

I-75

IMPROVEMENT STRATEGY

TENNESSEE STATE LINE TO

KY 876

(milepoints 0.000 to 86.806)

Prepared by the Kentucky Transportation Cabinet

Department of Highways

Office of Intermodal Planning

Division of Transportation Planning

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April 1995

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**KENTUCKY TRANSPORTATION CABINET
DIVISION OF TRANSPORTATION PLANNING
PROJECT PLANNING REPORT EXECUTIVE SUMMARY SHEET**

PROJECT ID NUMBER: 11-288.00
FEDERAL PROJECT NUMBER: N/A

PROJECT ENGINEER: Kathleen Slone, Nancy Bridwell
DATE: March 1995

LOCATION INFORMATION						
COUNTY Laurel, Madison Rockcastle, Whitley	COUNTY NO. 63 76, 102, 11	DISTRICT		ROUTE NO. I-75	ROUTE NAME N/A	
CITY N/A		HWY. 7, 8, 11	ADD 13, 15			
PROJECT DESCRIPTION Improvement Strategy from the Tennessee State Line to KY 876.				HWY. SYSTEMS		PROJECT LENGTH
				STATE SP	FED. NHS	Interstate 139.7 km (86.8 miles)
				FUNCT CLASS		MILEPOINT(S) 0.000 - 86.806

EXISTING CONDITIONS						
AREA TYPE RURAL OR URBAN	OPERATING SPEED	NO. OF LANES	PAVEMENT WIDTH	SHLD. WIDTH	DITCH WIDTH	MEDIAN WIDTH AND TYPE
Rural	104.6km/h (65 mph)	4	7.3 m each direction (24 feet)	3.0 m min. outside; 0.9- 1.8 m inside	----	Depressed median 14.6 - 28.3 m (48 - 93 feet)
ADEQUACY RATING 73.8 - 89.0		LEVEL OF SERVICE C-F	ACCIDENT RATE/STATEWIDE AVG. Critical Rate Factor varies from 0.425 to 1.081.		MAINT. RESPONSIBILITY State	ACCESS CONTROL Full

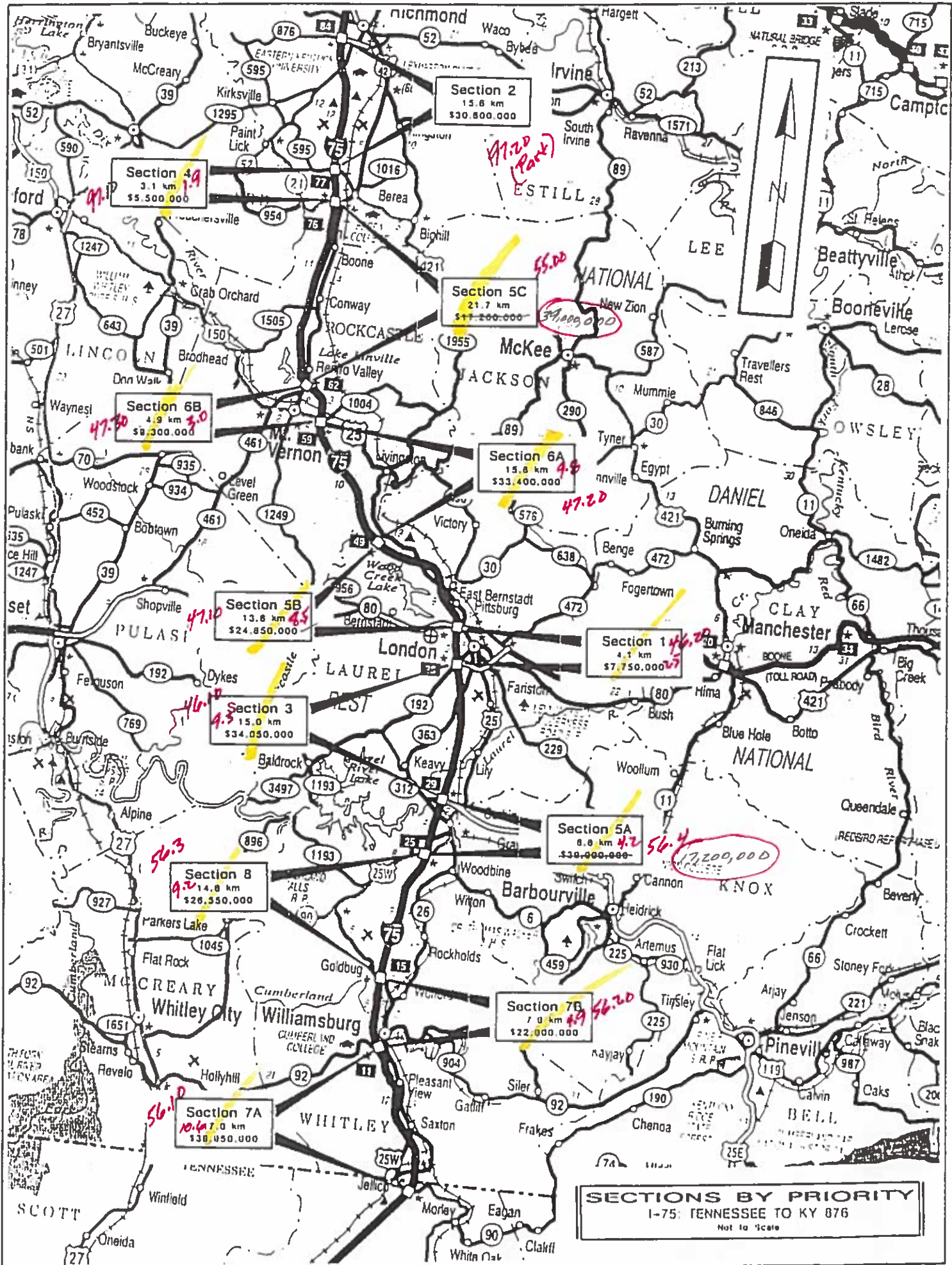
TRAFFIC			
EXISTING YEAR: 1994 ADT		PROJECTED DESIGN YEAR 2015 ADT	
Tenn. SL to Exit 11 - 24,400	Exit 41 to Exit 49 - 27,600	Tenn. SL to Exit 11 - 37,000	Exit 41 to Exit 49 - 42,000
Exit 11 to Exit 15 - 24,400	Exit 49 to Exit 59 - 25,500	Exit 11 to Exit 15 - 37,000	Exit 49 to Exit 59 - 39,000
Exit 15 to Exit 25 - 23,400	Exit 59 to Exit 62 - 25,500	Exit 15 to Exit 25 - 35,000	Exit 59 to Exit 62 - 39,000
Exit 25 to Exit 29 - 26,600	Exit 62 to Exit 76 - 26,600	Exit 25 to Exit 29 - 40,000	Exit 62 to Exit 76 - 40,000
Exit 29 to Exit 38 - 29,800	Exit 76 to Exit 79 - 30,800	Exit 29 to Exit 38 - 45,000	Exit 76 to Exit 79 - 46,000
Exit 38 to Exit 41 - 32,900	Exit 79 to Exit 87 - 32,900	Exit 38 to Exit 41 - 50,000	Exit 79 to Exit 87 - 49,000

DESIGN CRITERIA					
DESIGN SPEED 120 km/h	NO. OF LANES 6	PAVEMENT WIDTH 3.6 m per lane min.	SHLD. WIDTH 3.0 m	DITCH WIDTH AND SLOPE 5.4 m at 1:6	
MEDIAN WIDTH AND TYPE 7.9 m		MIN. BRIDGE WIDTHS Approach roadway width	DESIGN YR. LEVEL OF SERVICE B-C		MAINT. RESPONSIBILITY State
ACCESS CONTROL Full					

ALTERNATIVES CONSIDERED		
ALTERNATIVES CONSIDERED (SEE EXHIBIT IMMEDIATELY FOLLOWING THIS SHEET)		
Adding 2 lanes in the median		
1. KY 192 to KY 80 (Exit 38 to Exit 41)	4.1 km	\$7,750,000
2. KY 595 to KY 876 (Exit 78 to Exit 87)	15.6 km	\$30,600,000
3. US 25E to KY 192 (Exit 29 to Exit 38)	15.0 km	\$34,050,000
4. KY 21 to KY 595 (Exit 76 to Exit 78)	3.1 km	\$5,500,000
5a US 25W to US 25E (Exit 25 to Exit 29)	6.8 km	\$17,200,000
5b KY 80 to KY 90 (Exit 41 to Exit 49)	13.6 km	\$24,850,000
5c US 25 to KY 21 (Exit 62 to Exit 76)	21.7 km	\$39,000,000
6a KY 909 to US 25 (Exit 49 to Exit 59)	15.8 km	\$33,400,000
6b US 25 to US 25 at Renfro Valley (Exit 59 to Exit 62)	4.9 km	\$9,300,000
7a Tennessee state line to KY 92 (MP 0.00 to Exit 11)	17.0 km	\$39,950,000
7b KY 92 to US 25W (Exit 11 to Exit 15)	7.9 km	\$22,000,000
8. US 25W to US 25W at Corbin (Exit 15 to Exit 25)	14.8 km	\$26,550,000
Also recommended: Analysis of truck climbing lanes and consideration of Advantage I-75 criteria; Further analysis of Exit 29 (US 25E at Corbin) based on high Critical Rate Factor and investigation of proposed interchanges listed in report.		

PREFERRED ALTERNATIVE	
PREFERRED ALTERNATE 2 additional lanes in the median based on the sequence above.	COST ESTIMATES: BASE YEAR 1994 LENGTH 139.7 km P.C. I.N.W. U.T.R. CONBT. TOTAL \$290,150,000

ADDITIONAL REMARKS
ADDITIONAL REMARKS



I. PURPOSE

The purpose of this study is to recommend a strategy for prioritized improvements Interstate 75 from the Tennessee state line to KY 876, just south of Richmond (see Exhibit 1). The time frame considered for this strategy is 20 years. Factors studied include highway mainline and ramp capacity, existing geometrics, accidents, consideration of additional access, maintenance requirements, and costs.

II. PROJECT DESCRIPTION

A. EXISTING INVENTORY

1. Geometrics

Interstate 75 is a four-lane, divided facility with a posted speed limit of 104.6 kilometers per hour (65 miles per hour) throughout the study area. All lane widths are 3.6 m (12 feet). Outside shoulder widths are a minimum of 3.0 m (10 feet), and inside shoulder widths vary from 0.9 to 1.8 m (3 to 6 feet). Depressed median widths vary from 14.6 to 28.3 meters (48 to 93 feet), and right-of-way widths range from a minimum of 91.4 m (300 feet) to a maximum of 182.9 m (600 feet). See Table 1 or Appendix I for a summary of existing inventory.

2. Pavement Conditions

The Transportation Cabinet's Division of Operations evaluates the condition of all pavements on the Interstate Highway System in Kentucky. The "Report on Condition of Interstate Pavements in 1994" summarizes the pavement status in the project area as follows:

The PCC pavements extending from the Tennessee State Line to Rockcastle County Line (MP 50.77) were restored between 1984 and 1986 by full-depth and partial-depth PCC patching, installing edge drains, resealing joints, and overlaying several short sections. A short section of composite pavement between Tennessee State Line and MP 0.48 in the northbound lanes was milled and overlaid in 1994. The next pavements extending to MP 15.46 in the northbound lanes and 20.20 in the southbound lanes may be in need of

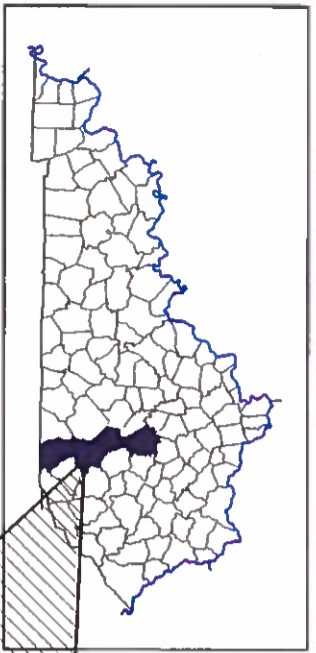
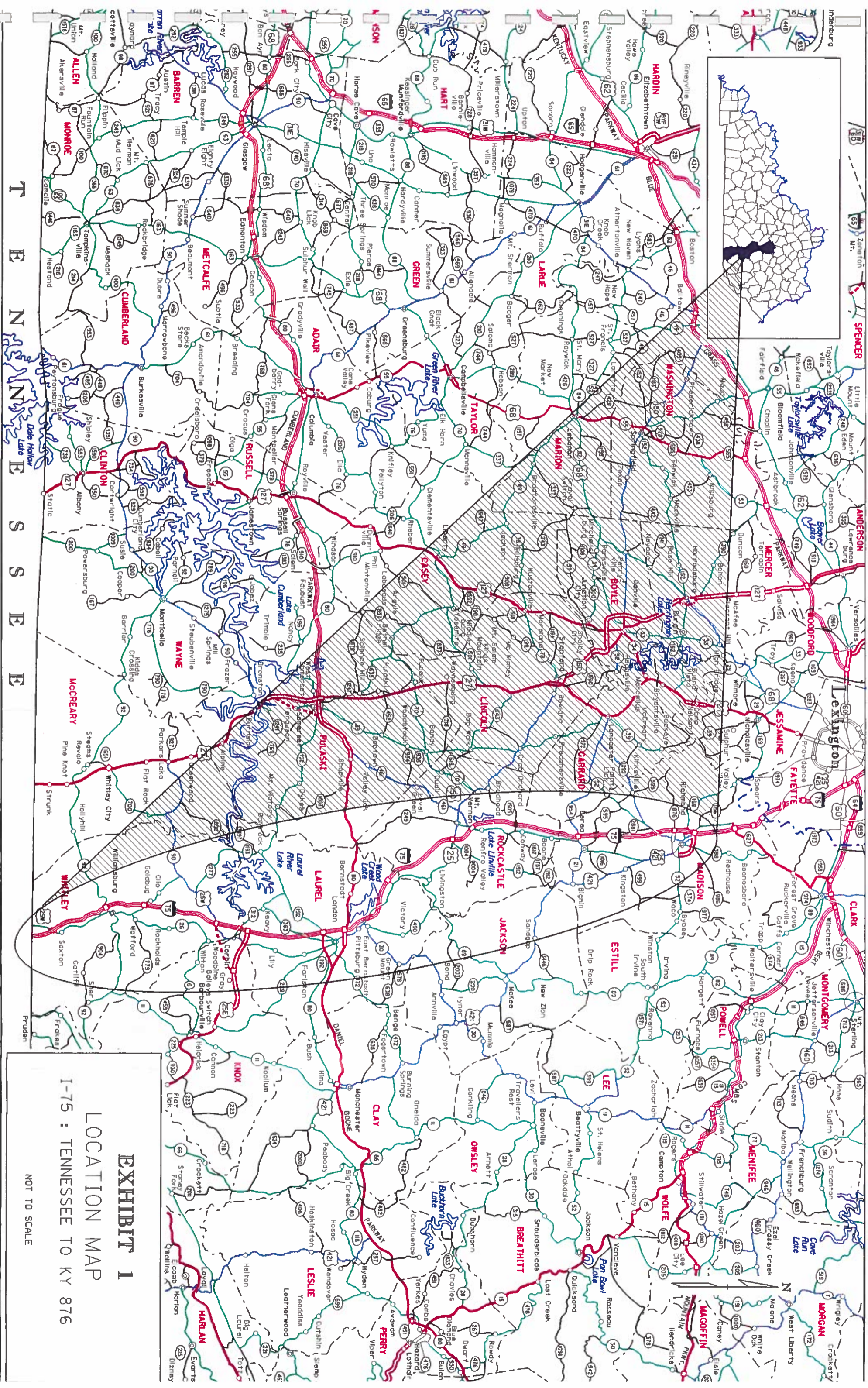


EXHIBIT 1
LOCATION MAP
 I-75 : TENNESSEE TO KY 876
 NOT TO SCALE

TABLE 1

EXISTING INVENTORY

I-75: TENNESSEE STATE LINE TO KY 876

SECTION	MILEPOINTS		LENGTH km (mi)	LANE m (ft)	MEDIAN m (ft)	WIDTHS		OUT SHLDER m (ft)	RAW m (ft)	ADEQUACY RATING	PERCENTILE RANKING **
	FROM	TO				IN SHLDER m (ft)	OUT SHLDER m (ft)				
1	0.000	3.169	5.10 (3.17)	3.66 (12)	15.85 (52)	1.22 (4)	3.05 (10)	91.4 (300)	79.0 *	24	
2	3.169	10.079	11.12 (6.91)	3.66 (12)	15.85 (52)	1.22 (4)	3.05 (10)	91.4 (300)	73.8	10	
3	10.079	12.384	3.71 (2.31)	3.66 (12)	15.85 (52)	1.22 (4)	3.05 (10)	91.4 (300)	86.7 *	50	
4	12.384	24.363	19.28 (11.98)	3.66 (12)	15.85 (52)	1.22 (4)	3.05 (10)	91.4 (300)	81.3	28	
5	24.363	27.943	5.76 (3.58)	3.66 (12)	15.85 (52)	1.22 (4)	3.05 (10)	106.68 (350)	85.0	38	
6	27.943	31.448	5.64 (3.51)	3.66 (12)	15.85 (52)	1.22 (4)	3.05 (10)	91.4 (300)	84.0 *	37	
7	31.448	33.152	2.74 (1.70)	3.66 (12)	27.74 (91)	1.22 (4)	3.05 (10)	152.4 (500)	82.8 *	33	
8	33.152	40.873	12.43 (7.72)	3.66 (12)	15.85 (52)	1.22 (4)	3.05 (10)	91.4 (300)	80.0	26	
9	40.873	49.132	13.29 (8.26)	3.66 (12)	15.85 (52)	1.22 (4)	3.05 (10)	91.4 (300)	86.3	47	
10	49.132	50.767	2.63 (1.64)	3.66 (12)	15.85 (52)	1.22 (4)	3.05 (10)	91.4 (300)	82.5	32	
11	50.767	58.954	13.18 (8.19)	3.66 (12)	15.85 (52)	1.22 (4)	3.35 (11)	91.4 (300)	82.0	29	
12	58.954	71.818	20.70 (12.86)	3.66 (12)	16.46 (54)	0.91 (3)	3.05 (10)	91.4 (300)	88.1 *	56	
13	71.818	73.408	2.56 (1.59)	3.66 (12)	28.35 (93)	0.91 (3)	3.05 (10)	182.9 (600)	88.3	56	
14	73.408	86.135	20.48 (12.73)	3.66 (12)	14.63 (48)	1.83 (6)	3.05 (10)	91.4 (300)	89.0 *	62	
15	86.135	86.806	1.08 (0.67)	3.66 (12)	26.52 (87)	1.83 (6)	3.05 (10)	91.4 (300)	82.5	32	

* WEIGHTED

** PERCENTILE RANKING WHEN COMPARED TO OTHER RURAL INTERSTATES

overlaying between 1997 and 2000. However, repairing and diamond grinding the surfaces to improve rideability would extend life of those pavements for several years. The northbound lanes between US 25W (MP 15.46) and MP 20.20 warranted overlaying in 1995. Pavement in the same direction extending to MP 21.98 was overlaid in 1991. Pavements from MP 20.20 to US 25W (MP 24.66) in the southbound direction and from MP 21.98 to 23.20 in the northbound direction was in fair to marginally poor condition and may require overlaying in 1996. The pavement in the northbound lanes to MP 24.66 (US 25W) was broken seated and AC overlaid in 1987 and was severely raveled and exhibited other defects. It was in poor condition and in need of overlaying. The PCC pavement in the southbound lanes between US 25W and US 25W (MP 28.85) was in fair to marginally poor condition and may be a candidate for overlaying in 1996. In the northbound lanes between US 25W and Laurel County Line (MP 27.94), the pavement was in poor condition and in need of overlaying. The PCC pavements from there to MP 46.95 was in good condition mostly because of restoration in 1991. The composite pavement further north, overlaid in 1984 with OGFC as the final surface, was raveled and may need to be milled and overlaid in 1997.

The AC pavements in Rockcastle County, from Laurel County Line (MP 50.77) to MP 65.22, were milled and overlaid in 1990. Asphalt stripping in the upper layer may necessitate milling and overlaying of short sections. Otherwise the pavement may be in acceptable condition for several years.

The PCC pavements from MP 65.22 to MP 87.32 in Rockcastle and Madison Counties were overlaid in 1988 and 1989. Those were in good condition.

The Pavement Management Branch of the Division of Operations recommends the improvements listed in Table 2.

3. Adequacy Ratings

Adequacy Ratings are numerical representations of a facility's relative physical condition and operating characteristics which can be compared with similar facilities throughout the state. The ratings for the I-75 study area range from 73.8 in Whitley County to 89.0 in Madison County. A rating of 73.8 ranks in the lowest

TABLE 2

PAVEMENT IMPROVEMENT NEEDS

I-75: TENNESSEE STATE LINE TO KY 876

County	From	To	Direction	Length km (miles)	Recommended Treatment	Year
Whitley	MP 3.68	MP 10.55 (KY 92)	Northbound	11.1 (6.87)	Repair: Diamond grind	1997
Whitley	MP 3.68	MP 10.55 (KY 92)	Southbound	11.1 (6.87)	Repair: Diamond grind	2000
Whitley	MP 10.55 (KY 92)	MP 15.46 (US 25W)	Northbound & Southbound	7.9 (4.91)	Repair: Diamond grind	2000
Whitley	MP 15.46 (US 25W)	MP 20.20	Northbound	7.6 (4.74)	Repair & AC overlay	1995
Whitley	MP 15.46 (US 25W)	MP 20.20	Southbound	7.6 (4.74)	Repair & AC overlay	1998
Whitley	MP 20.20	MP 24.66 (US 25 W)	Southbound	7.2 (4.46)	Break, seat, & AC overlay	1996
Whitley	MP 21.98	MP 23.20	Northbound	2.0 (1.22)	Repair, mill, & 3.8 cm (1 1/2in) AC overlay	1996
Whitley	MP 23.20	MP 24.66 (US 25W)	Northbound	2.3 (1.46)	Repair, mill & AC overlay	1995
Whitley	MP 24.66 (US 25W)	MP 27.94 (Laur. Co. Ln.)	Northbound	5.3 (3.28)	Break, seat, & AC overlay	1995
Whitley & Laurel	MP 24.66 (US 25W)	MP 28.85 (US 25E)	Southbound	6.7 (4.19)	Break, seat, & AC overlay	1996
Laurel	MP 46.95	MP 48.95 (beg. AC pvmt.)	Northbound & Southbound	3.2 (2.00)	Repair: Diamond grind	1997
Laurel	MP 48.95 (beg. AC pvmt.)	MP 50.77 (Rock. Co. Ln.)	Northbound & Southbound	2.9 (1.82)	ill & 3.8 cm (1 1/2 in AC overlay	1997
Rockcastle	MP 50.77 (Laur. Co. Ln.)	MP 62.01	Northbound & Southbound	18.1 (11.24)	ill & 3.8 cm (1 1/2 in AC overlay	1998

10% of total rural Interstate mileage for Kentucky. This rating of 73.8 is caused mainly by a low Condition Index, one of the three indices used in determining the adequacy rating. The Condition Index measures pavement type, pavement condition, and drainage adequacy. A section rated 89.0 is rated higher than approximately 62% of total rural Interstate mileage. Adequacy Ratings for each section are shown in Table 1 and Appendix I.

4. Structures

There are 38 structures located along the project's length (see Appendix I). These structures, along with relevant structural data, are listed in Table 3.

Some of the structures are twin bridges located in the northbound and southbound lanes. Sufficiency Ratings for these structures range from 64.5 to 97.1. For a bridge to qualify for Federal Bridge Replacement Funding, its Sufficiency Rating must be less than 50.0 and it must be structurally deficient or functionally obsolete. To qualify for Federal Bridge Rehabilitation Funding, the Sufficiency Rating must be less than 80.0 and the structure must be structurally deficient or functionally obsolete. The rehabilitation must elevate the Sufficiency Rating to 80.0 or more for 10 years. Because all of the structures along the study corridor are rated higher than 50.0, none qualify for Federal Bridge Replacement Funding. However, several do qualify for Federal Bridge Rehabilitation Funding (highlighted in Table 3). None of the structures in the project area are ranked as structurally deficient.

Two of the structures, located along I-75 where it spans the Cumberland and Laurel Rivers (respective milepoints 14.506 and 33.149), have been identified as non-redundant steel girder bridges. These structures are worthy of special consideration from a maintenance standpoint and have been assessed by the Division of Operations to determine their effect on the plan for additional lanes along the route (this assessment is documented in Appendix II). The Division of Operations recommends the replacement of the Cumberland River Bridge and estimates the useful life of the Laurel River Bridge to be less than the planning horizon for this study. Consequently, new structures over the Cumberland and Laurel Rivers were included in the

TABLE 3

STRUCTURES

I-75: TENNESSEE STATE LINE TO KY 876

MP	BR NO	LOCATION	FEATURES INTERSECTED	DESCRIPTION	LENGTH (meters) (feet)	WIDTH (meters) (feet)	FUNCTIONALLY OBSOLETE?	SR
WHITLEY COUNTY:								
0.79	57	NBL 1.3 km (0.8 mi) N of Tenn. St. Ln. SBL - Twin Bridges	CSX Railroad	3 - 16.2 m (53 ft) simple RCDG spans	48.5	10.9	YES	76.6
1.00	53	NBL 1.6 km (1.0 mi) N of Tenn St. Ln. SBL - Twin Bridges	KY 1804	14.6-17.7-14.6 m (48-58-48 ft) RCDG spans	46.9	10.9	YES	77.0
1.30	58	NBL 2.1 km (1.3 mi) N of Tenn St. Ln. SBL - Twin Bridges	Clear Fork River	2-16 m (52.5 ft) simple RCDG approaches	105.5	10.9	NO	73.9
1.51	52	2.4 km (1.5 mi) N of Tenn. St. Ln.	Ramp over Sandy Flats Road	21.3-30.5-21.3 m (70-100-70 ft) RCDG spans	34.4	7.6	YES	80.0
1.87	54	NBL 3.0 km (1.9 mi) N of Tenn. St. Ln. SBL - Twin Bridges	Sandy Flats Road	3-10.1 m (33 ft) simple RCDG spans	30.2	13.4	YES	90.9
2.46	59	NBL 4.0 km (2.5 mi) N of Tenn. St. Ln. SBL - Twin Bridges	Clear Fork River	3-16 m approaches; 21.3-30.5-21.3 m spans (3-52.5; 70-100-70 ft)	121.6	10.9	NO	93.0
3.17	55	NBL 5.1 km (3.2 mi) N of Tenn. St. Ln. SBL - Twin Bridges	US 25W	18.3-26.8-18.3 m (60-88-60 ft) continuous	65.2	11.0	YES	80.0
5.56	60	NBL 1.3 km (0.8 mi) S of KY 628 SBL - Twin Bridges	Wolf Creek	18.3-27.4-18.3 m (60-90-60 ft) continuous	65.2	10.9	NO	64.7
7.87	56	NBL 4.3 km (2.7 mi) S of KY 92 inter. SBL - Twin Bridges	KY 2986-Cane Creek Road	3-14.3 m (47 ft) RCDG spans	45.7	12.3	YES	68.6
10.96	61	0.6 km (0.4 mi) N of KY 92 inter.	Brier Creek	8.6-4.3-104.2 m (28.2-14.0-342 ft) RC arch culvert	9.8	0.0	NO	92.0
14.51	45	BL 1.6 km (1.0 mi) S of S-inter. US 25 SBL - Twin Bridges	umberland River Croley Road	2-27.4 m (90 ft) simple & 43.7-61.0-42.7 m (140-200-140 ft) spans	204.2	10.9	YES	92.2
17.17	62	2.6 km (1.6 mi) N of S-inter. US 25W	Blake Fork Creek	8.5-4.3-123 m (28-14-403.5 ft) arch culvert	10.1	0.0	NO	80.9
17.33	46	BL 2.9 km (1.8 mi) N of S-inter. US 25 SBL 2.9 km (1.8 mi) N of S-inter. US 25W	KY 836	13.1-16.2-11.6 m (43-53-38 ft) spans	40.8	12.2	YES	74.9
	46P			13.1-16.2-11.6-11.6 m (43-53-38-38 ft) spans	52.4	172		75.9
								77.5
								93.0
								93.2

LEGEND:

- MP Milepoint
- BR NO Bridge Number
- NBL Northbound Lane
- SBL Southbound Lane
- Eligible for Federal bridge Rehabilitation Funding
- St. Ln. State Line
- RCDG Reinforced Concrete Deck Girder
- PCIB Prestressed Concrete I-beam
- SR Sufficiency Rating

TABLE 3 (cont.)

STRUCTURES
I-75: TENNESSEE STATE LINE TO KY 876

MP	BR NO	LOCATION	FEATURES INTERSECTED	DESCRIPTION	LENGTH (meters) (feet)	WIDTH (meters) (feet)	FUNCTIONALLY OBSOLETE?	SR
WHITLEY COUNTY:								
20.32	47	6.8 km (4.2 mi) S of N-jct US 25W	KY 3000-Tidal Wave Road	7.9-4.3-5.8 m (26-14-183 ft) R. C. box culvert	8.5	0.0	YES	73.3
23.56	49	1.8 km (1.1 mi) S of N-jct US 25W	Bacon Creek-Corinth Road	6.1-4.3-52.4 m (20-14-172 ft) R. C. culvert	6.7	0.0	YES	69.9
24.65	50	NBL over N-inter. US 25 W	US 25W	16.2-22.9-16.2 m (53-75-53 ft) continuous RCDG spans	56.7	11.7	YES	95.2
25.90	51	2.0 km (1.25 mi) N of N-jct US 25W	KY 727-Barton Road	B 18.3-24.4-18.3 m (60-80-60 ft) cont. RCDG span	63.1	12.7	YES	95.2
27.90	63	2.0 km (1.25 mi) N of N-jct US 25W	Lynn Camp Creek	B 19.8-27.4-19.8 m (65-90-65 ft) cont. RCDG span	69.2	227	YES	93.2
27.90	63P	NBL on Laurel County Line	Lynn Camp Creek	42.7-61-42.7 m (140-200-140 ft) cont. weld. plate girder	147.8	10.1	NO	68.8
27.90	63P	SBL on Laurel County Line	Lynn Camp Creek	48.8-61-48.8 m (160-200-160 ft) cont. weld. plate girder	160	9.2	NO	80.0
LAUREL COUNTY:								
28.85	39	NBL 1.4 km (0.9 mi) N of County Line	Corbin Bypass	11.4-14.6-14.6-14.4 m (37.3-48-48-47.3 ft) continuous RCDG spans	56.4	12.2	NO	95.0
30.56	43	NBL 2.4 km (1.5 mi) N of US 25E inter.	Laurel River	42.7-61-42.7 m (140-200-140 ft) cont. weld. deck girder	146.3	9.1	NO	94.9
33.15	42	NBL 6.4 km (4.0 mi) N of US 25E inter.	Little Laurel River	16-30.5-22.1 m (52.5-100-72.5 ft) continuous RCDG spans	76.2	12.0	NO	72.5
39.13	38	NBL 2.4 km (1.5 mi) S of KY 80 inter.	Parker Road (KY 3432)	3-14.8 m (48.5 ft) continuous RCDG spans	45.7	12.1	YES	96.1
41.90	41	NBL 1.9 km (1.2 mi) N of KY 80 inter.	Wood Creek	11.1-15.8-11.1 m (36.5-52-36.5 ft) continuous RCDG spans	39.3	12.1	NO	95.9
42.35	37	NBL 2.6 km (1.6 mi) N of KY 80 inter.	KY 2041	10.7-14-10.7 m (35-46-35 ft) continuous RCDG spans	36.6	12.1	YES	88.0
50.71	40	NBL on County Line	Rockcastle River	48.8-61-48.8-48.8 m (160-200-160-160 ft) continuous RCDG spans	258.5	10.4	NO	97.1
50.71	40P	SBL - Twin Bridges	Rockcastle River	48.8-61-48.8-48.8 m (160-200-160-160 ft) continuous RCDG spans	258.5	10.4	NO	93.0
	40P	SBL - Twin Bridges	Rockcastle River	48.8-61-48.8-48.8 m (160-200-160-160 ft) continuous RCDG spans	258.5	10.4	NO	83.6

LEGEND:

- MP Milepoint
- BR NO Bridge Number
- NBL Northbound Lane
- SBL Southbound Lane
- Eligible for Federal bridge Rehabilitation Funding
- St. Ln. State Line
- RCDG Reinforced Concrete Deck Girder
- PCIB Prestressed Concrete I-beam
- SR Sufficiency Rating

TABLE 3 (cont.)

STRUCTURES
I-75: TENNESSEE STATE LINE TO KY 876

MP	BR NO	LOCATION	FEATURES INTERSECTED	DESCRIPTION	LENGTH (meters) (feet)	WIDTH (meters) (feet)	FUNCTIONALLY OBSOLETE?	SR
ROCKCASTLE COUNTY:								
58.95	38P	NBL at US 25 - Mt. Vernon SBL - Twin Bridges	US 25	17.7-25.6-17.1 m (56-84-56 ft) continuous RCDG spans	61.3	12.7	41.8	91.0
62.01	37	NBL at US 25 - Mt. Vernon	US 25	NB 12.8-25.9-21.9 m (42-85-72 ft)	67.1	12.7	41.8	89.0
	37P	SBL at US 25 - Mt. Vernon		SB 12.8-25.9-18.9 m (42-85-62 ft) simple comp. steel	59.7	12.8	42.1	88.0
62.65	36	NBL 0.6 km (0.4 mi) N of N-inter. US 25	Green Hill Road	1-21.3 m (70 ft) simple span	21.9	13.2	43.4	91.0
69.01	36P	SBL 0.6 km (0.4 mi) N of N-inter. US 25		welded plate girder		13.2	43.3	91.0
	43	0.8 km (0.5 mi) N of KY 1505 overpass	Clay Lick Branch	6.1-1.8-50.3 m (20-6-165 ft) R. C. culvert	7.3	0.0	0.0	80.7
71.16	42	3.4 km (2.1 mi) S of Madison County Line	Lambert Road	6.1-4.3-43.6 m (20-14-143 ft) box culvert	7.0	0.0	0.0	76.6
72.29	40	NBL 1.6 km (1.0 mi) S of County Line	Flat Gap Road	6.1-4.3-14.8 m (20-14-48.5 ft) box culvert	7.9	0.0	0.0	92.0
72.41	41	SBL 1.6 km (1.0 mi) S of County Line	Flat Gap Road	6.1-4.3-14.8 m (20-14-48.5 ft) box culvert	7.9	0.0	0.0	92.0
MADISON COUNTY:								
77.23	45	2.6 km (1.6 mi) N of KY 21 interchange	Walnut Meadow Branch	4.9-2.7-67.7 m (16-9-222 ft) R. C. culvert	7.3	0.0	0.0	74.1
77.47	43	NBL 2.9 km (1.8 mi) N of KY 21 inter.	KY 595	13.1-13.1-13.1 m (43-43-43 ft) continuous RCDG spans	39.3	12.8	42.0	93.2
	43P	SBL 2.9 km (1.8 mi) N of KY 21 inter.				12.2	40.0	93.2
80.87	44	NBL 0.5 km (0.3 mi) N of KY 2881	Silver Creek/ Menelaus Road	21.3-28-21.3 m (70-92-70 ft) cont. & 1-10.7 m (35 ft) simple RCDG	83.2	11.0	36.0	75.7
80.87	44P	SBL 0.5 km (0.3 mi) N of KY 2881						
84.64	42	NBL 4.0 km (2.5 mi) S of KY 876 inter. SBL - Twin Bridges	Silver Creek/ Menelaus Road	24.4-30.5-24.4 m (80-100-80 ft) cont. & 1-10.7 m (35 ft) simple RCDG	93.6	11.0	36.0	75.7
			KY 52	18.0-23.5-18.0 m (59-77-59 ft) continuous RCDG spans	61.6	11.0	36.1	75.7

LEGEND:

- MP Milepoint
- BR NO Bridge Number
- NBL Northbound Lane
- SBL Southbound Lane
- Eligible for Federal bridge Rehabilitation Funding
- St. Ln. State Line
- RCDG Reinforced Concrete Deck Girder
- PCIB Prestressed Concrete I-beam
- SR Sufficiency Rating

improvement strategy for the study corridor.

5. Access

Currently, eleven interchanges provide access within the project limits, with the longest distance between any two interchanges being approximately 22.5 km (14 miles) between Exit 62 (Mt. Vernon and Renfro Valley) and Exit 76 (Berea).

B. ACCIDENT RATES

1. Mainline

Accident data for the project was analyzed for the three-year time period from July 1, 1991 to June 30, 1994 (see Table 4). Analysis of the accident data produced a section along the mainline, between KY 595 and KY 876, that exhibited a Critical Rate Factor of 1.08. For a Critical Rate Factor of 1.00 or greater, it can be said with 99.5% confidence that some form of accident problem exists which cannot be attributed to random occurrence. This is the only section along the project corridor with a Critical Rate Factor greater than 1.00.

2. Interchanges

Accident data was also analyzed on I-75 in the vicinity of each interchange between the off and on ramps (see Table 5). As a result of this analysis, one location was identified which exhibited a Critical Rate Factor greater than 1.00 (Appendix I, sheet 7). This interchange, Exit 29 (US 25E at Corbin), shows a Critical Rate Factor of 1.390. This high Critical Rate Factor indicates that the accident rate in this area can be attributed to some type of accident problem and not to random occurrence.

III. TRAFFIC

A. EXISTING

Current average daily traffic volumes (ADT) in the project area (see Table 6 or Appendix III) range from approximately 24,000 near the Tennessee state line, to approximately 33,000 at the northern end of the project near Richmond. Likewise, volumes of 33,000 are also exhibited near the London area between Exits 38 and 41. Trucks constitute 25-28% of the ADT from the Tennessee state line to Richmond.

TABLE 4

MAINLINE ACCIDENT ANALYSIS

JULY 1, 1991 - JUNE 30, 1994

ROUTE DESCRIPTION						ACCIDENTS			
ROUTE NO.	FROM	TO	LENGTH		AADT (VPD)	FATAL	INJURY	PDO	TOTAL
			(km)	(miles)					
I 75	Tenn. St. Line	KY 92	16.98	10.55	24,400	1	41	52	94
I 75	KY 92	US 25W	7.90	4.91	24,400	1	23	37	61
I 75	US 25W	US 25W	14.79	9.19	23,400	2	46	62	110
I 75	US 25W	US 25E	6.78	4.21	26,600	3	25	50	78
I 75	US 25E	KY 192	15.03	9.34	29,800	1	37	93	131
I 75	KY 192	KY 80	4.06	2.52	32,900	0	11	27	38
I 75	KY 80	KY 909	13.57	8.43	27,600	2	31	53	86
I 75	KY 909	US 25	15.80	9.82	25,500	3	34	89	126
I 75	US 25	US 25	4.91	3.05	25,500	1	16	28	45
I 75	US 25	KY 21	21.74	13.51	26,600	4	63	93	160
I 75	KY 21	KY 595	3.14	1.95	30,800	1	13	36	50
I 75	KY 595	KY 876	15.64	9.72	32,900	3	100	186	289
TOTAL						22	440	806	1268

ROUTE DESCRIPTION			RATES PER 100M VMT					TOTALS		
ROUTE NO.	FROM	TO	HMVM	FUNCT. CLASS.	FATAL	INJURY	PDO	TOTAL ACC. RATE	CRITICAL RATE	CRITICAL RATE FACTOR
				RATE						
I 75	Tenn. St. Line	KY 92	2.82	58	0.35	14.55	18.45	33.35	78.45	0.425
I 75	KY 92	US 25W	1.31	58	0.76	17.53	28.20	46.50	88.09	0.528
I 75	US 25W	US 25W	2.35	58	0.85	19.53	26.33	46.71	80.39	0.581
I 75	US 25W	US 25E	1.23	58	2.45	20.39	40.77	63.61	89.14	0.714
I 75	US 25E	KY 192	3.05	58	0.33	12.14	30.51	42.98	77.66	0.553
I 75	KY 192	KY 80	0.91	58	0.00	12.12	29.74	41.86	94.27	0.444
I 75	KY 80	KY 909	2.55	58	0.79	12.17	20.80	33.76	79.52	0.425
I 75	KY 909	US 25	2.74	58	1.09	12.40	32.46	40.12	78.73	0.510
I 75	US 25	US 25	0.85	58	1.17	18.79	32.88	91.59	95.47	0.959
I 75	US 25	KY 21	3.94	58	1.02	16.01	23.63	33.29	75.28	0.442
I 75	KY 21	KY 595	0.66	58	1.52	19.77	54.74	76.03	100.73	0.755
I 75	KY 595	KY 876	3.50	58	0.86	28.56	53.12	82.53	76.33	1.081

TABLE 5

INTERCHANGE ACCIDENT ANALYSIS JULY 1, 1991 - JUNE 30, 1994

ROUTE DESCRIPTION				ACCIDENTS					
ROUTE NO.	FROM	TO	LENGTH (km)	LENGTH (miles)	AADT (VPD)	FATAL	INJURY	PROPERTY DAMAGE ONLY	TOTAL
I 75-Exit 11	Off Ramp	On Ramp	0.8	0.50	24400	0	2	7	9
I 75-Exit 15	Off Ramp	On Ramp	1.0	0.60	23900	0	3	5	8
I 75-Exit 25	Off Ramp	On Ramp	1.1	0.70	25000	0	7	16	23
I 75-Exit 29	Off Ramp	On Ramp	1.0	0.60	28200	0	14	22	36
I 75-Exit 38	Off Ramp	On Ramp	1.1	0.70	31400	0	4	24	28
I 75-Exit 41	Off Ramp	On Ramp	1.1	0.70	30300	0	10	20	30
I 75-Exit 49	Off Ramp	On Ramp	1.1	0.70	26500	0	1	7	8
I 75-Exit 59	Off Ramp	On Ramp	1.1	0.70	25500	0	8	15	23
I 75-Exit 62	Off Ramp	On Ramp	1.3	0.80	26000	0	9	20	29
I 75-Exit 76	Off Ramp	On Ramp	1.1	0.70	28700	1	6	10	17
I 75-Exit 78	Off Ramp	On Ramp	1.1	0.70	31800	0	7	10	17
TOTAL						1	71	156	228

ROUTE DESCRIPTION				RATES PER 100 MILLION VMT				TOTALS			
ROUTE NO.	FROM	TO	HMVH	CLASS RATE	FUNCT.	FATAL	INJURY	PROPERTY DAMAGE ONLY	TOTAL ACC. RATE	CRITICAL RATE	CRITICAL FACTOR
I 75-Exit 11	Off Ramp	On Ramp	0.13	58	0.00	0.00	15	52	67	155	0.435
I 75-Exit 15	Off Ramp	On Ramp	0.16	58	0.00	0.00	19	32	51	147	0.346
I 75-Exit 25	Off Ramp	On Ramp	0.19	58	0.00	0.00	37	83	120	138	0.868
I 75-Exit 29	Off Ramp	On Ramp	0.19	58	0.00	0.00	76	119	194	140	1.390
I 75-Exit 38	Off Ramp	On Ramp	0.24	58	0.00	0.00	17	100	116	129	0.899
I 75-Exit 41	Off Ramp	On Ramp	0.23	58	0.00	0.00	43	86	129	131	0.988
I 75-Exit 49	Off Ramp	On Ramp	0.20	58	0.00	0.00	5	34	39	136	0.290
I 75-Exit 59	Off Ramp	On Ramp	0.20	58	0.00	0.00	41	77	118	138	0.856
I 75-Exit 62	Off Ramp	On Ramp	0.23	58	0.00	0.00	40	88	127	132	0.968
I 75-Exit 76	Off Ramp	On Ramp	0.22	58	4.55	0.00	27	45	77	133	0.582
I 75-Exit 78	Off Ramp	On Ramp	0.24	58	0.00	0.00	29	41	70	129	0.541

TABLE 6
CURRENT AND PROJECTED TRAFFIC
FOR I-75 AND CROSSROADS
 TENNESSEE STATE LINE TO KY 876

SECTION	FROM		TO		ADT		DHV		TRUCK PERCENTAGE (ADT)	
					1994	2015	2015	2015	1994	2015
I-75										
A	TENN	EXIT 11	EXIT 11	EXIT 11	24,400	37,000	4,600	4,600	28	31
B	EXIT 11	EXIT 15	EXIT 15	EXIT 15	24,400	37,000	4,600	4,600	28	31
C	EXIT 15	EXIT 25	EXIT 25	EXIT 25	23,400	35,000	4,400	4,400	28	31
D	EXIT 25	EXIT 29	EXIT 29	EXIT 29	26,600	40,000	5,000	5,000	28	31
E	EXIT 29	EXIT 38	EXIT 38	EXIT 38	29,800	45,000	5,600	5,600	28	31
F	EXIT 38	EXIT 41	EXIT 41	EXIT 41	32,900	50,000	6,200	6,200	28	31
G	EXIT 41	EXIT 49	EXIT 49	EXIT 49	27,600	42,000	5,200	5,200	28	31
H	EXIT 49	EXIT 59	EXIT 59	EXIT 59	25,500	39,000	4,900	4,900	28	31
I	EXIT 59	EXIT 62	EXIT 62	EXIT 62	25,500	39,000	4,900	4,900	28	31
J	EXIT 62	EXIT 76	EXIT 76	EXIT 76	26,600	40,000	5,000	5,000	28	31
K	EXIT 76	EXIT 79	EXIT 79	EXIT 79	30,800	46,000	5,300	5,300	25	28
L	EXIT 79	EXIT 87	EXIT 87	EXIT 87	32,900	49,000	5,600	5,600	25	28

T A B L E 6 (cont.)
CURRENT AND PROJECTED TRAFFIC
FOR I-75 AND CROSSROADS
 TENNESSEE STATE LINE TO KY 876

SECTION	RELATIONSHIP TO I-75	ADT		DHV	TRUCK PERCENTAGE (ADT)	
		1994	2015		1994	2015
CROSSROADS						
KY 92 (EXIT 11)	EAST WEST	4,700 3,200	14,000 5,000	1,400 500	6 8	6 8
US 25 W (EXIT 15)	EAST WEST	6,100 4,700	9,500 7,200	1,200 820	7 7	7 7
US 25 W (EXIT 25)	EAST WEST	11,400 9,400	18,000 14,000	3,300 2,600	5 6	5 6
US 25 E (EXIT 29)	EAST WEST	27,000 9,800	42,000 15,200	4,400 1,500	12 4	15 4
KY 192 (EXIT 38)	EAST WEST	18,000 7,100	27,000 14,400	3,200 1,700	7 5	7 5
KY 80 (EXIT 41)	EAST WEST	17,900 21,900	28,000 34,000	2,900 3,500	11 14	13 18
KY 909 (EXIT 49)	EAST WEST	1,700 3,400	2,600 5,400	260 560	3 3	3 3
US 25 (EXIT 59)	EAST WEST	5,000 7,100	7,800 11,000	800 1,200	7 9	7 9
US 25 (EXIT 62)	EAST WEST	6,900 9,200	10,600 14,000	1,100 1,500	7 8	7 8
KY 21 (EXIT 76)	EAST WEST	14,100 11,400	22,000 18,000	2,400 1,900	7 6	7 6
KY 595 (EXIT 78)	EAST WEST	5,600 3,000	8,700 4,700	900 500	4 5	4 5

B. FUTURE

Average daily traffic volumes for the year 2015 are expected to range from approximately 37,000 near the Tennessee state line to approximately 50,000 near London and Richmond. Truck volumes are expected to increase slightly as a percentage of the ADT.

IV. LEVEL OF SERVICE

A. MAINLINE

Levels of Service (LOS) for all project sections are tabulated in Table 7. Existing Levels of Service on I-75 range from "C" between Exit 15 and Exit 25 near Corbin to "F" between Exit 38 and Exit 41 near London and between Exit 78 and Exit 87 near Richmond.

As is evident from the results of the capacity analysis, virtually all sections presently fall short of the standard minimum recommended LOS C. This deficiency will worsen in the future. Four sections are currently operating at LOS E or F.

By the year 2015, five sections will be capacity deficient even with the addition of a third lane in both directions and accepting as non-deficient a LOS D. With the addition of a fourth lane, levels of service on all sections would improve to D or higher. While construction of a third lane could be accomplished within the existing median, construction of a fourth lane would necessitate acquiring additional right of way. Due to funding constraints within Kentucky's highway program, this study identifies a recommended sequence of lane additions rather than the upgrade of all sections having a level of service lower than a minimum specified level of service.

The criteria utilized for the recommended sequence of lane additions are the 1994 volume to capacity ratios (v/c ratios) shown in Table 7. A v/c ratio of 1.00 indicates saturation flow at a Level of Service E, where actual traffic volumes are equivalent to the maximum hourly rate at which vehicles can be expected to travel a section of the freeway. Therefore, as a v/c ratio of 1.00 is approached, the need for additional lanes increases. Table 7 includes prioritization of widening needs based

TABLE 7

MAINLINE CAPACITY ANALYSIS

I-75: TENNESSEE STATE LINE TO KY 876

SECT EXTS	TERMINI	1994						2015						WIDENING PRIORITY
		DDHV	%T (DHV)	2 LANES		3 LANES		DDHV	%T (DHV)	3 LANES		4 LANES		
				LOS	V/C	LOS	V/C			LOS	V/C	LOS	V/C	
A 0-11	Tenn. St. Line to KY 92	1800	19	D	0.79	B	0.52	2800	21	D	0.85	C	0.63	7a
B 11-15	KY 92 to US 25W	1800	19	D	0.79	B	0.52	2800	21	D	0.85	C	0.63	7b
C 15-25	US 25W to US 25W Corbin	1700	19	C	0.74	B	0.49	2600	21	D	0.78	C	0.59	8
D 25-29	US 25W to US 25E	2000	19	D	0.87	C	0.58	3000	21	D	0.91	C	0.68	5a
E 29-38	US 25E to KY 192	2200	19	E	0.97	C	0.65	3400	21	F	1.04	D	0.78	3
F 38-41	KY 192 to KY 80	2400	19	F	1.05	C	0.70	3800	21	F	1.15	D	0.86	1
G 41-49	KY 80 to KY 909	2000	19	D	0.87	C	0.58	3100	21	E	0.94	C	0.70	5b
H 49-59	KY 909 to US 25	1900	19	D	0.83	C	0.55	2900	21	D	0.88	C	0.66	6a
I 59-62	US 25 to US 25 Renfro Valley	1900	19	D	0.83	C	0.55	2900	21	D	0.88	C	0.66	6b
J 62-76	US 25 to KY 21 Berea	2000	19	D	0.87	C	0.58	3000	21	D	0.91	C	0.68	5c
K 76-78	KY 21 to KY 595	2300	17	E	0.96	C	0.64	3200	19	E	0.93	C	0.70	4
L 78-87	KY 595 to KY 876	2400	17	F	1.01	C	0.67	3400	19	E	0.99	C	0.74	2

LEVEL OF SERVICE LOWER THAN D

on capacity analysis. The prioritization is discussed later in this report.

B. RAMPS

A capacity analysis was also performed for each ramp junction. Table 8 shows levels of service for merging and diverging movements at each interchange for existing and forecasted volumes.

It is evident from the table that existing ramp volumes produce Levels of Service lower than D. Additional lanes ease maneuvering problems to some degree, but merging deficiencies remain at Exits 29 and 38 for existing volumes on a three-lane facility. The addition of an on-ramp lane only worsens the situation, with two lanes of traffic attempting to merge with three mainline lanes. Clearly, the controlling breakdown factor of the route will be the entering and exiting movements rather than flow along the mainline.

V. COST ESTIMATES

Cost estimates were calculated for the widening of Interstate 75 to the number of lanes shown in Exhibit 2, at the end of the report. These estimates are shown in Exhibit 2 by section. The total cost for widening I-75 from four to six lanes is estimated to be \$290,150,000. Due to the non-redundant steel girder bridges over the Cumberland and Laurel Rivers, additional information was needed to generate cost estimates for Sections B and E. The Division of Bridge Design was contacted and supplied an estimate that was used to calculate the replacement of the bridges.

VI. CROSSROADS

A. EXISTING INVENTORY

Crossroad features were examined only in the vicinity of their respective interchanges with I-75. Design hourly volumes, trucks as percentages of the DHVs, number of lanes, lane widths, shoulder widths, and right-of-way widths are listed in Table 9 for each crossroad, immediately west and east of the Interstate. If existing lane and shoulder widths are substandard, recommended widths based on design

TABLE 8

MERGE / DIVERGE CAPACITY ANALYSIS I-75: TENNESSEE STATE LINE TO KY 876

SECT. EXITS	CROSSROAD	1994													
		2 LANES I-75/ 1 LANE RAMP		3 LANES I-75/ 1 LANE RAMP		3 LANES I-75/ 1 LANE RAMP		3 LANES I-75/ 2 LANE RAMP		3 LANES I-75/ 2 LANE RAMP		3 LANES I-75/ 2 LANE RAMP			
		MRG	DVG	MRG	DVG	MRG	DVG	MRG	DVG	MRG	DVG	MRG	DVG		
A	KY 92	E	1,836	D	1,795	C	1,135	C	1,335						
I1															
B	US 25W	D	1,679	D	1,754	D	1,455	C	1,291						
I5															
C	US 25W Corbin	F	2,140	D	1,719	D	1,455	D	1,719						
I25															
D	US 25E	F	2,679	F	2,164	F	2,079	D	1,621	F	2,297				
I29															
E	KY 192	F	2,637	F	2,178	E	1,871	D	1,612	E	1,974				
I38															
F	KY 80	F	2,078	F	2,566	C	1,344	E	1,906					B	694
I41															
G	KY 909	E	1,752	E	1,937	B	951	C	1,440						
I49															
H	US 25	D	1,744	D	1,774	B	934	C	1,304						
I59															
I	US 25 Renfro Valley	E	1,894	D	1,774	C	1,083	C	1,284						
I62															
J	KY 21	F	2,398	E	1,961	D	1,675	C	1,430						
I76															
K	KY 595	F	2,160	F	2,006	C	1,142	C	1,415						
I78															

Level of Service lower than D

TABLE 8 (cont.)

MERGE / DIVERGE CAPACITY ANALYSIS
I-75: TENNESSEE STATE LINE TO KY 876

SECT. EXITS	CROSSROAD	2015											
		3 LANES I-75/ 1 LANE RAMP		4 LANES I-75/ 1 LANE RAMP		4 LANES I-75/ 2 LANE RAMP		5 LANES I-75/ 1 LANE RAMP					
		MRG VOL	DVG VOL	MRG VOL	DVG VOL	MRG VOL	DVG VOL	MRG VOL	DVG VOL	MRG VOL	DVG VOL	MRG VOL	DVG VOL
A	KY 92	E 1,985	E 1,969	D 1,461	C 1,270	D 1,526	C 1,270	C 1,304					
B	US 25W	D 1,740	E 1,948	C 1,230	C 1,262	C 1,282	C 1,262	C 1,072					
C	US 25W Corbin	F 2,620	E 1,872	F 2,120	C 1,255	F 2,203	C 1,255	E 1,941					
D	US 25E	F 3,308	F 2,423	F 3,159	E 1,950	F 3,376	E 1,950	F 2,913	E 1,950				
E	KY 192	F 3,408	F 2,442	F 2,767	D 1,727	F 2,950	D 1,727	F 2,617					
F	KY 80	F 2,142	F 3,022	E 1,956	F 2,434	F 2,295	F 2,434	D 1,723	F 2,434				
G	KY 909	E 1,929	F 2,179	C 1,322	C 1,433	C 1,428	C 1,433	C 1,178					
H	US 25	E 1,863	E 1,941	C 1,224	C 1,146	C 1,266	C 1,146	C 1,066					
I	US 25 Renfro Valley	D 1,601	E 1,961	C 1,360	C 1,139	C 1,404	C 1,139	C 1,233					
J	KY 21	F 2,502	F 2,120	E 1,924	C 1,413	F 2,066	C 1,413	E 1,784					
K	KY 595	D 1,661	E 1,993	D 1,553	C 1,091	D 1,497	C 1,091	C 1,308					

Level of Service lower than D

TABLE 9

1994 CROSSROAD INVENTORY AND CAPACITY I-75 : TENNESSEE STATE LINE TO KY 870

CROSSROAD EXT	WEST OF I-75					EAST OF I-75					LOS	REC LOS	PRIORITY						
	DHV	%T	LW	REC LW	SW	REC SW	ROW	LOS	REC LOS	DHV				%T	LW	REC LW	SW	REC SW	ROW
KY 92 11	320	5	3.6 m (12 ft)		3.0 m (10 ft)		39.6 m (130 ft)	C	B	940	4	3.6 m (12 ft)		3.0 m (10 ft)		33.5 m (110 ft)	D	B	8
US 25W 15	470	5	3.6 m (12 ft)		3.0 m (10 ft)		48.8 m (160 ft)	C		810	5	3.6 m (12 ft)		3.0 m (10 ft)		48.8 m (160 ft)	C		10
US 25W(Corbin) 25	940	4	3.0 m (10 ft)	3.6 m (12 ft)	3.0 m (10 ft)		18.3 m (60 ft)	D	B	1140	3	3.0 m (10 ft)	3.6 m (12 ft)	3.0 m (10 ft)		18.3 m (60 ft)	E	B	1
US 25E(KY 770 29	980	3	3.6 m (12 ft)		3.0 m (10 ft)		30.5 m (100 ft)	D	C	2700	8	3.6 m (12 ft)		3.0 m (10 ft)		61.0 m (200 ft)	F	B	2
* KY 192 38	710	3	3.6 m (12 ft)		3.0 m (10 ft)		61.0 m (200 ft)	A		1770	5	3.6 m (12 ft)		3.0 m (10 ft)		61.0 m (200 ft)	E	B	7
* KY 80 41	2190	9	3.6 m (12 ft)		3.0 m (10 ft)		61.0 m (200 ft)	D	B	1790	7	3.6 m (12 ft)		3.0 m (10 ft)		61.0 m (200 ft)	C	B	6
KY 909 49	340	2	3.0 m (10 ft)		1.8 m (6 ft)	2.4 m (8 ft)	18.3 m (60 ft)	C		170	2	3.0 m (10 ft)	3.3 m (11 ft)	1.8 m (6 ft)		18.3 m (60 ft)	B		11
US 25 59	710	6	3.3 m (11 ft)	3.6 m (12 ft)	2.4 m (8 ft)		24.4 m (80 ft)	D	C	500	5	3.3 m (11 ft)	3.6 m (12 ft)	2.4 m (8 ft)		45.7 m (150 ft)	C		9
US 25(Rec. Val.) 62	920	5	3.3 m (11 ft)	3.6 m (12 ft)	2.4 m (8 ft)		36.6 m (120 ft)	E	C	890	4	3.3 m (11 ft)	3.6 m (12 ft)	2.4 m (8 ft)		36.6 m (120 ft)	D	C	5
KY 21 76	1140	4	3.6 m (12 ft)		2.7 m (9 ft)		33.5 m (110 ft)	E	C	1410	5	3.6 m (12 ft)		2.7 m (9 ft)		61.0 m (200 ft)	E	C	3
KY 595 78	300	3	2.7 m (9 ft)	3.6 m (12 ft)	0.6 m (2 ft)	2.4 m (8 ft)	13.7 m (45 ft)	C	B	560	3	2.1 m (7 ft)	3.6 m (12 ft)	0.6 m (2 ft)	3.0 m (10 ft)	12.2 m (40 ft)	D	B	4

LEGEND	
-	Four Lane Section
DHV	Daily Hourly Volume
%T	Percent Trucks (DHV)
LW	Lane Width
SW	Shoulder Width
REC	Recommended
ROW	Right of Way Width
LOS	Level of Service

criteria from the Cabinet's Design Manual are included in the crossroad inventory of Table 9.

B. LEVEL OF SERVICE

A capacity analysis was also performed for the crossroads using existing traffic volumes. The calculated levels of service are also listed in Table 9 with recommended levels given for comparison purposes. The crossroads were then assigned a priority for improvements based on capacity deficiencies, geometric deficiencies, and traffic volumes. Because capacity analysis involves the consideration of lane and shoulder widths and traffic volumes, it was given the most weight when establishing priority. The results of prioritization are listed in Table 9.

VII. ADDITIONAL INFORMATION

A. PLANNED PROJECTS

The Kentucky Transportation Cabinet has already recognized the need for widening I-75 through the project area in the Six Year Highway Plan, which includes widening of the Interstate from KY 876 (south of Richmond) to the KY 2881 overpass (north of Berea). While widening of the remainder of the route is not included in the Six Year Highway Plan, it is included in the FY 1995-2014 Statewide Transportation Plan. In addition, several crossroad projects have been outlined in the Six Year Highway Plan (see Table 10 for a summary of planned projects along the study corridor).

B. ADVANTAGE I-75

Advantage I-75 is a multi-state partnership of public and private sector interests along I-75. Its goal is to facilitate motor carrier operations in order to reduce congestion, increase efficiency, and enhance safety to all users of I-75 and its connections into Canada. This will be accomplished by allowing transponder-equipped and properly documented trucks to travel along I-75 with minimal stopping. Pre-clearance decisions at downstream stations will be based on information taken upstream and computerized checking of operation credentials in each state/province.

TABLE 10

PLANNED PROJECTS

I-75: TENNESSEE STATE LINE TO KY 876

ROUTE PROJECTS IN THE SIX YEAR HIGHWAY PLAN												
COUNTY	ROUTE	LENGTH	DESCRIPTION	SCOPE	DESIGN		RIGHT OF WAY		UTILITIES		CONSTRUCTION	
					YEAR	COST	YEAR	COST	YEAR	COST	YEAR	COST
Laurel	I-75	N/A	Advantage I-75 (also includes Scott and Kenton Counties)	IVHS							FY-95	\$1,100,000
Madison	I-75	0.5 km (0.3 miles)	Reconst. I-change at KY 876 near Richmond	Restoration Rehabilita.							FY-96	\$1,100,000
Madison	I-75	9.7 km (6.0 miles)	KY 876 to KY 2881 overpass (add lane each direction)	Major Widening			FY-94	\$421,000	FY-94	\$245,000	FY-97	\$750,000
							FY-97	\$500,000	FY-97	\$200,000	FY-96	\$5,000,000
							FY-00		FY-00		FY-00	\$22,500,000
ROUTE PROJECTS IN THE STATEWIDE TRANSPORTATION PLAN												
COUNTY	ROUTE	LENGTH	DESCRIPTION									COST (Million \$)
Whitley	I-75	46.5 km (28.9 miles)	Major widening for 2 additional lanes (4 to 6 lanes) from Tennessee State Line to US 25E at Corbin									115.6
Laurel	I-75	19.2 km (11.9 miles)	Major widening for 2 additional lanes (4 to 6 lanes) from US 25E at Corbin to KY 80 at London									47.6
Laurel	I-75	34.3 km (21.3 miles)	Major widening for 2 additional lanes (4 to 6 lanes) from KY 80 at London to US 25 N of Mt. Vernon									85.2
Rockcastle	I-75	21.6 km (13.4 miles)	Major widening for 2 additional lanes (4 to 6 lanes) from US 25 N of Mt. Vernon to KY 21 at Berea									27.2
Madison	I-75	8.0 km (5.0 miles)	Major widening for 2 additional lanes (4 to 6 lanes) from KY 21 at Berea to KY 2881 overpass									21
CROSSROAD PROJECTS IN THE SIX YEAR HIGHWAY PLAN												
COUNTY	ROUTE	LENGTH	DESCRIPTION	SCOPE	DESIGN	RIGHT OF WAY		UTILITIES		CONSTRUCTION		
Whitley	US 25W	4.0 km (2.5 miles)	Cumb. Falls Rd. reconst. from I-75 to Main St. in Corbin	Major Widening	YEAR FY-94	COST \$14,000	YEAR	COST	YEAR	COST	YEAR	COST
Rockcastle	US 25	1.3 km (0.8 miles)	Reconst. US 25 from I-75 to Mount Vernon Bypass (Sta 940 to 980)	Major Widening			FY-96	\$4,000,000	FY-97	\$700,000	FY-00	\$3,000,000
Madison	KY 595	3.4 km (2.1 miles)	I-75 to US 25 in Berea	Major Widening			FY-98	\$500,000	FY-98	\$700,000	FY-00	\$1,750,000

Advantage I-75 is an important component of the future of travel along I-75. As the widening of I-75 progresses, there are several possibilities that must be addressed in regards to the Advantage I-75 infrastructure and operations at the Laurel County weigh stations. These include: (1) the installation of mainline weigh in motion (WIM) equipment across all traffic lanes, (2) the installation of ramp WIM equipment on affected weigh station ramps, (3) the relocation of electronic readers and cabinets with their associated buried communication links, (4) the installation of mainline overhead trusses to accommodate radio antennae over each travel lane, and (5) the relocation of roadside signs associated with Advantage I-75 operations.

C. GEOTECHNICAL OVERVIEW

An overview of the geologic formations and geotechnical problems in the project area was performed by the Cabinet's Division of Materials. The complete overview is included in Appendix IV of this report.

As a result of the geotechnical overview, the following lists in order those sections which are the most economical to build with the fewest geotechnical problems:

1. MP 25-46
2. MP 74-86
3. MP 66-74
4. MP 46-66
5. MP 0-25

Milepoints 0-25 and 46-66 are about equal in number and severity of problems; however, a fiber optics telephone cable has been buried outside the right-of-way (MP 0-43). This, combined with additional right-of-way requirements to upgrade some existing sideslopes, will make MP 0-25 more expensive.

D. ENVIRONMENTAL OVERVIEW

Some environmental considerations were part of the geotechnical overview, three of which are particularly worth noting:

1. The U.S. Government has property holdings (Daniel Boone National Forest) from approximately Woods Creek Lake to Mount Vernon, milepoints 46-59.

Alternate construction techniques may be necessary to minimize the impact in the environmentally sensitive area.

2. I-75 crosses 29 blueline streams where additional disturbance may be required, and attempts should be made to minimize the impacts by appropriate methods such as limited channel changing, erosion control and fish habitat improvement structures. A blueline stream is defined as a river, creek, branch, etc., identified on a NGS topographical map with a solid or broken blue line.
3. Karst drainage systems are present from MP 58-66.5. Treatment of sinkholes which are not to be used for drainage should follow "Special Provision 91, Treatment of Sinkholes." Sinkholes which are not to be utilized for drainage should be investigated to determine if they may adversely impact others.

VIII. ADDITIONAL ACCESS

The Cabinets for Tourism and Economic Development, the affected Area Development Districts, and the affected Highway Department Districts, were contacted for input on this report. Based on these contacts, six sites for potential new interchanges were identified. Detailed studies of these locations as potential new access points may be conducted later. It was determined that there is an interest in new interchanges at the following locations:

ROUTE	MILEPOINT	COUNTY	IDENTIFYING	
			AGENCY	REASON
KY 312	27.442	Whitley	District 11	Corbin Tourism Ind. Park
KY 552	31.853	Laurel	CVADD*	Economic Development
New Route	33.5	Laurel	District 11	Proposed Industrial Park
US 25	45.901	Laurel	CVADD*	Economic Development
KY 1505	68.314	Rockcastle	CVADD*	Economic Development
Duncannon Rd.	82.930	Madison	District 7	Industrial Development and
			BGADD**	Improved Access for Bluegrass Army Depot

* Cumberland Valley Area Development District

** Bluegrass Area Development District

IX. RECOMMENDATIONS

This study recommends the widening of Interstate 75 to a six-lane facility from the Tennessee state line to KY 876 south of Richmond, based on the following sequence (also shown in Table 7 and Exhibit 2):

Priority	Section	Milepoints	Length	Cost
1	KY 192 to KY 80	38 to 41	4.1 km	\$7,750,000
2	KY 595 to KY 876	78 to 87	15.6 km	\$30,600,000
3	US 25E to KY 192	29 to 38	15.0 km	\$34,050,000
4	KY 21 to KY 595	76 to 78	3.1 km	\$5,500,000
5a	US 25W to US 25E	25 to 29	6.8 km	\$17,200,000
5b	KY 80 to KY 909	41 to 49	13.6 km	\$24,850,000
5c	US 25 to KY 21	62 to 76	21.7 km	\$39,000,000
6a	KY 909 to US 25	49 to 59	15.8 km	\$33,400,000
6b	US 25 to US 25	59 to 62	4.9 km	\$9,300,000
7a	Tenn. SL to KY 92	0 to 11	17.0 km	\$39,950,000
7b	KY 92 to US 25W	11 to 15	7.9 km	\$22,000,000
8	US 25W to US 25W	15 to 25	14.8 km	\$26,550,000

Other recommendations are as follows and are described in more detail in the following paragraphs:

- Analysis for the need of truck climbing lanes be conducted in the design of the current recommended lane additions.
- Exit 29 (US 25E in Corbin) be analyzed by the Division of Traffic for possible remedial actions for this high accident location.
- Replacement of the bridges over the Laurel and Cumberland Rivers.
- Incorporate needs identified through Advantage I-75 in future design processes.
- Interchange Justification Studies be conducted at Duncannon Road in Madison County and KY 312 in Whitley County.

- Update this report in four to six years.

The capacity analysis was used as the basic criteria for priority ranking. Analysis for the addition of truck climbing lanes to improve the Level of Service should be considered in the design phase.

Since no roadway sections exhibited an excessively high Critical Rate Factor, accident data did not affect the prioritization for widening. Likewise, the cost estimates had little effect on the priority order.

I-75 in the vicinity of Exit 29 (US 25E at Corbin) exhibits a Critical Rate Factor greater than 1.00, future improvements at this interchange may be necessary. However, the specific nature of these improvements is beyond the scope of this report at present.

The proposed widening strategy includes the replacement of the non-redundant steel girder bridges over the Cumberland and Laurel Rivers with new six-lane structures. These structures are recommended due to the relatively short useful lives of the current bridges and the inevitability of the widening of Interstate 75 along the study corridor.

Although capacity analysis was performed on the crossroads, specific improvements at these locations were not considered in this report. Nevertheless, a prioritized list for general improvements to the crossroads has been included in Table 9 and are shown in Exhibit 2.

This report recommends that funding be scheduled in the next Six-Year Highway Plan (FY 1997-2002) for an Interchange Justification Study for the proposed interchanges at Duncannon Road in Madison County and KY 312 in Whitley County. The remaining four proposed interchanges should be reevaluated in a future update of this report to determine if additional study is warranted.

This report recommends lane additions in the median as a practical, cost-effective means of improving traffic operations on this segment of I-75. As Table 7 illustrates, the studied portion of I-75 is currently operating at LOS D to F. Two additional lanes in the median will improve to an initial LOS to B to C, a substantial

improvement. However, by the design year 2015, operation will be back to LOS D to F. Obviously, the addition of two more lanes is only "buying time." In order to maintain the integrity of the interstate system with acceptable operating conditions, additional improvements will be needed. Therefore, it is recommended that this report be updated in four to six years with policy direction from the Cabinet to consider additional widening which would require additional right-of-way, and to identify other feasible means of dealing with some of the capacity problems on the interstate. Some concerns which will need to be addressed are:

1. Should the Cabinet continue to strive for a design year LOS of B for rural interstates, or can a lower level of service be accepted?
2. When adding the lanes in the median, if current standards dictate modifying the outside shoulders, ditches, or slopes, requiring additional right-of-way, should the fourth lane in each direction be added at the same time?
3. What is a practical limit for lane additions before the Cabinet starts considering ways to reduce traffic on or divert traffic from I-75?

As part of this update, the following items will also be addressed:

- Identification and scheduling of specific needs associated with Advantage I-75.
- Economic and transportation operations analysis to establish the need and scheduling for proposed interchanges.
- Review crossroads to identify, justify, prioritize, and schedule needs based on economic and transportation operations criteria.

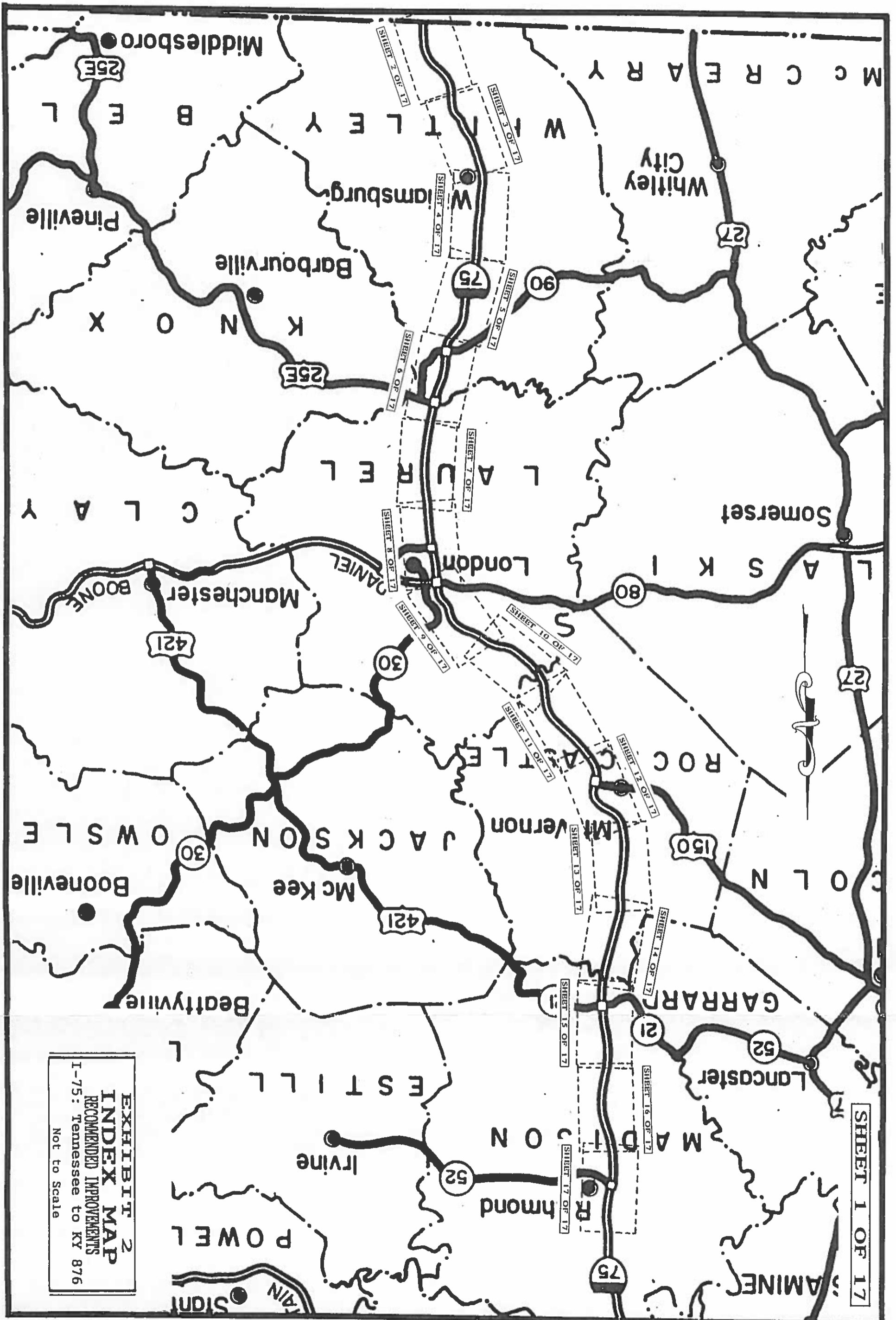
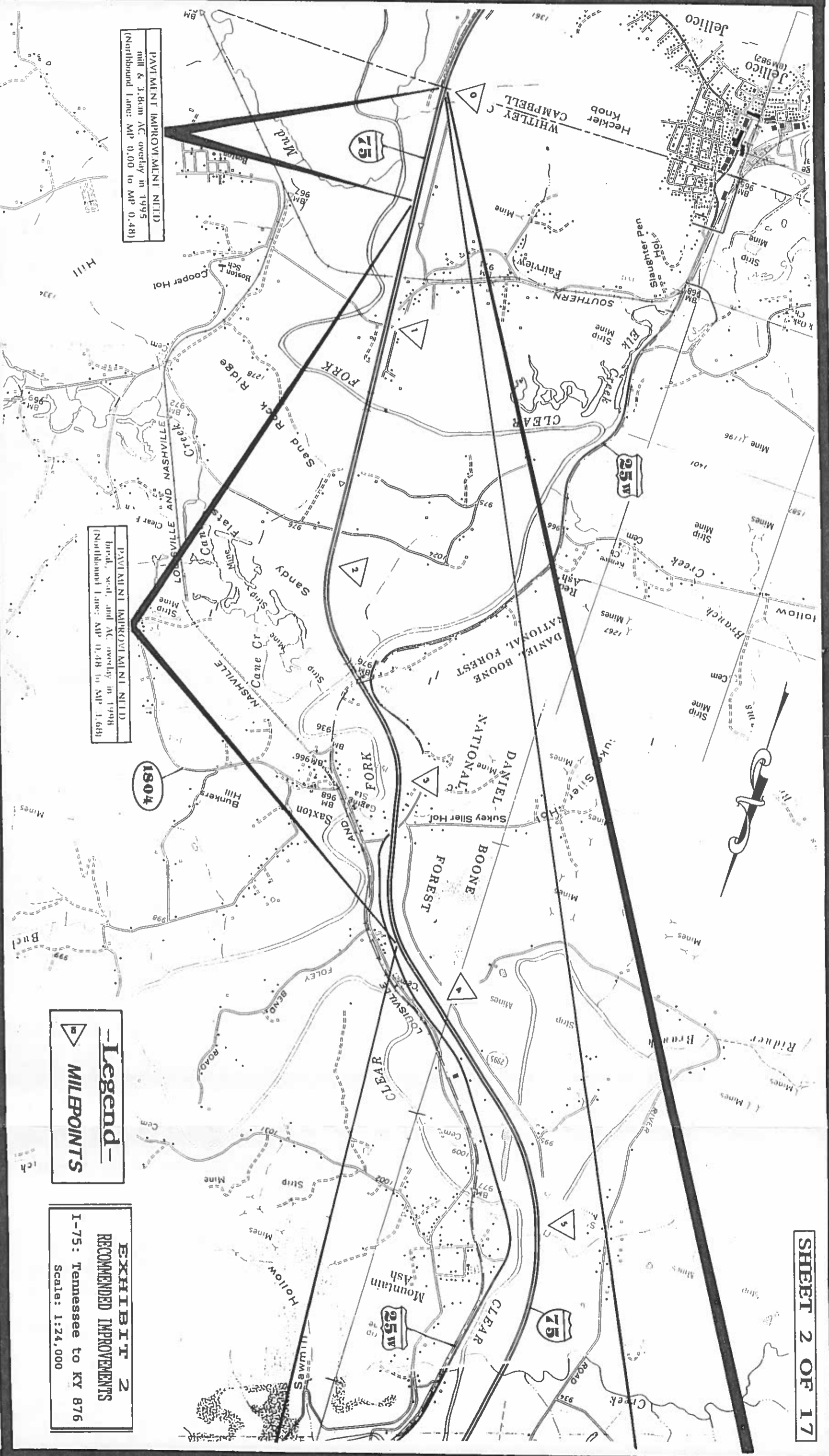


EXHIBIT 2
 INDEX MAP
 RECOMMENDED IMPROVEMENTS
 I-75: Tennessee to KY 876
 Not to Scale



PAVIMENT IMPROVEMENTS
 mill & 3.8cm AC overlay in 1995
 (Northbound Lane: MP 0.00 to MP 0.48)

PAVIMENT IMPROVEMENTS
 brock, seal, and AC overlay in 1998
 (Northbound Lane: MP 0.48 to MP 1.68)

Legend
 ▲ MILEPOINTS

EXHIBIT 2
RECOMMENDED IMPROVEMENTS
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SECTION A

SECTION A
 Tennessee State Line - EXIT 11
 Length 17.0 km
 Widening Priority (3-lanes) 7
 LOS (1994) after widening B
 LOS (2015) after widening D
 EST. COST = \$39,950,000

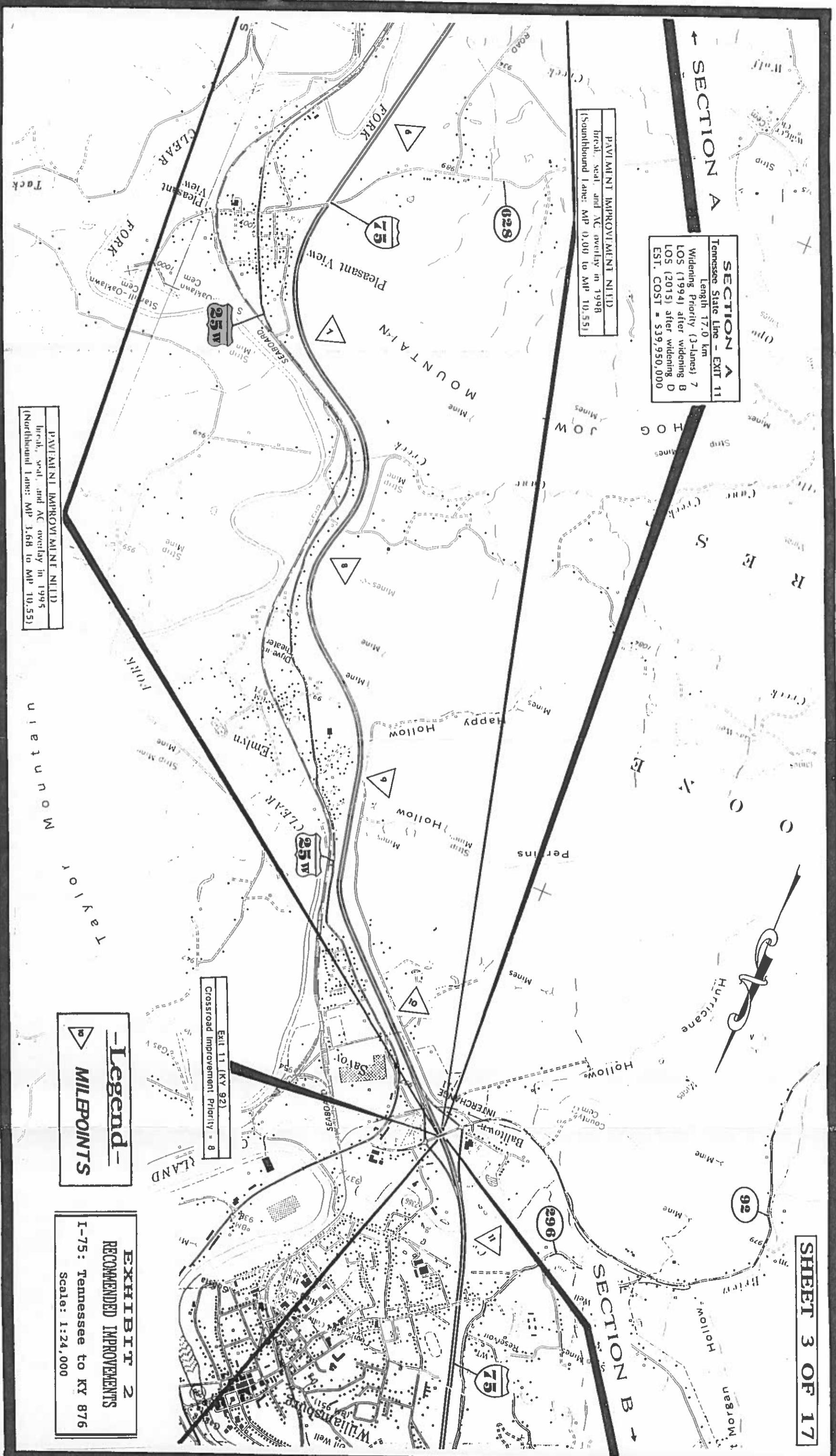
PAVIMENT IMPROVEMENT NEEDED
 break, seal, and AC overlay in 1998
 Southbound Lane: MP 0.00 to MP 10.551

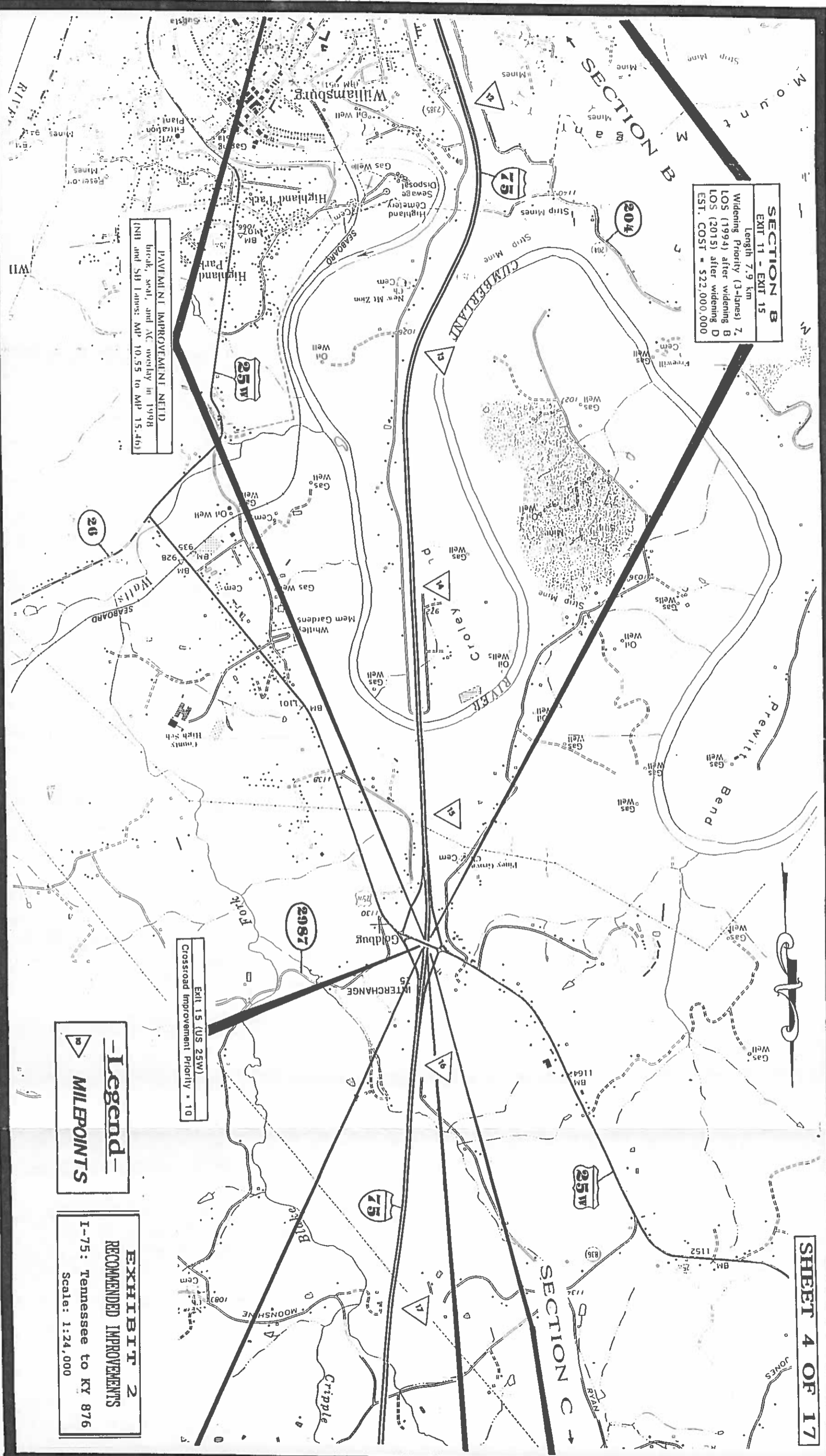
PAVIMENT IMPROVEMENT NEEDED
 break, seal, and AC overlay in 1995
 Northbound Lane: MP 3.68 to MP 10.551

Legend
 MILEPOINTS

EXHIBIT 2
 RECOMMENDED IMPROVEMENTS
 I-75: Tennessee to KY 876
 Scale: 1:24,000

Exit 11 (KY 92)
 Crossroad Improvement Priority = 8





SECTION B
 EXIT 11 - EXIT 15
 Length 7.9 km
 Widening Priority (3-lanes) 7,
 LOS (1994) after widening B
 LOS (2015) after widening D
 EST. COST = \$22,000,000

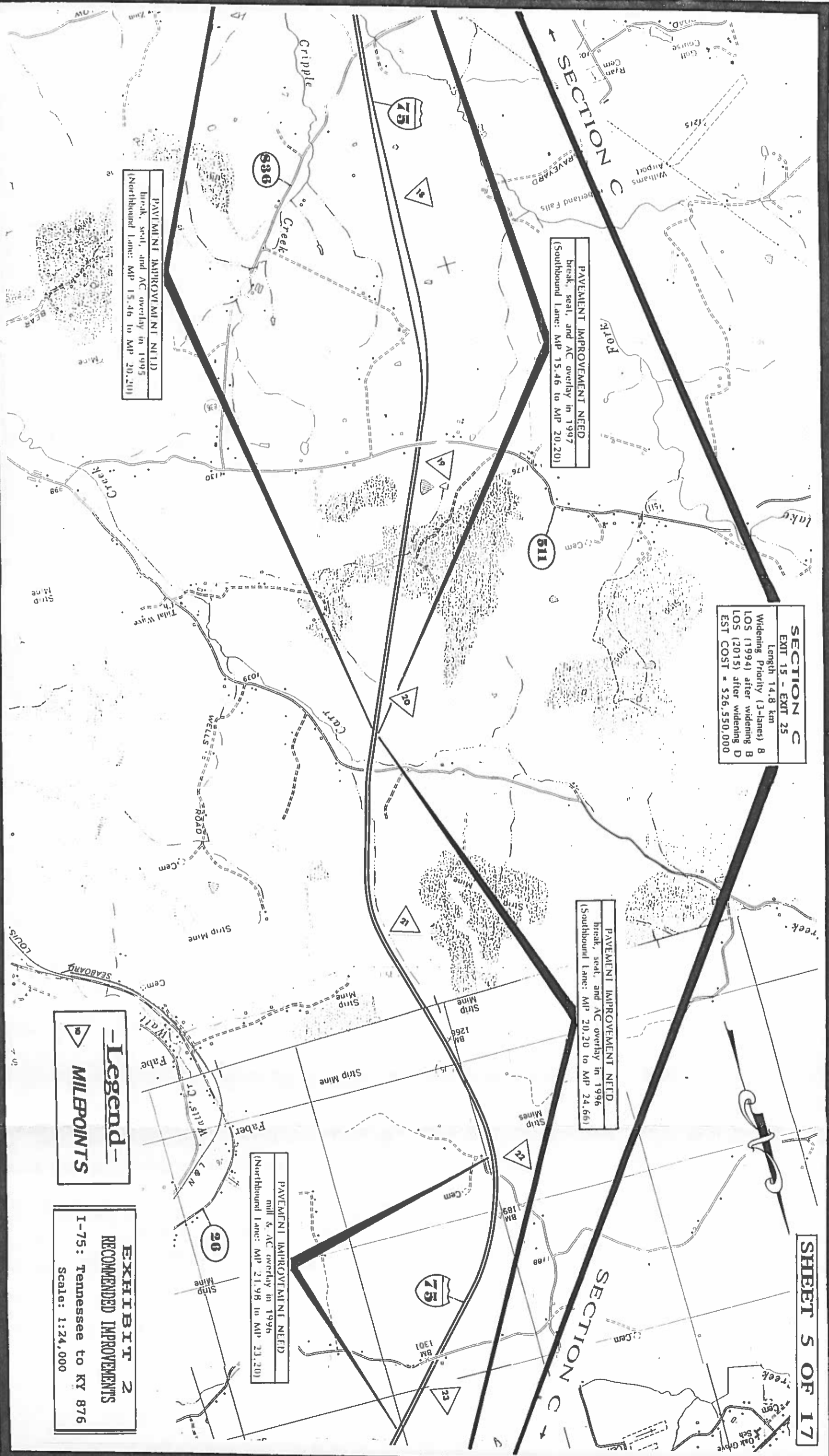
PAVEMENT IMPROVEMENT NEEDED
 break, seal, and AC overlay in 1998
 (NH and SH lanes: MP 10.55 to MP 15.40)

Exit 15 (US 25W)
 Crossroad improvement Priority = 10

Legend
 MILEPOINTS

EXHIBIT 2
RECOMMENDED IMPROVEMENTS
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 4 OF 17



SECTION C
 EXIT 15 - EXIT 25
 Length 14.8 km
 Widening Priority (3-lanes) B
 LOS (1994) after widening B
 LOS (2015) after widening D
 EST COST = \$26,550,000

PAVEMENT IMPROVEMENT NEEDED
 break, seal, and AC overlay in 1997
 (Southbound Lane: MP 15.46 to MP 20.20)

PAVEMENT IMPROVEMENT NEEDED
 break, seal, and AC overlay in 1996
 (Southbound Lane: MP 20.20 to MP 24.66)

PAVEMENT IMPROVEMENT NEEDED
 mill & AC overlay in 1996
 (Northbound Lane: MP 21.98 to MP 23.20)

PAVEMENT IMPROVEMENT NEEDED
 break, seal, and AC overlay in 1995
 (Northbound Lane: MP 15.46 to MP 20.20)

Legend
 MILPOINTS

EXHIBIT 2
RECOMMENDED IMPROVEMENTS
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 5 OF 17

SECTION D
 EXIT 25 - EXIT 29
 Length 6.8 km
 Widening Priority (3-lanes) B
 LOS (1994) after widening C
 LOS (2015) after widening D
 EST. COST = \$17,200,000

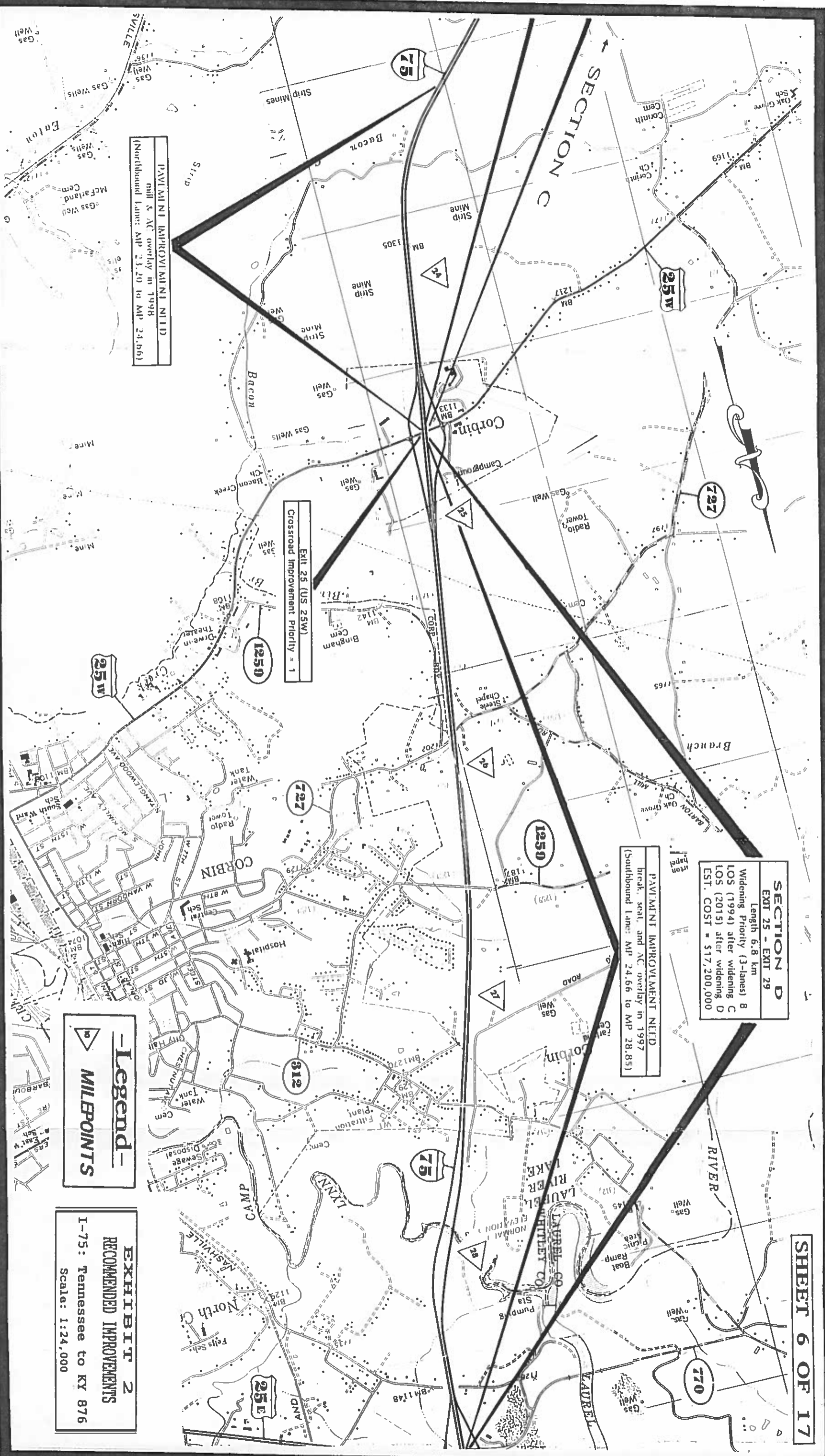
PAVIMENT IMPROVEMENT NEED
 break, seal, and AC overlay in 1997
 (Southbound Lane: MP 24.66 to MP 28.85)

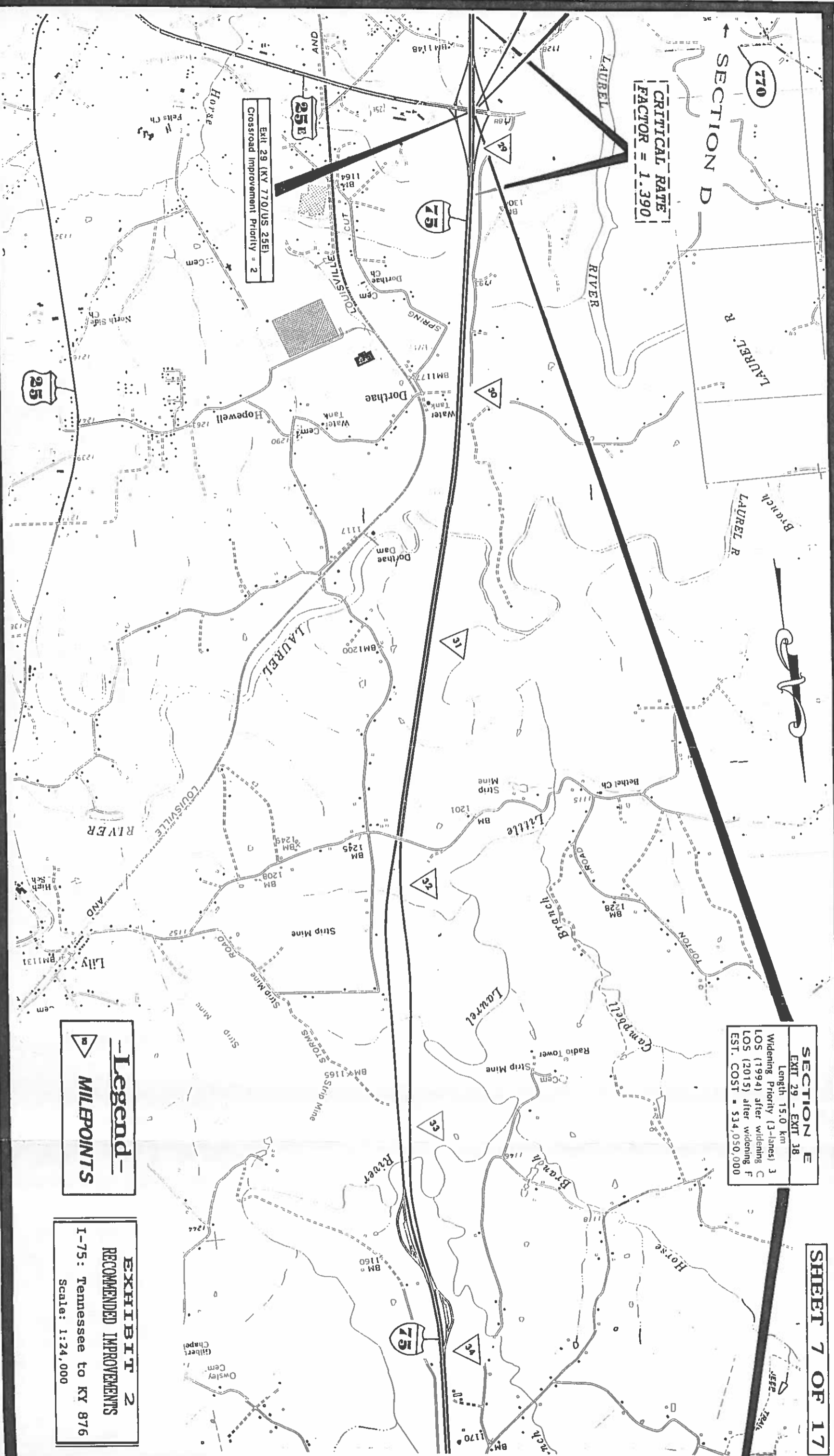
EXIT 25 (US 25W)
 Crossroad Improvement Priority = 1

PAVIMENT IMPROVEMENT NEED
 mill & AC overlay in 1998
 (Northbound Lane: MP 23.20 to MP 24.66)

Legend
 MILPOINTS

EXHIBIT 2
 RECOMMENDED IMPROVEMENTS
 I-75: Tennessee to KY 876
 Scale: 1:24,000





**CRITICAL RATE
FACTOR = 1.390**

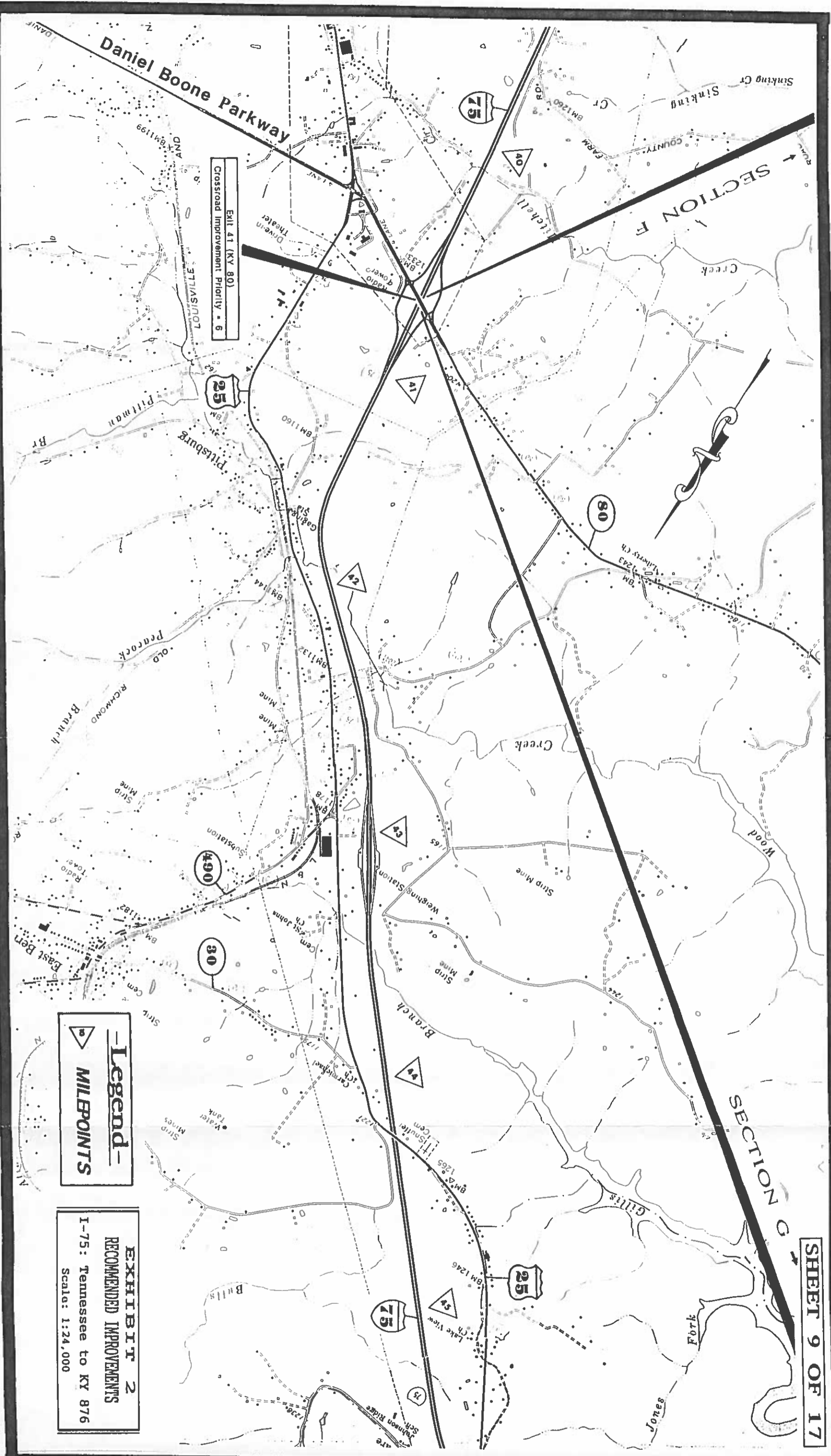
**EXIT 29 (KY 770/US 25E)
Crossroad Improvement Priority = 2**

SECTION E
EXIT 29 - EXIT 38
Length 15.0 Km
Widening Priority (3-lanes) 3
LOS (1994) after widening C
LOS (2015) after widening F
EST. COST = \$34,050,000

Legend -
MILEPOINTS

EXHIBIT 2
RECOMMENDED IMPROVEMENTS
I-75: Tennessee to KY 876
Scale: 1:24,000

SHEET 7 OF 17



Exit 41 (KY 90)
 Crossroad Improvement Priority = 6

Legend
 MILEPOINTS

EXHIBIT 2
 RECOMMENDED IMPROVEMENTS
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 9 OF 17

SECTION C
 EXIT 41 - EXIT 49
 Length 13.6 km
 Widening Priority (3-lanes) 5
 LOS (1994) after widening C
 LOS (2015) after widening E
 EST. COST = 524,850,000

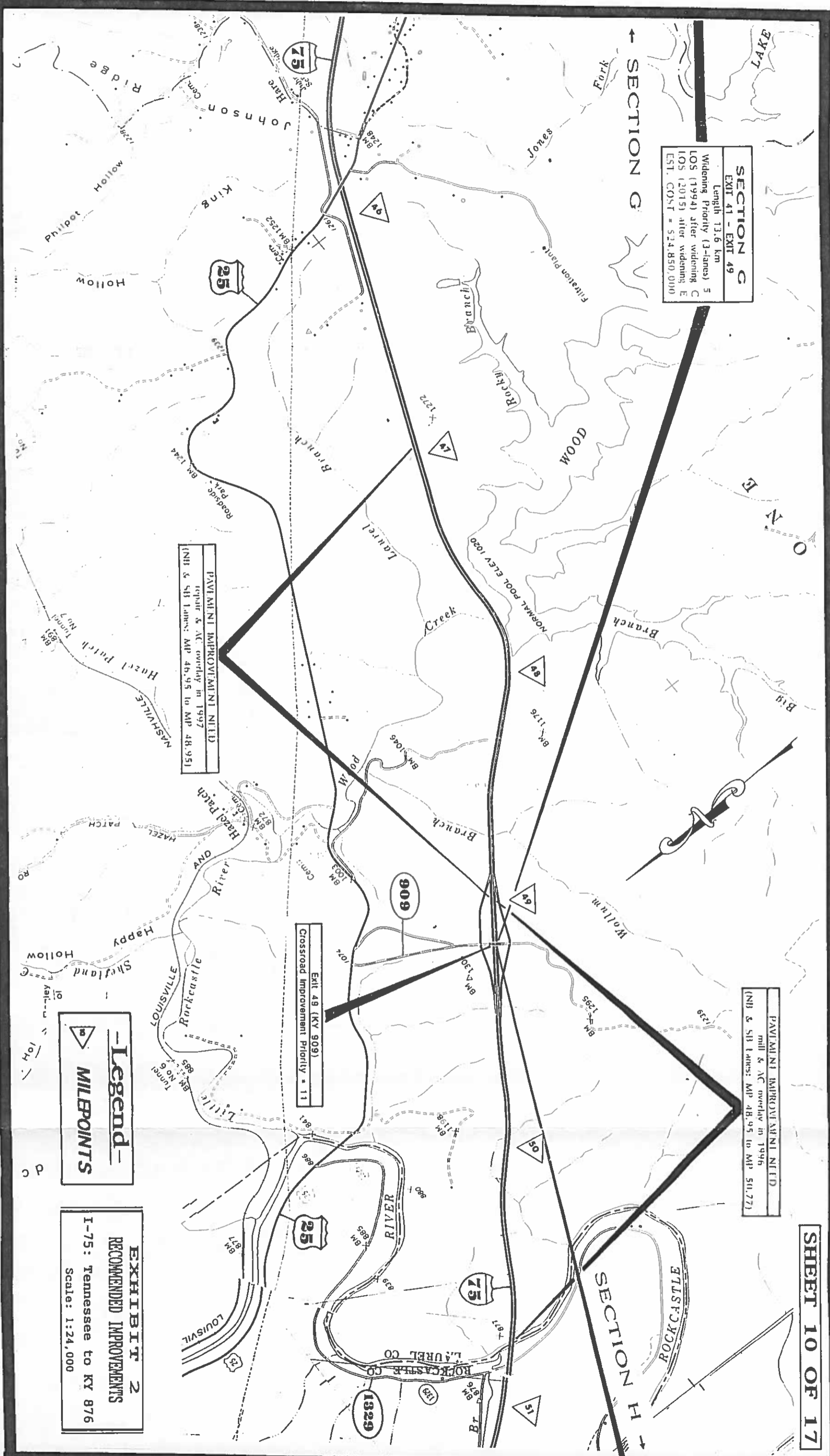
PAVIMENT IMPROVEMENT NEEDED
 repair & AC overlay in 1997
 (NB & SB Lanes: MP 48.95 to MP 48.95)

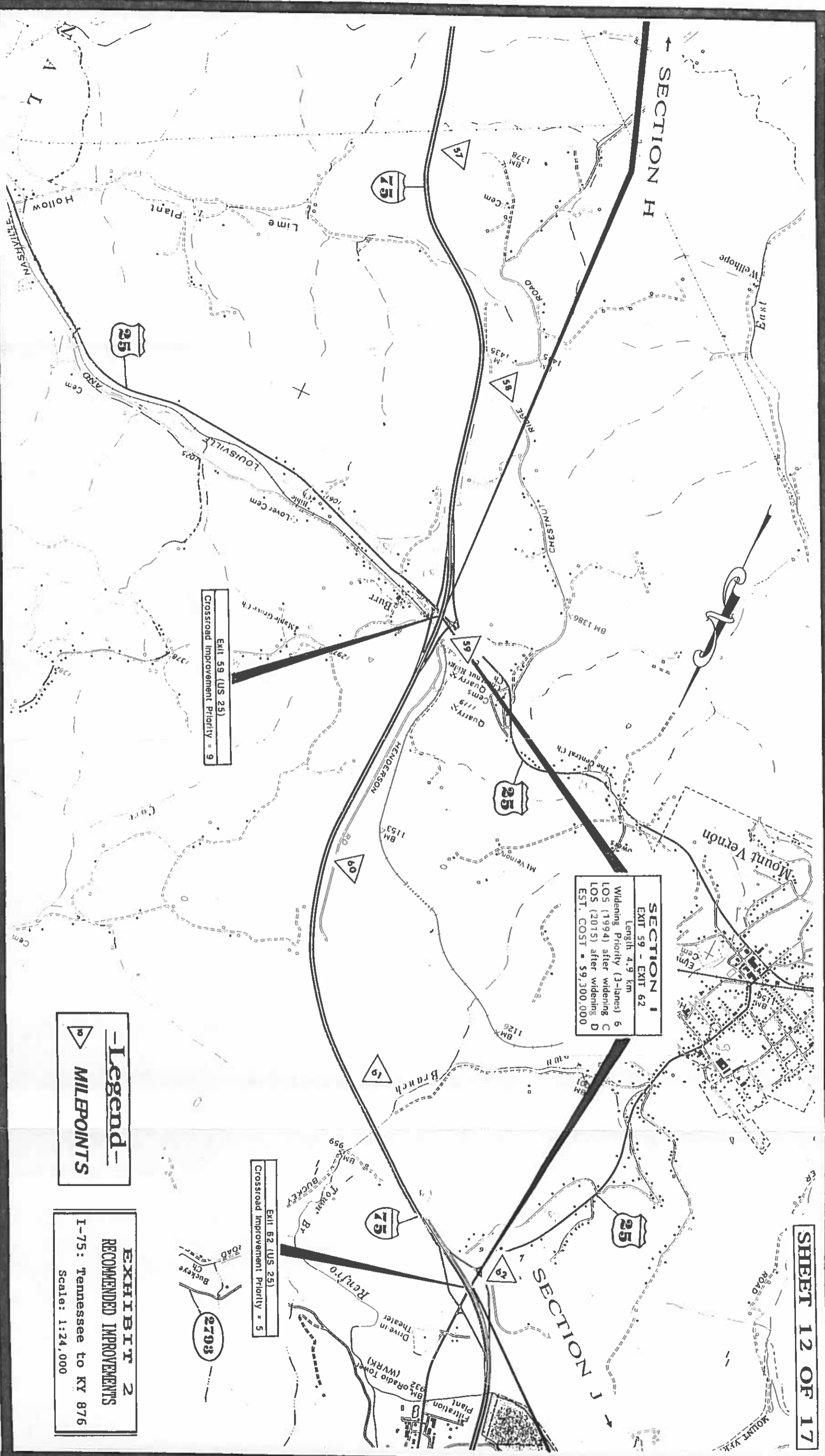
PAVIMENT IMPROVEMENT NEEDED
 mill & AC overlay in 1996
 (NB & SB Lanes: MP 48.95 to MP 50.77)

Exit 49 (KY 909)
 Crossroad Improvement Priority = 11

-Legend-
 MILEPOINTS

EXHIBIT 2
 RECOMMENDED IMPROVEMENTS
 I-75: Tennessee to KY 876
 Scale: 1:24,000





SECTION H

SECTION I
 EXIT 59 - EXIT 62
 Length 4.9 km
 Widening Priority (3-lanes) 6
 LOS (1994) after widening C
 LOS (2015) after widening D
 EST. COST = \$9,300,000

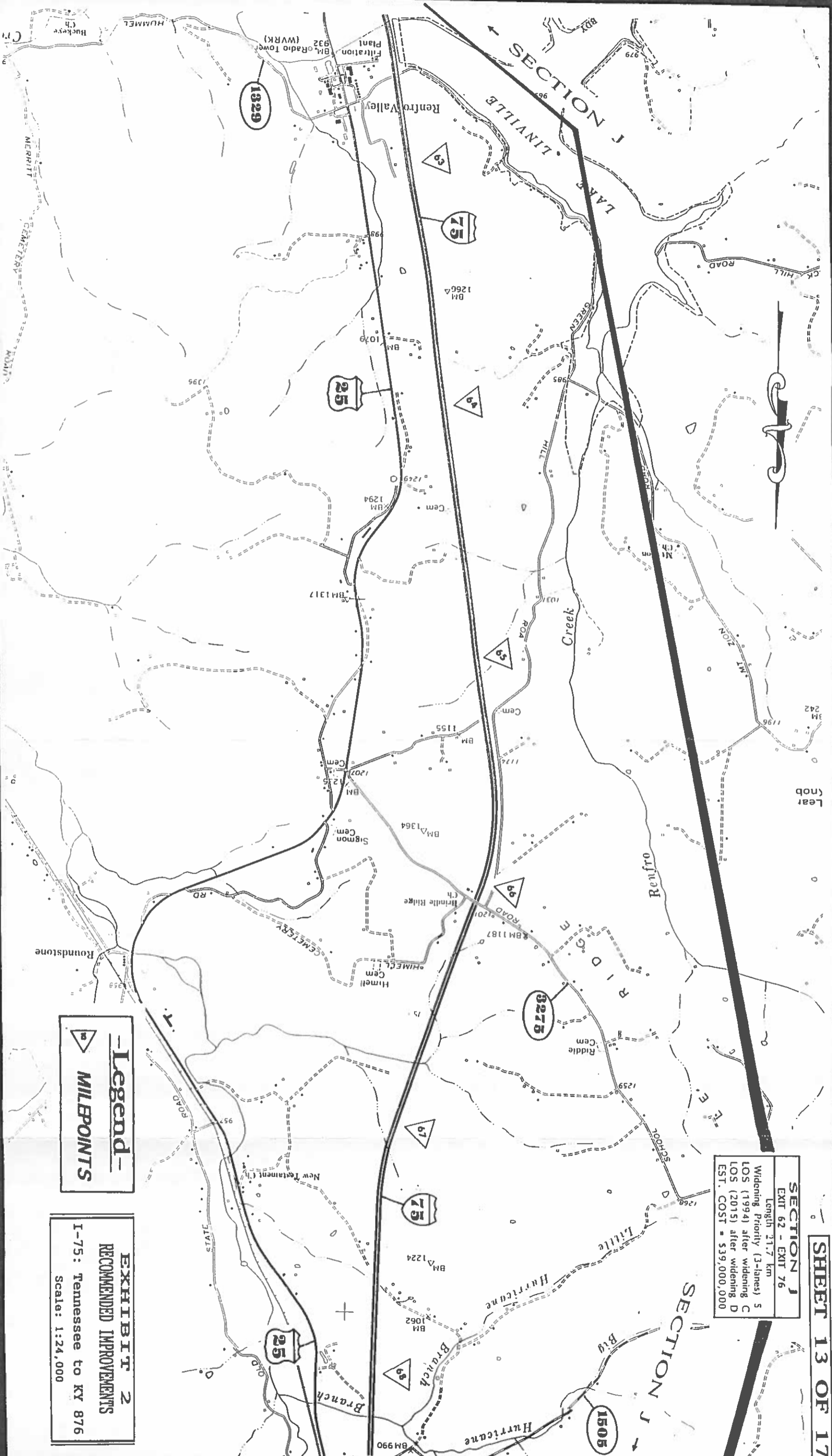
EXIT 59 (US 25)
 Crossroad Improvement Priority = 9

EXIT 62 (US 25)
 Crossroad Improvement Priority = 5

Legend
 MILEPOINTS

EXHIBIT 2
RECOMMENDED IMPROVEMENTS
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 12 OF 17

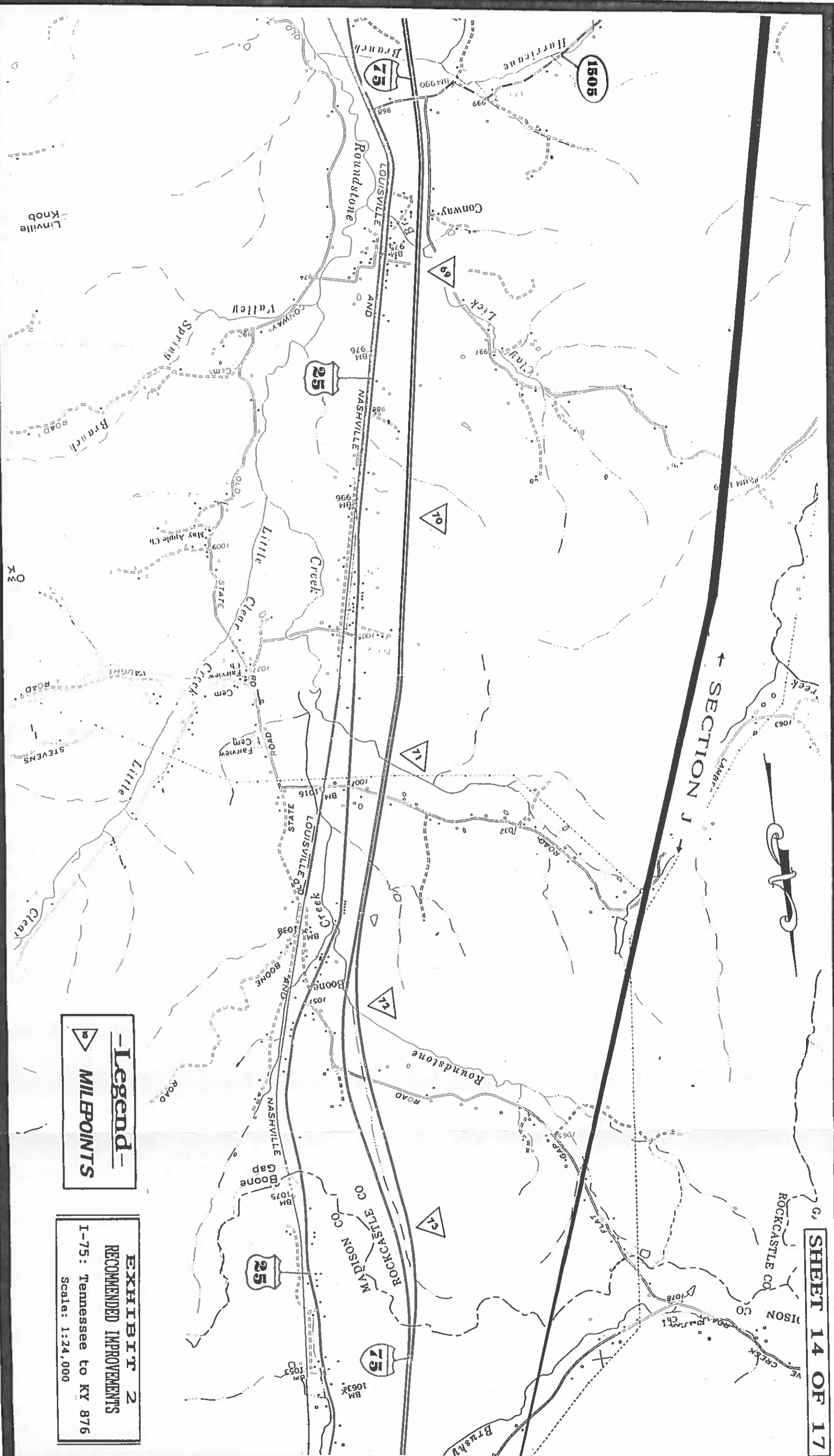


SHEET 13 OF 17

SECTION J
 EXIT 62 - EXIT 76
 Length 31.7 km
 Widening Priority (3-lanes) S
 LOS (1994) after widening C
 LOS (2015) after widening D
 EST. COST = \$39,000,000

Legend
 MILEPOINTS

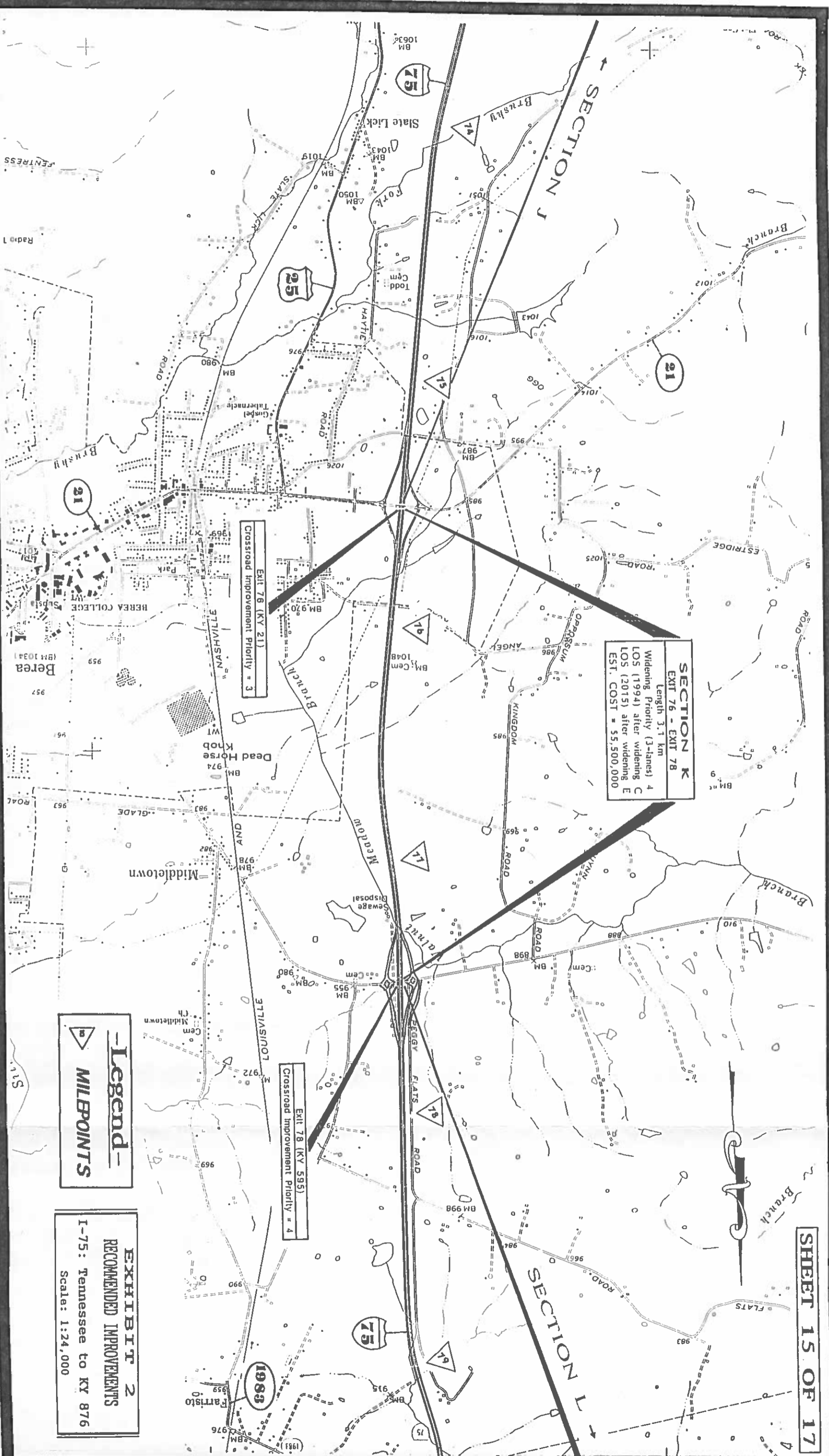
EXHIBIT 2
 RECOMMENDED IMPROVEMENTS
 I-75: Tennessee to KY 876
 Scale: 1:24,000



SHEET 14 OF 17

Legend
 ▲ MILEPOINTS

EXHIBIT 2
RECOMMENDED IMPROVEMENTS
 I-75: Tennessee to KY 876
 Scale: 1:24,000



SECTION K
 EXIT 76 - EXIT 78
 Length 3.1 km
 Widening Priority (3-lanes) 4
 LOS (1994) after widening C
 LOS (2015) after widening E
 EST. COST = \$55,500,000

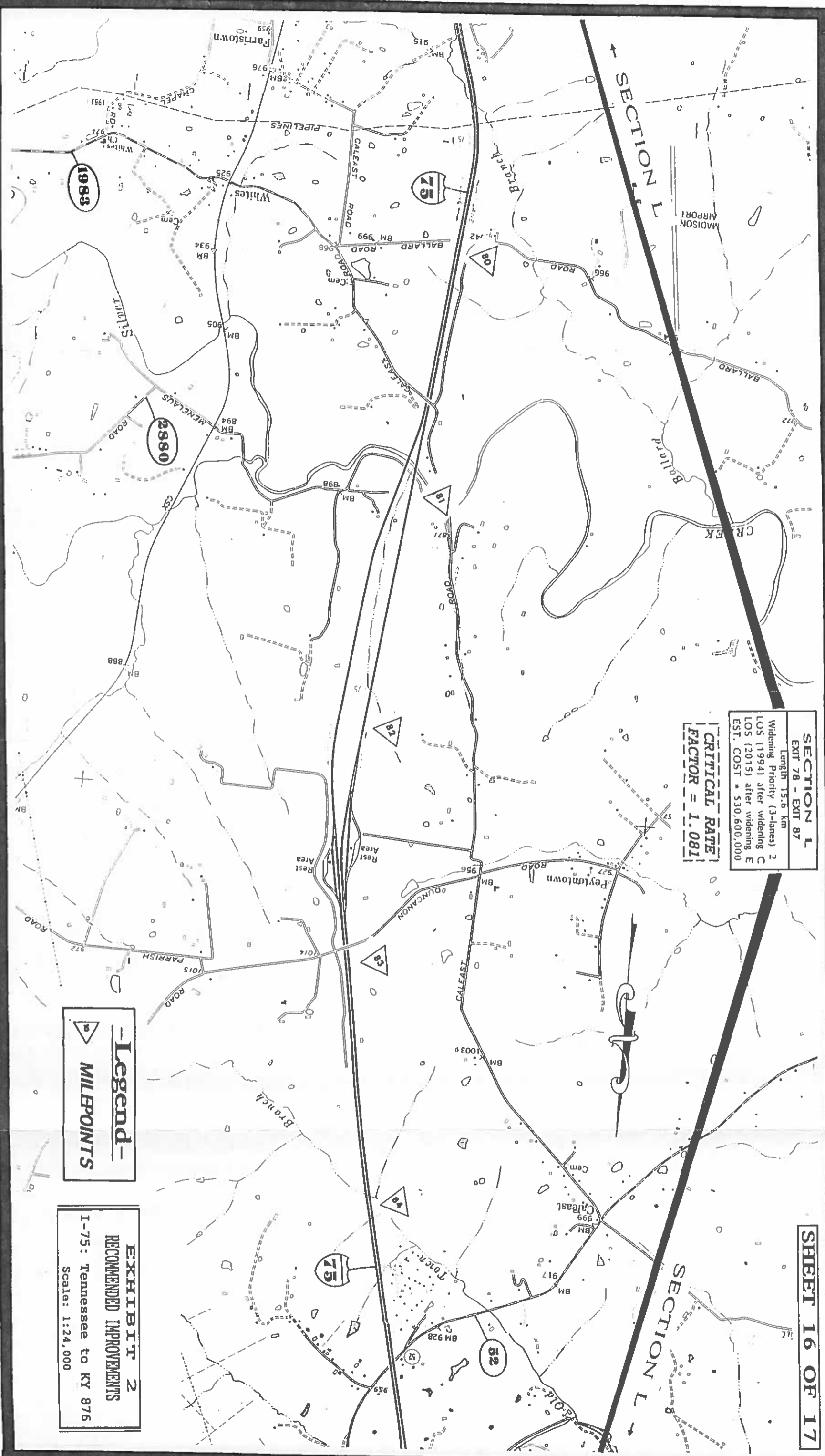
EXIT 76 (KY 21)
 Crossroad Improvement Priority = 3

EXIT 78 (KY 595)
 Crossroad Improvement Priority = 4

Legend
 MILEPOINTS

EXHIBIT 2
RECOMMENDED IMPROVEMENTS
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 15 OF 17



SECTION 1
 EXIT 78 - EXIT 87
 Length 15.6 km
 Widening Priority (3-lanes) 2
 LOS (1994) after widening C
 LOS (2015) after widening E
 EST. COST = \$30,600,000

CRITICAL RATE
FACTOR = 1.081

Legend
 MILEPOINTS

EXHIBIT 2
RECOMMENDED IMPROVEMENTS
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 16 OF 17

SECTION 1

Legend

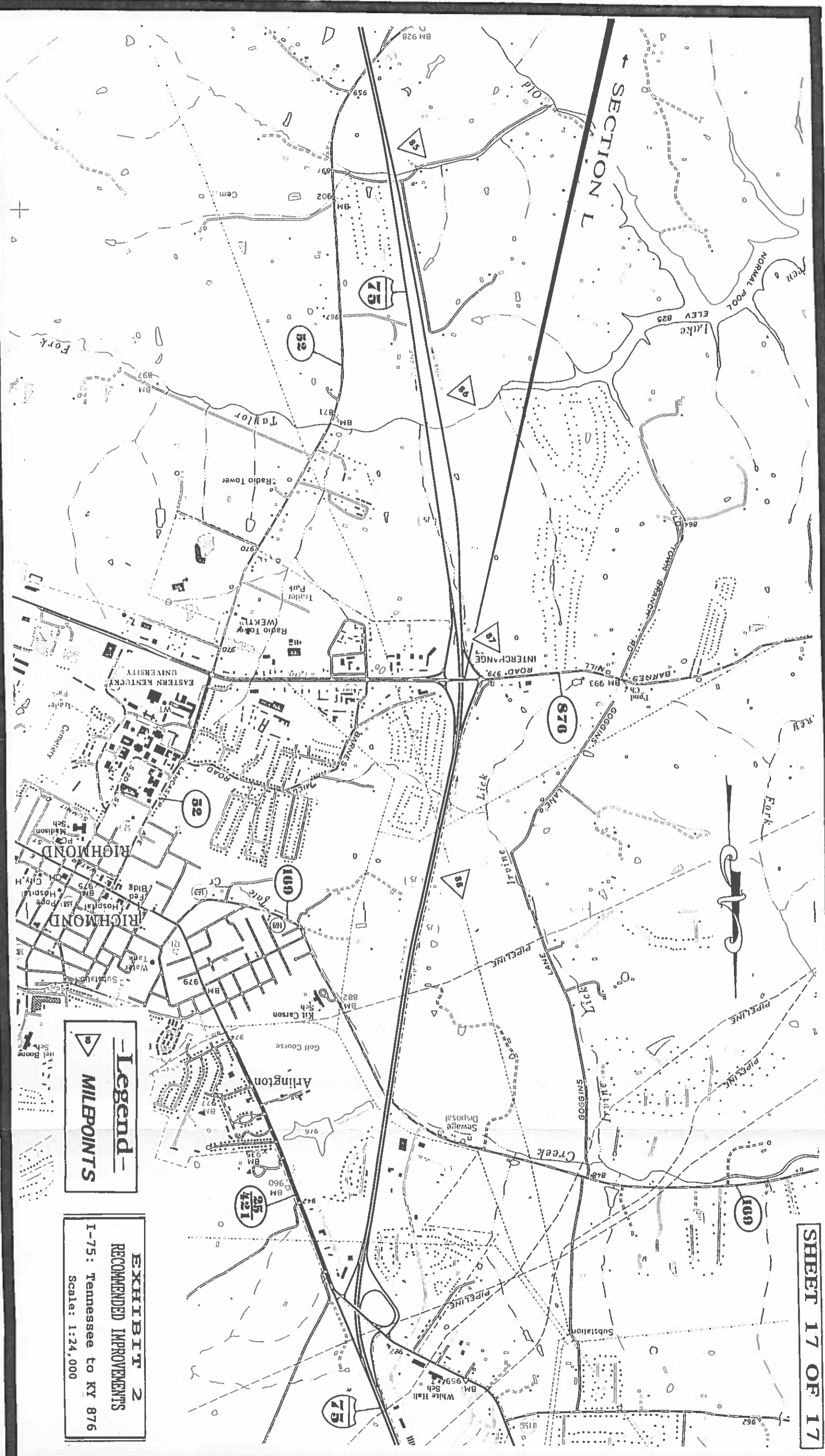
MILEPOINTS

EXHIBIT 2

RECOMMENDED IMPROVEMENTS

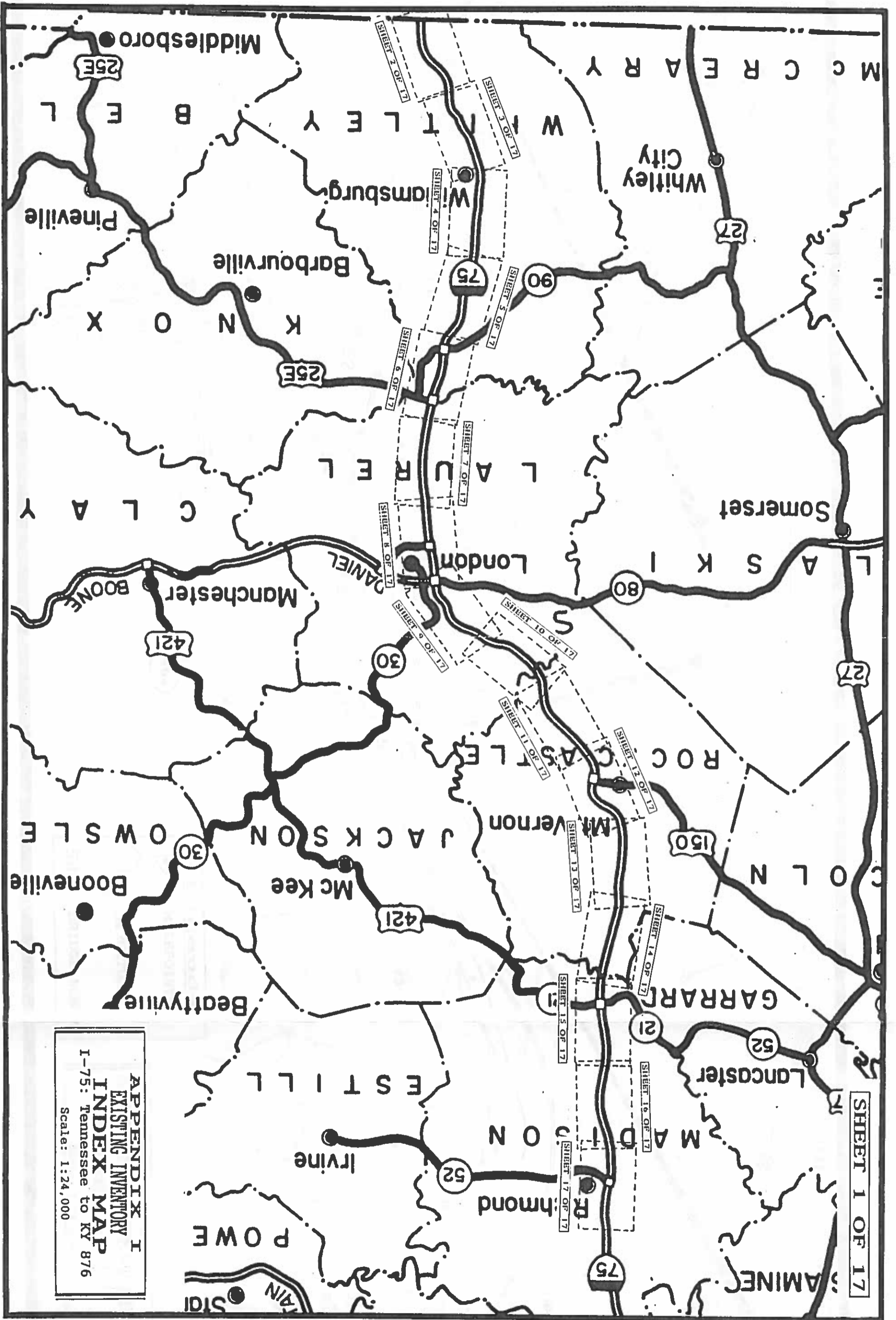
I-75: Tennessee to KY 876

Scale: 1:24,000



APPENDIX I

EXISTING INVENTORY FOR I-75

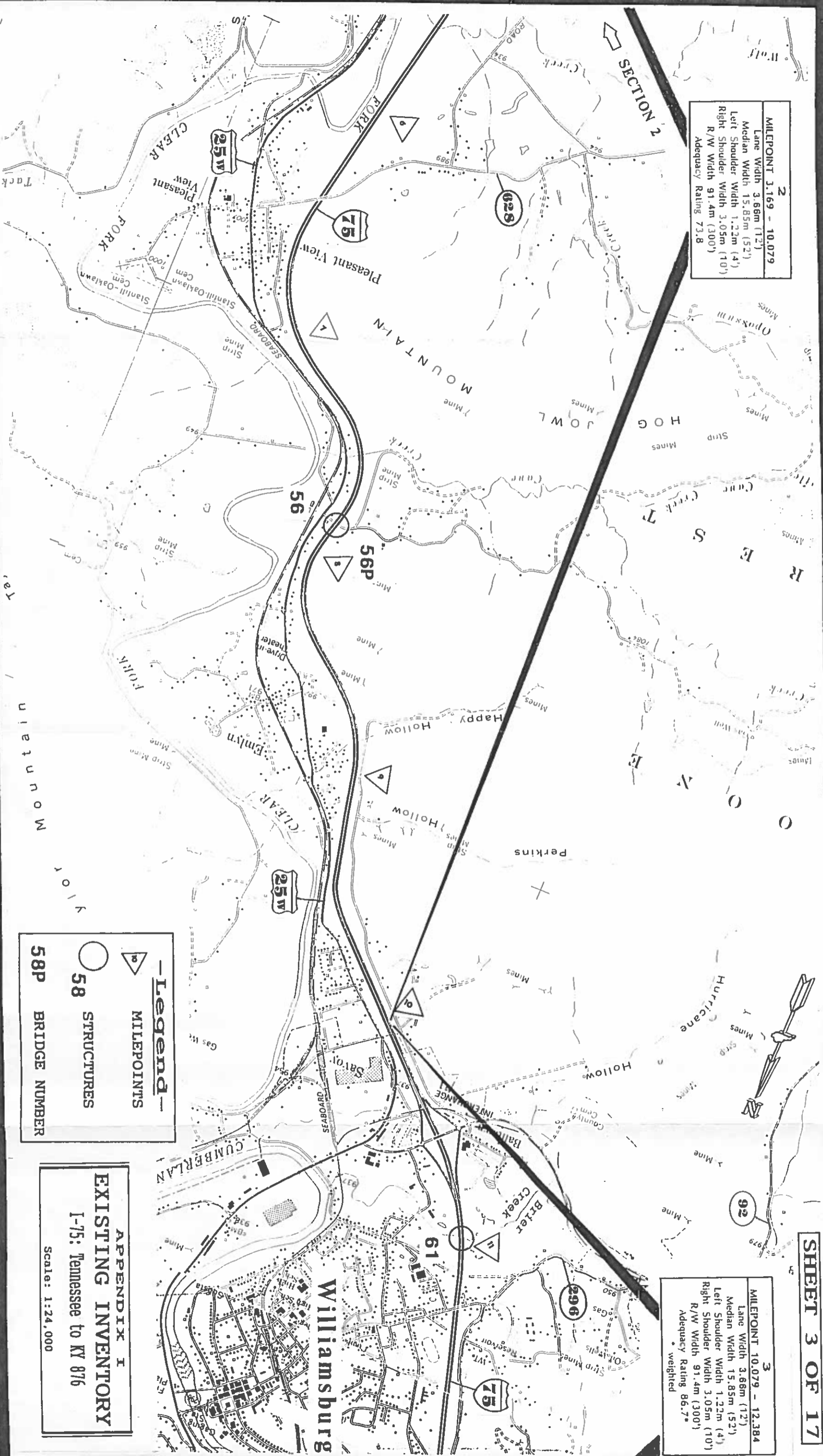


APPENDIX I
 EXISTING INVENTORY
 INDEX MAP
 I-75: Tennessee to KY 876
 Scale: 1:24,000

2	MILEPOINT 3.169 - 10.079
Lane Width 3.66m (12')	
Median Width 15.85m (52')	
Left Shoulder Width 1.22m (4')	
Right Shoulder Width 3.05m (10')	
R/W Width 91.4m (300')	
Adequacy Rating 73.8	

3	MILEPOINT 10.079 - 12.384
Lane Width 3.66m (12')	
Median Width 15.85m (52')	
Left Shoulder Width 1.22m (4')	
Right Shoulder Width 3.05m (10')	
R/W Width 91.4m (300')	
Adequacy Rating 86.7*	

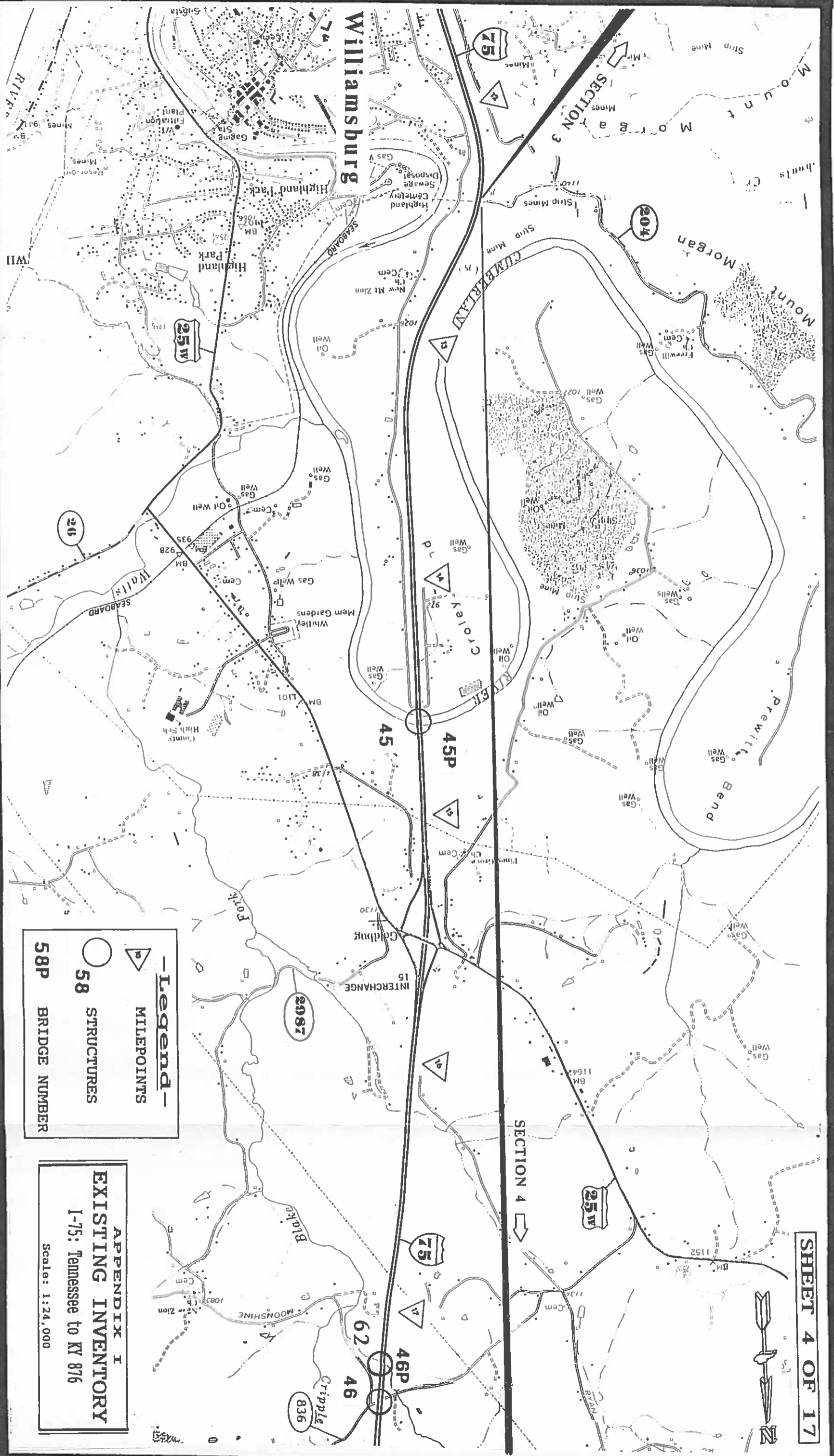
SHEET 3 OF 17



Legend

	MILEPOINTS
	STRUCTURES
58BP	BRIDGE NUMBER

APPENDIX I
EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000



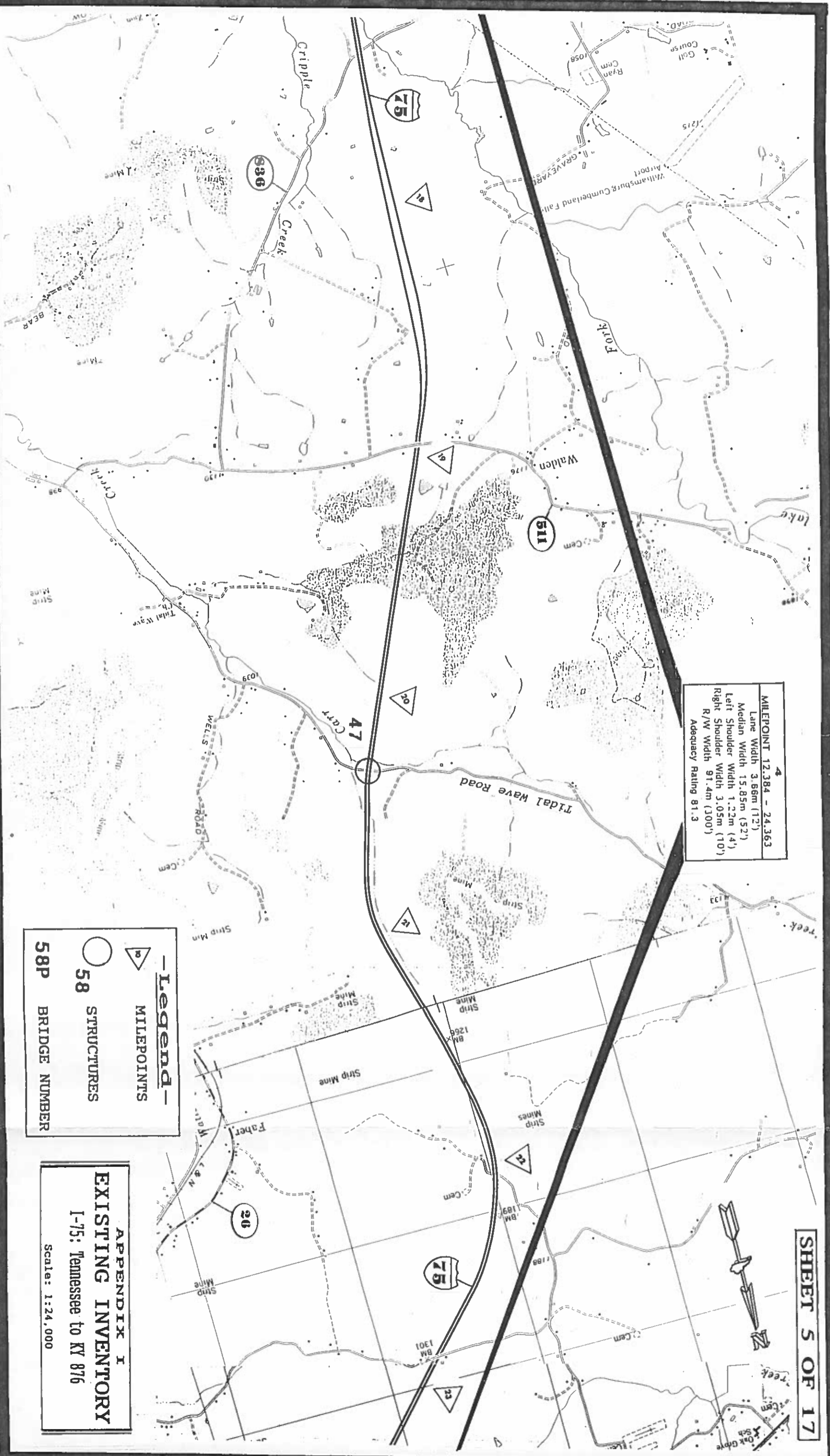
Legend

- MILEPOINTS
- STRUCTURES
- BRIDGE NUMBER

APPENDIX I
EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 4 OF 17





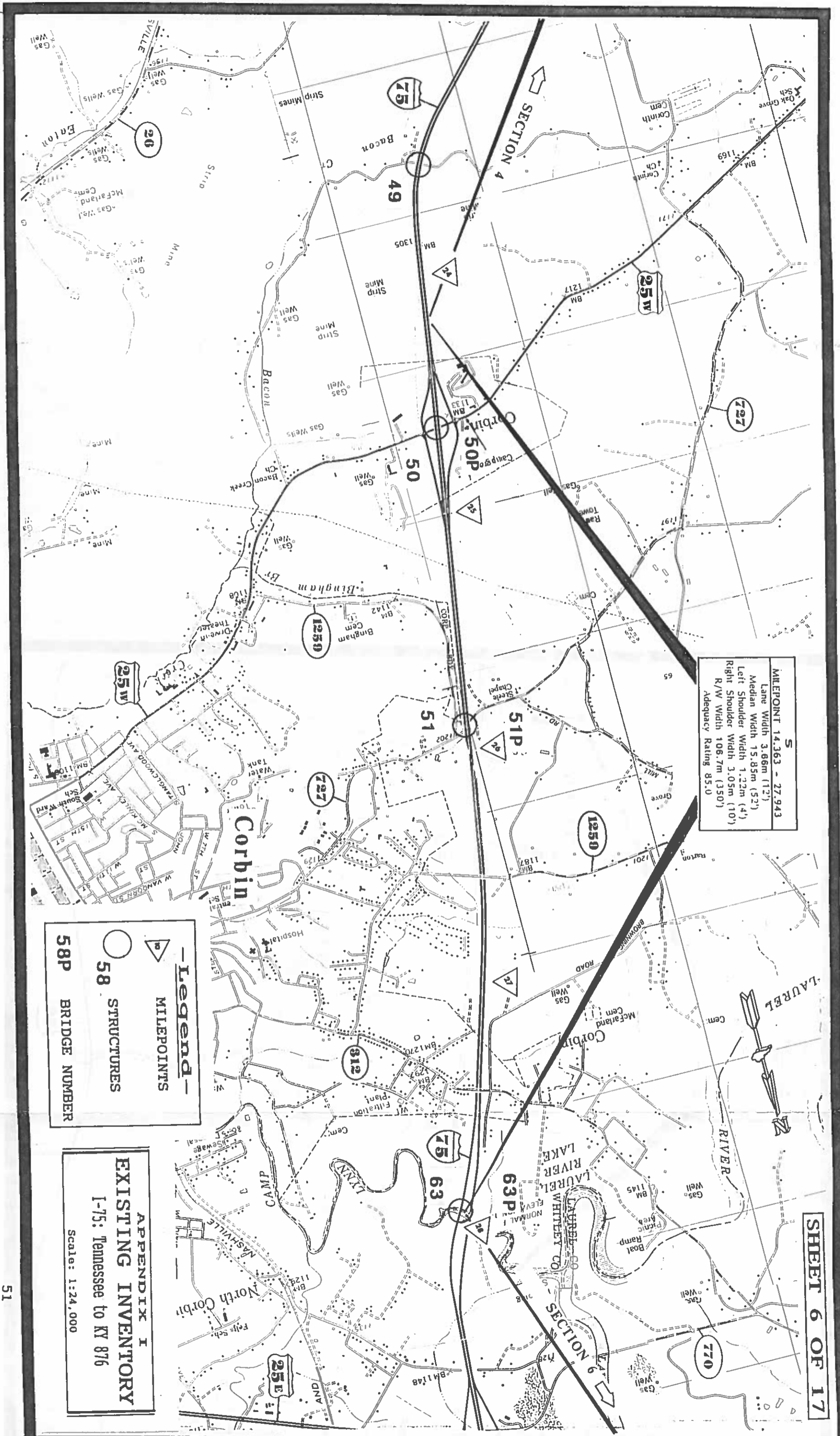
MILEPOINT	12.384 - 24.363
Lane Width	3.66m (12')
Median Width	15.85m (52')
Left Shoulder Width	1.22m (4')
Right Shoulder Width	3.05m (10')
R/W Width	91.4m (300')
Adequacy Rating	81.3

Legend

	MILEPOINTS
	STRUCTURES
	BRIDGE NUMBER

APPENDIX I
EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 5 OF 17



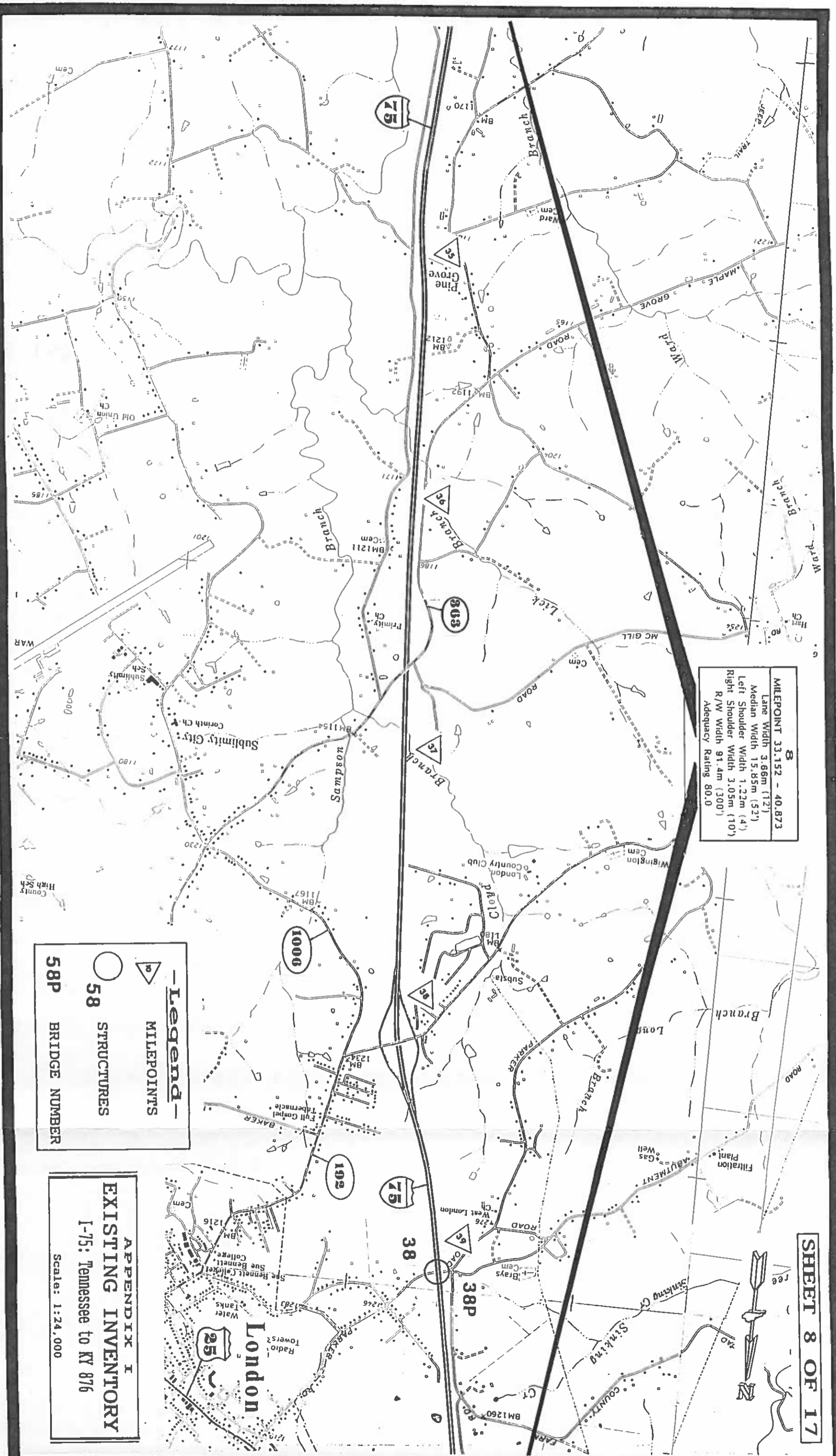
S	MILEPOINT 14.363 - 27.943
Lane Width	3.66m (12')
Median Width	15.85m (52')
Left Shoulder Width	1.22m (4')
Right Shoulder Width	3.05m (10')
R/W Width	106.7m (350')
Adequacy Rating	85.0

Legend

	MILEPOINTS
	STRUCTURES
	BRIDGE NUMBER

APPENDIX I
EXISTING INVENTORY
 I-75; Tennessee to KY 876
 Scale: 1:24,000

SHEET 6 OF 17



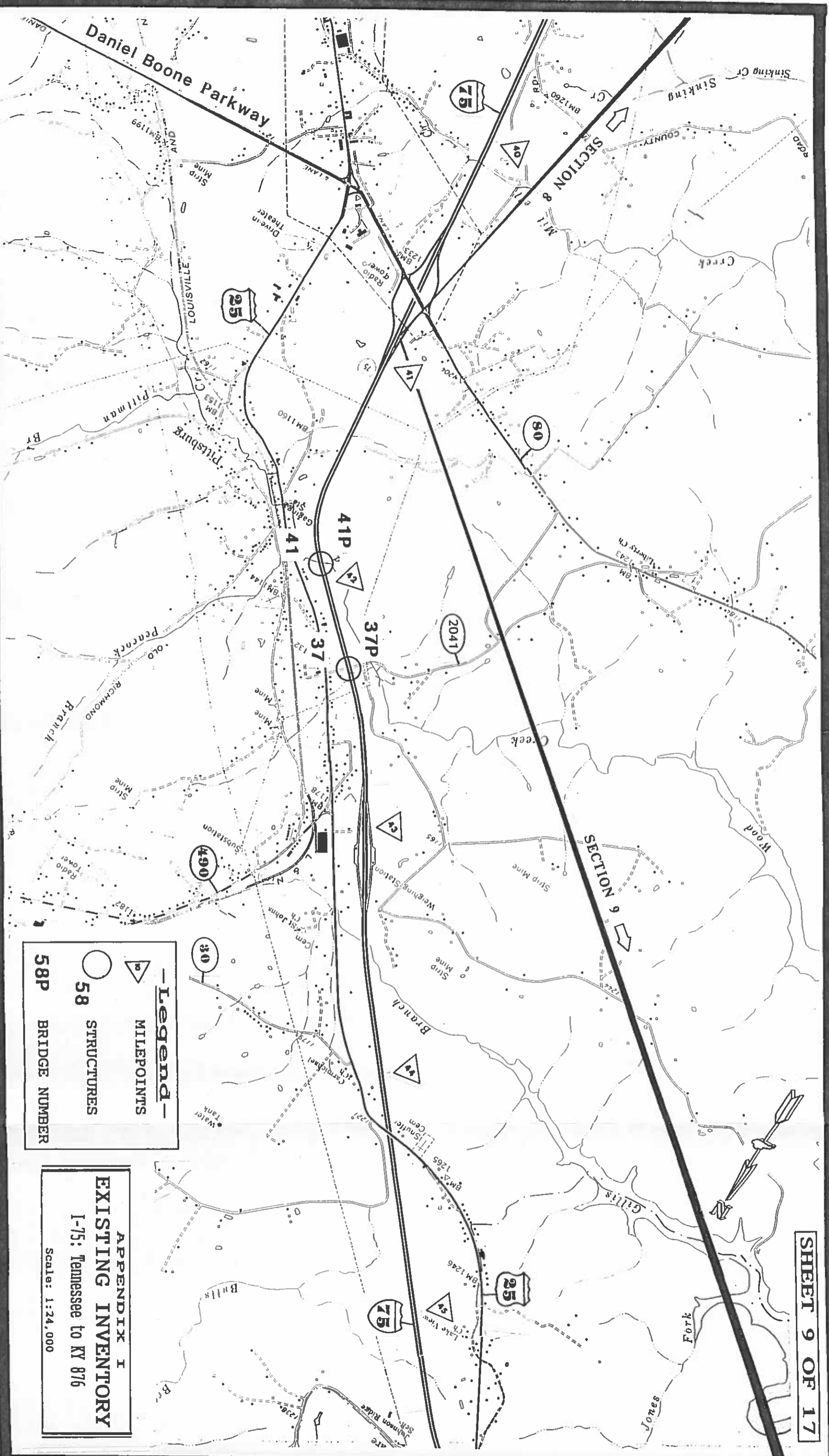
8	MILEPOINT 33.152 - 40.873
Lane Width 3.66m (12')	
Median Width 15.85m (52')	
Left Shoulder Width 1.22m (4')	
Right Shoulder Width 3.05m (10')	
R/W Width 91.4m (300')	
Adequacy Rating 80.0	

Legend	
	MILEPOINTS
	STRUCTURES
	BRIDGE NUMBER




APPENDIX I
EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 8 OF 17





Legend

-  MILEPOINTS
-  STRUCTURES
-  BRIDGE NUMBER

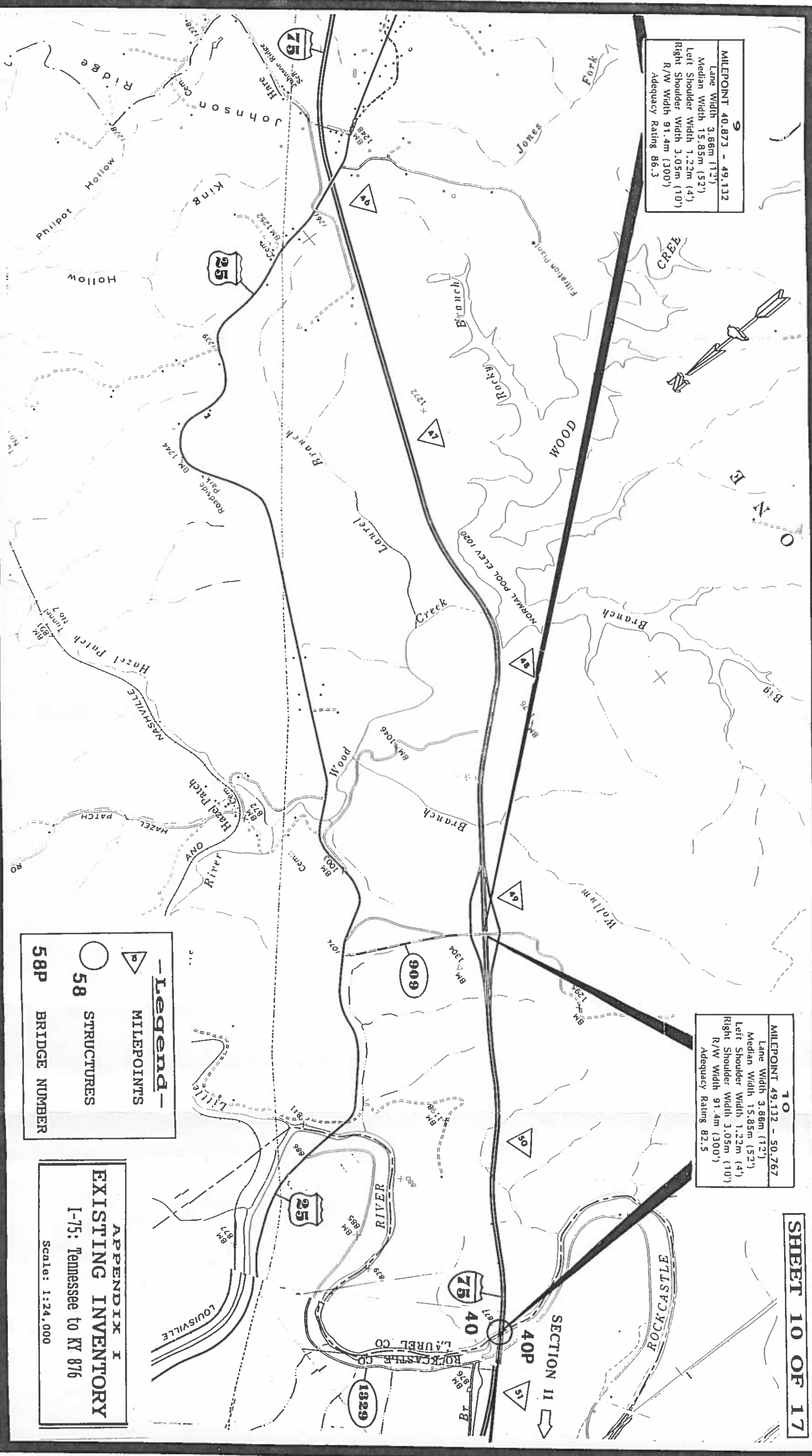
APPENDIX I
EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 9 OF 17

9	MILEPOINT 40.873 - 49.132
Lane Width 3.66m (12')	
Median Width 15.85m (52')	
Left Shoulder Width 1.22m (4')	
Right Shoulder Width 3.05m (10')	
R/W Width 91.4m (300')	
Adequacy Rating 86.3	

10	MILEPOINT 49.132 - 50.767
Lane Width 3.66m (12')	
Median Width 15.85m (52')	
Left Shoulder Width 1.22m (4')	
Right Shoulder Width 3.05m (10')	
R/W Width 91.4m (300')	
Adequacy Rating 82.5	

SHEET 10 OF 17



-Legend-

	MILEPOINTS
	STRUCTURES
58P	BRIDGE NUMBER



APPENDIX I
EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000

2	MILEPOINT 3.169 - 10.079
Lane Width 3.66m (12')	
Median Width 15.85m (52')	
Left Shoulder Width 1.22m (4')	
Right Shoulder Width 3.05m (10')	
R/W Width 91.4m (300')	
Adequacy Rating 73.8	

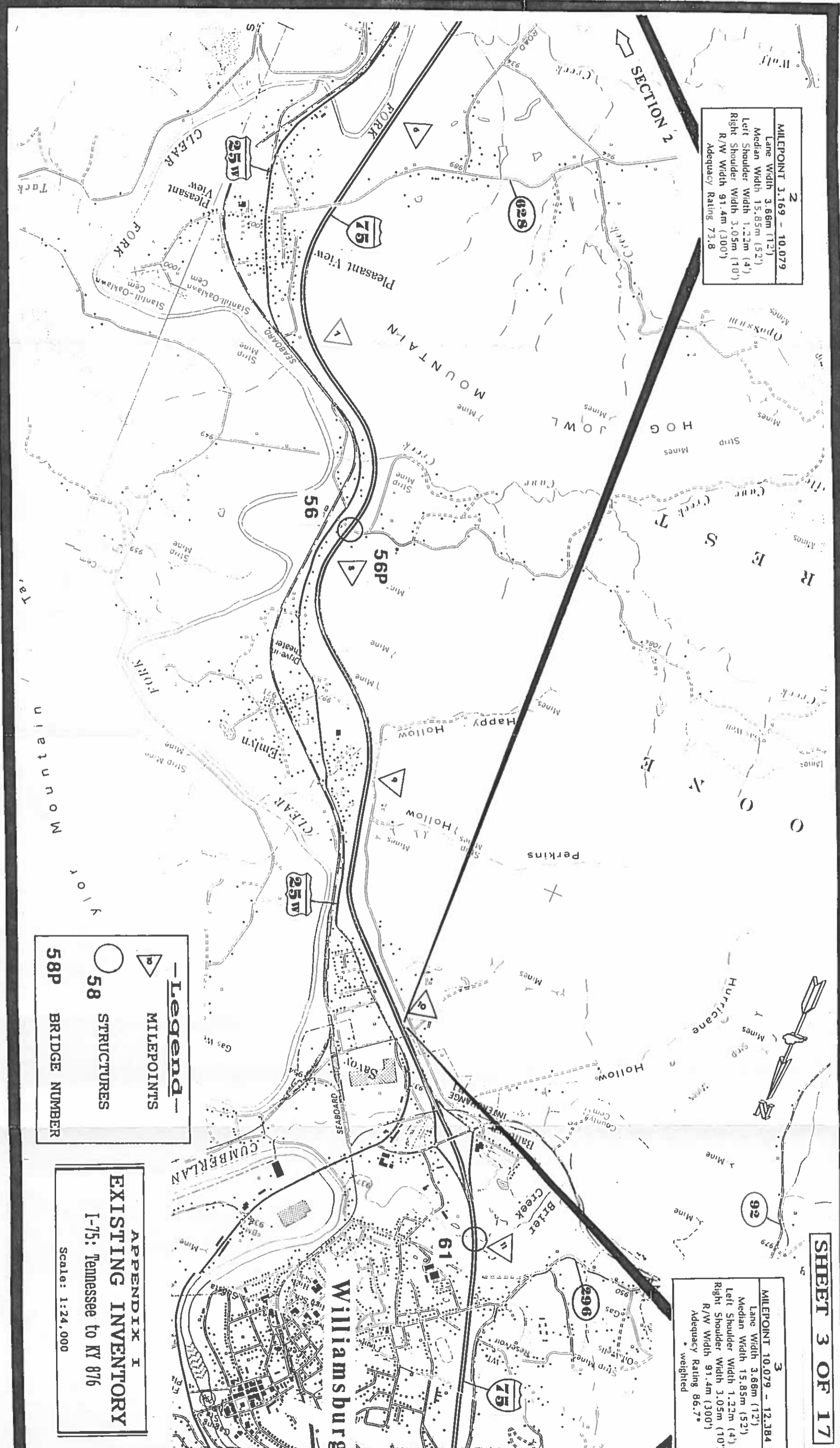
3	MILEPOINT 10.079 - 12.384
Lane Width 3.66m (12')	
Median Width 15.85m (52')	
Left Shoulder Width 1.22m (4')	
Right Shoulder Width 3.05m (10')	
R/W Width 91.4m (300')	
Adequacy Rating 86.7*	

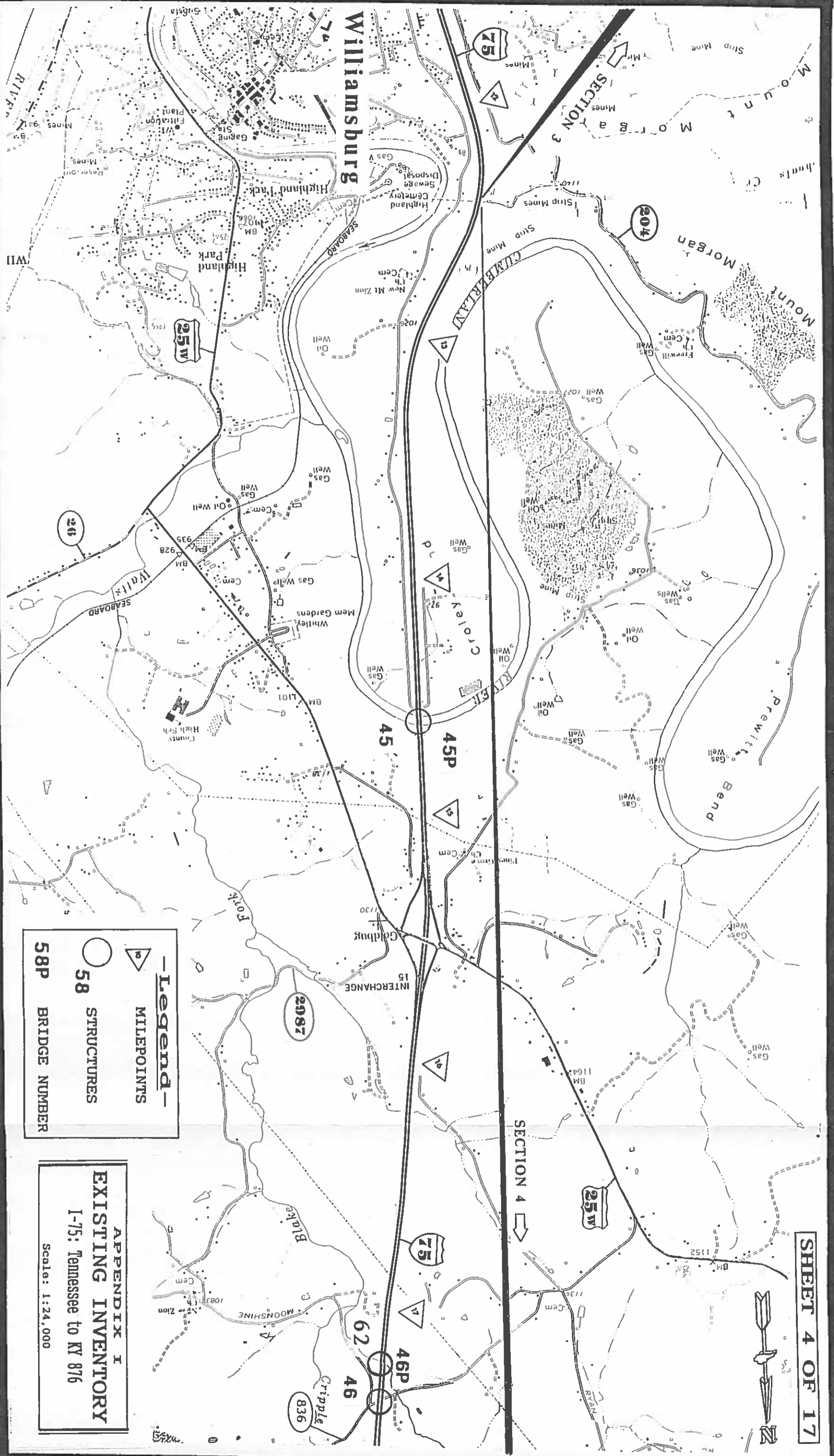
SHEET 3 OF 17

Legend

	MILEPOINTS
	STRUCTURES
58P	BRIDGE NUMBER

APPENDIX I
EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000





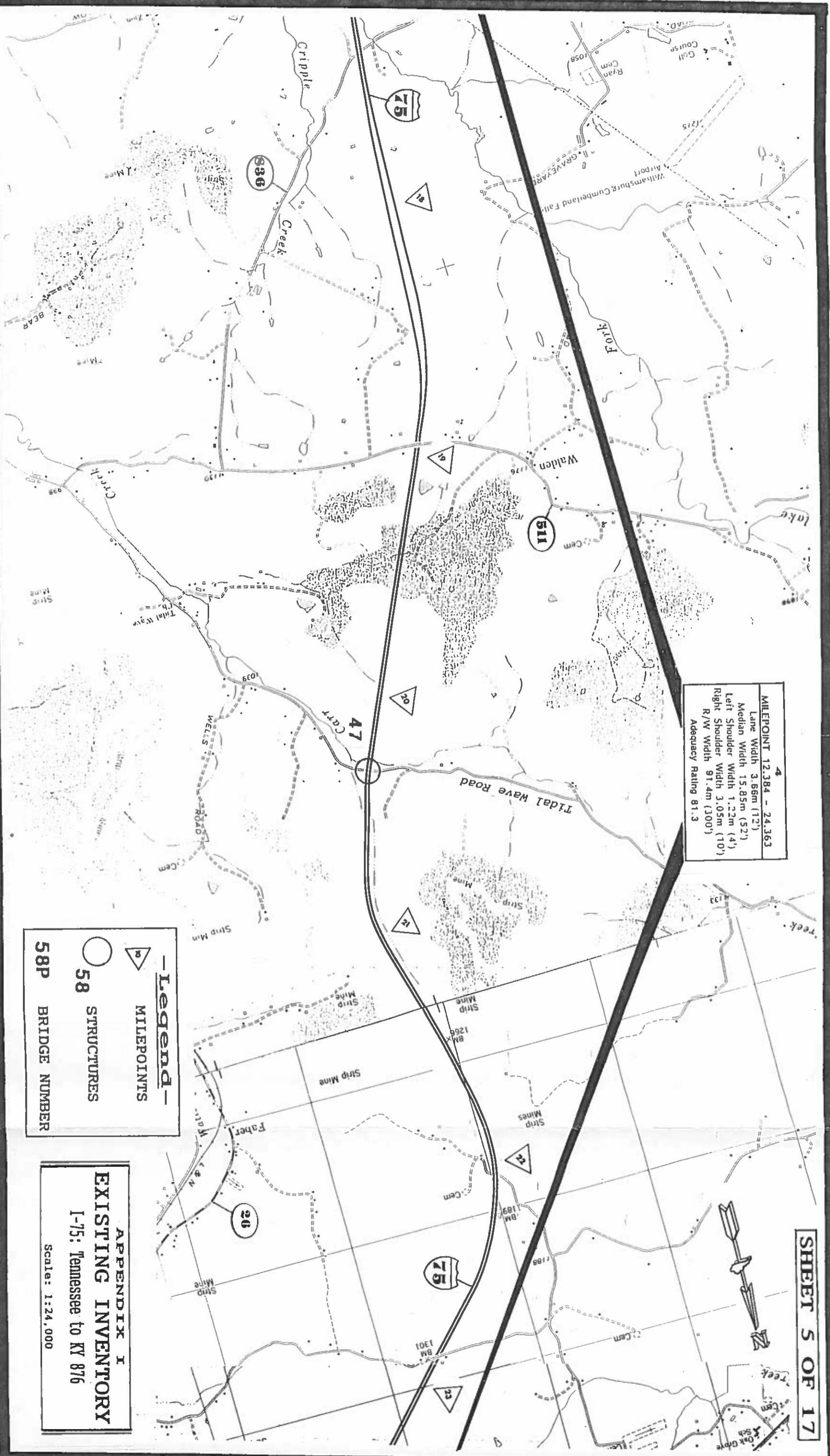
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- MILEPOINTS
- STRUCTURES
- BRIDGE NUMBER

APPENDIX I
EXISTING INVENTORY
 1-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 4 OF 17





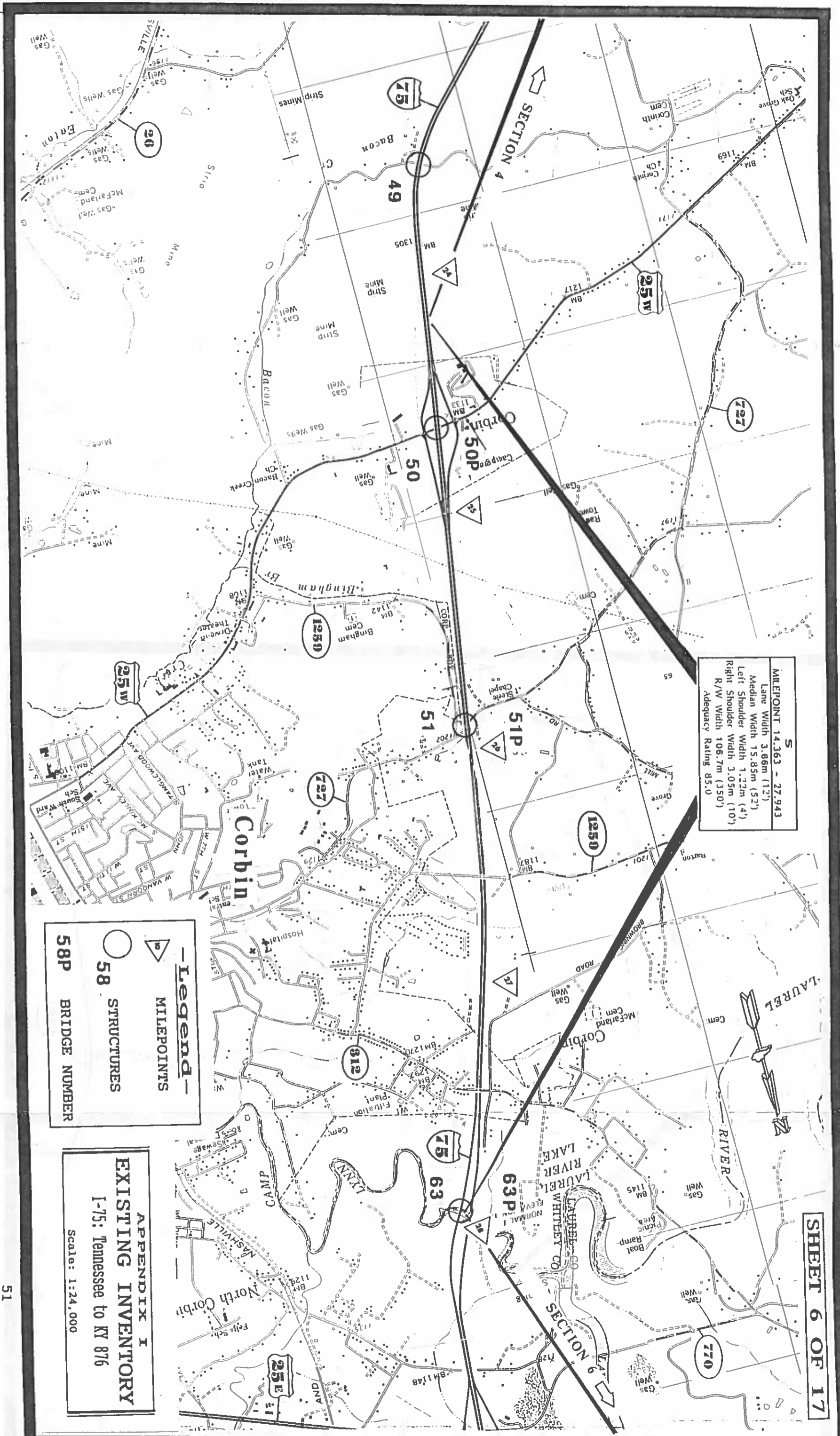
MILEPOINT	12.384 - 24.363
Lane Width	3.66m (12')
Median Width	15.85m (52')
Left Shoulder Width	1.22m (4')
Right Shoulder Width	3.05m (10')
R/W Width	91.4m (300')
Adequacy Rating	81.3

Legend

	MILEPOINTS
	STRUCTURES
	BRIDGE NUMBER

APPENDIX I
EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 5 OF 17



MILEPOINT	14.363 - 27.943
Lane Width	3.66m (12')
Median Width	15.85m (52')
Left Shoulder Width	1.22m (4')
Right Shoulder Width	3.05m (10')
R/W Width	106.7m (350')
Adequacy Rating	85.0

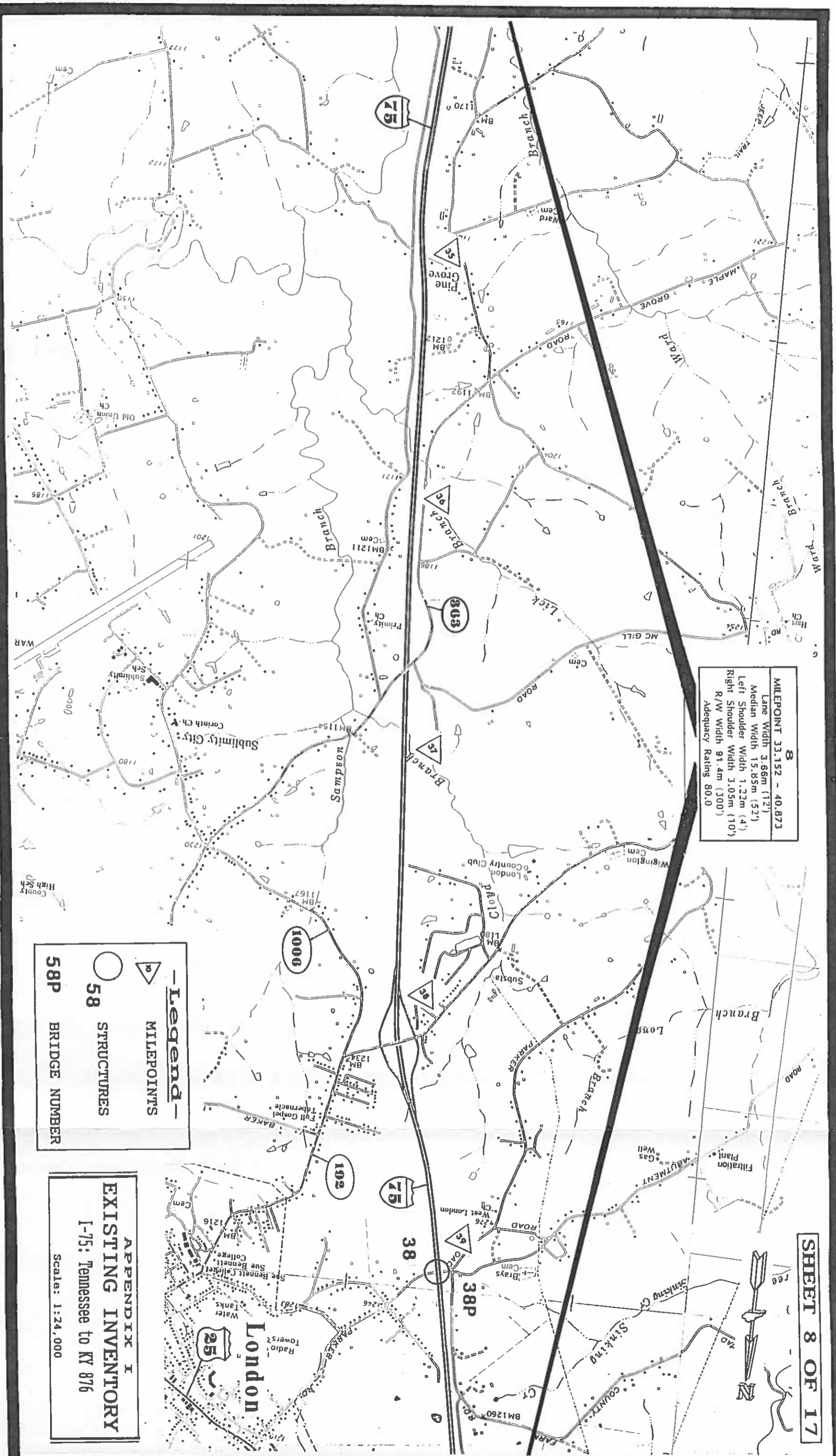
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	MILEPOINTS
	STRUCTURES
	BRIDGE NUMBER

**APPENDIX I
EXISTING INVENTORY
I-75: Tennessee to KY 876**

Scale: 1:24,000

SHEET 6 OF 17



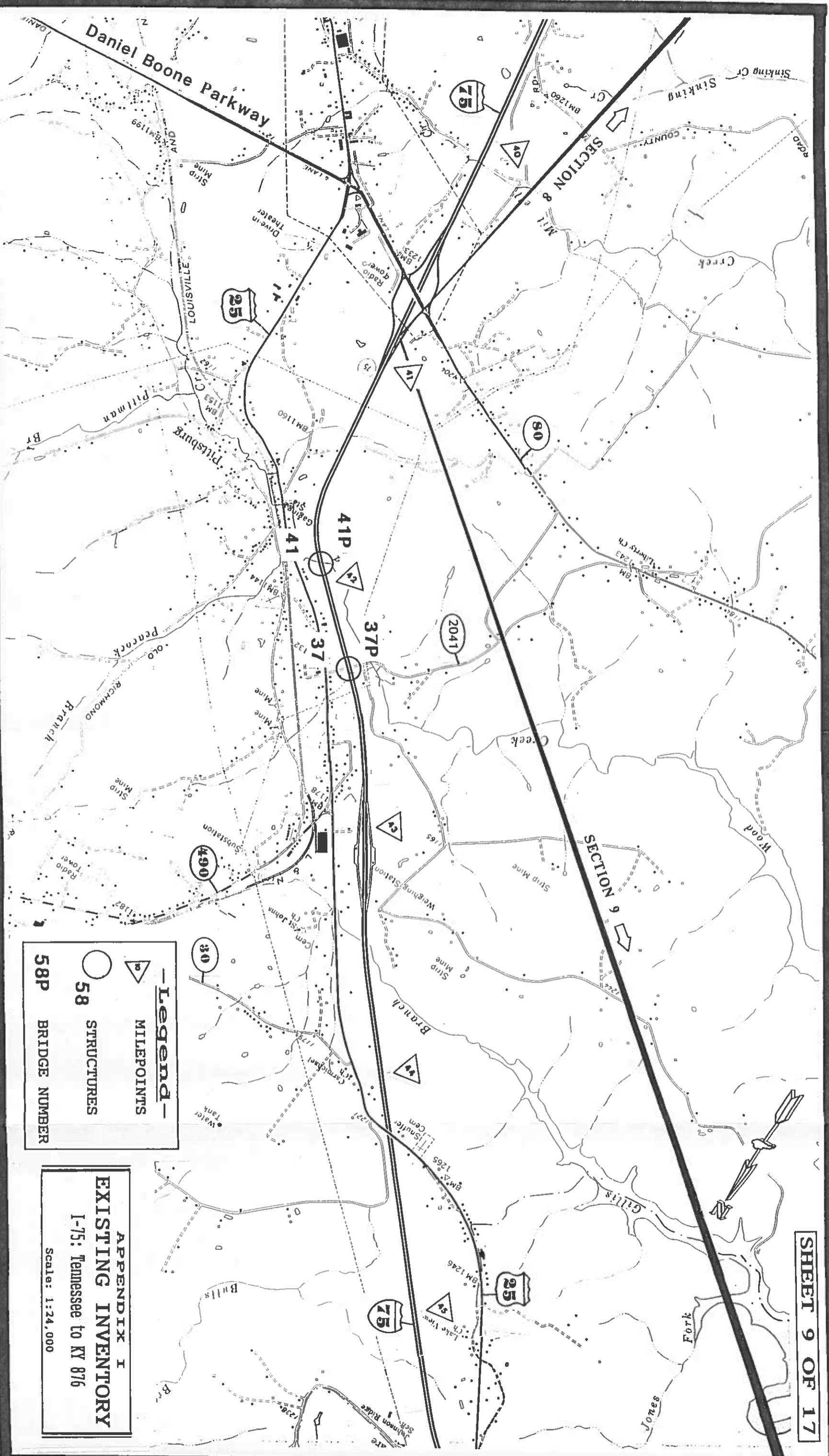
8	MILEPOINT 33.152 - 40.873
Lane Width 3.66m (12')	
Median Width 15.85m (52')	
Left Shoulder Width 1.22m (4')	
Right Shoulder Width 3.05m (10')	
R/W Width 91.4m (300')	
Adequacy Rating 80.0	

Legend	
	MILEPOINTS
	STRUCTURES
	BRIDGE NUMBER

APPENDIX I
EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 8 OF 17





Legend

- MILEPOINTS
- STRUCTURES
- 58P** BRIDGE NUMBER

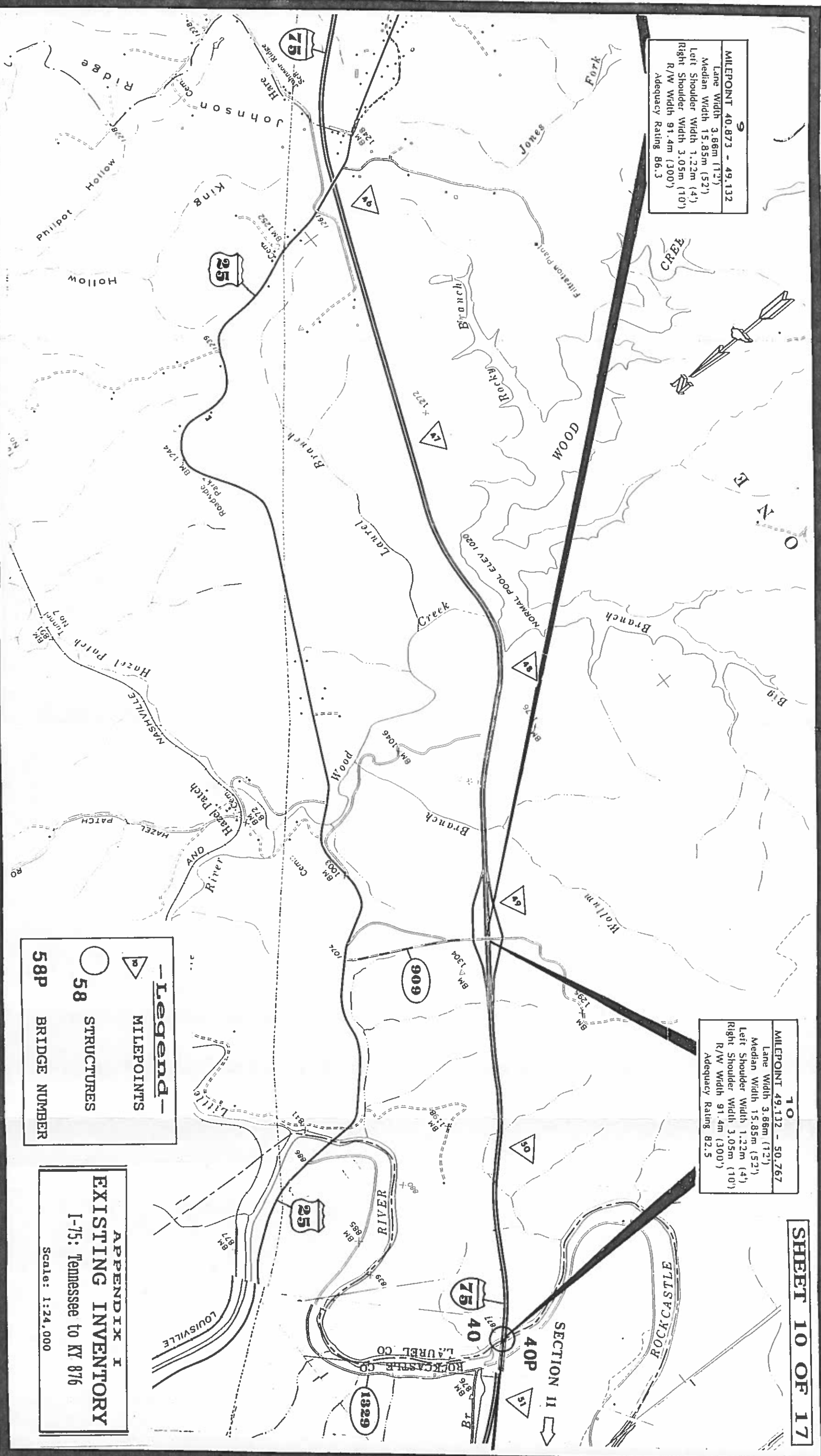
APPENDIX I
EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 9 OF 17

9	MILEPOINT 40.873 - 49.132
Lane Width 3.66m (12')	
Median Width 15.85m (52')	
Left Shoulder Width 1.22m (4')	
Right Shoulder Width 3.05m (10')	
R/W Width 91.4m (300')	
Adequacy Rating 86.3	

10	MILEPOINT 49.132 - 50.767
Lane Width 3.66m (12')	
Median Width 15.85m (52')	
Left Shoulder Width 1.22m (4')	
Right Shoulder Width 3.05m (10')	
R/W Width 91.4m (300')	
Adequacy Rating 82.5	

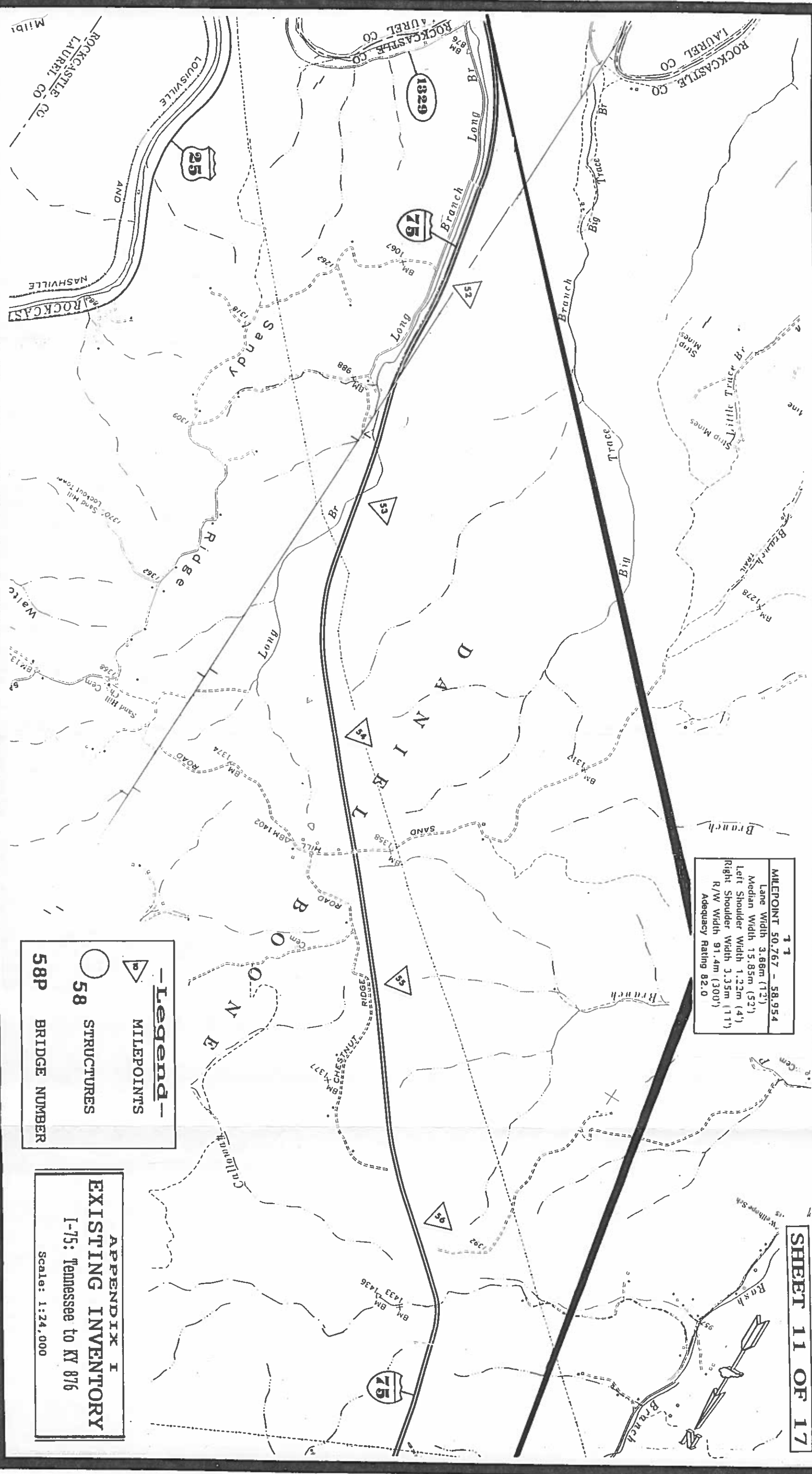
SHEET 10 OF 17



-Legend-

	MILEPOINTS
	STRUCTURES
58P	BRIDGE NUMBER

APPENDIX I
EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000



1 1	
MILEPOINT 50.767 - 58.954	
Lane Width	3.68m (12')
Median Width	15.85m (52')
Left Shoulder Width	1.22m (4')
Right Shoulder Width	3.35m (11')
R/W Width	91.4m (300')
Adequacy Rating	82.0

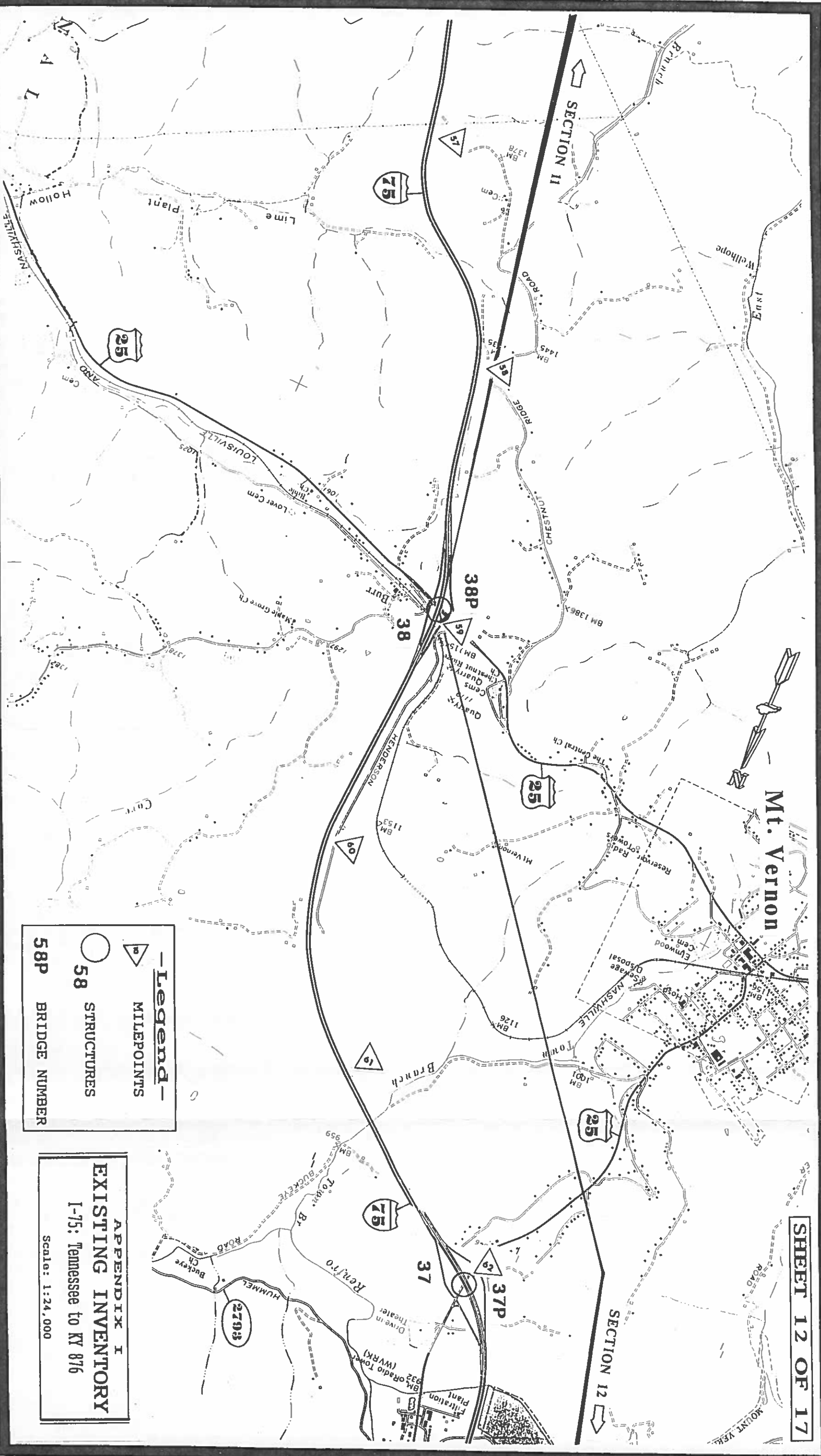
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- MILEPOINTS
- STRUCTURES
- 58P** BRIDGE NUMBER





APPENDIX I
EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000

SHEET 11 OF 17

Mt. Vernon



Legend

-  MILEPOINTS
-  STRUCTURES
-  58
-  58BP BRIDGE NUMBER

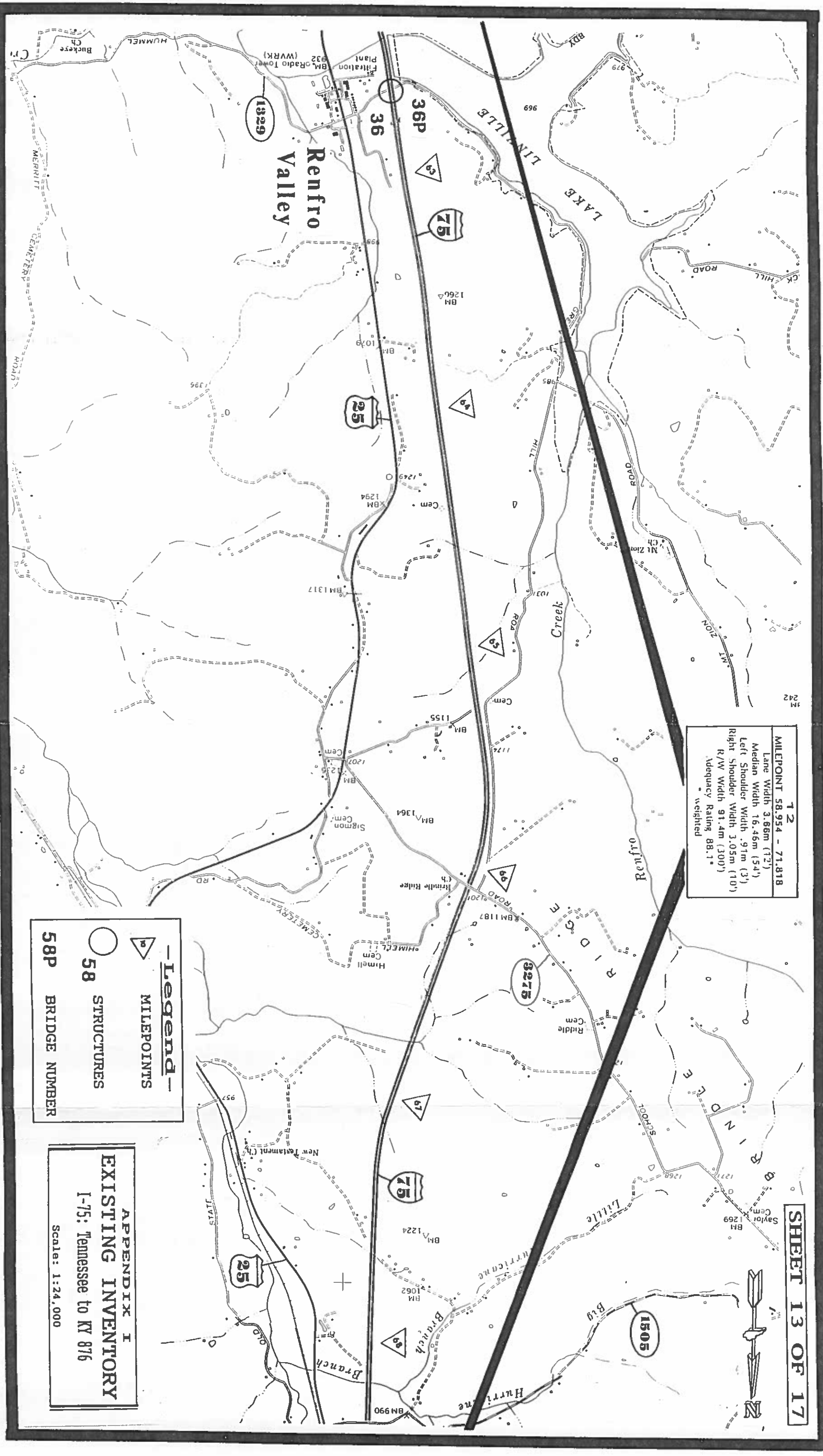
APPENDIX I
EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000

12	MILEPOINT 58.954 - 71.818
	Lane Width 3.68m (12')
	Median Width 16.46m (54')
	Left Shoulder Width .91m (3')
	Right Shoulder Width 3.05m (10')
	R/W Width 91.4m (300')
	Adequacy Rating 88.1*
	* weighted

Legend

	MILEPOINTS
	STRUCTURES
	BRIDGE NUMBER

APPENDIX I
 EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000

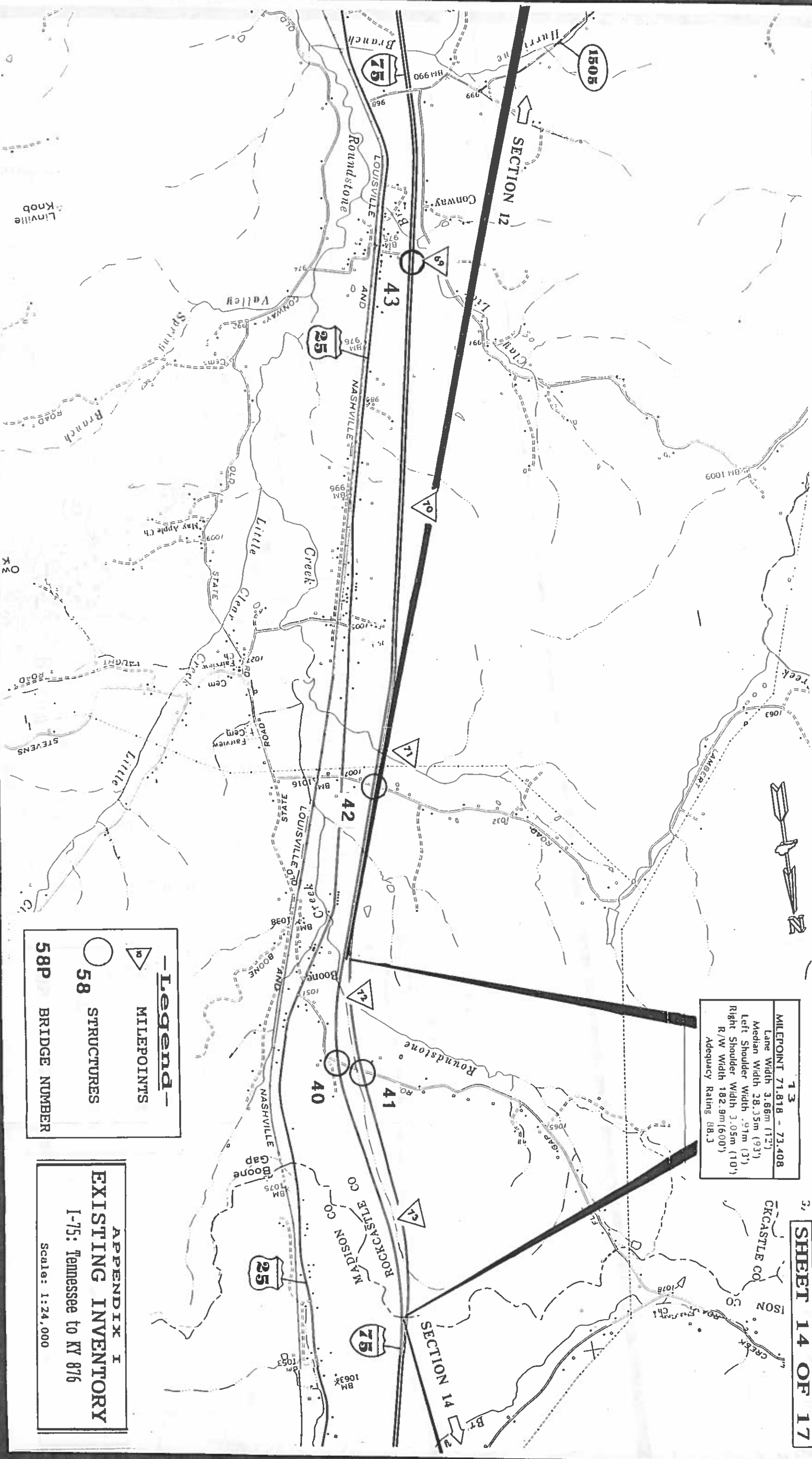


13	MILEPOINT 71.818 - 73.408
	Lane Width 3.66m (12')
	Median Width 28.35m (93')
	Left Shoulder Width .91m (3')
	Right Shoulder Width 3.05m (10')
	R/W Width 182.9m(600')
	Adequacy Rating 88.3

-Legend-

	MILEPOINTS
	STRUCTURES
58P	BRIDGE NUMBER

APPENDIX I
 EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000

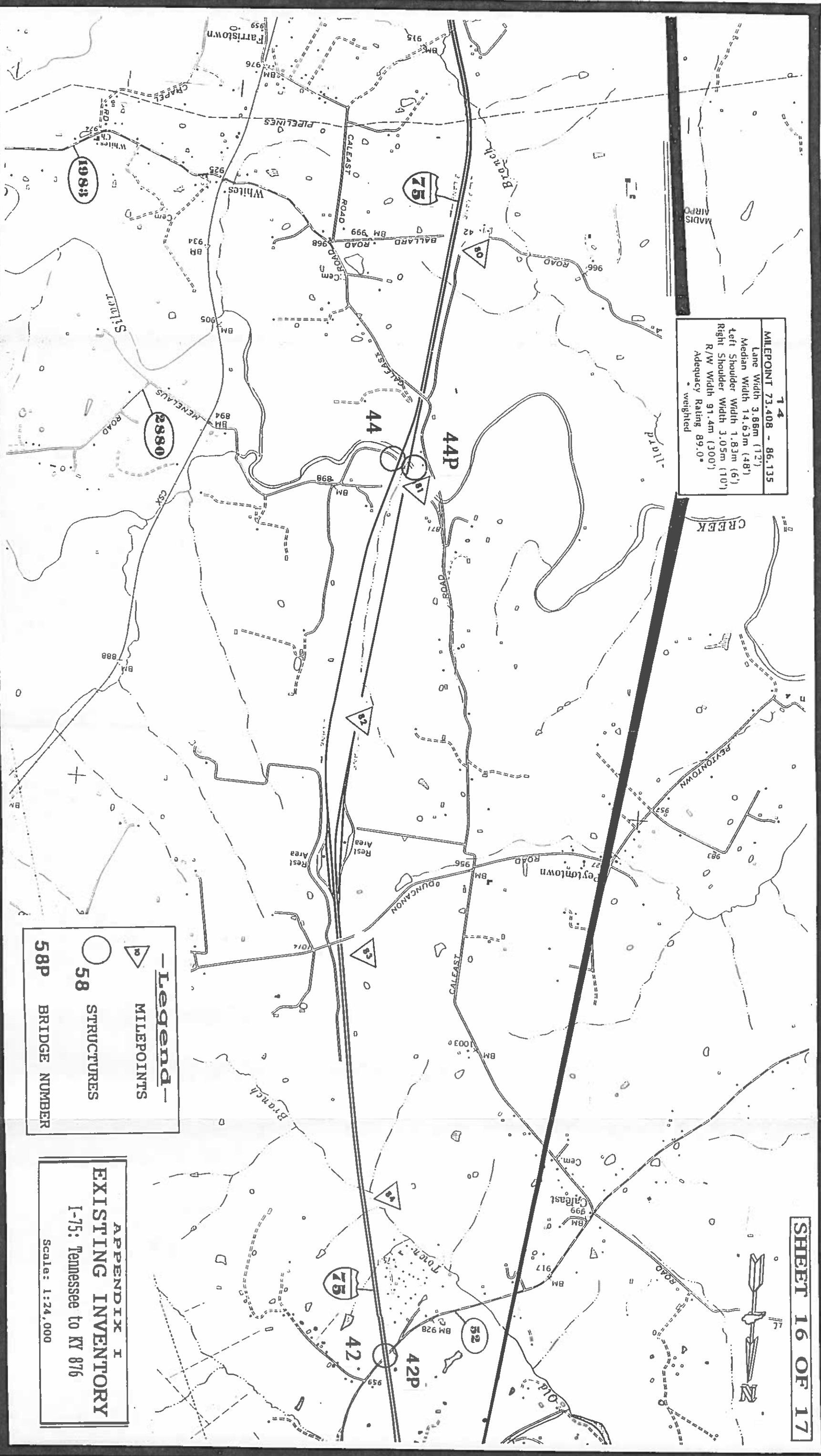


1-4
MILEPOINT 73.408 - 86.135
Lane Width 3.66m (12')
Median Width 14.63m (48')
Left Shoulder Width 1.83m (6')
Right Shoulder Width 3.05m (10')
R/W Width 91.4m (300')
Adequacy Rating 89.0*
* weighted

Legend

	MILEPOINTS
	STRUCTURES
58P	BRIDGE NUMBER

APPENDIX I
 EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000

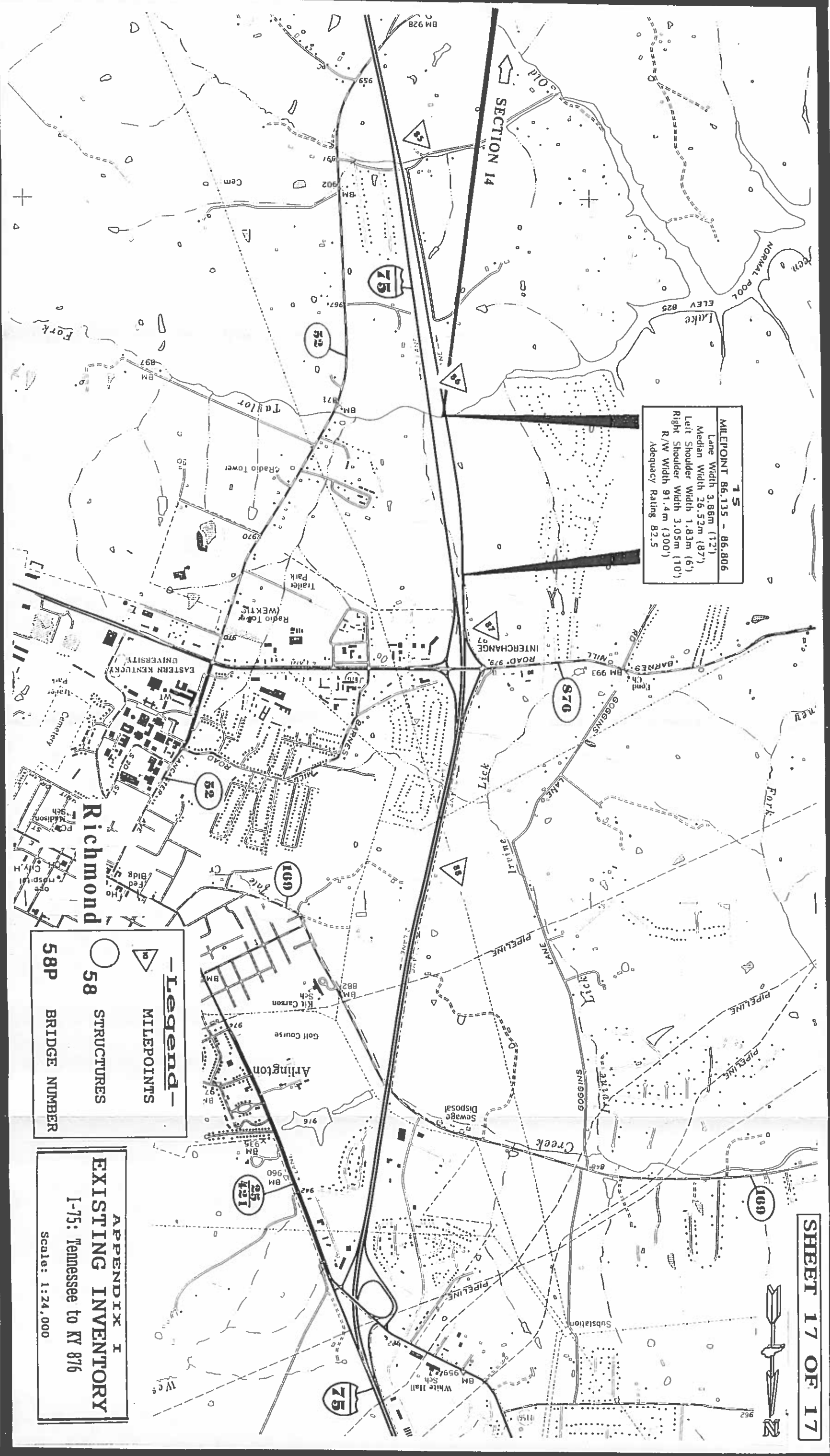


75	
MILEPOINT	86.135 - 86.806
Lane Width	3.66m (12')
Median Width	2.6.52m (87')
Left Shoulder Width	1.83m (6')
Right Shoulder Width	3.05m (10')
R/W Width	91.4m (300')
Adequacy Rating	82.5

Legend

	MILEPOINTS
	STRUCTURES
	BRIDGE NUMBER

APPENDIX I
EXISTING INVENTORY
 I-75: Tennessee to KY 876
 Scale: 1:24,000



APPENDIX II

CORRESPONDENCE WITH THE DIVISION OF OPERATIONS

MEMO TO: Donald L. Ecton
Director
Division of Planning

FROM: George Asbury *Geo*
Engineer Director
Division of Maintenance

DATE: December 11, 1991

SUBJECT: Items 11-268.00 & 4-274.00, Six Year Plan
I-75: Tennessee to KY 876 in Richmond
I-65: Tennessee to Western Kentucky Parkway
Bridge Evaluation

The four non-redundant steel girder bridges identified in your memorandum dated 11/26/91 are worthy of special consideration. The Division of Maintenance offers an appraisal of these bridges so that rehabilitation planning of the roadway section containing the structures can include structural needs in the project.

The non-redundant twin bridges carrying I-75 over the Cumberland River will need major rehabilitation work or replacement within 5 to 10 years. During the last 5 years two retrofitting contracts have been awarded to compensate for fatigue failures found in fatigue prone details of the girder system. Details such as gusset plates welded to bottom flanges of main girders, stringer cope cracking and cracked stringer clip angles have been or are being retrofitted. We are experiencing continuing fatigue problems with the details on this set of bridges. The existing concrete slab was overlaid approximately 15 years ago. It is currently showing signs of distress which will require major repair in the near future. This slab was constructed with many transverse joints and we have not been successful in keeping them sealed. Water leakage through the joint is damaging the structural steel supporting the slab to the point that section lose could become a problem in the near future. It is recommended that this structure should be replaced within the next 5 to 10 years. The replacement structure would replace a non-redundant girder bridging system plagued by fatigue prone details, and a slab that has major problems concerning joints and the quality of the concrete.

The non-redundant twin bridges carrying I-75 over the Laurel River is not as critical as the previously discussed structures. These bridges were constructed approximately 10 years later and do not have as many fatigue prone details as the Cumberland River structures. Completed major retrofitting consisting of floor beam strengthening should

prolong the structure life substantially, providing a useful estimated life of at least 10 to 15 years.

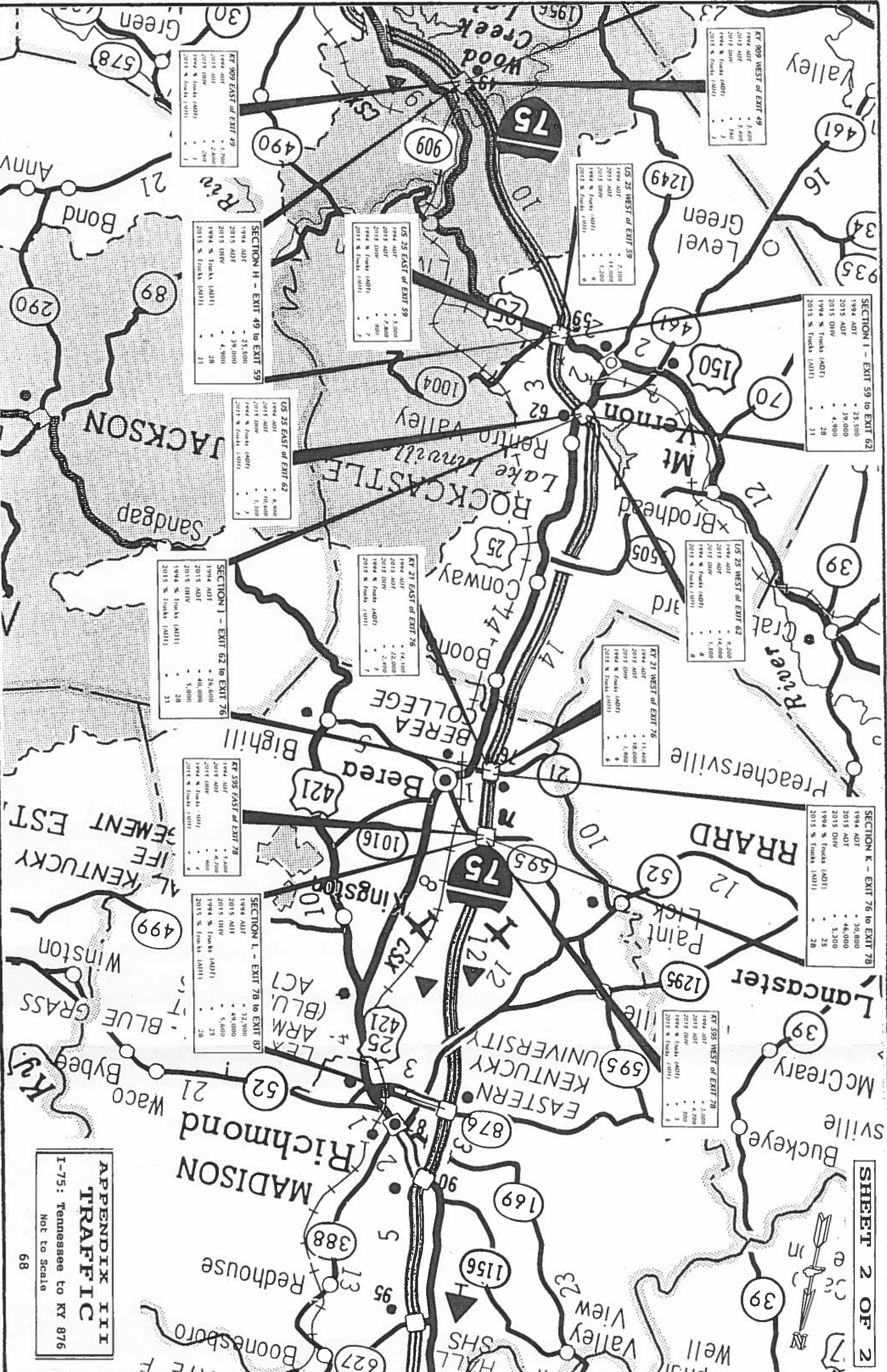
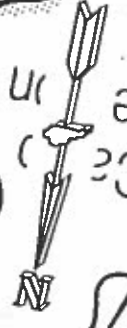
The non-redundant twin bridges carrying I-65 over the Barren River are constructed in a similar manner to the I-75 structures over the Cumberland River. These bridges are built on a skew which is contributing to our maintenance problems. Fatigue prone details are the major problems confronting us at this time. The problem does not appear to be as severe as the Cumberland River bridges. A useful life with an average amount of maintenance to the steel and the slab is estimated to be at least 10 to 15 years.

The remaining non-redundant bridges in question are the twin bridges carrying I-65 over the Green River. The recent indepth inspection of these bridges did not discover any major problems relating to fatigue or slab deterioration. The general condition of the structures is excellent. A useful estimate life of 20 years plus can be assumed with normal maintenance.

The bridges carrying I-75 over the Cumberland River is the most critical of the four sets of bridges you targeted. It is the recommendation of this office that any rehabilitation work on I-75 include replacement of the structures.

If you need additional information, please advise.

GWA:WAC:bkd



SECTION I - EXIT 59 to EXIT 62

1994 ADT	25,500
2015 ADT	39,000
2015 DIV	4,900
1994 % Trucks (ADT)	28
2015 % Trucks (ADT)	31

KY 909 WEST of EXIT 49

1994 ADT	3,400
2015 ADT	5,400
2015 DIV	580
1994 % Trucks (ADT)	3
2015 % Trucks (ADT)	3

US 25 WEST of EXIT 59

1994 ADT	2,100
2015 ADT	17,000
2015 DIV	1,200
1994 % Trucks (ADT)	9
2015 % Trucks (ADT)	9

US 25 EAST of EXIT 59

1994 ADT	5,000
2015 ADT	7,800
2015 DIV	800
1994 % Trucks (ADT)	7
2015 % Trucks (ADT)	7

SECTION H - EXIT 49 to EXIT 59

1994 ADT	25,500
2015 ADT	39,000
2015 DIV	4,900
1994 % Trucks (ADT)	28
2015 % Trucks (ADT)	31

US 25 EAST of EXIT 62

1994 ADT	4,900
2015 ADT	30,600
2015 DIV	1,500
1994 % Trucks (ADT)	7
2015 % Trucks (ADT)	7

US 25 WEST of EXIT 62

1994 ADT	9,200
2015 ADT	14,000
2015 DIV	1,500
1994 % Trucks (ADT)	8
2015 % Trucks (ADT)	8

KY 27 WEST of EXIT 76

1994 ADT	11,400
2015 ADT	38,000
2015 DIV	1,900
1994 % Trucks (ADT)	6
2015 % Trucks (ADT)	6

KY 27 EAST of EXIT 76

1994 ADT	14,100
2015 ADT	23,000
2015 DIV	2,400
1994 % Trucks (ADT)	7
2015 % Trucks (ADT)	7

SECTION I - EXIT 62 to EXIT 76

1994 ADT	26,600
2015 ADT	40,000
2015 DIV	5,000
1994 % Trucks (ADT)	28
2015 % Trucks (ADT)	31

SECTION K - EXIT 76 to EXIT 78

1994 ADT	30,800
2015 ADT	46,000
2015 DIV	5,300
1994 % Trucks (ADT)	25
2015 % Trucks (ADT)	28

KY 595 WEST of EXIT 78

1994 ADT	3,000
2015 ADT	4,700
2015 DIV	500
1994 % Trucks (ADT)	5
2015 % Trucks (ADT)	5

SECTION L - EXIT 78 to EXIT 87

1994 ADT	32,900
2015 ADT	49,000
2015 DIV	5,600
1994 % Trucks (ADT)	25
2015 % Trucks (ADT)	28

KY 595 EAST of EXIT 78

1994 ADT	5,600
2015 ADT	4,900
2015 DIV	400
1994 % Trucks (ADT)	3
2015 % Trucks (ADT)	3

APPENDIX III
TRAFFIC
I-75: Tennessee to KY 876
Not to Scale

APPENDIX III

TRAFFIC DATA FOR I-75 AND CROSSROADS

APPENDIX IV

GEOTECHNICAL OVERVIEW

M E M O R A N D U M

TO: Donald L. Ecton, P.E.
Director, Division of Planning

FROM: Henry Mathis, P.E.
Geotechnical Engineering
Branch Manager
Division of Materials

BY: R. T. Wilson, P.G. *R. T. W.*
Geotechnical Branch

DATE: February 18, 1992

SUBJECT: Whitley, Laurel, Rockcastle and Madison Counties
SSP 121 SW 91 P
Tennessee State Line - KY 876 @ Richmond (I-75)
Preliminary Geotechnical Review
Item 11-268.0

At your request, a review of the geologic formations and geotechnical problems to be encountered by the subject project is completed. This project begins on the Cumberland plateau crosses the Pottsville escarpment, Mississippian plateau, Knobs region and ends in the Outer Bluegrass region.

It is situated in two drainage basins. Drainage south of M.P. 73.7 flows into the Cumberland River system and drainage north of M.P. 73.7 flows into the Kentucky River system.

Rock formations along the proposed route are part of the Quaternary, Pennsylvanian, Mississippian, Devonian, Silurian and Ordovician Systems.

Quaternary alluvium is detrital materials consisting of clays, silts, sands, gravels and boulders. A thickness of approximately 20 feet is estimated.

Pennsylvanian age rocks consists of the Breathitt and Lee Formations. The Breathitt Formation contains sandstone, shales and coals. Sandstones are generally characterized as brown to gray in color, fine to medium grain size and considered suitable for most road construction applications. Shales consist of Durable Shale or siltstone, and non-durable shale or clay shales. Coal seams to be encountered are River Gem, Blue Gem, Little Blue Gem, Jellico and Colony.

The Lee Formation contains sandstones, shales and coals. Sandstones are typically described as brown in color, coarse grained to conglomeratic. Friable sandstones in make some lithologic sections are unsuitable for channel lining.

Shales are generally non-durable. Coal seams to be encountered are New Livingston and Halsey Rough.

Beneath the Pennsylvanian is the Mississippian Age consisting of Pennington, Newman and Borden Formations. The Pennington Shale consists of 50 to 90 percent gray green

non-durable shale, with intermittent sandstone and limestone ledges. The Pennington Formation (approximately 40 feet thick) is extremely unstable and slides and slumps are common. The Newman Formation (approximately 75 - 170 feet thick) is composed of three members: Upper Newman, Ste. Genevieve, and St. Louis. Limestone with beds of crudely laminated shale are prevalent in the upper part. Fine to medium grained limestone occurs throughout, and sinkholes, lapies, and caverns are associated with these formations. Rock from this formation is suitable for all roadway uses. The Sorden Formation (approximately 300 - 450 feet thick) has five members. The Renfro Member (approximately 50 - 90 feet thick) is a dolomitic limestone with thin beds of siltstone and shale. The Wildie Member is described as a nondurable shale and has a thickness of 10'-15'. Durable shales make up the Halls Gap (approximately 10 - 60 feet thick) and the siltstone section of the New Providence Shale Members (approximately 50 - 150 feet thick). The lower half of the New Providence Shale consist of nondurable shales with a layer thickness of 100' - 240'.

The Devonian age strata consists of New Albany and Boyle Formations. The New Albany (approximately 80 - 110 feet thick) is a black carbonaceous durable shale containing pyrite. The Boyle Dolomite (maximum thickness of 15 feet) consists of dolomite and thin limestone.

The Crab Orchard (approximately 5 - 35 feet thick) and Brassfield Formations make up Silurian age rocks. The Crab Orchard is predominantly (80%) shale nondurable and (20%) dolomite. The Brassfield is a dolomite 10'-18' thick.

The Ordovician age rocks consisting of Drakes, Ashlock and Calloway Creek Formations. The Drakes consists of Preachersville (70 - 85 feet thick) and Rowland Members (40 - 50 feet thick) which are greenish-gray nondurable shales, with the Preachersville containing 15% limestone. Five members make up the Ashlock. They are the Reba, Terrill, Stingy Creek, Gilbert, and Tate. The Reba, Stingy Creek and Gilbert are limestones with layer thicknesses 10' - 18' each. Greenish-gray nondurable shales make up the Terrill and Tate members. A layer thickness of 10' - 15' for the Terrill and 65' - 75' for the Tate are found along I-75 in the vicinity of Richmond. The Calloway Creek Formation is a limestone with some clay shale partings with a layer thickness of 90' - 105'.

Vertical displacement faults (60') trending northeast to southwest are located between Walnut Meadow Branch and Silver Creek (M.P. 79.5 & 78.8) in Madison County, and between Town Branch and Renfro Creek (M.P. 60) in Rockcastle. These faults cross the alignment at approximately 90°. Construction problems associated with these faults are not anticipated.

Springlines can be anticipated at the base of the Newman Limestone, base of the Renfro member, base of Boyle Dolomite, base of the Brassfield Dolomite, base of the Drakes and at the contact between the upper and lower Ashlock members.

Environmental Considerations ...

1. Acid produced from the black shale should be minimized by encasing embankments with 2' minimum of soil and lining drainage ditches with limestone.

2. The U.S Government has property holdings (Daniel Boone National Forest) from approximately Woods Creek Lake to Mount Vernon (M.P. 46 - 59). Alternate construction techniques may be necessary to minimize the impact in the environmentally sensitive area.

3. I-75 crosses 29 blueline streams where additional disturbance may be required and attempts will be made to minimize the impacts by appropriate methods such as limited channel changing, erosion control and fish habitat improvement structures.

4. Friable sandstones are associated with the Corbin sandstone (M.P. 26.5 - 55). Where exposed, erosion control methods such as silt fences, straw bales and settling ponds will be needed to prevent stream siltation.

5. Five coal seams are projected to be present on the route. The Jellico coal seam (M.P. 19 - 46) is the only one anticipated to contain levels of acid producing materials which require treatment. Acidic shales and coal waste sites should be buried or encased with 4' of soil and/or nondurable shale.

6. Karst drainage systems are present from M.P. 58 - 66.5. Treatment of sinkholes that are not to be used for drainage, treatment should follow "Special Provision 91, Treatment of Sinkholes". Sinkholes which are to be utilized for drainage should be investigated to determine if it may adversely impact others.

Geotechnical Considerations ...

1. Soil overburden depths may vary from 3' to 20'.

2. The average soil stripping depth is estimated to be 3" and a soil shrinkage factor of 2 percent is suggested in accordance with the Design Guidance Manual Section.

3. Rock Swell Factors for this project are estimated to be as follows: 0% to 10% for Non-Durable Shales; and 15% for Sandstone, Limestone and Durable Shales.

4. A CBR value of 3 is recommended if soil subgrade or nondurable shales are utilized. Therefore, chemical stabilization of the subgrade is likely. If limestone and sandstone or durable shales are available in sufficient quantities for subgrade a CBR of 11 - 9 respectfully is anticipated.

5. Cut slopes in the durable shales, limestone, dolomites, and sandstones will be stable on 1:20 - 1/2:1 presplit slopes with 18'-20' benches and 15' overburden bench at the bottom of the overburden and rock disintegration depth. Back slope will be depended on the joint angles and the lift heights depend on lithology. The ORDD extends approximately 10'-15' below groundline in cut section.

6. Cut slopes in nondurable shales should be 1:1 or flatter. Side hill conditions should be avoided in these formations where possible.

7. Special shale compaction procedures may be required where nondurable shales are utilized.

8. Limestone, siltstones, or dolomite should be placed in bottom of fills to the maximum high water elevation at the following locations: Clear Fork, Cane Creek, Happy Hollow, Perkins Hollow, Brier Creek, Cumberland River, Blake Fork, Carr Fork, Spruce Creek, Bacon Creek, Parks Branch, Sinking Creek, Mitchell Wood Creek, Gillis Branch, Bulls Branch, Woolums Branch, Rockcastle River, Long Branch, Town Branch, Renfro Creek, Hurricane Branch, Clay Branch, Roundstone Creek, Brushing Fork, Walnut Meadow Branch, Ballard Branch, Silver Creek, Old Town Creek and Taylor Creek .

9. Rock at flowline is present at the following locations: Clear Fork, Cane Creek, Gillis Branch, Bulls Branch, Woolums Branch, Rockcastle River, Town Branch, Renfro Creek, Clay Branch, Brushing Fork, Ballard Branch, Silver Creek, Old Town Creek and Taylor Creek.

10. Embankment benches will be necessary in sidehill conditions. Limestone rock (2 feet minimum) should be placed on the benches for drainage.

11. Spring boxes and underdrains will be necessary when springs, caves and water bearing coal seams are encountered in the embankment areas and undercuts.

12. Limestone, Durable Sandstone & Durable Shale are suitable for all roadway uses.

13. Friable Sandstone is suitable for free draining fill & embankments, however it shall be constructed in 1' lifts.

14. Non-Durable Shales are suitable for embankment constructed in 8" lifts and compacted in accordance with shale compaction procedure.

15. This project is in a classified Seismic Risk Zone 1 which is defined as an area of minor damage due to earthquake activity.

CONCLUSIONS

This study covers 86 miles of I-75 and from a geotechnical perspective the following ratings are provided:

1. M.P. 25 - 46 is the most economical to build as to the fewest problems.

2. M.P. 74 - 86

3. M.P. 66 - 74

4. M.P. 46 - 66

5. M.P. 0 - 25

Mile Post 0 - 25 and 46 - 66 are about equal in number and severity of problems, however a fiber optics telephone cable has been buried along the ROW (M.P. 0 - 43) making 0 - 25 more expensive as additional ROW will be needed to correct some hazardous slopes.

ROAD LOG

The following roadlog of existing detrimental conditions which requiring corrections to meet the current design standards.

MILE POST	LANE	CONDITION	CORRECTION
0 - 1	SB	No Full Safety, Oversteepened Shale	Flatten Slope
	NB	Embankment Failure w ROW problem	Berm
	NB	Settlement at RR Bridge	
1 - 2	SB	No Full Safety, Oversteepen Shale	Flatten Slope
2 - 3	SB	No Full Safety, Oversteepen Shale with ROW problem involving US25W	Redesign Slope using IB bench for US25W
3 - 4	SB	No Full Safety, Hazardous Rockfalls	Remove Sandst Cap
	SB	No Full Safety, Oversteepen Shale	Flatten Slope

MILE POST	LANE	CONDITION	CORRECTION
4 - 5	NB	Acid Runoff on to DOH ROW from Coal Processing facility	
	NB	No Full Safety, Oversteepen Shale	Flatten Slope
5 - 6	NB	Embankment Failure w ROW problem	Berm
6 - 7	SB	No Full Safety, Oversteepen Slope	Redesign as One Slope
7 - 8	SB	Settlement at overpass bridge	
8 - 9	SB	No Full Safety, Oversteepen Slope	Redesign as One Slope
	SB	Acid Drainage	
9 - 10	NSB	No Full Safety, Oversteepen Slope	Redesign Slope
11 - 12	NSB	No Full Safety	Recut Slope on Existing Angle
12 - 13	SB	No Full Safety, Oversteepen Shale	Flatten Slope
	SB	Acid Drainage	Flatten Slope & Cover
	NB	Embankment Failure	Flatten Slope
13 - 14	SB	No Full Shale	Flatten Slope
14 - 17	NSB	No Full Safety, Oversteepen Slopes Misplaced Benches	Redesign Slope
17 - 18	SB	No Full Safety, Oversteepen Slope	Redesign as One Slope
	SB	Settlement at end of bridge	
	NB	No Full Safety, Oversteepen Shale w/Acid Drainage	Flatten Slope & Cover
19 - 20	NSB	No Full Safety, Cut Slope Failures in Strip Mines	Stabilize
20 - 21	NSB	No Full Safety, Cut Slope Failure	Flatten Slope
	NB	No Full Safety, Oversteepen Slope	Redesign as One Slope
21 - 22	NB	No Full Safety, Oversteepen Slope	Redesign with Benches
	SB	No Full Safety, Cut Slope Failures in Strip-mines	Stabilize

MILE POST	LANE	CONDITION	CORRECTION
22 - 23	SB	Embankment Failure	Flatten Slope
23 - 25	NSB	No Full Safety, Oversteepen Slope	Redesign with Benches
25 - 26	NSB	Hazardous Ss Blocks	Remove Cap
	SB	Embankment Failure	Flatten Slope
26 - 27	SB	Acid Drainage	Cover
27 - 28	SB	Embankment Failure	Flatten Slope
28 - 29	SB	No Full Safety on Passing Lane	Recut Slope on Existing Angle
31 - 32	NB	Acid Drainage	Cover
	NB	Embankment Failure	Berm
36 - 37	SB	Acid Drainage	Cover
38 - 39	SB	Acid Drainage	Cover
41 - 42	SB	Acid Drainage	Cover
43 - 44	SB	Acid Drainage	Cover
	SB	Embankment Failure	Flatten Slope
47 - 48	NB	Loose Rocks on Cut Slope	Scale Slope
	NSB	Cut above Tunnel for Wood Creek has large number of open joints	Inspect and Document Cond. of Tunnel. Blastw/Caution
	NSB	Cut with Slump Block on Vertical Slope	Redesign with Flatter Slope & Benches
	SB	Embankment Slope may Spill into Lake	Wall
49 - 50	NSB	No Full Safety	Recut Slope on Existing Angle

MILE POST	LANE	CONDITION	CORRECTION
50 - 51	NB	No Full Safety, Oversteepen Slope	Redesign as One Slope
	SB	No Full Safety, Oversteepen Slope	Daylight Cut
	NSB	Settlement at both ends of bridge	
	SB	No Full Safety, Oversteepen Slope	Redesign as One Slope
50 - 53	NB	Unstable Embankment on County Road Widening Could cause a shift of Channel Change and Co. Road	Steepen and Reinforce Slope
51 - 52	SB	No Full Safety, Oversteepen Slope	Redesign as One Slope
	SB	No Full Safety, Landslide Deposit	Remove Material
52 - 53	SB	No Full Safety, Oversteepen Slope	Redesign w Benches
	NB	No Full Safety, Oversteepen Slope	Redesign as One Slope
	NSB	Embankment Failure	Flatten Slope
53 - 54	NB	No Full Safety, Channel Deposits	Redesign with Benches and Flatter Slopes
	SB	No Full Safety, Oversteepen Slope	Daylight Cut
54 - 56.5	NSB	No Full Safety	Recut Slope on Existing Angle
56.5 - 57	SB	No Full Safety, Misiocated Benches	Redesign w Benches on Lithology
57 - 58	SB	Acid Drainage	Cover
	NB	Embankment Failure	Flatten Slope
	SB	No Full Safety, Misiocated Benches	Redesign with Benches on Lithology

MILE POST	LANE	CONDITION	CORRECTION
58 - 59	SB	No Full Safety , Caves and Lapies	Redesign Existing Slope. Seal Cave & Notch off Lapies
59 - 60	NSB	No Full Safety , Solution Features	Redesign on Existing Slope & Notch off Lapies
60 - 61	NSB	No Full Safety , Solution Features & Fault in Top of Cut	Major Redesign
61 - 62	NSB	No Full Safety , Solution Features	Redesign on Flatter Slope
62 - 63	NSB	No Full Safety , Hazardous Slopes	Redesign on Flatter Slope w/ Benches
	NB	Cut adjacent to tunnel for Linville Lake will require redesign	Inspect and Document Cond. of Tunnel. Blast w/Caution
63 - 64	SB	No Full Safety	Redesign on Existing Slope
64 - 65	NSB	No Full Safety , Solution Features	Redesign on Existing Slope & Notch off Lapies
	NSB	No Full Safety , Differential Weathering	Redesign on Flatter Slope & Notch off Lapies
65 - 66	NSB	No Full Safety , Solution Features	Redesign on Flatter Slope & Notch off Lapies
66 - 67	NB	No Full Safety , Differential Weathering	Redesign on Flatter Slope w Benches
	SB	No Full Safety, Oversteepened Slope	Redesign on Flatter Slope
	NB	No Full Safety, Oversteepened Slope	Redesign on Interbedded Shales
			One Slope

MILE POST	LANE	CONDITION	CORRECTION
67 - 70	NSB	No Full Safety, Oversteepened Slope Interbedded Shales	Redesign One Slope
69 - 70	SB	Pavement Failure	
70 - 71	SB	No Full Safety, Oversteepened Slope Deep Shale Cut	Redesign One Slope
71 - 73	NSB	No Full Safety, Oversteepened Slope Small Shale Cut	Redesign on Soil Slope
73 - 74	NSB	No Full Safety, Joint Controlled Failures	Redesign on Flatter Slope w Benches
74 - 76	NSB	Cuts and Fills are Leaching Acid	Cover Embankment w/ 2'soil & piace Ls. in ditches
78 - 79	SB	Embankment failure related to Drainage Structure	
79 - 86	NSB	No Full Safety, Oversteepened Slope	Redesign on Flatter One Slope