

Congestion within the GSATS area

Congestion within the GSATS area is a result of both commuting traffic and recreational/vacation traffic. Most of this congestion is a result of high traffic volumes on an urban area roadway network that provides access to residential properties and businesses, as well as commuter traffic and recreational traffic heading to vacation destinations along the Atlantic Ocean.

Additional capacity has been provided in recent years with the opening of the Conway Bypass (S.C. Route 22) and the Carolina Bays Parkway (SC 31). The Conway Bypass provides an opportunity to divert traffic from U.S. Route 501 to the northern portions of Myrtle Beach, as well as Atlantic Beach and North Myrtle Beach. Carolina Bays Parkway provides an east-west alternative to congested routes such as U.S. Route 17 and U.S. Route 17 Business (King's Highway).

The nature of travel within the region also contributes to increased congestion. In addition to regular commuter traffic, congestion is compounded by vacation and recreational traffic, especially on 'changeover days', when guests leave at the end of their vacation at the same time new visitors arrive for the start of their vacation.

All of the I-73 alternatives under consideration tie into the existing Conway Bypass, which extends from U.S. Route 501 to U.S. Route 17, and would not provide additional capacity within the GSATS area. Although the capacity would not be increased, by connecting with S.C. Route 22 it is anticipated that greater traffic volumes would be moved to this currently underutilized roadway.

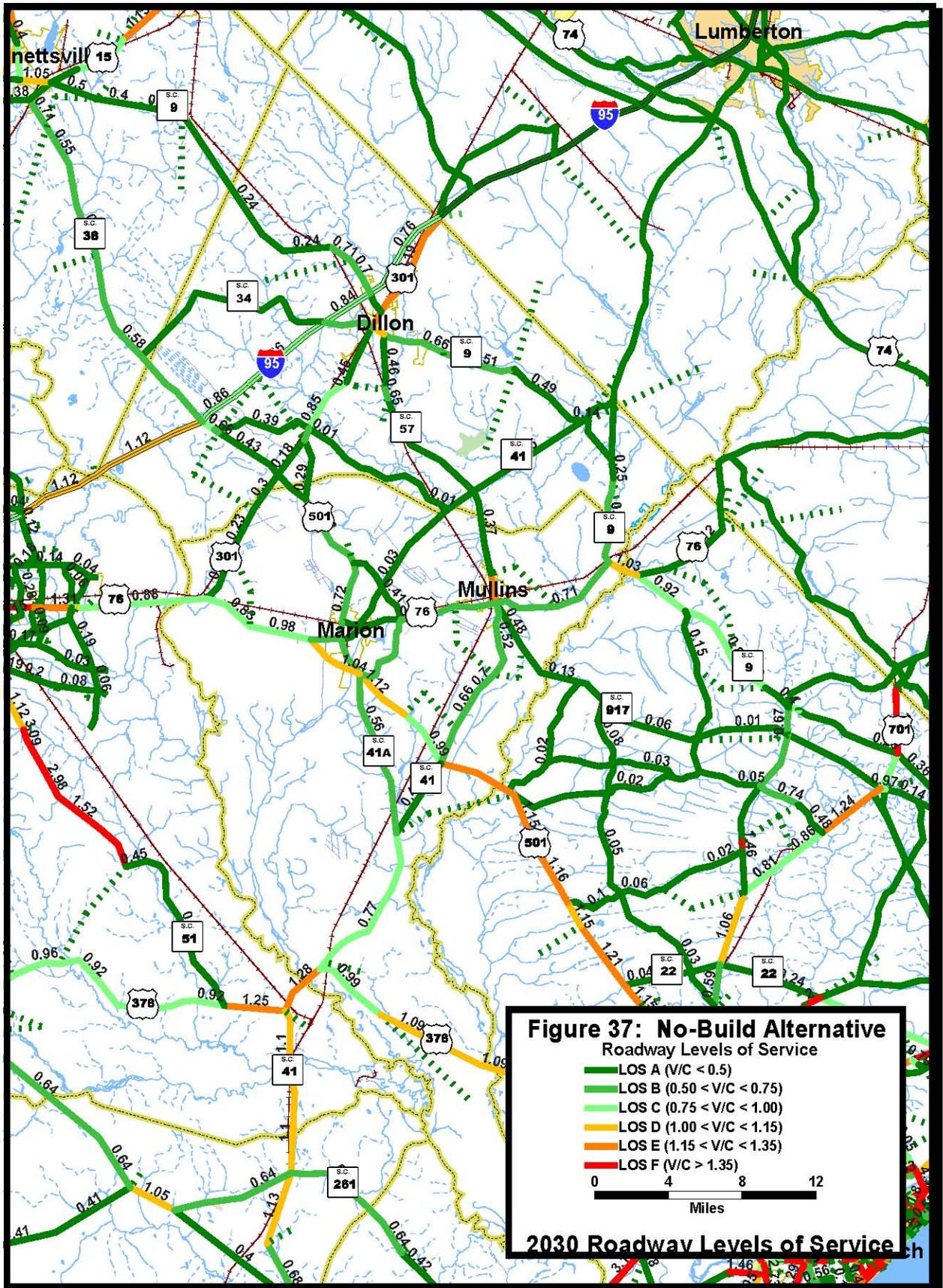
Congestion outside of the GSATS area.

The location of the eight I-73 alternatives between I-95 and S.C. Route 22 provides an opportunity to relieve congestion and provide additional capacity within the remainder of the study area outside the GSATS area.

The projected 2030 roadway levels of service for the No-build condition were determined using the 2030 Average Daily No-build traffic assignments and SCDOT level of service (LOS) criteria. The SCDOT LOS are determined using the daily volume-capacity ratio (V/C) and are based on LOS C capacities. The SCDOT V/C - LOS criteria are:

LOS A	$V/C < 0.50$
LOS B	$0.50 \leq V/C < 0.75$
LOS C	$0.75 \leq V/C < 1.00$
LOS D	$1.00 \leq V/C < 1.15$
LOS E	$1.15 \leq V/C < 1.35$
LOS F	$V/C \geq 1.35$

The 2030 No-build Alternative Roadway Levels of Service are shown in Figure 37.



As shown in Figure 37, most of the U.S. Route 501 roadway segments between U.S. Route 76 west of Marion and S.C. Route 22 north of Conway are projected to operate at LOS D or E during the 2030 Average Daily No-build condition. U.S. Route 378 between SC 41 and Conway is also projected to operate at LOS D.

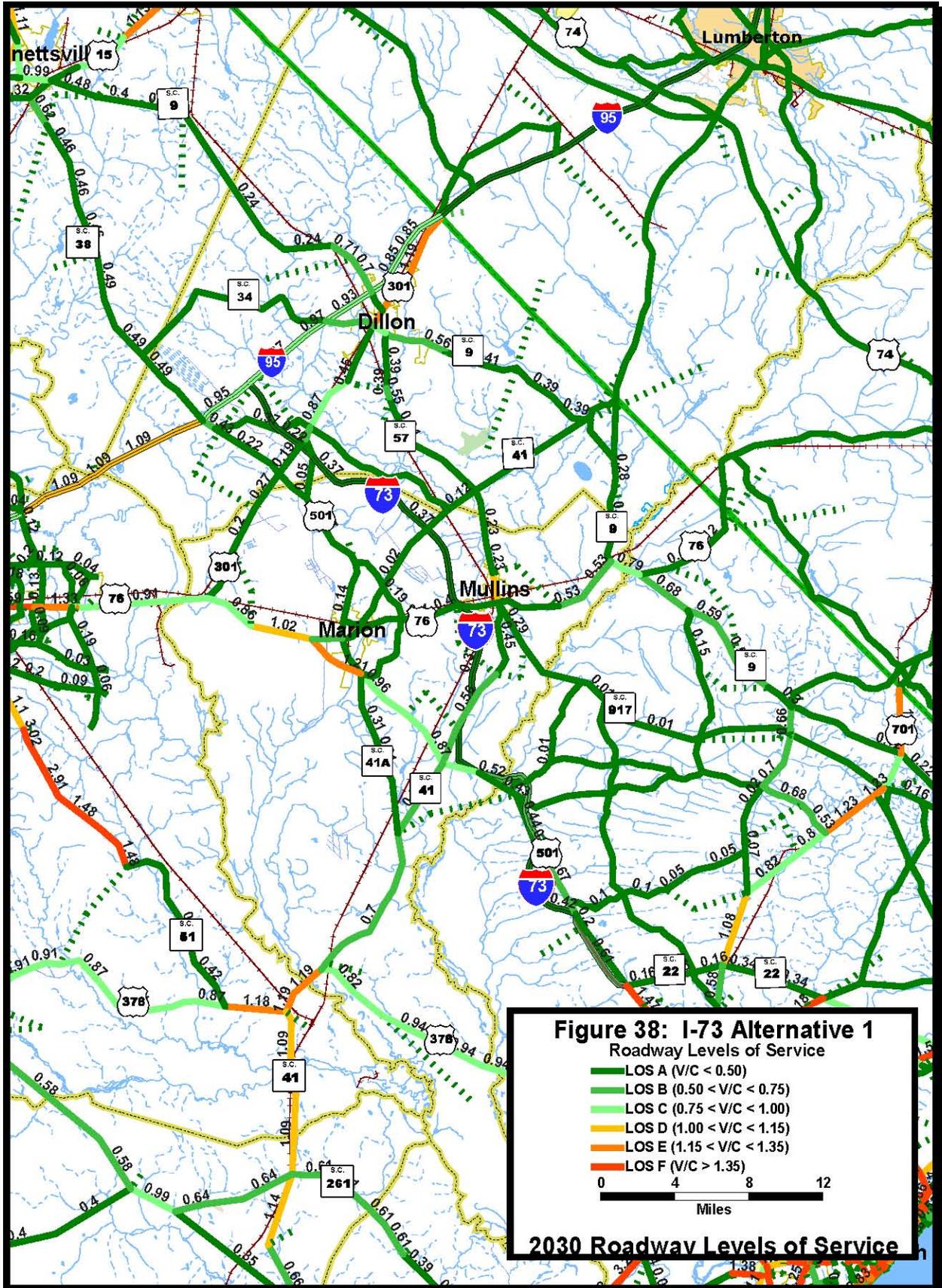
Figures 38 through 45 illustrate the projected 2030 roadway LOS for I-73 Alternatives 1 through 8 respectively. As these figures show, the construction of any of the I-73 alternatives would reduce congestion along U.S. Route 501 between U.S 76 and S.C. Route 22, and also improve the roadway LOS on U.S. Route 378 between SC 41 and Conway.

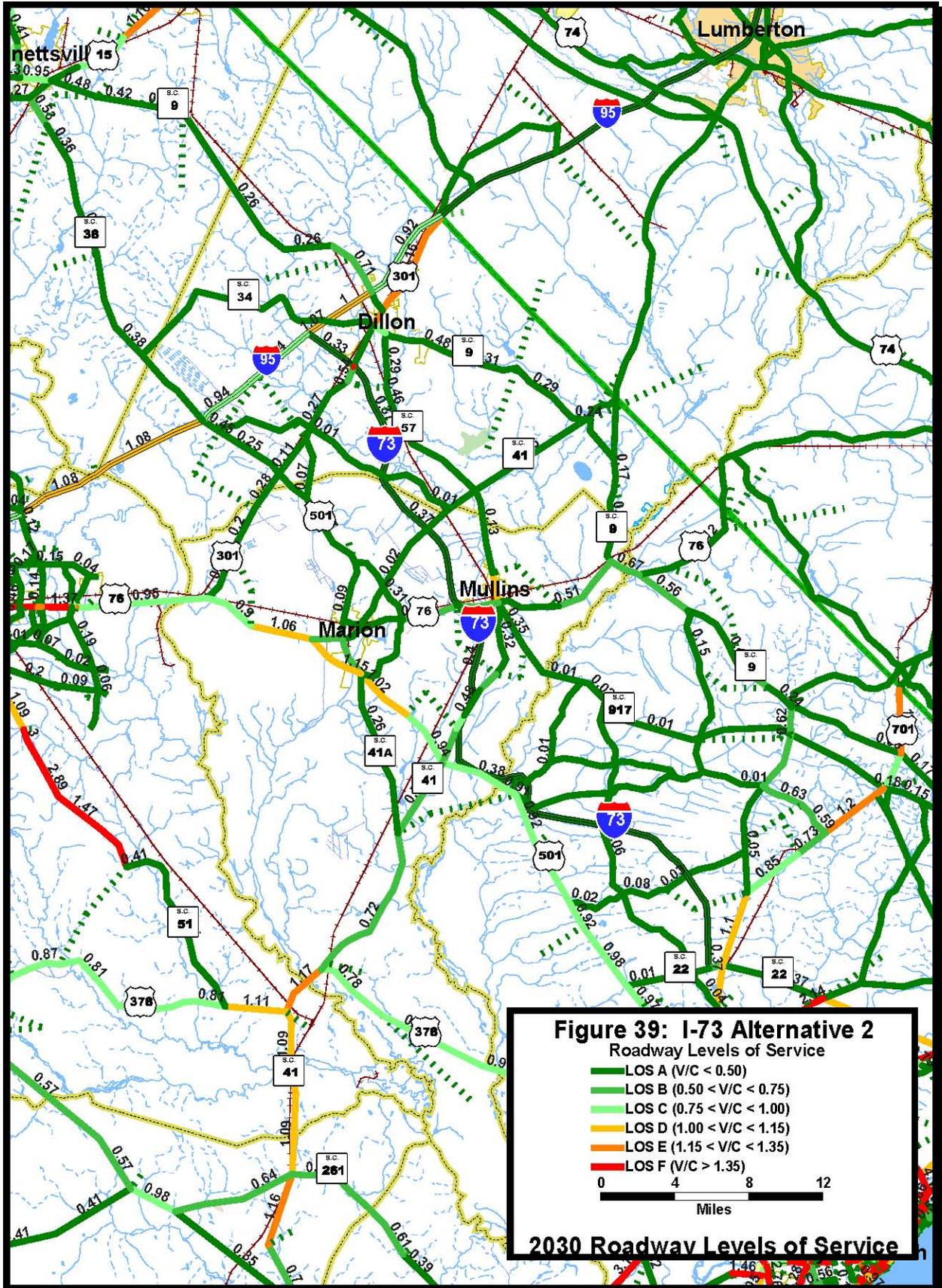
The benefit provided by the I-73 alternatives would be the diversion of some longer distance trips through the study area from the existing local roadway network, especially U.S. Route 501. This diversion of traffic would free up existing capacity that could be used by local residents and businesses for shorter distance trips.

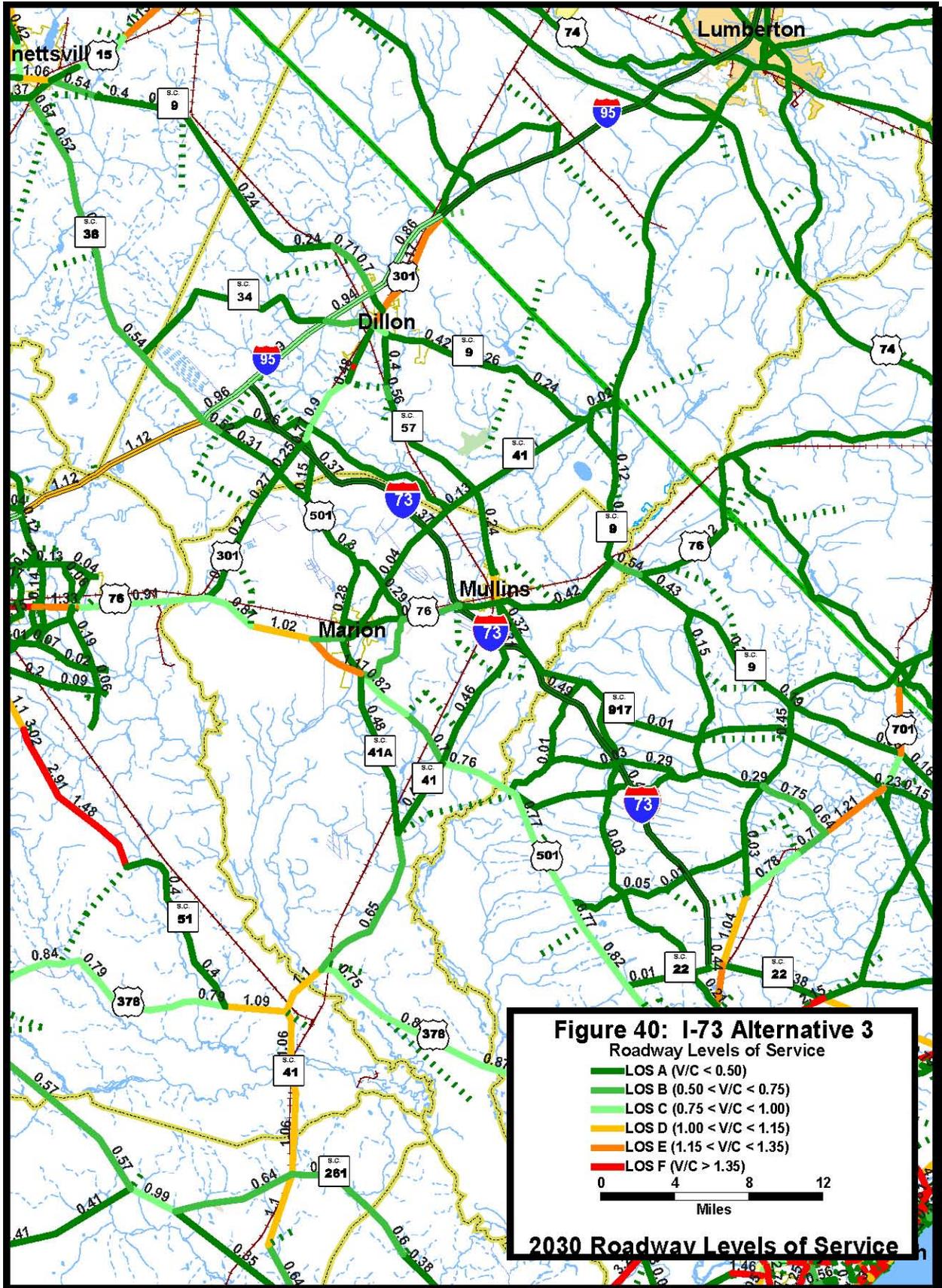
Other Measures of Effectiveness

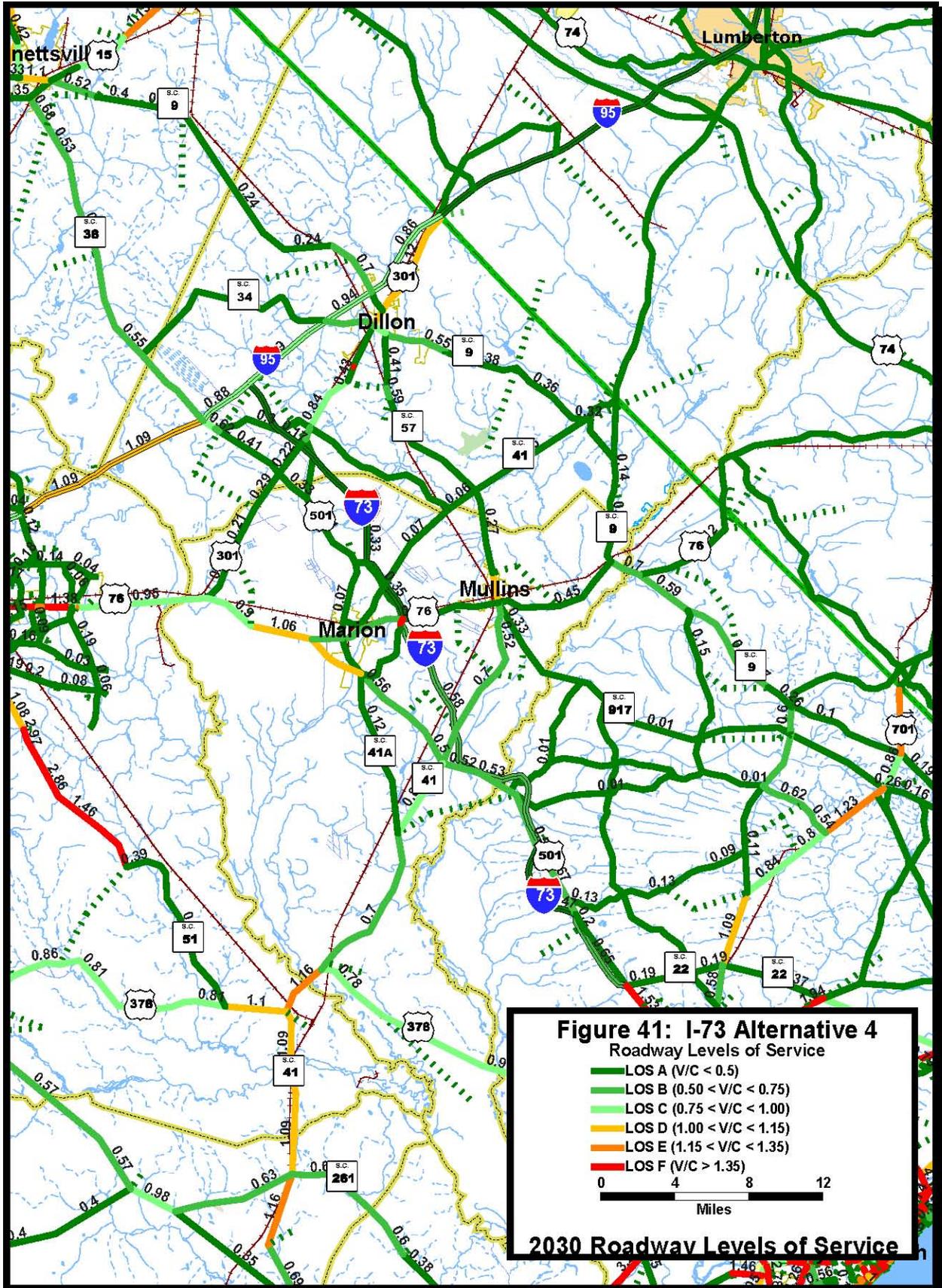
Other measures of effectiveness (MOE) were developed for each of the I-73 alternatives and compared to the MOE for the No-build Alternative. The key measures of effectiveness calculated were average daily Vehicle Miles Traveled (VMT) and Vehicle Hours Traveled (VHT). The MOE were calculated for the roadway network on the basis of the roadway functional classification within the three county (Dillon, Marion and Horry) study area. The MOE were further refined by removing the VMT/VHT contribution generated within the GSATS model area, which contributed a significant percentage to the network VMT/VHT within the three county study area. Since the new construction portion of the project would not add capacity to the GSATS model area, inclusion of the GSATS area tends to dilute the effects to the MOE. Therefore, the traffic was also evaluated with the GSATS area removed from the model to better illustrate the effects of I-73 on the local roadway network outside of GSATS. The 2030 No-build Alternative VMT and VHT for the three county study area (with and without the GSATS network contribution) is summarized in the following table.

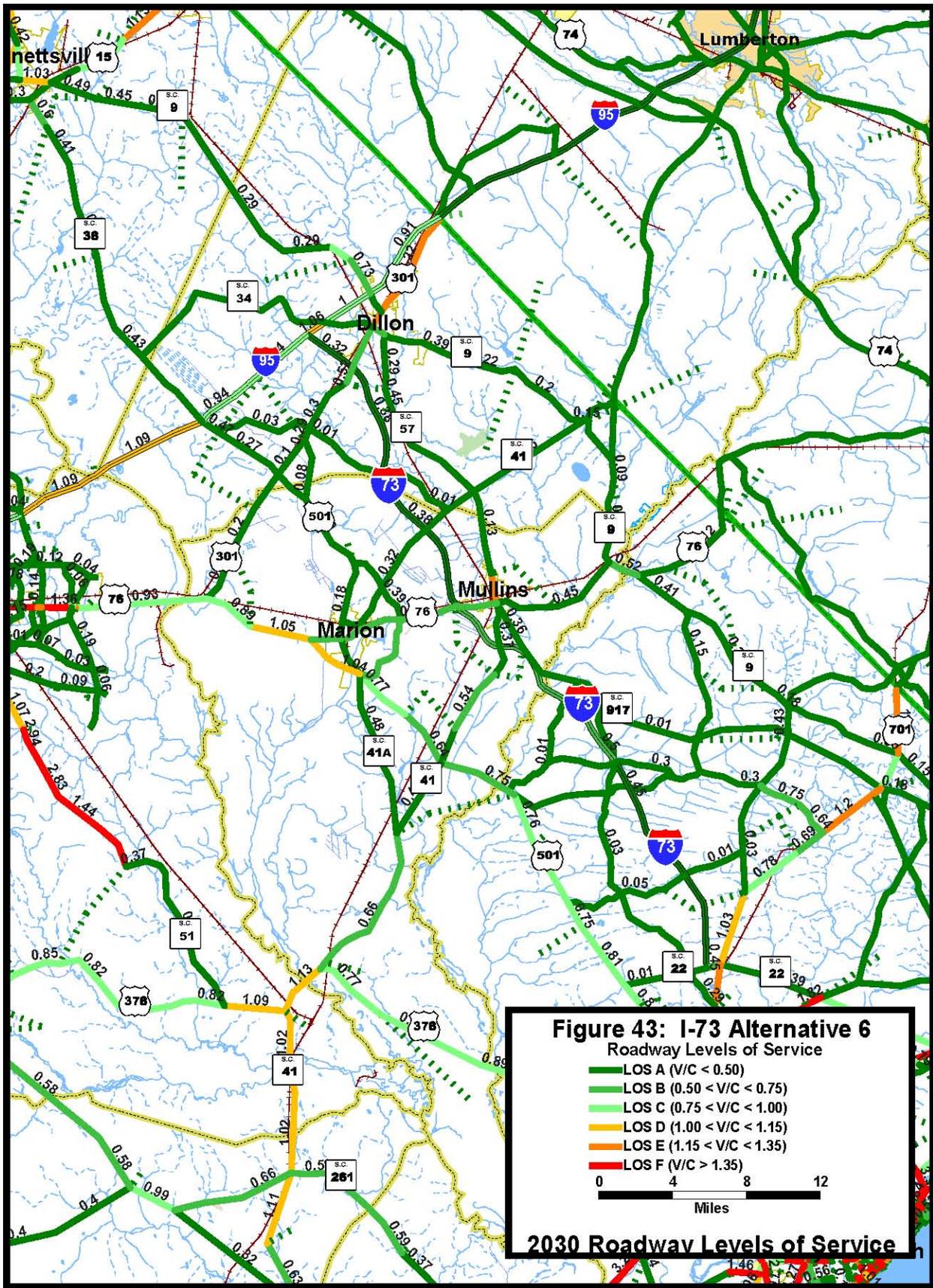
FUNCTIONAL CLASSIFICATION	NO BUILD STUDY AREA		NO BUILD STUDY AREA W/O GSATS	
	VMT	VHT	VMT	VHT
Centroid Connector	2,928,567	65,121	412,701	9,221
Rural Interstate	1,059,146	16,115	1,059,146	16,115
Rural Minor Arterial	3,187,273	64,187	1,882,927	40,470
Rural Minor Collector	39,965	1,164	39,965	1,164
Rural Principal Arterial	5,210,775	95,674	1,644,703	30,387
Urban Freeway or Expressway	2,870,126	47,897	0	0
Urban Principal Arterial	2,375,678	51,698	10,863	201
Other (Unclassified)	3,762,126	82,516	125	4
TOTAL:	21,433,657	424,372	5,050,430	97,563

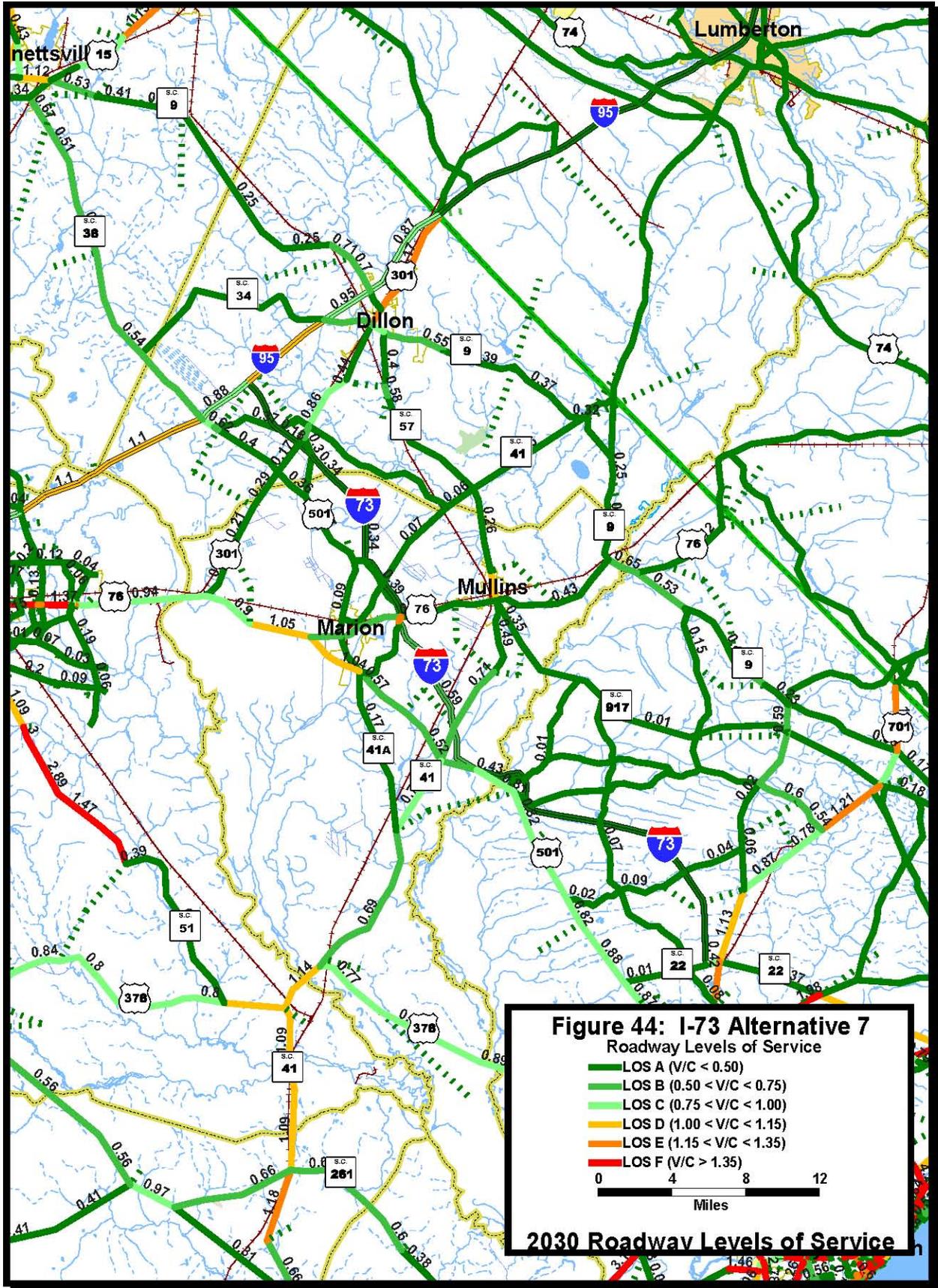












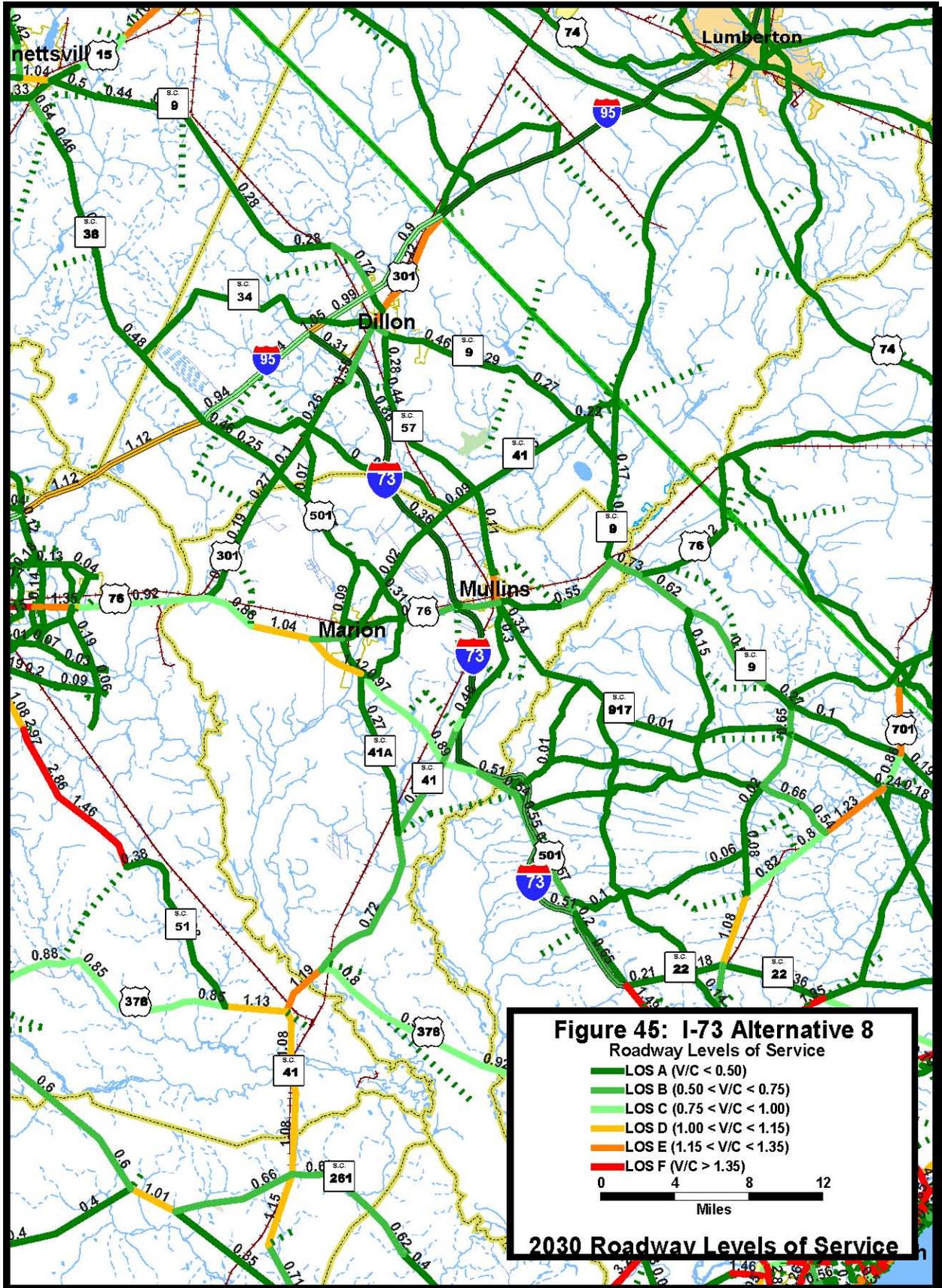
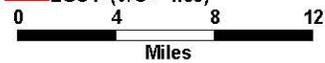


Figure 45: I-73 Alternative 8

Roadway Levels of Service

- LOS A (V/C < 0.50)
- LOS B (0.50 < V/C < 0.75)
- LOS C (0.75 < V/C < 1.00)
- LOS D (1.00 < V/C < 1.15)
- LOS E (1.15 < V/C < 1.35)
- LOS F (V/C > 1.35)



2030 Roadway Levels of Service

The GSATS area network contributes about 16.4 million VMT, and 327,000 VHT within the study area, or approximately 77 percent of the total study area network VMT and VHT. Thus, including the GSATS network in the analysis of MOE dampens the effects and makes identifying the improvement provided by any I-73 alternative difficult. Therefore, subsequent comparisons of MOE will be based on calculations both with and without the influence of the GSATS network.

The MOE for Alternative 1 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 1 STUDY AREA</i>		<i>ALTERNATIVE 1 STUDY AREA W/O GSATS</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,928,774	65,128	412,752	9,227
Rural Interstate	2,167,275	32,375	2,167,275	32,375
Rural Minor Arterial	2,617,511	51,313	1,328,942	27,885
Rural Minor Collector	34,943	1,016	34,943	1,016
Rural Principal Arterial	5,105,612	93,033	1,431,686	25,857
Urban Freeway or Expressway	2,855,509	47,653	0	0
Urban Principal Arterial	2,468,973	52,773	7,510	137
Other (Unclassified)	3,621,963	79,187	125	4
TOTAL:	21,800,560	422,477	5,383,234	96,501
DIFFERENCE FROM NO-BUILD	366,903	-1,895	332,804	-1,062

Alternative 1 VMT is higher and the VHT is lower than the No-build Alternative within the entire study area and in the study area with the GSATS area network removed. This means that the travel efficiency would be improved (more miles traveled in less time).

The MOE for Alternative 2 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 2 STUDY AREA</i>		<i>ALTERNATIVE 2 STUDY AREA W/O GSATS</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,926,207	65,070	412,890	9,230
Rural Interstate	2,185,449	33,610	2,185,449	33,610
Rural Minor Arterial	2,774,923	54,319	1,497,672	31,095
Rural Minor Collector	32,976	953	32,976	953
Rural Principal Arterial	5,014,680	91,465	1,310,820	23,742
Urban Freeway or Expressway	2,840,977	47,410	0	0
Urban Principal Arterial	2,441,106	52,191	7,183	131
Other (Unclassified)	3,663,601	79,936	125	4
TOTAL:	21,880,540	423,122	5,450,402	96,977
DIFFERENCE FROM NO-BUILD	446,883	-1,250	399,972	-586

Alternative 2 also has higher VMT and lower VHT than the No-build Alternative within the entire study area and in the study area with the GSATS area network removed.

The MOE for Alternative 3 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 3 STUDY AREA</i>		<i>ALTERNATIVE 3 STUDY AREA W/O GSATS</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,923,960	65,017	409,128	9,143
Rural Interstate	2,198,766	32,956	2,198,766	32,956
Rural Minor Arterial	2,714,623	52,114	1,428,396	28,726
Rural Minor Collector	58,629	1,706	58,629	1,706
Rural Principal Arterial	5,079,637	92,244	1,361,664	24,263
Urban Freeway or Expressway	2,816,749	47,006	0	0
Urban Principal Arterial	2,453,836	52,523	5,798	105
Other (Unclassified)	3,648,516	79,697	125	4
TOTAL:	21,894,716	423,263	5,462,506	96,903
DIFFERENCE FROM NO-BUILD	461,059	-1,109	412,077	-660

Alternative 3 also has higher VMT and the lower VHT than the No-build Alternative within the entire study area and in the study area with the GSATS area network removed.

The MOE for Alternative 4 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 4 STUDY AREA</i>		<i>ALTERNATIVE 4 STUDY AREA W/O GSATS</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,926,491	65,070	412,815	9,222
Rural Interstate	2,255,184	33,722	2,255,184	33,722
Rural Minor Arterial	2,593,097	50,666	1,282,907	26,846
Rural Minor Collector	37,976	1,099	37,976	1,099
Rural Principal Arterial	5,102,009	92,907	1,427,462	25,720
Urban Freeway or Expressway	2,834,101	47,295	0	0
Urban Principal Arterial	2,454,387	52,447	6,052	110
Other (Unclassified)	3,654,862	79,778	125	4
TOTAL:	21,858,109	422,984	5,422,522	96,723
DIFFERENCE FROM NO-BUILD	424,452	-1,388	372,092	-840

Alternative 4 also has higher VMT and lower VHT than the No-build Alternative within the entire study area and in the study area with the GSATS area network removed.

The MOE for Alternative 5 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 5 STUDY AREA</i>		<i>ALTERNATIVE 5 STUDY AREA W/O GSATS</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,927,024	65,086	412,202	9,211
Rural Interstate	2,115,465	31,602	2,115,465	31,602
Rural Minor Arterial	2,782,439	54,211	1,504,246	30,969
Rural Minor Collector	31,661	921	31,661	921
Rural Principal Arterial	5,072,920	92,368	1,375,693	24,764
Urban Freeway or Expressway	2,817,785	47,023	0	0
Urban Principal Arterial	2,456,848	52,580	6,703	122
Other (Unclassified)	3,657,460	79,804	125	4
TOTAL:	21,861,600	423,594	5,446,095	97,593
DIFFERENCE FROM NO-BUILD	427,943	-778	395,666	31

Alternative 5 has higher VMT and lower VHT than the No-build Alternative within the entire study area. Both the VMT and the VHT are higher when the influence of the GSATS area network is removed.

The MOE for Alternative 6 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 6 STUDY AREA</i>		<i>ALTERNATIVE 6 STUDY AREA W/O GSATS</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,922,493	64,988	409,743	9,160
Rural Interstate	2,239,561	34,456	2,239,561	34,456
Rural Minor Arterial	2,718,513	52,108	1,381,141	27,790
Rural Minor Collector	60,832	1,781	60,832	1,781
Rural Principal Arterial	5,012,190	91,442	1,317,625	23,838
Urban Freeway or Expressway	2,834,379	47,300	0	0
Urban Principal Arterial	2,455,082	52,483	6,212	113
Other (Unclassified)	3,622,874	79,432	125	4
TOTAL:	21,865,923	422,536	5,415,238	95,687
DIFFERENCE FROM NO-BUILD	432,266	-1,836	364,809	-1,875

Alternative 6 also has higher VMT and lower VHT than the No-build Alternative within the entire study area and in the study area with the GSATS area network removed.

The MOE for Alternative 7 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 7 STUDY AREA</i>		<i>ALTERNATIVE 7 STUDY AREA W/O GSATS</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,932,438	65,207	413,353	9,238
Rural Interstate	2,231,903	33,380	2,231,903	33,380
Rural Minor Arterial	2,722,100	52,285	1,417,910	28,571
Rural Minor Collector	32,200	931	32,200	931
Rural Principal Arterial	5,078,427	92,509	1,388,037	25,006
Urban Freeway or Expressway	2,807,126	46,845	0	0
Urban Principal Arterial	2,433,061	52,070	5,759	105
Other (Unclassified)	3,684,778	80,356	125	4
TOTAL:	21,922,032	423,584	5,489,287	97,234
DIFFERENCE FROM NO-BUILD	488,375	-788	438,857	-328

Alternative 7 also has higher VMT and lower VHT than the No-build Alternative within the entire study area and in the study area with the GSATS area network removed.

The MOE for Alternative 8 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 8 STUDY AREA</i>		<i>ALTERNATIVE 8 STUDY AREA W/O GSATS</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,928,588	65,117	412,600	9,217
Rural Interstate	2,300,269	34,441	2,300,269	34,441
Rural Minor Arterial	2,625,711	51,415	1,313,983	27,567
Rural Minor Collector	38,211	1,107	38,211	1,107
Rural Principal Arterial	5,043,497	91,791	1,361,691	24,442
Urban Freeway or Expressway	2,817,768	47,022	0	0
Urban Principal Arterial	2,452,387	52,401	7,993	146
Other (Unclassified)	3,662,088	79,897	126	4
TOTAL:	21,868,519	423,192	5,434,874	96,924
DIFFERENCE FROM NO-BUILD	434,863	-1,180	384,444	-638

Alternative 8 also has higher VMT and lower VHT than the No-build Alternative within the entire study area and in the study area with the GSATS area network removed.

The total difference in VMT and VHT from the 2030 No-build Alternative compared to each of the 2030 I-73 Alternatives is summarized in the following table.

<i>ALTERNATIVE</i>	<i>DIFFERENCE FROM NO-BUILD (STUDY AREA)</i>				<i>DIFFERENCE FROM NO-BUILD (STUDY AREA W/O GSATS)</i>			
	VMT	Rating	VHT	Rating	VMT	Rating	VHT	Rating
Alternative 1	366,903	8.00	-1,895	0.00	332,804	8.00	-1,062	3.41
Alternative 2	446,883	2.73	-1,250	4.62	399,972	2.93	-586	5.41
Alternative 3	461,059	1.80	-1,109	5.63	412,077	2.02	-660	5.10
Alternative 4	424,452	4.21	-1,388	3.63	372,092	5.04	-840	4.34
Alternative 5	427,943	3.98	-778	8.00	395,666	3.26	31	8.00
Alternative 6	432,266	3.70	-1,836	0.42	364,809	5.59	-1,875	0.00
Alternative 7	488,375	0.00	-788	7.93	438,857	0.00	-328	6.49
Alternative 8	434,863	3.52	-1,180	5.12	384,444	4.10	-638	5.19

A statistical analysis was performed using the VMT and VHT shown in the previous table. For the entire study area, the VMT for all the alternatives except Alternatives 1 and 7 are within one standard deviation of the mean VMT, while the VHT for Alternatives 2, 3, 4 and 8 are within one standard deviation of the mean VHT. For the study area with the GSATS area network removed, the VMT for all the alternatives except Alternatives 1 and 7 are within one standard deviation of the mean VMT, while the VHT for all the alternatives except Alternatives 5 and 6 are within one standard deviation of the mean VHT.

As shown in the previous table, the alternatives were rated according to the relative differences between their VMT and VHT. A proportional rating system was applied to each of the alternatives. The proportional rating is based on where each alternative's VMT and VHT fell in the range of results for each condition studied. The range between the minimum and maximum VMT and VHT in each condition was established, and the approximately location of the remaining alternatives within that range was calculated. The 'best' alternative was given a rating of 0.00, while the 'worst' alternative was given a rating of 8.00. The closer an alternative's MOE was to the ends of the range, the closer its rating would be to either 0.00 or 8.00. The closer an alternative's MOE is to the center of the range, the closer its rating would be to 4.00.

For example, in VHT in the entire study area condition for Alternative 1 (a reduction of 1,895 vehicle hours) was the 'best' of the eight alternatives, while the VHT for Alternative 5 (a reduction of 778 vehicle-hours) is the 'worst'. These alternatives are assigned a rating 0.00 and 8.00 respectively. The ratings for the remaining alternatives VHT could be calculated based on where they fall in proportion to the range of 1,117 vehicle-hours between these two extremes. Alternative 6, which provides a reduction of 1,836 vehicle-hours of travel, is very close (59 vehicle-hours) to the 'best' end of the range. This is reflected in its calculated rating of 0.42. Alternative 4 provides a reduction of 1,388 vehicle hours, or about 507 vehicle-hours less than Alternative 1. This falls about halfway within the middle of the range between the 'best' and 'worst' results (about 558 vehicle-miles), which results in its rating of 3.63. Alternative 7, which

provides a reduction of 788 vehicle-hours of travel, is very close (10 vehicle-hours) to the 'worst' end of the range, which results in its rating of 7.93.

A straight numeric ranking was considered, but was not used because it would not reflect the "bunching" of the assignments results. For example, the difference between the VMT for Alternatives 2 (with the third highest VMT of 446,883 vehicle-miles) and Alternative 4 (with the seventh highest VMT of 424,452 vehicle-miles) is 22,400 vehicles miles – about a five percent difference. With the close spacing of the results, giving Alternative 2 a ranking of "3" while giving Alternative 4 a ranking of "7" does not adequately reflect how closely the two alternatives, as well as the three alternatives that would be ranked between them, compare to each other.

In comparing the analysis results for the entire study area (including the GSATS area network), Alternative 1 provides the smallest increase in VMT (366,903 vehicle-miles) and largest reduction in VHT (1,895 vehicle-hours), while Alternative 7 provides the largest increase in VMT (488,375 vehicle-miles) and Alternatives 5 and 7 produce the smallest decreases in VHT (778 and 788 vehicle hours respectively).

After adjusting for the influence of the congested GSATS area network in the VMT and VHT calculations, Alternatives 1 and 7 still provide the smallest and largest increases in VMT (332,804 and 438,857 vehicle-miles) respectively. Alternative 6 provides the greatest reduction in VHT, while Alternative 5 provides a slight increase in VHT (1,875 and 31 vehicle-hours respectively).

It is not unexpected that the addition of any of the I-73 alternatives results in an overall increase in VMT throughout the study area. As shown in Figures 37 through 45, the presence of any of the I-73 alternatives would divert traffic from the existing roadway network on what would be longer, but faster trips.

The reductions in VHT are also an outcome that would be expected to occur with a reduction in network congestion as a result of constructing the I-73 alternatives. It is likely that the relatively uncongested nature of the 2030 study area network is what is causing the smaller reductions in VHT that are obtained in most alternatives. If the network in which the I-73 alternatives are located (between I-95 and S.C. Route 22) was more congested during the No-build condition, it is likely the I-73 alternatives would show a more substantial network-wide reduction in congestion by larger reductions in VHT.

The change in the No-build network VMT and VHT for each alternative without the influence of I-73 related VMT/VHT was examined. This was done by removing the VMT and VHT for each I-73 Alternative from the data, and examining the changes in MOE in the existing surrounding roadway network. The VMT and VHT for each I-73 alternative are summarized in the following table.

I-73 ALTERNATIVE	VMT	Rating	VHT	Rating
ALTERNATIVE 1	1,037,032	5.08	14,938	2.91
ALTERNATIVE 2	1,035,484	5.15	15,717	5.27
ALTERNATIVE 3	1,042,675	4.81	14,994	3.08
ALTERNATIVE 4	1,126,772	0.82	16,318	7.10
ALTERNATIVE 5	975,493	8.00	13,979	0.00
ALTERNATIVE 6	1,090,014	2.56	16,615	8.00
ALTERNATIVE 7	1,094,186	2.37	15,771	5.44
ALTERNATIVE 8	1,144,018	0.00	16,510	7.68

As shown in the previous table, Alternative 5 has the lowest VMT of the eight I-73 alternatives (975,493 vehicle-miles), while alternatives 6 and 7 have the highest VMT (1,090,014 and 1,094,186 vehicle-miles respectively). Alternative 5 also has the lowest VHT (13,979 vehicle-hours), while Alternative 6 has the highest VHT (16,615 vehicle-hours).

The MOE for the eight I-73 alternatives were analyzed again to identify the impact each alternative has on the remainder of the roadway network. The MOE for Alternative 1 are summarized in the following table.

FUNCTIONAL CLASSIFICATION	ALTERNATIVE 1 STUDY AREA W/O I-73		ALTERNATIVE 1 STUDY AREA W/O GSATS W/O I-73	
	VMT	VHT	VMT	VHT
Centroid Connector	2,928,774	65,128	412,752	9,227
Rural Interstate	1,130,243	17,437	1,130,243	17,437
Rural Minor Arterial	2,617,511	51,313	1,328,942	27,885
Rural Minor Collector	34,943	1,016	34,943	1,016
Rural Principal Arterial	5,105,612	93,033	1,431,686	25,857
Urban Freeway or Expressway	2,855,509	47,653	0	0
Urban Principal Arterial	2,468,973	52,773	7,510	137
Other (Unclassified)	3,621,963	79,187	125	4
TOTAL:	20,763,528	407,539	4,346,202	81,563
DIFFERENCE FROM NO-BUILD	-670,129	-16,833	-704,228	-16,000

The MOE for Alternative 2 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 2 STUDY AREA W/O I-73</i>		<i>ALTERNATIVE 2 STUDY AREA W/O GSATS W/O I-73</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,926,207	65,070	412,890	9,230
Rural Interstate	1,149,965	17,893	1,149,965	17,893
Rural Minor Arterial	2,774,923	54,319	1,497,672	31,095
Rural Minor Collector	32,976	953	32,976	953
Rural Principal Arterial	5,014,680	91,465	1,310,820	23,742
Urban Freeway or Expressway	2,840,977	47,410	0	0
Urban Principal Arterial	2,441,106	52,191	7,183	131
Other (Unclassified)	3,663,601	79,936	125	4
TOTAL:	20,825,244	407,995	4,395,106	81,850
DIFFERENCE FROM NO-BUILD	-608,413	-16,377	-655,324	-15,713

The MOE for Alternative 3 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 3 STUDY AREA W/O I-73</i>		<i>ALTERNATIVE 3 STUDY AREA W/O GSATS W/O I-73</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,923,960	65,017	409,128	9,143
Rural Interstate	1,156,091	17,961	1,156,091	17,961
Rural Minor Arterial	2,714,623	52,114	1,428,396	28,726
Rural Minor Collector	58,629	1,706	58,629	1,706
Rural Principal Arterial	5,079,637	92,244	1,361,664	24,263
Urban Freeway or Expressway	2,816,749	47,006	0	0
Urban Principal Arterial	2,453,836	52,523	5,798	105
Other (Unclassified)	3,648,516	79,697	125	4
TOTAL:	20,852,041	408,269	4,419,832	81,909
DIFFERENCE FROM NO-BUILD	-581,615	-16,103	-630,598	-15,654

The MOE for Alternative 4 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 4 STUDY AREA W/O I-73</i>		<i>ALTERNATIVE 4 STUDY AREA W/O GSATS W/O I-73</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,926,491	65,070	412,815	9,222
Rural Interstate	1,128,411	17,404	1,128,411	17,404
Rural Minor Arterial	2,593,097	50,666	1,282,907	26,846
Rural Minor Collector	37,976	1,099	37,976	1,099
Rural Principal Arterial	5,102,009	92,907	1,427,462	25,720
Urban Freeway or Expressway	2,834,101	47,295	0	0
Urban Principal Arterial	2,454,387	52,447	6,052	110
Other (Unclassified)	3,654,862	79,778	125	4
TOTAL:	20,731,336	406,666	4,295,750	80,405
DIFFERENCE FROM NO-BUILD	-702,320	-17,706	-754,680	-17,158

The MOE for Alternative 5 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 5 STUDY AREA W/O I-73</i>		<i>ALTERNATIVE 5 STUDY AREA W/O GSATS W/O I-73</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,927,024	65,086	412,202	9,211
Rural Interstate	1,139,972	17,624	1,139,972	17,624
Rural Minor Arterial	2,782,439	54,211	1,504,246	30,969
Rural Minor Collector	31,661	921	31,661	921
Rural Principal Arterial	5,072,920	92,368	1,375,693	24,764
Urban Freeway or Expressway	2,817,785	47,023	0	0
Urban Principal Arterial	2,456,848	52,580	6,703	122
Other (Unclassified)	3,657,460	79,804	125	4
TOTAL:	20,886,107	409,615	4,470,603	83,615
DIFFERENCE FROM NO-BUILD	-547,550	-14,756	-579,827	-13,948

The MOE for Alternative 6 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 6 STUDY AREA W/O I-73</i>		<i>ALTERNATIVE 6 STUDY AREA W/O GSATS W/O I-73</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,922,493	64,988	409,743	9,160
Rural Interstate	1,149,546	17,841	1,149,546	17,841
Rural Minor Arterial	2,718,513	52,108	1,381,141	27,790
Rural Minor Collector	60,832	1,781	60,832	1,781
Rural Principal Arterial	5,012,190	91,442	1,317,625	23,838
Urban Freeway or Expressway	2,834,379	47,300	0	0
Urban Principal Arterial	2,455,082	52,483	6,212	113
Other (Unclassified)	3,622,874	79,432	125	4
TOTAL:	20,775,908	406,850	4,325,224	80,002
DIFFERENCE FROM NO-BUILD	-657,748	-17,522	-725,206	-17,561

The MOE for Alternative 7 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 7 STUDY AREA W/O I-73</i>		<i>ALTERNATIVE 7 STUDY AREA W/O GSATS W/O I-73</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,932,438	65,207	413,353	9,238
Rural Interstate	1,137,716	17,609	1,137,716	17,609
Rural Minor Arterial	2,722,100	52,285	1,417,910	28,571
Rural Minor Collector	32,200	931	32,200	931
Rural Principal Arterial	5,078,427	92,509	1,388,037	25,006
Urban Freeway or Expressway	2,807,126	46,845	0	0
Urban Principal Arterial	2,433,061	52,070	5,759	105
Other (Unclassified)	3,684,778	80,356	125	4
TOTAL:	20,827,846	407,813	4,395,100	81,463
DIFFERENCE FROM NO-BUILD	-605,811	-16,559	-655,329	-16,099

The MOE for Alternative 8 are summarized in the following table.

<i>FUNCTIONAL CLASSIFICATION</i>	<i>ALTERNATIVE 8 STUDY AREA W/O I-73</i>		<i>ALTERNATIVE 8 STUDY AREA W/O GSATS W/O I-73</i>	
	VMT	VHT	VMT	VHT
Centroid Connector	2,928,588	65,117	412,600	9,217
Rural Interstate	1,156,251	17,931	1,156,251	17,931
Rural Minor Arterial	2,625,711	51,415	1,313,983	27,567
Rural Minor Collector	38,211	1,107	38,211	1,107
Rural Principal Arterial	5,043,497	91,791	1,361,691	24,442
Urban Freeway or Expressway	2,817,768	47,022	0	0
Urban Principal Arterial	2,452,387	52,401	7,993	146
Other (Unclassified)	3,662,088	79,897	126	4
TOTAL:	20,724,501	406,682	4,290,856	80,414
DIFFERENCE FROM NO-BUILD	-709,155	-17,690	-759,574	-17,148

The VMT and VHT within the remainder of the study area network would be substantially reduced by all of the I-73 Build Alternatives, proving that each I-73 Build Alternative would reduce traffic volumes on the remaining existing roadway network when compared to the No-build Alternative.

To identify which I-73 alternative provides the largest reductions in MOE on the remainder of the roadway network, the differences in VHT and VMT for each alternative were compared to the No-build Alternative. This comparison is shown in the following table.

<i>ALTERNATIVE</i>	<i>DIFFERENCE FROM NO-BUILD (STUDY AREA)</i>				<i>DIFFERENCE FROM NO-BUILD (STUDY AREA W/O GSATS)</i>			
	VMT	Rating	VHT	Rating	VMT	Rating	VHT	Rating
Alternative 1	-670,129	1.93	-16,833	2.37	-704,228	2.46	-16,000	3.46
Alternative 2	-608,413	4.99	-16,377	3.60	-655,324	4.64	-15,713	4.09
Alternative 3	-581,615	6.31	-16,103	4.35	-630,598	5.74	-15,654	4.22
Alternative 4	-702,320	0.34	-17,706	0.00	-754,680	0.22	-17,158	0.89
Alternative 5	-547,550	8.00	-14,756	8.00	-579,827	8.00	-13,948	8.00
Alternative 6	-657,748	2.54	-17,522	0.50	-725,206	1.53	-17,561	0.00
Alternative 7	-605,811	5.12	-16,559	3.11	-655,329	4.64	-16,099	3.24
Alternative 8	-709,155	0.00	-17,690	0.04	-759,574	0.00	-17,148	0.91

The analysis and comparison of alternatives indicates that Alternatives 4 and 8 would provide the largest reduction in network VMT (702,320 and 709,155 vehicle-miles respectively) and VHT (17,706 and 17,690 vehicle-hours respectively) throughout the existing roadway network in the

three county study area. Alternative 5 would provide the least reduction in VMT (547,550 vehicle-miles), while Alternative 2 would provide the least reduction in VHT (16,377 vehicle-hours).

When considering the study area network without the GSATS area network, Alternatives 4 and 8 would provide the largest reduction in network VMT (754,680 and 759,574 vehicle-miles respectively), while Alternative 6 would provide the largest reduction in VHT (17,561 vehicle-hours). Alternative 5 would provide the least reduction in VMT (579,827 vehicle-miles) and in VHT (13,948 vehicle-hours).

Evaluation of 2030 AADT Alternatives

The analyses indicate that all of the proposed I-73 improvements would carry a large number of vehicle-miles of travel throughout the study area. The analyses also indicate that all of the proposed Build Alternatives would reduce vehicle-miles and vehicle-hours of travel of the rest of the existing ‘No-build’ network.

Since all the alternatives would provide desirable outcomes, it then becomes necessary to determine which alternatives would be better at providing those outcomes than the other alternatives. To do this, the ratings for the various MOE for the previous analyses were added together and averaged to rank the I-73 alternatives according to which provide better levels of improvement over the No-build condition. This is summarized in the following table.

<i>ALTERNATIVE</i>	Sum of Ratings	Average Ratings	Rank
Alternative 1	64.55	4.30	6
Alternative 2	73.48	4.90	7
Alternative 3	62.37	4.16	5
Alternative 4	34.06	2.27	1
Alternative 5	100.85	6.72	8
Alternative 6	37.55	2.50	2
Alternative 7	58.21	3.88	4
Alternative 8	48.53	3.24	3

Based on this evaluation, Alternatives 4 and 6 would be better overall in addressing travel demands arising from 2030 average daily traffic conditions. Alternative 8 would be the next ‘best’ alternative for these conditions, followed by Alternatives 1, 3, and 7, which provide about the same overall benefit. Alternative 5 would be the least beneficial alternative under the 2030 average daily traffic conditions.

2030 Peak Period Traffic Assignments

The previous model assignments were based on the average annual daily traffic within the study area network. Additional analyses were performed to determine the extent that traffic increases as a result of higher seasonal tourism and vacation travel. These analyses led to the development

of peak period traffic assignments for the 2030 No-build condition and the eight I-73 alternatives.

Peak period traffic assignments were developed for 2030 in order to investigate the ability of the network to handle the anticipated average daily traffic during the peak travel periods of the year. The first step in developing the peak period assignments was comparing the average annual daily traffic (AADT) at the SCDOT permanent count station located on U.S. Route 501 (approximately one mile west of S.C. Route 22) against the average daily traffic volume for the peak three month period (from June 1 through August 30). The AADT was also compared to the highest observed daily traffic volume within the three month peak period.

The 2004 monthly average traffic volumes at the SCDOT permanent count station located on U.S. Route 501 approximately one mile west of S.C. Route 22 are summarized in the following table.

Month	Average Daily Volume	Month	Average Daily Volume
January	15,530	July	34,935
February	17,776	August	27,436
March	21,889	September	23,443
April	26,368	October	22,876
May	27,258	November	20,554
June	30,890	December	17,678

The average daily traffic volume at this count station for the entire year was calculated to be 23,886 vehicles per day. The average traffic volume for the peak three month period between June 1 and August 31 was calculated to be 31,087 vehicles per day. The peak day traffic volume was determined from the raw count station data to be 54,377 vehicles per day on Saturday, July 9.

The following table summarizes the comparison between these counts against the AADT.

Peak Period	Volume	Ratio versus AADT
Average Annual Daily Traffic	23,886	1.00
Three Month Peak Average Daily Traffic	31,087	1.30
Peak Day Traffic	54,377	2.28

The Peak Period Traffic Assignments were developed by increasing a portion of the I-73 AADT trip table by the ratio derived by dividing the respective peak period volumes by the AADT. These ratios were used to multiply the 2030 AADT trip table components for surveyed work, non-work and truck trips to produce Three Month Peak and Peak Day trip tables. The resulting

trip tables were assigned to the various No-build Alternative traffic networks to produce traffic assignments for the respective peak periods.

The results of these traffic assignments were reviewed and analyzed. The analysis results for the Three Month Peak Period and Peak Day traffic assignments are summarized in the following sections.

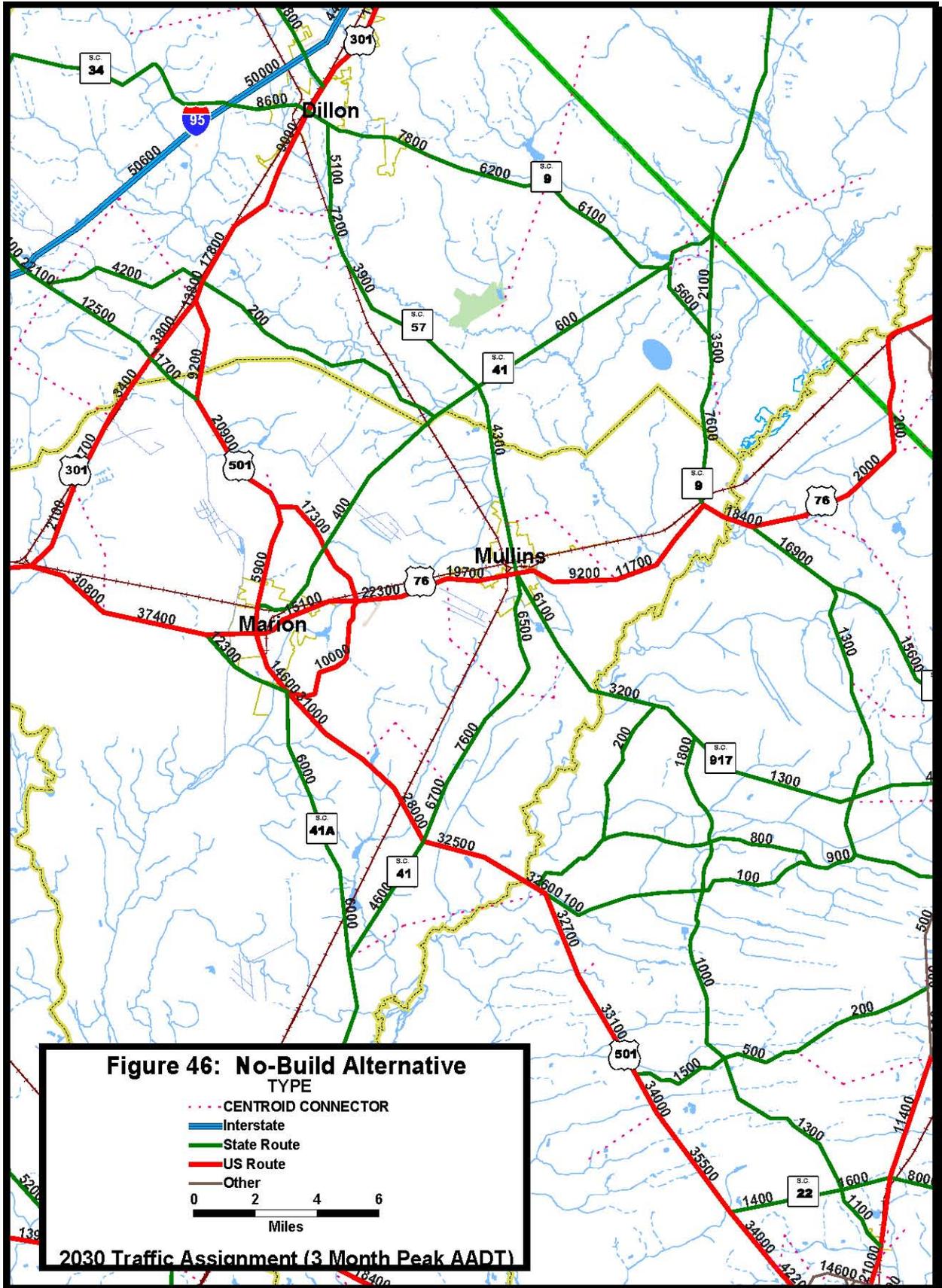
Three Month Peak Period Average Daily Traffic Assignment

The Three Month Peak Period Traffic Assignments were developed by increasing the surveyed work, non-work and truck portions of the 2030 AADT trip table by 1.3. The resulting Three Month Peak Period Average Daily trip table was assigned to the No-build network and the eight I-73 alternative alignment networks.

The 2030 Traffic Assignments for the Average Daily Traffic occurring during the peak three month travel period (between June 1 and August 31) for the No-build Alternative and Alternatives 1 through 8 are shown in Figures 46 through 54. Selected link volumes are summarized in the following table.

Route	Location	No-Build	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt.6	Alt. 7	Alt. 8
I-95	North of SC 34	50,000	56,600	62,300	57,200	56,800	56,200	61,700	57,500	60,300
I-95	South of SC 34	50,600	58,600	66,500	60,100	59,400	58,800	66,300	59,900	63,700
I-73	South of I-95	-	17,500	25,400	21,100	12,700	17,700	24,500	12,800	21,100
I-73	North of US 76	-	26,500	26,200	28,100	23,500	27,100	24,000	27,400	25,000
I-73	South of US 76	-	24,700	30,300	37,100	38,400	27,000	38,200	41,800	27,600
I-73	North of SC 22	-	45,600	30,200	34,200	46,300	29,300	35,300	32,200	47,500
SC 38	South of I-95	22,100	14,600	12,200	15,900	18,900	14,300	13,200	21,300	12,000
SC 34	South of I-95	8,600	6,600	5,400	5,600	6,500	5,900	5,800	6,700	4,600
SC 9	North of SC 41	6,100	4,900	3,300	2,600	4,200	4,000	2,400	4,500	3,200
SC 9	South of US 76	16,900	11,700	9,800	7,600	10,300	10,400	7,300	9,400	10,900
US 501	South of SC 38	20,900	6,100	10,400	10,700	8,800	6,000	11,500	11,400	10,100
US 501	North of SC 41	28,000	25,700	26,900	19,500	17,100	26,100	18,600	15,200	26,600
US 501	South of SC 41	32,500	27,100	27,900	21,500	17,800	27,200	21,500	15,700	27,900
US 501	North of SC 22	35,500	8,100	27,900	24,800	10,200	27,100	24,800	26,800	8,100
US 378	East of SC 41	16,500	13,600	13,400	12,500	13,200	13,300	13,200	12,900	13,900

The I-73 alternatives with interchanges closer to S.C. Route 34 on I-95 (Alternatives 2, 6, and 8) would carry the most traffic on the northern sections of I-73. The I-73 Alternatives with the southern terminus interchange closer to S.C. Route 22/U.S. Route 501 (Alternatives 1, 4, and 8) would carry more traffic on the southern portion of I-73 than those with the southern terminus located toward US 701.



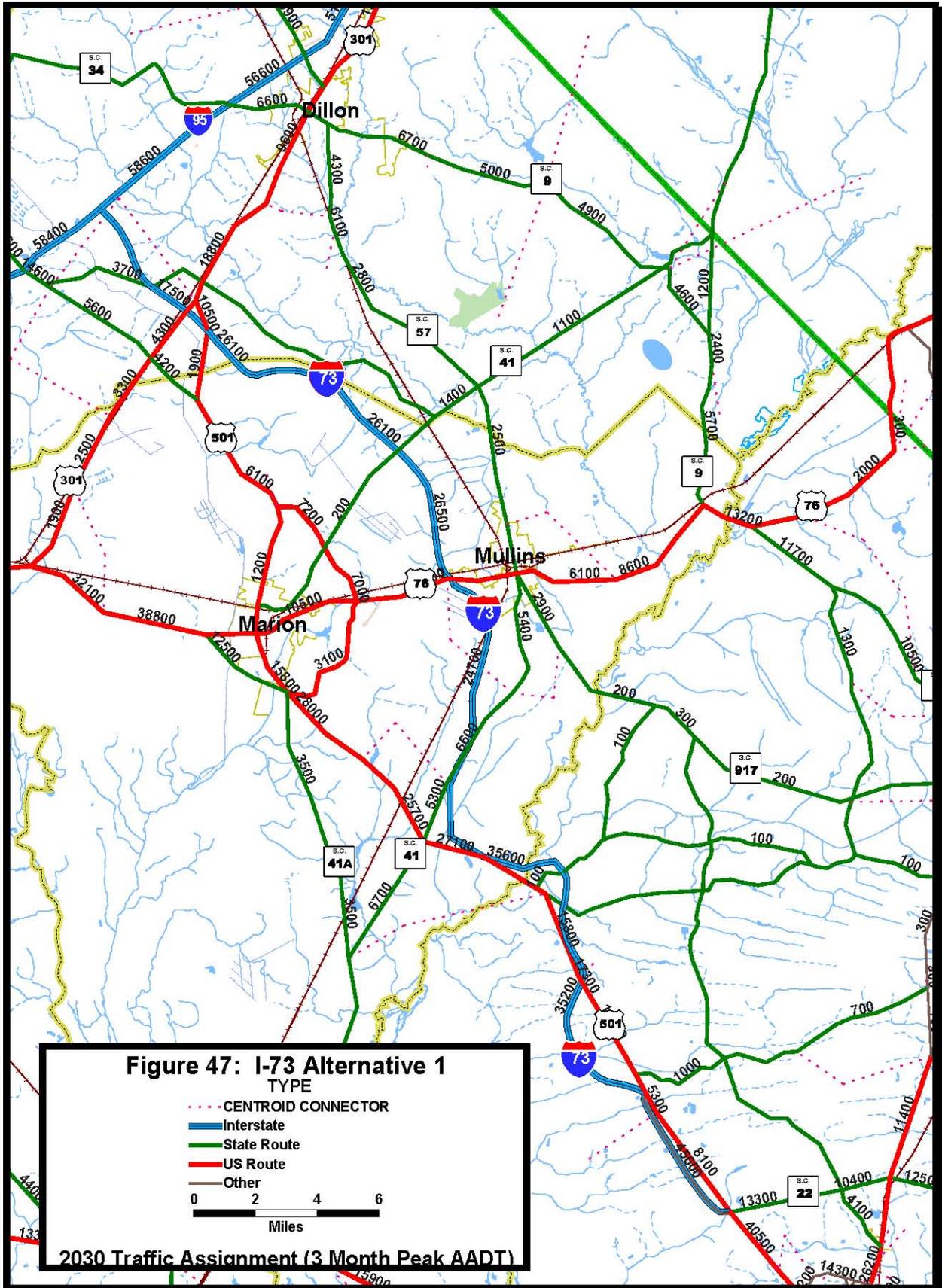
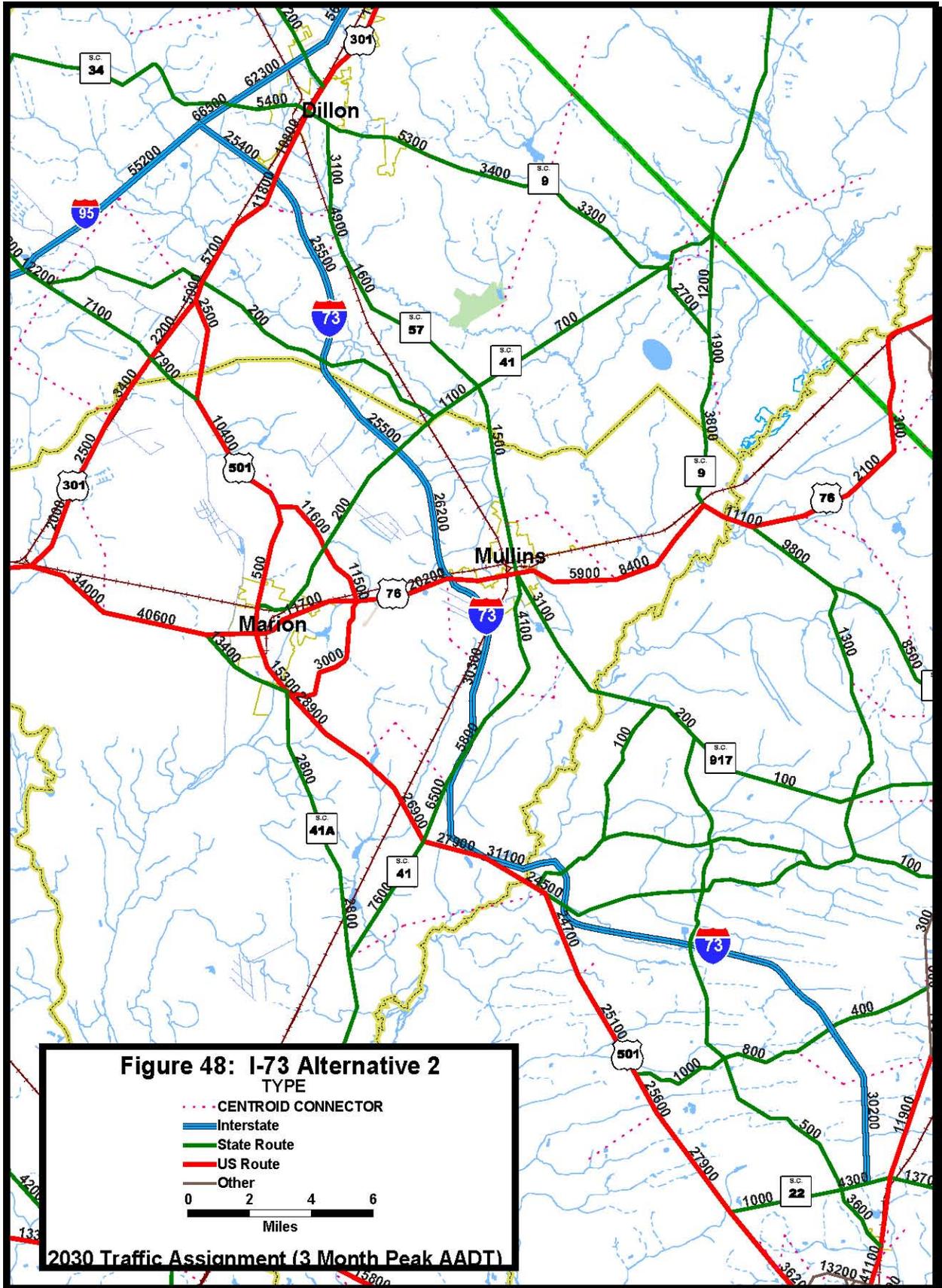


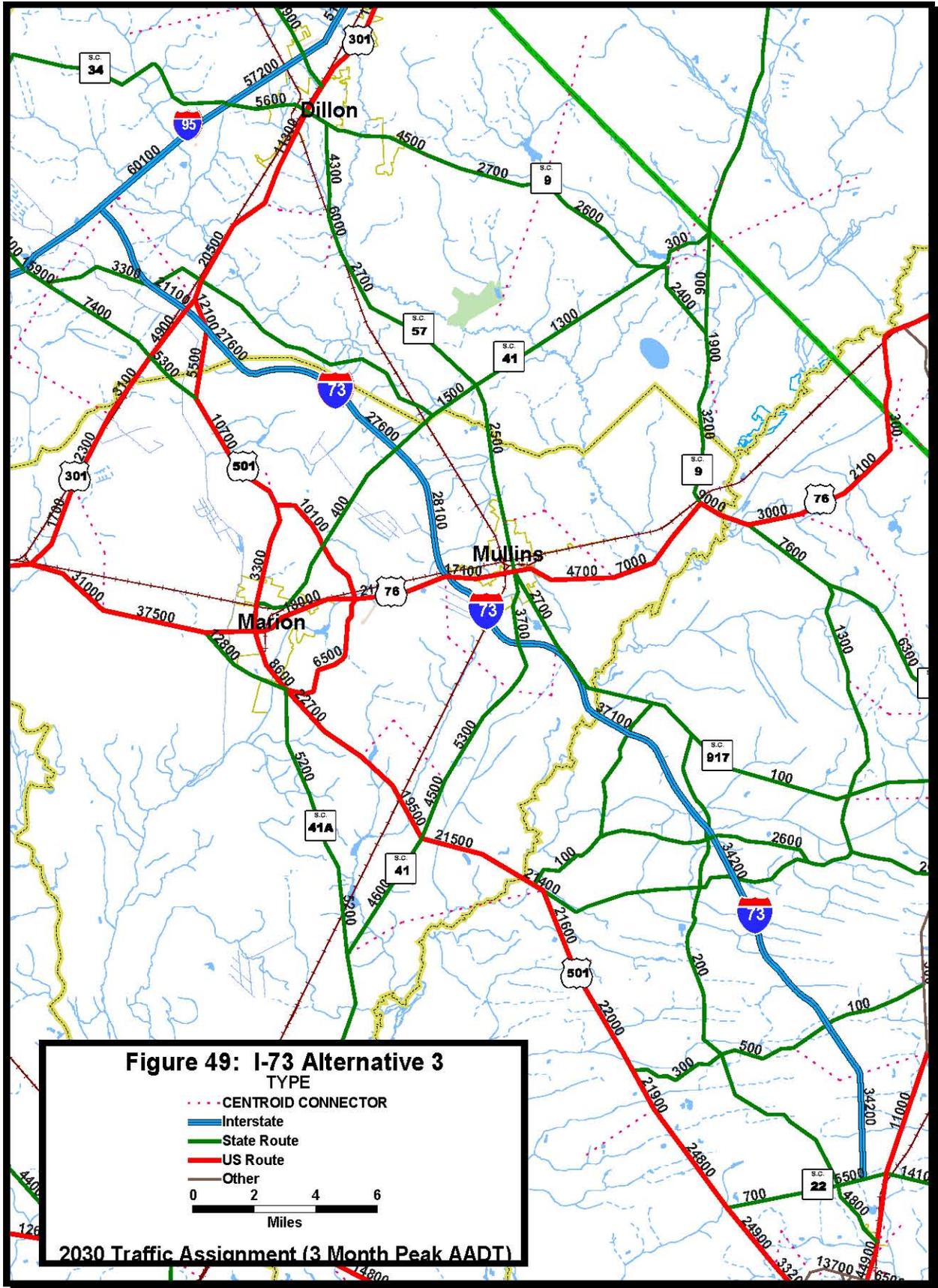
Figure 47: I-73 Alternative 1
TYPE

- CENTROID CONNECTOR
- Interstate
- State Route
- US Route
- Other

0 2 4 6
Miles

2030 Traffic Assignment (3 Month Peak AADT)





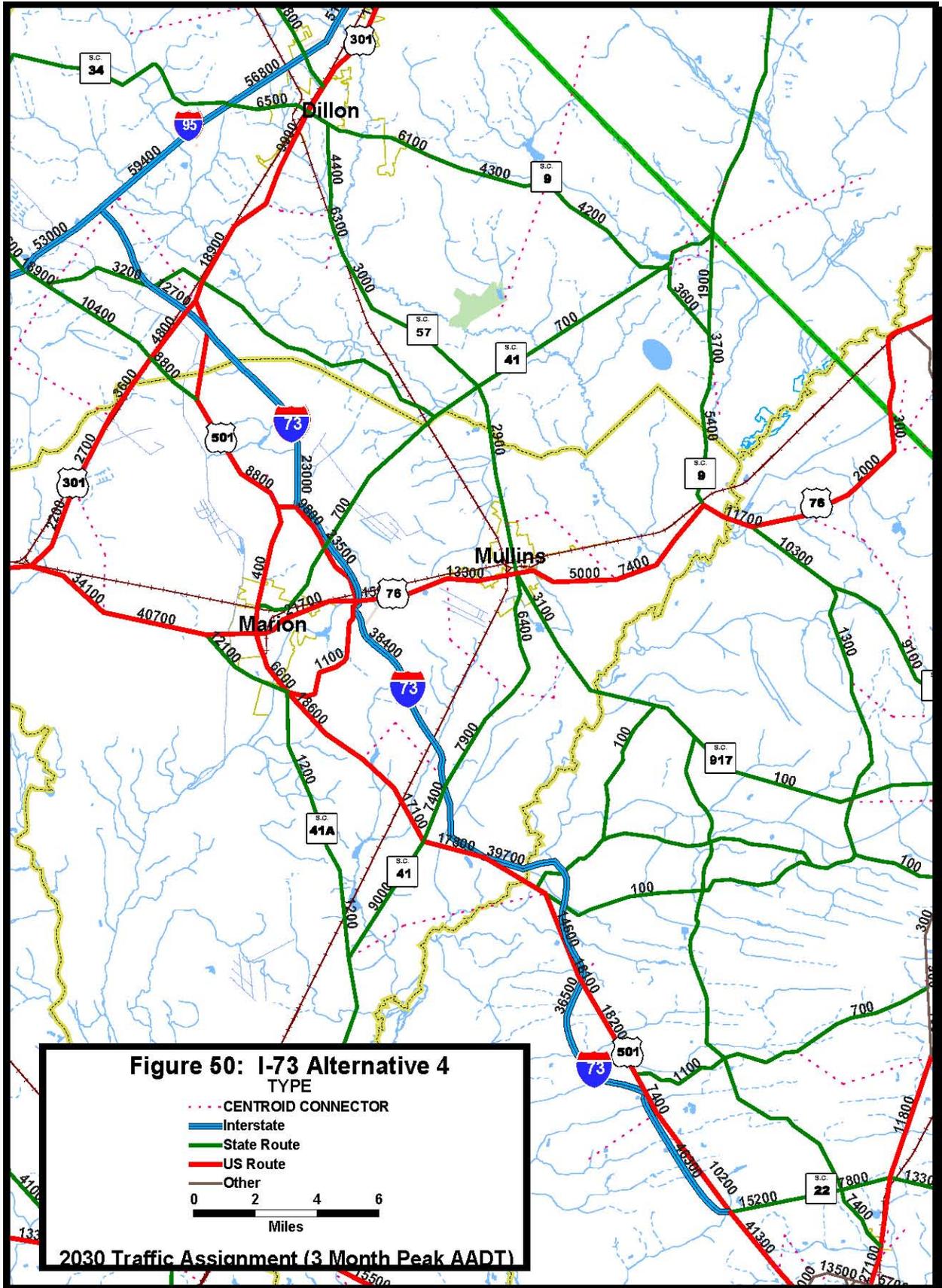


Figure 50: I-73 Alternative 4
TYPE

- CENTROID CONNECTOR
- Interstate
- State Route
- US Route
- Other

0 2 4 6
Miles

2030 Traffic Assignment (3 Month Peak AADT)

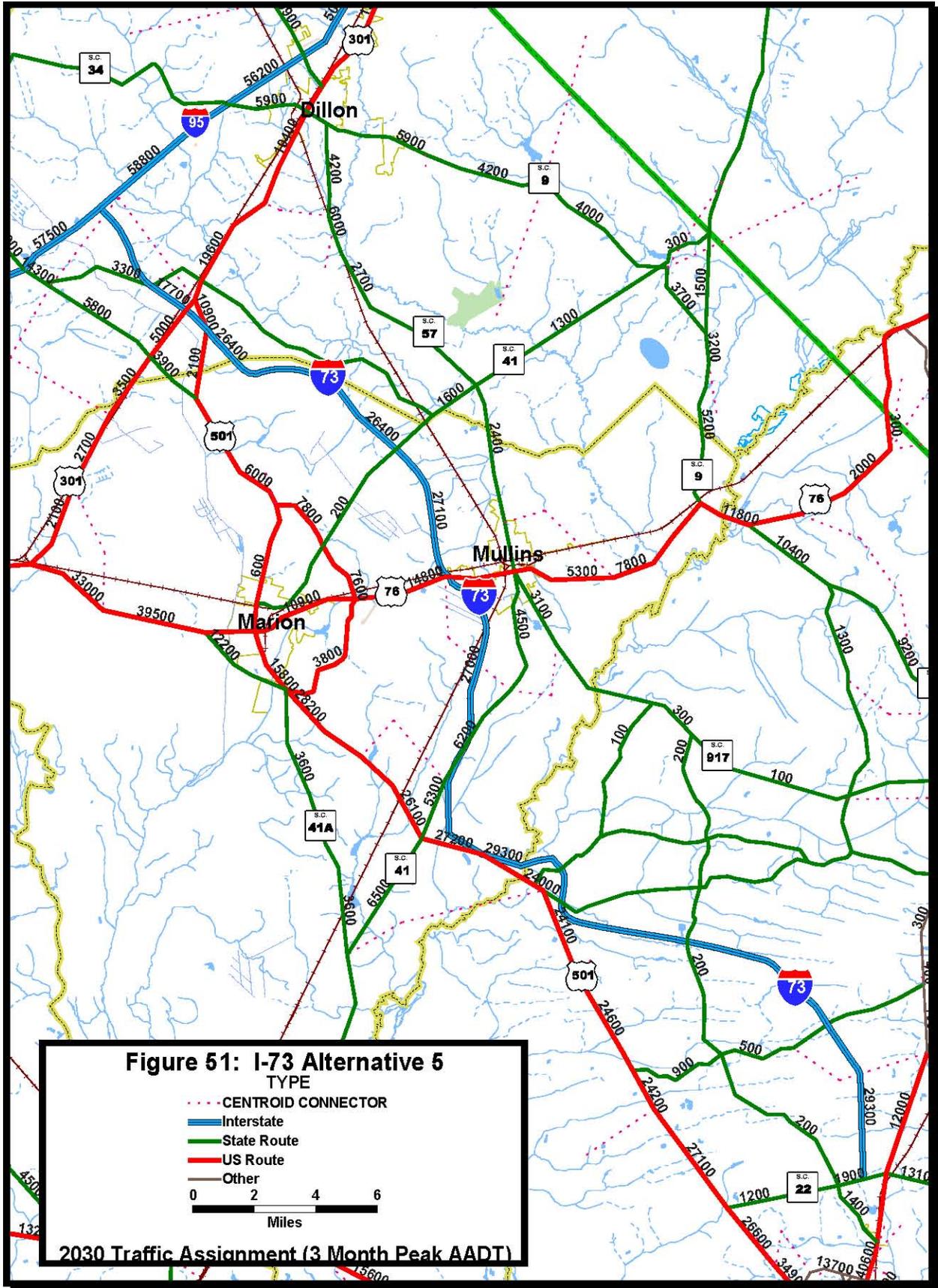


Figure 51: I-73 Alternative 5

TYPE

- CENTROID CONNECTOR
- Interstate
- State Route
- US Route
- Other

0 2 4 6
Miles

2030 Traffic Assignment (3 Month Peak AADT)

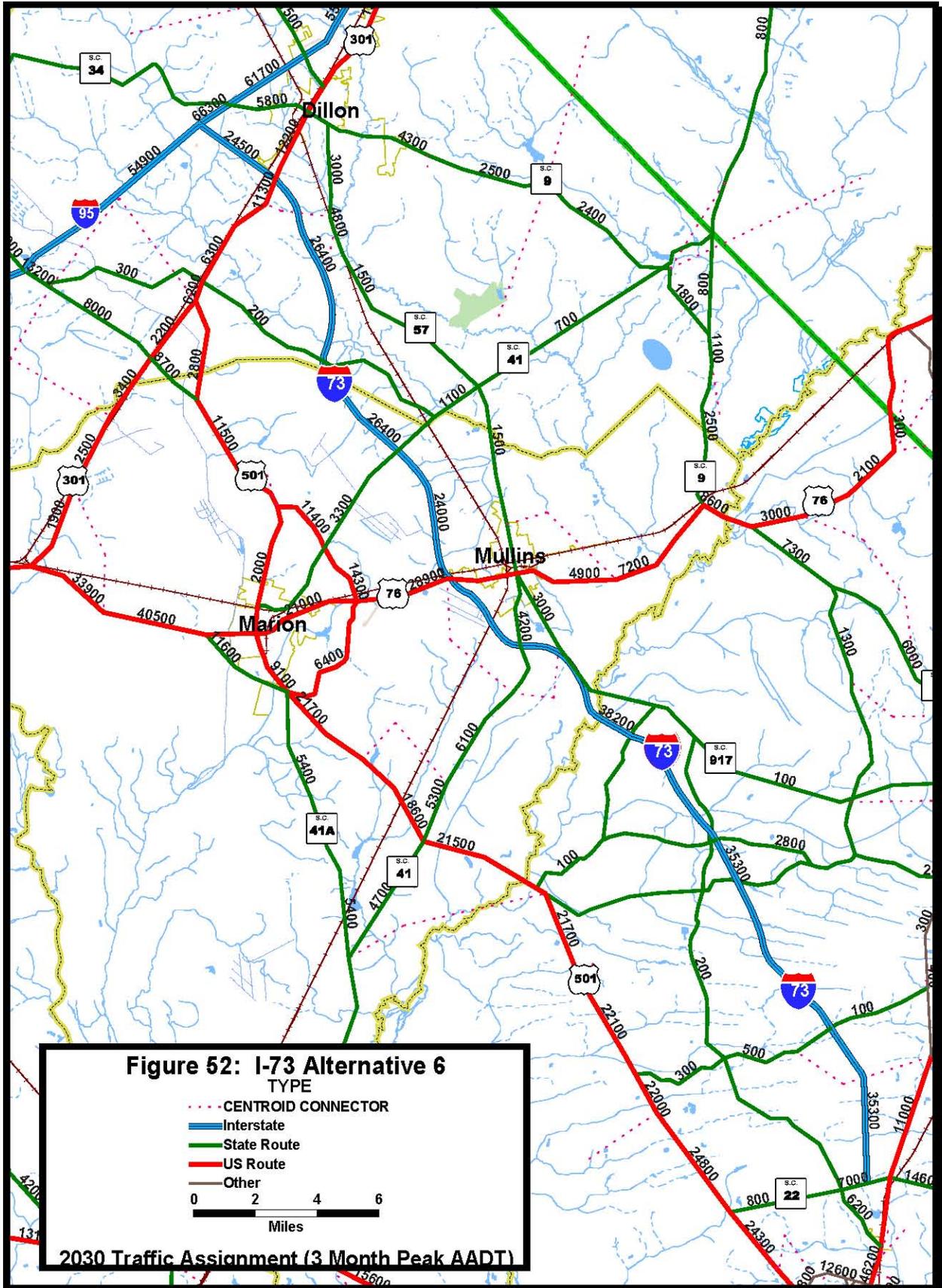


Figure 52: I-73 Alternative 6

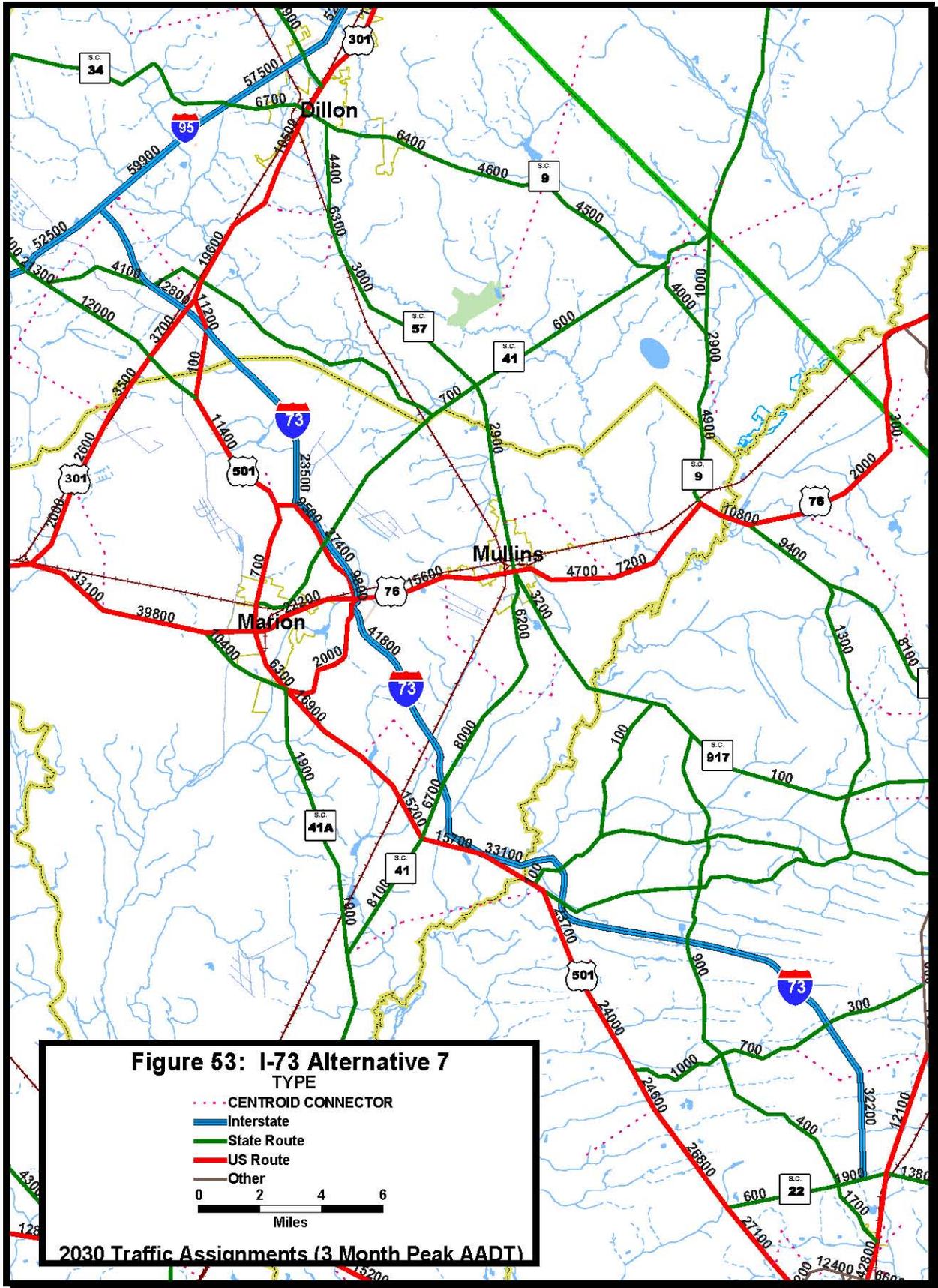
TYPE

- CENTROID CONNECTOR
- Interstate
- State Route
- US Route
- Other

0 2 4 6

Miles

2030 Traffic Assignment (3 Month Peak AADT)



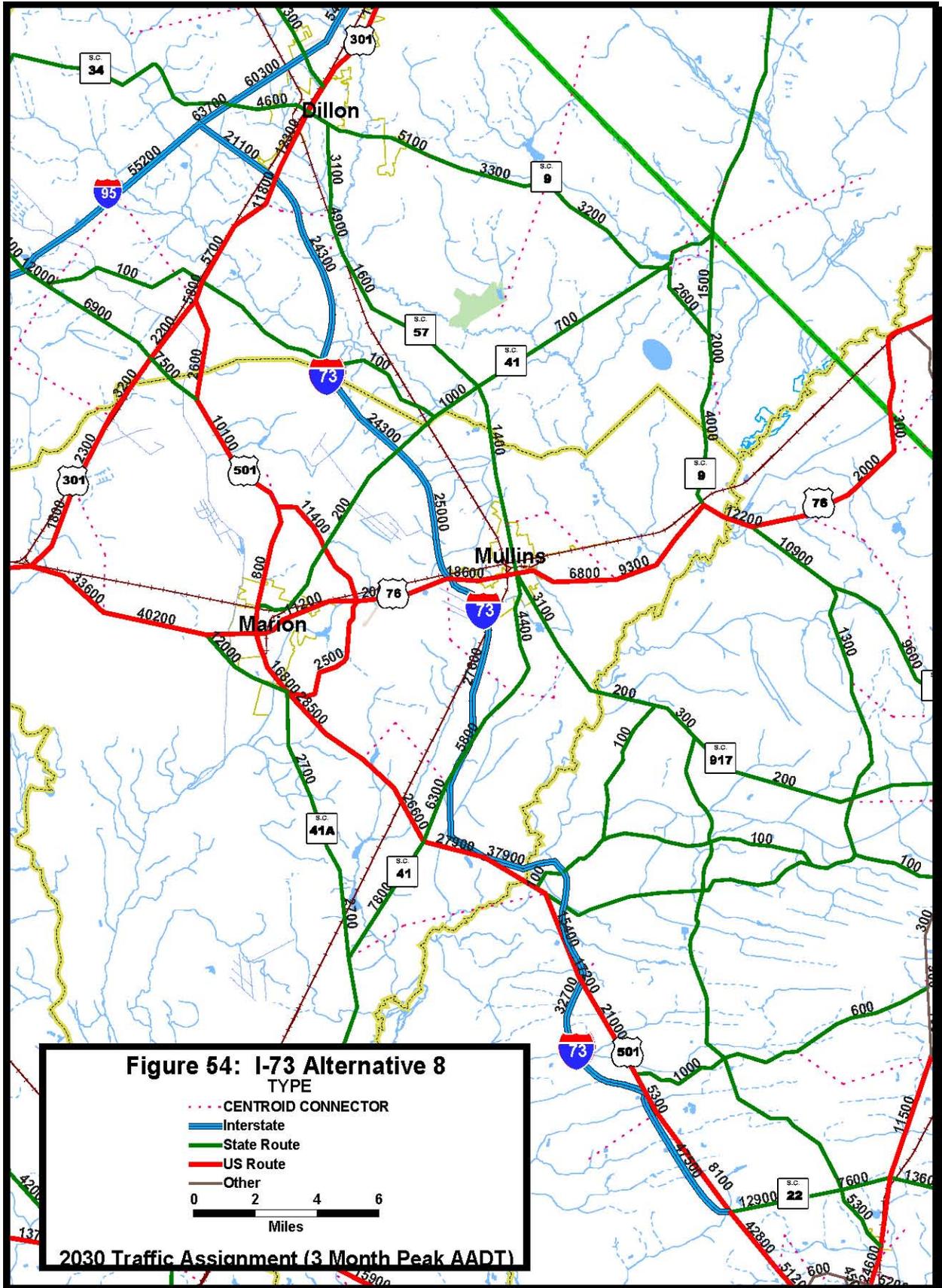


Figure 54: I-73 Alternative 8

TYPE

- CENTROID CONNECTOR
- Interstate
- State Route
- US Route
- Other

0 2 4 6
Miles

2030 Traffic Assignment (3 Month Peak AADT)