roads.
0
500
1000
1500
2000
Approximate Scale in Feet

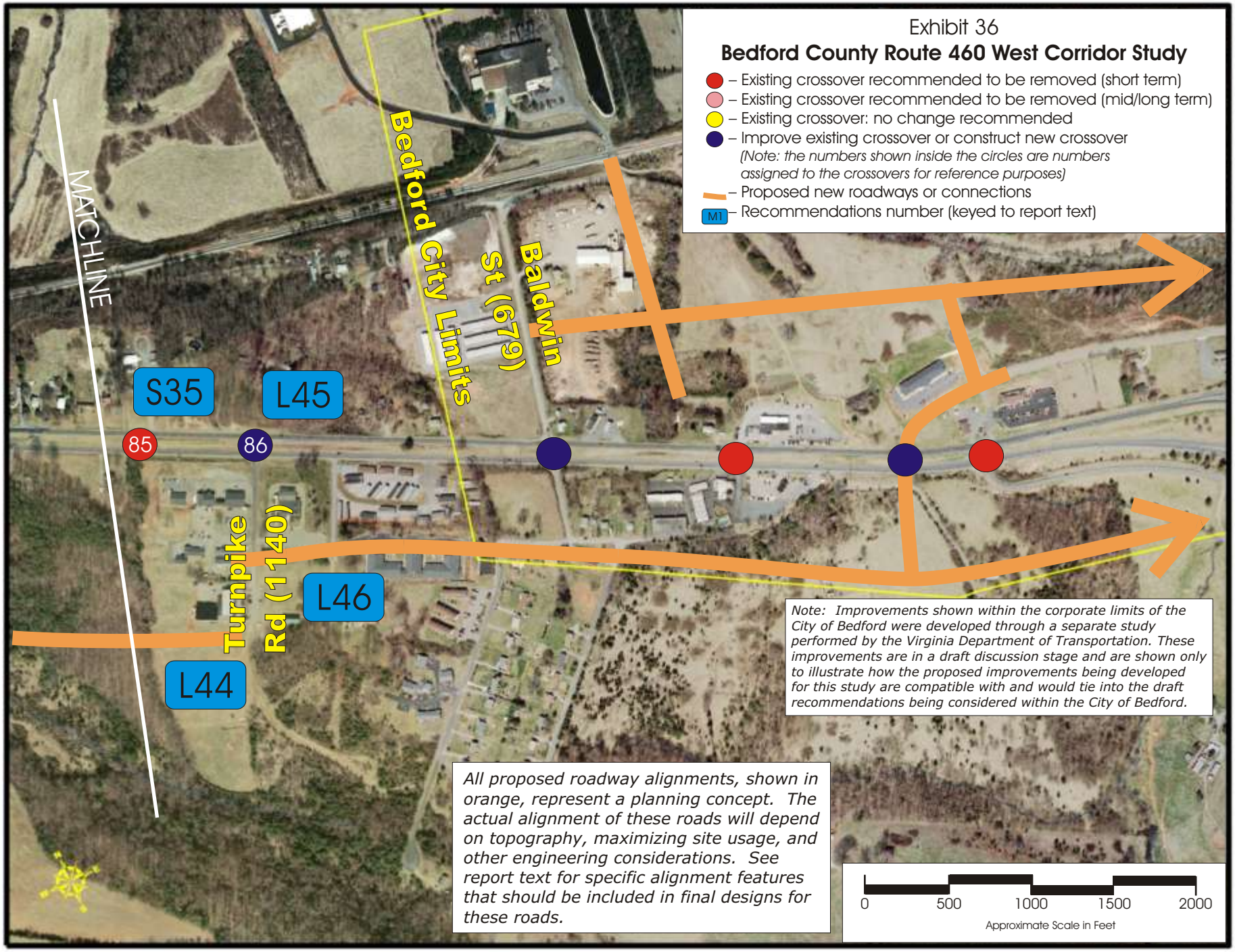


Exhibit 36
Bedford County Route 460 West Corridor Study
– Existing crossover recommended to be removed (short term)
– Existing crossover recommended to be removed (mid/long term)
– Existing crossover: no change recommended
– Improve existing crossover or construct new crossover
(Note: the numbers shown inside the circles are numbers assigned to the crossovers for reference purposes)
– Proposed new roadways or connections
M1 – Recommendations number (keyed to report text)
MATCHLINE
Bedford City Limits
Baldwin St (679)
Turnpike Rd (1140)
S35
L45
L46
L44
85
86
Note: Improvements shown within the corporate limits of the City of Bedford were developed through a separate study performed by the Virginia Department of Transportation. These improvements are in a draft discussion stage and are shown only to illustrate how the proposed improvements being developed for this study are compatible with and would tie into the draft recommendations being considered within the City of Bedford.
All proposed roadway alignments, shown in orange, represent a planning concept. The actual alignment of these roads will depend on topography, maximizing site usage, and other engineering considerations. See report text for specific alignment features that should be included in final designs for these roads.
0
500
1000
1500
2000
Approximate Scale in Feet