

CHAPTER I - PURPOSE OF AND NEED FOR ACTION

The Missouri Department of Transportation (MoDOT) and the Federal Highway Administration (FHWA) are proposing to improve Route 13 from U.S. 24 south of Lexington to a point south of Clinton, Missouri in Lafayette, Johnson and Henry Counties in west-central Missouri.

This chapter provides a description of the proposed action and the transportation-related problems which are to be addressed by the proposed improvements.

A. PROJECT STATUS

1. Project History

In the 1992 *Program for Right of Way Acquisition and Construction on the Interstate, Primary and Supplemental Systems*, approved September 8, 1993, the Missouri Highway and Transportation Department (MHTD) outlined a program for highway improvements on the Missouri State Highway System. This plan provides an estimated outlay of highway improvement funds for design, right-of-way acquisition and construction. Included in the 1992 plan are plans to improve and upgrade Route 13, including the segment from Lexington to Clinton. Improvements to Route 7 are identified in the program as well. In addition to capacity improvements along the existing Route 7 alignment west of and through the city of Clinton, improvements have been programmed for the relocation of Route 7 around Clinton.

In May of 1994, MHTD authorized the location and environmental study for the Route 13 improvements from Lexington to Clinton and the Route 7 relocation in the vicinity of the city of Clinton.

2. Actions Pending

The action proposed in the Route 13 Corridor Study (Lexington to Clinton), as presented in this EIS, consists of improvements commencing at U.S. 24 south of Lexington and connecting with existing Route 13 south of Clinton and north of Truman Reservoir. At the northern terminus, alternative analysis considerations for the improvements north of U.S. 24, including the areas around U.S. 24, were included in the EIS for the Route 13 Corridor Study (Richmond to Lexington). The analyses and conclusions presented therein define the logical northern terminus of this EIS. Similarly, environmental documentation and analyses for planned improvements south of Clinton, which have culminated in a "Finding of No Significant Impacts" (FONSI) based on the Final Environmental Assessment approved on June 13, 1996, have also evaluated alternative alignments and have defined the logical southern terminus for this EIS. Impacts for each of these proposed actions, both direct and indirect, are presented in their respective environmental documents – EIS for the project to the north and an EA for the southern project. Indirect or secondary impacts to both social and natural environments for this proposed action have been included in this EIS.

The southern termination point of this project – Route 13 (Lexington to Clinton) – did take into account the commencement point for the southern Route 13 improvement project. It was determined that additional bridge crossings of Truman Reservoir other than the location of the existing bridges would likely have additional impacts to the Corps of Engineers properties, including the Reservoir, and to MDC leaseholds as well as additional location and construction costs.

3. Merged NEPA and CWA Procedures

As a cooperating agency for the proposed Route 13 and Route 7 improvements, the U.S. Army Corps of Engineers has provided significant input into the location and environmental study for the proposed improvements. A merged process for the National Environmental Policy Act requirements and the Clean Water Act procedures, as administered by the Corps, was implemented for this study. With this merged process, common requirements of each act were developed jointly during the course of the study. As shown of Exhibit I.A.3-1, the notice of intent was jointly developed, as well as the statement of purpose and need. Other concurrence points included the preliminary screening and evaluation of alternatives. Additional coordination was necessary for the joint location public hearing and the development of appropriate mitigation measures. The goal of these merged procedures is to fulfill the intent of the NEPA/CWA regulations through a simultaneous, efficient process. As a result, this Final Environmental Impact Statement (FEIS) is the documentation for the issuance of a generalized Section 404 permit. A Section 404 permit application for the proposed action is included in this FEIS for review and comment.

B. PROJECT DESCRIPTION

The Route 13 and Route 7 project consists of improvements to existing Route 13 from south of Lexington to south of Clinton, connecting a planned four-lane relocation of Route 13 from Richmond to Lexington to a planned four-lane widening of the existing roadway immediately south of Clinton (MoDOT Job No. J4P1234B from U.S. 24 to U.S. 50 and MoDOT Job No. J4P1235 from U.S. 50 to south of Clinton). The distance of the Route 13 improvements for this project is approximately 105.7 km (65.7 miles). Also included in the project is a four-lane Route 7 improvement on new location from 3.22 km (two miles) west to 1.0 km (0.6 miles) east of Clinton, connecting a planned four-lane roadway west of Clinton with an existing two-lane facility east of Clinton (MoDOT Job No. J4P1119). The study corridor and MoDOT Job Number limits for the Route 13/Route 7 project is shown on Exhibit I.B-1.

1. Existing Route Description

a. Regional Transportation System

Route 13 Corridor

Route 13 is a north-south state highway located in the western part of Missouri. Extending from a connection with I-35 in northern Missouri to a southern terminus at the Arkansas state line, the Route 13 corridor generally extends through the state. Larger cities (population of 4,500 or greater) located along the corridor include Richmond,

Lexington, Higginsville, Warrensburg, Clinton, Bolivar, and the Springfield/Branson area. Interstate connections are provided at I-35 from the north, I-70 east of Kansas City and I-44 north of Springfield. Parallel routes which provide similar travel service include U.S. 71 to the west and U.S. 65 to the east. U.S. 50, an east-west routing, intersects the Route 13 corridor at Warrensburg.

By virtue of its alignment through Springfield, Route 13 provides the primary means for roadway travel from the northwest part of the state to the Springfield/Branson region. Traffic originating from or passing through Kansas City primarily accesses Route 13 by means of M-210, I-70, U.S. 50 or Route 7 via U.S. 71. A coalition of city, business and transportation groups has been formed to promote the use of the Route 92, Route 10 and Route 13 corridors for tourist traffic originating from northern Kansas City, particularly the Kansas City International Airport, and destined for the Springfield/Branson area. The 92-10-13 Coalition has pursued the upgrading of these facilities to provide a tourism corridor from Kansas City to the southwest part of the state. Exhibit I.B.1-1 shows the 92-10-13 Corridor as well as the regional transportation system.

Route 7 Corridor

Beginning in the Kansas City area and ending at a connection with I-44 west of Rolla, Route 7 is generally a north-south state route which traverses the state in a northwest-southeast direction. Cities outside of the Kansas City Metropolitan Area located along the corridor include Harrisonville, Clinton, Warsaw, Camdenton and Richland. Interstate connections are provided at I-70 in Kansas City and I-44 west of Rolla.

Travel usage along Route 7 is similar to Route 13 due to the interconnection of the routes at the city of Clinton and service to the Springfield/Branson area. One of the primary travel patterns for traffic originating or passing through the Kansas City area and destined for the southwest part of the state is a combination of Route 7 and Route 13. Route 7 provides a direct connection between U.S. 71 south of Harrisonville and Route 13 at the City of Clinton. In addition to the travel demand farther south, this connection provides access to the headwaters of Harry S. Truman Reservoir located immediately south of Clinton. Farther east, Route 7 also provides access to the Harry S. Truman Reservoir dam area and to the Lake of the Ozarks. Though not considered a primary route for access to Lake of the Ozarks, Route 7 does provide service to the western remote areas of the Lake.

b. Description of Existing Roadways

Route 13 Roadway

In general, existing Route 13 consists of a rural, two-lane roadway with narrow, unstabilized shoulders throughout the study area. This generalized section varies within the Warrensburg and Clinton areas. Originally constructed in the 1920's and 30's, the roadway horizontal alignment is fairly straight with periodic alignment adjustments for township/range lines. One exception is the diagonal alignment between Lexington and Higginsville. Subsequent to the original paving, various improvements have been performed to the roadway section. More recent improvements include bridge structure replacements with associated roadway widening and roadway relocations in the vicinity

of Warrensburg and Clinton. A 4.0 Km (2.5-mile) relocation immediately north of Warrensburg including a bridge crossing over the Blackwater River was completed in the early 1970's and a 9.8 Km (6.1-mile) relocation immediately north of Clinton plus a two-lane/three-lane bypass around the eastern side of Clinton was completed in the late 1960's.

Route 7 Roadway

Unlike the Route 13 alignment within the study area, the existing Route 7 alignment in the vicinity of Clinton is not located along the original alignment. Route 7 was relocated to its current alignment north of the city of Clinton on a joint location with Route 13, also relocated from its original location, from an intersection north of Clinton to an intersection east of Clinton. To the west of Clinton, existing Route 7 consists of a two-lane roadway section with full-width, stabilized shoulders. Through Clinton, the Route 7 roadway varies from a two-lane to a three-lane section. East of Clinton the existing roadway consists of a two-lane section with narrow, unstabilized shoulders.

c. Planned Route Improvements

Within the region generally surrounding the project area, MoDOT has identified numerous roadway improvements in the 1992 plan. As shown on Exhibit I.B.1-2, extensive improvements are planned for both the Route 13 and Route 7 corridors throughout the region. For this project, the termini of the proposed action are all located adjacent to roadway segments in various stages of improvement (programmed, design or construction). These regional improvements will have an effect on the future travel demand of the region and the need for improvements of Route 13 and Route 7 within the project area. Other planned improvements potentially influencing the project area include the I-70 and U.S. 50 improvements.

Route 13 Improvements

As identified in the 1992 plan, plans have been initiated for the relocation of Route 13 from Richmond to Lexington. The location study for these improvements, which was recently completed, has identified a relocation alignment along the east side of Lexington as the best location for the improvements. The southern limit of these improvements is U.S. 24 where a folded-diamond interchange is planned. Included in these improvements is a new Missouri River bridge crossing to replace the existing bridge. Based on desired traffic service and program objectives, a divided four-lane facility is planned for this relocation.

At the southern end of the project, in the vicinity of Clinton, numerous roadway improvements are planned. Within the Route 13 corridor, four-lane widening of the existing roadway through the City of Clinton is currently in progress. These improvements are programmed to continue south along the existing Route 13 alignment, including new bridge structures over Truman Reservoir.

Route 7 Improvements

Like Route 13, MoDOT has also programmed improvements for Route 7 throughout the region. Beginning at the City of Urich, where the existing four-lane expressway currently

ends, four-lane upgrading of the existing two-lane roadway is planned up to and through the City of Clinton (joining the Route 13 improvements located north and east of the city). Construction of these improvements will begin in the near future.

East of Clinton, improvements along the Route 7 corridor are planned for the latter part of the 1992 plan. A location study for the Route 7 improvements east of Clinton has not yet been initiated. These improvements are intended to extend through the Lake of the Ozarks area.

2. Description of Study Corridor

The study corridor or project area generally extends approximately 105.7 km (65.7 miles) from Lexington to a short distance south of Clinton along Route 13 in Lafayette, Johnson and Henry Counties. In addition, the study corridor extends along Route 7 a short distance on both sides of the City of Clinton. As shown on Exhibit I.B-1, the corridor is generally aligned north and south with a short diagonal at the northern end of the project area for the alignment between Lexington and Higginsville. The corridor is generally centered along the existing Route 13 with a total width of approximately 9.7 km (six miles).

Located within the project area are three relatively major cities: Higginsville, Warrensburg and Clinton. Lexington is located at the northern end of the study corridor. Route 13, Route 213 and Route 20 currently serve the City of Higginsville, which is located north of I-70. The central business district is directly served by Route 213, with Route 13 being located on the western fringe of the community. Route 13 provides the primary transportation access to and from the City of Higginsville.

The City of Warrensburg is located in the center of the study corridor at the intersection of U.S. 50 and Route 13. With the Knob Noster community and Whiteman Air Force Base being located a relatively short distance east of Warrensburg, U.S. 50 is the primary access roadway to the Warrensburg community. In addition to the Knob Noster and Whiteman Air Force Base, U.S. 50 also serves traffic to and from Kansas City to the west and Sedalia to the east. Access to and from the north/south directions is primarily served by Route 13. Within the Warrensburg city limits, Route 13 is located along the east side of the central business district, including the Johnson County courthouse, and is located within the Central Missouri State University campus on the south side of the city.

The southern end of the study corridor contains the City of Clinton and the headwater area of Harry S. Truman Reservoir. Both Route 13 and Route 7 bypass the Clinton community on the north and east sides. Other state routes which serve the community, though not to the extent of Route 13 and Route 7, include Route 18 to the west and Route 52 to the northeast.

Outside of these three city areas, the study corridor can be characterized as rural with agricultural land uses. The one exception to this is the strip mine areas located north of Clinton and extending through the 9.7 km (six-mile) wide corridor.

3. Roadway Type

The Route 13 and Route 7 improvements are proposed to be an expressway facility utilizing limited control of access in rural areas and a freeway facility using full control of access in the urban areas of Warrensburg and Clinton. The basic roadway would consist of two traffic lanes in each direction separated by an 18.3 meter (60 foot) depressed median. Full width paved shoulders would be used on each side of the traveled way. The roadway line and grade would be efficiently adapted to the topography of the area to the extent allowed by the design criteria. The roadway typical section for the expressway/freeway improvement, as well as for a two-lane improvement and the existing roadway, is illustrated in Exhibit I.B.3-1 and the design criteria is presented in Appendix A.

C. OVERVIEW OF PURPOSE AND NEED

1. Statement of Basic Project Purpose

The basic purpose of the project is to provide a safe, efficient, environmentally sound and economical transportation facility that responds to the needs of the study area.

2. Statement of Purpose and Need

The specific needs being addressed by the proposed action are summarized as follows:

- *Traffic Safety* - Reduce the number and severity of traffic-related accidents occurring along Route 13 between Lexington and Clinton and Route 7 in Clinton.
- *Roadway Deficiencies* - Eliminate current roadway deficiencies including substandard roadway alignment, inadequate roadway cross section, and roadside hazards such as narrow bridges, guardrail and inadequate clear zones.
- *Traffic Congestion* - Relieve through traffic congestion and associated costs currently occurring in the Route 13 and Route 7 corridors.
- *Efficient Movement of People and Goods* - Improve the movement of people and goods through the region by reducing the total vehicle miles traveled and vehicle hours traveled within the study area.
- *Public Safety* - Improve existing public safety by reducing emergency vehicle response times within the project area.
- *Economic Development* - Improve economic development opportunities by removing impediments to the safe and efficient movement of people and goods through and within the region.
- *Regional Highway System Continuity* - Provide regional route continuity based on the currently planned Route 13 and Route 7 improvements along adjacent roadway segments.

- *Recreational Access* - Facilitate the usage by motorists of established recreational facilities.
- *Defense Facility Access* - Provide for the timely and efficient movement of personnel and resources to Whiteman Air Force Base.

Each of these specific needs is discussed in the following sections.

D. TRAFFIC SAFETY

Older two-lane highways, such as Route 13 and Route 7, have several characteristics that contribute to a higher accident rate than a modern expressway or freeway. Route 13, for example, has several areas with limited passing visibility, inadequate shoulders, and heavy turning movements at major crossroads. As Route 13 passes through the three urban areas of Higginsville, Warrensburg, and Clinton, the problems of heavy turning movements and side friction create an even more accident prone highway. As traffic growth continues in the Route 13 corridor, the potential for traffic accidents increases proportionally.

By comparison, a modern four-lane expressway or freeway with bypasses around the urban communities reduces the probability of accidents. The expressway/freeway removes or reduces dangerous turning movements, allows safe passing maneuvers, provides roadside recovery zones on the outside shoulders and the median, and reduces or eliminates the need for frequent speed changes. In the urban areas, the bypass not only provides a safer passage through town, but removes traffic from the existing city street system, thus reducing recurrent congestion. Less congested city streets improve the traffic flow and reduce the risk of accidents.

1. Current Accident Statistics

Statewide yearly average accident rates for accidents during the five year period from 1992 through 1996 are shown in Table I.D.1-1 and classified by route designation.

Table I.D.1-1
Statewide Average Accident Rates¹
 (Yearly Average for Five Year Period - 1992 through 1996)

ROUTE TYPE	YEARLY AVERAGE	
	Accidents per 100 Million Vehicle	
	Kilometers	Miles
Interstate	79.40	127.79
Non-Interstate Rural Divided ²	57.90	93.17
U.S. Numbered	117.86	189.67
State Numbered	176.91	284.71
State Lettered	164.00	263.93
Other	422.93	680.64

¹Data Source: MoDOT

²Data Period: 1991 through 1995

Table I.D.1-2 presents project specific accident data on an average yearly basis for the same five year analysis period, 1992 through 1996. The data in Table I.D.1-2 has been broken down into homogeneous operational segments in each county and also by type (property damage only accidents, injury accidents and fatal accidents). Data for both Route 13, summed by county and by project total, and for Route 7 is included in the table.

An inspection of Table I.D.1-2 reveals that, when viewed on a segment basis, the only segments that exceed the statewide average for state numbered routes are the urban portions of Higginsville and Warrensburg on Route 13 and the urban portion of Clinton on Route 7. Each of these high accident locations will be by-passed by the proposed action.

The existing alignment of Route 7 and 13 through Clinton is currently being upgraded from two lanes to four lanes including intersection improvements at the two intersections of Route 7 and 13, north and south, plus a reconfiguration of the Route 7/13 interchange with Route 52. This improvement will reduce the accident rate to more closely resemble the average for U.S. numbered routes (117.86 accidents per 100 MVKm or 189.67 accidents per 100 MVM).

2. Accident Projections for the No-Build Condition

Based on current accident rates and expected traffic growth to the design year of 2022, the total number of accidents was estimated and is shown in Table I.D.2-1. This estimate assumes that no improvements are made in the project area. A comparison of total project accidents on Route 13 indicates an almost doubling (195% increase) in accidents between the 1992 to 1996 average to the design year of 2022.

In order to more closely reflect the actual condition on Route 7 after the widening of the existing route to four lanes through Clinton, the accident rates for Segments 11 and 12 were changed to the value for State Numbered routes from Table I.D.1-1 (176.91 accidents per 100 million vehicles kilometers).

3. Accident Projections for the Build Condition

Table I.D.3-1 illustrates the projected accident numbers that would occur in each analysis section if the four lane divided expressway is in place. The accident rate for this analysis is the Non-Interstate Rural Divided value shown in Table I.D.1-1. The total accident rate of 57.90 accidents per 100 million vehicle kilometers was divided into its individual components in the same relationship as currently exists on Route 13. By using projected accident rates for the new facility and projected vehicle kilometers of travel, the anticipated accident numbers for the new facility in the design year are calculated.

Table I.D.1-2
Accident Statistics by Type
 (Average Per Year for Period between 1992 through 1996)

LENGTH Kilometers (Miles)	AVERAGE DAILY TRAFFIC	NUMBER OF ACCIDENTS BY TYPE AND RATE*								
		PDO	PDO Rate	Injury	Injury Rate	Fatal	Fatal Rate	Total	Total Rate	
LAFAYETTE COUNTY										
Segment 1 - from U.S. 24 to Business Route 13										
15.80 (9.82)	3,900	16.4	73 (117)	6.4	28 (46)	0.2	0.9 (1.4)	23	102 (164)	
Segment 2 - from Business Route 13 to Route MM (urban Higginsville)										
5.47 (3.40)	2,130	20.2	475 (764)	4.8	113 (182)	0	0 (0)	25	588 (946)	
Segment 3 - from Route MM to 0.5 miles north of I-70										
4.75 (2.95)	6,100	5	47 (76)	2	19 (30)	0	0 (0)	7	66 (106)	
Segment 4 - from 0.5 miles north of I-70 to 0.5 miles south of I-70										
1.61 (1.0)	6,140	4.2	116 (187)	1.2	33 (53)	0	0 (0)	5.4	150 (241)	
Segment 5 - from 0.5 miles south of I-70 to Johnson County Line										
6.58 (4.09)	5,130	4.6	37 (60)	2.4	19 (31)	0.2	1.6 (2.6)	7.2	58 (94)	
LAFAYETTE COUNTY TOTAL										
34.21 (21.26)	4,264	50.4	95 (152)	16.8	31 (51)	0.4	0.7 (1.2)	67.6	127 (204)	
JOHNSON COUNTY										
Segment 6 - from Lafayette County Line to Route OO										
11.99 (7.45)	6,920	22.2	73 (118)	9	30 (48)	0.4	1.3 (2.1)	31.6	104 (168)	
Segment 7 - from Route OO to Route Y (urban Warrensburg)										
14.10 (8.76)	14,600	210.6	280 (451)	48.6	65 (104)	0.8	1.1 (1.7)	260	346 (557)	
Segment 8 - from Route Y to Henry County Line										
16.38 (10.18)	6,470	28	72 (116)	9.4	24 (39)	0.2	0.5 (0.8)	37.6	97 (156)	
JOHNSON COUNTY TOTAL										
42.47 (26.39)	9,295	260.8	181 (291)	67	46 (75)	1.4	1.0 (1.6)	329.2	228 (368)	
HENRY COUNTY										
Segment 9 - from Johnson County Line to Route 7 north										
19.97 (12.41)	3,100	17.8	79 (127)	8.2	36 (58)	0.2	0.9 (1.4)	26.2	116 (186)	
Segment 10 - from Route 7 south to 1 mile south of Clinton										
3.28 (2.04)	7,800	5.4	58 (93)	3.2	34 (55)	0	0 (0)	8.6	92 (148)	
HENRY COUNTY TOTAL (Exclusive of Route 7/13 north to Route 7/13 south)										
23.26 (14.45)	3,763	23.2	73 (117)	11.4	36 (57)	0.2	0.6 (1.0)	34.8	109 (175)	
ROUTE 13 TOTAL										
99.94 (62.10)	6,285	334.4	146 (235)	95.2	42 (67)	2.0	0.9 (1.4)	431.6	188 (303)	
ROUTE 7										
Segment 11 - from 1 mile west of Clinton City Limits to Route 7/13 north										
3.48 (2.16)	8,140	17.2	166 (268)	8	77 (125)	0	0 (0)	25.2	244 (393)	
Segment 12 - from Route 7/13 north to Route 7/13 south (urban Clinton)										
3.75 (2.33)	10,000	25.6	187 (301)	13.4	98 (158)	0.2	1.5 (2.4)	39.2	286 (461)	
Segment 13 - from Route 7/13 south to 1 mile east of Clinton City Limits										
2.62 (1.63)	5,120	17.4	355 (571)	8	163 (263)	0	0 (0)	25.4	519 (834)	
ROUTE 7 TOTAL										
9.85 (6.12)	8,044	60.2	208 (335)	29.4	102 (164)	0.2	0.7 (1.1)	89.8	310 (500)	

* Rate Expressed As: Accidents Per Hundred Million Vehicle Kilometers
 (Accidents Per Hundred Million Vehicle Miles)

PDO = Property Damage Only

**Table I.D.2-1
Accident Numbers - Year 2022
No-Build Condition**

LENGTH Kilometers	ADT 2022	ACCIDENT RATE*				ACCIDENT NUMBER			
		PDO	Injury	Fatal	Total	PDO	Injury	Fatal	Total
LAFAYETTE COUNTY									
Segment 1 - from U.S. 24 to Business Route 13									
15.80	10,100	73	28	0.9	102	42.5	16.3	0.5	59.3
Segment 2 - from Business Route 13 to Route MM (urban Higginsville)									
5.47	6,000	475	113	0	588	56.9	13.5	0	70.4
Segment 3 - from Route MM to 0.5 miles north of I-70									
4.75	15,700	47	19	0	66	12.8	5.2	0	18.0
Segment 4 - from 0.5 miles north of I-70 to 0.5 miles south of I-70									
1.61	15,700	116	33	0	150	10.8	3	0	13.8
Segment 5 - from 0.5 miles south of I-70 to Johnson County Line									
6.58	15,700	37	19	1.6	58	14.0	7.2	0.60	21.8
LAFAYETTE COUNTY TOTAL									
34.21						137	45	1	183
JOHNSON COUNTY									
Segment 6 - from Lafayette County Line to Route OO									
11.99	15,700	73	30	1.3	104	50.2	20.6	0.9	71.5
Segment 7 - from Route OO to Route Y (urban Warrensburg)									
14.10	24,950	280	65	1.1	346	359.5	83.5	1.4	444.3
Segment 8 - from Route Y to Henry County Line									
16.38	7,100	72	24	0.5	97	30.6	10.2	0.2	41.2
JOHNSON COUNTY TOTAL									
42.47						440	114	3	557
HENRY COUNTY									
Segment 9 - from Johnson County Line to Route 7 north									
19.97	9,700	79	36	0.9	116	55.9	25.4	0.6	82.0
Segment 10 - from Route 7 south to 1 mile south of Clinton									
3.28	20,100	58	34	0	92	14.0	8.2	0	22.2
HENRY COUNTY TOTAL (Exclusive of Route 7/13 north to Route 7/13 south)									
23.26						70	34	1	104
ROUTE 13 TOTAL									
99.94						647	193	5	844
ROUTE 7									
Segment 11 - from 1 mile west of Clinton City Limits to Route 7/13 north									
3.48	20,900	136	39	2	177	36.1	10.4	0.5	47
Segment 12 - from Route 7/13 north to Route 7/13 south (urban Clinton)									
3.75	26,800	136	39	2	177	49.9	14.3	0.7	64.9
Segment 13 - from Route 7/13 south to 1 mile east of Clinton City Limits									
2.62	10,800	355	163	0	519	36.7	16.8	0	53.6
ROUTE 7 TOTAL									
9.85						123	42	1	166

* Rate Expressed As: Accidents Per Hundred Million Vehicle Kilometers

PDO = Property Damage Only

**Table I.D.3-1
Accident Numbers - Year 2022
Build Condition
(Rural Divided Non-Interstate)**

LENGTH Kilometers	ADT 2022	ACCIDENT RATE*				ACCIDENT NUMBER			
		PDO	Injury	Fatal	Total	PDO	Injury	Fatal	Total
LAFAYETTE COUNTY									
Segment 1 - from U.S. 24 to Business Route 13									
15.80	10,100	44.58	12.74	0.58	57.90	26	7.4	0.34	33.7
Segment 2 - from Business Route 13 to Route MM (urban Higginsville)									
5.47	6,000	44.58	12.74	0.58	57.90	5.34	1.53	0.07	6.94
Segment 3 - from Route MM to 0.5 miles north of I-70									
4.75	15,700	44.58	12.74	0.58	57.90	12.13	3.46	0.16	15.76
Segment 4 - from 0.5 miles north of I-70 to 0.5 miles south of I-70									
1.61	15,700	44.58	12.74	0.58	57.90	4.11	1.18	0.04	5.34
Segment 5 - from 0.5 miles south of I-70 to Johnson County Line									
6.58	15,700	44.58	12.74	0.58	57.90	16.8	4.80	0.22	21.83
LAFAYETTE COUNTY TOTAL									
34.21						65	18	1	84
JOHNSON COUNTY									
Segment 6 - from Lafayette County Line to Route OO									
11.99	15,700	44.58	12.74	0.58	57.90	30.63	8.75	0.40	39.78
Segment 7 - from Route OO to Route Y (urban Warrensburg)									
14.10	24,950	44.58	12.74	0.58	57.90	57.24	16.36	0.74	74.35
Segment 8 - from Route Y to Henry County Line									
16.38	7,100	44.58	12.74	0.58	57.90	18.92	5.41	0.25	24.58
JOHNSON COUNTY TOTAL									
42.47						107	31	1	139
HENRY COUNTY									
Segment 9 - from Johnson County Line to Route 7 north									
19.97	9,700	44.58	12.74	0.58	57.90	31.52	9.01	0.41	40.94
Segment 10 - from Route 7 south to 1 mile south of Clinton									
3.28	20,100	44.58	12.74	0.58	57.90	10.73	3.07	0.14	13.93
HENRY COUNTY TOTAL (Exclusive of Route 7/13 north to Route 7/13 south)									
23.26						42	12	1	55
ROUTE 13 TOTAL									
99.94						214	61	3	278
ROUTE 7									
Segment 11 - from 1 mile west of Clinton City Limits to Route 7/13 north									
3.48	4,800	44.58	12.74	0.58	57.90	2.71	0.78	0.04	3.53
Segment 12 - from Route 7/13 north to Route 7/13 south (urban Clinton)									
3.75	11,700	44.58	12.74	0.58	57.90	7.14	2.04	0.09	9.27
Segment 13 - from Route 7/13 south to 1 mile east of Clinton City Limits									
2.62	10,800	44.58	12.74	0.58	57.90	4.60	1.32	0.06	5.98
ROUTE 7 TOTAL									
9.85						15	4	0	19

* Rate Expressed As: Accidents Per Hundred Million Vehicle Kilometers

PDO = Property Damage Only

4. Projected Accident Cost Saving with Build Condition

The reduced accidents that will be experienced when the four-lane expressway is in place can be computed by multiplying costs per accident by the number of accidents reduced by the new facility.

Based on the standard Missouri accident cost values of \$2,000 per PDO accident, \$41,000 per injury accident, and \$1.5 million per fatal accident, the total monetary savings was estimated for the reduction in accidents. With the completion of a four-lane facility, the public would save approximately \$12.6 million per year in the year 2022.

**Table I.D.4-1
Projected Accident Cost Savings - Four Lane Expressway
Year 2022**

SEGMENT	NUMBER OF ACCIDENTS REDUCED				TOTAL SAVINGS
	PDO	Injury	Fatal	Total	
Route 13					
Lafayette Co.	72	27	0	99	\$1,251,000
Johnson Co.	333	83	2	418	7,069,000
Henry Co.	28	22	0	50	958,000
Route 13 Total	433	132	2	567	\$9,278,000
Route 7 Total	108	38	1	147	\$3,274,000
Project Total	541	170	3	714	\$12,552,000

The total reduction in accident numbers from an expected 1,010 accidents for the No-Build condition to 309 accidents for the new facility illustrates the benefits derived by the proposed action for the one factor of accident reduction alone.

E. ROADWAY DEFICIENCIES

Route 13 through the study area has generally remained in the same location since its original construction in the 1920's and 30's. Some improvements to the route have been implemented by MoDOT, such as bridge replacements and roadway relocations immediately north of Warrensburg and north of Clinton, but in general, Route 13 is currently as it was sixty to seventy years ago. Though the horizontal location of the roadway is fairly straight through the study area, significant deficiencies do exist regarding the vertical alignment, roadway section and roadside safety. These deficiencies exist because a lower standard of design was used during the time when Route 13 was originally constructed.

For safety reasons, sight distance of sufficient length must be provided along a roadway so that drivers can control the operation of their vehicles to avoid striking an unexpected object on the traveled way. The minimum sight distance available on a roadway should be long enough to enable a vehicle traveling at or near the maximum safe driving speed, or design speed, to stop before reaching a stationary object in its path. Roadway

alignments should also be gentle to permit smooth directional transitions for the traveling vehicle. Based on a review of both the existing horizontal and vertical alignments, Route 13 does not meet current American Association of State Highway and Transportation Officials (AASHTO) design standards for alignment. As shown on Exhibit I.E-1, approximately 74% of the Route 13 roadway in the study area is substandard based on a 80.5 kph (50 mph) design speed. If a 112.6 kph (70 mph) is considered, only 18% of the existing roadway would meet current alignment design standards.

Another standard of design, which has changed considerably over time, is the issue of roadside safety. While every reasonable effort should be made to keep a motorist on the roadway, as accomplished through alignment design standards, even with the best type of facility this goal will never be fully realized. Motorists will continue to have accidents in which they run off the road for one reason or another. Realizing that vehicles can potentially leave the roadway at any given location, a "forgiving roadway" concept has been developed since the time that the original Route 13 was constructed to provide a safer roadside environment for the traveling public. Standard roadway cross sections have been improved, including a travel lane of 3.66 meters (12-feet) with wide paved shoulders. Furthermore, a clear zone area, free of roadside hazards such as trees, boulders or non-breakable sign posts, is now typically provided adjacent to the roadway surface. The existing cross section of Route 13 does not meet these standards. The travel lanes are generally less than 3.66 meters (12-feet) in width and only limited segments within the study area include paved shoulders. For most of the approximate 112 km (70 mile) Route 13 and Route 7 project, roadway shoulders do not currently exist and objects are located within the roadside recovery zone.

Improvements along the existing alignment or on new location would address the current roadway deficiencies of Route 13. In either case, travel lanes of 3.66 meters (12-feet) with full-width paved shoulders would be provided in accordance with AASHTO guidelines. Furthermore, outside of the travel way, sufficient recovery areas for errant vehicles would be provided. These upgrades to the Route 13 cross section, when combined with alignment improvements would provide a considerably safer, more efficient roadway through the project area.

F. TRAFFIC CONGESTION

1. Level of Service Criteria

Quality of traffic flow is measured by comparison to established levels of traffic service. These levels of service are defined for the various classes of roadway in the "Highway Capacity Manual -- Special Report No. 209" (HCM), 1985, prepared by the Transportation Research Board. The levels of service range from the most desirable (level A) to the theoretical capacity of the roadway (level E) and also forced flow congested conditions referred to as level F. General descriptions of the operating conditions for expressway/freeway facilities for each of the levels of service from the HCM are as follows:

- *Level-of-Service A* - Level A describes primarily free flow operations. Average travel speeds near 60 mph generally prevail on 70-mph freeway elements. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.
- *Level-of-Service B* - Level B also represents reasonably free-flow conditions, and speeds of over 57 mph are maintained on 70-mph freeway elements. The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high.
- *Level-of-Service C* - Level C provides for stable operations, but flows approach the range in which small increases in flow will cause substantial deterioration in service. Average travel speeds are still over 54 mph. Freedom to maneuver within the traffic stream is noticeably restricted at LOS C, and lane changes require additional care and vigilance by the driver.
- *Level-of-Service D* - Level D borders on unstable flow. In this range, small increases in flow cause substantial deterioration in service. Average travel speeds of 46 mph or more can still be maintained on 70-mph freeway elements. Freedom to maneuver within the traffic stream is severely limited, and the driver experiences drastically reduced physical and psychological comfort levels.
- *Level-of-Service E* - The boundary between LOS D and LOS E describes operations at capacity. Operations in this level are extremely unstable, because there are virtually no usable gaps in the traffic stream. Vehicles are spaced at approximately 80 feet, or 4 car-lengths, at relatively uniform headways. This, however, represents the minimum spacing at which stable flow can be accommodated.
- *Level-of-Service F* - Level F describes forced or breakdown flow. Such conditions generally exist within queues forming behind breakdown points.

The generally accepted service level for design year traffic volumes in rural conditions is level C with level B considered as the desirable flow condition. In more congested urban areas, level D, minimum, and level C, desirable, are the generally accepted service levels for design year traffic volumes.

For a typical two-lane rural roadway, assuming a 60%/40% directional distribution, 14% heavy trucks and 10% to 15% of the total daily volume occurring during a peak one hour period, the following theoretical service volumes can be assumed:

**Table I.F.1-1
Typical Two-Lane Rural Highway Service Volumes**

Service Level	Volumes (vehicles per day)	
	from	to
LEVEL TERRAIN		
A	1,600	2,400
B	3,200	4,800
C	5,300	7,900
D	9,000	13,500
E	15,200	22,900
ROLLING TERRAIN		
A	700	1,100
B	1,800	2,800
C	3,500	5,200
D	5,300	8,000
E	9,900	14,800

Source: Highway Capacity Manual, 1994, Table 8-10.

2. "No-Build" Condition

The current Route 13 roadway has several alignment and operational deficiencies that create an environment conducive to traffic congestion. For example, the highway segment through Warrensburg essentially operates as a city street, where through traffic is forced to mix with normal city traffic. This segment is currently operating near capacity with around 11,000 vehicles per day and is projected to serve approximately 30,000 vehicles per day by the year 2022. In the rural areas, the combination of substantial traffic volumes and inadequate passing lanes creates bottlenecks and slow-downs as well.

Current MoDOT policy states that when the average daily traffic (ADT) for the construction year (year 2002) exceeds 3,000 vehicles, acquisition for future four lane construction should be considered. Construction of the additional two lanes will be considered when design year traffic exceeds 7,500 vehicles per day (vpd). Most segments are currently in excess of the 3,000 vpd values, and projections show almost all rural sections exceeding the 7,500 vpd threshold before the year 2022. Traffic projections indicate between 7,100 and 21,000 vpd will be using various sections of Route 13, with a weighted average of 12,200 vpd. Four-lane improvements on Route 13 would meet the MoDOT planning criteria for both the existing traffic on the two-lane road and the future need for four lanes by the end of the design period for this project (year 2022).

In the urban areas, the traffic congestion will be even worse. In Clinton, the existing two-lane bypass is carrying between 8,000 and 12,000 vpd and is expected to increase to 20,000 to 28,000 vpd by the year 2022. The large Kansas City to the lake movement through Clinton is spurring much of that demand, while the at-grade intersections at Route 13/Route 7 and Route 13/Route 18/7 are creating large queues. In Warrensburg, the Route 13 traffic contends with frequent traffic signals and heavy turning movements from the commercial businesses. The existing two- and three-lane facility is expected to carry between 20,000 and 30,000 vpd by the year 2022.

Review of a traffic study of McGuire Street (existing Route 13) in Warrensburg performed for the City in 1990 by Bucher, Willis and Ratliff, service level D is now being experienced at Gay Street and level F at Young Avenue (Business U.S. 50). Increases in traffic demand in the future will worsen service levels on McGuire Street.

**Table I.F.2-1
Traffic Service of No-Build Condition**

Travel Section	Existing ADT ¹ (1997)	Construction ADT ¹ (2002)	Future ADT (2022)	Existing LOS (average)	1 st Year of Construction (average)	Future LOS (average)
N of Higginsville	5,000	6,100	10,200	C	C	D
Higginsville Urban	4,800	5,800	9,600	B	C	D
S of Higginsville	8,400	10,200	15,700	C/D	D	E
N of Warrensburg	9,700	11,800	16,600	D	D	E
Warrensburg Urban	12,300	14,900	25,000	D	E	Capacity +
S of Warrensburg	8,400	10,200	15,500	C/D	D	E
N of Clinton	4,000	4,800	9,700	B	B/C	D
Clinton Urban	13,000	15,800	25,500	D	E	Capacity +

¹ Extrapolated from 1993 volumes at 5% increase each year.

By inspection of Table I.F.2-1, it can be noted that the existing two lane roadway through the urban areas of Warrensburg and Clinton is presently experiencing congested operation. MoDOT has committed projects to improve Route 7 and 13 through Clinton which will alleviate congestion in Clinton. No plans are currently proposed to improve existing Route 13 through Warrensburg with the exception of constructing a pedestrian overpass at Central Missouri State University (CMSU).

By the first year of construction (year 2002) the rural section of the project from Higginsville to I-70 and both north and south of Warrensburg will also be experiencing service level D at volumes well above the MoDOT criteria for conversion to four lane operation.

The major intersections on the existing routing occur at: 1) the I-70 ramp terminals, 2) the intersection of Route 13 with Business U.S. 50 in Warrensburg, 3) the Route DD intersection in Warrensburg, and 4) the north and east intersections of Route 13 and Route 7 in Clinton. A discussion of each intersection follows.

a. I-70 Ramp Terminals

Although no capacity problems currently occur or are anticipated to occur at this location, sight distance restrictions and relatively high operating speed on Route 13 create safety concerns at this location. When warranted by accident experience, traffic signals could be used at these locations to mitigate sight distance problems and to force a reduction of speed on Route 13.

b. Business U.S. 50 Intersection in Warrensburg

As stated in the 1990 report prepared by Bucher, Willis and Ratliff (BWR) service level F is currently being experienced at this location during peak hour operation. Neither the City or the State have any current plans to improve this intersection. Based on future

traffic assignments, this above capacity operation in the peak hour can be expected to continue in the future.

c. Route DD Intersection in Warrensburg

As shown in the 1990 BWR report, this intersection currently operates at level of service "C". Based on design year traffic projections discussed in Chapter II (13,000 ADT on McGuire and up to 10,000 ADT on Route DD), this intersection can be expected to reach capacity operation if no change is made to either route. The City has long range plans to widen both McGuire Street and Route DD to four lanes but no definite time table or fund commitment exists at this time.

d. Route 13/Route 7 Intersections (2) in Clinton

Both of these intersections currently operate at capacity during peak hour operation and during certain off peak periods of high volume operation due to recreational traffic.

Committed projects are currently scheduled by MoDOT to widen Routes 7 and 13 in Clinton to four through lanes with median turn lanes where needed. These improvements to these two intersections will improve operation through most of the design period for this project.

3. Local Demand versus Regional Traffic

The current transportation configuration forces longer distance through trips to intersperse with shorter local trips. The current configuration adds five to ten minutes for trips through Warrensburg, and two to five minutes to the average trip through both Higginsville and Clinton. Motorists passing through Clinton during a heavy lake traffic movement, can experience a delay of fifteen or more minutes.

For local trips, the presence of through vehicles creates additional congestion and delays. Motorists are forced into longer queues at stoplights or lengthy detours to avoid congested areas.

4. Local Traffic Trends

The traffic volumes in both the rural and urban areas have been growing steadily over the last ten years. The Whiteman Air Force Base, Central Missouri State University, the recent growth at the Clinton Industrial Park, and the growth in traffic to the Truman Reservoir and Springfield/Branson area have all been responsible for that growth. Exhibit I.F.2-1 shows the historical daily traffic volumes on various Route 13 segments. The traffic on these segments has grown by approximately 2 to 8 percent annually over the last ten years.

5. Current/Projected Traffic Volumes in Urban Areas

Existing traffic volumes along the rural Route 13 segments range from 3,200 vpd between Warrensburg and Clinton to 8,100 vpd just north of Warrensburg. As expected, traffic volumes increase dramatically, ranging between 6,000 and 12,000 vpd, as the route passes through the urban areas. (These increases are discussed in more detail in Chapter II.)

Traffic growth was projected to the year 2022 to estimate the need for the proposed improvements. The projected traffic volumes indicate a fairly extensive growth in traffic over the next thirty years. The rural traffic volumes will range from 9,000 to 15,000 vpd, while the urban traffic volumes will range from 9,000 to 30,000 vpd. The projected growth in traffic through Warrensburg, as well as around Clinton, will create significant delays for the motoring public.

6. Proposed Improvements

The proposed improvements would substantially reduce current traffic congestion along Route 13 and Route 7, especially in the urban areas, and would provide a uniform level of service of C or better throughout the length of the Route 13 improvement. Removing through movements, as well as some trips with an origin or destination on the fringe of the urban areas, would result in less congestion on the existing routes. Table I.F.6-1 identifies the expected number of hours saved by the citizens in each county each day. The expected decrease in travel time ranges from 7 % in Johnson County to approximately 20 % in both Lafayette and Henry Counties.

**Table I.F.6-1
Average Daily Time Savings
Year 2022**

	Driving Hours Reduced	Percent Decrease
Lafayette County	2,850	22%
Johnson County	2,920	7%
Henry County	4,690	19%

For a typical four-lane rural roadway (assuming a 60%/40% directional distribution, 14% heavy trucks and 10% to 15% of the total daily volume occurring during a peak one hour period) the following theoretical service volumes can be assumed:

**Table I.F.6-2
Typical Four-Lane Expressway Service Volumes**

Service Level	Volumes (vehicles per day)	
	from	to
LEVEL TERRAIN		
A	6,160	9,200
B	10,270	15,400
C	14,070	21,100
D	16,840	25,270
E	19,640	29,470
ROLLING TERRAIN		
A	5,200	7,800
B	8,600	12,900
C	11,840	17,770
D	14,110	21,170
E	16,400	24,600

Source: Highway Capacity Manual, 1994, Table 7-11.

In the following table, Table I.F.6-3, the homogeneous operating sections of the proposed expressway improvement are listed and the anticipated operation of the new facility is presented based on the typical service volumes listed above.

Table I.F.6-3
Traffic Service of Proposed Expressway
 (4-lane roadway with at-grade intersections at approximately one-half mile spacing)

Travel Section	First Year of Completion ADT (2002)	Design Year ADT (2022)	Level of Service 1 st Year (2002)	Level of Service Design Year (2022)
N of Higginsville	6,100	10,200	A	B
Higginsville Bypass	4,000	6,500	A	A
S of Higginsville	10,200	15,700	B	C
N of Warrensburg	11,800	16,600	B	C
Warrensburg Bypass	8,800	12,900	A	B
S of Warrensburg	10,200	15,500	B	C
N of Clinton	4,800	9,700	A	B
Clinton Bypass	7,600	11,700	A	B

Intersections on the Expressway desirably should occur no closer than one-half mile apart. All public roads will have access to Route 13 either via an at-grade intersection or an interchange. Intersections can be upgraded to an interchange generally because of one of three reasons:

- Usage (Traffic Demand)
- Safety (Accident Reduction)
- System Considerations (Access Control)

Some intersections will be built as interchanges initially and some intersections will be upgraded to interchanges later in the design period. Not all interchanges are warranted by traffic demand. Some locations are designated as interchanges due to system considerations.

It is the desire of the Highway Commission to provide fully access controlled, free-flowing facilities around the urban areas of Lexington, Warrensburg and Clinton. Thus, the major crossroad intersections in these areas will be built initially as interchanges to achieve access control.

In other areas where it is anticipated that crossroad traffic will increase substantially in the future, the right of way for a typical diamond interchange will be reserved initially even through an interchange cannot be warranted based on first day of opening traffic.

Proposed interchange locations and warrants are summarized in Table I.F.6-4.

When an interchange is a part of a freeway bypass, it will be built initially as a part of the bypass construction. The magnitude of traffic demand would not be a factor in warranting the interchange. Interchanges that are not built initially would be warranted by either traffic demand or accident experience.

**Table I.F.6-4
Interchange Locations and Warrants**

Location	Design Year LOS ¹	Constructed		Warranted by	Remarks
		Initially	Ultimate		
LAFAYETTE COUNTY					
U.S. 24	NA	✓		System	Constructed as part of Missouri River Bridge Project.
Business Rte. 13	E - W.B. Lt. A - overall		✓	Demand	To be warranted by traffic volume growth - latter part of design period.
Route FF	B		✓	Demand	Same as Business Rte. 13.
Route MM	F		✓	Demand	Same as Business Rte. 13.
Interstate 70	NA		✓	System	Existing interchange will be used - through traffic to bypass interchange.
JOHNSON COUNTY					
Business Rte. 13 N	F - E.B. Lt. B - overall	✓		System	Part of Warrensburg bypass - to be built initially.
U.S. Rte. 50	NA	✓		System	Full Access Control
Montserrat Road	F	✓		Demand	Local Access - to be built initially.
Route DD	F	✓		Demand	Local Access - to be built initially.
Business Rte. 13 S	F - E.B. Lt. E - overall	✓		System	Part of Warrensburg bypass - to be built initially.
Missouri Rte. 2	E - E.B. Lt. B - overall		✓	Demand	Would not be constructed until warranted by demand - reserve ROW.
HENRY COUNTY					
Business Rte. 13 N	D - E.B. Lt. A - overall	✓		System	Part of Clinton bypass.
Missouri Rte. 7 Relocated	NA		✓	System	Would be built as part of Rte. 7 relocation - ROW to be reserved initially.
Missouri Rte. 52	F	✓		System	State route to State route service.
Missouri Rte. 7 E	F	✓		System	Same as Rte. 52.
Business Rte. 13 S	F	✓		System	Part of Clinton bypass.
ROUTE 7 RELOCATED					
Business Rte. 7 W	E - S.B. Lt. C - overall	✓		System	Part of Rte. 7 relocated.
County Rte. NW 221	B		✓	Demand	To be constructed only if warranted by demand - reserve ROW.
Business Rte. 13 N	B	✓		System	To maintain access control - interchange to be built when Rte. 7 relocation is built.

All intersection levels of service are relative to unsignalized operation. Signalized intersections would not be consistent with expressway design goals.

Level of Service is expressed as a function of delay.

A bypass of Warrensburg is expected to attract 11,500 to 14,300 vehicles per day and, as such, will reduce design year volumes on McGuire Street by as much as 18% when compared to the no-build projection. Although the relocated Route 13 will relieve expected traffic volumes on McGuire, the design year volumes on McGuire, with the bypass, are approximately twice as much as existing volumes.

The City has completed a preliminary improvement study for McGuire Street. This study suggested a widening of McGuire to four lanes from Business Route 50 to south of Route DD. At the present time, no identified funding source or timetable exists for this improvement.

This improvement of Route 13, with the bypasses of Higginsville, Warrensburg and Clinton, will improve service to through traffic throughout the seventy mile length of the corridor.

Local urban trips, those with origins and destinations within an urban area will not necessarily be served by this facility. Improved service to local trips will remain the responsibility of the local users.

In Higginsville, the magnitude of traffic remaining on existing Route 13, after construction of the new route, will be sufficiently low (3,000 to 9,000 vpd) that no major improvements to the current routing through the city will be needed.

In Warrensburg, residual traffic volumes on the current Route 13 (McGuire Street) after the bypass is in place will vary from 9,900 vpd to 26,100 vpd. As stated previously in this section, this traffic demand may require improvements to McGuire. At this time, no final plans have been prepared and no funding source has been identified for improving McGuire Street. The widening of McGuire is included in the proposed long-range plan of the Capital Improvement Program (CIP). Routing of through trips to the Route 13 bypass will extend the useful life of existing McGuire Street by as much as five years.

In Clinton, the existing routing of Routes 7 and 13 is currently being widened from two lanes to four lanes plus turn lanes as needed. This widening of Routes 7 and 13 will adequately serve the traffic demand on those routes through the design period.

G. EFFICIENT MOVEMENT OF PEOPLE AND GOODS

While traffic congestion creates delays for motorists, it also impacts the ability of commuters getting to work, businesses shipping supplies and products, and customers getting to businesses, all of which creates burdens on the business community. These burdens lead to reduced profit margins, lower wage rates, and a lower tax base.

With an improved transportation system, reductions in the overall transportation costs to local businesses would be realized by reducing congestion within the urban areas, providing a viable north-south transportation corridor and reducing the risk of accidents. The reduced transportation costs increase the profitability of existing businesses, promotes the expansion of those businesses and creates an incentive for new businesses to locate in the corridor, all of which leads to job creation, wage increases and community wealth. Table I.G-1 indicates that the three counties could gain an additional three hundred and sixty five million dollars in additional business and 1,280 jobs over the next thirty years with the proposed improvements to Route 13 and Route 7. The numbers are based on the economic development analysis conducted in Chapter IV, Section E.

Table I.G-1*
Average Economic Development Benefits

	Economic Development Benefits (\$Millions)	Jobs
Lafayette County	55	260
Johnson County	140	580
Henry County	170	440
Total	365	1,280

Source: Wilbur Smith Associates, Regional Economic Models, Inc.

* Average value derived from all alternatives.

H. PUBLIC SAFETY

The goal of improving public safety by means of transportation system improvements (i.e. Route 13 and Route 7) can be accomplished in several ways. With the proposed action, improved traffic safety (reduced accident rates) would be realized due to the resulting roadway capacity improvements, improved roadway alignments, higher standard of roadway design, and separation of traffic via medians, turning lanes or grade-separated interchanges. Traffic congestion relief along the existing routes within the urban areas would further improve current public safety.

But public safety is not just limited to traffic issues and reductions in accident rates. A key component of the public safety considerations is the impact of the proposed action on the responsiveness of emergency vehicles. Response times for emergency vehicles are dependent on many factors, foremost of these being the travel time. With the Route 13 and Route 7 improvements, travel times to the call for assistance would be improved through higher operating speeds and reduced traffic congestion. In addition, an improved four-lane facility would provide a continuous passing lane for the emergency vehicle to pass other motorists and a paved shoulder would be provided for motorists to pull off the road if needed.

I. ECONOMIC DEVELOPMENT

1. Review of Existing Development and Activity

Most existing development within the study area is associated with one of the three larger cities (Higginsville, Warrensburg and Clinton) or with the City of Lexington, which is located just north of the project area. Other smaller development areas located in the project area are associated with small communities, settlements or agricultural activities. The three principal cities are also commercial and industrial centers for the Route 13 corridor.

2. Land Planning and Regulation

Land planning and regulation has become an important part of managing the fiscal health of local municipalities. Planning and land use regulation allow municipalities to plan for and sequence expansion of facilities within the constraints of the municipality's financial resources. Local planning, whether on a county or city basis, provides the mechanism for

the local municipalities to manage the economic development effects of transportation improvements.

Of the three counties located within the study area, only Lafayette County has initiated planning and zoning. For both Henry and Johnson Counties, the permitting and inspection process is used to track growth within the county. Of the three major cities in the study area, only the City of Clinton is currently working on a comprehensive land use plan to address the future growth and development of the community. Though a land use plan is currently not being developed for the City of Warrensburg, the city has formed a special task force to address the issue of compatible long-range city planning in association with the Route 13 improvements. Warrensburg's current plan was adopted in the mid 1980's. Higginsville uses a policy plan within its zoning ordinance to guide growth. Overall, each of the three cities uses zoning to help regulate land use within their city limits.

Johnson County is currently developing a county wide comprehensive plan and zoning ordinance. It was authorized under Missouri Bill No. 1259. The comprehensive plan and zoning ordinance will go to a vote of the residents in the fall of 1997. The plan and zoning ordinance includes all the areas of the county outside of incorporated cities that have a zoning ordinance in place. Within the Route 13 Corridor in Johnson County, only Warrensburg currently has zoning ordinances in place.

Land development trends, planning and regulatory schemes, or lack thereof, are important to the Route 13 Corridor as they have helped shape the existing land use environment and will continue to help manage future growth which may occur within the corridor.

3. Estimate of Economic Effect of Improvements

Major improvements to Route 13 and Route 7 would have an overall positive effect on the existing economies in the study area. Economic benefits would be realized due to the initial spending and re-spending impacts of the highway construction activities within the project area and by the better competitive positions that would be created by the improved transportation system for the existing communities.

Increased productivity would result from the improved travel efficiencies and lower travel costs for the businesses to perform their services. Furthermore, all users of the improved facilities would experience transportation-related savings due to improved travel speeds, distances and accident risks. Factored into the analysis of the overall economic impacts, as discussed in detail in Chapter IV, Section E, were bypass effect considerations and the negative effect on the local economies of the conversion of agricultural lands to non-agricultural activities (i.e. highway usage).

In the analysis of the overall economic impacts of the improvement alternatives, the annual benefits and costs were discounted to a present-worth value from a project time period of 30 years (1994 to 2024). These discounted overall impacts provide a measure of the merits of the proposed improvements. Based on the economic development analysis discussed in Chapter IV, Section E, economic development benefits for increased competitive position alone would range from \$330 to \$410 million, depending on the location of the expressway/freeway improvement.

J. REGIONAL HIGHWAY SYSTEM CONTINUITY

As outlined in the 1992 plan, plans for improvements to the regional highway system adjacent to the study area include the four-lane widening and/or relocation of Route 13 from Richmond to Lexington, located north of the study area, and Clinton to Bolivar, located to the south. These improvements, coupled with the Route 13 improvements from Lexington to Clinton, Route 92/10 improvements in the Kansas City area, and the existing highway network, would provide a continuous four-lane, high-level type of roadway facility from Kansas City to the southwest part of the State. Similarly, planned improvements along Route 7 to the west of Clinton, as shown on Exhibit I.B.1-2, in combination with the existing system and the planned Route 7/13 improvements in and south of Clinton, would provide a continuous four-lane alternative route. The continuity of design standards with these improvements would enhance the overall operational efficiency of the regional highway system.

K. RECREATIONAL ACCESS

Tourism and recreational traffic have significantly affected the current travel demand in the study corridor. This influence on the study area's traffic volumes due to recreational traffic is expected to continue in the future.

1. Importance of Tourism to the State of Missouri

The growth of tourism in the Harry S. Truman Reservoir, Lake of the Ozarks and Springfield/Branson areas, all generally located outside of the project area but served by both Route 13 and Route 7, is important to the state as a whole. Purchases made by visitors to these areas create economic impacts to both the regions themselves as well as the state. Direct economic impacts are realized when these new dollars are spent in a defined area. Part of this initial expenditure goes toward local income and employment; the rest is realized in state and local taxes. Secondary impacts are then realized as the initial dollars are used to purchase goods and services in other segments of the state's economy or in other geographic areas of the state. An improvement to the transportation system that serves and sustains the tourism growth is critical for the continued realization of these statewide economic benefits.

2. Travel Demand from Recreational Activities

Recreational activity centers located outside of the study area draw traffic through the project area. The Harry S. Truman Reservoir area partially located at the southern end of the study area is served primarily from the west by the Route 13 and Route 7 corridors. Farther east, the Lake of the Ozarks area, which has experienced tremendous growth over the last several years, tends to attract Kansas City traffic destined for the southern parts of the lake along Route 7. Perhaps the most significant impact on regional recreational access has been the Springfield/Branson area. Traffic destined from the Kansas City area or areas farther north use a combination of the Route 7 and Route 13 corridors or the Route 92-10-13 Corridor to access the recreational activity centers in the southwest part of the state. With the planned improvements and organization of the Route 92-10-13 Coalition coupled with the steady

growth of the southwest Missouri region, it is likely that the influence of recreational activities on the project area's travel demand will continue.

With the increased travel demand created by the growing recreational activity centers located within and outside of the study area, improvements to the roadway system (i.e. Route 7 and Route 13) are necessary to provide efficient and safe regional access to the growing recreational traffic.

L. DEFENSE FACILITY ACCESS

Located east of the study corridor along U.S. 50, Whiteman Air Force Base is an important military installation for the overall security of the United States. The general mission of the base has changed over time, but its importance to the overall military force has not. A transportation system with good access, mobility and flexibility is paramount for the base to mobilize and operate efficiently. Though the study area does not provide direct access to the facility, improvements in the study area would be utilized by the base services as an alternative to the current north-south corridor located to the east of the base (U.S. 65). An improved Route 13 corridor would provide much greater flexibility for the base to respond to national or regional emergencies such as during wartime or for natural disaster relief.

M. REFERENCES

American Association of State Highway and Transportation Officials, A Policy on Geometric Design of Highways and Streets, 1990, Washington D.C. 20001.

Bucher, Willis and Ratliff Consulting Engineers, Planners and Architects, "Highway 13 Corridor and City-Wide Transportation Study," Kansas City, Missouri, May 1990.

Missouri Highway and Transportation Department, Division of Planning, "Highway Right of Way and Construction Program," Jefferson City, Missouri, 1994.

Transportation Research Board, "Highway Capacity Manual - Special Report No. 209," National Research Council, Washington, D.C., 1985.

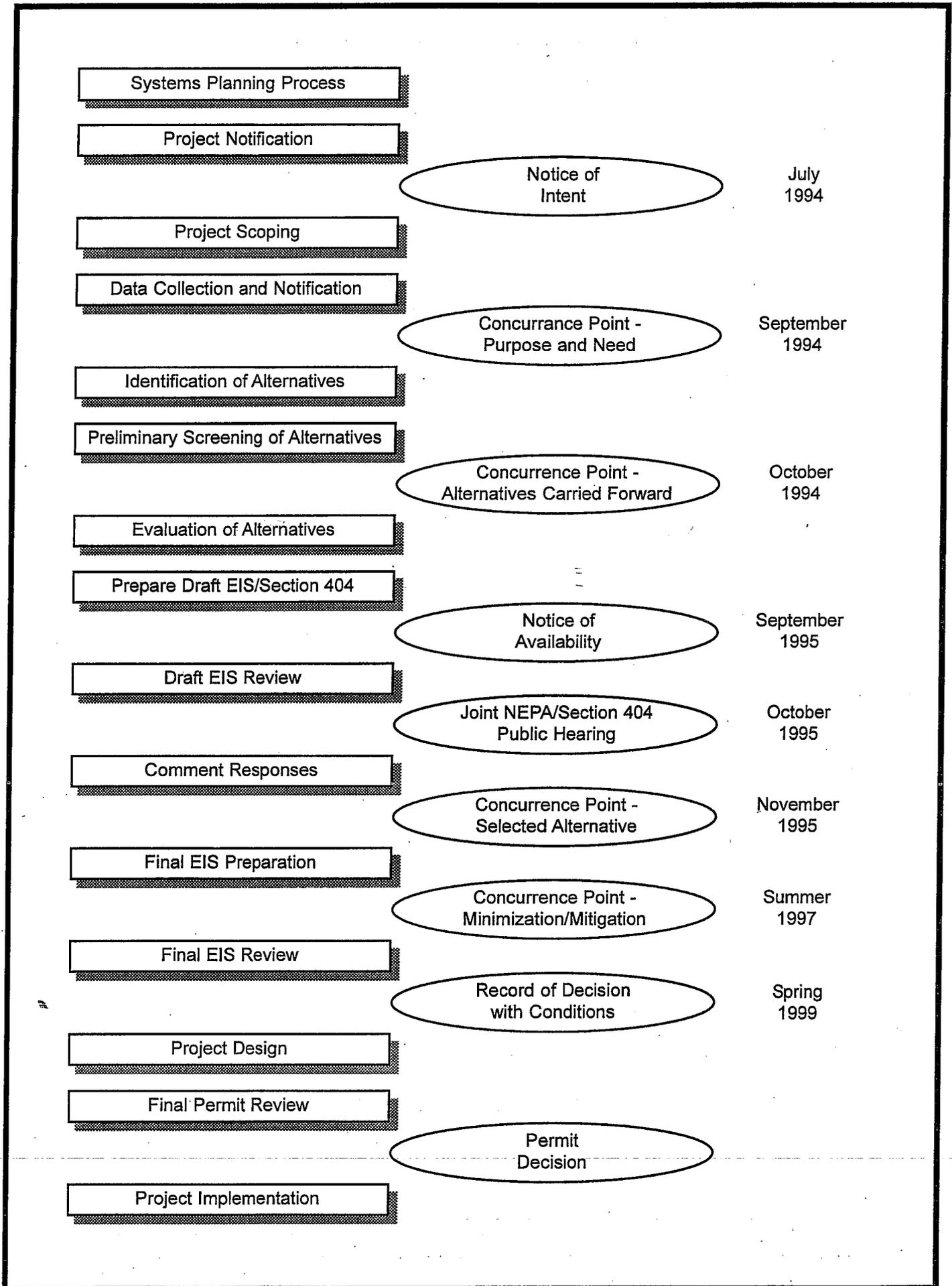
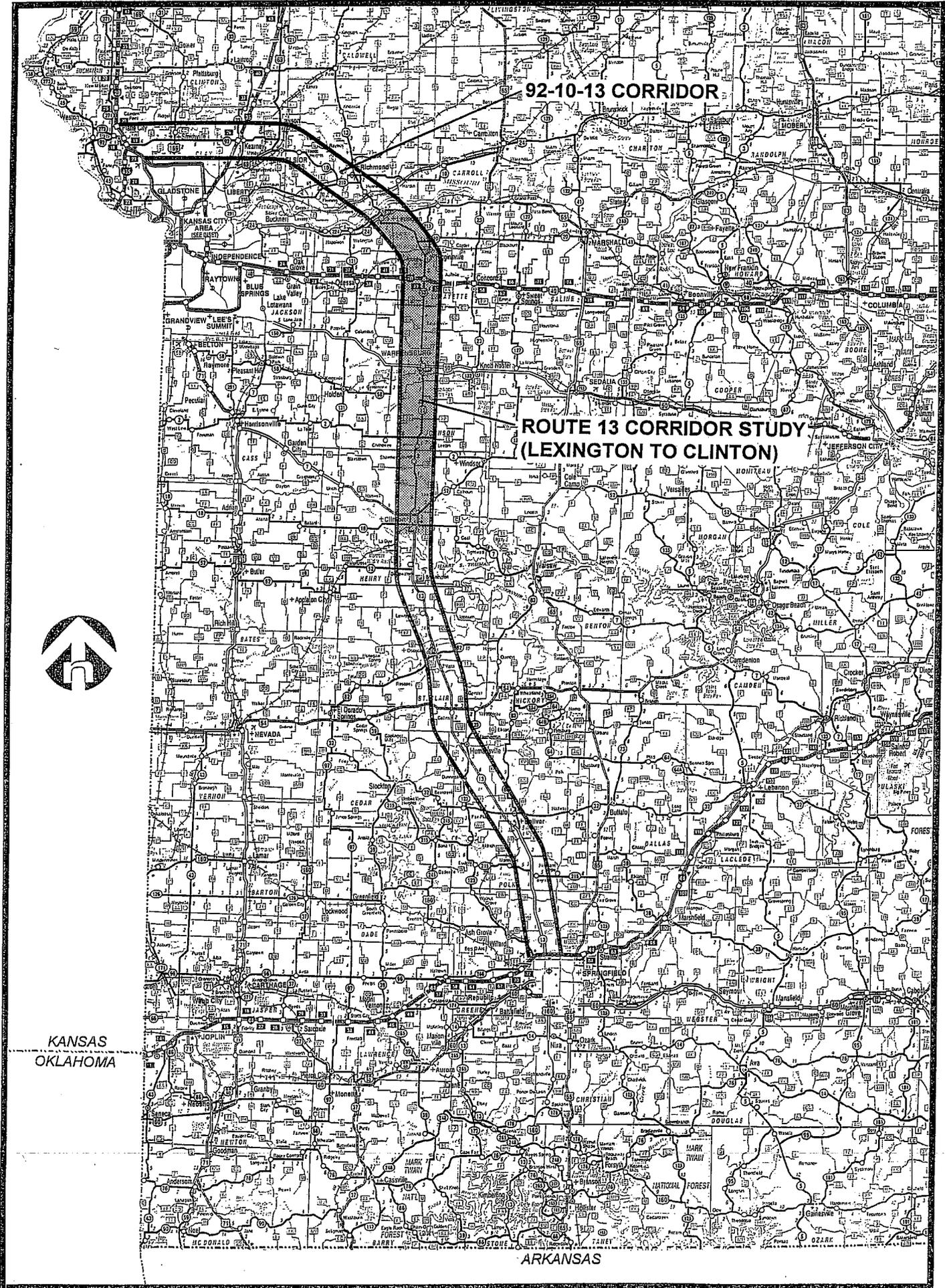


EXHIBIT I.A.3-1 Merged NEPA/Clean Water Act Process Flow Diagram



92-10-13 CORRIDOR

ROUTE 13 CORRIDOR STUDY
(LEXINGTON TO CLINTON)



KANSAS
OKLAHOMA

ARKANSAS

EXHIBIT I.B.1-1 Regional Transportation System

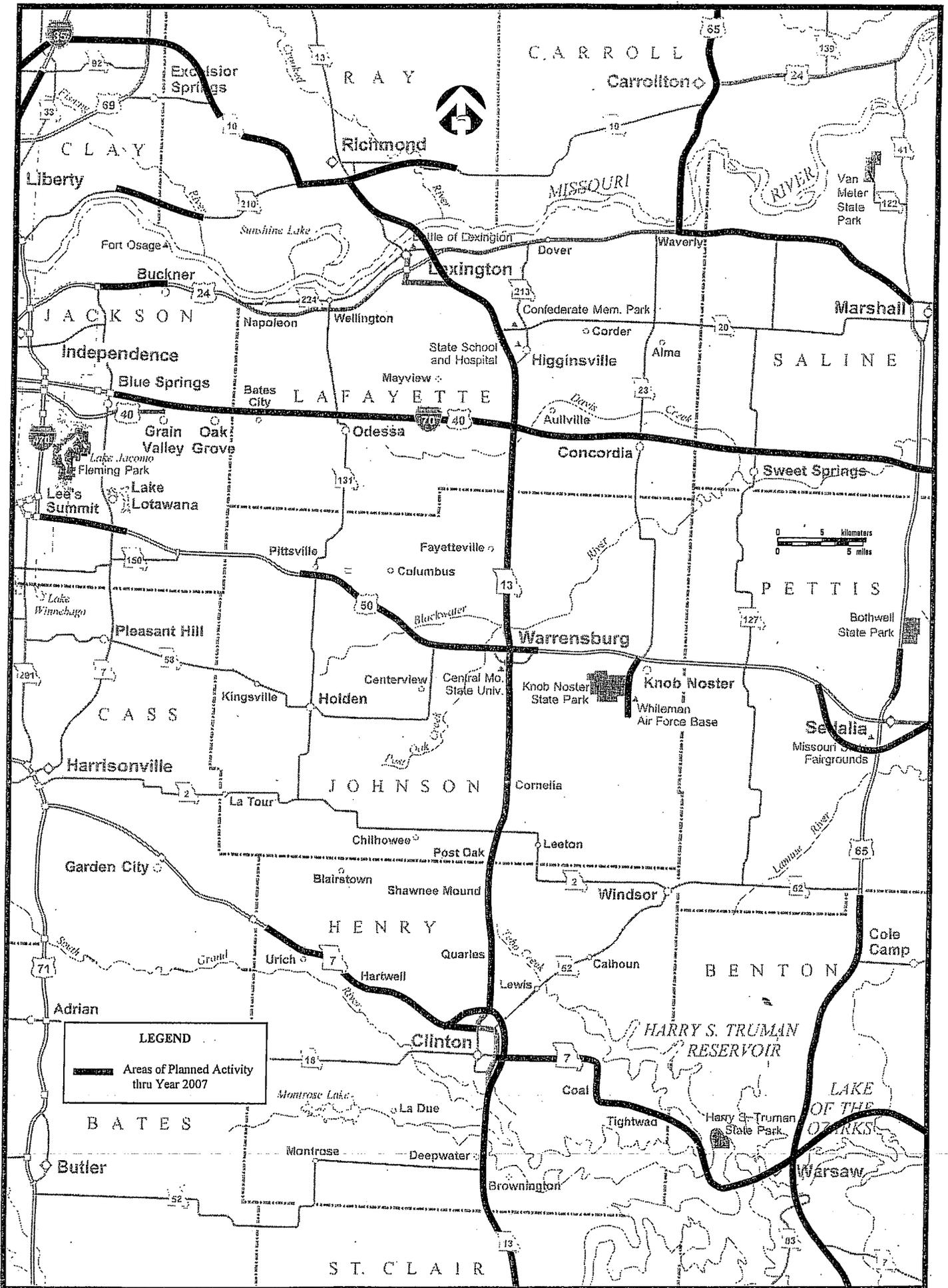
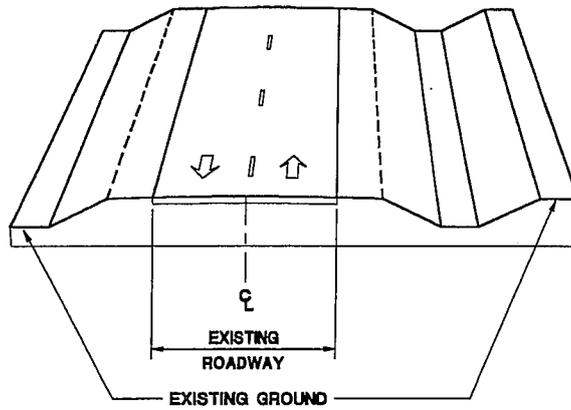
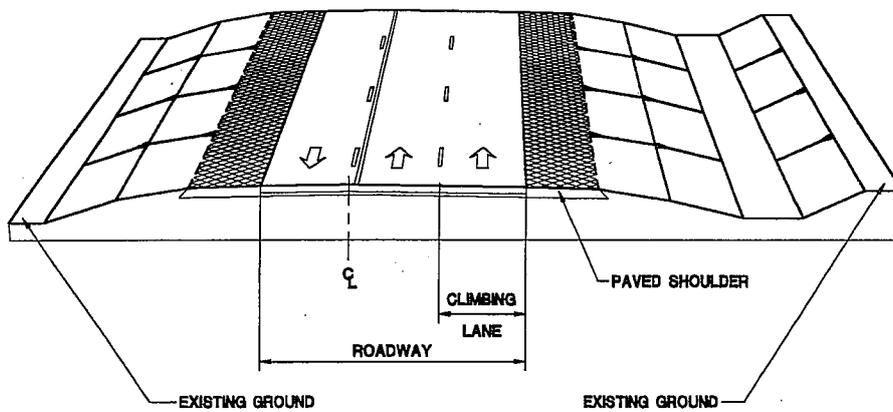


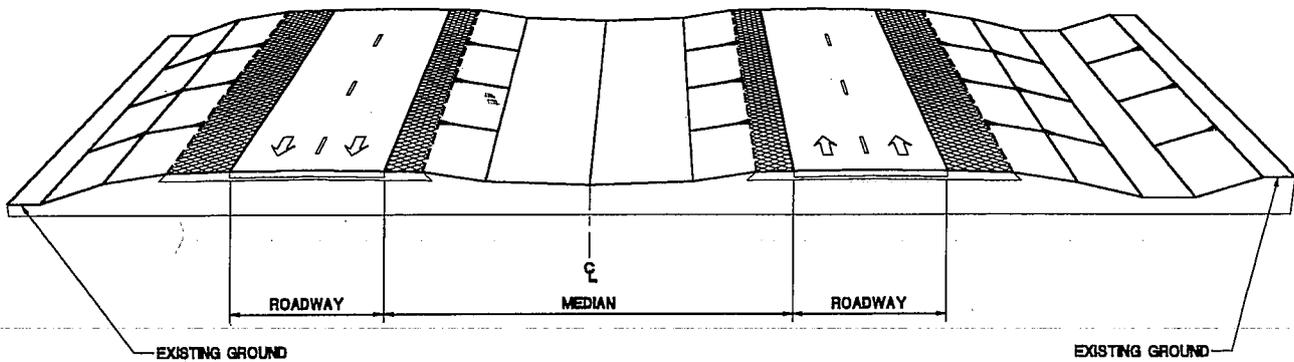
EXHIBIT I.B.1-2 System Improvements



NO ACTION ALTERNATIVE



**MAJOR IMPROVEMENT OF EXISTING ROUTE 13 ALTERNATIVE
(Transportation System Management Alternative)**



EXPRESSWAY / FREEWAY ALTERNATIVES

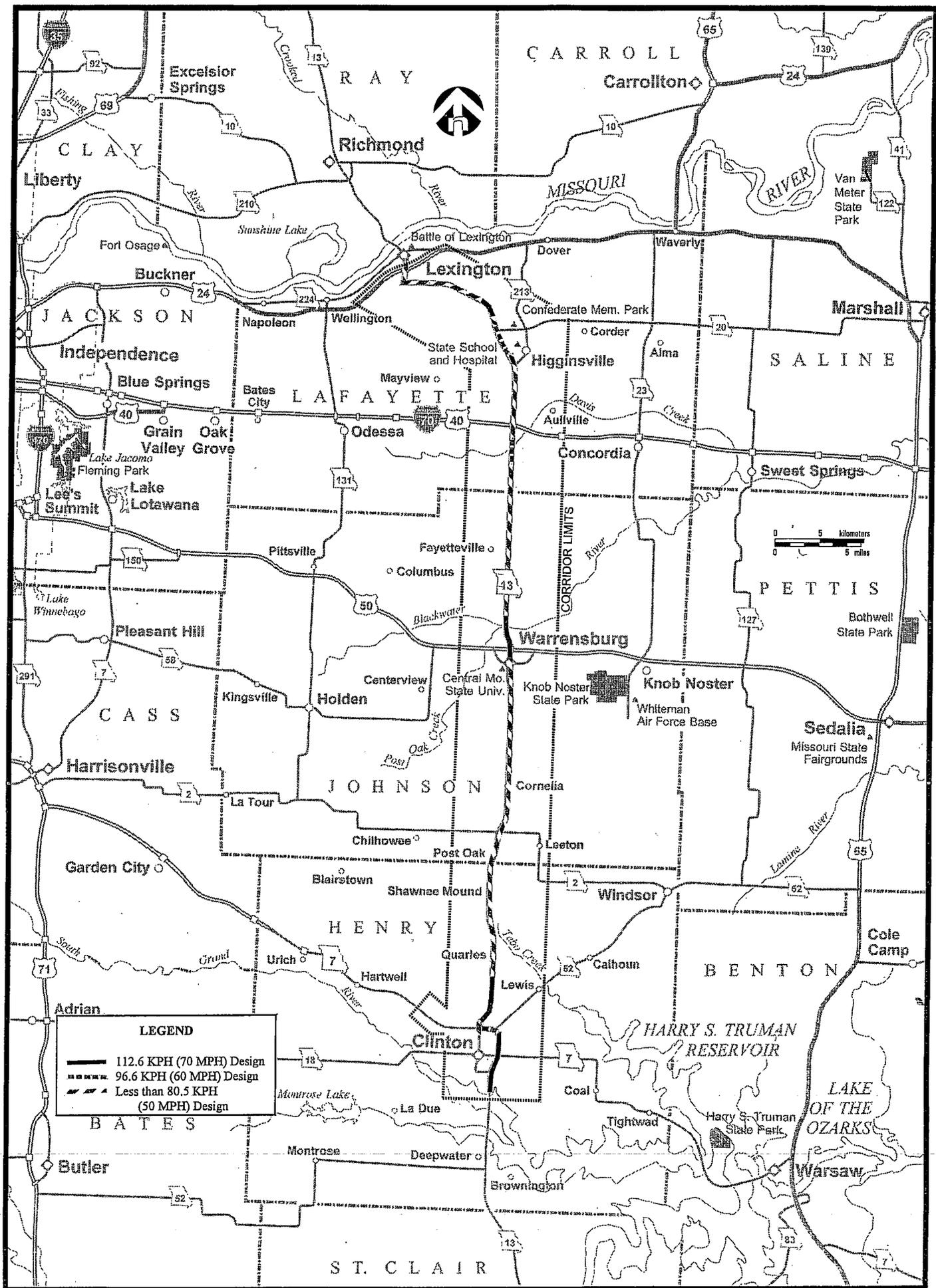


EXHIBIT I.E-1 Geometric Sufficiency

EXHIBIT I.F.2-1
Historical Daily Traffic Volumes by Highway Segment
1985 - 1993

Location / Highway Segment	Average Daily Traffic (ADT)				
	1985	1987	1989	1991	1993
Lexington	2680	3240	3680	3820	4140
Higginsville	4940	5120	6210	6450	7000
Warrensburg	4390	4640	5790	5910	6000
Clinton	5920	6260	7820	7970	8100
Weighted Average	3883	4249	5724	5373	5501