CHAPTER I
Purpose and Need

A. Introduction

On June 29, 1956, President Dwight D. Eisenhower signed the Federal Aid Highway Act of 1956. The Interstate Highway System, also known as the Eisenhower System of Interstate and Defense Highways, is an interconnected system of 45,500 miles (73,225.2 km) of limited-access highways across the United States. One of the most important of these highways is Interstate 70 (I-70), providing for east-west transcontinental interstate access across much of the United States. In August 1956, shortly after President Eisenhower signed the legislation creating the Interstate Highway System, the Missouri State Highway Commission awarded the first contract toward the construction of I-70. Construction continued for another nine years and I-70 now spans a distance of more than 250 miles across the state. Other than short reconstructed portions, the newest sections of I-70 are 39 years old. With maintenance provided by the Missouri Department of Transportation (MoDOT), the facility has outlasted its original design life of 20 years and has carried traffic volumes of both cars and heavy trucks that have far exceeded the expectations of the original designers.

The Missouri Department of Transportation and the Federal Highway Administration (FHWA) propose improving a portion of the I-70 corridor between just west of Route 19 (milepost 174) and Lake St. Louis Boulevard to meet the current and future needs of this extremely important transportation facility. To facilitate this action, MoDOT has completed a First Tier Environmental Impact Statement and initiated this Second Tier Environmental Impact Statement (STEIS) to fulfill this goal. This chapter of the STEIS provides an overview and description of the study corridor within SIU 7, and identifies serious transportation problems within that section of the I-70 corridor that would be addressed by the proposed project.

The Department of the Army Corps of Engineers has indicated that it is in general agreement with this Purpose and Need. A copy of this letter can be found in Appendix H.

B. Summary of First Tier EIS Project Purpose & Need

The goal of I-70 improvements between Kansas City and St. Louis is to provide a safe, efficient, environmentally sound and cost-effective transportation facility that responds to the needs of the study corridor and to the expectations of drivers traveling on a nationally important interstate. The need for the project is based on transportation deficiencies that had been identified in the First Tier EIS. These are summarized as follows:

Roadway Capacity – Increase roadway system capacity in accordance with projected travel demands to improve the general operating conditions on I-70. Level of Service (LOS) analyses show that, with no capacity improvements, by 2030 all sections of I-70 in Missouri are expected to operate at or very near unacceptable levels of service. In the urban areas near Kansas City, Columbia and St. Louis levels of service are expected to be at LOS F. Levels of service in the majority of rural sections of I-70 are expected to range from D to E in the year 2030.

Traffic Safety – Reduce the number and severity of traffic-related crashes occurring along I-70 between Kansas City and St. Louis. The 1997 total crash rate on I-70 in Missouri was 147 crashes per 100 million vehicle miles traveled. These rates are expected to continue.

Roadway Design Features – Upgrade current roadway design features along I-70, including interchanges, roadway alignment and roadway cross-sections. 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. In addition, some vertical curves do not meet current standards. Also recommended is the reconstruction of existing interchanges to comply with MoDOT's access management guidelines.

System Preservation – Preserve the existing I-70 facility through ongoing rehabilitation and maintenance activities. Depending on the rating used, between 34 percent and 54 percent of existing I-70 pavement in Missouri is ranked as "poor" or "very poor." Only 25-38 percent of existing I-70 pavement is ranked as "good" or "very good." Bridges on the corridor have an average age of 27 years and have average ratings for decks, superstructure and substructure that fall within the "generally fair" to "generally good" categories, with a need for maintenance. A 2002 survey indicates Missouri ranks second-worst in the nation in the percentage of structurally-deficient bridges.

Goods Movement – Improve the efficiency of freight movement using I-70. Most intrastate movement of goods takes place by truck, and both domestic and international freight flows within the United States have increased dramatically over the course of the last 10 years. A commodity flow survey published in December 1999 estimated that between 1993 and 1997 the total tons of freight shipped in the United States increased by over 14 percent and the total increase in value of that cargo over that same period increased by almost 19 percent, which equates to between a three and five percent increase in goods movement per year. Truck traffic along I-70 has been increasing at a rate slightly greater than two percent per year. Without improvements to I-70, the movement of goods by truck in the I-70 corridor would be degraded as a result of future traffic congestion, resulting in higher transport costs.

National Defense/Homeland Security – Adding additional capacity along the I-70 corridor would increase the ability of the corridor to handle diversion from other highway links should a disaster occur. The increased capacity also enhances the ability to handle emergency responses. A layered security system, where multiple security features are connected and provide backup for one another 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.

The ordering of these specific needs is not intended to imply any relative prioritization or order of importance. Furthermore, the numbering of the individual needs of the Improve I-70 Study Corridor is not intended to replace the findings of the Missouri Long-Range Transportation Direction regarding the prioritization of MoDOT's statewide needs.

C. Proposed Action

Given the current and projected traffic volumes and the outdated design of portions of existing I-70 (some sections date from as early as 1956), improvements to the I-70 corridor are considered critical to provide for a safe, efficient and economical transportation network that would meet traffic demands. The intent of the Second Tier EIS is to build on and extend the work of the First Tier EIS for improving I-70. This will be accomplished through an evaluation at the appropriate level of detail within the National Environmental Policy Act (NEPA) process. This study will present preferred alternatives within SIU 7 for improving I-70 along its mainline and at each interchange.

D. Project Background

In 1999, MoDOT conducted the Route I-70 Feasibility Study to document the existing condition and needs of I-70. The purpose of the Feasibility Study was to project future needs of the facility, analyze feasible solutions and prepare recommendations on the most appropriate course(s) of action to address these needs over the next several years. An objective of the Feasibility Study was to investigate any deficiencies in the existing interstate that would influence future operations, maintenance or construction.

To accomplish that goal, the Feasibility Study included a detailed analysis of the existing facility and parallel routes. This included reviewing the physical and operational features of the interstate route along with the characteristics of its function. In addition, a number of possible strategies to resolve the issues associated with the current facility were defined and discussed. One involved adding capacity to the existing facility, while a second strategy involved building a new parallel interstate facility. While these two strategies were identified as being feasible based on initial assessments, the study recommended that more detailed and comprehensive engineering, environmental and socioeconomic investigations be conducted. The Feasibility Study recommended that these more detailed studies be conducted as part of a "tiered" NEPA process. The subsequent First Tier Environmental Impact Statement was designed to look at a broad range of conceptual corridors for the entire I-70 corridor, between the Kansas City and St. Louis metropolitan areas.

To further study the environmental and engineering implications of the strategies identified in the I-70 Feasibility Study, and in compliance with NEPA, MoDOT initiated the I-70 Improvement Study. This study culminated in the preparation of the First Tier EIS for the I-70 corridor. The First Tier EIS, completed in the fall of 2001, considered a number of approaches to improving safety and travel efficiency within the corridor.

During the first tier process, MoDOT developed a number of I-70 strategies in consultation with various resource agencies. In addition to agency input, the First Tier EIS incorporated public and community involvement developing consensus to arrive at a preferred strategy for improving the I-70 corridor. The First Tier EIS concluded that the preferred strategy is to widen and reconstruct existing I-70, with the option for new I-70 conceptual corridors in the Columbia and Warrenton / Wright City / Wentzville areas.

The current phase of the program, called Improve I-70, is a continuation of the I-70 Improvement Study. This effort consists of a group of seven independent but closely coordinated second tier studies that will consider engineering, environmental and community issues as improvement decisions are made. These Second Tier Studies will consist of more detailed analyses and more precise quantification of the environmental impacts associated with the improvements to I-70.

Each of these seven studies focus on a separate Section of Independent Utility (SIU) to ensure that the preferred strategy is implemented in a way that is sensitive to the needs of local communities. Each SIU is an independent project, standing on its own merits within the framework of the Improve I-70 studies. The final product for SIU 7 in the Improve I-70 phase is this Second Tier Environmental Impact Statement.

1. Project Location and Description

The SIU 7 study corridor is approximately 40 miles in length and is located in eastern Missouri, from just west of Exit 175 at Route 19, east to Exit 214 at Lake St. Louis Boulevard. There are 13 interchanges within the study corridor.

The study corridor includes portions of three counties: Montgomery, Warren and St. Charles. Many of the communities within the study corridor are some of the fastest growing in the state. Land uses are becoming more heterogeneous as farmland is converted to suburban residential, commercial and light industrial land uses. The rapid pace of this growth is reflected in the region's strained transportation system, particularly along this stretch of I-70.

Missouri's 251 miles (402.3 km) of I-70 were completed in 1965. Between Route 7 in Jackson County and the Lake St. Louis exit in St. Charles County, I-70 is a four-lane divided freeway. The lanes are 12 feet (3.6 m) wide, with 10-foot (3.0 m) or 12-foot (3.6 m) outside shoulders and four-foot (1.2 m) or six-foot (1.8 m) inside shoulders. Through most of Missouri, I-70 has a 40-foot (12.2 m) grass median. The areas where the median width varies from 40 feet (12.2 m) occur mainly where old U.S. 40 was used for two lanes of the interstate. In these areas the median width is variable, but it is always wider than 40 feet (12.2 m). Through Columbia, Warrenton, Wright City and Wentzville and at the Missouri River crossing, the median is closed with a median barrier.

2030 traffic projections indicate that SIU 7 of the existing I-70 conceptual corridor will need to be designed to carry six lanes from its western terminus west of Route 19 to two miles (3.2 km) west of Route 47, where it would be widened to eight lanes through the eastern end of the section at Lake St. Louis Boulevard.

Since the Improve I-70 program involves potential improvements to the existing I-70 roadway, each interchange in the section would need to be reconstructed. To the extent possible, any interchange reconstruction efforts would be built in accordance with MoDOT's access management guidelines. Access management involves the careful 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.

2. Overview of the Tiering 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 approach enables a decision-making process that focuses on issues that are ripe for decision and reduces repetition in environmental documentation. First tier decisions provide a framework for the decision-making process and helps to narrow the scope of second tier studies.

The First Tier process concluded with a Draft and Final EIS and a Record of Decision (ROD), filed in December of 2001. This study will present preferred alternatives, which will in turn lead to a final Environmental Impact Statement and Record of Decision within SIU 7 for improving I-70 along its mainline and at each interchange.

The First Tier EIS produced the following outcomes:

- Approval of general concept (the preferred strategy) for improving I-70, including a prioritization strategy 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 referenced by Second Tier Studies to eliminate repetitiveness and record the first tier decision.
- Development of agency and public consensus for the overall improvement plan.

Late in 2001, the FHWA approved the selection of the Widen Existing I-70 Strategy for the I-70 Corridor. The entire I-70 Study Corridor is approximately 10 miles (16.1 km) wide, five 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 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 First Tier strategy.

The First Tier EIS indicated that future 2030 travel demands require 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. 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. A summary of the First Tier EIS is found in Appendix A of this document.

E. Need For Project

1. Route Importance and System Linkage

Interstate 70 is a vital part of the interstate system. Interstate routes carry 38 percent of the total traffic volume in Missouri, while the actual interstate roadway mileage accounts for less than four percent of the state highway system. Within Missouri, I-70 connects the metropolitan areas of St. Louis, Columbia and Kansas City. In rural Missouri, I-70 carries more traffic daily than any other route.

a. National and State Importance

Interstate 70 is one of the nation's longest interstate routes, running east to west through the center of the United States. The highway begins in Baltimore and ends at I-15 in Utah, crossing through 10 states. Interstate 70 connects the cities of Baltimore, Pittsburgh, Columbus, Indianapolis, St Louis, Kansas City and Denver. Missouri's 251 miles (403.9 km) of I-70 were completed in 1965. In Missouri, I-70 bisects the state, connecting St. Louis on the east with Kansas City on the west.

Commercial, Manufacturing, and Agricultural Centers Access

This section of I-70 serves as a direct link to various identified district, urban, and regional trade centers, including the City of St. Louis, suburban commercial centers in St. Louis and St. Charles counties, and growing commercial districts in Warrenton and Wright City. Interstate 70 also provides commercial access to communities to the north and south, including trade centers in Montgomery City, Hermann, Troy and Bowling Green.

- Manufacturing centers depend on efficient transportation networks in order to import and export goods and services. Connector routes provide direct service to secondary manufacturing counties as well as links to any primary manufacturing counties. Interstate 70 serves important manufacturing centers in the City of St. Louis, St. Louis County, St. Charles County and Franklin County.
- Agricultural centers are vital to Missouri's economy. Interstate 70 is a major agricultural corridor throughout Missouri and within the SIU 7 study corridor in Montgomery and Warren counties. Further, it provides access to farmland in counties to the north and south of the corridor.

Recreation and Tourism Centers Access

As one of only two east-west interstates in Missouri, and the only interstate facility which connects the two largest cities in Missouri, St. Louis and Kansas City, I-70 is the largest gateway to the vast number of tourist and recreational destinations in the state. In some locations, summer traffic volumes on I-70 can increase by 50 percent compared to winter volumes, with many travelers seeking access to recreational and tourist facilities.

Convenient access to recreational areas in Missouri is important to the quality of life of many Missourians and Midwesterners. Branson/Table Rock Lake and the Lake of the Ozarks are two of the largest tourist/recreational destinations in Missouri. But in addition to these, travelers use the I-70 connections to major north/south highways, such as U.S. 54, U.S. 63, U.S. 61 and U.S. 65, to arrive at tourist and recreational facilities throughout the state. These destinations include the Lake of the Ozarks, Branson/Table Rock Lake, Long Branch Lake, Mark Twain Lake, Truman Lake, Stockton Lake, Pomme de Terre Lake, numerous rivers, streams, reservoirs and state parks.

Tourism is a $7.8 billion per year industry in Missouri, employing nearly 191,000 Missourians. Further, Missouri tourism generates $625 million in state taxes and $272 million in local taxes annually. Given the economic importance of the tourist and recreational destinations in Missouri, safe and efficient access is needed to recreational facilities, particularly during summer months when the number of recreational travelers increases.

Also important is the intrinsic recreational value of I-70 to those who travel on it. The I-70 "experience," whether simply enjoying the beauty of central Missouri or experiencing the possible recreational activities potentially associated with the Corridor, can provide travelers additional recreational and entertainment opportunities. The enjoyment of traveling along I-70 can further highlight the underlying importance of this corridor to the tourism industry, particularly the western portion of this section.

b. Regional Importance

Interstate 70 intersects a number of major interstate facilities in Missouri, though all are located in the metropolitan areas of Kansas City and St. Louis. These routes include I-29, I-35, I-435, I-470, located in Kansas City, and I-270, I-170, I-64 and I-55 in St. Louis. Other major roadways accessed from I-70 include U.S. 71 in Jackson County, U.S. 65 in Saline County, U.S. 63 in Boone County, U.S. 54 in Callaway County, U.S. 61 in St. Charles County, and U.S. 67 in St. Louis County.

Two regional planning agencies have jurisdiction within the SIU 7 study area:

- The Boonslick Regional Planning Commission (BRPC) is an association of governments representing Lincoln, Montgomery and Warren counties and 27 municipal governments in central Missouri.
- East-West Gateway Council of Governments (EWCOG) is the Metropolitan Planning Organization for the St. Louis metropolitan area. (The organization recently changed its name from the East-West Gateway Coordinating Council.) In Missouri, it includes the counties of Franklin, Jefferson, St. Louis, St. Charles and the City of St. Louis.

The BRPC generally agreed with the conclusions of the First Tier EIS that improvements are necessary on I-70 within this region.[1] According to the Commission, the current and projected traffic levels, accident rates, and population growth are reason enough to look at improving the safety and efficiency of this corridor. In the 2001 Transportation Plan for the Boonslick Region, the commission specifically states that I-70 is by far the most important roadway within the region. They note that enormous traffic volumes are rapidly deteriorating this critical corridor and call for making rehabilitation and reconstruction a high priority to keep the driving surface at an acceptable service level.

Transportation Redefined II, the long-range regional transportation plan developed by the EWCOG in 1999, establishes several broad regional goals for transportation projects.[2] Some of these goals are:

- A strong position in the national and global marketplace, ensured through strategic economic development, competitive employment opportunities, a well-trained workforce, and responsible asset management.
- A sustainable and growing economy grounded in wise use and coordinated use of physical, environmental, social, and agricultural resources.
- A clean and healthy environment.
- Resources for learning and personal development, accessible at every point of the life cycle.
- Varied and valued outlets for recreation and cultural expression.
- Efficient and balanced patterns of growth and development that respect the land, the citizenry, the history and the strategic location of this region.

In 2002, the EWCOG further refined its transportation vision for the region with the publication of *Legacy 2025*.[3] This document builds on the principles and objectives of *Transportation*

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[1] Boonslick Regional Planning Commission (2001), *Interstate 70 Improvement Study Position Statement*. Retrieved August 2002 from http://www.boonslick.org/pro_pub/publications/I70positionstatement.htm.

[2] East-West Gateway Coordinating Council (1999), *Transportation Redefined II: Building on a Solid Foundation for 2020*.

Redefined and establishes six focus areas for ensuring that decisions made with regard to transportation projects address priority regional needs. The six focus areas are:

- Preservation of the existing infrastructure (maintaining current road, bridge, transit, and intermodal assets in good condition)
- Safety and security in travel (decreasing the risk of personal injury and property damage on, in, and around transportation facilities)
- Congestion management (ensuring that congestion on the region's roadways does not reach levels that compromise productivity and quality of life)
- Access to opportunity (addressing the complex mobility needs of persons living in low-income communities and persons with mobility needs)
- Sustainable development (coordinating land use, transportation, economic development, environmental quality, energy conservation, and community aesthetics)
- Efficient movement of goods (improving the movement of freight within and through the region by rail, water, air, and surface transportation modes)

The EWCOG Board of Directors did not take a formal position on the results of the First Tier EIS, although improving the existing corridor clearly falls within the vision of the council.

c. Local Importance

The shifting of land uses from agricultural to low density suburban and commercial within the study area has led to a focus of activities along the highway and near existing interchanges. As a result, mobility and access functions have become increasingly compromised as the highway is progressively used more for local trips. In fact, several of the communities along this section of I-70 refer to the highway as their "main street."

The land under consideration for improving the existing corridor is situated in one of the fastest growing regions of the St. Louis metropolitan area. Many of the communities in the study corridor have developed a comprehensive planning process to accommodate and direct this anticipated growth. Each of the cities and counties within the study area is actively pursing the implementation of their plans, often with regard to the presence of I-70.

2. Existing and Future Traffic Volumes

a. Existing Conditions

Section of Independent Utility 7 extends from just west of Route 19 (milepost 175), in Montgomery County, to Lake St. Louis Boulevard (exit 214), in St. Charles County. This corridor also passes through Warren County. All of the 39 miles (62.8 km) of interstate are presently four-lane divided, although widening and upgrades are planned and/or underway in the eastern, more urban portions. Some characteristics of this section, including average daily traffic volumes (ADT) and average daily truck percentages, are listed in Table I-1.

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[3] East-West Gateway Coordinating Council (2004), *Legacy 2025: The Transportation Plan for the Gateway Region*. Retrieved August 2002 from http://www.ewgateway.org/trans/longrgplan/triii/triii.htm

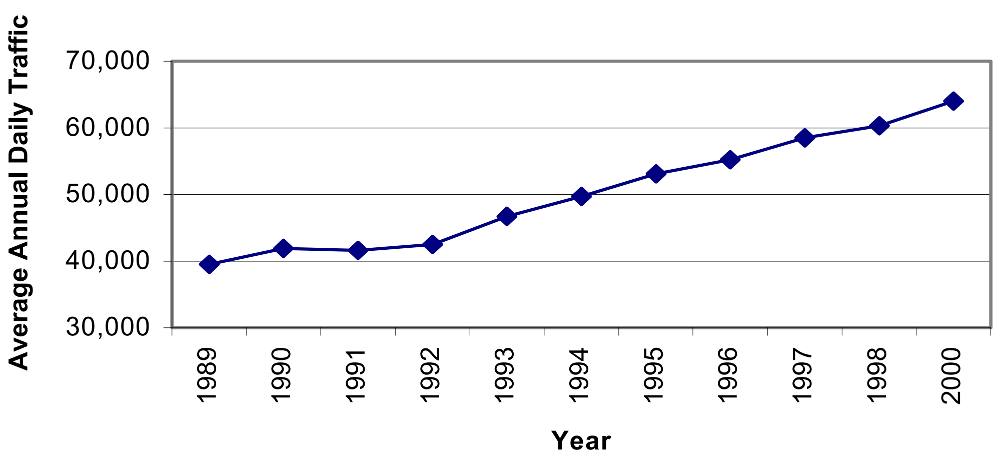
Table I-1: SIU 7 Existing Characteristics and Descriptions

Description	Exit (milepost) From	Exit (milepost) To	Length (miles/km)	Number of Lanes	2003 ADT	2000 % Trucks
From MO-19 to MO-F	175	179	4.8/7.7	4	37,700	23%
From MO-F to MO-E/Y	179	183	4/6.4	4	35,900	23%
From MO-E/Y to MO-A/B	183	188	4.7/7.6	4	29,400	23%
From MO-A/B to MO-47	188	193	5/8	4	29,100	23%
From Mo-47 to Exit 199	193	199	5.5/8.9	4	36,900	21%
From Exit 199 to MO-J/F	199	200	1/1.6	4	36,900	21%
From MO-J/F to MO-W/T	200	203	3.8/6.1	4	43,500	20%
From MO-W/T to Exit 208	203	208	4.5/7.2	4	52,200	19%
From Exit 208 to MO-Z	208	209	1.2/1.9	4	59,200	19%
From MO-Z to U.S.-40/61	209	210	0.9/1.4	4	64,000	18%
From U.S.-40/61 to MO-A	210	212	1.6/2.6	6	64,400	17%
From MO-A to Lake St. Louis Blvd.	212	214	2/3.2	6	68,000	17%

b. Traffic Growth Trends

Traffic on I-70 has been increasing at a relatively consistent rate, according to data from numerous traffic volume count locations throughout the study corridor. Data from I-70 west of U.S. 40/61 and within this urban area is graphed in Figure I-1 to provide an illustration of the steady traffic growth in the corridor. The compounded average annual growth rate at this location is nearly 4.5 percent for the 11 years depicted. Obviously, the magnitude and rate of escalation differs at other locations, but the growth pattern is similar.

Figure I-1: Historical Traffic Growth at I-70 and U.S. 40/61



Projections for future growth, derived from travel demand models, indicate that traffic would increase by from 47 to 130 percent between 2000 and 2030, depending on the specific location. This equates to an average annual increase of 1.3 percent to 2.8 percent per year. The rural areas would experience the higher growth rates, although the urban areas would continue to carry the highest average daily volumes. In addition, the percentages of trucks in the total traffic volumes traveling through this corridor are expected to increase by four to six percent over the same period. Although truck traffic on I-70 is a significant facet of the state's transportation system and economy, higher heavy truck percentages will reduce the available overall capacity and increase the deterioration of the physical structure of the roadway.

c. Traffic Volume Forecasts

As a basis for corridor analysis, traffic volumes were forecast using two different travel demand models. Output from the Statewide Travel Demand Model was utilized for the rural areas. In an effort to better predict volumes in the urban, eastern, portion of the corridor, the St. Louis regional model was utilized for that area. This process provided an update to the traffic volume projections for the SIU 7 corridor estimated during the First Tier EIS process. (A description of the traffic modeling and forecasting procedure can be found in the First Tier EIS document.) These projections are tied to the current and planned land use in the area, as well as the existing and committed roadway network. Important roadway network enhancements in the region, expected to be constructed by the year 2030, include the extension of MO-364 (Page Avenue Extension) to U.S. 40/61, the widening of routes MO-47 and MO-Z, and widening and improvements of U.S. 40/61.

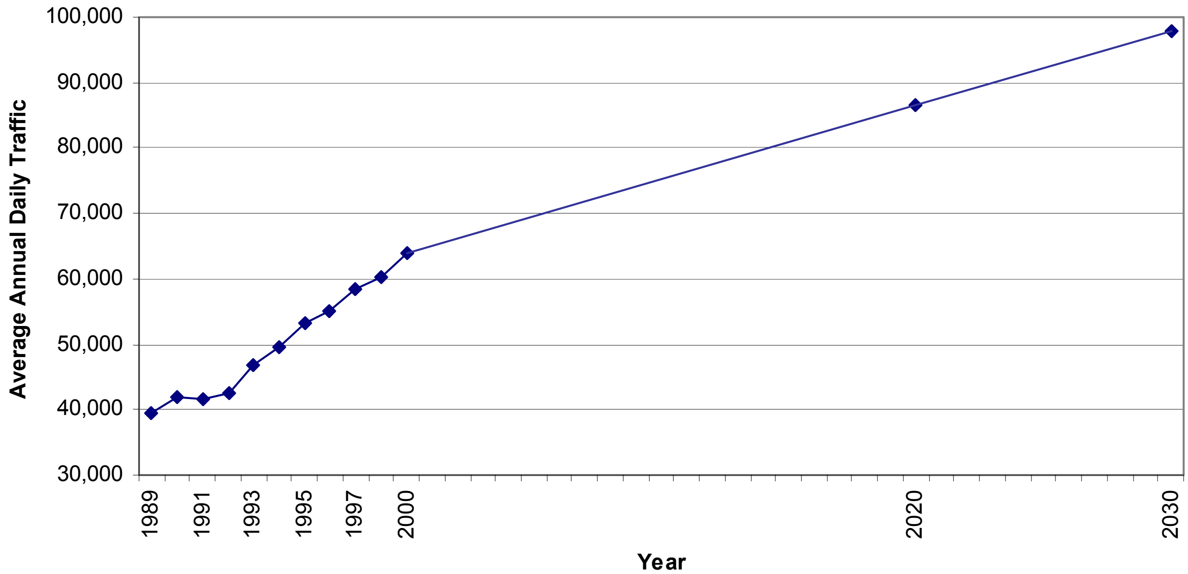
The resulting I-70 mainline forecast year 2020 and 2030 average daily traffic (ADT) volumes are listed in Table I-2 together with the year 2003 ADTs presented previously. The base year volumes used for projections was 2000, although recently available 2001 to 2003 traffic volume data were reviewed and the trend appears to remain consistent. Significant increases in traffic are forecast for the entire corridor. The percentage of truck traffic is expected to increase over time as well. The rural subsections of I-70 show the largest percentage increase in traffic from the year 2000 to 2030, although the urban subsections would continue to carry the highest average daily volumes and would experience slightly larger increases in truck traffic.

Table I-2: Existing ADTs and ADT Forecasts for Years 2020 and 2030

Description	2003 ADT	2000 % Trucks	2020 ADT	2020 % Trucks	2030 ADT	2030 % Trucks
From MO-19 to MO-F	37,700	23%	62,900	26%	75,900	26%
From MO-F to MO-E/Y	35,900	23%	61,000	27%	73,800	27%
From MO-E/Y to MO-A/B	29,400	23%	62,300	27%	78,800	27%
From MO-A/B to MO-47	29,100	23%	64,000	26%	81,700	26%
From Mo-47 to Exit 199	36,900	21%	69,000	25%	85,100	25%
From Exit 199 to MO-J/F	36,900	21%	69,000	25%	85,100	25%
From MO-J/F to MO-W/T	43,500	20%	72,000	24%	89,500	24%
From MO-W/T to Exit 208	52,200	19%	76,200	23%	89,900	23%
From Exit 208 to MO-Z	59,200	19%	79,700	23%	89,900	23%
From MO-Z to U.S.-40/61	64,000	18%	86,600	21%	97,800	22%
From U.S.-40/61 to MO-A	64,400	17%	81,600	23%	92,700	23%
From MO-A to Lake St. Louis Blvd.	68,000	17%	84,500	22%	92,700	23%

Referring again to the U.S. 40/61 example, the 2020 and 2030 volumes at that location are displayed graphically in Figure I-2.

Figure I-2: Historical and Projected Traffic Growth at I-70 and U.S. 40/61



3. Level of Service

Operational analyses of the I-70 mainline were completed for SIU 7 for the base year 2000, and forecast year 2030, to determine the ability of existing I-70 to serve the corridor's travel demands. The analysis was performed using the basic freeway section methodologies from the *Highway Capacity Manual*. The analysis calculates a Level of Service (LOS) for freeway sections based upon hourly volumes, percent of heavy vehicles in the traffic mix, and the traffic and freeway section attributes.

Level of Service, as related to freeway segments, refers to the different operating conditions that occur on a roadway when accommodating various traffic volumes. In actual practice, LOS varies over a continuum from free flow to gridlock conditions. For purposes of analysis, LOS is expressed as one of six discrete levels, A through F. LOS A is a state of free traffic flow where there is no restriction in speed or maneuverability caused by the presence of other vehicles and the effects of incidents are easily absorbed. LOS B also indicates free-flow conditions, but with slightly less freedom to maneuver. At LOS C there is less maneuverability, average travel speeds begin to reduce, and traffic incidents will cause deterioration in service. In LOS D, the ability to maneuver is severely restricted and only minor incidents can be absorbed without queuing and service deterioration. LOS E represents unstable operations that are at or near capacity. LOS F is forced-flow operation occurring when demand is above the capacity of the freeway segment.[4]

The hourly volumes and percent truck traffic used in the mainline LOS analysis for the year 2030 were derived from the average daily volumes forecasted by the travel demand models listed previously (Table I-2). Traffic attributes that impact the LOS include: peak hour traffic percentages, peak hour factors and the directional split of peak hour traffic. Peak hour traffic percentages were calculated from traffic counts along I-70 and were applied to the 24-hour volumes (ADTs). The peak hour percentages ranged from seven percent at the west end of the

[4] Transportation Research Board (2000), *Highway Capacity Manual 2000*.

corridor to 10 percent in the more urban areas of the Section. Peak hour factors are an indicator of the severity of the peak 15-minutes of traffic volume during the peak hour. For this analysis, the peak hour factors ranged between 0.92 at the west end of the Section, and 0.95 at the east end. The directional split of peak hour traffic was determined to average 60 percent in the peak direction in urban areas, and 55 percent in rural ones. Freeway section attributes include the number of lanes, whether the section is considered to service more rural or urban driver-types and whether the terrain is level or rolling. Existing I-70 is four lanes throughout SIU 7. Interstate 70 west of MO-A/B (exit 188) was considered to be rural; east of this route was analyzed as urban. The terrain type fluctuates between level and rolling from link to link through SIU 7, as terrain type is determined by the degree of individual roadway grades and their duration. It is important to note that differing terrain types can result in I-70 roadway links with similar traffic volumes and the same number of lanes having different levels of service. Heavy trucks have a greater impact on traffic flow as roadway grades become steeper and longer. Grades can cause average truck speeds to be substantially reduced as compared to other traffic. The reduced speeds result in trucks taking up a larger percentage of the available roadway capacity.

It should be noted that each of these traffic and freeway section attributes can have very different, yet distinct, impacts on the LOS, and volumes alone cannot be used as the sole guide. Therefore, it is important to realize that the LOS results are an average of the varying operating conditions that might be expected within each section, and that fluctuations of LOS throughout the section would happen more gradually and more often than it might appear from the summary. The results of the freeway LOS analyses for 2000 and 2030 are presented in Table I-3. The shaded boxes denote the LOS in subsections that are not expected to meet MoDOT's desired service standards of a minimum LOS C in rural areas and minimum LOS D in urban locations. (A better LOS standard in the rural areas reflects a driver's increased reluctance to tolerate congestion on longer trips.) These subsections of I-70 would operate under conditions of unstable flow, lowered operating speeds, congested stop-and-go travel and traffic volumes that exceed the capacity of the roadway.

Table I-3: LOS Analysis, Years 2000 and 2030

Description	Minimum Desired LOS	2000 ADT	2000 LOS	2030 ADT	2030 LOS
From MO-19 to MO-F	C	35,300	B	75,900	C
From MO-F to MO-E/Y	C	33,600	B	73,800	C
From MO-E/Y to MO-A/B	C	29,500	B	78,800	E
From MO-A/B to MO-47	C	28,600	B	81,700	F
From Mo-47 to Exit 199	D	36,900	B	85,100	F
From Exit 199 to MO-J/F	D	36,900	B	85,100	F
From MO-J/F to MO-W/T	D	36,800	B	89,500	F
From MO-W/T to Exit 208	D	48,900	C	89,900	E
From Exit 208 to MO-Z	D	59,200	C	89,900	F
From MO-Z to U.S.-40/61	D	64,000	D	97,800	F
From U.S.-40/61 to MO-A	D	59,500	E	92,700	F
From MO-A to Lake St. Louis Blvd.	D	68,000	F	92,700	F

Table I-3 shows that all but two subsections of SIU 7, or 77 percent of the corridor, is expected to operate at an unacceptable LOS by the year 2030. The results of the mainline capacity analysis reveal that the LOS deteriorates measurably along I-70 between the years 2000 and 2030 for the analysis scenarios, demonstrating a need for capacity enhancement along the corridor.

Level of Service analyses was also completed for the interchanges within SIU 7. LOS for signalized intersections is based on the average delay per vehicle. LOS A represents less than 10 seconds of delay per vehicle, while LOS F signifies more than 80 seconds per vehicle. VISSIM software, an advanced traffic simulation software for microscopic traffic flow simulation, was used to estimate the levels of service that would be expected at the various interchanges along I-70 within SIU 7. Analysis of existing conditions indicates that all interchanges within SIU 7 are currently operating at LOS B or better with the exception of the interchanges at Route 47 (Exit 193) and Wentzville Parkway (Exit 208), which currently operate at LOS C, and Lake St. Louis Blvd. (Exit 214), currently operating at LOS D.

If no major capital improvements are made to increase the capacity and operational efficiency of these interchanges (the No-Build Alternative), the LOS at the above-mentioned four interchanges is anticipated to deteriorate to LOS F by the year 2030. Levels of service at the remaining interchanges would be expected to still operate at acceptable levels of service through the design year 2030 with the No-Build Alternative.

4. Existing Highway Characteristics

Throughout the length of SIU 7, from Route 19 to the Lake St. Louis exit in St. Charles County, I-70 is a four-lane divided freeway. The lanes are 12 feet (3.6 m) wide, with 10-foot (3.0 m) or 12-foot (3.6 m) outside shoulders and four-foot (1.2 m) or six-foot (1.8 m) inside shoulders. Through much of SIU 7, I-70 has a 40-foot (12.2 m) grass median, although it varies by location. Through Warrenton, Wright City and Wentzville, to the eastern end of the section, the median is closed with a median barrier.

Interstate 70 through SIU 7 is distinguished by both urban/suburban and rural characteristics. In the western, more rural areas (milepost 174 to approximately 0.6 mile (1.0 km) east of Route A/B, just west of Warrenton), the existing typical section is often rural in character, with wider medians and a generally larger overall envelope. Towards the east (east of Route A/B to the project terminus at Lake St. Louis Boulevard), land uses intensify and the highway's envelope becomes more compact. Here the typical highway section is generally suburban in character and is expected to be developed with an urban typical section.

Interstate 70 crosses under the Norfolk Southern Railway east of High Hill and at Wentzville. The highway alignment at these locations consists of reverse curves connected by a short tangent crossing under railroad bridges with substandard openings. Radii for these curves is at, or just above, the typical absolute minimum radius of 1,910 feet (three degrees) (582.2 m) for an interstate highway, and well below the 3,820 foot (one and one-half) (1,164.3 m) desirable radius. Both of these locations experience higher than average crash rates, especially during inclement weather. At High Hill, MoDOT has previously conducted planning work for the realignment of the highway to pass over the Norfolk Southern Railway, flattening the curves on either side to improve safety. This work was placed on hold pending completion of the I-70 Second Tier EIS so that any improvements would be consistent with the plans for the I-70 corridor in this location. At Wentzville, MoDOT has prepared preliminary plans that also call for taking the highway over the Norfolk Southern Railway on an offset alignment. While this plan would eliminate the need for highway traffic to pass under the existing narrow railroad bridge, horizontal curves of 1673.22 feet (3 degrees 25 minutes) (510 m) and 2001.31 feet (2 degrees 51 minutes) (610 m) are smaller than existing conditions and less than the 3,820-foot (1,164.3 m) radius defined as the desired minimum radius. The proposed vertical alignment proposes grades of four percent on I-70 to clear the railroad with a crest vertical curve K-value of 262. These do not meet the desired criteria of a maximum grade of three percent and a minimum K-value of 312. Realignment should be provided in both locations to more closely meet the desired design criteria. If evaluations indicate that the highway alignment should still pass under the railroad, new railroad bridges should be constructed to provide adequate vertical and horizontal clearances.

5. Crashes and Safety

As with all roadway facilities, safety is a key consideration for the I-70 corridor. Crashes occur on a regular basis within the corridor and generally happen 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, provided by the MoDOT Traffic Management System, illustrates the important issue of traffic safety in the SIU 7 study corridor.[5]

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 reported crashes are designated as property damage only.

a. Crash Trends

The total number of crashes on I-70 within the study corridor has been increasing, primarily as a result of the increase of traffic on I-70. The increase in traffic results in an increase in the density of vehicles, which leads to less room for driver error. The number of crashes increased steadily in the six-years 1995 to 2000, resulting in an annual average of 518 crashes within SIU 7 for that period. In addition, in 1997 the section in Warren County between MO-A/B and MO-47 had an accident rate higher than the statewide average.

Table I-4 shows the average annual crashes within SIU 7 projected for year 2030 traffic conditions if no improvements are made to I-70. (PDO crashes are those with Property Damage Only.)

Table I-4: Years 1995-2000 and Projected Year 2030 Average Annual Crashes

Description	Length (miles/km)	1995-2000 Crash Averages			2030 Crash Projections		
		PDO	Injury	Fatal	PDO	Injury	Fatal
From MO-19 to MO-F	4.8/7.7	20	14	0.7	46	33	1.5
From MO-F to MO-E/Y	4/6.4	38	25	0.5	90	58	1.2
From MO-E/Y to MO-A/B	4.7/7.6	30	13	1.0	80	36	2.7
From MO-A/B to MO-47	5/8	37	17	1.2	89	41	2.8
From Mo-47 to Exit 199	5.5/8.9	38	14	0.7	100	37	1.8
From Exit 199 to MO-J/F	1/1.6	19	8	0.5	45	18	1.2
From MO-J/F to MO-W/T	3.8/6.1	32	11	0.3	80	27	0.8
From MO-W/T to Exit 208	4.5/7.2	44	13	0.5	83	23	0.9
From Exit 208 to MO-Z	1.2/1.9	35	13	0.5	53	20	0.8
From MO-Z to U.S.-40/61	0.9/1.4	20	6	0.0	31	9	0.0
From U.S.-40/61 to MO-A	1.6/2.6	21	6	0.8	34	9	1.3
From MO-A to Lake St. Louis Blvd.	2/3.2	28	8	1.2	38	11	1.6
Total:	**39.0/62.6**	**362**	**148**	**7.9**	**769**	**322**	**16.6**

[5] Accident statistics and safety data summarized or presented in this PDEIS are protected under federal law. See Appendix F.

Interstate improvements would solve some of the safety problems occurring on I-70. Such improvements could include adding capacity, installing median barriers and making pavement and geometric improvements. MoDOT is currently constructing, or has plans for construction, to improve I-70 from MO-Z in St. Charles County to Lake St. Louis Boulevard. These improvements include the construction of an additional lane and median barrier from U.S. 40/61 to Lake St. Louis Boulevard, the reconstruction of some U.S. 40/61 interchange ramps, and the construction of additional ramps at Route Z.

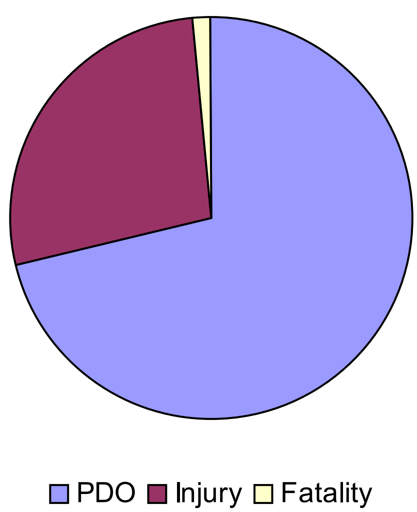
As vehicle miles traveled on I-70 continue to increase, the number of crashes occurring on I-70 will also continue to increase. Even if the current crash rate holds, the increase in travel alone would increase the number of crashes on I-70. In this scenario, traffic forecasts for 2030 indicate the number of crashes on I-70 would more than double in the rural sections of SIU 7, and increase more than 50 percent in the urban areas. Recently available 2001 to 2003 crash data were reviewed and the trend appears to remain consistent, and even shows an increasing rate in the urbanized areas east of Route W and Route T.

Due to an increase in truck traffic, more crashes involving this type of vehicle are expected. Adding capacity to the I-70 corridor would improve operational conditions, relieve congestion and reduce the density of traveling vehicles, thereby potentially reducing the crash rate. Providing these improvements as well as the design improvements discussed earlier in the SIU 7 corridor would create the opportunity to directly address the localized or systematic safety issues that cause the corridor's crash problems.

b. Crash Severity

Fatal crashes along I-70 within SIU 7 from 1995 through 2000 made up 1.5 percent of all crashes with nine average annual fatal crashes. The average annual number of injury crashes over that same time period was 166, or 27.3 percent of the total number. Property damage only crashes, at 432, constituted 71.2 percent of all average annual crashes. Figure I-3 illustrates the distribution of crash severity for the six-year period from 1995 to 2000.

Figure I-3: Distribution of Crash Severity, 1995 – 2000

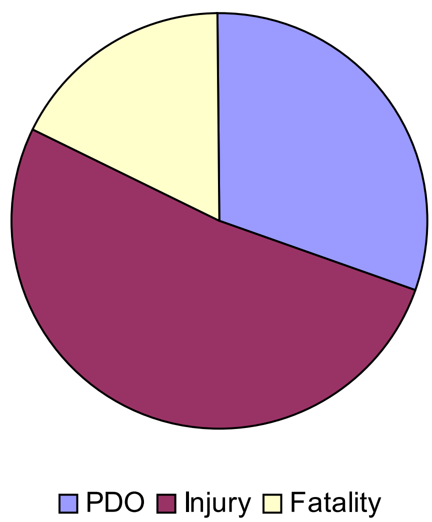


c. Cross-Median Crashes

Cross-median crashes have been a concern as a result of the relatively narrow median – generally 40 feet (12.2 m) – in many areas. Between 1995 and 2000 there were an average of 20 cross-median crashes per year in the SIU 7 study corridor. 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 I-3 to the crash severity distribution for cross-median crashes shown in Figure I-4 illustrates this point.

Of all 51 fatal crashes from 1995 to 2000, 21 fatal crashes were cross-median. Thus, 41 percent of fatal crashes are cross-median while cross-median crashes are only three percent of all crashes. It should be noted that MoDOT is currently completing the installation of barrier cable in the median throughout SIU 7 that will reduce the likelihood of cross-median crashes.

Figure I-4: Distribution of Crash Severity for Cross-Median Crashes, 1995 – 2000



d. Truck Crashes

According to MoDOT data, trucks comprise between 17 percent and 23 percent of the traffic stream in the study corridor, depending on location. Within the study corridor, there were an average of 231 crashes involving trucks per year in the six-year period from 1995 to 2000. As such, approximately 38 percent of the annual crashes involved one or more trucks. MoDOT traffic records indicate that trucks make up less than 24 percent of the total traffic along I-70, indicating a markedly higher number of crashes attributed to truck traffic.

The distribution of crash severity within all truck crashes is very similar to that for all vehicles (Figure I-3), and trucks were involved in over 30 percent of both the injury and fatal accidents. Although not obvious in the SIU 7 data, heavy truck crashes can be more severe because of the significant difference in size and weight of a truck compared to other vehicles.

e. High Crash Rate Locations

There are two railroad crossings within SIU 7 where crash rates are above average. These crossings are located just east of High Hill, and just east of Wentzville Parkway, Exit 208. Although the crossings are grade-separated, in both locations the railroad crosses over I-70 at a high skew angle. To accommodate this angle, the original design of the highway used relatively tight reverse curves in the alignment in an attempt to reduce the length of the required bridge. These tight curves, combined with the reduced sight distance caused by the bridge piers, have created a more hazardous condition, particularly in adverse weather conditions. Overall crash rates in the two links containing these railroad overpasses are 1.65 and 2.2 times worse than the average crash rate in the remainder of SIU 7.

6. Modal Relationships

Modal relationships indicate the relationships between roadways, airports, navigable waterways and mass transit services as they interface with and complement each other as part of an integrated transportation system. This section summarizes travel and transportation modes beyond I-70 and how I-70 is a connecting link with each. In addition, modal relations are discussed in their relationship to the interstate and the connectivity provided by these systems. As I-70 improvement decisions are made and implemented, care should be taken to avoid adversely affecting these modal relationships.

The freight railroad system in Missouri consists of 4,396 mainline miles (7,074.7 km) of track. Kansas City and St. Louis have the second and third largest rail hubs in the United States, respectively. Freight rail service is provided on a number of tracks between St. Louis and Kansas City.

Amtrak operates rail passenger service between Kansas City and St. Louis. Two round trips are provided daily. Amtrak stations are located at Kansas City, Independence, Lee's Summit, Warrensburg, Sedalia, Jefferson City, Hermann, Washington, Kirkwood and St. Louis.

Statewide travel of passengers and freight also occurs via bus, air and water modes of transportation. Intercity bus transportation is provided by Greyhound on I-70 and serves the major communities located along this route. Air travel is provided by a number of carriers between St. Louis and Kansas City. The total air transportation system in Missouri consists of the two major commercial airports in Kansas City and St. Louis and four regional commercial airports (Springfield, Columbia, Joplin and Cape Girardeau).

The Missouri River is defined as a navigable waterway for its entire length through the state. The following ports are located on the Missouri River: St. Joseph Regional, Kansas City, Jackson County, Howard/Cooper County Regional and St. Charles County. Many of these ports serve intermodal functions providing an interface between barge, rail and truck transportation. As I-70 parallels the Missouri River, it provides an important link connecting commercial ports and other facilities.

Bicycle and pedestrian modes also need to be considered, particularly in areas where established, pedestrian-oriented communities abut or are within the study corridor.

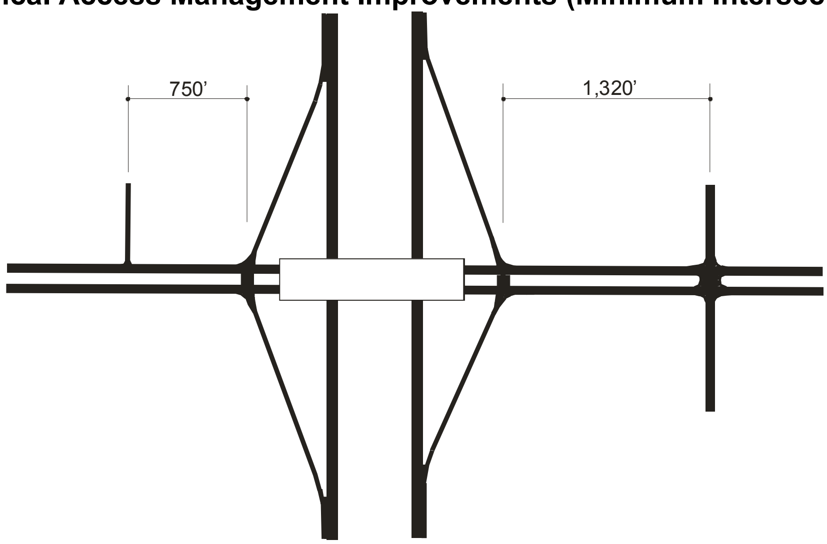
7. Access Management

Access management involves the thorough 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 would need to be reconstructed. Figure I-5 shows the guidelines for the desired spacing for crossroad access at interchange locations. The guidelines include a desired minimum spacing of 750 feet (228.6 m) 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 desired minimum distance between that intersection and the ramp intersection with the crossroad is 1,320 feet (402.3 m).

Figure I-5: Typical Access Management Improvements (Minimum Intersection Spacing)



At present, none of the interchanges within SIU 7 meet new access management guidelines desired minimum distance of 1,320 feet (402.3 m) from the ramp terminal to the outer road intersection, and at only three locations is even half of that desired separation provided (Table I-5).

Table I-5: Existing Interchange Spacing

Interchange (exit)	Distance from south outer road to ramp terminals (ft/m)		Distance from ramp terminals to north outer road (ft/m)	
Route 19 (175)	350.0	106.7	365.0	111.3
High Hill (179)	135.0	41.1	255.0	77.7
Jonesburg (183)	N/A	N/A	885.0	269.7
Route AB (188)	550.0	167.6	900.0	274.3
Route 47 (193)	600.0	182.9	160.0	48.8

Interchange (exit)	Distance from south outer road to ramp terminals (ft/m)		Distance from ramp terminals to north outer road (ft/m)	
Wright City West (199)	160.0	48.8	250.0	76.2
Wright City East (200)	N/A	N/A	125.0	38.1
Foristell (203)	250.0	76.2	210.0	64.0
Wentzville Pkwy (208)	125.0	38.1	865.0	263.7
Route Z (209)	125.0	38.1	N/A	N/A
Route A (212)	300.0	91.4	N/A	N/A
Lake St. Louis (214)	125.0	38.1	100.0	30.5

In the western portions of SIU 7, present traffic volumes and density of development are generally not high enough to result in serious congestion and safety problems, even with reduced spacing of the intersections. In the future, however, projected increases in traffic volumes and increased development intensity will surely lead to these problems if adequate access management measures are not initiated now, before anticipated additional growth takes place. In the eastern portions of the study area, higher traffic volumes and higher density of development are already causing higher levels of congestion.

Under the no-build alternative there would be no changes to the configuration of crossroads and outer roadways and no changes in access to those roadways. As traffic volumes increase, traffic operations will degrade, delays for motorist will increase and crash rates will increase. Examples of what can happen are easily found along I-70 east of SIU 7 in St. Charles County at interchanges like Route K and N in O'Fallon, Cave Springs in St. Peters, and Zumbehl Road in St. Charles. These interchanges are characterized by tight ramp terminal spacing, short distances between ramp terminals and outer roadways, and too many private entrances close to the interchange. These conditions result in congestion and potential crashes caused by motorists not having enough time between interchange elements to be in the correct lane at the correct time to get where they want to go.

8. National Defense/Homeland 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 increased concerns about homeland security and terrorism had come about.

Although it 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, individual travel corridors must be robust enough to meet increased demands if other links are impacted. The ability to provide information on the systems status is essential to taking advantage of the redundancy in the system.

Current planning related to the highway system security focuses on:

- Protecting critical mobility assets
- Enhancing traffic management capabilities
- Improving state departments' of transportation 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 would yield other general mobility benefits. The reverse is also true. Investments in general highway system enhancements, such as improving the I-70 corridor, would yield security benefits.

Additional capacity along the I-70 corridor would 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.

In many ways I-70 faces the same challenges today that existed when the interstate highway system was first conceived – that of providing for the national defense. However, as potential threats become more complicated, the interstate will be called upon to provide for more than the movement of the military. In times of crisis, the mobility of entire communities may depend on the interstate system's capacity to handle a large number of autos safely and efficiently. As such, it would further be expected that management of homeland security and national defense issues would require events to be coordinated at a scale not typically encountered on a daily basis. If traffic congestion continues to worsen within SIU 7 without highway improvements that go beyond basic maintenance activities, using the highway to serve homeland security purposes may become impossible. Should a catastrophe occur, I-70 would be called upon to provide increased mobility. Given the highway's current configuration, it may not be able to provide this additional mobility.

Proposed intelligent transportation system (ITS) implementation along the corridor would assist in protecting critical assets and would enhance traffic management capabilities. Gateway Guide, MoDOT's ITS program to improve roadway safety and efficiency in the St. Louis metropolitan region, is planned for expansion along I-70 within SIU 7. In addition to providing information about crashes and roadway conditions to the traveling public, the Gateway Guide Transportation Management Center (TMC) works in partnership with state and local emergency service agencies to assist in all facets of emergency management. As the role of the TIC evolves from monitoring traffic and crashes to coordinating responses as an emergency operations management center, the TIC will be called upon to be a key partner with first-responders for the operational requirements for emergency situations.

Further additions to the Gateway Guide system to enhance homeland security issues might include closed-circuit television cameras that 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.