Appendix A

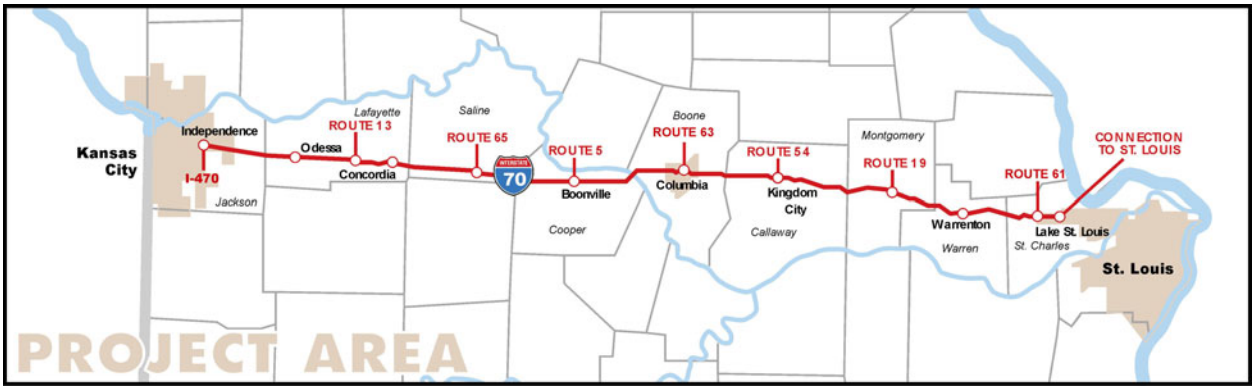
First Tier Summary

First Tier Summary

The Missouri Department of Transportation and the Federal Highway Administration are proposing to construct improvements to Interstate 70 between the metropolitan areas of Kansas City and St. Louis to meet the current and future transportation-related needs of this corridor. In compliance with the National Environmental Policy Act, a First Tier Environmental Impact Statement was prepared to aid in determining the most appropriate type of improvement concept for I-70. This summary chapter summarizes the First Tier EIS process.

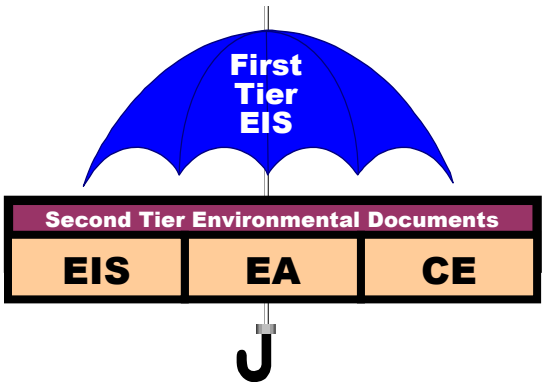
A. First Tier Decision

The FHWA approved the selection of the Widen Existing I-70 Strategy for the I-70 Corridor. The I-70 Study Corridor was approximately ten (10) miles (16.1 km) wide, five (5) miles (8.0 km) either side of existing I-70, and is 199 miles (320.3 km) in length. The selected strategy is environmentally preferred and it involves the improvement and total reconstruction of the existing I-70 roadway. In the Columbia area and the area of Warrenton, Wright City, and Wentzville, relocation options are a part of the selected strategy. Future 2030 travel demands dictate that six lanes be provided in the rural areas and a minimum of eight lanes through Columbia and in the metropolitan areas of Kansas City and St. Louis. The minimum eight-lane section in metropolitan Kansas City would likely extend from Grain Valley to the I-470 interchange. Considerations will need to be given to the continuation of these lanes through the I-470 interchange to the west as part of the ongoing I-70 Major Investment Study, which is currently being conducted by MoDOT for I-70 in Jackson County. Similarly, in the St. Louis area, a minimum of eight lanes would need to be provided from Warrenton to the east, into the St. Louis metropolitan area.



B. Tiered Environmental Process

Tiering refers to addressing broad programs and issues in initial first tier analyses, and analyzing more specific proposals and impacts in subsequent second tier studies. The tiered process enables a decision-making process that focuses on issues that are ripe for decision and reduces repetition in environmental documentation. First tier decisions frame and narrow the scope of second tier studies and related decisions. The First Tier process included a Draft and Final EIS and was concluded with a



Record of Decision in December of 2001. The Second Tier Studies will result in the more traditional project-level environmental documents such as Environmental Impact Statements, Environmental Assessments and a Categorical Exclusion.

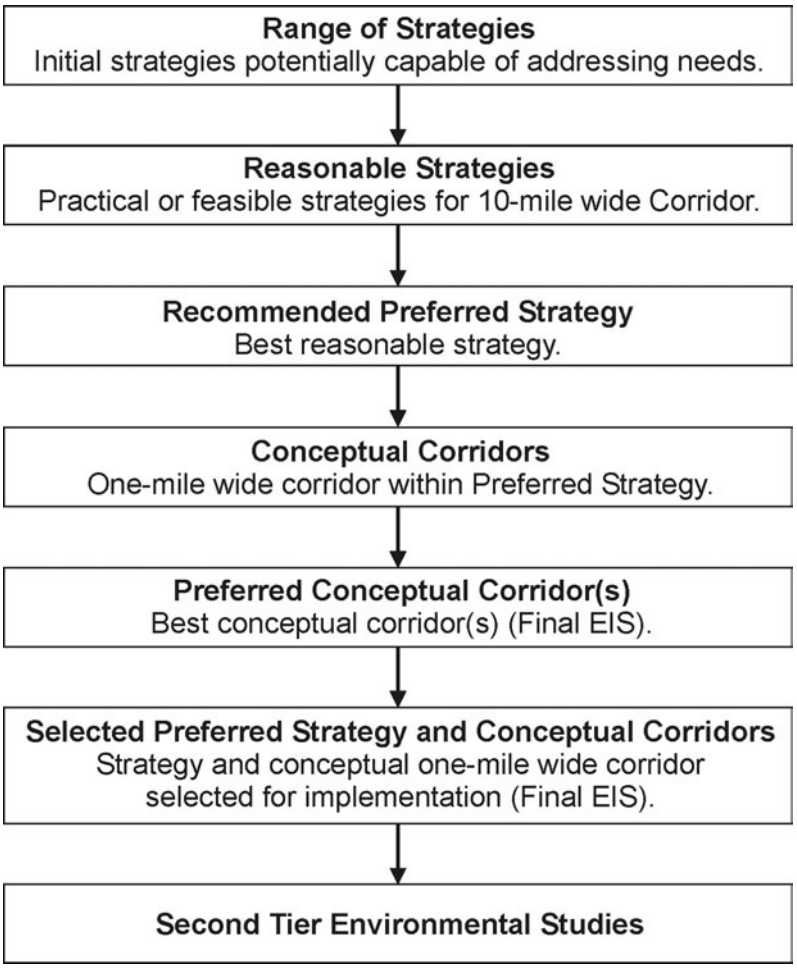
C. I-70 First Tier Approach

The First Tier EIS produced the following outcomes:

- **Approval of general concept** (i.e., preferred strategy) for improving I-70, including a prioritization plan for the corridor.
- Identification of the **Sections of Independent Utility** for the Second Tier Studies, including an action plan for the completion of the environmental process.
- **Documentation** that can be referenced by the Second Tier Studies to eliminate repetitiveness and record the First Tier decision.
- Development of **agency and public consensus** for the overall improvement plan.

The following diagram shows the process of developing public/agency consensus though progressively more detailed identification of engineering and environmental impacts of improvement strategies. Definitions of the improvement strategies, in ascending level of detail, utilized by the First Tier EIS included:

Decision-Making Process for I-70 First Tier EIS



D. Purpose and Need for I-70 Improvements

The goal or purpose of I-70 improvements is to provide a safe, efficient, environmentally sound and cost-effective transportation facility that responds to corridor needs as well as expectations of a national interstate.

1. PURPOSE AND NEED SUMMARY

The project's purpose and need can be summarized as follows:

Purpose and Need Statement

- **Roadway Capacity** – Increase roadway system capacity in accordance with the projected travel demands to improve the general operating conditions of I-70.
- **Traffic Safety** – Reduce the number and severity of traffic-related crashes occurring along I-70 between Kansas City and St. Louis.
- **Roadway Design Features** – Upgrade current roadway design features along I-70, including interchanges, roadway alignment and roadway cross sections.
- **System Preservation** – Preserve the existing I-70 facility through continued and ongoing rehabilitation and maintenance activities of pavement and bridges.
- **Goods Movement** – Improve the efficiency of freight movements using the I-70 corridor.
- **Access to Recreational Facilities** – Facilitate the usage by motorists of nearby regional recreational facilities through improved accessibility.

Each of the specific needs, as summarized above, has been addressed in detail during the First Tier EIS process. The ordering of these specific needs is not intended to imply any order of importance. Also, the array of individual needs is not intended to replace the findings of the Missouri Long-Range Transportation Direction regarding the prioritization of MoDOT's statewide needs.

2. TRAFFIC AND CRASH CONSIDERATIONS

a. Roadway Capacity

Traffic Trends on I-70

Traffic on I-70 has been increasing with time at a relatively consistent rate. An examination of historic average annual daily traffic indicates that in some years growth was not consistent. These fluctuations in traffic volumes from one year to the next could be due to construction or opening of new roadways or other unknown conditions that cause a diversion of traffic to or away from I-70. Table 1 presents an 11-year history for five counties in which MoDOT maintains annual traffic counts on I-70 between Exit 15 (I-470) and Exit 214 (Lake St. Louis), the study limits. These trends are presented graphically in Figure 1.

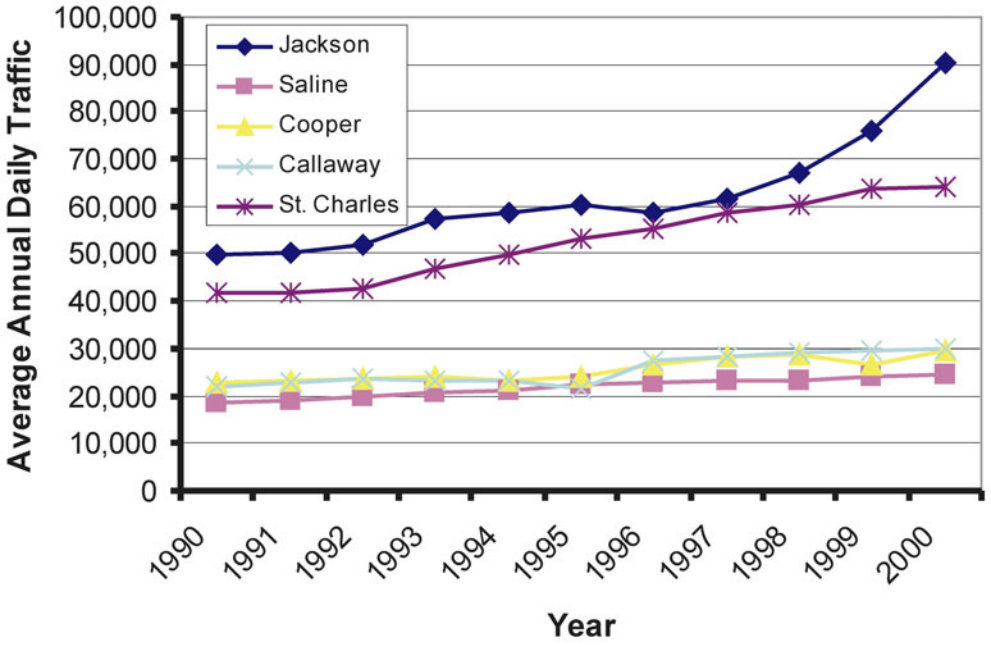
The count locations near the urbanized areas of Kansas City and St. Louis exhibit a greater average annual percent growth than do the rural locations. In Jackson County, traffic counts show an average annual percent growth of 8.2 percent per year from 1990 to 2000. At the easterly limit of the study corridor, the growth in AADT averaged 5.3 percent per year over the same 10 years. Comparatively, the AADT's in the rural areas through which I-70 passes have average annual growth rates ranging from 2.9 to 3.5 percent per year. It is clear from this historic traffic review that the trend is for higher volumes on I-70.

Table 1: I-70 Historical Average Annual Daily Traffic (AADT)

Traffic Volume (AADT) by Year											
County	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
Jackson	49,800	50,000	51,800	57,200	58,800	60,400	58,700	61,400	66,900	76,100	90,300
Saline	18,700	19,100	20,000	20,600	21,000	22,200	22,600	23,100	23,400	24,200	24,600
Cooper	22,900	23,400	23,800	24,100	23,000	24,100	26,400	28,400	28,600	26,800	29,500
Callaway	22,100	22,700	23,600	23,000	23,400	21,400	27,300	28,300	29,000	29,500	29,900
St. Charles	41,900	41,600	42,500	46,700	49,700	53,100	55,200	58,500	60,300	63,600	64,000

The counter locations are Jackson Co. on I-70 at Route 7, Saline Co. on I-70 at Route 127, Cooper Co. on I-70 at Route 87, Callaway Co. on I-70 at US 54 and St. Charles Co. on I-70 at US 40/61.

Figure 1: I-70 Historical Traffic Trends (by County at Counter Locations)



Traffic Forecasts

As input to much of I-70 corridor analysis, traffic volumes were forecast using several different travel demand models. In the Kansas City, Columbia and St. Louis areas regional travel demand models were used along with a statewide model to forecast future year demand. The statewide model was used to forecast traffic in the rural areas outside of the regional model areas.

Travel demand forecasting is a four-step process that addresses questions such as:

- Who is traveling? (Trip Generation)
- Where are they going? (Trip Distribution)
- What means of transportation will they use? (Mode Split)
- What route will they take to get where they want to go? (Trip Assignment)

Each of the travel demand models requires a simulated roadway network. The roadway network reflects the existing plus committed roadway network. Some key roadway network enhancements that are expected to be in-place by 2030 are also included in the future roadway network. From a corridor-wide perspective the most significant improvements are the possible

widening of US 36 and 50 to four lanes across the state. Characteristics such as lanes, functional classification, capacity, speed, and area type (urban, suburban, and rural) are coded into a network for each link. Some of these characteristics of the existing facility are included in Table 2 along with link descriptions.

Table 2: Existing Characteristics and Link Descriptions

Description	Exit		Length (miles)	# of Lanes
	from	to		
West of I-470	--	15	1.3	6
From I-470 to Blue River Expwy.	15	16	1.2	6
From Blue River Expwy. to Wood Chapel	16	18	1.9	6
From Woods Chapel to MO-7	18	20	1.8	6
From MO-7 to Adams Dairy	20	21	1.3	6
From Adams Dairy to MO-AA/MO-BB	21	24	2.7	4
From MO-AA/MO-BB to MO-H/MO-F	24	28	3.7	4
From MO-H/MO-F to MO-D/MO-Z	28	31	3.3	4
From MO-D/MO-Z to MO-131	31	37	5.6	4
From MO-131 to CR 96	37	38	1.2	4
From CR 96 to MO-O/MO-M	38	41	2.9	4
From MO-O/MO-M to MO-E/MO-H	41	45	4.2	4
From MO-E/MO-H to MO-13	45	49	4.0	4
From MO-13 to MO-T	49	52	3.5	4
From MO-T to MO-23	52	58	5.7	4
From MO-23 to MO-Y/MO-VV	58	62	4.0	4
From MO-Y/MO-VV to MO-127	62	66	4.3	4
From MO-127 to MO-EE/MO-K	66	71	4.5	4
From MO-EE/MO-K to MO-YY	71	74	3.2	4
From MO-YY to US-65	74	76	3.6	4
From US-65 to MO-J	76	84	6.4	4
From MO-J to MO-K	84	89	5.3	4
From MO-K to MO-41/MO-135	89	98	8.0	4
From MO-41/MO-135 to MO-5	98	101	3.8	4
From MO-5 to MO-B	101	103	1.8	4
From MO-B to MO-87	103	106	2.8	4
From MO-87 to MO-179	106	111	5.0	4
From MO-179 to MO-BB	111	115	4.1	4
From MO-BB to MO-J/MO-O	115	117	2.2	4
From MO-J/MO-O to US-40/MO-UU	117	121	3.5	4
From US-40/MO-UU to MO-E/MO-740	121	124	3.2	4
From MO-E/MO-740 to Loop 70	124	125	1.1	4
From Loop 70 to MO-163	125	126	1.0	4
From MO-163 to MO-763	126	127	0.5	4
From MO-763 to Loop 70	127	128	1.4	4
From Loop 70 to US-63	128	128A	0.5	4
From US-63 to St. Charles Road	128A	131	2.1	4
From St. Charles Road to MO-Z	131	133	2.6	4

Table 2: Existing Characteristics and Link Descriptions (continued)

Description	Exit		Length (miles)	# of Lanes
	from	to		
From MO-Z to MO-DD/MO-J	133	137	4.1	4
From MO-DD/MO-J to MO-M/MO-HH	137	144	6.4	4
From MO-M/MO-HH to US-54	144	148	3.7	4
From US-54 to MO-A/MO-Z	148	155	7.5	4
From MO-A/MO-Z to MO-D/MO-YY	155	161	5.9	4
From MO-D/MO-YY to MO-161/MO-J	161	170	9.1	4
From MO-161/MO-J to MO-19	170	175	4.6	4
From MO-19 to MO-F	175	179	4.8	4
From MO-F to MO-E/MO-Y	179	183	4.0	4
From MO-E/MO-Y to MO-A/MO-B	183	188	4.7	4
From MO-A/MO-B to MO-47	188	193	5.0	4
From MO-47 to Exit 199	193	199	5.5	4
From Exit 199 to MO-J/MO-F	199	200	1.0	4
From MO-J/MO-F to MO-W/MO-T	200	203	3.8	4
From MO-W/MO-T to Exit 208	203	208	4.5	4
From Exit 208 to MO-Z	208	209	1.2	4
From MO-Z to US-61	209	210	0.9	4
From US-61 to MO-A	210	212	1.6	4
From MO-A to Lake St. Louis Blvd.	212	214	2.0	6
From Lake St. Louis Blvd. to Bryan Rd.	214	216	1.9	6
From Bryan Rd. to MO-M/MO-K	216	217	1.9	6

The resulting I-70 mainline forecast year 2020 and 2030 average daily traffic (ADT) volumes are presented in Table 3 along with year 2000 average annual daily traffic counts. Significant increases in traffic are forecast for the entire corridor. The rural I-70 roadway links show the largest percentage increase in traffic from the year 2000 to 2030, while the urban I-70 roadway links continue to carry the highest daily volumes.

Highway Operations (Level of Service)

Using the base year (2000) and forecasted (2020 and 2030) traffic volumes along I-70, operational analyses were completed to determine the ability of the existing I-70 facility to serve the corridor's travel demands. The analysis was performed using the basic freeway segment methodologies from the *Highway Capacity Manual*. The analysis calculates a level of service for freeway sections based upon hourly volumes, percent of heavy vehicles in the vehicle mix, and the freeway link attributes.

The hourly volumes used in the level of service analysis for the year 2020 and 2030 were derived from the average daily volumes forecast by the travel demand models. The year 2000 traffic counts and the model generated volumes are for a 24-hour period, but hourly volumes are required for level of service analysis. Peak-hour traffic percentages were derived from traffic counts along I-70 and were applied to the 24-hour volumes. The peak hour adjustment percentages ranged from a high of 11 percent in Jackson County near Kansas City, to a low of seven percent in some of the more rural areas of I-70. In the urban areas the peak directional split was 60 percent and in rural areas was 55 percent. Similarly, truck percentages were adjusted to reflect the higher percentage of trucks in the rural areas. Truck percentages range from 14 percent to 31 percent.

Table 3: Forecast Daily Traffic and Peak Hour Level of Service

Description	Desired Level of Service	2000 Average Daily Traffic	2000 Level of Service	2020 Average Daily Traffic	2020 Level of Service	2030 Average Daily Traffic	2030 Level of Service
West of I-470	D	104,236	F	123,000	F	132,380	F
From I-470 to Blue River Expwy.	D	90,224	F	108,870	F	118,190	F
From Blue River Expwy. to Wood Chapel	D	90,224	F	109,830	F	119,630	F
From Woods Chapel to MO-7	D	76,650	D	96,450	F	106,350	F
From MO-7 to Adams Dairy	D	68,635	D	88,390	F	101,480	F
From Adams Dairy to MO-AA/MO-BB	D	59,935	E	74,810	F	87,990	F
From MO-AA/MO-BB to MO-H/MO-F	C	43,922	C	70,910	F	83,360	F
From MO-H/MO-F to MO-D/MO-Z	C	43,637	C	67,430	F	78,900	F
From MO-D/MO-Z to MO-131	C	27,325	B	64,730	F	75,720	F
From MO-131 to CR 96	C	29,679	B	59,620	E	69,710	F
From CR 96 to MO-O/MO-M	C	32,032	B	61,150	E	71,530	F
From MO-O/MO-M to MO-E/MO-H	C	29,399	B	60,770	E	71,180	F
From MO-E/MO-H to MO-13	C	28,178	B	60,520	E	70,900	F
From MO-13 to MO-T	C	25,570	B	57,960	E	68,390	F
From MO-T to MO-23	C	28,616	B	57,670	D	68,040	E
From MO-23 to MO-Y/MO-VV	C	26,467	B	56,090	D	66,170	E
From MO-Y/MO-VV to MO-127	C	24,317	A	56,090	C	66,170	D
From MO-127 to MO-EE/MO-K	C	24,558	A	56,020	C	66,100	D
From MO-EE/MO-K to MO-YY	C	24,637	A	56,020	C	66,100	D
From MO-YY to US-65	C	24,715	A	54,880	C	64,760	D
From US-65 to MO-J	C	22,821	A	56,890	C	66,940	D
From MO-J to MO-K	C	26,698	A	56,970	C	67,030	D
From MO-K to MO-41/MO-135	C	28,726	B	57,520	C	67,680	D
From MO-41/MO-135 to MO-5	C	30,754	B	63,420	E	74,690	F
From MO-5 to MO-B	C	29,953	B	63,080	D	74,300	F
From MO-B to MO-87	C	29,820	B	62,290	D	73,360	F
From MO-87 to MO-179	C	29,544	B	67,190	E	79,100	F
From MO-179 to MO-BB	C	35,637	B	69,160	E	81,440	F
From MO-BB to MO-J/MO-O	C	34,678	B	70,640	E	83,000	F
From MO-J/MO-O to US-40/MO-UU	C	33,718	B	70,960	E	89,580	F
From US-40/MO-UU to MO-E/MO-740	C	50,149	C	77,620	F	91,350	F
From MO-E/MO-740 to Loop 70	D	51,515	D	89,980	F	109,210	F
From Loop 70 to MO-163	D	52,880	D	89,630	F	108,010	F
From MO-163 to MO-763	D	59,714	E	93,720	F	110,730	F
From MO-763 to Loop 70	D	54,069	D	82,790	F	97,150	F
From Loop 70 to US-63	D	55,529	D	95,080	F	114,850	F
From US-63 to St. Charles Road	D	50,192	C	74,680	F	86,930	F
From St. Charles Road to MO-Z	C	33,017	B	68,910	E	85,230	F
From MO-Z to MO-DD/MO-J	C	35,070	B	65,640	E	78,050	F
From MO-DD/MO-J to MO-M/MO-HH	C	24,344	A	62,320	D	73,510	F
From MO-M/MO-HH to US-54	C	30,432	B	62,850	D	74,140	F

While roadway link volumes have been updated with Second Tier numbers, the levels of service reflect roadway link parameters determined to be appropriate in the First Tier Study. These parameters may be adjusted based on the more detail field investigations in the Second Tier Studies. Roadway link parameter adjustments may impact the resulting levels of service.

Unacceptable Level of Service

Table 3: Forecast Daily Traffic and Peak Hour Level of Service (continued)

Description	Desired Level of Service	2000 Average Daily Traffic	2000 Level of Service	2020 Average Daily Traffic	2020 Level of Service	2030 Average Daily Traffic	2030 Level of Service
From US-54 to MO-A/MO-Z	C	29,893	B	58,490	D	69,010	E
From MO-A/MO-Z to MO-D/MO-YY	C	29,892	B	59,540	D	70,250	F
From MO-D/MO-YY to MO-161/MO-J	C	29,892	B	59,570	C	70,290	D
From MO-161/MO-J to MO-19	C	25,622	A	58,520	C	69,040	D
From MO-19 to MO-F	C	35,277	B	64,310	D	75,920	E
From MO-F to MO-E/MO-Y	C	33,623	B	62,540	C	73,790	D
From MO-E/MO-Y to MO-A/MO-B	C	29,446	B	62,320	C	78,750	E
From MO-A/MO-B to MO-47	C	28,600	B	64,000	D	81,700	F
From MO-47 to Exit 199	C	36,902	B	69,000	E	85,050	F
From Exit 199 to MO-J/MO-F	C	36,902	B	69,000	E	85,050	F
From MO-J/MO-F to MO-W/MO-T	C	36,842	B	71,950	E	89,500	F
From MO-W/MO-T to Exit 208	C	48,901	C	76,230	F	89,900	F
From Exit 208 to MO-Z	C	59,158	D	79,650	F	89,900	F
From MO-Z to US-61	D	64,018	E	86,540	F	97,800	F
From US-61 to MO-A	D	59,467	F	81,620	F	92,700	F
From MO-A to Lake St. Louis Blvd.	D	68,034	D	84,480	F	92,700	F
From Lake St. Louis Blvd. to Bryan Rd.	D	75,424	D	99,610	F	111,710	F
From Bryan Rd. to MO-M/MO-K	D	80,469	D	101,300	F	111,710	F

While roadway link volumes have been updated with Second Tier numbers, the levels of service reflect roadway link parameters determined to be appropriate in the First Tier Study. These parameters may be adjusted based on the more detail field investigations in the Second Tier Studies. Roadway link parameter adjustments may impact the resulting levels of service.

Unacceptable Level of Service

A brief description of each of the level of service categories is as follows:

- **Level of Service A** – uninterrupted traffic flow, lower volumes and higher travel speeds.
- **Level of Service B** – stable traffic flow, increasing traffic and reduced travel speeds due to congestion.
- **Level of Service C** – stable flow, increasing traffic; travel speeds and maneuverability restricted by higher volumes.
- **Level of Service D** – approaching unstable flow, tolerable travel speeds although considerably affected by changes in operating conditions.
- **Level of Service E** – unstable flow, with possible stopped conditions, lower operating speeds than level of service D, volume approaching capacity of the roadway.
- **Level of Service F** – unstable flow, with speeds at low or stopped condition for varying times caused by congestion when downstream traffic volumes are at or over the roadway capacity.

Level of service calculations were made for I-70 roadway links to identify where and when traffic congestion will occur if no improvements are made to I-70. The results of the roadway level of service analysis for 2000, 2020 and 2030 are presented in Table 3. These results reflect the revised traffic forecasts summarized in Table 3 and roadway link parameters determined to be

appropriate in the First Tier Study. The parameters may be adjusted based on the more detail field investigations in the Second Tier Studies. Parameter adjustments may impact the resulting levels of service.

The results of the level of service analysis show the I-70 roadway links that do not have sufficient capacity (i.e., number of lanes) to adequately serve the daily traffic demand according to MoDOT's desired service standards – level of service C in more rural areas and level of service D in more urban areas. The shaded level of service designations indicate those locations that are expected to operate at a level of service worse than C in rural areas and D in urban areas. These I-70 roadway links will operate under conditions of unstable flow, lowered operating speeds, congested stop-and-go travel, and traffic volumes that exceed the capacity of the roadway. The desired better level of service in the rural areas reflects a driver's ability to tolerate less congestion on longer trips.

It can be seen from Table 3 that in 2030 all I-70 roadway links will operate at or very near to an unacceptable level of service. Over 95 percent of the I-70 corridor was forecast to operate at an unacceptable level of service by the year 2030. The I-70 roadway links that are forecast to operate at an acceptable level in 2030 are very near the unacceptable level of service threshold. A five percent (5%) increase in daily traffic in 2030 would result in an unacceptable level of service. In the year 2020 a significant portion of the I-70 corridor reaches unacceptable levels of service. The forecast unacceptable level of service that would be provided by the existing I-70 demonstrates the need for capacity enhancement along the corridor.

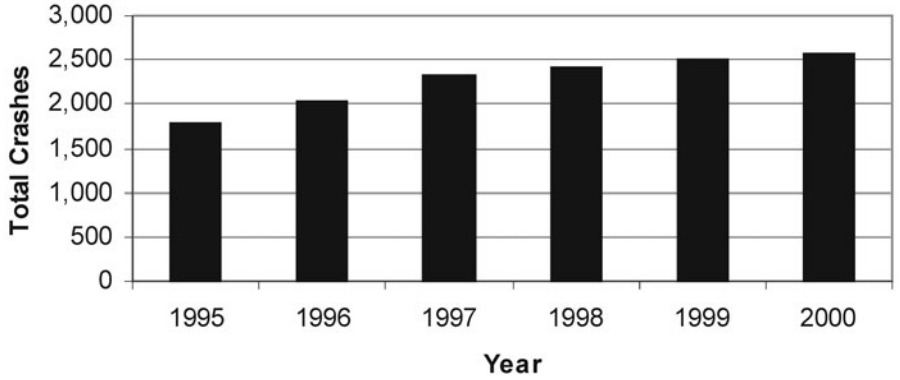
b. Traffic Safety

As with all roadway facilities, safety is a key consideration for the I-70 corridor. Crashes occur on a regular basis on the corridor generally as the result of driver error. The design of the roadway facility can impact how forgiving the roadway is to driver error. The following crash data illustrates how important the issue of traffic safety is in the I-70 corridor. The data was provided by the MoDOT Traffic Management System.

c. Crash Trends

The total number of crashes on I-70 within the study corridor has been increasing, as shown in Figure 2. In the 6-year period from 1995 to 2000, the number of crashes increased from 1,777 to 2,565, which is a 44% increase. This increase in the number of crashes primarily results from an increase in the traffic on I-70. The increase in traffic results in an increase in the density of vehicles resulting in less room for driver error.

Figure 2: Annual I-70 Crashes

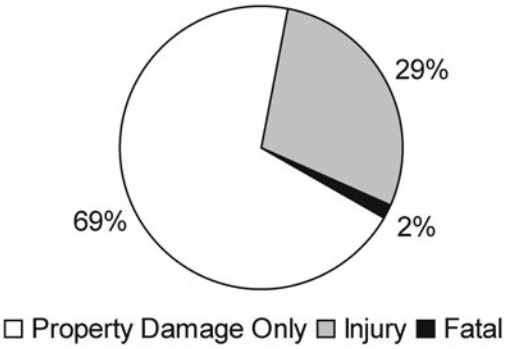


Crash Severity

To assess the severity of crashes, crashes are categorized as being fatal, injury or property damage only (PDO). Any crash that involves one or more fatalities is considered a fatal crash. If a crash involves injuries without any fatalities, then it is considered an injury crash. All remaining crashes are designated as property damage only.

Fatal crashes along the I-70 study corridor from 1995 through 2000 made up 1.6% of all crashes for an average annual number of fatal crashes of 36. The average annual number of injury crashes over that same time period was 648 (28.6%). Property damage only crashes constituted 69.8% of all crashes. Figure 3 illustrates the distribution of crash severity for the 6-year period from 1995 to 2000.

Figure 3: I-70 Crash Severity



Truck Crashes

Heavy trucks were involved in 29 percent of all crashes and 33 percent of fatal crashes in the 6-year period from 1995 to 2000. Heavy truck crashes can be more severe because of the significant difference in size and weight of a truck compared to other vehicles. Heavy trucks accounted for approximately 23 percent of the vehicle-miles of travel within the I-70 corridor in the year 2000. Figures 4 and 5 illustrate the proportion of all crashes and fatal crashes that involve heavy trucks.

Figure 4: All I-70 Crashes

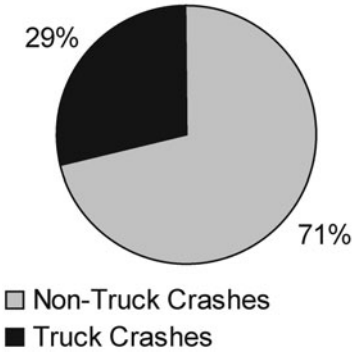
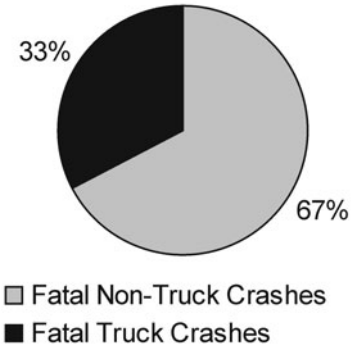


Figure 5: Fatal I-70 Crashes



Cross-Median Crashes

Cross-median crashes have been a concern as a result of the relatively narrow median in many areas. Between 1995 and 2000 the average number of cross-median crashes per year was 47. Cross-median crashes are very often more severe because the colliding vehicles are traveling in opposite directions. A comparison of the crash severity distribution for all crashes shown in Figure 3 to the crash severity distribution for cross-median crashes shown in Figure 6 illustrates this point. Fatal crashes are only 2 percent of all crashes, while 16 percent of cross-median crashes result in at least one fatality. The percentage of cross-median injury crashes is also higher at 35 percent when compared to 29 percent for all crashes.

Of all 213 fatal crashes from 1995 to 2000, 45 fatal crashes were cross-median. Thus, 21 percent of fatal crashes are cross-median while cross-median crashes are only 2 percent of all crashes. Figure 7 illustrates the percentage of fatal crashes that are cross-median.

Figure 6: Crash Severity for Cross-Median Crashes

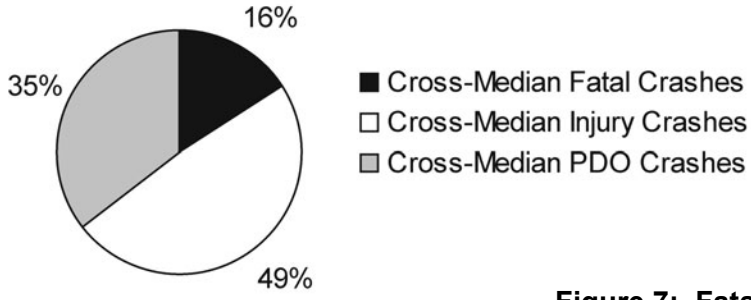
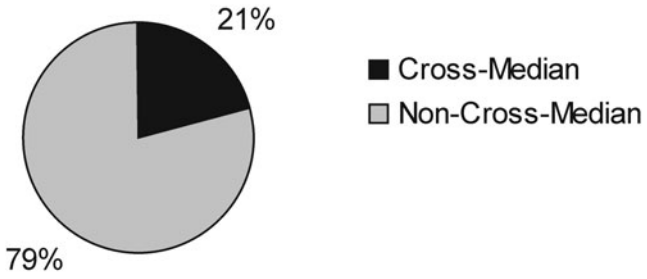


Figure 7: Fatal Crash Distribution



Given the number of crashes in the I-70 corridor, improvement of safety along the corridor is critical. As the volume of traffic on I-70 increases the number of crashes will increase unless safety improvements are made. The vehicle-miles of travel in the I-70 study corridor is expected to more than double between 2000 and 2030. Without any safety improvements at a minimum the number of crashes can also be expected to double.

3. NATIONAL SECURITY

The need to have efficient, convenient and expeditious movement of large quantities of people and goods requires that transportation systems must have a high degree of access. In cases such as the highway system, access is almost unlimited. Along with the open access, most of the transportation infrastructure, from airports to highway and rail bridges, was designed and built long before concerns about security and terrorism had arisen.

Although the highway system has many of the same vulnerabilities as other surface transportation modal systems, the highway system has the benefit of redundancy. To provide the necessary redundancy, the individual corridors must be robust enough to meet the demands if other links are impacted. The other key to taking advantage of the redundancy in the system is the ability to provide information on the systems status.

Current planning related to the highway system security is focusing on:

- Protecting critical mobility assets
- Enhancing traffic management capabilities, and
- Improving state department of transportations emergency response capabilities.

The American Association of State Highway and Transportation Officials' (AASHTO) Transportation Security Task Force identified that investment in these three security initiatives will yield other general mobility benefits. The reverse is also true. Investments in general highway system enhancements, such as improving the I-70 corridor, will yield security benefits.

Additional capacity along the I-70 corridor will increase the ability of the corridor to handle diversion from other highway links should some type of disaster occur. The increased capacity also enhances the ability to handle emergency responses. The I-70 corridor is part of the Strategic Highway Network (STRANET) and several interchanges provide connections to STRANET connecting links. The STRANET is designed to facilitate the movement of personnel and equipment for deployment and emergency response.

Proposed intelligent transportation system (ITS) implementation along the corridor will assist in protecting critical assets and will enhance traffic management capabilities. Closed-circuit television cameras could be used for surveillance of critical assets in the I-70 corridor such as the Missouri River bridge. Alarm systems can also be facilitated by the ITS communication network.

The physical protection of assets will be considered as part of the design process. An example is designing a barrier system to eliminate the ability of vehicles to park under critical bridges. The careful consideration of security issues in the design of highway facilities is still evolving as the transportation community comes to grips with new threats to security. In the design process, a risk assessment based approach will be used to determine the appropriate investment in security.

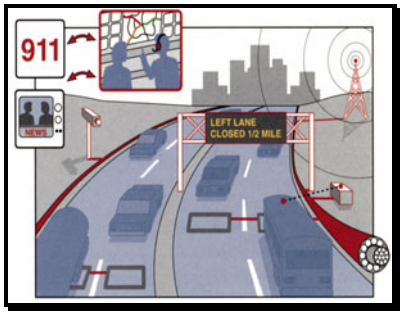
One approach to the issue of transportation security is the concept of a layered security system, where multiple security features are connected and provide backup for one another. This approach offers the advantage that perfection from each element of the system is not required, as other elements can compensate for any shortcomings. At the same time enhancements to one layer of the system can boost the performance of the system as a whole. Improving I-70 can help to increase transportation system security in Missouri and in the nation as a whole.

E. Summary of Initial Improvement Strategies

The I-70 First Tier EIS process leading to the decision to select the Widen Existing I-70 Strategy involved the consideration of a variety of strategies, including a “no-build” strategy, a transportation system management strategy, a new parallel facility strategy, a new parallel toll road strategy, a high occupancy vehicle lanes strategy, and a high-speed rail strategy.

Strategy No. 1 (“No-Build”)

Preserve the existing I-70 freeway by completing rehabilitation and performing ongoing maintenance without adding new lanes or capacity.



Strategy No. 2
(Transportation System and Demand Management)

Manage the demand and volume of traffic on I-70 through such programs as park-and-ride lots, variable message signs and other traveler information tools and intelligent transportation systems.

Strategy No. 3 (Widen Existing I-70)

Improve existing I-70 by adding lanes and reconstructing the existing roadway to enhance safety and performance, including improved access management.

Strategy No. 4 (New Parallel Facility)

Build a new parallel four-lane freeway or truckway close to and parallel with I-70, and improve access management at existing I-70 interchanges.

Strategy No. 5 (New Parallel Toll Road)

Build a new four-lane parallel toll road close to and parallel with I-70, and improve access management at existing I-70 interchanges.

Strategy No. 6 (High-Occupancy Vehicle Lanes)

Improve performance of I-70 through special new lanes reserved for high-occupancy or multi-person vehicles.

Strategy No. 7 (High-Speed Passenger Rail)

Use high-speed passenger rail between Kansas City and St. Louis to alleviate some of the traffic pressure on I-70.

An initial screening was conducted to identify those strategies that could be reasonably applied to the corridor (see Table 4). This process entailed evaluating the ability of each strategy to meet the corridor needs (i.e., purpose and need), in coordination with public and agency input.

Several strategies would clearly not be able to solve the problems of the study corridor as standalone improvements, but are worthy of further consideration as elements in a broader package.

- The No-Build Strategy was carried forward as a comparison for other strategies.
- TSM/TDM would adequately enhance operations only if combined with other improvements.
- High-speed passenger rail would provide benefits, due to the conversion of highway traffic to an alternative mode. However, like TSM/TDM, high-speed rail alone would not improve daily, recurring congestion experienced in the corridor.
- The High-Occupancy Vehicle Lanes Strategy would not improve operations due to the highly dispersed nature of the origination and destination points for daily I-70 travel.

Table 4: Initial Strategy Screening

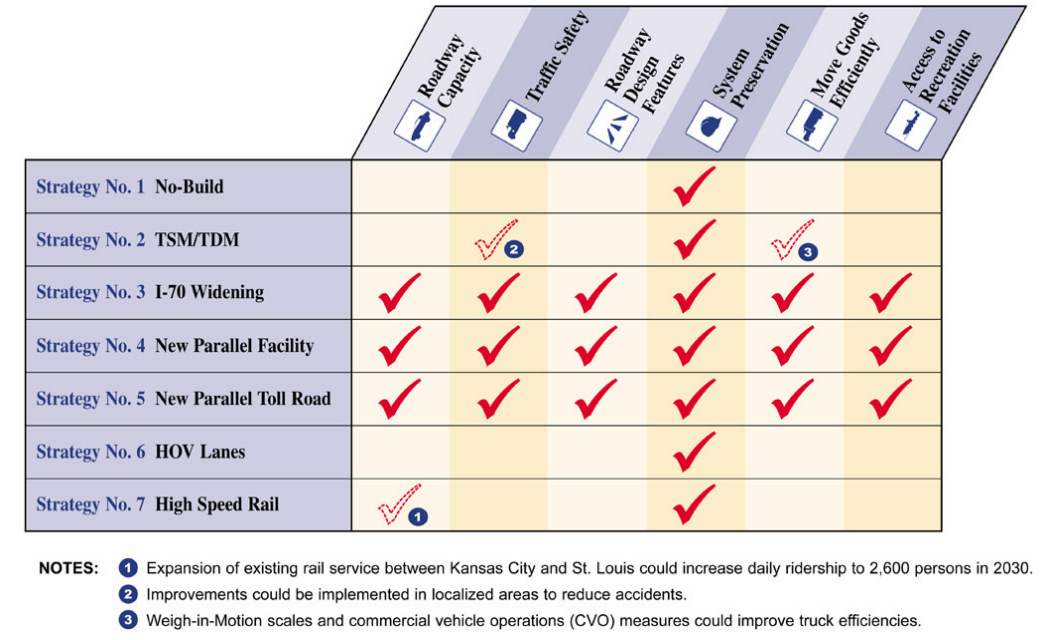


Table 5 identifies strategies recommended for more detailed evaluation.

Table 5: Recommended Reasonable Strategies

Strategy	Carry Strategy Forward for More Detailed Evaluation (Reasonable Strategies)	Eliminate Strategy from Further Consideration as Standalone Strategy
Strategy No. 1 (No-Build)		
Strategy No. 2 (TSM/TDM)		✓
Strategy No. 3 (Widen Existing I-70)	✓	
Strategy No. 4 (New Parallel Facility)	✓	
Strategy No. 5 (New Parallel Toll Road)	✓	
Strategy No. 6 (HOV Lanes)		✓
Strategy No. 7 (High-Speed Rail)		✓

F. Summary of Major Impacts of Reasonable Strategies

An overall comparison of the engineering and traffic characteristics of each reasonable strategy was performed based on more detailed definition and assessment of their transportation impacts. This evaluation was performed in concert with a general assessment of the environmental and socio-economic impacts of each strategy. The reasonable strategies carried forward were Strategy Number 3, 4 and 5.

Table 6 presents a summary of the effectiveness of the reasonable strategies in accomplishing the Purpose and Need.

Table 6: Purpose and Need Summary for Reasonable Strategies

Purpose and Need	*Reasonable Strategies*		
	Strategy No. 3 (Widen Existing I-70)	**Strategy No. 4 (New Parallel Facility)**	**Strategy No. 5 (New Parallel Toll Road)**
	✓ Provides new capacity as warranted based on future travel demands. ✓ Provides ability to add additional capacity in the future as travel demands continue to grow. ✓ Includes provisions for future transportation improvements within the median area.	✓ Provides a total of eight lanes, thereby providing greater long-term capacity. ✓ Includes provisions for future transportation improvements within the median area. ✓ Additional system capacity via passenger rail within the median could be added more readily due to superior compatibility with criteria – milder grades and curves.	✓ Provides a total of eight lanes, thereby providing greater long-term capacity. ✓ Includes provisions for future transportation improvements within the median area. ✓ Additional system capacity via passenger rail within the median could be added more readily due to superior compatibility with criteria – milder grades and curves.
	✓ Would enhance the safety of the I-70 roadway system. ✓ All I-70 traffic, interstate and locally oriented travel, would realize the same accident enhancements.	✓ Would enhance the safety of the I-70 roadway system, but primarily on the new route. ✓ Would provide the best overall accident rate improvement due to the new parallel highway construction and its superior safety features. ✓ The degree of overall safety improvement depends on the amount of diverted traffic to the parallel route. ✓ Emergency access to new route would need to be addressed.	✓ Would enhance the safety of the I-70 roadway system, but primarily on the new route. ✓ Would provide the best overall accident rate improvement due to the new parallel highway construction and its superior safety features. ✓ Would provide less reduction in accidents due to lower diversion of traffic to new route. ✓ Emergency access to new route would need to be addressed.
	✓ Would replace the existing I-70 roadway, in its entirety, with a new configuration that would meet current standards for freeway construction.	✓ Additional construction would be necessary to upgrade the existing I-70 facility.	✓ Additional construction would be necessary to upgrade the existing I-70 facility.
	✓ Would solely replace the existing I-70 infrastructure in its entirety. ✓ Would best provide for the preservation of the existing corridor beyond 2030.	✓ An additional bridge and replacement program would be necessary to preserve the existing I-70 infrastructure. ✓ Adds more freeway lanes and right-of-way to maintain.	✓ An additional bridge and replacement program would be necessary to preserve the existing I-70 infrastructure. ✓ Adds more freeway lanes and right-of-way to maintain. ✓ Requires additional operation costs for toll collection.

	✓ Would improve the efficiency of freight movements. ✓ Operational options include prohibiting trucks from inside lane.	✓ Would improve the efficiency of freight movements. ✓ Could provide the best service to trucks with higher speeds.	✓ Would improve the efficiency of freight movements. ✓ Degree of improved service to trucks would depend on diverted truck volumes, estimated at around 20 to 30 percent.
	✓ Would equally provide improved access to recreational facilities.	✓ Would equally provide improved access to recreational facilities.	✓ Would equally provide improved access to recreational facilities.

1. COMPARISON OF OVERALL BENEFITS AND IMPACTS

Each of these reasonable strategies would have varying degrees of adverse impacts and benefits. On a number of the impact issues, none of the strategies differentiated themselves. However, for each of the major evaluation factors, there were distinguishing factors or issues, summarized in Table 7, which support the identification of the preferred strategy.

Table 7: Summary of Issues for Reasonable Strategies

Major Categories (Evaluation Factors)	Distinguishing Factors or Issues
Engineering	✓ **Capital Cost (Order of Magnitude) –** Relocation strategies would be approximately 10% to 15% less expensive. However, this would depend on the extent of access management accomplished at the existing I-70 interchanges. ✓ **Annual O&M and Preservation Costs –** Widen Existing I-70 Strategy would save approximately $22M per year over the relocation strategies ($302M from 2001 to 2030). ✓ **Implementation –** The Widen Existing I-70 Strategy would be the most flexible and responsive strategy for addressing the immediate and growing needs of the corridor as they become evident. ✓ **Constructability** – Relocation strategies would not impact existing I-70 traffic operations during construction.
Traffic	✓ **Change in Travel Time (2030) –** Relocation strategies would reduce corridor travel times an additional 20 minutes or so over the Widen Existing I-70 Strategy. (Additional travel time savings along the corridor would be due to higher operating speed assumptions with the parallel route strategies.) ✓ **Incident Management** – The relocation strategies would provide superior alternative routing for incident management for long-distance travel.
Environmental	✓ **Natural Resources Impacts** – The relocation strategies would directly impact roughly seven times the amount of forests, five times the amount of wetlands and two to three times the amount of farmland as the Widen Existing Strategy. ✓ **Secondary and Cumulative Impacts** – The Widen Existing I-70 Strategy would expand a corridor where impacts to the natural environment have already occurred and the relatively low magnitude of new impacts would be less measurable.
Social and Economic	✓ **Impacts to Existing Structures** – It is estimated that up to 120 to 150 displacements would occur in the rural interchange areas with the Widen Existing I-70 Strategy. However, the majority of these same displacements would occur with the relocation strategies due to access management upgrades along the existing I-70 roadway. Other displacements would occur if a new parallel facility were constructed. ✓ **Impacts to I-70 Business Operations** – Widen Existing I-70 Strategy would impact adjacent businesses temporarily during construction and could include some acquisition. ✓ **Cost-Effectiveness** – New Parallel Toll Road Strategy would not be solely financially feasible.

2. PUBLIC AND AGENCY PARTICIPATION AND COMMENT

a. Public Involvement

The First Tier EIS employed a number of public involvement tools. In making use of the internet, a web site and e-mail address were perhaps the most convenient of all avenues for public involvement. Individuals with internet access could visit the website at their convenience, 24 hours a day, seven days a week. Three rounds of public meetings were held during the I-70 First Tier EIS process. Table 8 provides attendance figures and location details for each public meeting.

Table 8: Attendance at I-70 First Tier EIS Public Meetings

Location	Round #1 Date	Round #1[1] Attendance	Round #2 Date	Round #2 Attendance	Round #3[2] Date	Round #3 Attendance
Oak Grove	2/28/00	69	5/15/00	33		
Wentzville	2/28/00	43	5/15/00	39	3/21/01	97
Concordia	2/29/00	41	5/16/00	51		
Warrenton	2/29/00	28	5/16/00	40	3/20/01	154
Kingdom City	3/1/00	70	5/17/00	35		
Boonville	3/1/00	37	5/17/00	21		
Jefferson City	3/2/00[3]	35	5/18/00	18		
Columbia	3/2/00	72	5/18/00	86	3/2101	314
Kansas City			5/22/00	109		
St. Louis			5/22/00	21		
Sedalia			5/22/00	15		
Chillicothe			5/23/00	13		
Macon			5/23/00	21		
Union			5/23/00	1		
TOTALS		**395**		**503**		**565**

[1] Round #1 attendance figures includes both the stakeholder briefings and public meetings.
[2] Round #3 meetings were scheduled in Warrenton, Wentzville and Columbia to allow communities to review and comment on by-pass alternatives unique to their communities
[3] 3/2/00 Jefferson City was a morning legislative briefing only. No public meeting was held.

Additional tools used during the First Tier included: post office box and hot line; mailing lists; newsletters and updates; stakeholder coordination and briefings; sample survey; billboards; and media relations. The required location public hearings were held the week of August 27, 2001, at the locations identified in Table 9.

Table 9: Public Hearing Locations and Attendance

Location		Attendance
August 27:	Grain Valley	57
	Warrenton	88
August 28:	Concordia	94
	Wentzville	45
August 29:	Columbia	126
August 30:	Kingdom City	59
	Boonville	47
	TOTAL	**516**

Two general messages were drawn from the First Tier public involvement process:

- **Concern for Safety** – The clearest message was that the experience of driving on I-70 elicits strong concerns from Missourians. Missourians are uniformly concerned for their safety when traveling on I-70.
- **Improvement Strategy Preference** – The preponderance of public input suggested a preference for widening the existing I-70. In general, the public expressed a higher degree of opposition to building a new parallel facility.

b. Resource Agencies

Resource agency coordination occurred throughout the First Tier process. This coordination began even prior to the formal scoping meeting and continued through the project development process with nine study team progress meetings. The participating agencies included Missouri Department of Natural Resources, Missouri Department of Conservation, United States Army Corps of Engineers, United States Fish and Wildlife Service, United States Environmental Protection Agency and the Federal Highway Administration. The dates and subject matter of those study team progress meetings follows:

- February 23, 2000 – Scoping Meeting (Study introduction; draft Purpose and Need; Concurrence Points; Joint Development; and Feasibility Study.)
- March 15, 2000 – (Phase I Evaluation Matrix; Public Involvement Review; Environmental Data Collection Activities; and Traffic and Economic Studies Information).
- April 18, 2000 – (Chapter I, Purpose and Need; Affected Environment Overview; and Public Involvement update).
- June 21, 2000 – (Review findings of Public Involvement Efforts).
- October 25, 2000 – (MoDOT Commission Meeting and Stakeholder Coordination review; Sections of Independent Utility; and Project Schedule).
- January 16, 2001 – (Preferred Widening Strategy; upcoming agency meetings, Overton Bottoms, and Mineola Hill; Methodology for Evaluation of Alternatives; and Stakeholder and Public Meetings for Columbia and the Wentzville to Warrenton).
- April 17, 2001 – (Agency and Public Meetings update; Widening Strategy Review; Evaluation of Widening Strategy; Preliminary Draft First Tier EIS).
- July 17, 2001 – (Status of Draft First Tier EIS and SIU plan).
- October 3, 2001 – (Review of Draft First Tier EIS comments).

A summary of the comments received from the resource agencies includes:

- Concurrence with the proposed limits for the Second Tier SIU's and encouraged by the commitments made regarding mitigation/enhancement initiatives and joint development opportunities within environmentally sensitive areas (e.g. Overton Bottoms and Mineola Hill area).
- FHWA and MoDOT to be commended for using the tiered approach in evaluating options available for the cross-state corridor. Also, both agencies to be commended for selecting a widen strategy as the preferred alternative.
- The resource agency review comments did contain a number of specific concerns with regard to possible impacts to the natural and human environment. By and large, these concerns will be addressed in the Second Tier environmental documents.

Each of the agency letters received were reproduced and the specific comments and their responses are contained in the First Tier Final EIS.

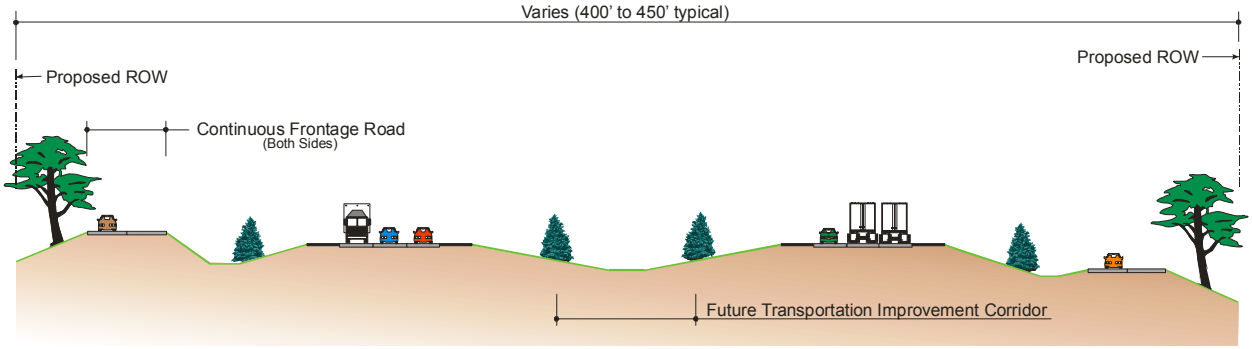
G. Summary of Selected Preferred Strategy

1. SELECTED PREFERRED STRATEGY

Strategy No. 3 (Widen Existing I-70) was the selected preferred strategy. This strategy was selected for the following reasons:

- Meets the long-term travel and safety needs for the corridor.
- Responds to public concerns.
- Replaces existing I-70 pavement.
- Lower annual maintenance.
- Reinvests in existing system.
- Buildable in usable increments.
- Incorporates management type improvements such as ITS.
- Improved incident management.

Selected Preferred Strategy:	Characteristics and Issues:
Strategy No. 3 (Widen Existing I-70)  *"Rebuild and reconstruct existing I-70 on its current alignment"*	• Urban area options (local relocations): ✓ Columbia ✓ Warrenton/Wright City/Wentzville • Rural area options: ✓ Widening to the north or south • Interchanges: ✓ Access management ✓ Relocations/displacements • Special study areas: ✓ Overton Bottoms ✓ Mineola Hill • ITS implementation • Maintenance of traffic



Features of a Modern I-70:

- **Expanded right-of-way**, typically 400 to 500 feet wide.
- **Six lanes** in rural areas (roughly 80 percent of corridor).
- **Eight to ten lanes** in urban areas (roughly 20 percent of corridor).
- **Future Transportation Improvement Corridor** (in rural areas only).
- Improved interchanges with enhanced **access management**.
- A corridor plan for **environmental enhancements**.
- **Continuous frontage roads** on both sides where warranted.

2. ROADWAY CHARACTERISTICS

As part of the evaluation of the reasonable strategies, several optional means of adding lanes to I-70 were identified. Through a review of the benefits of each of these options, recommended roadway design standards were identified. Figures 8 through 10 show the standards for the typical rural widening, local relocation and urban widening applications. Figures 11 and 12 show perspective views of the selected preferred strategy in the rural and urban areas, respectively.

Figure 8: Rural I-70 Widening Typical Section

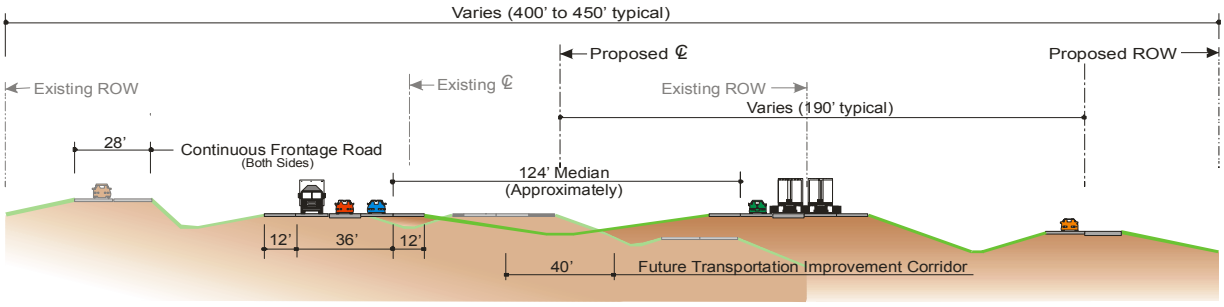


Figure 9: Local I-70 Relocation Typical Section

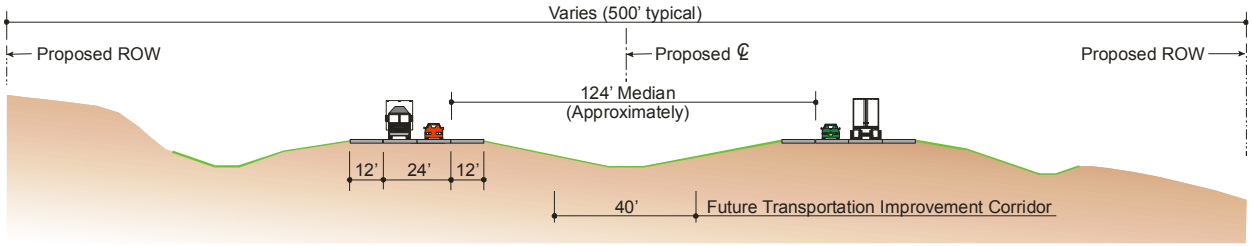


Figure 10: Urban I-70 Widening With Frontage Roads Typical Section

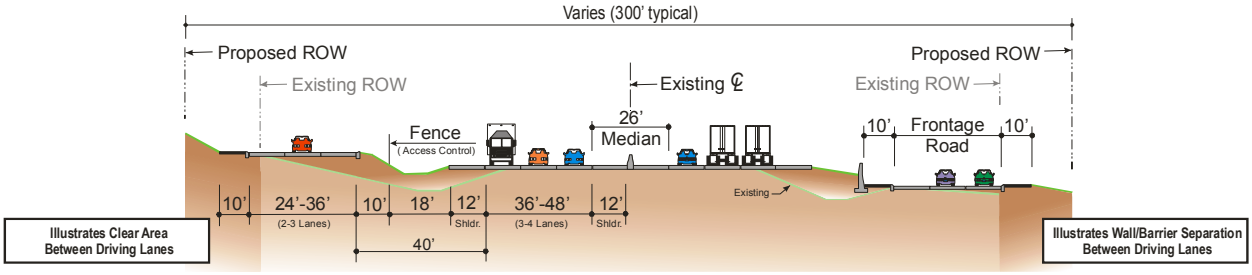


Figure 11

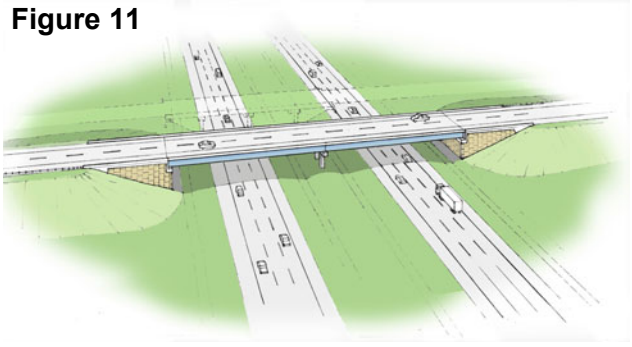
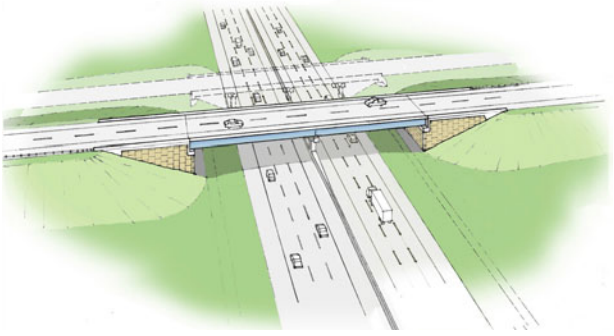


Figure 12



3. ROADWAY DESIGN CRITERIA

Design criteria have been developed to establish the general design characteristics of the I-70 improvements. These criteria establish common design parameters to be utilized in the design of the improvements by the seven Section Engineering Consultants.

The design criteria are generally based on the MoDOT Policy Procedure and Design Manual where applicable, but some variances occur where changes are needed to reflect the character of this futuristic facility. The design speed for the new I-70 is 75 mph (120.7 km/hr), although it will most likely be posted at 70 mph (112.7 km/hr). The design speed of the crossroads will be determined by roadway classification.

Compared to today's design standards for a state-of-the-art freeway, the existing I-70 facility has several deficiencies in its design that should be addressed as part of any improvement to the corridor. Current roadway standards for freeways provide wider shoulders and medians than what was originally constructed on I-70. Facility upgrades to I-70 will include the following:

- **Roadway** – Widening of inside and outside shoulders to meet current AASHTO standards. A 12-foot (3.7 M) wide full-depth shoulder is recommended to allow for use as future through lanes during maintenance activities.
- **Median** – Provide an improved median meeting the minimum standards. For open median sections, a minimum median width of 76 feet (23.2 M) between the inside edges of the through lanes (including two 12-foot [3.7 M] shoulders) would be required. Current MoDOT standards recommend a minimum 60-foot (18.3 M) median width, for a 70 mph (112.7 km/hr) design speed.
- **Clear Zone** – Provision for a 30-foot (9.1 M) wide (with a 6:1 slope) safety clear zone to meet requirements for 70 mph (112.7 km/hr) design.
- **Vertical Alignment** – Some vertical curves do not meet the current AASHTO standards. Vertical curves need to provide at least a minimum, but preferably the desirable vertical curvature to meet sight distance requirements.
- **Climbing Lanes** – Additional climbing lanes are recommended for locations where vertical grades result in a 15-mph (24.1 km/hr) reduction in heavy truck speeds.
- **Interchanges** – Reconstruction of existing diamond interchanges to provide a minimum of 700 feet (213.4M) between ramp termini and 430 feet (131.1M) between termini and outer roads with improved access control.

4. MAINTENANCE OF TRAFFIC

Maintenance of traffic during construction is a significant issue. This issue has been one of the more influential considerations in the recommended typical section for the roadway widening. Given the magnitude of the construction costs for the I-70 improvements and the other competing priorities within the state, the potential exists for construction to extend through a number of years.

MoDOT intends to maintain four lanes along I-70 during the construction of the improvements. These lanes will be maintained with limited interference from adjacent construction zones.

Improvements will be staged or phased to limit the amount of detouring of through traffic. Shifting the existing I-70 centerline a sufficient distance to either the north or south would provide the ability to construct three of the six new lanes without impacting the existing I-70 roadway. The limited extent of alignment adjustments will also promote the avoidance of the existing lanes during construction. Therefore, for the most part, the I-70 mainline improvements will be constructed without interfering with the travel lanes.

Figure 13: Existing Condition – Maintenance of Traffic Plan

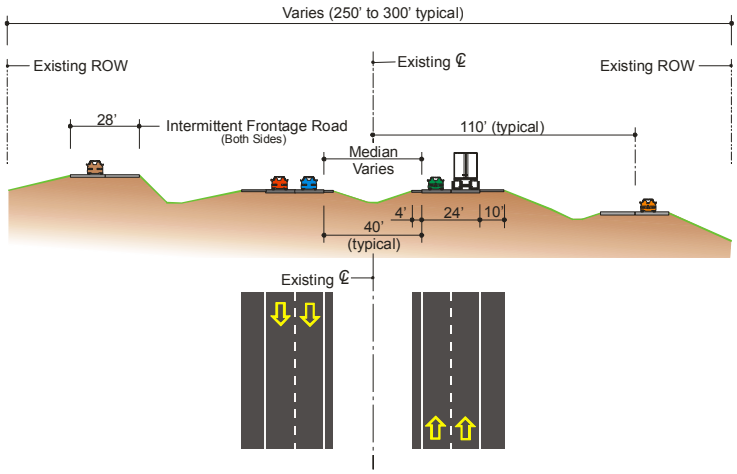


Figure 14: Stage 1 – Maintenance of Traffic Plan

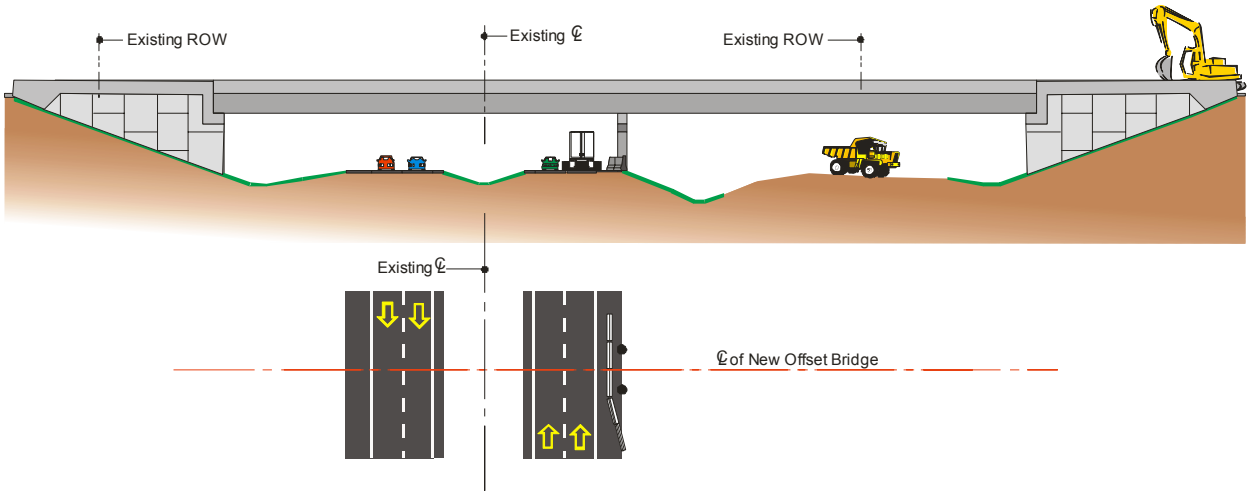


Figure 15: Stage 2 – Maintenance of Traffic Plan

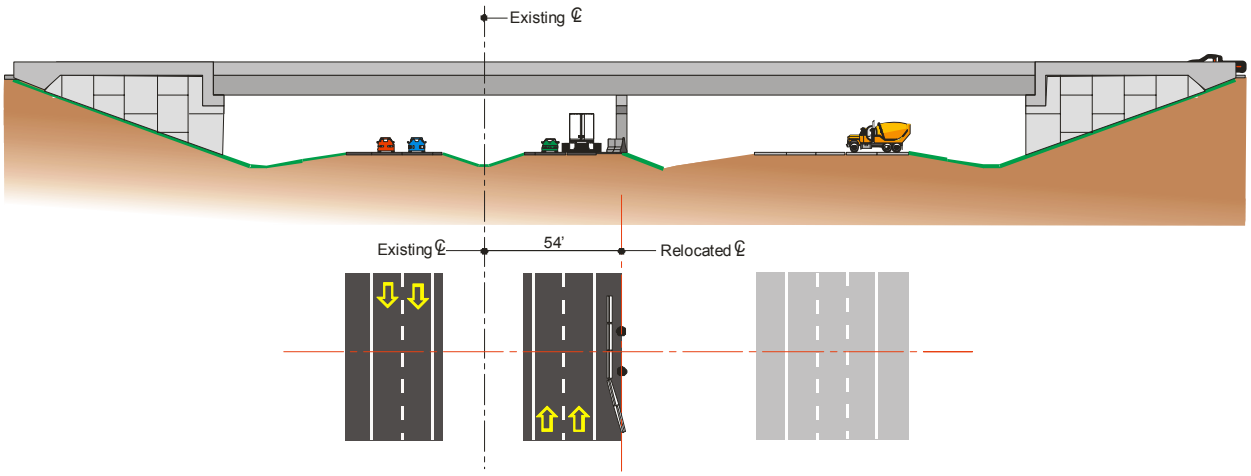


Figure 16: Stage 3 – Maintenance of Traffic Plan

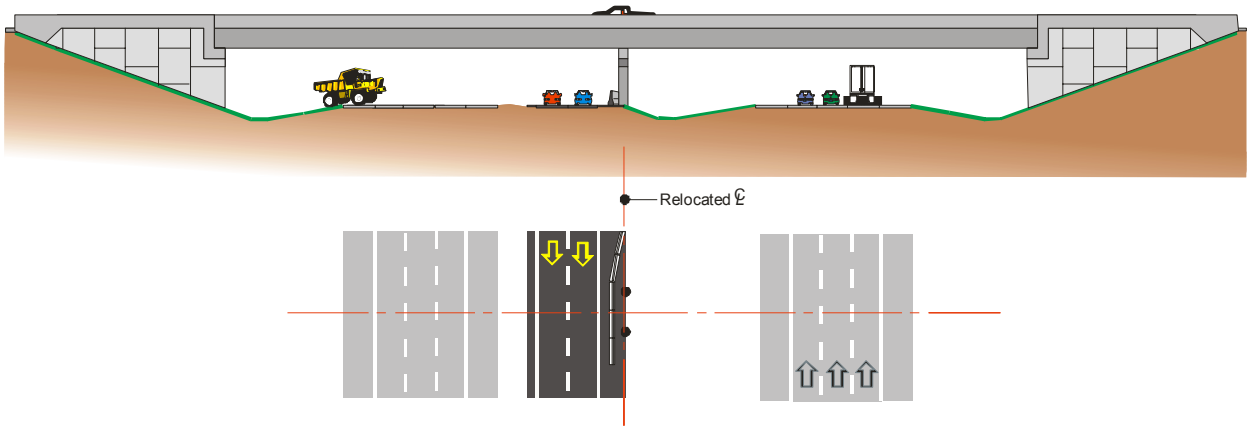
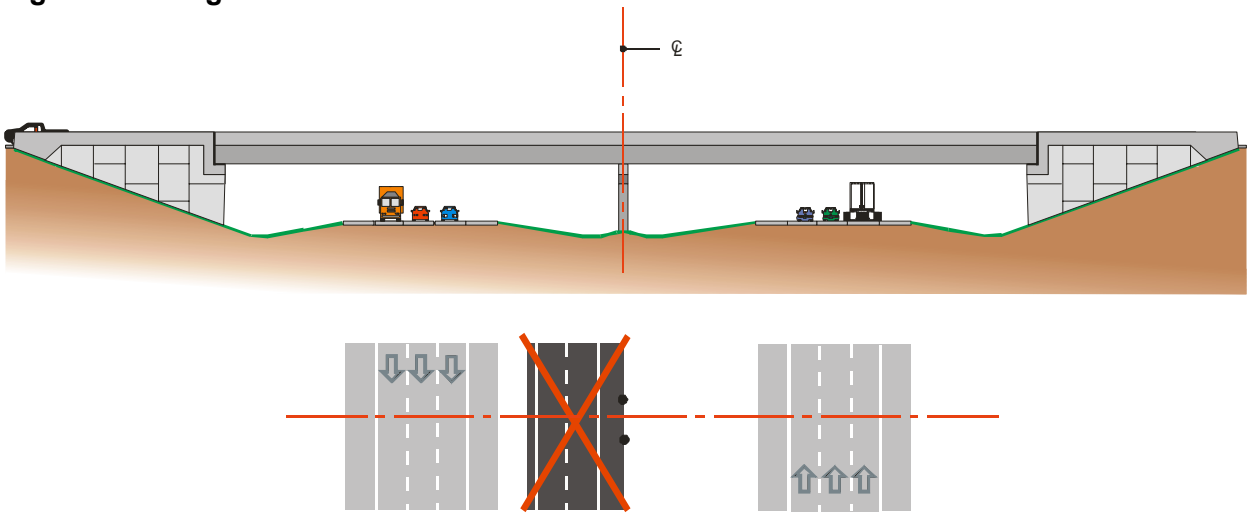


Figure 17: Stage 4 – Maintenance of Traffic Plan



5. ACCESS MANAGEMENT

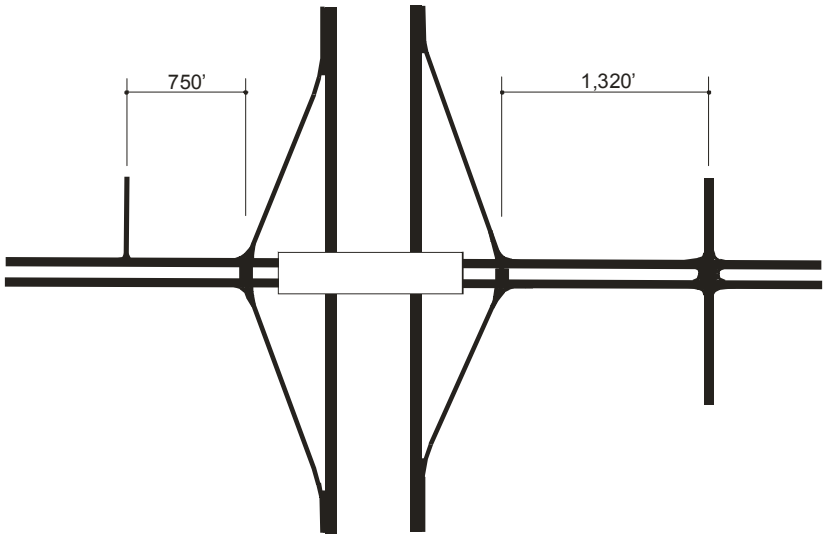
Access management involves the thoughtful planning and design of points of access to the public roadway system to maximize the efficiency and safety of the roadway. Sound application of access management can have a significant beneficial impact on safety and the ability of a roadway to successfully carry traffic. MoDOT's goals in implementing a comprehensive set of standards for access management include the following:

- Improved roadway safety.
- Improved traffic operations.
- Protection of past investments in the roadway system.
- Creation of better conditions for non-automobile modes of transportation.

Due to the widening of the roadway associated with the Widen Existing I-70 Strategy, all interchanges will need to be reconstructed. To the extent possible, all interchanges will be reconstructed in accordance with MoDOT's access management guidelines. Figure 18 shows the desired spacing guidelines for crossroad access at interchange locations. The guidelines include a minimum spacing of 750 feet between ramp intersections with crossroads and the

next intersecting roadway that only allows right turns in and right turns out. If the next intersection allows left turns to and from the intersecting roadway, then the minimum distance between that intersection and the ramp intersection with the crossroad is 1,320 feet.

Figure 18: Typical Access Management Improvements for I-70 Interchanges (Minimum Intersection Spacing)



6. ITS PLAN

One aspect of the selected preferred strategy is the implementation of Intelligent Transportation System (ITS) enhancements. ITS systems utilize advanced technologies, including computer communications and process control technologies to improve the efficiency and safety of the transportation network. ITS encompasses a variety of components that are deployed by both public and private entities and can be deployed apart from or in combination with traditional transportation facility infrastructure improvements. ITS deployments which support the purpose and need of the I-70 corridor include Commercial Vehicle Operations (CVO), Road-Weather Information Systems, Incident Management, and Traveler Information Systems.

a. Commercial Vehicle Operations (CVO)

The CVO applications include a broad range of deployments that are focused on improved commercial vehicle safety and efficiency. The most appropriate application for the I-70 corridor is Commercial Vehicle Electronic Clearance. Commercial Vehicle Electronic Clearance uses automatic vehicle identification (AVI) systems, high-speed weigh-in-motion systems and roadside databases to electronically identify and check the safety, credentials and size and weight data for commercial vehicles while they travel on the interstate. AVI equipment includes roadside readers and antennae and in-vehicle transponders to communicate a vehicle's unique identification code with the roadside equipment. Through the use of the AVI equipment, weigh-in-motion equipment and statewide and interstate commercial vehicle databases, legal commercial vehicles can travel on the interstate without stopping at weigh stations and state enforcement officials at weigh stations can concentrate their enforcement activities on non-compliant or questionable commercial carriers. These systems also improve safety on the interstate by reducing or removing commercial vehicle queues that back up from the weigh station onto the Interstate.

b. Road/Weather Information Systems

Road/Weather Information Systems (R/WIS) include weather detection and forecasting technologies, deployed on the interstate in combination with information dissemination systems. These systems alert drivers to upcoming hazardous driving conditions resulting from weather conditions and also provide data and information to the Department of Transportation and other agencies responsible for road maintenance and emergency response. The systems include technologies that detect changes in atmospheric and road surface conditions. Potential conditions to be monitored include water surface levels of nearby streams and rivers, precipitation, fog and other visibility impairing atmospheric conditions, and road surface temperature, ice and the presence of de-icing materials. Information dissemination systems associated with R/WIS can include electronic roadside signing, commercial and highway advisory radio broadcasts, in-vehicle information systems and pre-trip information sources such as the Internet and local television broadcasts. These information systems can be deployed in the form of a travel information system to alert drivers to upcoming conditions and take corrective actions.

c. Incident Management Systems

Incidents that cause non-recurring congestion are responsible for a significant proportion of the delays and associated costs. Incident management systems focus on enhancing incident detection, response and clearance. Incident management also focuses on efficient maintenance of traffic during the incident. Incident detection along the I-70 corridor would be enhanced through the use of advanced sensor technologies and communication systems which would allow local emergency service providers to more quickly and accurately identify a variety of incidents. The incident management systems would improve the coordination between jurisdictions and the immediate deployment of actions to minimize the effects of incidents. Technologies which encompass an incident detection and management system include in-road and non-intrusive vehicle detectors, video surveillance equipment, wide-area network communications between the various emergency service providers along the corridor and central or distributed command and control centers. These systems can also provide inputs to travel and tourism information systems, providing data on road closures and delays.

d. Traveler Information Systems

Traveler information systems provide I-70 travelers with pre-trip, en-route and on-site traffic and travel information. The specific information provided by these systems could include interstate and local arterial traffic conditions, weather conditions along the roadway, incidents and delays, alternative route and modal choices and construction activities along the corridor. Additionally these systems can provide localized travel and tourism information such as information on special events (i.e. State Fair or University of Missouri sporting events), seasonal traffic conditions, roadside services or amenities (i.e. gas stations, restaurants and lodging), and the location of the nearest hospitals, medical facilities, police and fire and rescue. Traveler information systems can use a variety of information dissemination resources including dynamic message signs, highway advisory radio, in-vehicle displays, cable television broadcast, commercial radio and the Internet.

H. Summary of Preferred Strategy Impacts

1. ENVIRONMENTAL IMPACTS

Through a comprehensive review of the potentially affected environment and environmental consequences during the First Tier EIS, no known issues were identified that would necessarily preclude or prevent the implementation of the Widen Existing I-70 Strategy. However, there were a number of environmental issues that will need further investigation as part of Second Tier Studies. These investigations will need to include considerations of avoidance,

minimization of impacts, and appropriate mitigation. As part of either the Second Tier Studies or the subsequent design development, regulatory and construction permits will be required. Necessary regulatory permits include Section 404 of the Clean Water Act, administered by the U.S. Army Corps of Engineers, and Section 9 and Section 10 of the Rivers and Harbors Act, administered by the U.S. Coast Guard and the Corps, respectively. Construction will adhere to existing agreements between MoDOT and the Missouri Department of Natural Resources, which include a water pollution control program and established best management practices.

A summary of the environmental impact issues includes:

- **Noise Impacts** – In the rural areas, the project has the potential to create noise impact to adjacent receptors due to widening the right-of-way. Relocation options around the Columbia and Warrenton/Wright City/Wentzville areas would introduce highway noise where such noise does not exist. Additional investigation of potential noise impacts and mitigation measures, if any, will be conducted in the Second Tier Studies.

- **Parklands, Wildlife Refuges, Recreation Areas and Public Lands** – Potential impacts by the project to several existing or planned parklands, or other public lands, have been identified. Each of these sites will be studied further as part of the Second Tier Studies, including a Section 4(f) evaluation if impacted. A number of parklands were identified in the relocation corridors around the Columbia and Warrenton/Wright City/Wentzville areas. However, options exist to avoid these sites. Below are the key areas that will require special consideration during the Second Tier.

  - ✓ KATY Trail State Park
  - ✓ Harriman Hill Access Area on the Lamine River
  - ✓ Big Muddy National Wildlife Refuge
  - ✓ Overton Bottoms Conservation Area
  - ✓ Graham Cave State Park

- **Prime Farmland** – The project would impact prime farmland. More detailed assessments and estimates of the impacts will be performed in the Second Tier Studies, including the Farmland Conversion Impact Rating for Corridor Type Projects.

- **Water Quality** – The current water quality conditions would not be degraded by the project activities.

- **Floodplains** – Several floodplains would be crossed by the project. With the exception of the possible relocations of the Columbia and Warrenton/Wright City/Wentzville areas, I-70 already crosses these floodplains. The project will entail in general the replacement in kind of all existing I-70 floodplain crossings. Major floodplain crossings and floodplain complexes include:

  - ✓ Blackwater River
  - ✓ Lamine River
  - ✓ Missouri River
  - ✓ Loutre River

- **Wetlands** – Impacts to wetlands would occur. Additional study and delineation of existing wetland resources will be performed during the Second Tier Studies. Special attention will be given to the Overton Bottoms area and the other major floodplain crossings.

  Additionally, Wetland Reserve Program (WRP) lands will be identified and any impacts will be evaluated, and if appropriate, mitigation and/or conversion procedures will be followed. Coordination will take place with the NRCS and FWS, as necessary.

- **Terrestrial and Aquatic Communities** – Sensitive biological resources potentially impacted by the project that require more detailed study include:
  - ✓ Buffalo grass (located near Boonville rest area)
  - ✓ Blacknose shiner (located near Whetstone Creek)
- **Threatened and Endangered Species** – No known critical habitat would be impacted by the project. However, informal consultation with the U.S. Fish and Wildlife Service will continue during the Second Tier Studies.
- **Historic and Archeological Resources** – Archaeological sites, National Register properties, and cemeteries were identified within the vicinity of the existing I-70 right-of-way. It has been determined that each of these sites will require additional study and coordination.
- **Hazardous Waste Sites** – No known hazardous waste sites would be impacted.

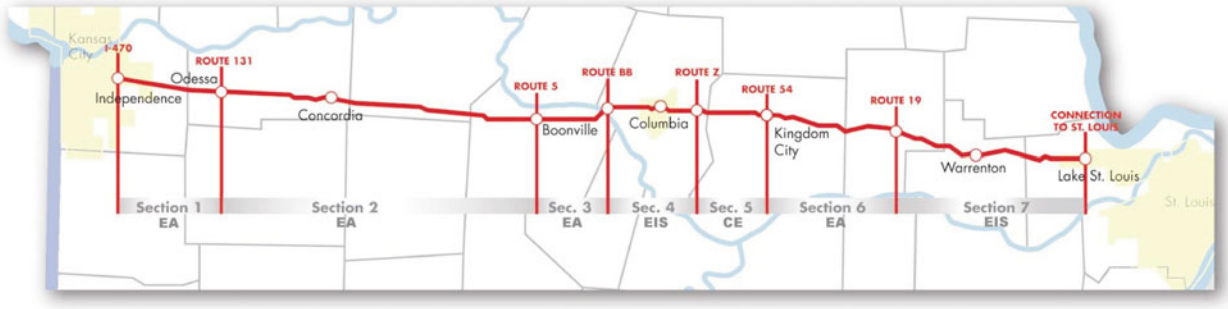
2. SOCIAL AND ECONOMIC IMPACTS

Interstate 70 has created a development spine across the state that has grown in intensity and breadth. It is anticipated that the Widen I-70 Strategy will continue this development trend, and to some extent, accelerate its growth due to the improved access provided at the interchanges and the slightly higher traffic volumes.

As part of the Second Tier Studies and subsequent design development, additional consideration will be given to the direct impacts of the project to adjacent properties and structures, particularly at the interchange areas. Additional studies at each interchange area will be needed to minimize the direct impacts of the project to existing residences and businesses. Furthermore, considerations will be given to maintenance of traffic during construction to minimize the temporal impacts of construction on adjacent businesses.

I. Sections of Independent Utility for Second Tier Studies

MoDOT is carrying forward the Second Tier Studies identified in the First Tier EIS. These Second Tier Studies are necessary to further study and define the improvements to I-70 such that more detailed analyses of the environmental impacts can be performed to more precisely evaluate the impacts of the project. The limits of each SIU are shown in the following map.



The determination of the appropriate type of environmental process to be utilized for each individual SIU depends on the nature of the improvements and the anticipation of the degree and significance of the potential impacts of the improvements. Three types of environmental processes are available – Categorical Exclusion (CE), Environmental Assessment (EA) and Environmental Impact Statement (EIS). These processes are defined as follows:

- **Categorical Exclusion (CE)** – Improvements are categorically excluded in FHWA regulations from the need to prepare an EIS due to the typical nature of the improvements and the level and intensity of expected impacts, which are not expected to be significant. A public and agency coordination process will be provided to document the process of refining the improvements and avoiding and minimizing impacts to natural and social resources.
- **Environmental Assessment (EA)** – Study of alternatives and environmental consequences will be performed and documented to determine the significance of the potential impacts. Based on the findings of the First Tier EIS, these impacts are not considered at this time to be significant. Should it be determined upon the conclusion of the EA that significant impacts would occur, an EIS will be prepared. A public and agency coordination process, including a public hearing, will be provided to refine the improvements and consider avoidance, minimization and mitigation of environmental consequences.
- **Environmental Impact Statement (EIS)** – The range of alternatives is broad with high variability of environmental consequences. The yet to be defined environmental consequences are anticipated at this time to be potentially significant such that a more comprehensive alternatives analysis and public/agency process is warranted. A public and agency coordination process, including a location public hearing, will be provided to refine the improvements and consider avoidance, minimization and mitigation of environmental consequences.

The First Tier EIS provided guidance on the nature of the improvements and the potential significance of environmental resources and social impact issues potentially impacted by the Preferred Strategy. This guidance provided support for the determination of the appropriate type of second tier study for each SIU. The First Tier EIS further documented the commitments of MoDOT and FHWA to provide corridor-wide impact coordination, impact mitigation and considerations of corridor enhancements. The document provided agencies and communities assurances that corridor-based considerations will be fulfilled and appropriate special considerations will be provided for each of the Second Tier Studies.

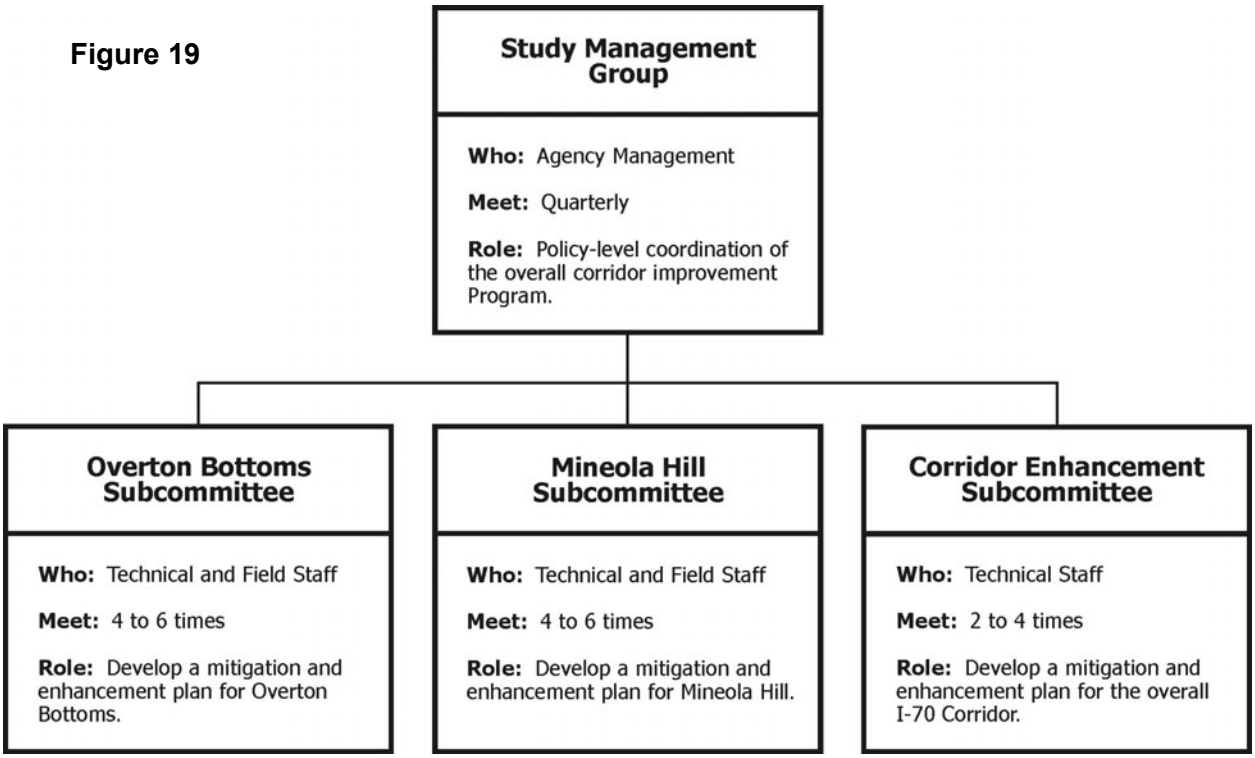
J. Corridor Enhancement

A Study Management Group (SMG) was assembled and organized for the Second Tier Studies. It is comprised of upper level resource agency staff for the purpose of coordination and information sharing. Also, three subcommittees stemming from the SMG were formed. These three subcommittees devised mitigation and enhancement plans for both strategic natural areas of the I-70 corridor and for the overall I-70 corridor itself. Figure 19 illustrates the relationship of the SMG and the three subcommittees.

1. CORRIDOR ENHANCEMENT PLAN

The programmatic improvement of the I-70 corridor provided the opportunity to incorporate an overall corridor enhancement plan to increase the benefits of the transportation investments to the natural environment and the I-70 travelers. The joint development of the corridor through a collaboration and partnership with a number of federal, state and local agencies was key in the development of the enhancement plan. The development of the corridor enhancement plan was a product of the Corridor Enhancement Subcommittee, one of three subcommittees (shown in Figure 19) formed for specific roles for development of the I-70 corridor. The enhancement plan has addressed corridor wide: bridge and roadway improvements; a bicycle/pedestrian plan, landscape enhancements; riparian corridors; a showcase Missouri plan; and community partnership opportunities.

Figure 19



2. OVERTON BOTTOMS

The Overton Bottoms area is located where the I-70 corridor crosses the Missouri River floodplain. The Overton Bottoms Subcommittee (shown in Figure 19) developed a joint development, mitigation, and enhancement plan for the Overton Bottoms area. It includes: consideration of a rest area/tourist information center; wetland mitigation and restoration; and bike and pedestrian access to the KATY Trail via a new Missouri River bridge.

3. MINEOLA HILL

The Mineola Hill area is located where I-70 crosses the wide Loutre River valley. The area also contains Graham Cave State Park, the historic Graham farmstead, and 'Slave Rock' located in the median of existing I-70. The Mineola Hill Subcommittee (shown in Figure 19) was formed to assist in the identification of environmental features of concern and project alternatives with mitigation and enhancement features in this area.

K. Corridor- Wide Agency Coordination

A number of corridor-wide project team coordination activities have taken place for the I-70 corridor. They are highlighted below:

- **Corridor Enhancement Plan** – This plan was developed in collaboration with technical staff from a number of federal, state, and local agencies.
- **Environmental Protection Agency** – A cooperating agency MOA and an EPA Scoping document have both been developed for the I-70 corridor.
- **U.S. Army Corps of Engineers** – A Partnering Agreement has been developed that emphasizes a cooperative spirit and where appropriate, a merged Section 404/NEPA process.

- **Natural Resources Conservation Service** – A cooperative Agreement has been developed for the I-70 corridor that addresses the Prime and Unique Farmland, Wetland Reserve Program, and the Conservation Reserve Program coordinating procedures.

- **State Historic Preservation Office** – The Missouri SHPO has concurred in the Historic Architecture Methodology that was used for the I-70 corridor. The SHPO has also concurred in the recommendation of a Geomorphology Report that was prepared for the major stream crossings along the I-70 corridor. Additionally, a formal MOA has been developed addressing procedures for considering the potential historic aspects of I-70.

The corridor-wide agency coordination continues and is a key aspect of the development of the Second Tier Studies.