

ROUTE 122 CORRIDOR STUDY

Bedford County and Bedford City, Virginia

Developed by

Region 2000 Regional Commission

In cooperation with

Bedford County, Virginia

City of Bedford, Virginia

Virginia Department of Transportation

and

Federal Highway Administration

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Table of Contents

Executive Summary	ES-1
1 Existing Conditions	1
1.1 Roadway Geometry.....	1
1.2 Traffic Data	5
1.3 Safety Analysis	14
1.4 Roadway Operations Analyses	17
1.5 Field Observations	19
1.6 Public Participation and Input.....	19
2 2025 Traffic Conditions	23
2.1 2025 Traffic Forecasts	23
2.2 2025 No-Build Traffic Operations	27
3 Improvement Alternatives	29
3.1 Alternative 1: Improve Intersections Only.....	29
3.2 Alternative 2: Upgrade Two-Lane Roadway.....	29
3.3 Alternative 3: Widen to Four-Lanes Undivided	31
3.4 Alternative 4: Widen to Four-Lanes Divided	31
3.5 Summary Comparison of Alternatives.....	31
3.6 Non-Construction Improvement Options	33
4 Study Recommendations	34
4.1 Route 24 Intersection Improvements	35
4.2 Comprehensive Plan Amendments	35
4.3 Access Management, Overlay Zoning, and Local Circulation Planning...	35
4.4 Route 122 Construction Improvements	39
4.5 Route 460 Interchange Improvements	40
4.6 Halesford Bridge Capacity.....	44
4.7 Implementation Considerations	44

List of Exhibits

1	Study Corridor	2
2	Intersection Lane Configurations	4
3	Summary of Roadway Conditions	5
4	Daily Traffic Count Locations	6
5	Major Intersections	6
6	Average Daily Traffic Volume	7
7	Traffic Volume by Day of the Week	7
8	Weekday Volume by Time of Day – Route 122 North of the Bedford/Franklin County Line	8
9	Weekday Volume by Time of Day – Route 122 between Routes 731 and 24	8
10	Weekday Volume by Time of Day – Route 122 South of Route 460	8
11	Weekday Volume by Time of Day – Route 122 South of Route 903	9
12	Weekend Volume by Time of Day – Route 122 South of Route 903	9
13	Weekday Volume by Time of Day – Route 122 South of Route 721	9
14	Weekend Volume by Time of Day – Route 122 South of Route 721	10
15	Existing Conditions AM Peak Hour Traffic Volumes	11
16	Existing Conditions PM Peak Hour Traffic Volumes	12
17	Percentage of Trucks and Buses in the Corridor	13
18	Percentage of Trucks and Buses by Day of the Week	13
19	Accidents in the Study Corridor	15
20	Frequent Accident Locations	16
21	Accidents by Type	16
22	Accidents by Time of Day	16
23	Summary of Existing Segment Operations	17
24	Existing Intersection Levels of Service	18
25	Summary of Deficiencies Identified by Field Review	19
26	Summary of Input from Public Meetings	20
27	Segment Growth Calculations	23
28	2025 Average Daily Traffic Forecasts	24
29	2025 AM Peak Hour Traffic Volumes	25
30	2025 PM Peak Hour Traffic Volumes	26
31	2025 Intersection Levels of Service	27
32	Summary of 2025 Segment Operations	28
33	Improvement Alternatives Conceptual Cross-Sections	30
34	Summary of Benefits and Costs	31
35	Proposed Corridor Overlay District Wording	37
36	Conceptual Cross-Section: Two-Lane Upgrade on a Four-Lane Right-of-Way	39
37	Proposed Intersection Improvements	41
38	Potential Route for Re-Alignment of Route 122 in the Vicinity of Route 801	42
39	Potential Route for Alignment of Diamond Hill Road and Hendricks Store Road (Route 655)	43

Executive Summary

This study examines a stretch of Route 122 in Bedford County that extends for slightly more than 16 miles from the Franklin County border to the Route 460 Bypass in the City of Bedford. For most of this length, Route 122 is a two-lane rural minor arterial that serves the residential and tourist areas in the vicinity of Smith Mountain Lake, the communities of Moneta and Bedford, and the low-density rural residential and agricultural areas of southern Bedford County.

Route 122 serves as the major route to the growing areas around Smith Mountain Lake. There has been and continues to be residential and commercial development alongside Route 122 both north and south of the Halesford Bridge over Smith Mountain Lake. Such development is expected to continue. Development is also likely to increase dramatically with Bedford County's extension of public water along the southern portion of Route 122 from Hendricks Store Road (Route 655) to the Halesford Bridge. This extension of public water service, anticipated to be complete by the summer of 2003, will serve a large area with both residential and commercial zoning. The service may also extend across the Halesford Bridge into Franklin County.

This study was performed to identify existing transportation and safety concerns along Route 122, identify the effects of continued land development on transportation operations and safety, and develop roadway and land planning projects, procedures, and policies to ensure long-term transportation efficiency and safety in this important corridor. The study included analysis of existing (year 2002) conditions as well as a study horizon year of 2025. Year 2025 traffic forecasts were developed based on historic trends as well as expected changes in land uses that are anticipated by Bedford County planning staff.

Public involvement was a key element of this study. The public was involved early in the study process to assist in identifying transportation and safety concerns in the corridor, and they were invited to provide comment at a follow-up meeting on a number of potential options to address these concerns. This input was invaluable and is reflected in many of the final study recommendations.

This report provides details on the data collection, analysis, forecasting, and public participation process. The study recommendations are summarized below; additional detail on the recommendations is included in Chapter 4.

This study recommends the following short-term improvements (within 5 years) for the Route 122 Corridor:

- 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 122.

- Update to the Corridor Overlay District portion of the Bedford County Zoning Ordinance to incorporate access management elements for this important corridor.
- Construction of the planned VDOT safety improvements at the intersection of Route 122 and Route 24.
- Re-alignment of Route 655 North (Diamond Hill Road) with Route 655 South (Hendricks Store Road), thereby eliminating the Route 655 North intersection on Route 122.
- Study options for increasing roadway capacity across Smith Mountain Lake using either the existing Halesford Bridge or a new crossing.

Intermediate-term (5 to 15 years) improvements for the study corridor would address the specific roadway deficiencies in the Davis Mill area (in the vicinity of Goose Creek) as well as a number of intersection deficiencies identified by this study. These improvements include:

- Construction of Route 122 on new alignment from approximately 0.75 miles north of Goose Creek to 0.2 miles south of Route 801. This improvement would include a new bridge over Goose Creek east of where Stony Fork joins Goose Creek as well as an improved intersection to accommodate the connection between Route 801 and Route 122.
- Improvements to 12 intersections in the study corridor to add turn lanes. In order to safely accommodate projected year 2025 traffic, it is anticipated that traffic signals may be needed at up to six intersections in the study corridor.

The long-term (more than 15 years) recommendation for the Route 122 Corridor is for a full-length upgrade of the corridor to an improved two-lane facility on a four-lane right-of-way. This recommendation is a combination of two alternatives that were presented to the public at the December 16, 2002 meeting. In conjunction with the intermediate-term intersection improvements, this recommendation would address safety concerns in the corridor along with a number of the anticipated capacity concerns. Projected traffic demands in 2025 and beyond indicate the need for additional capacity so the purchase of sufficient right-of-way to provide for a four-lane divided facility is necessary. With this recommendation, Route 122 would be upgraded to 12-foot standard lanes with four-foot paved shoulders for safety and to accommodate bicycles. Sections of the roadway with deficient geometrics would be improved to meet current standards. Sufficient right-of-way would be purchased to ultimately provide for four 12-foot travel lanes, four to six foot inside and outside shoulders, a 26-foot grass median, and a separate trail for bicycle and pedestrian travel. It is important to note that all short- and intermediate-term improvements should be made to be consistent with the long-term recommendations. For example, improvements such as the construction of Route 122 on new alignment north and south of Goose Creek should include the purchase of sufficient right-of-way for four travel lanes and a new bridge over Goose Creek should provide for four lanes or be capable of being upgraded to four lanes.

Chapter 1 – Existing Conditions

Route 122 extends in a southwest to northeast direction in Central Virginia, and is designated a state primary route. For its approximate 50-mile length, it provides transportation service to the City of Bedford, the Town of Rocky Mount, and the unincorporated towns of Big Island, Moneta, and Burnt Chimney. The specific study area for this project extends 16.3 miles from the Franklin/Bedford county line at Smith Mountain Lake north to the Route 460 Bypass in the City of Bedford. A map of the study area is included in Exhibit 1.

The primary concerns on Route 122 today relate to roadway safety with particular concerns at several intersections. The primary safety concern in the corridor today is the intersection of Route 122 and Route 24. Other areas of concern include the intersection of Route 122 at Route 801 and the section of Route 122 just north of this intersection. Current traffic congestion issues revolve around the intersections of Route 122 with Route 655 (the Hendricks Store area). The northern end of the corridor at and near the Route 460 interchange also carries high volumes of traffic.

The existing conditions analyses for the corridor study included assessing traffic flow, safety, access, and roadway geometrics. To support these analyses, traffic counts were taken, roadway operations analysis was performed, traffic accident reports were retrieved and analyzed, and field observations were made. The primary existing deficiencies in the Route 122 corridor relate to roadway geometry and traffic safety.

1.1 Roadway Geometry

Route 122 is a two-lane facility from Smith Mountain Lake to the southern corporate limits of the City of Bedford, where it becomes four lanes with no median. In the two-lane sections, the travel lanes on Route 122 range in width from 10 to 12 feet, with the majority of sections having lane widths between 10 and 11 feet. Shoulder widths are generally two to four feet. As it bypasses the community of Moneta, however, Route 122 has full 12-foot lane widths with paved shoulders of 8 feet or more. Passing is not allowed (double yellow line) on approximately 85 percent of Route 122 through the study area. The legal travel speeds range from 25 miles per hour on a short section in the City of Bedford to 55 miles per hour. Along numerous curves and at the approaches to several intersections, the speed limits are reduced to either 35 or 45 miles per hour.

All intersections along Route 122 are controlled by stop signs on the side road. At Route 24, the stop signs controlling traffic on Route 24 are supplemented by flashing lights. There are no stop signs controlling traffic on Route 122 itself and, with the exception of waiting for left turning vehicles, motorists on Route 122 do not need to stop when traveling through the study area. The majority of intersections on Route 122 do not have turn lanes, but several of the larger intersections have right turn lanes that allow motorists

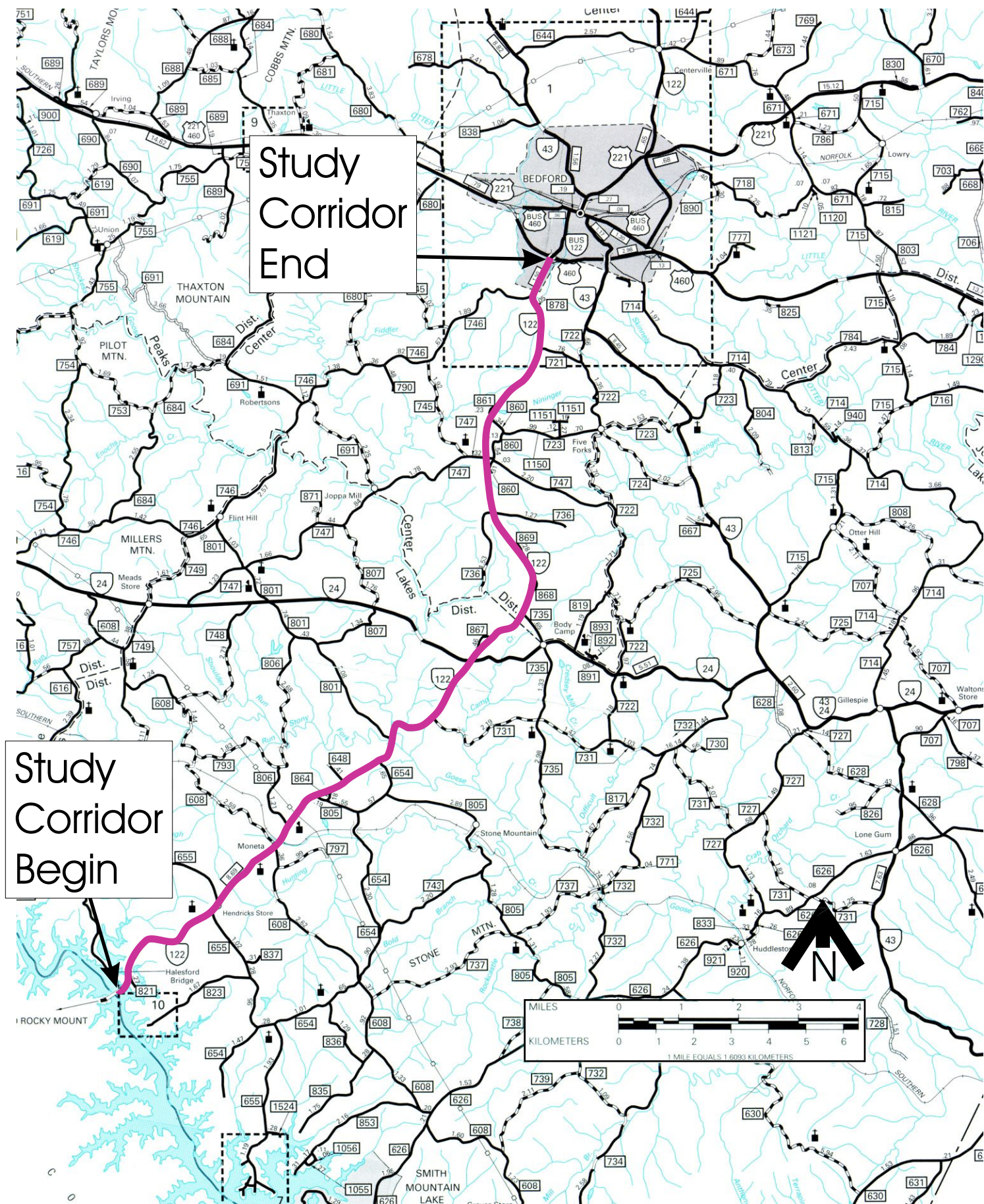


Exhibit 1
Study Corridor

to decelerate when making a right turn off Route 122. Several of the intersections on the Moneta Bypass section of Route 122 have left turn lanes in addition to right turn lanes.

The side street approaches at almost all intersections in the study area are single lane approaches with no left or right turn lanes. The lane configurations at 15 key intersections in the study area are shown in Exhibit 2.

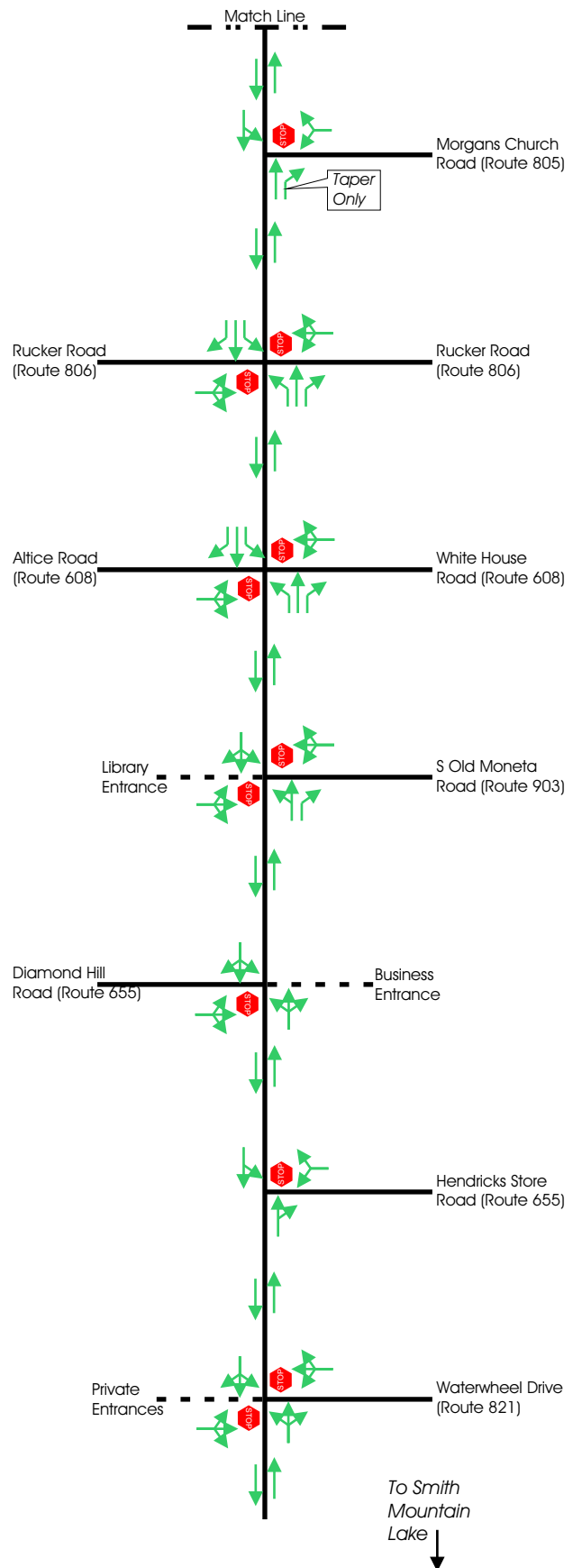
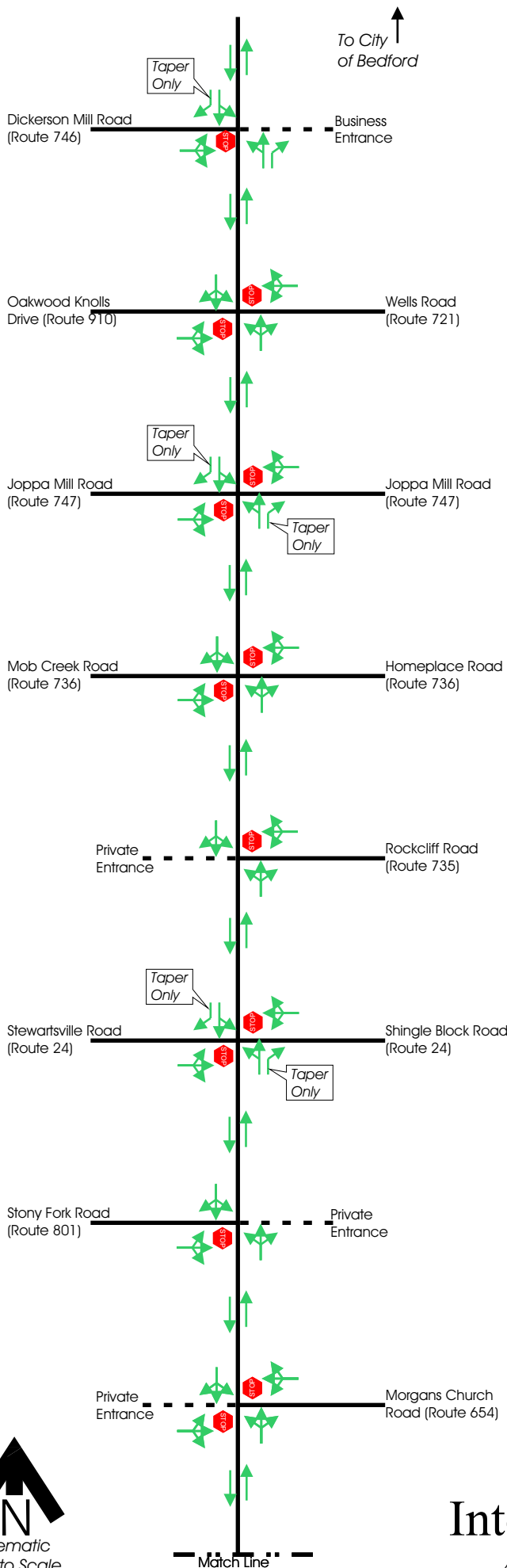


Exhibit 2 Intersection Lane Configurations

There are currently 375 access points on both sides of Route 122, including roads and driveways. On average, the corridor has an access point every 204 feet (25.9 access points per mile). These access points are shown in Exhibit 3.

Exhibit 3
Summary of Roadway Conditions

Segment Endpoint		Length (miles)	Number of Access Points			Access Points per Mile		
From	To		NB	SB	Total	NB	SB	Total
Franklin Co. Line	Route 821	0.2	3	3	6	10	10	20
Route 821	Route 655 S	1.9	20	26	46	11.8	15.3	27.1
Route 655 S	Route 655 N	0.2	0	2	2	0	11.1	11.1
Route 655 N	Route 903	1.0	15	13	28	18.75	16.25	35
Route 903	Route 608	0.4	2	1	3	4	2	6
Route 608	Route 806	0.4	3	3	6	10	10	20
Route 806	Route 805	0.7	11	7	18	15.7	10	25.7
Route 805	Route 654	1.2	14	16	30	12.7	14.5	27.2
Route 654	Route 801	0.4	2	6	8	4.4	13.3	17.7
Route 801	Route 24	2.1	15	26	41	8.3	14.4	22.7
Route 24	Route 735	1.3	11	11	22	11	11	22
Route 735	Route 736	1.9	24	12	36	13.7	6.9	20.6
Route 736	Route 747	0.9	9	12	21	11.25	15	26.25
Route 747	Route 721/901	2.1	23	16	39	13.1	9.1	22.2
Route 721/901	Route 746	0.9	10	13	23	13.3	17.3	30.6
Route 746	Bedford City Line	0.1	5	2	7	50	20	70
Bedford City Line	Route 460 Bypass	0.6	23	16	39	46	32	78
TOTAL		16.3	190	185	375	13.1	12.8	25.9

1.2 Traffic Data

Daily traffic counts and peak hour turning movement traffic data for the 2002 base year were obtained in the Route 122 corridor. The counts were conducted during August 2002. Daily traffic counts were collected at five locations in the corridor, listed in Exhibit 4. Pneumatic traffic counters (tubes) were used to count traffic on Route 122 at five locations in the study corridor. These counts were taken during the week of August 12, 2002. Three of these counters recorded traffic volumes for a 48-hour weekday period (Tuesday and Wednesday); the remaining two counters recorded traffic volumes for a seven-day period.

Exhibit 4
Daily Traffic Count Locations

Segment on Route 122
<i>48-Hour Counts</i>
North of Bedford/Franklin County Line
Between Route 731 and Route 24
South of Route 460
<i>Seven-Day Counts</i>
South of Route 903
South of Route 721

Intersection turning movement counts were conducted at 15 intersections in the corridor. The intersections are listed in Exhibit 5 by VDOT route numbers and road names.

Exhibit 5
Major Intersections

Route Number	Road Name
Route 821	Waterwheel Drive
Route 655 (South Intersection)	Hendricks Store Road
Route 655 (North Intersection)	Diamond Hill Road
Route 903	South Old Moneta Road
Route 608	White House Road (East) / Altice Road (West)
Route 806	Rucker Road
Route 805	Morgans Church Road
Route 654	Morgans Church Road
Route 801	Stony Fork Road
Route 24	Shingle Block Road (East) / Stewartsville Road (West)
Route 735	Rockcliff Road
Route 736	Home Place Road (East) / Mob Creek Road (West)
Route 747	Joppa Mill Road
Routes 721 (East) / Route 910 (West)	Wells Road (East) / Oakwood Knolls Drive (West)
Route 746	Dickerson Mill Road

Daily (24-hour) traffic volumes within the study corridor, as determined by the traffic counts performed for this study, are shown in Exhibit 6. The highest and lowest average daily traffic volumes were recorded in the 48-hour counts: the highest volume was south of Route 460, while the lowest volume was between Route 731 and Route 24.

Exhibit 6
Average Daily Traffic Volume

Segment on Route 122	Average 24-hour Volume
<i>48-Hour Counts</i>	
North of Bedford/Franklin County Line	6270
Between Route 731 and Route 24	4650
South of Route 460	9900
<i>Seven-Day Counts</i>	
South of Route 903	6420
South of Route 721	7600

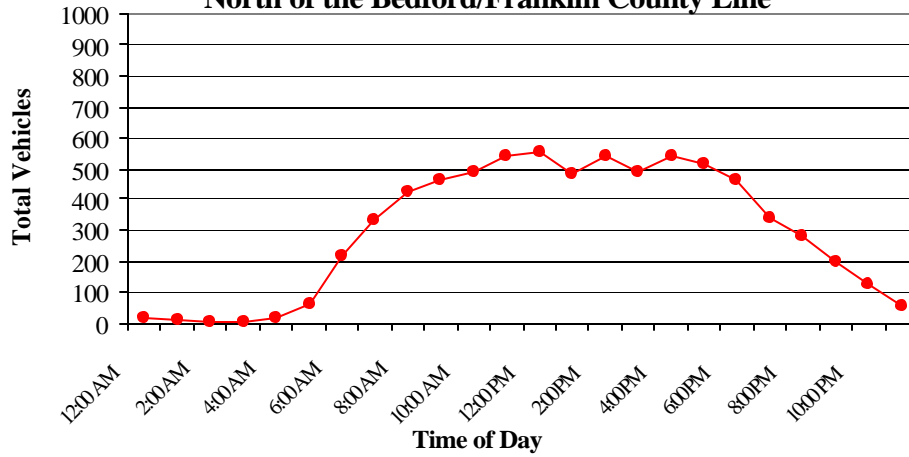
The seven-day counts at two locations show that traffic volumes in the corridor varied to a small degree by the day of the week. Average volume is the lowest on Sunday. It gradually increases through the week, and reaches its highest point on Friday (Friday volumes are 15 percent higher than Monday volumes). Traffic volume by the day of the week is shown in Exhibit 7. The volumes shown are those recorded by the two seven-day tube counters.

Exhibit 7
Traffic Volume by Day of the Week

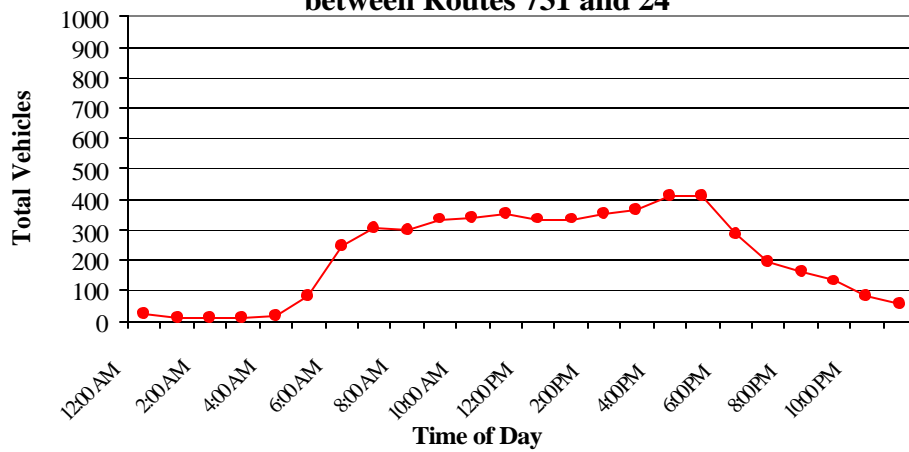
Count Location	Volume by Day						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Route 903	6135	6440	6356	6280	7131	6948	5597
Route 721	7338	7481	7618	7796	8362	7650	6681
AVERAGE	6737	6961	6987	7038	7747	7299	6139

Traffic volumes at each of the count locations vary greatly by time of day. In the early morning hours, low volumes were observed. The pattern for the rest of the day consisted of a gradual rise in traffic volume from around 6 a.m. until late in the afternoon, when it begins falling sharply. Local variations exist at the count locations (with the highest level of peaking in the City of Bedford just south of Route 460), but the same general pattern can be seen at all count locations. No significant change in this pattern exists for weekend traffic versus weekday traffic. Line graphs of traffic volumes versus time of day are shown in Exhibits 8 through 14.

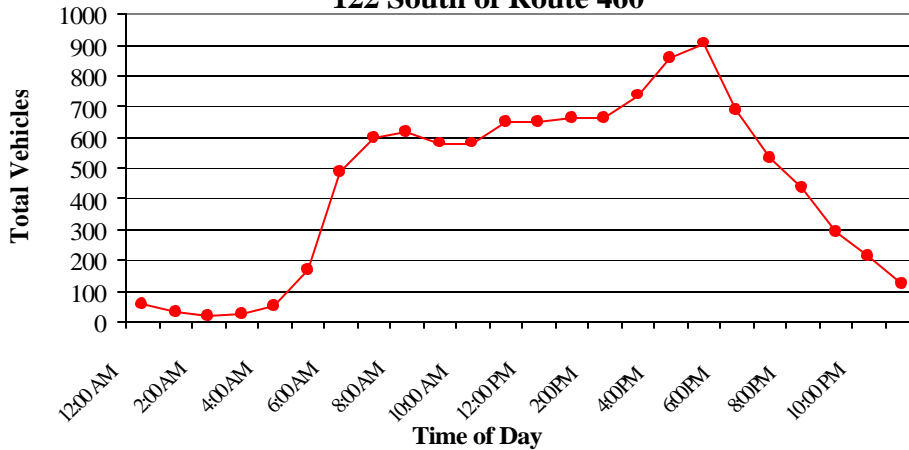
**Exhibit 8: Weekday Volume by Time of Day -- Route 122
North of the Bedford/Franklin County Line**

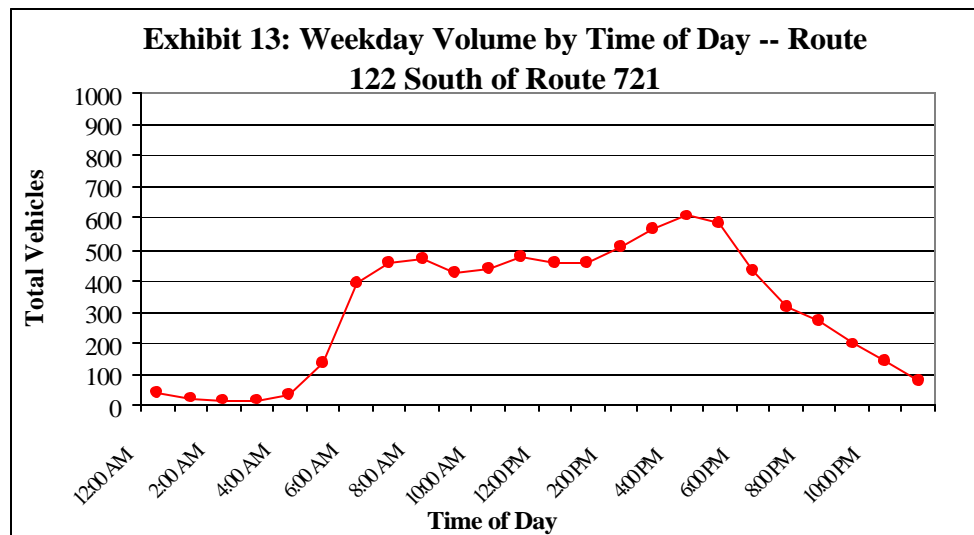
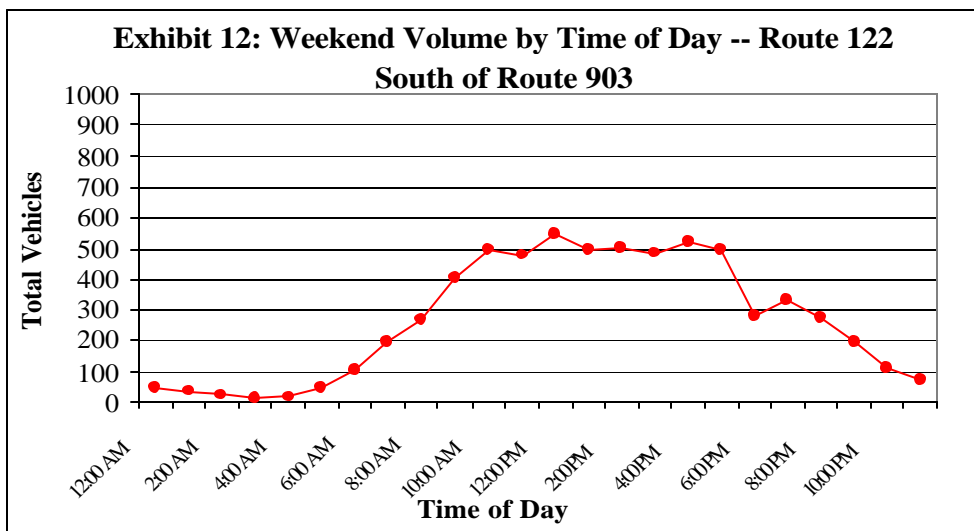
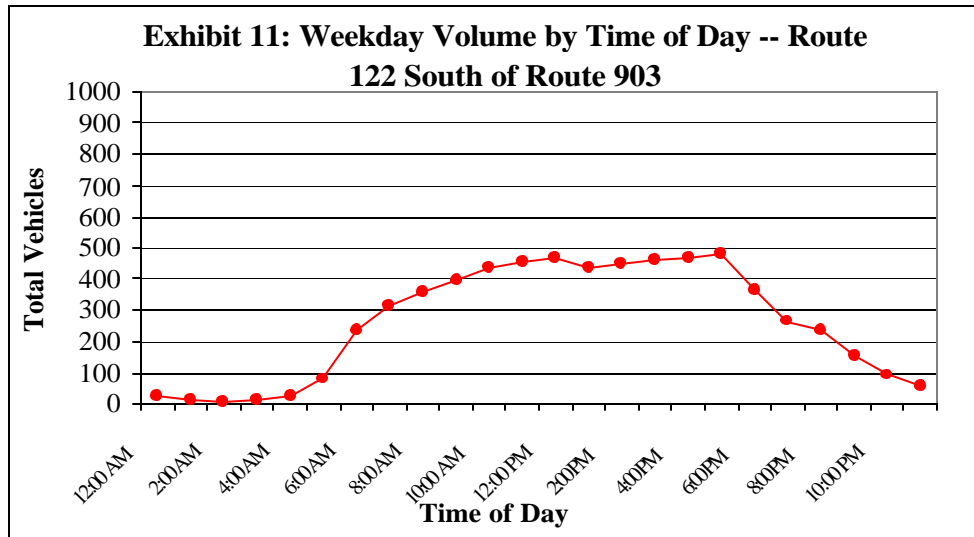


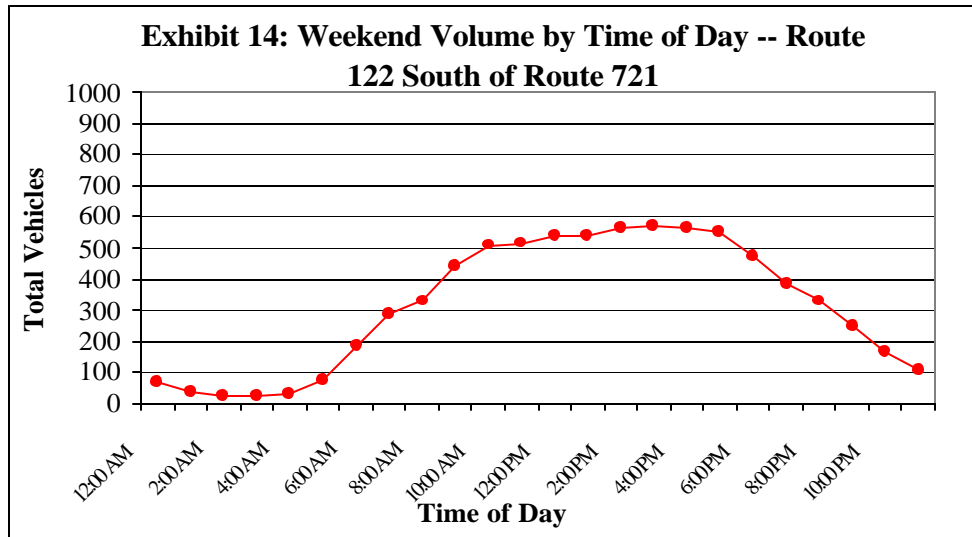
**Exhibit 9: Weekday Volume by Time of Day -- Route 122
between Routes 731 and 24**



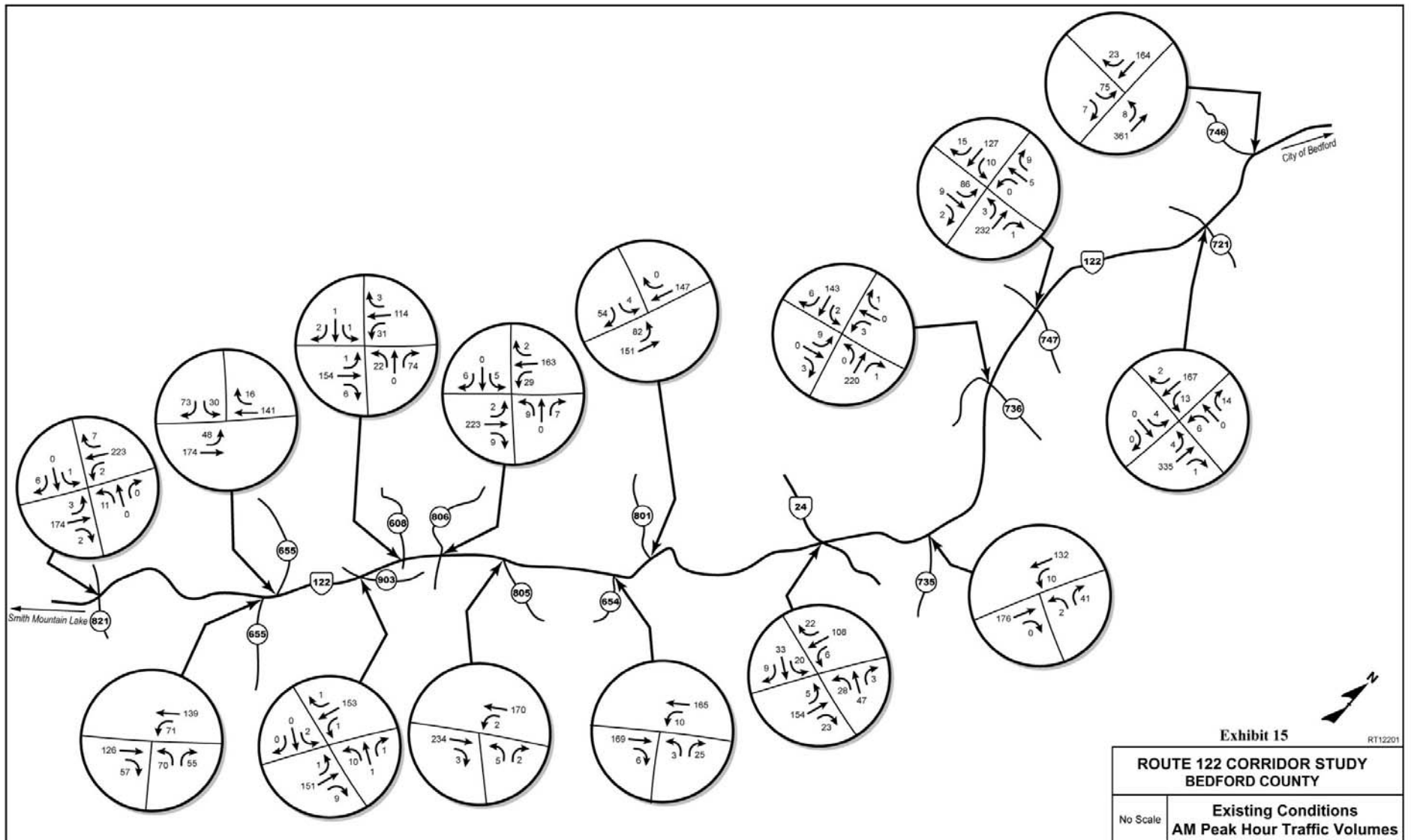
**Exhibit 10: Weekday Volume by Time of Day -- Route
122 South of Route 460**

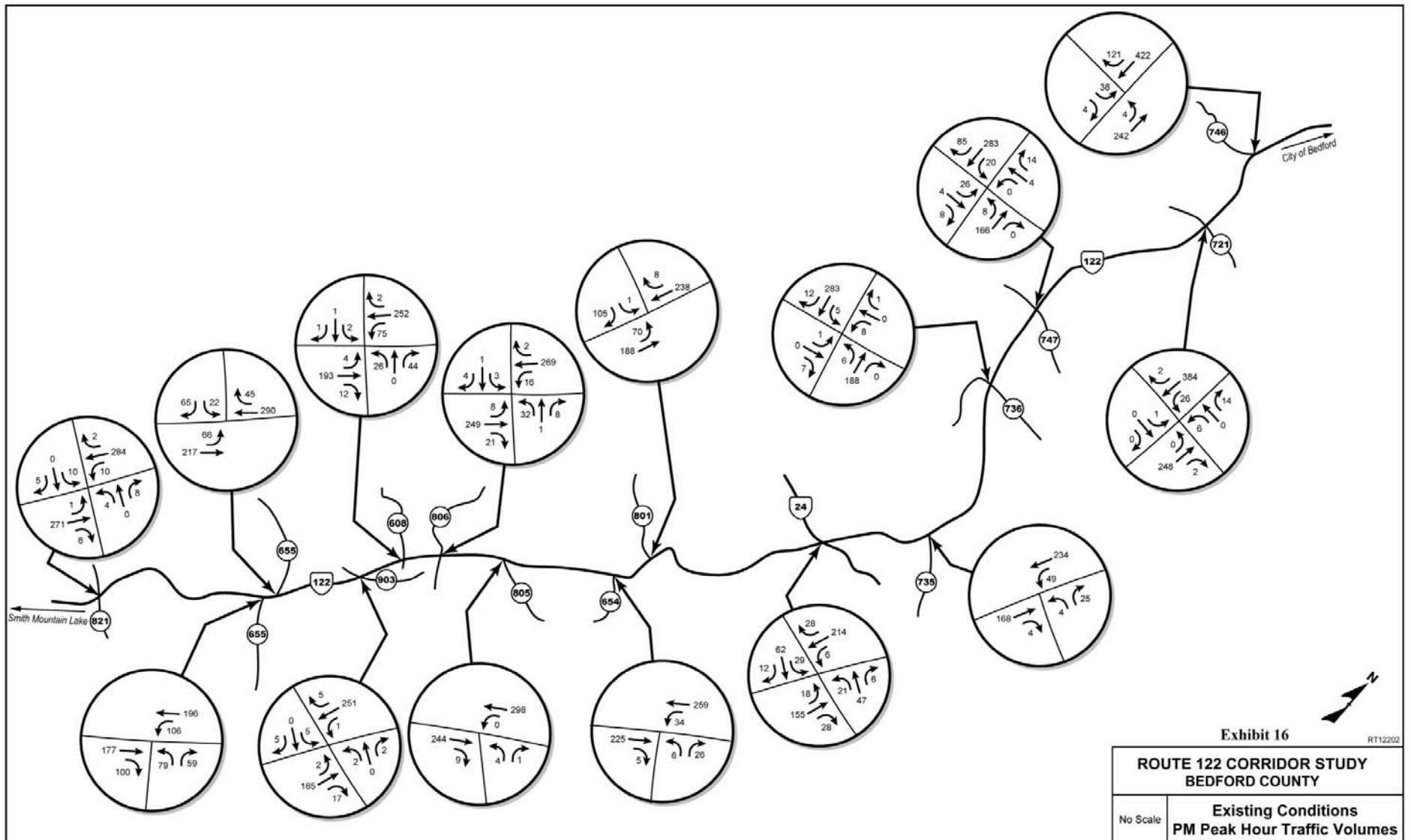






In addition to daily traffic counts along Route 122, intersection turning movement counts were conducted at 15 intersections in the corridor. As opposed to the tube counts, these counts were conducted manually using staff stationed at each intersection for a two-hour morning period from 7 a.m. to 9 a.m. and evening peak period from 4 p.m. to 6 p.m. As with the tube counts, the turning movement counts were performed during the week of August 12, 2002. After each count was tallied, the one-hour period of the highest traffic volume was determined for each intersection for the morning and evening peak periods. These peak hour volumes are shown in Exhibits 15 and 16.





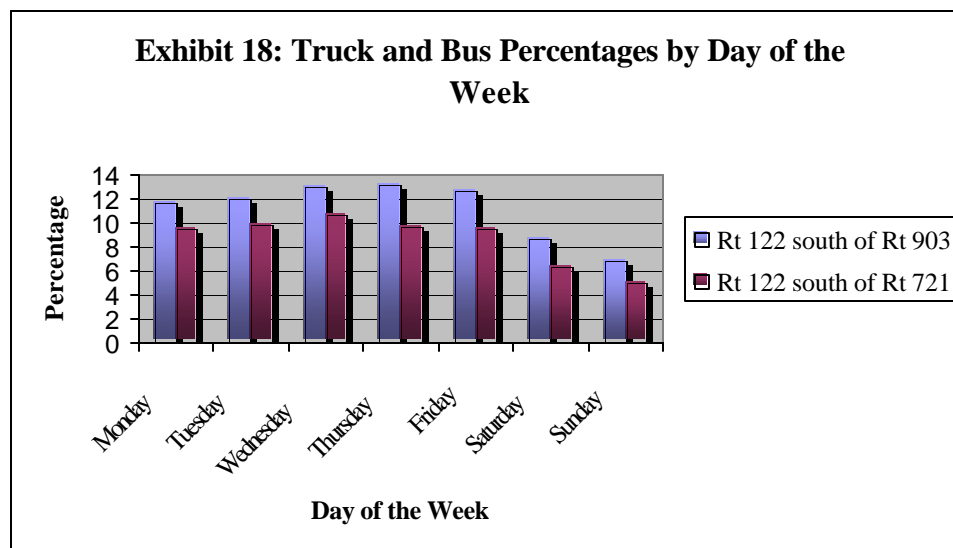
While most vehicles on Route 122 are passenger cars, about one-tenth of traffic in the corridor consists of commercial trucks and buses. These percentages, as recorded at the five tube counts performed for this study, are shown in Exhibit 17.

Exhibit 17
Percentage of Trucks and Buses in the Corridor

Location on Route 122	2002 Volume	% Trucks/Buses*	
		Northbound	Southbound
<i>48-Hour Counts</i>			
North of Bedford/Franklin County Line	6267	9.8%	10.7%
Between Route 731 and Route 24	4652	11.2%	12.2%
South of 460 Bypass	9901	8.9%	10.3%
<i>Seven-Day Counts</i>			
South of Route 903	6415	9.9%	12.4%
South of Route 721	7595	8.0%	9.4%

* Defined as any vehicle with six or more tires.

At the two tube count locations where traffic was counted for seven days, south of Route 903 and south of Route 721, a slight difference was recorded in truck/bus percentages during the week as compared to the weekend. At the Route 903 location, weekday truck/bus percentages ranged from a low of 11.6 percent on Monday to a high of 13.2 percent on Wednesday. On Saturday, however, this number decreased to 8.6 percent, and on Sunday it declined further to 6.9 percent. A similar trend was seen at the Route 721 location where truck/bus percentages ranged from a low of 9.4 percent on Monday to a high of 10.7 percent on Wednesday. On Saturday, this figure fell to 6.3 percent, and on Sunday it decreased further to 5.0 percent. Truck/bus percentages for the corridor by the day of the week are shown in Exhibit 18.



1.3 Safety Analysis

Roadway safety was determined based on an analysis of vehicle crash records for the three-year period from January 1999 to December 2001. During this period, 154 vehicular accidents occurred in the study area. These accidents are summarized in Exhibit 19.

The analysis of accidents included assessing the total number of accidents in any calendar year, identifying whether there was a consistent trend in the number of accidents, and determining locations where this trend was either consistent across years and/or increasing. While all locations were assessed, a threshold of five or more accidents in at least one of the three study years was used to define a location as having safety deficiencies in terms of accident experience. This threshold was used as a general guideline, as locations with four accidents in any one of the study years were also assessed to determine if there were any particular safety concerns. The analysis of accident history was also supplemented by field observations of traffic safety and by input from the general public, Bedford County officials, and the VDOT Bedford Residency. Ultimately, all of this input was used to identify locations with safety concerns.

Four roadway segments and three intersections exceeded the screening guideline of five or more vehicle accidents in any one of the study years. These locations are shown in Exhibit 20 and a breakdown of these accidents by type is listed in Exhibit 21. The roadway segment with the highest number of accidents is from Route 821 to Route 655 South. Half of the 22 accidents that occurred in this segment were rear-end crashes. The intersection with the most accidents was at Route 122 and Route 24, where 12 of 13 accidents were angle crashes and one accident was a sideswipe.

An analysis of vehicle accidents by time of day can sometimes reveal deficiencies with respect to street lighting or location, type, and lighting of roadway signs. These deficiencies can sometimes be pinpointed if an unusually high number of accidents occur during the night hours. Exhibit 22 shows the breakdown of accidents for the seven identified locations by time of day. The segment of Route 122 with the highest percentage of night accidents is the segment from Route 747 to Route 721 (56 percent night accidents). None of the intersections had more than about 20 percent night accidents, and the intersection of Route 122 and Route 801 had no night accidents.

Exhibit 19
Accidents in the Study Corridor

Location	Distance (miles)	1999	2000	2001	Total
From Franklin County Line to Route 821	0.2	1	3	1	5
At Route 821	*	0	0	0	0
From Route 821 to Route 655 S	1.9	8	9	5	22
At Route 655 S	*	1	2	0	3
From Route 655 S to Route 655 N	0.2	0	0	0	0
At Route 655 N	*	1	3	1	5
From Route 655 N to Route 903	1	4	2	2	8
At Route 903	*	0	0	1	1
From Route 903 to Route 608	0.4	0	0	1	1
At Route 608	*	0	0	0	0
From Route 608 to Route 806	0.4	0	0	0	0
At Route 806	*	0	0	0	0
From Route 806 to Route 805	0.7	0	0	0	0
At Route 805	*	0	0	0	0
From Route 805 to Route 654	1.2	4	5	2	11
At Route 654	*	1	2	0	3
From Route 654 to Route 801	0.4	4	2	3	9
At Route 801	*	5	0	2	7
From Route 801 to Route 24	2.1	2	5	3	10
At Route 24	*	3	7	3	13
From Route 24 to Route 735	1.3	0	3	3	6
At Route 735	*	1	3	0	4
From Route 735 to Route 736	1.9	1	1	1	3
At Route 736	*	0	0	1	1
From Route 736 to Route 747	0.9	3	2	0	5
At Route 747	*	1	3	1	5
From Route 747 to Route 721	2.1	0	3	6	9
At Route 721	*	0	0	0	0
From Route 721 to Route 746	0.9	2	0	1	3
At Route 746	*	0	1	1	2
From Route 746 to Route 460 Bypass	0.7	2	3	3	8
At Route 460 Bypass	*	5	1	4	10
TOTAL	16.1	49	60	45	154

* An accident was considered to take place at an intersection if it happened within 200 feet on either side of intersection.

Exhibit 20
Frequent Accident Locations

Route 122 Location	Number of Accidents			
	1999	2000	2001	Total
At Route 460 Bypass	5	4	1	10
From Route 747 to Route 721	0	3	6	9
At Route 24	3	7	3	13
From Route 801 to Route 24	2	5	3	10
At Route 801	5	0	2	7
From Route 805 to Route 654	4	5	2	11
From Route 821 to Route 655 South	8	9	5	22

Exhibit 21
Accidents by Type

Location	Number of Accidents					
	Rear-End Crash	Angle Crash	Sideswipe	Fixed Object	Deer	Other
At Route 460 Bypass	1	5	1	2	0	1
From Route 747 to Route 721	4	1	0	0	4	
At Route 24	0	12	1	0	0	0
From Route 801 to Route 24	3	1	1	2	3	0
At Route 801	4	2	0	1	0	0
From Route 805 to Route 654	5	1	0	1	3	1
From Route 821 to Route 655 South	11	1	2	2	4	2

Exhibit 22
Accidents by Time of Day

Location	Number of Accidents				
	Total	Daylight	Night	Daylight Percentage	Night Percentage
At Route 460 Bypass	10	8	2	80%	20%
From Route 747 to Route 721	9	4	5	44%	56%
At Route 24	13	10	3	77%	23%
From Route 801 to Route 24	10	7	3	70%	30%
At Route 801	7	7	0	100%	0%
From Route 805 to Route 654	11	7	4	64%	36%
From Route 821 to Route 655 South	22	13	9	59%	41%

1.4 Roadway Operations Analyses

Traffic operations in the study corridor were analyzed using the concept of levels of service. The analysis rates 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 122 examined by this study, VDOT rates levels of service A, B, or C as 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.

A summary of roadway segment operations for Route 122 in 2002 is shown in Exhibit 23. All segments but one of the existing segment operations were acceptable during both peak periods. The one exception is the evening peak on Route 122 between Route 747 and the southern corporate limits of the City of Bedford. A summary of intersection operations on Route 122 in 2002 is shown in Exhibit 24. The 2002 traffic operations are all acceptable.

Exhibit 23
Summary of Existing Segment Operations

Segment	Existing	
	AM	PM
Route 122 – Between Route 821 and Route 903	C	C
Route 122 –Between Route 903 and Route 801	C	C
Route 122 –Between Route 801and Route 747	C	C
Route 122 –Between Route 747 and SCL Bedford	C	D

Exhibit 24
Existing Intersection Levels of Service

Road Intersecting with Route 122	Existing Peak Hour Level of Service (average delay in vehicle seconds)	
	AM	PM
Route 821 (Waterwheel Drive)	A	A
Route 821 eastbound	10	13.3
Route 821 westbound	9.3	11.5
Route 655 South (Hendricks Store Road)	A	A
Route 655 westbound	12.2	15.8
Route 655 North (Diamond Hill Road)	A	A
Route 655 eastbound	10.7	8.6
Route 903 (South Old Moneta Road)	A	A
Route 903 eastbound	10.9	11.1
Route 903 westbound	10.8	10.9
Route 608 (White House Road)	A	A
Route 608 eastbound	10.5	14.5
Route 608 westbound	10.3	12.5
Route 806 (Rucker Road)	A	A
Route 806 eastbound	10.9	12.2
Route 806 westbound	11.5	14.3
Route 805 (Morgans Church Road)	A	A
Route 805 westbound	10.9	12.2
Route 654 (Morgans Church Road)	A	A
Route 654 westbound	9.6	10.5
Route 801 (Stony Creek Road)	A	A
Route 801 eastbound	9.6	10.5
Route 24 (Stewartsville Road)	A	A
Route 24 eastbound	11.8	15
Route 24 westbound	12.4	14.5
Route 735 (Rockcliff Road)	A	A
Route 735 westbound	9.6	9.9
Route 736 (Mob Creek Road)	A	A
Route 736 eastbound	7.8	7.6
Route 736 westbound	7.5	7.6
Route 747 (Joppa Mill Road)	A	A
Route 747 eastbound	13.7	14.3
Route 747 westbound	10.6	10.5
Route 721 (Wells Road)	A	A
Route 721 eastbound	14.1	16.6
Route 721 westbound	11.5	11.9
Route 746 (Dickerson Mill Road)	A	A
Route 746 eastbound	14.2	16.2

1.5 Field Observations

One of the first steps performed in this study was a field review of the entire study corridor in August 2002. Another review was conducted in September 2002. These field reviews determined several qualitative roadway deficiencies. These eight deficiencies are outlined in Exhibit 25.

Exhibit 25
Summary of Deficiencies Identified by Field Review

Location on Route 122	Deficiencies Identified
Roadway between Route 655 South and Route 655 North	Traffic congestion
Route 806	Limited sight distance for northbound and southbound traffic
Route 805	Westbound left turns have limited sight distance due to vertical curve on southbound lane
Texaco Station / Lakers Country Store (0.1 mile south of Rt. 654 intersection)	No delineation between road pavement and store parking lot
Route 801	Lack of adequate turn radius – Eastbound motorists turning right (south) frequently cross into path of northbound traffic
Hill and “S” curve 0.1 miles north of Route 801	Steep grade for trucks
Route 24	Poor sight distance due to angle of intersection; non-standard intersection treatment creates motorist confusion
Route 735	Northbound and southbound sight distance poor due to vertical curves

1.6 Public Participation and Input

The traffic engineering analyses described in this chapter provide 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 November 14, 2002 and December 16, 2002. Exhibit 26 summarizes the input received from the public meetings. Noted as concerns for the Route 122 Corridor were safety problems resulting from high-speed traffic, truck traffic, recreational vehicle traffic, and the incompatibility of these types of traffic with the both the residential nature and commercial nature of adjacent land uses. Issues also addressed for the corridor are the lack of turn lanes and the lack of paved shoulders. The most frequent comment addressed the need for improving the intersection of Routes 122 and 24. Other Route 122 intersections referenced in public comments as needing improvement were Routes 460, 655, 747, and 801. Issues regarding the Halesford Bridge were the connection between Route 122 and the Halesford Bridge as well as the potential for bottlenecks if the number of lanes between the road and the bridge were not consistent.

Exhibit 26
Summary of Input from Public Meetings
November 14, 2002 and December 16, 2002

Comment or Problem	# of Times Cited	Citizen-Suggested Solution
Increased traffic on Route 122.	5	1. Widen Route 122 to 4-lane highway. 2. Widen Route 122 from Route 460 to Route 806 (near Bedford County Library, Moneta) and upgrade the rest of the roadway to Halesford Bridge by adding turn lanes. 3. Pursue construction of Interstate 73 to accommodate future traffic demand.
There is too much traffic on Route 122. Development and traffic will increase with the extension of the water supply.	2	Slow the growth and influx of people.
Proposed development (like condominiums at Bridgewater) will adversely impact traffic and have a negative effect on the intersection of Routes 122 and 655.	2	Require developer to consider impacts on roads and community before residential projects are approved.
There are bottlenecks southbound on Route 122 in the City of Bedford (where the road goes from four lanes to two lanes) and on the Route 122 bridge over Route 460.	1	Devote the southbound left lane to be only a turn lane for entry to Liberty Lake Park and other businesses; improve the interchange at Route 460.
Too much traffic for only one bridge over Smith Mountain Lake.	1	Construct another bridge over the lake by extending either Route 626 or Route 616.
Issues regarding Halesford Bridge must be addressed. There is potential for bottlenecks. Pedestrian access is needed.	2	If bridge is not widened like Route 122, Route 122 must merge down to two lanes well before bridge (around Route 655). If 122 Route is widened to bridge, do not take lakefront properties, but instead take from other side of road. Construct good sidewalk as part of bridgework.
Traffic is heavy; dangerous to mix higher speeds with slow or turning vehicles.	2	Add turn lanes or passing lanes at key points and intersections; construct wider, paved shoulders.
Route 122 is adequate for current traffic and there is no need to improve.	3	Do not widen to four lanes. Look at other solutions like improving police enforcement of speeding and Driving Under the Influence. Four-lanes would not solve traffic or safety problems.
The primary traffic concern is seasonal lake traffic.	3	Improvements should only be made south of intersection of Routes 122 and 24. Use resources for general improvements to Route 122 and intersection improvements.
Tractor-trailers are using Route 122 for throughway between Route 220 and Route 460.	1	Widen Route 122 to a four-lane divided highway. Alternative suggestion was to relocate Route 122 because improving existing Route 122 would only bring more trucks. Improvements to Route 24 should be a higher priority than improvements to Route 122.

Exhibit 26
Summary of Input from Public Meetings
November 14, 2002 and December 16, 2002

Comment or Problem	# of Times Cited	Citizen-Suggested Solution
High numbers of large trucks at high speeds and oversized recreational vehicles (RVs, boats).	4	Reduce and enforce truck speed limit. Create truck weight restrictions. Prohibit oversized vehicles on neighborhood streets.
Safety concerns all along Route 122. Reasons include inattentive drivers, speeding, traffic at different speeds, drivers following too closely, high traffic volumes, and road conditions (existing two-lane road is dangerous).	14	Range of solutions include: eliminate passing on Route 122; build deceleration lane and turn lanes at major intersections; construct passing areas; reduce speed limit to 45 mph with 35 mph at the approaches to the intersections at Routes 24 and 747; widen to four lanes (include landscaping and buffer tree areas); improve (but not widen) all of Route 122 south of Route 24; increase speed enforcement; increase setback of mailboxes.
Dangerous curve near twin bridges over Goose Creek.	5	Improve curve. Straighten road and construct new bridge over Goose Creek east of where it joins Stony Fork.
Safety concerns on elevated section of Route 122 just south of intersection at Routes 122 and 747; bad approach to Bunker Hill Foods plant (3678 Moneta Road) in both directions.	1	All sections of Route 122 that are zoned commercial need to be widened to four lanes; vertical geometry needs to be improved; turn lanes needed for future growth; pull-off lanes are needed.
Safety problems at intersection of Routes 122 and 24.	16	Realign intersection of Routes 122 and 24 by widening intersection, installing traffic light, constructing turn lanes, and installing warning signage/lights. Also, reduce and enforce speed limit at and approaching intersection. Other suggestions include construction of a grade-separated interchange at Route 24.
Intersection of 122 and 801 is dangerous.	2	Improve 801 intersection.
Intersection at Routes 122 and 460 is dangerous.	1	Add traffic signal.
Dangerous to enter Route 122 from driveways because of limited sight distance and high speeds.	1	Construct four-lane divided highway, convert existing roadway to carry southbound traffic only, construct new roadway for northbound traffic.
Intersection of Routes 122 and 655 is dangerous.	1	Install stop sign at intersection of Routes 122 and 655. Connect Route 655 (Hendricks Store Road and Diamond Hill Road).
Dangerous egress/ingress.	1	Build four-lane divided highway, but limit right-of-way to 50 or 60 feet. Do not add median or bicycle path because they take up too much space. Construct turn lanes.
Increased traffic and speeds; insufficient patrolling on Route 122.	1	Improve patrolling and enforcement. Carry through all proposals for Route 122/Route 24 intersection. Lower speed limits by 5 mph to improve safety and discourage truck traffic.

Exhibit 26
Summary of Input from Public Meetings
November 14, 2002 and December 16, 2002

Comment or Problem	# of Times Cited	Citizen-Suggested Solution
Reroute traffic from Route 122.	1	Use Route 608 to Route 24 as alternate to Route 122. Use Route 608 as direct route to Smith Mountain Lake.
Drivers use South Old Moneta Road as a shortcut from Route 122 to Route 608.	1	Eliminate Route 122 and South Old Moneta Road interchange and only allow access to Old Moneta Road from Route 608. Only the turn into the church at South Old Moneta Road should remain.
Improvements would adversely affect properties (residential properties, cemeteries) near Route 122.	4	Unnecessary to widen roadway.
Costs are prohibitive with Virginia's current financial situation.	2	None given.
Study needs to recognize that entrances to Smith Mountain Lake, Moneta, and City of Bedford have commercial uses.	1	Do not construct four-lane road for aesthetic reasons; only widen major intersections to four lanes. Reconstruct Route 122 to straighten and allow passing. Limit access of future development and create pattern of service roads. Require commercial ingress/egress to Route 122 to have turn lanes. Construct pedestrian and bike trail parallel to Route 122. Create landscaped median outside City of Bedford. Require shoulders and landscaped right of way for ingress/egress. Erect street lighting near intersections.
Aesthetic issues on Route 122.	1	Improve aesthetics along Route 122 by limiting billboards; increase setback from road (including mailboxes).

Chapter 2 – 2025 Traffic Conditions

The transportation recommendations for the study corridor 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 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 2002 and 2025, historic traffic counts collected by VDOT were tabulated along with the 2002 traffic counts performed for this study. Historic traffic growth rates were calculated at eight locations in the corridor. These locations and the annual growth rates at each are shown in Exhibit 27.

Exhibit 27
Segment Growth Calculations

Route 122 Segment Endpoint		Annual Growth Rate (Non-compounded)	Years of Count Dates Used for Trend Analysis
From	To		
Bedford/Franklin County Line	Route 655 North	3.6%	15
Route 655 North	Moneta Bypass (South End)	2.9%	15
Moneta Bypass (South End)	Route 805	2.9%	15
Route 805	Route 801	2.9%	15
Route 801	Route 24	2.4%	16
Route 24	Route 735	2.2%	16
Route 735	Route 746	1.7%	16
Route 746	Bedford City Limit	1.1%	15

Based on this analysis, an annual growth rate of 3.9 percent per year was used for Route 122 south of Route 24 and an annual growth rate of 2.6 percent was used for those portions of Route 122 north of Route 24. It is important to note that the growth rates used were not compounded (for example, a two percent non-compounded annual growth rate for 26 years yields a total assumed growth of 52 percent). By not compounding, the growth rate is a constant volume per year.

In addition to the traffic growth based on historic trends, proposals for three developments located in the vicinity of Smith Mountain Lake at the southern end of the study corridor are currently in various stages of the approval process in Bedford County. County planners believe that each of these developments is likely to be approved at densities close to those currently proposed, and that full build-out of the parcels can be expected by the year 2025. These developments are as follows:

- **WHM.** The WHM development is planned near the intersection of Route 122 and Snug Harbor Road. It is projected to include 410,900 square feet of commercial and retail development and 296 housing units.
- **Macher.** The Macher development is planned near the intersection of Route 122 and Route 821. It is projected to include 12,000 square feet of retail development and 100 housing units.
- **Camille.** The Camille development is planned near the intersection of Route 122 and Route 821 and would include 80 housing units.

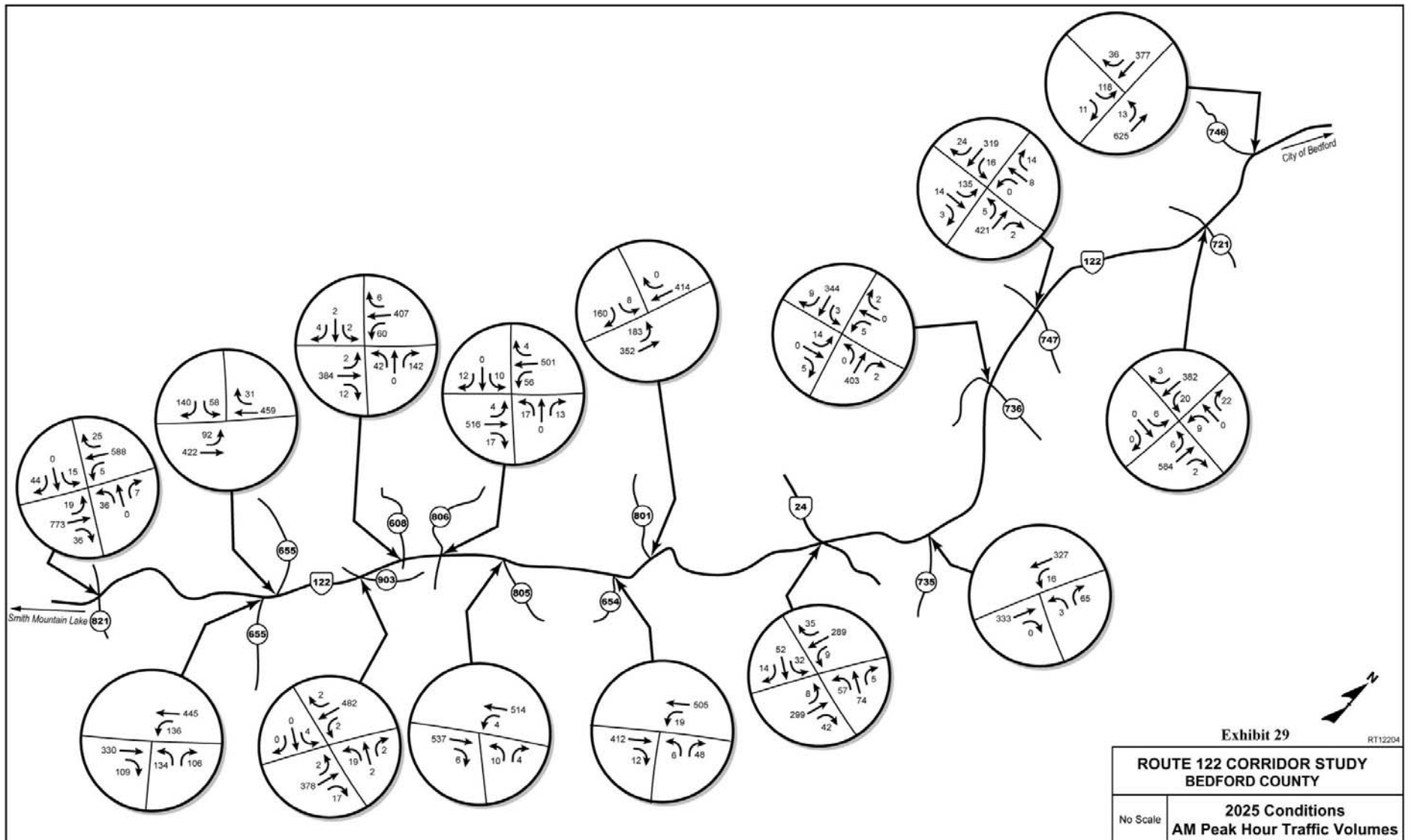
Using standard traffic engineering techniques, the amount of traffic that each of these developments would generate was calculated. The calculation of the number of trips generated is based on the Trip Generation Manual (5th Edition, Institute of Transportation Engineers).

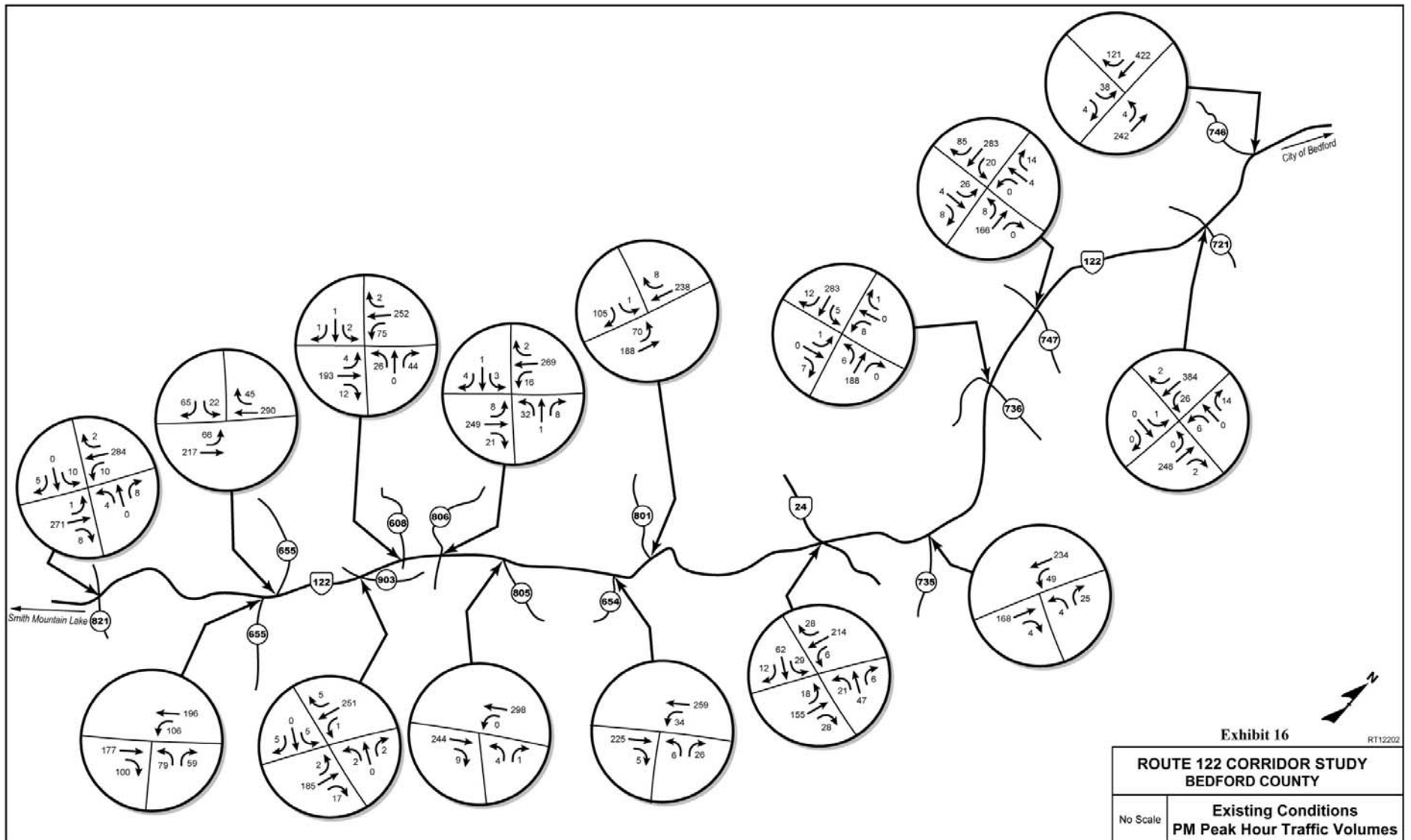
The amount of traffic expected to be generated by the proposed developments was added to the traffic volumes calculated by using historic growth rates. While it is impossible to know how traffic will actually grow, the study team believes that the application of the growth rates described above and then adding growth from planned development yields the best estimates of year 2025 traffic. Economic factors may result in lower growth, while the extension of public water lines to the areas between Hendricks Store Road and Smith Mountain Lake may yield growth at higher levels than historic trends suggest.

The year 2025 traffic forecasts (including both historic growth and traffic generated by the development proposals discussed above) are shown in Exhibit 28. Traffic volumes in the corridor are expected to range from a low of about 11,100 vehicles per day to near 27,500 vehicles per day in year 2025. Peak hour intersection turning movement volumes for the year 2025 are shown in Exhibits 29 and 30.

Exhibit 28
2025 Average Daily Traffic Forecasts

Segment on Route 122	Average 24-hour Volume
Between Bedford/Franklin County Line and Route 821	27,500
Between Route 821 and Route 655 South	22,000
Between Route 654 and Route 801	17,800
Between Route 801 and Route 24	12,500
Between Route 24 and Route 735	11,100
Between Route 747 and Route 721	14,800
Between Route 746 and Route 460	18,100





2.2 2025 No-Build Traffic Operations

A summary of projected traffic operations on Route 122 in the year 2025 is shown in Exhibit 31. As shown, the expected increases in traffic will result in highly congested traffic operations by the year 2025. The time needed for motorists to enter Route 122 from side streets will exceed the planning-level threshold for acceptable delay for 14 of the 15 intersections analyzed.

Exhibit 31
2025 Intersection Levels of Service

Road Intersecting with Route 122	2025 No-Build Peak Hour Level of Service (average delay in vehicle seconds)	
	AM	PM
Route 821 (Waterwheel Drive)	F	F
Route 821 eastbound	28.1	Greater than 500
Route 821 westbound	91.1	Greater than 500
Route 655 South (Hendricks Store Road)	F	F
Route 655 westbound	102.6	Greater than 500
Route 655 North (Diamond Hill Road)	D	F
Route 655 eastbound	29.1	353.8
Route 903 (South Old Moneta Road)	C	E
Route 903 eastbound	20.4	41.7
Route 903 westbound	20.5	37.3
Route 608 (White House Road)	C	F
Route 608 eastbound	17.2	128.6
Route 608 westbound	17.8	481.4
Route 806 (Rucker Road)	D	F
Route 806 eastbound	22.2	62.7
Route 806 westbound	26	467.5
Route 805 (Morgans Church Road)	C	F
Route 805 westbound	19.7	50.1
Route 654 (Morgans Church Road)	B	D
Route 654 westbound	12.8	32.6
Route 801 (Stony Creek Road)	C	F
Route 801 eastbound	15.1	53.7
Route 24 (Stewartsville Road)	D	F
Route 24 eastbound	21.1	260.4
Route 24 westbound	26.4	400.1
Route 735 (Rockcliff Road)	B	B
Route 735 westbound	11.2	14.9
Route 736 (Mob Creek Road)	C	D
Route 736 eastbound	16.3	17.1
Route 736 westbound	15.9	34.6
Route 747 (Joppa Mill Road)	E	F
Route 747 eastbound	41.6	66.5
Route 747 westbound	14	17.9
Route 721 (Wells Road)	D	F
Route 721 eastbound	27.4	58.7
Route 721 westbound	17.3	28.6
Route 746 (Dickerson Mill Road)	E	F
Route 746 eastbound	41.3	98.7

As shown in Exhibit 32, the expected year 2025 traffic volumes on Route 122 will also result in unacceptable traffic operations (level of service D or worse) on all segments of Route 122. Clearly, the current capacity and configuration of Route 122 will not be able to adequately accommodate the projected growth in traffic. In order to accommodate this growth, the study team developed a set of improvement options to address traffic and safety needs in the corridor. These are described in the next chapter.

Exhibit 32
Summary of 2025 Segment Operations

Segment	2025	
	AM	PM
Route 122 – Between Route 821 and Route 903	D	E
Route 122 –Between Route 903 and Route 801	D	E
Route 122 –Between Route 801and Route 747	D	D
Route 122 –Between Route 747 and SCL Bedford	D	E

Chapter 3 – Improvement Alternatives

Four transportation alternatives were developed by the study team and then presented for discussion at a public meeting held in Moneta on December 16, 2002. The alternatives ranged from intersection improvements to the construction of a four-lane divided roadway. The alternatives are described below; conceptual cross-sections are shown in Exhibit 33.

3.1 Alternative 1: Improve Intersections Only

The first alternative consists of improvements to thirteen intersections, the installation of six traffic signals, and a realigned intersection. This alternative would only improve intersections and approaches to these intersections and there would be no changes to Route 122 itself other than on-going maintenance. Right-of-way for the roadway is 24 feet.

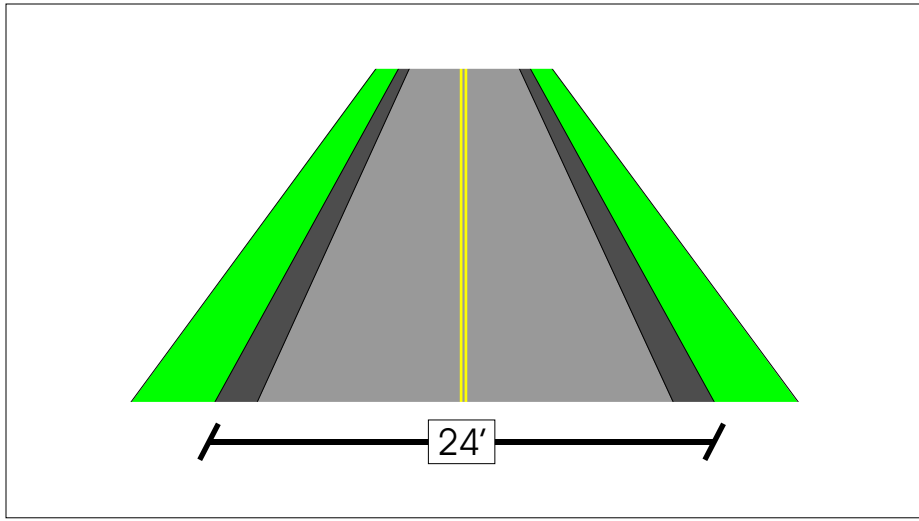
The thirteen intersections that would be improved by adding turn lanes are Route 746 (Dickerson Mill Road), Route 910/721 (Oakwood Knolls Drive/Wells Road), Route 747 (Joppa Mill Road), Route 736 (Mob Creek Road/Homeplace Road), Route 735 (Rockcliff Road), Route 24 (Stewartsville Road/Shingle Block Road), Route 801 (Stony Fork Road), Route 654 (Morgans Church Road), Route 806 (Rucker Road), Route 608 (Altice Road/White House Road), Route 903 (South Old Moneta Road), Route 655 (Diamond Hill Road), and Route 821 (Waterwheel Drive).

Based on projected intersection delays in the year 2025, traffic signals may be required at six of the thirteen intersections listed above by 2025 (these signals would be installed when appropriate traffic engineering criteria are satisfied). The six intersections are: Route 747 (Joppa Mill Road), Route 24 (Stewartsville Road), Route 801 (Stony Fork Road), Route 608 (Altice Road/White House Road), Route 655 (Hendricks Store Road/Diamond Hill Road), and Route 821 (Waterwheel Drive).

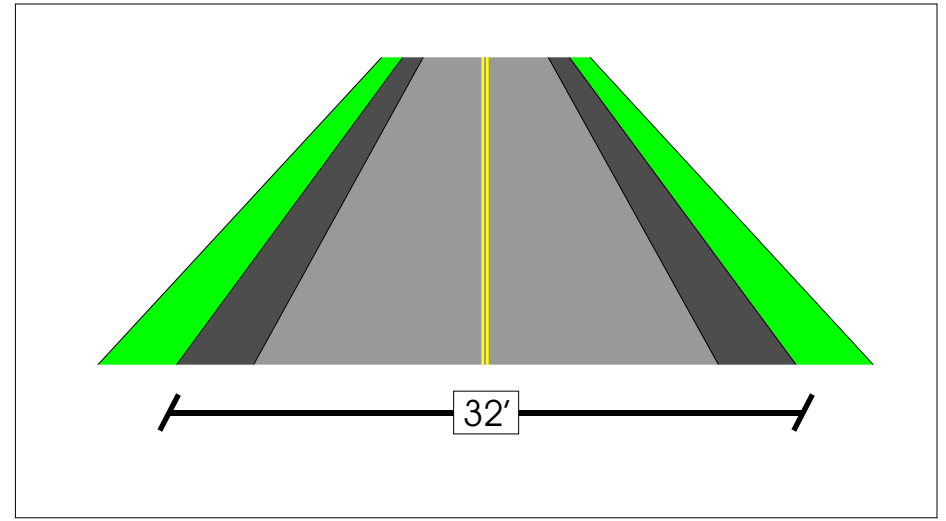
In addition, Route 655 North (Diamond Hill Road) would be reconstructed to align with Route 655 South (Hendricks Store Road). Thus, the existing intersection of Route 122 and Route 655 North (Diamond Hill Road) would be eliminated.

3.2 Alternative 2: Upgrade Two-Lane Roadway

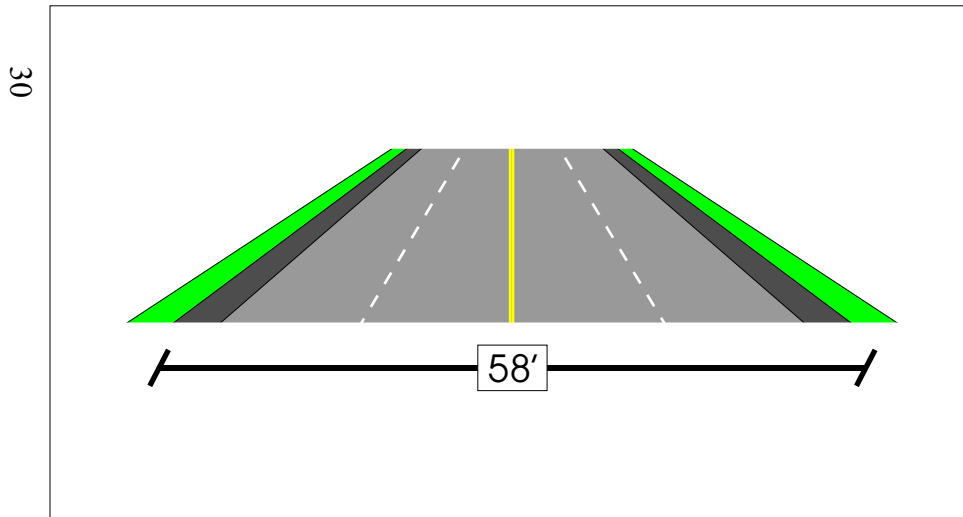
In the second alternative, Route 122 would remain two lanes but the travel lanes would be upgraded to the current VDOT standard of twelve feet. Paved four-foot shoulders would be constructed for safety and to accommodate bicycles. Right-of-way required for the roadway is 32 feet. All proposals for intersection improvements and traffic signals from the first alternative are also part of this alternative, including the realignment of Route 655 North (Diamond Hill Road) with Route 655 South (Hendricks Store Road).



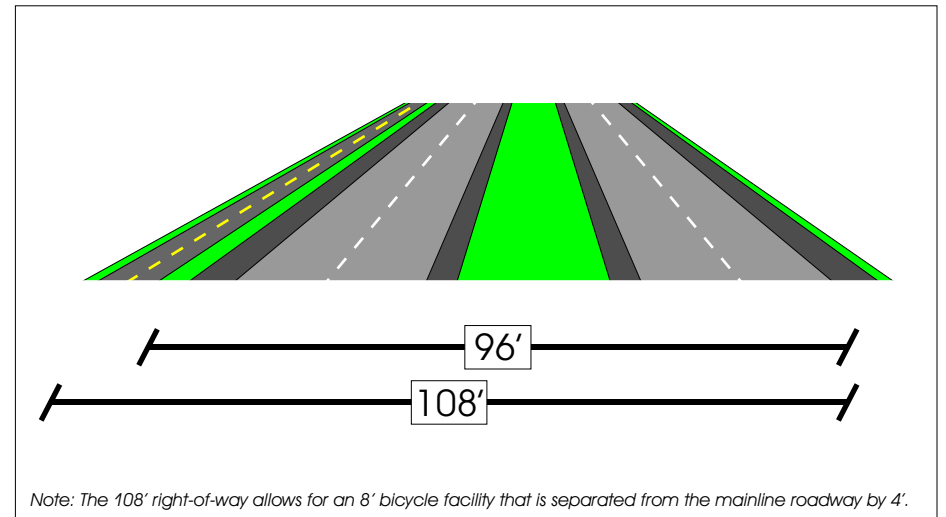
Alternative 1: Improve Intersections Only



Alternative 2: Upgrade Two-Lane Roadway



Alternative 3: Widen to Four-Lanes Undivided



Alternative 4: Widen to Four-Lanes Divided

Exhibit 33

Improvement Alternatives Conceptual Cross-Sections

3.3 Alternative 3: Widen to Four-Lanes Undivided

The third alternative would widen Route 122 to a four-lane road with paved four-foot shoulders. There would be no median added to the roadway in this proposal. The four-foot shoulder could be used for bicycle travel. Right-of-way for the four-lane road with shoulders is 58 feet. All improvements from the first alternative would also be included in this alternative.

3.4 Alternative 4: Widen to Four-Lanes Divided

Alternative Four would widen Route 122 to four lanes with six-foot outside and four-foot inside shoulders, a 26-foot grass median, and a separate trail that would be used for bicycle and pedestrian travel. Roadway right-of-way for this divided roadway would total 96 feet (without the separate bicycle and pedestrian trail) or 108 feet (including the separate bicycle and pedestrian trail). All improvements included in the first alternative would also be incorporated into this alternative.

3.5 Summary Comparison of Alternatives

Benefits and costs of each alternative are summarized in Exhibit 34. The weighted average daily traffic for the corridor increases from 6,300 vehicles in the base year to 16,500 vehicles in the No-Build Alternative and 16,600 vehicles for the four other alternatives (traffic volumes were weighted by distance).

Exhibit 34
Summary of Benefits and Costs

	Existing	Alternative (Year 2025)				
		No-Build	1	2	3	4
Number of Lanes	2	2	2	2	4	4
Divided: Yes/No	No	No	No	No	No	Yes
Average Daily Traffic (Summer) – Weighted Average for Corridor	6,300	16,500	16,600	16,600	16,600	16,600
Average Delay for Vehicles Entering Route 122 (p.m. peak, in minutes)	0.53	5.00	2.65	2.65	1.41	1.41
Average Delay at Major Intersections for Vehicles Traveling on Route 122 (p.m. peak, in minutes)	0.25	1.03	1.88	1.88	0.73	0.73
Estimated Reduction in Accidents Per Year Versus 2025 No-Build	N/A	N/A	15%	33%	0% [1]	45%
Estimate Construction and Right-of-Way Cost in Millions (2002 Dollars)	N/A	[2]	\$14.35	\$60.70	\$125.06	\$140.16
Bicycle and Pedestrian Safety [3]	4	4	3	2	2	1
Access and Growth Management [3]	3	3	3	4	4	2

N/A = Not applicable.

[1] – Available data indicates that accident experience on this type of road is similar to or slightly higher than for unimproved two-lane rural roads.

[2] – Costs for this alternative would be for on-going maintenance only.

[3] – 1 = Excellent, 2 = Good, 3 = Moderate, 4 = Poor

As summarized below, the alternatives provide a range of benefits to traffic operations in the corridor:

- ❑ The average delay for vehicles entering Route 122 during the base year evening peak is approximately half a minute (0.53 minutes). This delay is anticipated to increase almost ten-fold to five minutes by the year 2025 if no improvements are made (the No-Build Alternative).
- ❑ Delays for traffic on Route 122 itself are projected to increase by about four times between the minimal existing delay (0.25 minutes) and the No-Build delay (1.03 minutes).
- ❑ The intersection improvements and traffic signals in Alternatives 1 and 2 would reduce the average time for motorists to get onto Route 122 from side roads by close to half (down to 2.65 minutes). Some of this reduction in delay for side road traffic would come at the expense of through traffic on Route 122 where delays would increase from 1.03 minutes to 1.88 minutes.
- ❑ The addition of two more lanes on Route 122, along with the intersection and traffic signal improvements described above, would further reduce side-street delays for Alternatives 3 and 4. While still greater than existing delays, side-street delays for these two alternatives (an average of 1.41 minutes) would be less than one-third of the five-minute No-Build alternative delays.
- ❑ Delays for traffic on Route 122 would also decrease for Alternatives 3 and 4 (0.73 minutes) as compared to the No-Build (1.03 minutes). This is because the relatively small delay from waiting for traffic signals in Alternatives 3 and 4 would be less than the delay from left-turning vehicles blocking through traffic under the No-Build alternative.

The reduction in the number of vehicle accidents per year is estimated to be greatest in the four-lane divided alternative. The four-lane undivided alternative would experience no decrease in accidents because the accident experience on this type of road is similar to or slightly higher than unimproved two-lane rural roads. The upgraded two-lane alternative (Alternative 2) is expected to reduce accidents by 33 percent while the intersection improvement alternative (Alternative 1) would decrease the number of accidents by 15 percent.

The estimated construction and right-of-way costs vary between only maintenance costs for the No-Build alternative to \$140 million for the four-lane divided alternative. The intersection improvements in Alternative 1 are estimated to cost \$14.35 million, while these same intersection improvements combined with upgrading all of Route 122 to an improved two-lane road is estimated to cost \$60.7 million. Construction and right-of-way for a four-lane undivided roadway is estimated to cost \$125.06 million, while the four-lane divided estimated cost would be \$140.16 million. It is important to note that all costs are in year 2002 dollars and would vary from these amounts depending on when the projects are actually constructed.

The extent to which the alternatives safely accommodate bicycles and pedestrians varies substantially. Exhibit 34 provides a generalized measure of how the alternatives safely accommodate these modes of travel. The safest facility for bicycles and pedestrians is

the four-lane divided alternative because the eight-foot trail would be separated from the vehicular lanes by a four-foot buffer. The upgraded two-lane alternative and the four-lane undivided alternative are rated “good” in bicycle and pedestrian safety because bicyclists and pedestrians could utilize the paved four-foot shoulders. The intersection improvement alternative is rated “moderate” for bicycle and pedestrian safety, while the base year and No-Build alternative rate poorly because there are neither intersection improvements nor paved shoulders.

The only alternative receiving a “good” rating for access and growth management is the four-lane divided alternative because of the ability to control access with the median. Both the upgraded two-lane and undivided four-lane alternatives received poor ratings because neither alternative includes a median.

3.6 Non-Construction Improvement Options

In addition to alternatives for physical improvements to Route 122, a number of transportation planning initiatives were presented for consideration at the December 16, 2002 public meeting. These planning initiatives are intended to maximize the benefit of any roadway improvement and help minimize the potential impacts of such improvements. The initiatives include updates to Bedford County’s Comprehensive Plan and zoning regulations, as well as procedural changes in site plan reviews and coordination with VDOT on access decisions. All of these initiatives are incorporated in the final study recommendations described in the next chapter.

Chapter 4 – Study Recommendations

The transportation improvement recommendations described below are intended to address both existing and future transportation needs in the study corridor. These proposed improvements include a combination of long-term projects, short- and intermediate-term projects, and planning and access management initiatives. In general, the intermediate-term projects address existing needs, are lower-cost, and would result in fewer impacts than the long-term projects. All of the intermediate-term projects are compatible with and support the long-term projects.

This study recommends a combination of intersection improvements, roadway upgrades, and planning initiatives. The engineering analysis, field observation, and public comment all highlighted a range of safety, capacity, and mobility concerns in this important transportation corridor. Route 122 is clearly a significant transportation asset to Bedford County and is becoming more important with the passage of time. Initiatives to preserve the value of this corridor, address existing critical concerns, plan for inevitable change, and ensure that options for improvements are preserved are critical to the future of the transportation system. In summary, the study recommendations are:

1. Implement the VDOT programmed improvements at the intersection of Route 122 and Route 24.
2. Adopt changes to the Bedford County Comprehensive Plan to provide the foundation for corridor preservation, corridor overlay zoning, and access management.
3. Implement an access management and local circulation plan, and incorporate additional elements into the Corridor Overlay District element of the Bedford County Zoning Ordinance, to provide Bedford County with a mechanism to control the number of access points onto Route 122.
4. Re-construct Route 122 as an improved two-lane facility on a four-lane right-of-way. With this recommendation, Route 122 would be upgraded to meet current VDOT standards with twelve-foot lanes and paved four-foot shoulders to improve safety and accommodate bicycle travel. Because the traffic forecasts show a clear need for a four-lane facility, sufficient right-of-way should be purchased to construct a four-lane divided facility. Portions of this improvement, including particular intersection improvements, should be prioritized.
5. Improve the interchange of Route 122 at Route 460 in the City of Bedford. Proposed improvements to this interchange were developed as part of the City of Bedford's Year 2020 Long-Range Transportation Plan and are endorsed by this study.
6. Based on projected travel demands on the Halesford Bridge, perform studies of potential corridors to increase capacity across Smith Mountain Lake.

4.1 Route 24 Intersection Improvements

Improvements to this intersection are needed to address safety problems. Improvements have been developed and partially funded by VDOT and include changes to the vertical and horizontal geometrics of the approaches to the intersection. Analysis using traffic engineering criteria has determined that a traffic signal is not currently warranted at this intersection. This study has projected that traffic operations by the year 2025 may result in the need for a traffic signal, and VDOT will continually monitor this location and address potential traffic signalization needs when appropriate.

4.2 Comprehensive Plan Amendments

The Bedford County Comprehensive Plan provides the policy foundation for changes to zoning and regulatory procedures that will then be used to preserve the functionality and safety of the Route 122 Corridor. For this reason, this study recommends that the Comprehensive Plan be updated to:

- ❑ Include goals of preserving and enhancing the scenic beauty of Route 122.
- ❑ Support the implementation of design standards for landscaping, median treatment, and access management.
- ❑ Support access point guidelines for spacing median breaks no closer than 0.25 mile and traffic signals no closer than 0.50 mile.
- ❑ State a policy of shared entrances and inter-parcel access for properties along Route 122.

4.3 Access Management, Overlay Zoning, and Local Circulation Planning

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. This study recommends the implementation of access management principles using the tools of an overlay zoning ordinance and a local circulation plan.

Route 122 is one of six corridors in Bedford County that is covered by the county zoning ordinance's Corridor Overlay District (Zoning Ordinance Section 30-77). The primary focus of the existing overlay districts is the preservation of viewsheds and natural resources, as well as promoting responsible development. This study recommends that the corridor overlay district requirements be expanded, for the Route 122 Corridor, to include both access management and the preservation of rights-of-way for local

circulation. Sample wording to include in the corridor overlay district to accomplish these goals is included in Exhibit 35. This wording provides favorable consideration for new development that incorporates shared entrances, inter-parcel access, or access via internal and/or secondary roads. It also provides incentives and bonuses for combining access points (shared or inter-parcel access), allows one access point per parcel, and establishes minimum parcel frontage requirements. Additionally, instituting setback requirements on new construction would prevent structures from being built in areas that may be needed for future improvements to Route 122. The proposed changes to the corridor overlay district include expanding the area covered by the corridor overlay district to 1,000 feet on each side of the existing roadway centerline (the limits for the existing overlay district extend 200 feet from the edge of the roadway right-of-way).

This study also recommends the development and adoption of a local circulation plan for the Route 122 Corridor. This plan should incorporate the following:

1. Guidelines for the development of a system of parallel roads that can serve localized traffic along Route 122. This 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. Parallel roads should meet the following criteria:
 - ❑ The parallel roads should be located between 300 and 700 feet of the centerline of existing Route 122 (generally along the rear, not the front, of the land parcels along Route 122).
 - ❑ The parallel roads should provide a means for motor vehicles to access Route 122 at designated access points (listed below), and should ultimately minimize the need for motorists to use Route 122 for short local trips that have both origins and destinations within the study corridor.
 - ❑ Designated access points should ideally be located one mile apart, but no closer than 0.5 mile. Over the long term, full access would be provided at these locations. Intermediate access points should ultimately allow only right-in/right-out access. The recommended designated access points are:
 - Route 821 (Waterwheel Drive)
 - Route 655 (Consolidation of intersections with Diamond Hill Road and Hendricks Store Road)
 - Route 608 (Altice Road/White House Road)
 - Route 806 (Rucker Road)
 - Route 654 (Morgans Church Road)
 - Route 801 (Stony Fork Road)
 - Route 24 (Stewartsville Road/Shingle Block Road)
 - Route 735 (Rockcliff Road)
 - Route 736 (Mob Creek Road)
 - Route 747 (Joppa Mill Road)
 - Route 721/910 (Wells Road/Oakwood Knolls Drive)
 - Route 746 (Dickerson Mill Road)

Exhibit 35

Proposed Corridor Overlay District Wording

Section XX – Highway Corridor Overlay District

XX.1 Purpose and Intent

The purpose of this district is to protect and promote the public health, safety and general welfare by preventing or reducing traffic congestion and/or changes in the public streets; maintaining the function of arterial highways, primary highways, and secondary collector roads to encourage the most desirable development and use of land in accordance with the Comprehensive Plan, to improve pedestrian and vehicular circulation, to encourage architectural designs which result in functional and attractive relationships between buildings, the street system, and the surrounding areas.

XX.2 District Boundaries

1. The Highway Corridor District Boundaries shall be as follows: U.S. Route 122 from the Bedford County corporate limits at Smith Mountain Lake to the county corporate limits at the City of Bedford.
2. In lieu of a metes and bounds description, the District boundaries shall be described by fixing the point of beginning to the centerline of the highway and the point of ending shall be one-thousand (1000) feet from the centerline of the nearest two lanes.

XX.3 Establishment of Districts

The Highway Corridor Overlay District shall be in addition to and shall overlay all other zoning districts where it is applied so that any parcel of land lying in whole or part in the Highway Corridor Overlay District shall also lie within one of more of the other zoning districts provided by this ordinance. The effect shall be the creation of new zoning districts consisting of the regulations and requirements of both the underlying district(s) and the Highway Corridor Overlay District.

XX.4 Administration

The administration of the section shall be through site plan requirements and through sections of the Subdivision Ordinance.

XX.5 Permitted Uses

All uses permitted by right or by special exception/use in the underlying zoning district(s).

XX.6 Lot Area and Other Dimensional Requirements

The lot dimensions and other dimensional requirements shall be the same as those requirements set forth in the underlying zoning district(s) except that the minimum front setback shall be sixty-five (65) feet from the centerline of the nearest two lanes unless a greater setback is required by the underlying zoning district.

Exhibit 35 (Continued)

Proposed Corridor Overlay District Wording

XX.7 Design Requirements

All uses shall be subject to the limitations and development standards set forth in the underlying zoning district(s) and shall be subject to the following limitations:

1. Such uses shall have access designed so as not to impede traffic on Route 122, which is intended to carry through traffic. To such end, access via the following means may be given favorable consideration:
 - a. By the provision of shared entrances, inter-parcel travel-ways or on-site service drives connecting adjacent properties or through access points and existing and future transportation improvements as shown in Route 122 Corridor Circulation Plan;
 - b. By access from a public highway other than that on which the property is fronted;
 - c. By the internal streets of a commercial, office, or industrial complex.
2. One point of access shall be permitted for each lot with a minimum of 850 feet of frontage. One additional entrance or road may be permitted for each additional 1,250 feet if approved by the Planning Commission. The form of this access will be determined by the Planning Commission; this access shall be as defined in the Route 122 Corridor Circulation. The Planning Commission may modify this requirement if it finds that it best accomplishes the purposes of Section XX.1.

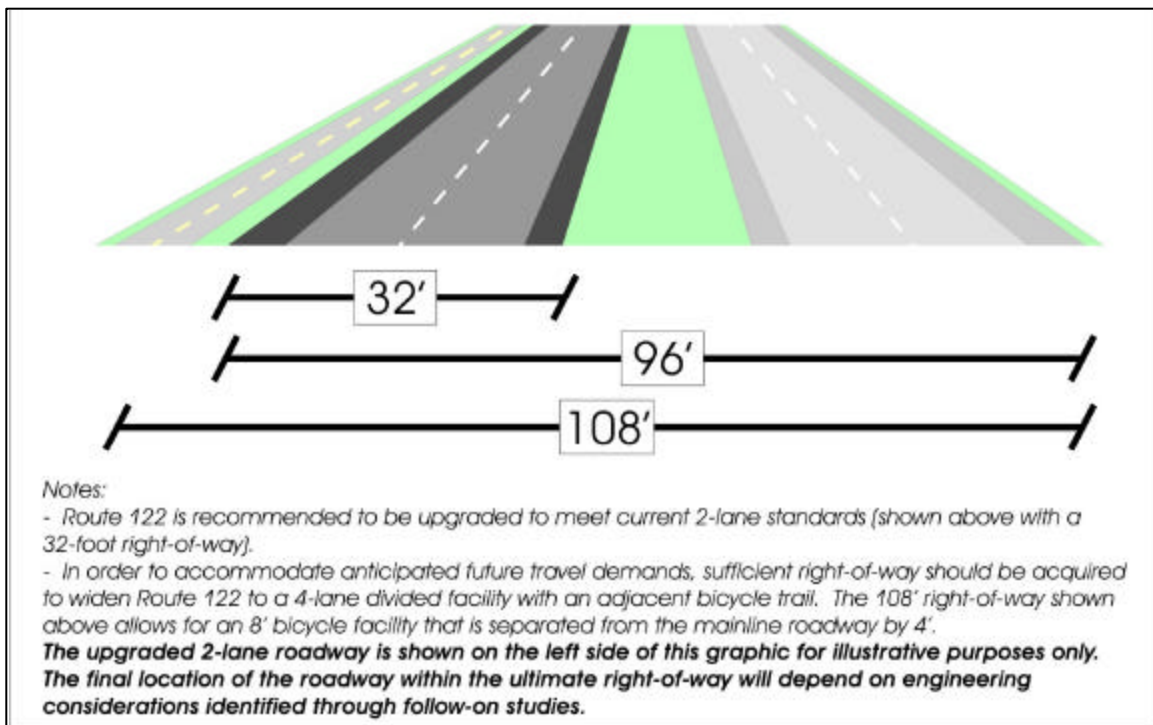
Existing parcels of land shall not be denied access to a public highway if no reasonable joint or cooperative access is possible, at the time of development.
3. A bonus shall be given for combining access points when two adjacent property owners agree. The total lot size and road frontage normally required will be reduced by 15 percent for both landowners. In addition, the required number of parking spaces will be reduced by 15 percent for each development. Site circulation and safety standards will still be enforced.
4. Pedestrian circulation shall be provided for and coordinated with that generated from or using adjacent properties.
5. Parking areas shall be landscaped both externally and internally.
6. A landscape plan shall be required with any site plan for commercial or industrial development or major subdivisions plat.

2. Guidelines for new development access agreements. New agreements for access onto Route 122 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.
3. Guidelines for implementing the corridor circulation plan by integrating the goals of the updated Comprehensive Plan into the subdivision, site plan, and negotiation process with landowners and developers.

4.4 Route 122 Construction Improvements

This study recommends that Route 122 be reconstructed as an improved two-lane facility on a four-lane right-of-way. Route 122 would be upgraded to meet current VDOT standards with twelve-foot lanes and paved four-foot shoulders to improve safety and to accommodate bicycle travel. Because of the expected traffic demands by the year 2025, it will be critical that sufficient right-of-way be purchased to ultimately construct a four-lane divided facility. A conceptual cross-section showing the recommendation is shown in Exhibit 36. This recommendation is essentially a composite of the upgraded two-lane roadway alternative (Alternative 2 described in Chapter 3) and the four-lane divided roadway alternative (Alternative 4).

Exhibit 36
Conceptual Cross-Section:
Two-Lane Upgrade on Four-Lane Right-of-Way



The estimated right-of-way for the upgraded two-lane roadway is 32 feet (it is important to note that right-of-way requirements can vary substantially based on topography and design features). The ultimate right-of-way width would be 108 feet to accommodate four travel lanes, median, shoulders, and a separate bicycle/pedestrian facility.

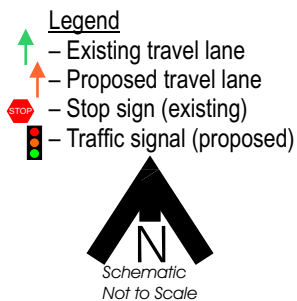
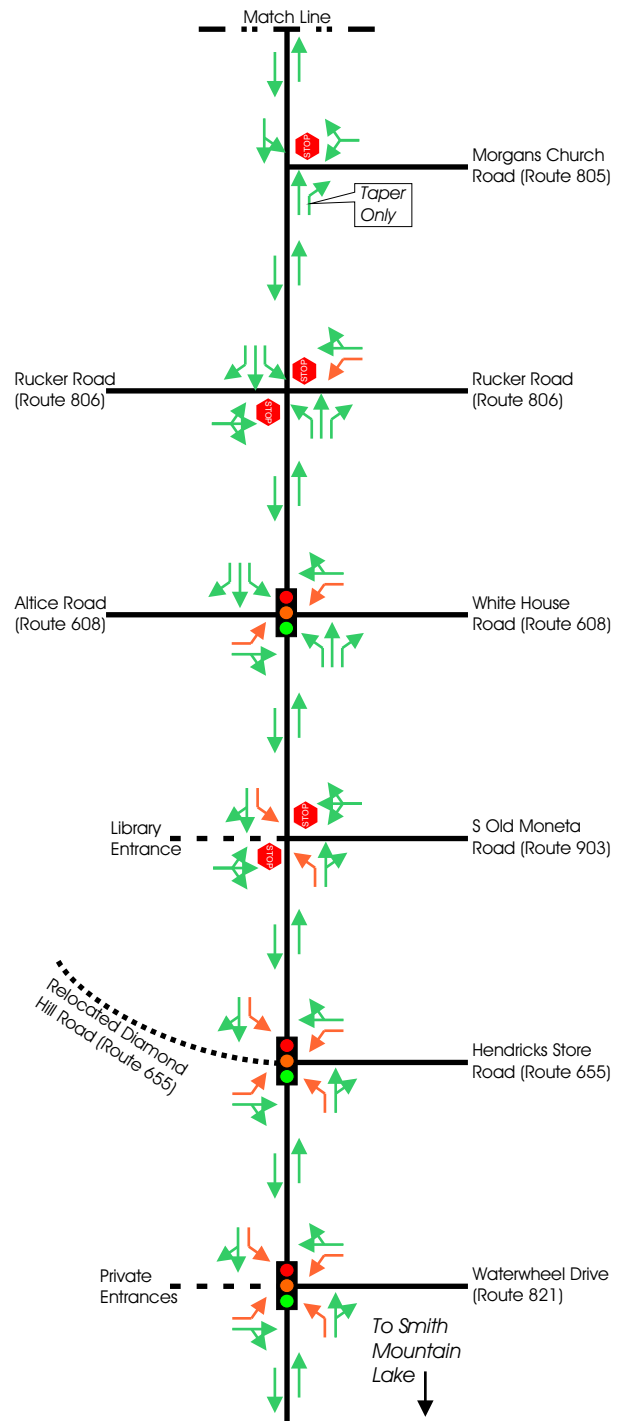
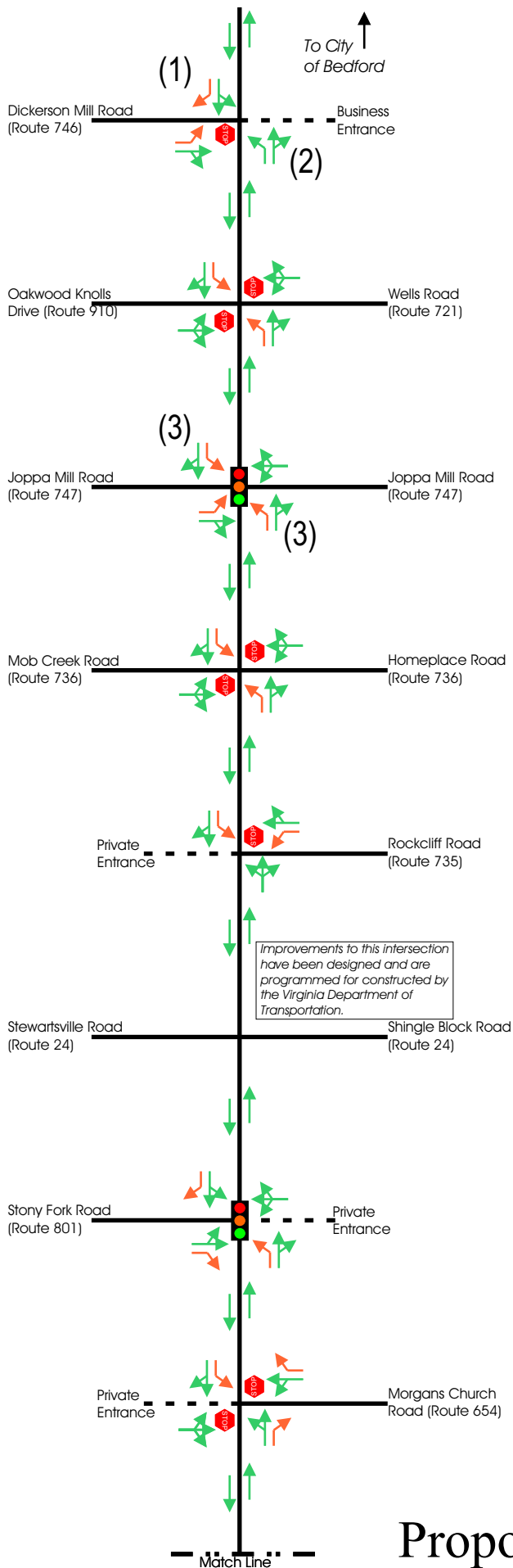
The study recommendations include improvements to 12 intersections (in addition to the improvements to the Route 24 intersection described above). These intersection improvements, shown in Exhibit 37, include potential traffic signals at five locations (in addition to a potential traffic signal at Route 24).

One of the major safety and operational concerns in the study corridor is on Route 122 in the Davis Mill area, just north of Route 801 and Goose Creek. The intersection of Route 122 and Route 801 is a key problem area. The numerous topography and waterway crossing constraints in this area severely limit improvement options on the existing alignment. Based on these constraints, this study recommends consideration of a new alignment and waterway crossing for Route 122 in this area. A conceptual alignment for this is shown in Exhibit 38. This alignment provides the benefit of a single crossing over Goose Creek as opposed to the two existing crossings of Goose Creek and Stony Fork. The portion of existing Route 122 between Route 801 and where the new alignment joins Route 122 could be designated as Route 801 and a new, improved intersection of Route 122 and Route 801 could be provided.

Traffic congestion is a particular concern in the Hendricks Store area, with problems resulting from the offset of Route 655 North and Route 655 South at Route 122 and the close proximity of these two intersections. The study recommendation to re-align Route 655 North (Diamond Hill Road) to tie in directly across from Route 655 South (Hendricks Store Road) is illustrated in Exhibit 39.

4.5 Route 460 Interchange Improvements

Deficiencies at this interchange were identified both by the general public at the meetings held for this study and as part of the transportation system analysis performed by the Virginia Department of Transportation for the City of Bedford's Year 2020 Long-Range Transportation Plan. This interchange serves the City of Bedford, Route 122 South, as well as the D-Day Memorial, a national tourist attraction. The improvements developed as part of the Bedford 2020 Long-Range Transportation Plan include widening both the westbound and eastbound exit ramps from Route 460 to 2 lanes, widening Route 122 (Crenshaw Street) from the westbound ramp to the D-Day Memorial entrance to 4 lanes (includes turn lanes), and the installation of interconnected traffic signals, if warranted, at the eastbound and westbound ramps and the D-Day Memorial entrance. This study endorses the recommendations of the City's 2020 Long-Range Transportation Plan.

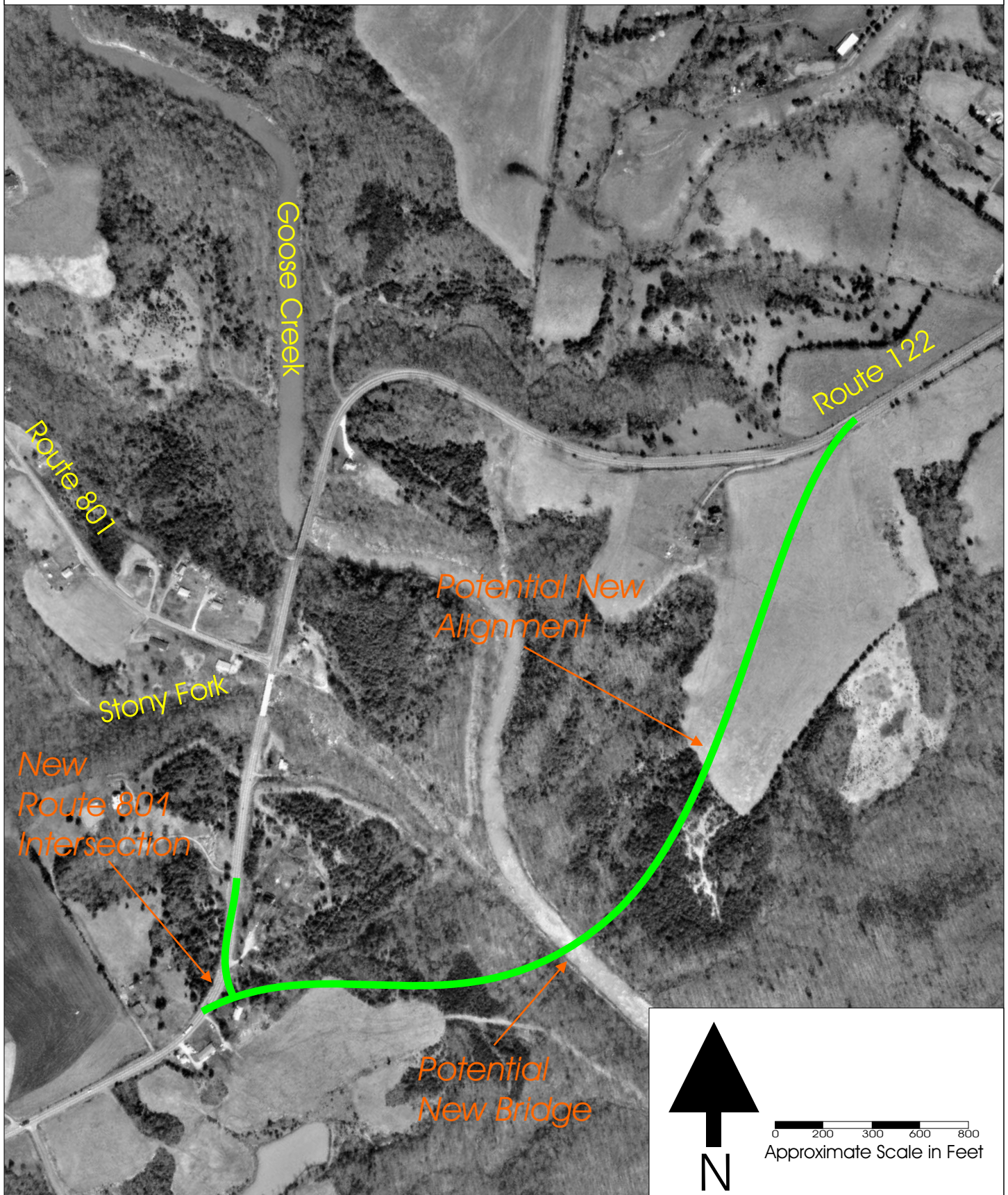


Notes:

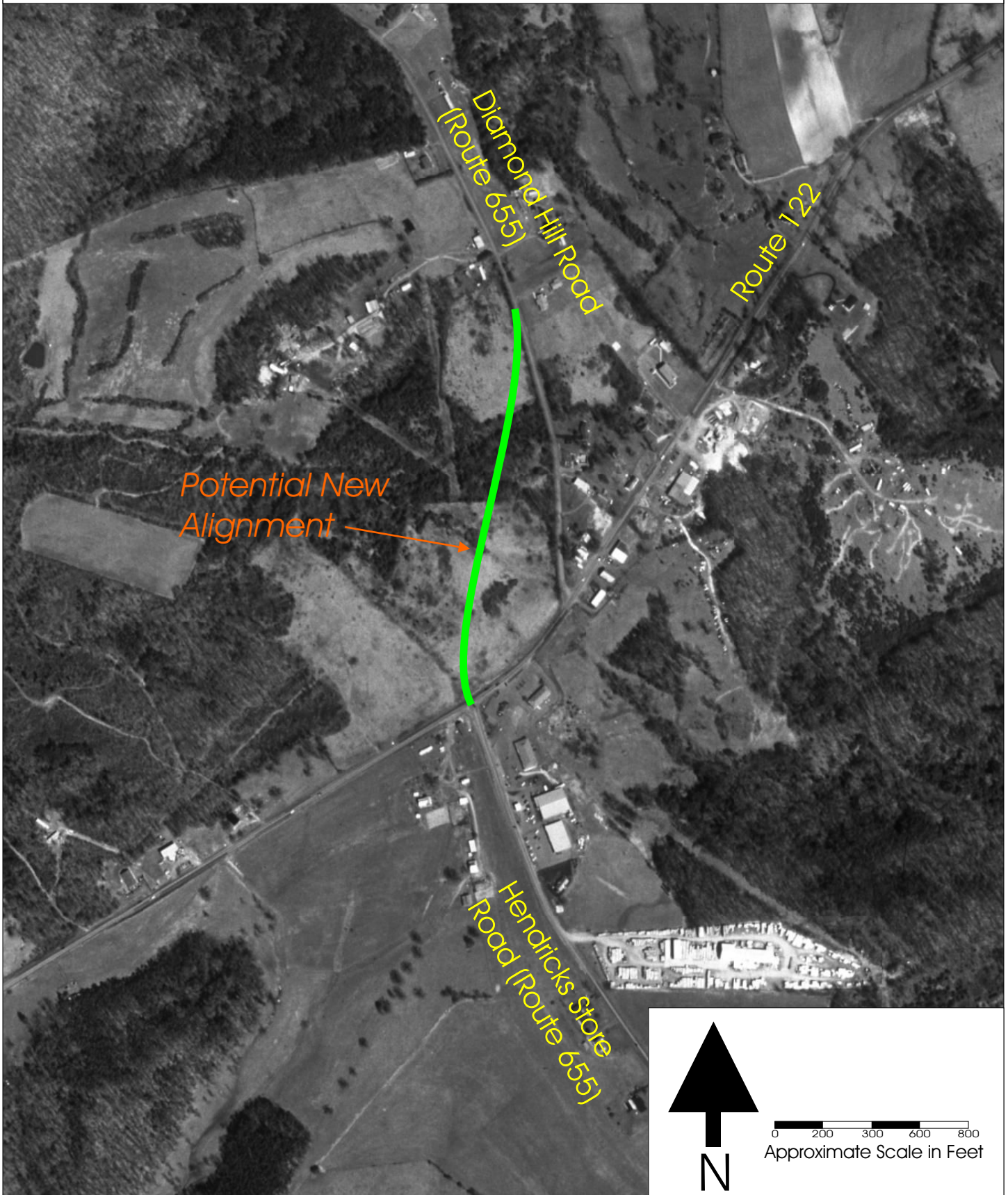
- (1) – Turn taper converted to full-length turn lane
- (2) – Minimal adjustment to pavement width; primary change is lane designation
- (3) – Existing configuration includes some pavement currently being used as right turn taper.

Exhibit 37 Proposed Intersection Improvements

Potential Route for Re-Alignment of Route 122 in the Vicinity of Route 801



Potential Route for Alignment of Diamond Hill Road and Hendricks Store Road (Route 655)



4.6 Halesford Bridge Capacity Improvements

The traffic forecasts for this study indicate that travel demand across the Halesford Bridge will be approaching 30,000 vehicles per day by 2025. In addition, the lack of bicycle and pedestrian amenities on the bridge was the subject of public comment throughout the study. The built environment around the bridge in both Bedford and Franklin Counties suggests that options for providing a new or improved crossing of Smith Mountain Lake in this vicinity should be studied in the near-term. The results of this study would support planning and rights-of-way preservation efforts in both counties.

4.7 Implementation Considerations

The estimated cost of improving Route 122 as an upgraded two-lane facility on a four-lane right-of-way is \$77.16 million. Based on this cost, it is clear that improvements to this roadway will need to be constructed over a significant period of time. To ensure that the planning framework is in place to maintain the functionality and safety of existing Route 122 for as long as possible, this study recommends that immediate attention be paid to the implementation of the comprehensive plan, corridor overlay zoning, and circulation plan recommendations. Of particular concern is the preservation of rights-of-way so that future improvements are not precluded by ongoing development.

Because there will be significant funding constraints and improvements in the Route 122 corridor will take time to implement, this study prioritized improvements into short, intermediate, and long-term recommendations. These priorities are shown below.

Short-Term Recommendations (within 5 years)

- Update the Bedford County Comprehensive Plan.
- Update the corridor overlay section of the Bedford County Zoning Ordinance.
- Construct the planned VDOT safety improvements at the intersection of Route 122 and Route 24.
- Re-align Route 655 South (Hendricks Store Road) with Route 655 North (Diamond Hill Road).
- Study options to increase roadway capacity across Smith Mountain Lake using either existing Halesford Bridge or a new crossing.

Intermediate-Term Recommendations (5 to 15 years)

- Construct Route 122 on new alignment from approximately 0.75 miles north of Goose Creek to 0.2 miles south of Route 801. This improvement would include a new bridge over Goose Creek east of where Stony Fork joins Goose Creek as well as an improved intersection to accommodate the connection between Route 801 and Route 122.
- Improve 12 intersections in the study corridor to add turn lanes. Install traffic signals when warranted.

Long-Term Recommendations (more than 15 years)

- Construct full-length upgrade of Route 122 to an improved two-lane facility on a four-lane right-of-way.

Short- and mid-term improvements should be constructed to be compatible with the long-term recommendation for the study corridor. Thus, intersection improvements should consider the purchase and/or preservation of sufficient rights-of-way to ultimately accommodate a four-lane divided Route 122. Planning efforts, such as setback requirements in the overlay corridor zoning, should also preserve sufficient rights-of-way for a four-lane divided facility. Larger construction efforts, such as the construction of Route 122 on new alignment north and south of Goose Creek should include the purchase of sufficient right-of-way for four travel lanes. A new bridge over Goose Creek should also allow for sufficient deck width to accommodate four lanes or should be capable of being upgraded to four lanes.