

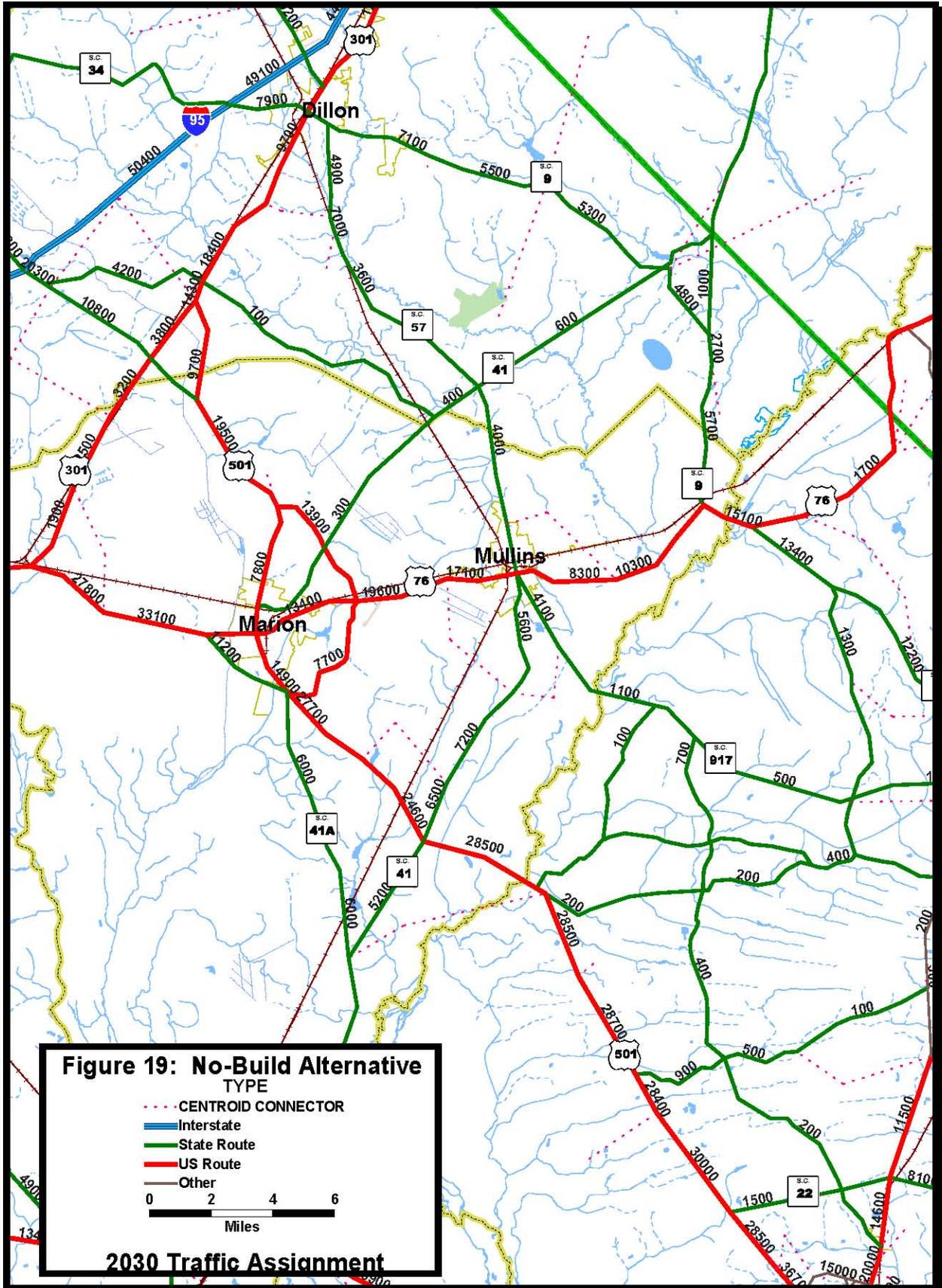
2030 Average Annual Daily Traffic Assignments

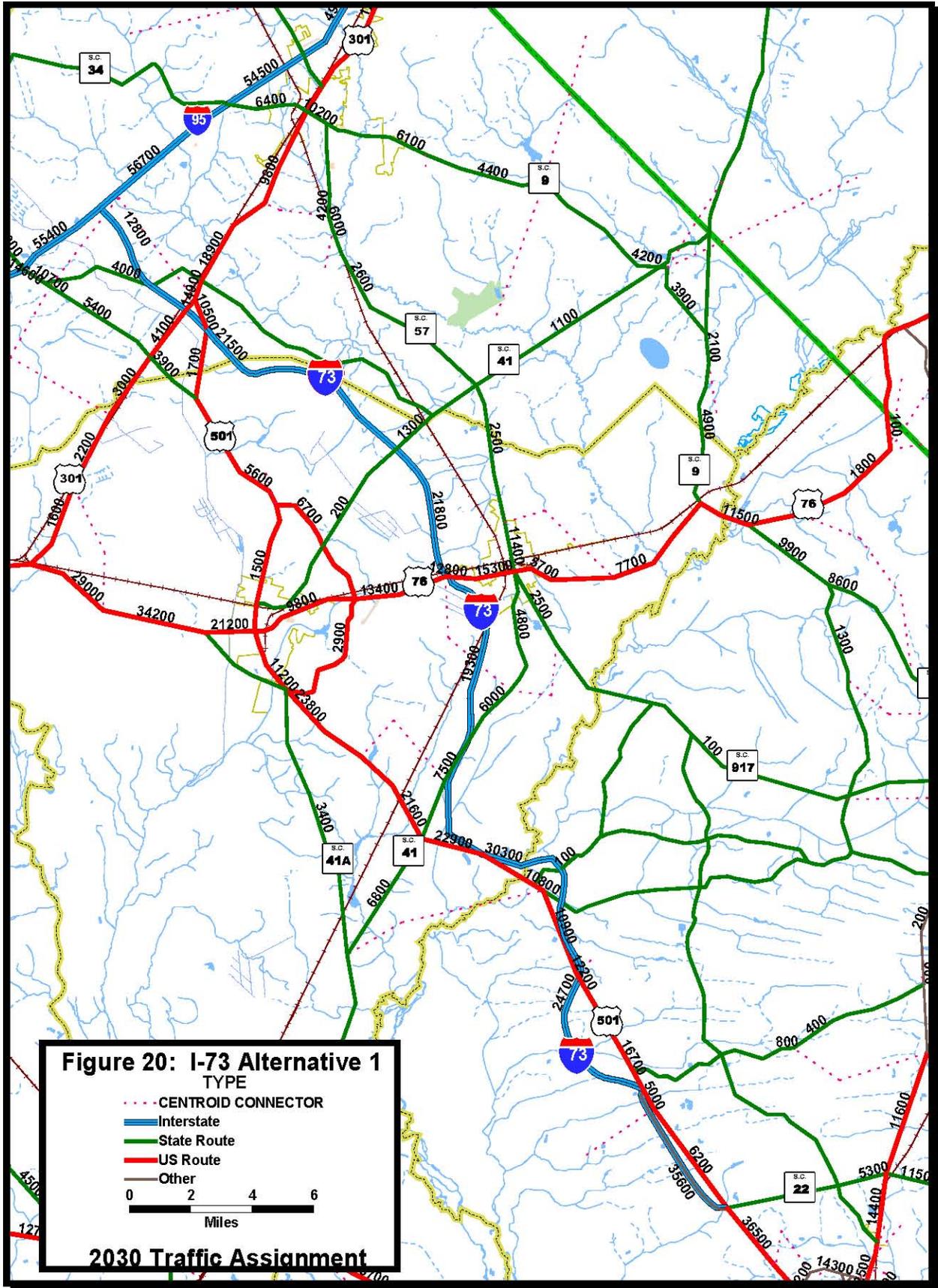
The 2030 Average Annual Daily Traffic Assignments for the No-build Alternative and Alternatives 1 through 8 are shown in Figures 19 through 27. Selected traffic assignment link volumes are summarized in the following table.

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	49,100	54,500	58,900	55,300	55,100	54,600	58,500	55,700	57,700
I-95	South of SC 34	50,400	56,700	62,500	58,300	57,800	57,200	62,100	58,700	61,300
I-73	South of I-95	-	12,800	19,500	15,500	10,000	13,800	18,900	10,300	18,400
I-73	North of US 76	-	21,800	22,200	21,900	20,200	23,000	20,100	23,100	22,000
I-73	South of US 76	-	19,300	23,600	28,600	33,900	21,000	29,400	34,500	23,300
I-73	North of SC 22	-	35,600	21,500	25,900	38,100	21,100	26,600	24,600	37,800
SC 38	South of I-95	20,300	10,700	11,200	15,800	18,700	14,400	12,000	19,400	11,400
SC 34	South of I-95	7,900	6,400	4,800	5,600	6,400	6,000	4,800	6,100	4,600
SC 9	North of SC 41	5,300	4,200	3,200	2,600	3,900	3,800	2,200	4,000	2,900
SC 9	South of US 76	13,400	9,900	8,100	6,200	8,600	8,800	5,900	7,800	9,100
US 501	South of SC 38	19,500	5,600	9,000	9,900	8,100	5,700	9,800	9,000	9,100
US 501	North of SC 41	24,600	21,600	23,200	17,300	12,400	22,700	16,000	12,800	22,200
US 501	South of SC 41	28,500	22,900	24,200	18,900	12,900	23,600	18,600	13,100	23,200
US 501	North of SC 22	30,000	6,200	24,200	20,400	6,200	23,500	20,000	21,800	6,200
US 378	East of SC 41	14,500	11,900	11,400	11,000	11,300	11,500	11,300	11,200	11,700

A comparison of the 2030 traffic assignments indicates that the I-73 alternatives would divert traffic primarily from S.C. Route 38, S.C. Route 9 and U.S. Route 501. The extent that the traffic could be diverted from each route depends on the nature of each alternative's alignment. The I-73 alternatives with interchanges closer to S.C. Route 34 on I-95 (Alternatives 2, 6, and 8) would carry more traffic on the northern sections of I-73, and divert the most traffic from S.C. Route 38 and S.C. Route 34. 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 and divert the most traffic from portions of U.S. Route 501 just north of S.C. Route 22.

Those alternatives that have portions of the proposed I-73 alignment near U.S. Route 501 would be likely to carry less traffic than what is projected should I-73 operate as a tolled facility. The proximity of an adjacent free route that would be an attractive alternative to a tolled I-73 would divert traffic from the proposed I-73.





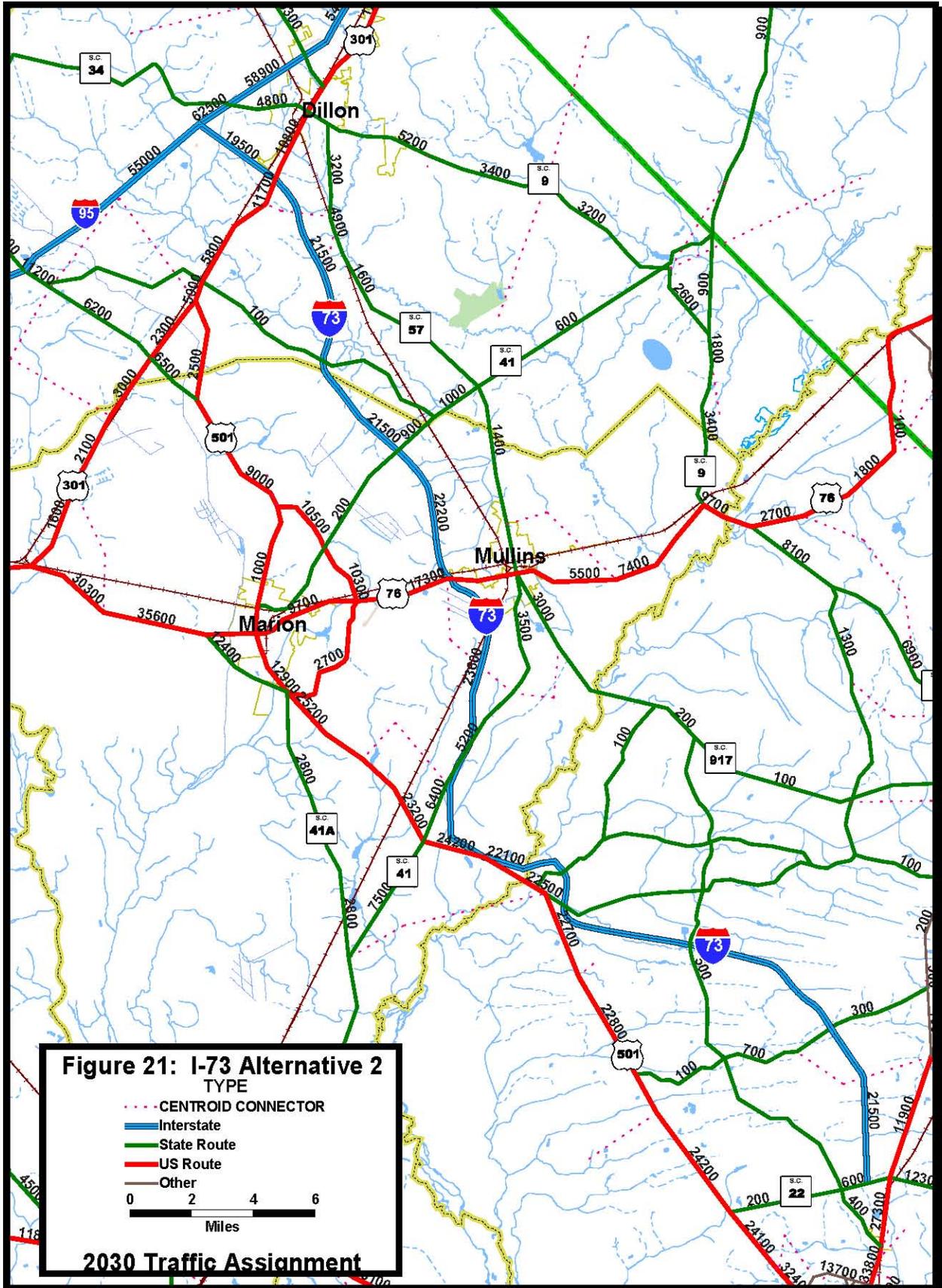
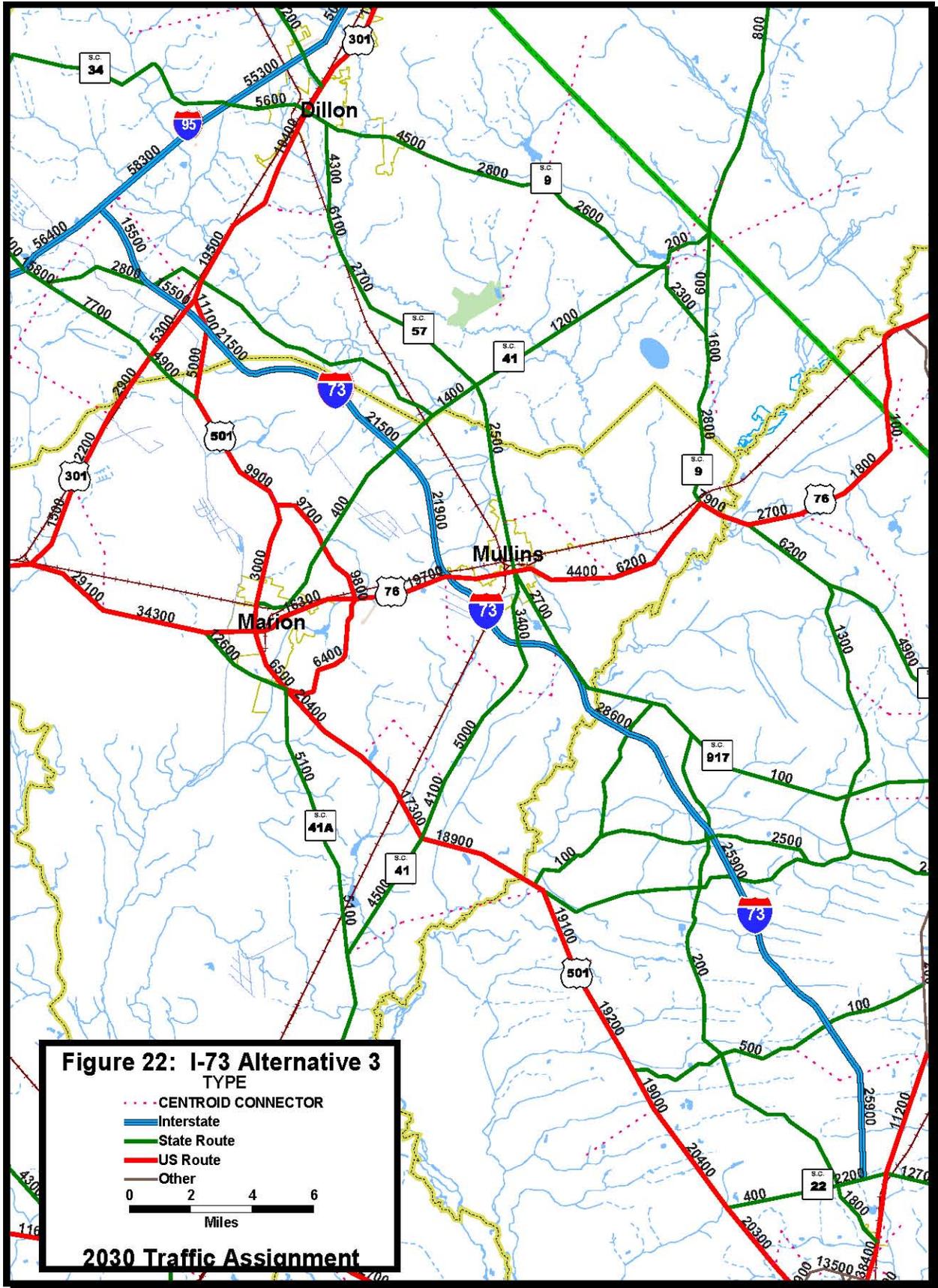


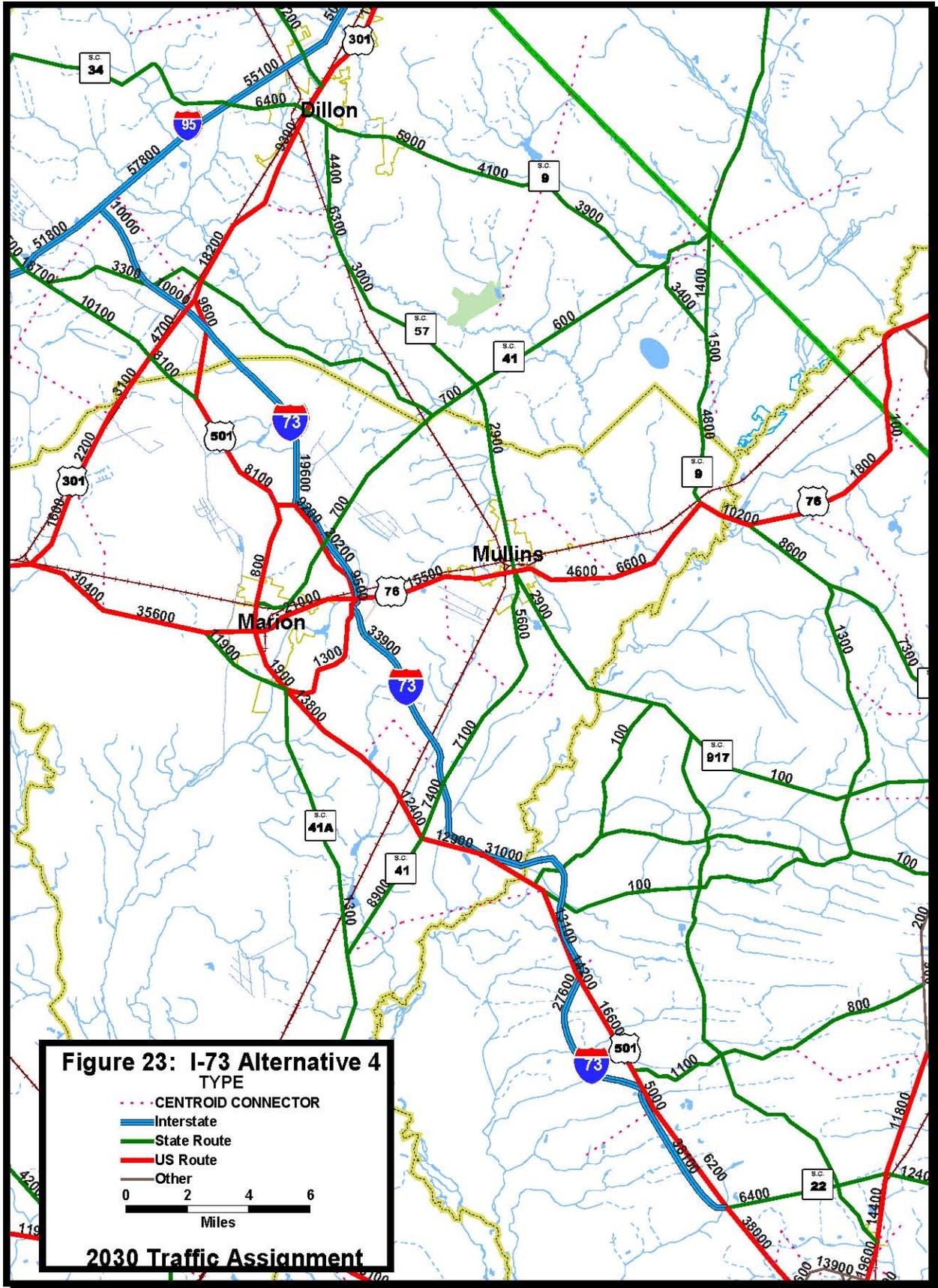
Figure 21: I-73 Alternative 2
 TYPE

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

0 2 4 6
 Miles

2030 Traffic Assignment





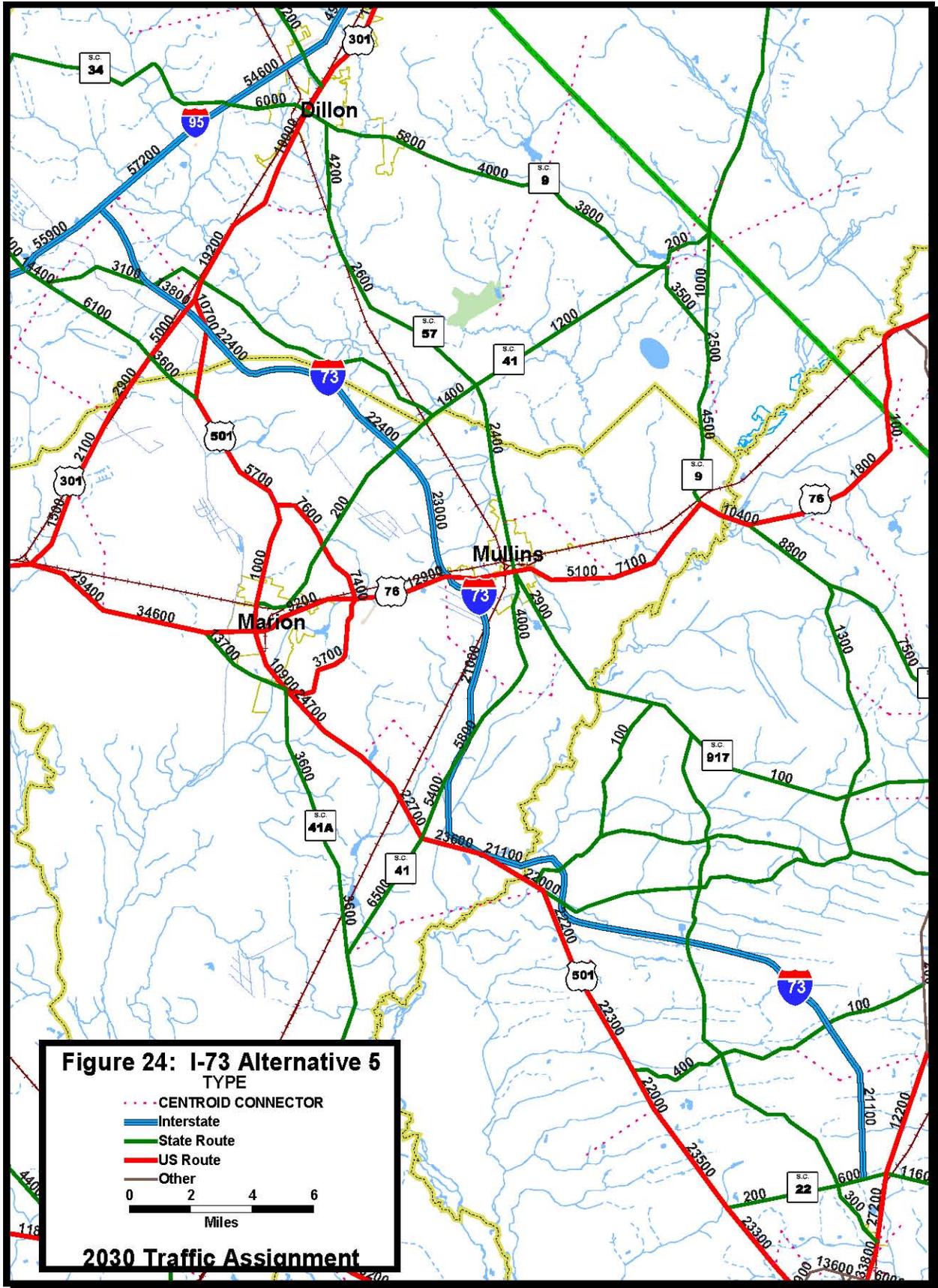
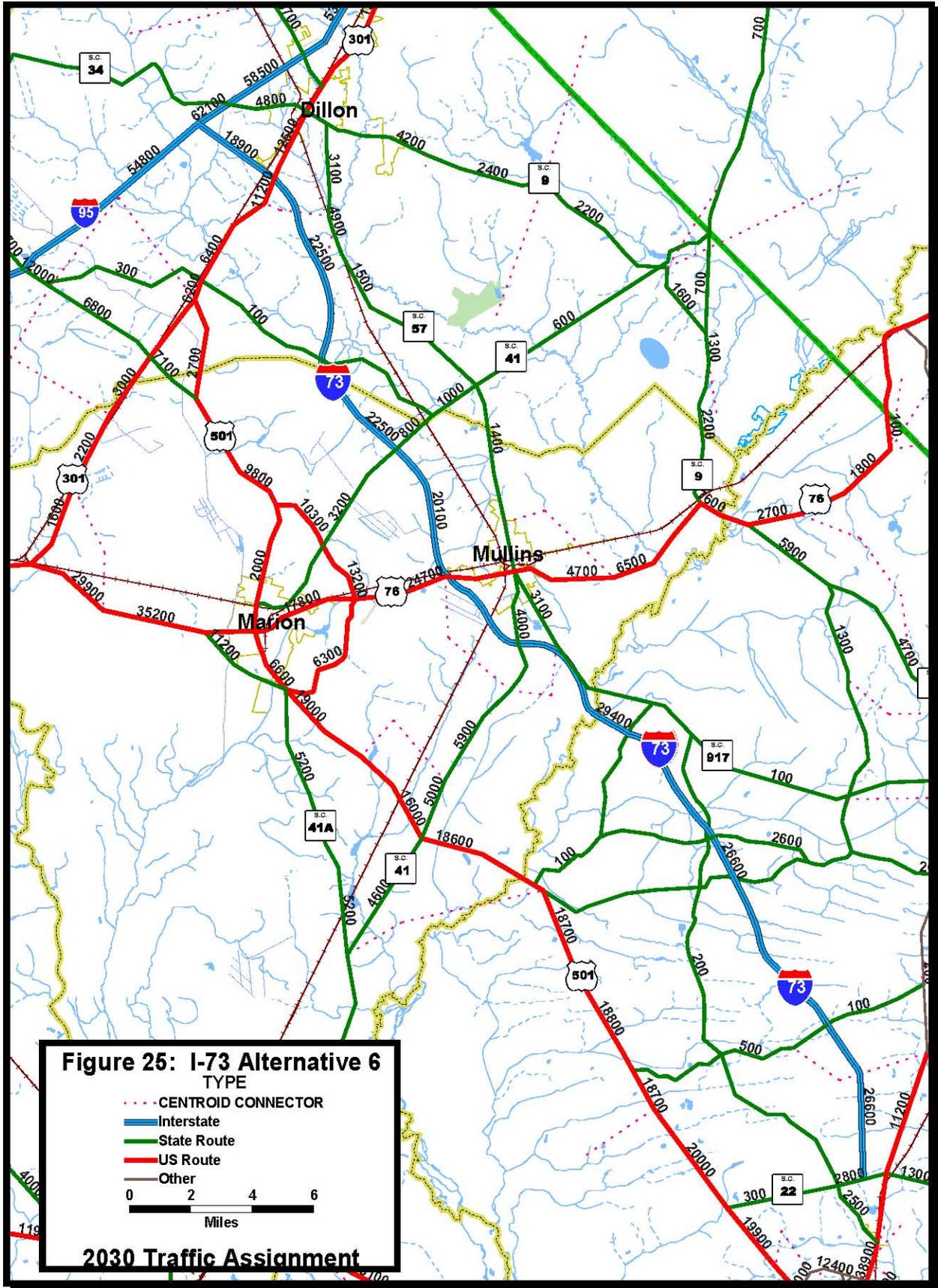


Figure 24: I-73 Alternative 5
 TYPE

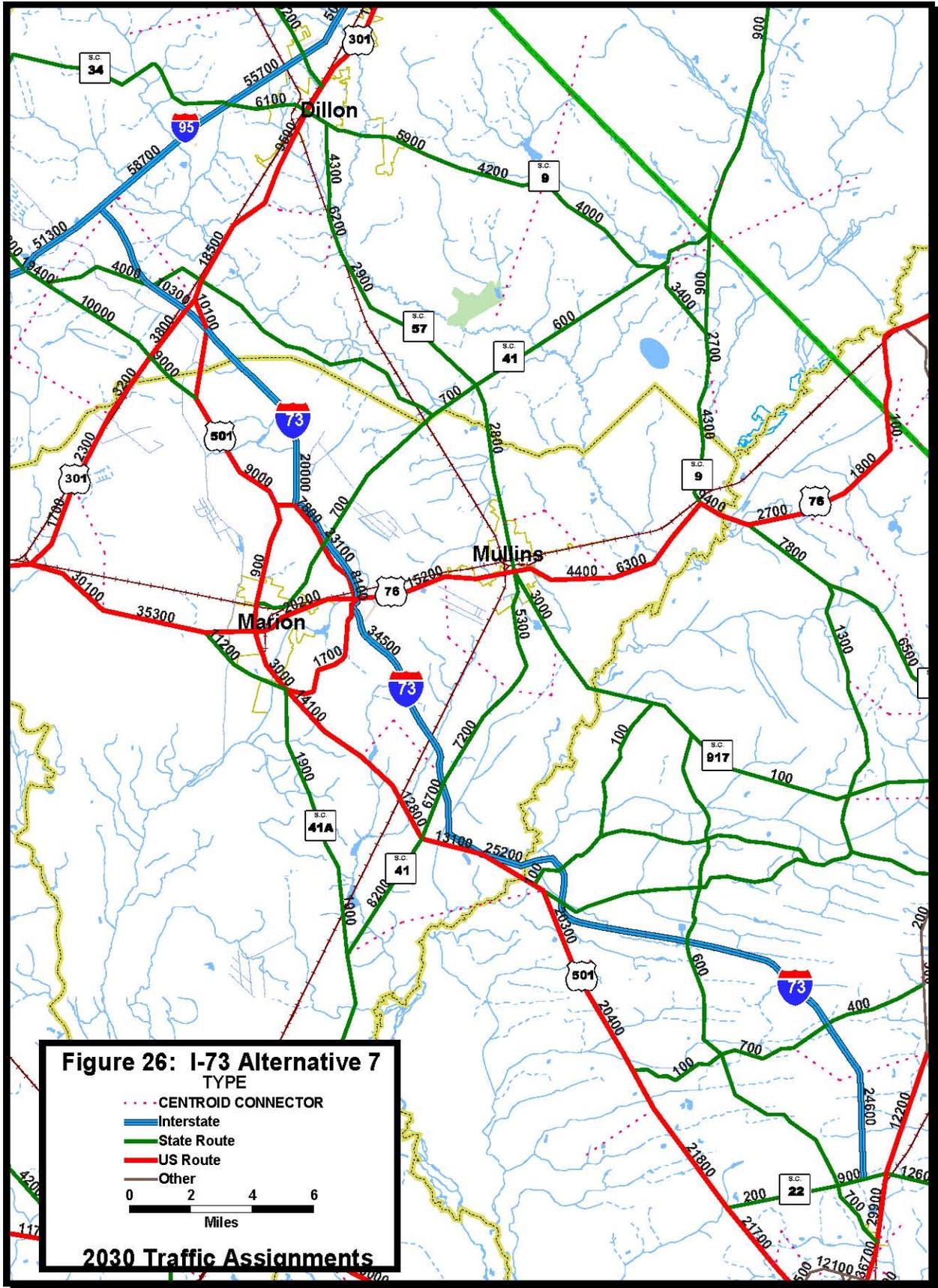
- CENTROID CONNECTOR
- Interstate
- State Route
- US Route
- Other

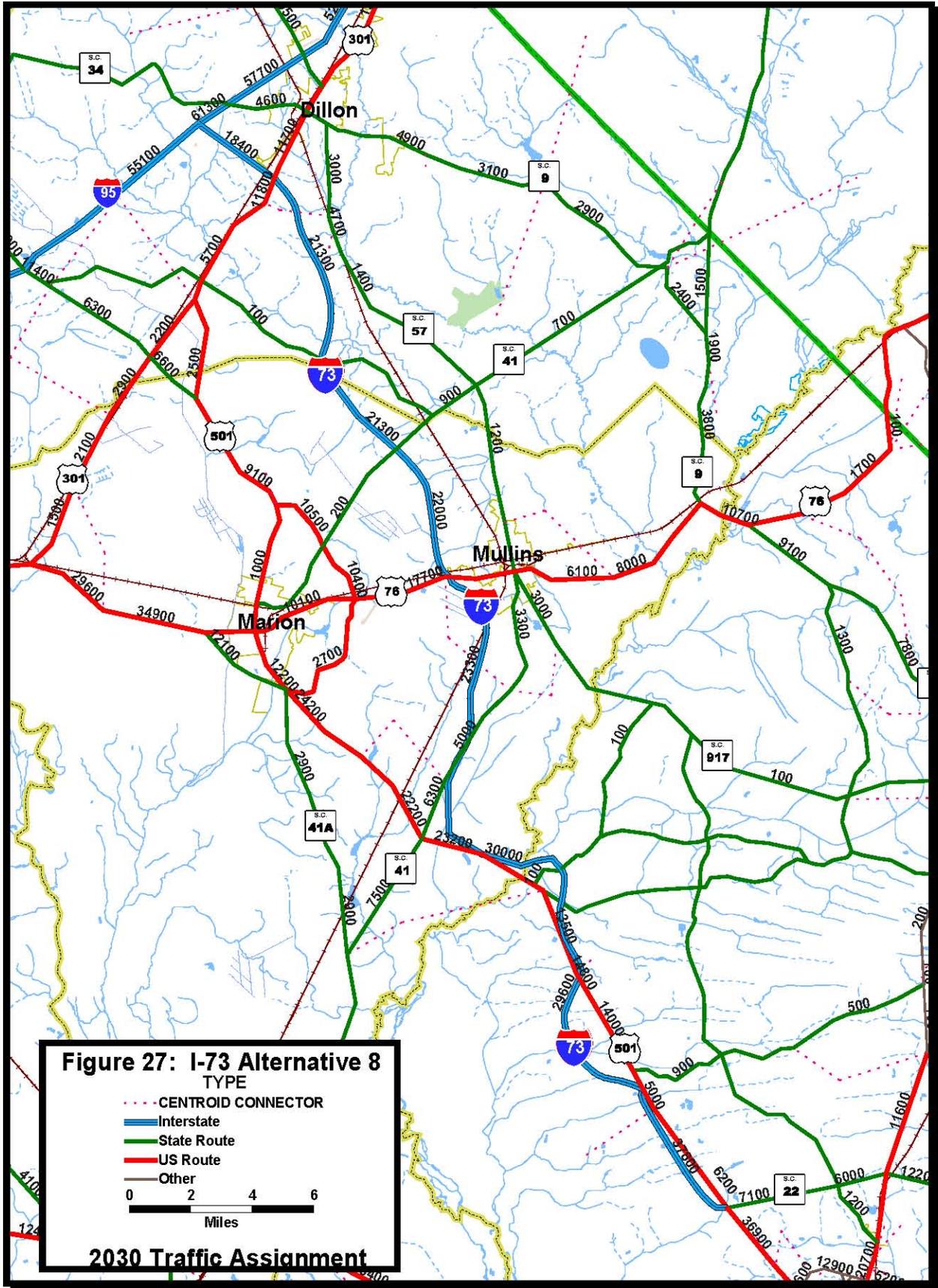
0 2 4 6
 Miles

2030 Traffic Assignment



Map showing traffic assignment for I-73 Alternative 6 in 2030, including road types (Interstate, State Route, US Route, Other) and a scale bar (0 to 6 miles).





Evaluation of Individual I-73 Alternative Alignments

The individual I-73 Alternatives were evaluated and compared against each other with respect to their length, traffic assignments, vehicles miles traveled, and traffic density to identify which alternative carried the most traffic, provided the most vehicles miles of travel, or had the highest traffic density based upon the average annual daily traffic (AADT). The information evaluated included:

- Total Length – the sum of the link lengths for each I-73 alternative alignment;
- Total Vehicles Miles of Travel (VMT) – the product of the length of each link and its 2030 daily traffic assignment volume;
- Average Annual Average Daily Traffic (AADT) – the weighted average of each link’s 2030 daily traffic assignment volume with respect to the link’s length;
- Average VMT – the weighted average of the VMT on each link with respect to the link’s length;
- Average Traffic Density – calculated based on the equation

$$\text{Density} = (((2030 \text{ Link Assignment Volume} \times K \times D) / PHF) / FFS) / n$$

Where: *K* is a factor converting daily to peak hour traffic (10%)

D is a directional split factor to convert two-way traffic to one-way traffic (55%)

PHF is a factor representing the peaking characteristic of traffic within one hour (0.90)

FFS is the free flow speed of the I-73 Alternative (70 mph)

n is the number of lanes in one direction (2 lanes)

The results of the analysis are summarized in the table below.

	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6	ALT 7	ALT 8
Total Length	44.87	47.61	43.12	42.7	47.51	43.22	45.32	44.97
TOTAL VMT	1,037,032	1,055,296	1,042,675	1,126,772	975,493	1,090,014	1,094,186	1,144,018
Average AADT	25,704	24,911	22,683	28,899	23,481	27,766	27,130	24,879
Average VMT	129,629	150,757	208,535	140,847	139,356	181,669	156,312	127,113
Average Density	10.09	9.68	10.56	14.81	8.96	11.01	10.54	11.10

As shown in the table, the Average AADTs are within a range between approximately 22,700 vehicles per day and 28,900 vehicles per day. A statistical analysis was performed to determine if the Average AADT for calculated for each alternative was within one standard deviation of the mean Average AADT. The mean Average AADT was calculated to be 25,682 vehicles per day, with a standard deviation of 1,996 vehicles per day. Therefore, any alternatives with an Average AADT between 23,686 and 27,678 vehicles per day are within one standard deviation of the mean for all alternatives. Based on this analysis, Alternatives 3, 4, 5 and 6 were not within one standard deviation of the mean Average AADT. The Average AADT for alternatives 1, 2, 7, and 8 could be considered statistically equal to each other, and that these alternatives essentially have the same Average AADT.

Alternatives 3 and 6 have the highest Average VMT of all the alternatives despite being the second and third shortest alternatives. This is due to Alternatives 3 and 6 having their single highest link volume occurring on the longest link in their alignment. This is illustrated in the following table.

	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6	ALT 7	ALT 8
Maximum Single Link Volume for I-73 Alternative	35,584	23,537	28,597	38,120	23,032	29,413	34,455	37,827
Link Length with Maximum Single Link Volume	5.02	6.60	12.73	5.01	4.65	12.73	6.76	5.02
LINK VMT	178,630	155,344	364,044	190,983	107,098	374,430	232,916	189,891

The I-73 alternative that is the most heavily traveled will be identified by the highest Total VMT, Average AADT, Average VMT and Average Density. The alternatives were ranked in each of these categories, with the highest value being ranked first and the lowest value ranked eighth. The Total Length was also evaluated, with the shortest total length of the alternative ranked first and the longest alternative ranked eight. The rankings are summarized in the following table.

	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6	ALT 7	ALT 8
Total Length	4	8	2	1	7	3	6	5
TOTAL VMT	7	5	6	2	8	4	3	1
Average AADT	4	5	8	1	7	2	3	6
Average VMT	7	4	1	5	6	2	3	8
Average Density	6	7	4	1	8	3	5	2
Average Ranking	5.6	5.8	4.2	2.0	7.2	2.8	4.0	4.4
Final Ranking	6	7	4	1	8	2	3	5

Based on this evaluation of the use of each I-73 alternative, Alternatives 4 and 6 were the highest ranked alternatives. Alternatives 3, 7, and 8 had average rankings, comparable to one another, as did Alternatives 1 and 2. Alternative 5 was the lowest ranked alternative.

Travel Time Maps

Travel Time maps were developed for the Year 2030 No-build alternative and each I-73 alternative. The travel time maps assist in identifying which alternative allows traffic to travel farther from a fixed starting location within certain time intervals. The junction of S.C. Route 22 with U.S. Route 17 was chosen as the starting locations for the travel time maps. This location was chosen since S.C. Route 22 is to be designated as part of I-73, making this junction the ultimate terminus of I-73 in the Grand Strand.

The distance traffic could travel in sixty minutes from the junction of U.S. Route 17 and S.C. Route 22 was mapped in five minute intervals using the 2030 link travel times for the No-build Alternative and the eight I-73 alternatives. These maps are shown in Figures 28 through 36.

The Travel Time maps show that the construction of I-73 would allow traffic to reach I-95 faster, and therefore increase the distance that traffic would be able to travel when compared to the No-build Alternative. For the No-build Alternative (Figure 28), traffic would be able to reach I-95 from the junction of U.S. Route 17 and S.C. Route 22 in approximately 80 minutes. Depending on which I-73 alternative would be constructed, the amount of time necessary for traffic to reach I-95 ranges from about 60 to 65 minutes. This is a significant time savings accruing to the public.

The following table summarizes the minimum time required to travel between the junction of U.S. Route 17 and S.C. Route 22 to I-95, as illustrated in Figures 28 through 36.

	No-Build	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	ALT 6	ALT 7	ALT 8
Minimum Travel Time (minutes)	80	65	65	60	65	65	60	60	65

Local Network Congestion

A key issue for the I-73 alternatives to address is providing a reduction of congestion on the local transportation network. U.S. Route 501 is the primary route used by travelers with destinations in Myrtle Beach and throughout the Grand Strand. During the summer, U.S. Route 501 experiences considerable recurring congestion from a combination of local commuter traffic and recreational/tourist traffic. U.S. Route 501 has been cited as a roadway that experiences increased congestion and traffic delay as a result of Myrtle Beach and the Grand Strand’s popularity as a tourist destination. U.S. Route 501 was ranked 23rd in a list of the 25 most congested routes experiencing congestion during the summer vacation season in the American Highway Users Alliance *A Report on Summer Traffic Bottlenecks and Steps Needed to Ensure that Our Favorite Vacation Destinations Remain Accessible*.

Based on information contained in that report, the U.S. Route 501 corridor to Myrtle Beach has the sixth highest Seasonal Vehicle-Miles of Travel (approximately 114.5 million vehicle-miles of travel) and Number of Summer Trips (approximately 5.7 million) of the thirty nine separate routes that lead to 27 different destinations throughout the United States.

The effect of the I-73 alternatives on local network congestion within and outside the Grand Strand Area Transportation Study boundary was examined.

