MISSISSIPPI RIVER CROSSING

New I-70 Mississippi River Bridge Crossing – Initial Phase

Access Justification Report
Concept Approval

Illinois Department of Transportation

Missouri Department of Transportation

Final – January 2009

Connecting Illinois and Missouri at Downtown St. Louis

New I-70 Mississippi River Bridge Crossing
Initial Phase

Access Justification Report
Concept Approval

Final

Prepared for:
Illinois Department of Transportation
Missouri Department of Transportation

January 2009

Prepared by:
MACTEC Engineering and Consulting, Inc.

New I-70 Mississippi River Crossing
Initial Phase

Access Justification Report

Table of Content **Page**

Introduction 1

I. Existing Facilities 2

A. Description of Project Area 2

B. Transit Facilities 3

C. Project Limits 3

D. Project Purpose and Need 4
- **Project Purpose** 4
- **Project Need** 4
- **Travel Delays** 5
- **Traffic Safety** 5
- **Summary** 6

II. Transportation System Management 7

A. Alternatives 7
- **Stage I** 7
- **Stage II** 7

B. EIS Alternatives 9

C. EIS Re-evaluation 9

III. Access Connections and Design 12

A. Access Connections 12

B. Design 13

C. Design Exceptions 17

IV. Transportation Land Use Plans 22

V. Comprehensive Interstate Network Study 23

VI. Coordination with Transportation System Improvements 24

VII. Status of Planning and NEPA 26

VIII. Operational Analysis 29

A. Traffic Demand Forecasting Model Results 29

B. Safety 32
- **Possible Countermeasures** 35

C. Access Analysis 36

List of Tables **Page**

Table 1 – Poplar Street Bridge Approaches (Illinois and Missouri) Fatal and Disabling and Total Crashes 5
Table 2 – Stage II Alternatives 7
Table 3 – SMG Recommendations 9
Table 4 – Build Alternative Ramp Movements 12
Table 5 – Design Criteria 16
Table 6 – Anticipated Design Exceptions (Illinois) 17
Table 7 – Anticipated Design Exceptions (Missouri) 20
Table 8 – I-70 Mississippi River Bridge Crossing, Initial Phase Costs 27
Table 9 – Freeway Level of Service 30
Table 10 – Mississippi River Daily Crossings, 2030 No Build and 2030 Build 30
Table 11 – Mississippi River Crossings Level of Service 31
Table 12 – Poplar Street Bridge Approach (Illinois) Crash Summary (2001-2003) 32
Table 13 – Poplar Street Bridge Approach (Missouri I-70) Crash Summary (2001-2004) 33
Table 14 – Poplar Street Bridge Approach (Missouri I-64) Crash Summary (2001-2004) 33
Table 15 – Illinois and Missouri Fatal and Disabling and Total Crashes 34
Table 16 – I-70 near Cass Avenue Crash Summary (2003-2007) 34

Appendix A

Highway Capacity Software Output - Illinois

Appendix B

East-West Gateway's Travel Demand Model

Appendix C

Figure 1 – Area Map
Figure 2 – Proposed Action
Figure 3 – Existing Condition
Figure 4 – Proposed Initial Phase New I-70 Mississippi River Bridge Crossing
Figure 5 – 2001 FEIS Preferred Alternative and Future Relocated IL 3
Figure 6 – Initial Phase Project/2001 FIES Preferred Alternative
Figure 7 – Initial Phase Project/Future Improvements
Figure 8 – Missouri North I-70 Interchange Existing Condition
Figure 9 – Missouri North I-70 Interchange Proposed Initial Phase New I-70 Mississippi River Bridge Crossing
Figure 10 - Missouri North I-70 Interchange 2001 FEIS Preferred Alternative
Figure 11 - Missouri North I-70 Interchange Initial Phase Project/Future Improvements
Figure 12 – Existing and Proposed Missouri I-70 Access Points

Figure 13 – I-55/70/64 (Tri-Level) Interchange Existing Condition
Figure 14 – I-55/70/64 (Tri-Level) Interchange Proposed Initial Phase New I-70 MRB Crossing
Figure 15 – I-55/70/64 (Tri-Level) Interchange 2001 FEIS Preferred Alternative
Figure 16 – I-55/70/64 (Tri-Level) Interchange Initial Phase Project/ Future Improvements
Figure 17 – High Traffic Crash Location
Figure 18 – Existing Interstate Route Marking
Figure 19 – Initial Plans Interstate Marking
Figure 20 – Ultimate Plan Route Marking
Figure 21-29 – Traffic and Level of Service
Figure 30-55 – Roadway Plans

Introduction

The purpose of this Access Justification Report is to present to FHWA an evaluation of the proposed changes to the existing interstate system in the St. Louis, Missouri core area. The changes proposed represent an Initial Phase of the New I-70 Mississippi River Bridge Crossing (Initial Phase Project).

Two separate AJRs were previously submitted and approved. The 2002 Access Justification Report addressed changes in the existing Tri-Level Interchange of I-55/70/64 included in 2001 FEIS Preferred Alternative. The redesign of the interchange included moving ramp terminals, improving ramp geometrics, realigning ramps, closing some of existing ramps as well as providing the I-64 Connector link to relocated I-70 and the new Mississippi River Bridge Crossing. The report was approved in December 2002.

A separate Access Justification Report was prepared for the Relocated I-70 and I-64 Connector, exclusive of the Tri-level Interchange. The report addressed access changes in Illinois and Missouri to the existing interstate system in the St. Louis core area. In Illinois changes included additional access points to existing I-55/70 and to existing IL Rte 203; new access at the proposed relocated I-70/IL Rte 3 interchange; new access from I-64 Connector to the New Mississippi River Bridge at relocated I-70 and new access at the proposed I-64 Connector/Relocated IL Rte 3 interchange.
In Missouri changes included removing some of the existing ramps, moving and relocating ramps, and adding new ramps to and from I-70 between Cole Street and Madison Street, north of downtown St. Louis. At this location access had been provided to the New I-70 Mississippi River Bridge Crossing. The change in Missouri also included completion of diamond interchange at St. Louis Avenue and I-70 by adding ramps, removing ramps or reconfiguration of existing ramps. The report for the Relocated I-70 and I-64 Connector (exclusive of Tri-Level Interchange) was approved in October 2003.

The Federal Register identifies eight categories to be addressed in a request for concept approval. The following discusses these eight items:

1. Existing Facilities
2. Transportation System Management
3. Access Connections and Design
4. Transportation Land Use Plans
5. Comprehensive Interstate Network Study
6. Coordination with Transportation System Improvements
7. Status of Planning and NEPA
8. Operational Analysis

I. Existing Facilities

A. Description of Project Area

The Mississippi River Crossing project is located in Illinois and Missouri. The proposed new bridge is located in St. Clair County, Illinois and the city of St. Louis, Missouri. The above areas fall within the District 6 and 8 of the Missouri and Illinois Departments of Transportation (MoDOT) and (IDOT), respectively. **Figure 1** shows the general project location.

I-55, I-70 and I-64 converge in the study area, and all three cross the Mississippi River on the congested eight-lane Poplar Street Bridge. I-44 joins I-55 immediately south of the study area on the Missouri side. The McKinley Bridge is an older bridge north of downtown that was, until recently, a toll bridge. It was re-opened to traffic, after reconstruction, as a two-lane toll-free structure. The four-lane King Bridge lies immediately north of downtown St. Louis. This bridge has undergone recent improvements to enhance its connections to the interstate network on both sides of the river. The Eads Bridge is used for MetroLink rail on the lower deck and a four-lane local-to-local roadway connection, on the upper deck. The MacArthur Bridge is used for rail traffic only.

The New I-70 Mississippi River Bridge Crossing, Proposed Action, (**Figure 2**) lies within an area that has seen intensive human settlement and varied land use for more than 100 years with a broad range of uses and activities normally associated with urbanized areas. The project area includes parts of the municipalities of Brooklyn, Fairmont City, Madison and East St. Louis in St. Clair County, Illinois and the City of St. Louis in Missouri. Parts of the project area in Illinois are in small and isolated unincorporated portions of St. Clair County. The declining population trend noted in the FEIS within the project area has continued. Overall, the towns on the Illinois side within the project area lost about 4 percent of their population between 1990 and 2000. East St. Louis' population, though, decreased by 23 percent from 1990 to 2000, having 31,530 people in 2000. Fairmont City had a 2000 population of 2,425, which is a gain of 13 percent from 1990. The Village of Brooklyn, with 2000 population of 658, lost 42 percent of its population between 1990 and 2000.

On the Missouri side, the project area is entirely within the City of St. Louis. Only three census tracts are located within the project area in the City of St. Louis: 1257, 1266, and 1267, with a total 2000 population of 7,888, a decline of 28 percent since 1990. For comparison, the City of St. Louis (within the city limits), with a 2000 population of 348,189, lost 12 percent of its population from 1990 to 2000. Wetlands, floodplains, and threatened endangered species are present in the study area on the Illinois side of the Mississippi River.

The I-55/70/64 Tri-Level Interchange is located in a developed part of East St. Louis immediately beyond the central business district. It is surrounded by older, deteriorated housing, including some units of public housing; new housing; small

businesses; churches; vacant land; and railroad tracks. The Katherine Dunham Center and the Miles D. Davis Elementary School are located next to the interchange, as is Immaculate Conception Church. These cultural institutions and the housing and churches in the interchange area are noise sensitive sites. Loss of small businesses means loss of jobs and tax base, which may be offset to some degree by new development accommodated by local access and circulation improvements provided with the new interchange. The area surrounding the interchange is a low income, minority community, which presents the potential for environmental justice issues. Parts of the interchange area include remnants of the East St. Louis Mound Group archaeological sites. The MetroLink light rail transit alignment crosses through the interchange and includes a large park-and-ride lot and bus transfer facility at the Emerson Park station, located adjacent to the interchange. The IDOT Bowman Yard maintenance facility is also located adjacent to the interchange. In addition, a number of special waste sites are located in the interchange area that will require remediation.

B. Transit Facilities

The MetroLink light rail system runs through a portion of the project area. The line crosses the Mississippi River on the lower deck of the Eads Bridge, runs through St. Louis, then turns southeast and follows I-64. Park-n-Ride lots are provided at the East Riverfront station (295 spaces), 5th & Missouri station (322 spaces with seven bus bays) and Emerson Park Station (816 spaces). St. Clair County Transit bus route currently operates seven bus routes and Madison County Transit currently operates two off-peak bus routes in and out of the 5th & Missouri station. Only one St. Clair County Transit bus route is currently operated in and out of Emerson Park station. With reconstruction of the tri-level interchange, Madison County is expected to permanently truncate the five bus routes that it currently operates across the King Bridge into and out of downtown St. Louis at the Emerson Park MetroLink station.

C. Project Limits

The east terminus of the project is located immediately east of the I-55/70/64 Interchange in East St. Louis, Illinois. This location represents the tie-down point of new ramp movements to and from relocated I-70, parallel to and east of St. Clair Avenue. The south terminus of the project is located along I-64 just south of 18th Street where reconstruction and reconfiguration of the side streets and I-64 ramps start. The west terminus of the project in Missouri requires a location for a new interchange between the McKinley and King bridges that minimized impacts on the surrounding community (**Figure 9**). The underutilized northeast quadrant of downtown St. Louis provided the best access, while minimizing community disruption. A connection to Cass Avenue, at 11th Street, provides for traffic going to and coming from downtown with access to two north-south arterials. The northernmost change in access is the addition of ramps to and from I-70 for the new relocated I-70 Mississippi River Bridge Crossing. South of the project, the ramps to and from the King Bridge, are the nearest access points, approximately 1,300 feet away.

D. Project Purpose and Need

Project Purpose

The purpose and need for the proposed New I-70 Mississippi River Bridge Crossing follows that originally stated in the Relocated I-70 and I-64 Connector FEIS, with modifications due to the project phasing.

The purpose of the proposed action is to provide transportation system reliability, transportation system sustainability, transportation system linkages; and community access. The proposed action will reduce traffic congestion and vehicular crashes on downtown St. Louis area Mississippi River crossings, especially the Poplar Street Bridge, which currently carries the combined traffic of I-55, I-64, and I-70. It is assumed that an overall reduction of traffic on the Poplar Street Bridge will reduce the potential for crashes. The proposed action will also help to sustain economic growth and development in the St. Louis metropolitan area, and by doing so avoid economic stagnation for economically depressed communities in Illinois such as East St. Louis, Brooklyn and Madison. Economically depressed communities exhibit no growth, have a low income base, job scarcity, and infrastructure in decline or disrepair.

Project Need

As the only Interstate crossing into and out of the City of St. Louis, the eight-lane Poplar Street Bridge is severely overburdened, and its now over 40-year old design is substandard. Motorists face numerous decisions in close proximity in the tri-level interchange and therefore do not have adequate distance to weave or merge into and diverge out of the traffic flow. The substandard design of the interchange ramps compounds the resulting congestion problems and leads to traffic crashes.

The downtown area Interstate highway network does not provide adequate traffic distribution. I-55, I-64, and I-70 share the same two-mile section from their East St. Louis interchange to the west Poplar Street Bridge approach in Missouri. Having all Interstate movements through the downtown area of St. Louis in one stretch of roadway contributes to peak-period congestion and decreased safety.

Even with the already programmed improvements in the region's highway network, the St. Louis area lacks adequate capacity across the Mississippi River in the vicinity of downtown St. Louis for efficient travel and system linkages and community access between the Interstates and the local transportation network. Traffic safety will not be adequately addressed with currently programmed improvements as many of the safety problems are a result of the lack of capacity of the Poplar Street Bridge. Additionally, the programmed improvements have little or no potential to enhance economic growth and development.

Travel Delays

Under the No-build scenario, delays across the Poplar Street Bridge are projected to increase by almost 75 percent by the design year of 2030 (up to 55 minutes per vehicle). Travel speeds across the Poplar Street Bridge are projected to decrease by about 25 percent by 2030. This is due to the fact that the Poplar Street Bridge is currently near capacity. Any slight increase in traffic volume has a profound effect on travel speeds. Delays across the other downtown bridges are projected to increase by up to 86 percent, with speeds projected to decrease by 26 percent. As the delays increase on all of the downtown bridges, the length of the peak hours of AM and PM traffic will continue to increase. These increases in congestion and delays will have an adverse impact on safety in the corridor.

Building a new bridge will cause a shift in study-area traffic patterns compared with base case condition (no-build). The New I-70 Mississippi River Bridge will reduce 2030 daily crossing of the Poplar Street Bridge from 142,000 (No build) to 128,000 (Build). This reduction (9.3 percent) in traffic will improve traffic flow, similar to capacity enhancement improvement (see **Table 9**).

Traffic Safety

The Poplar Street Bridge corridor has a crash rate more than three times higher than either Illinois or Missouri statewide freeway averages and the entire stretch from the interchange of I-55/70/64 in Illinois across the Poplar Street Bridge to Jefferson Avenue on I-64 west of downtown St Louis has higher than average traffic-crash rates.

Crash data for Poplar Street Bridge Approaches from 2001 to 2003, provided by the Illinois Department of Transportation (IDOT) and Missouri Department of Transportation (MoDOT), have been summarized in **Table 1**. The fatal and disabling injury crashes are about 3.0 percent of the total crashes.

Table 1 – Poplar Street Bridge Approaches (Illinois and Missouri) Fatal and Disabling and Total Crashes

Year	Total Fatal and Disabling Crashes	Total Crashes	%
2001	38	1198	3.2
2002	34	1203	2.8
2003	36	1140	3.2
Total	108	3541	3.0

The New I-70 Mississippi River Bridge will be constructed to modern freeway standards as indicated in Table 5. Current MoDOT and IDOT standards will be utilized with respect to design speed, cross section elements and horizontal and vertical geometry. Therefore, it is anticipated that the proposed improvements will

reduce traffic on the Poplar Street Bridge and its approaches and ultimately should reduce the fatal and disabling injury crashes in the area.

Summary

The core of the St. Louis region needs a functional roadway infrastructure to be able to compete with other regional economies. With mounting congestion and with more crashes, downtown St. Louis and East St. Louis will not be able to sustain new growth and development.

The City of St. Louis has lost much of its resident population. The City of St. Louis' total population is now barely one-third of its post-World War II high. No new major private office space has been built in almost a decade in downtown St. Louis. Only seven of the nation's 35 largest regions are sprawling at a faster rate than St. Louis, and yet all but six of them are growing faster in population than St. Louis. This region's propensity to build at the fringes (where there is readily-available land for development) will be reinforced by the core-area disincentives resulting from inadequate river-crossing infrastructure. The locally unacceptable levels of congestion resulting from inadequate infrastructure will likely stifle downtown-area development and may be expected to lead to an exodus of existing businesses. Without a new bridge, unmet traffic demand will move with new growth and development to the edge of the region, leaving the core in decline.

II. Transportation System Management

A. Alternatives

The alternatives presented in detail in the Environmental Impact Statement (EIS) are the product of five years of planning, community involvement, preliminary engineering design, and social, economic, environment, and financial evaluations. This effort included two distinct studies, Stage I and Stage II. Together, these two study stages comprise the project's screening process.

Stage I

The purpose of the Stage I study was to evaluate whether a new crossing of the Mississippi River is needed at downtown St. Louis and to determine where to locate a new bridge and its landside connections.

After carefully analyzing the four corridors and evaluating the public comments two out of four corridors were selected for further considerations.

At the completion of the Stage I study, the United States Department of Transportation (USDOT) issued new guidelines requiring that a Major Investment Study (MIS) be completed for all major transportation projects in a Metropolitan Planning Organization (MPO) area using federal funds. The Mississippi River Bridge Crossing MIS began in 1994 with meeting among IDOT, MoDOT and East West Gateway Coordination Council (EWGCC) and establishing Study Management Group (SMG).

Stage II

Alternatives studied in equal details during MIS are listed in **Table 2**.

Table 2 - Stage II Alternatives

Base Case ➢ Relocated Il Rte 3 ➢ MetroLink extension ➢ Reopening of Eads Bridge ➢ I-70 Reconstruction ➢ King Bridge approach improvements in MO and IL ➢ Rehabilitation of and signal improvements to the McKinley Bridge (retains tall) ➢ Tow Truck Patrols in Missouri ➢ Variable message signs and highway advisory radio
Freeway Traffic Management (FTM) ➢ Downtown traffic control center and related equipment
Transit Pricing ➢ 25¢ peak-period river crossing MetroLink and express bus service

Two-Way King with One High Occupancy Vehicle Lane (HOV) ➢ One lane restricted for the use of buses and autos with two or more occupants ➢ EB HOV lane across King Bridge and one lane for SOV in evening peak-period ➢ WB HOV lane from I-64 and IL Rte 159 in morning peak-period ➢ WB HOV lane from I-55/70 and IL Rte 159 in morning peak-period ➢ WB HOV lane across King Bridge and one lane for SOV in morning peak-period ➢ New peak-period express buses with service along HOV lanes ➢ Park-n-ride Lots at IL Rte 159, 157 and 111 in I-64 and I-55/70
One-Way Pair ➢ Three-lane striping on Eads (allowing EB traffic only) ➢ Three-lane striping on King (allowing WB traffic only) ➢ New ramps to/from Eads Bridge from/to interstates in Missouri and Illinois ➢ New local ramp to WB King Bridge and from EB Eads Bridge in east St. Louis
TSM (Transportation Systems Management) ➢ FTM-Downtown traffic control center and related equipment ➢ TDM-Transit Pricing-25¢ peak-period river crossing MetroLink and express bus service
North or South Build ➢ Assumes removal of McKinley Bridge tolls ➢ New north crossing connecting I-55/70 and I-64 in Illinois with I-70 and downtown, or a new south crossing connecting I-255 and Poplar Street Bridge with I-55 and downtown St. Louis in Missouri
Tolls ➢ Implement $2 toll during peak and $1 toll during off-peak on all WB Mississippi River bridge lanes from Alton to Jefferson Barracks

The findings of the Stage II (MIS) studies, including: transportation impacts, social economical, and environmental assessment, cost and financial analysis and public opinion, were reviewed with the SMG which then recommended that some alternatives be carried forward into DEIS and others should be eliminated (**Table 3**).

Table 3 - SMG Recommendations

Considered and Rejected by SMG
• HOV lanes without a new bridge
• HOV lanes with a new bridge
• One-Way Pair
Offered for possible Study by SMG
• Base case downtown traffic control center (FTM)*
• Transit pricing*
• New bridge north or south of downtown*
• River crossing pricing strategy, namely tolls*

* Presented as cumulative alternatives with each option incorporating the improvements of the one listed above it, rather than stand-alone possibilities, with the downtown traffic control center and transit pricing constituting a TSM alternative

The public comments from July 2006 public meeting series were evaluated along with other studies. The SMG recommended proceeding with the TSM option and the North Build option as preferred build alignment

B. EIS Alternatives

The EIS addressed a No-Build alternative and proposed action. The proposed action consists of the three measures ratified by the general public, the Study Management Group (SMG), and the Executive Committee in the Mississippi River Crossing MIS. These three measures are defined sequentially: for example, if a new bridge is built on the north side of downtown, it will by definition, include downtown traffic control measures and transit pricing. Together, the downtown traffic control measures and transit pricing constitute a Transportation System Management (TSM) alternative. The three measures are:

- *Downtown Traffic Control:* a measure to modulate the flow of traffic in and out of downtown St. Louis using computerized traffic control measures;
- *Transit Pricing:* a measure that will reduce the cost of public transit across the Mississippi River during peak periods to encourage transit use between Illinois and downtown St. Louis;
- *Build Alternative:* a measure to restructure the core-area interstate network, increasing river crossing capacity, including building a new eight-lane interstate bridge across the Mississippi River on the north side of downtown, plus implement the above two measures which constitute the TSM alternative.

C. EIS Re-evaluation

In 2008, a re-evaluation of the EIS was prepared for an operationally independent Initial Phase project. This proposes a Build Alternative that satisfies the Major Project

requirements while providing components essential to meeting the main elements of the project purpose and need by increasing river crossing capacity with a new 4-lane, 2-way Mississippi River Crossing.

Listed below are specific changes in access for the Initial Phase Project:

Illinois Access Locations:

1. Provide a new 4-lane, 2-way relocated I-70 Bridge crossing the Mississippi River. (**See Figure 2**)
2. Provide new access from the I-55/70/64 Tri-Level Interchange to the bridge at relocated I-70. (**See Figure 2**)
3. Reconfigure the I-55/70/64 Tri-Level Interchange (**See Figure 14**, green line for Initial Phase Project) including:
    - Moving the WB I-64 ramp at Baugh Ave. from north of 15th Street to south of 15th Street,
    - Modifying the ramp terminal from SB I-55 to Exchange Ave. to eliminate the local road (8th Street) intersection with the ramp,
    - Removing EB I-64 exit to St. Clair Ave., near 8th Street,
    - Realigning the EB I-64/St. Clair Avenue entrance ramp, located south of 15th Street to a point adjacent to the relocated exit ramp terminal to provide greater acceleration length.
    - Accommodating the I-70 Connection link to relocated I-70 and the new Mississippi River Bridge to/from I-55/70, and to/from I-64.

Missouri Access Locations:

Reconfigure ramps to and from I-70 between Cass Avenue and Madison Street, north of downtown St. Louis (**See figure 9**, green line for Initial Phase Project), including:

- Removing the EB I-70 exit ramp to 10th Street and replacing it with a two-lane exit for Ramp 10 (to Relocated I-70 Bridge over the Mississippi River),
- Adding an EB connection from Cass Avenue, at 11th Street, to the Relocated I-70 Bridge over the Mississippi River,
- Eliminate the slip ramp exit from WB I-70 to 10th Street, and replace it with an exit ramp (Ramp 2) from WB I-70 further South,
- Adding a new 2-lane entrance ramp to WB I-70 from relocated I-70 Bridge over the Mississippi River (Ramp 8),
- Adding WB connection from the relocated I-70 Bridge over the Mississippi River to Cass Avenue at 11th Street.

Subsequent to the 2001 FEIS, additional studies were conducted that refined the proposed “future improvements” to the Missouri North I-70 interchange. This future ultimate improvement is shown on **Figure 11**.

- Reconstruction of a portion of Ramp 10 and the EB connection from Cass Avenue on fill to align with future parallel bridge,
- Adding a single lane ramp from Relocated I-70 Bridge to WB I-44,
- Adding a single lane ramp from EB I-44 to the future Relocated I-70 bridge,
- Removing the EB I-70 exit ramp to Broadway and replacing it with a two lane off-ramp (Ramp 7) that serves both Cass Avenue and Broadway. One lane of the ramp will go up to Cass Avenue and the second lane will travel under Cass Avenue and connect to Broadway,
- Adding a connection from Cass Avenue to the relocated Broadway exit ramp,
- Providing access to the reversible lanes from 3rd Street via a new structure,
- Providing access from the reversible lanes to Broadway via a new structure.

As shown in **Figure 11** the Initial Phase is compatible with the proposed "future improvement" with minimal reconstruction. The exception being the reconstruction of a portion of Ramp 10 and the EB connection from Cass Avenue on fill between the structure over I-44 to the future Relocated I-70 Bridge.

III. Access Connections and Design

A. Access Connections

The change in access being evaluated consists of approximately 6.5 miles of Initial Phase build improvements. The project involves a four-lane two-way bridge connected, in Illinois, to a four-lane relocated I-70 to the Tri-Level Interchange; and in Missouri, to the mainline lanes of I-70 and a connection to Cass Avenue at 11th Street. **Table 4** lists the ramp movements that will be provided in Illinois and Missouri as part of the build alternative.

Table 4 - Build Alternative Ramp Movements

ILLINOIS
I-55/70/64 (existing) Interchange
WB I-64 to NB I-55 (directional ramp)[1]
WB I-64 to SB I-55 (existing 2-lane directional ramp)[2]
WB I-64 to WB Relocated I-70 MRB Crossing (directional ramp)[3]
WB I-64 Entrance ramp from 18th Street[3]
SB I-55 to EB I-64 (directional ramp)[2]
SB I-55 to WB Relocated I-70 MRB Crossing (2-lane directional ramp)[3]
SB I-55 Exit ramp to Exchange Avenue[1]
SB I-55 Exit ramp to NB St. Clair Avenue[2]
NB I-55 to EB I-64 (2-lane directional ramp)[1]
St. Clair Avenue to NB & SB I-55[1]
NB I-55 Entrance ramp from 9th Street[3]
EB Relocated I-70 to EB I-64 (directional ramp)[3]
EB Relocated I-70 to NB I-55 (2-lane directional ramp)[3]
EB I-64 Exit ramp to St. Clair Avenue[1]
EB I-64 Entrance ramp from St. Clair Avenue[1]
MISSOURI
Proposed I-70 North Interchange
Relocated WB I-70 to existing WB I-70 plus return (2-lane directional)[3]
Relocated WB I-70 to Cass Avenue plus return[3]
WB I-70 exit to 10th Street (near Brooklyn Avenue)[3]

[1] Modification of an existing movement
[2] Existing movement
[3] New Movement

The Initial Phase improvement involves relocating I-70 as a four-lane interstate from a reconfigured I-55/70/64 Tri-Level Interchange paralleling St. Clair Avenue (existing IL 3), to a Mississippi River Crossing on a new four-lane two-way bridge and then to a new interchange in Missouri with existing I-70 north of downtown St. Louis (**Figure 2**)

Figure 3 shows the existing condition of the project area. **Figure 4** overlays the Initial Phase improvements on existing condition while **Figure 5** shows Ultimate Phase as described in the 2001 I-70 Mississippi River Bridge FEIS as the Preferred Alternative. **Figure 6** depicts the Initial Phase improvements which lie within the footprint of the 2001 I-70 Mississippi River Bridge FEIS Preferred Alternative. **Figure 7** shows that the Initial Phase falls within the footprint of the future improvement plan.

Figures 8-10 show existing conditions, the Initial Phase, and FEIS Preferred Alternative of Missouri North I-70 Interchange improvement, respectively. **Figure 11** shows Initial Phase Missouri North I-70 Interchange improvement as compared to future improvements plan. The relocated I-70 tie-in in Missouri includes two-mainline east and westbound I-70 movements. The existing I-70 stretch between the new bridge and the Poplar Street Bridge will be re-signed I-44.

Completing the directional movements to and from the bridge in Missouri will be a connection involving two eastbound and two westbound lanes extending between the bridge and the project's western limits at Cass Avenue.

Ramp changes comparing the Initial Phase to existing local access at the Missouri North I-70 Interchange are depicted schematically on **Figure 12.** Although the Proposed Missouri North I-70 Interchange does not provide for ramp movements to and from the south along I-44 in the Initial Phase, access to this portion of interstate remains via Poplar Street Crossing and Martin Luther King Bridge. Initial Phase construction will be completed within an approximate timeframe between 2010 and 2016. The future build-out will occur when the need and funding become available in the future.

Figure 13 depicts existing conditions at I-55/70/64 Tri-Level Interchange. **Figures 14** and **15** show the Initial Phase improvement and the 2001 FEIS Preferred Alternative at the I-55/70/64 Tri-Level Interchange respectively**. Figure 16** shows figures 14 and 15 combined.

With the future construction of the Ultimate FEIS preferred improvements, the ramps at the Tri-Level Interchange to/from I-55/70 to/from the New I-70 (Interim) Mississippi River Bridge Crossing become redundant. It is therefore part of the Ultimate improvement to eliminate those ramps and reconstruct two-lane movement to/from I-64 to/from the I-70 Connection. Movements between I-70 New Mississippi River Bridge and I-70 will be provided via Ultimate I-70 and corresponding ramps (as shown in red in **Figure 7**).

B. Design

The New I-70 Mississippi River Bridge Crossing-Initial Phase project has been designed in accordance with current standards and criteria established by IDOT and

MoDOT, as well as the American Association of State Highway and Transportation Officials (AASHTO). The specific documents utilized include:

IDOT
- Bureau of Design and Environment Manual, 2002

MoDOT
- Engineering Policy Guide, 2006
- Practical Design Implementation Manual, 2006

Other
- A Policy on Design Standards - Interstate System, January 2005
- Policy on Geometric Design of Highways and Streets, 2004
- Highway Capacity Manual, 2000

An anticipated set of mainline and ramp criteria for evaluating the roadways was developed and is shown in **Table 5**. Minimum criteria for the design features are generally shown; however, desirable criteria were used as the primary design objectives with minimum criteria considered only when physical, environmental, social, or cost factors dictate modification of design. Specific design exceptions are presented in the following Section C. Any additional design exceptions that arise during design will be submitted to FHWA for review and approval.

Detailed roadway plans of the Initial Phase improvements follow this report as **Figures 30-55**. The plans are subject to refinement during design phase.

Elements controlling the location of Initial Phase project include the following:

- Establishing a tie-in to the existing interstate system at a point that precludes costly reconstruction of existing interchanges while providing a direct route to a crossing of Mississippi River
- Providing good access to the city of St. Louis while providing bypass for through traffic on I-70
- Avoid multiple existing land uses
- Avoiding lands known to contain special waste contaminates that will be too costly to mitigate
- Minimize the displacements of the low-income and “environmental justice” sensitive areas of East St. Louis
- Providing good access for future development.

The Initial Phase improvements include a reconfigured I-55/70/64 (Tri-Level) Interchange and a new interchange in Missouri with I-70, connected with approximately 2.3 miles of four-lane interstate providing sufficient distance for adequate signing, acceleration, deceleration and weaving.

IDOT's functional classification system groups roadways into three basic types: arterials collectors, and locals. Arterials, for Urban State Highway Systems, are further divided into eleven highway types, ranging from six or more lane freeway with traffic volumes greater than 3,700 vehicles per hour, to two-way streets with volumes less than 1,250 vehicle per hour. The new bridge alignment involves a four-lane bridge connected, in Illinois, to a four-lane relocated I-70 to the I-55/70/64 Interchange I-64. Based on the number of lanes, and the year 2030 traffic projections, the Illinois portion of the alternative is designed to a Freeway-4 category.

In Missouri, the proposed action includes four mainline lanes of I-70 and a four-lane connection tying into Cass Avenue. The local connection to Cass Avenue is designed as a principal arterial.

Multiple options were evaluated during the project's design development (2001 FEIS Preferred Alternative), including an alternative I-70 Missouri interchange layout developed at FHWA's request to provide for a through-left lane movement for east and westbound I-70. The through-left lane alternative was presented in 2003 AJR for the Relocated I-70 and I-64 Connector, (exclusive of Tri-Level Interchange). This additional alteration was found to have "fatal flaws" according to the 2003 AJR.

As result of recognition of the corridors constrain a new plan of an interchange concept has been laid out that reduces project costs in such way that project can be funded and constructed. The proposed improvements are shown for initial phase and proposed future improvements on **Figures 11 and 12** respectively.

The physical roadway improvements recommended in this study relate to various streets and highway of different functional classifications. For example, although the mainline of the new bridge is designed as a freeway, modifications to local roadways meet urban requirements for either two-way or one-way local streets, depending on the existing street's classification.

IDOT held a corridor protection public hearing on November 19, 1997 in response to development pressures surrounding the Gateway International Raceway and limited opportunities for shifting the alignment in the area. IDOT approved corridor protection in March 27, 1998, and filed the corridor protection map, Plates 164 through 172, and approval in St. Clair County of the Recorder of Deeds in Belleville on June 12, 1998.

The required Right-of-Way for the Initial Phase has been developed and it stays inside the protected corridor. The total required area is approximately 48 acres, for Missouri I-70 Interchange, and approximately 96 acres for the construction in Illinois. Both numbers present reduction from Preferred Alternative requirements. The land acquisition for the Initial Phase is in progress.

Table 5 –Design Criteria

General Criteria	Design Criteria	Illinois		Missouri	
		Mainline	**Ramps**	**Mainline**	**Ramps/ Parkways**
Roadway Type	Functional Classification	Freeway	-	Interstate	-
	Level of Service (Peak Hr.)	C (D min)	C (D min)	E	E
	Design Year	2030	2030	2030	2030
	Design Speed (mph)	60	50 (25 min)	60	45/40
	Access Control	Full	Full	Full	Full
Cross-Section	Lane Widths (feet)	12	16 & 24	12	15 & 24
	Pavement Widths (feet)	same	same	TBD**	TBD**
	Paved Shoulders (feet)				
	- left	10	4 (6 for 2-lane)	10 (6 for 4-lane)	4
	- right	10	6 (10 for 2-lane)	10	8 (10 for 2-lane) (6 for directional)
	Superelevation (max)	6%	8%	4%	6%
	SE Transition Length (feet)	160	190	96	109 (@ 6%)
Geometrics	Horizontal Curvature (min radius) (feet)	1340	170 - 25 mph 760 - 50 mph	1500	485 - 40 mph 643 - 45 mph
	Grades (max)				
	- ascending	3%	4%	3% (4% abs max)	5% (7% abs max)
	- descending	3%	6%	6%	5% (7% abs max)
	- min for drainage	0.5%	0.5%	0.5%	0.5%
	Stopping Sight Distance (min) (feet)	570	155 - 25 mph 425 - 50 mph	570	305 - 40 mph 360 - 45 mph
	Vertical Curves (min K)				
	- crest	151	12 - 25 mph 84 - 50 mph	151	44 - 40 mph 61 - 45 mph
	- sag	136	26 -25 mph 96 - 50mph	136	64 - 40 mph 79 - 45 mph
	Vertical Clearances (min) (feet)				
	- over interstate & state rts	16.75	16.75	16.5	16.5#
	- over local roads and streets	15.5*	15.5*	15.5*	15.5*
	-over railroads	23.5	23.5	23.5	23.5
	- over design highwater	3	3	3	3
	- over navigational channel 2% line	60	60	60	60

*Commercial Zone

#Design Exception for 15.0

** MoDOT Pavement Design Team will determine width

C. Design Exceptions

Selected features of the projects will not comply with IDOT or MoDOT policies. Permanent waivers will need to be granted for these conditions listed below in **Table 6** and **Table 7:**

Table 6 – Anticipated Design Exceptions (Illinois)

EXISTING I-55/70/64 INTERCHANGE			
	DESCRIPTION	IDOT "ACTION ITEM"	CONDITIONAL FHWA APPROVAL
1.	EXISTING I-55 SOUTHBOUND CURVE 55SB-2 DOES NOT MEET POLICY DESIGN SPEED OF 60 MPH (MINIMUM RADIUS = 1340'). THE EXISTING RADIUS OF 1195.59' MEETS POLICY FOR 55 MPH. POSTED SPEED FOR I-55 SOUTHBOUND IS 50 MPH.	CORRECTIVE ACTION DURING "ULTIMATE IMPROVEMENTS" OR NEXT RESURFACING	YES
2.	EXISTING I-55 SOUTHBOUND CURVE 55SB-2 (E = 4.2%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 6.0% FOR MINIMUM RADIUS OF 1340'.	CORRECTIVE ACTION DURING "ULTIMATE IMPROVEMENTS" OR NEXT RESURFACING	YES
3.	EXISTING I-55 SOUTHBOUND CURVE 55SB-3 DOES NOT MEET POLICY DESIGN SPEED OF 60 MPH (MINIMUM RADIUS = 1340'). THE EXISTING RADIUS OF 885.51' MEETS POLICY FOR 50 MPH. POSTED SPEED FOR I-55 SOUTHBOUND IS 50 MPH.	CORRECTIVE ACTION DURING "ULTIMATE IMPROVEMENTS" OR NEXT RESURFACING	YES
4.	EXISTING I-55 SOUTHBOUND CURVE 55SB-3 (E = 5.5%) EXCEEDS THE MAXIMUM POLICY SUPERELEVATION RATE OF 6.0%.	SUBMIT FOR FORMAL APPROVAL	APPROVED
5.	EXISTING I-55 SOUTHBOUND CURVE 55SB-4 DOES NOT MEET POLICY DESIGN SPEED OF 60 MPH (MINIMUM RADIUS = 1340'). THE EXISTING RADIUS OF 1304.14' MEETS POLICY FOR 55 MPH. POSTED SPEED FOR I-55 SOUTHBOUND IS 50 MPH.	SUBMIT FOR FORMAL APPROVAL	APPROVED
6.	EXISTING I-55 SOUTHBOUND CURVE 55SB-4 (E = 4.7%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 6.0% FOR MINIMUM RADIUS OF 1340'.	CORRECTIVE ACTION DURING "ULTIMATE IMPROVEMENTS" OR NEXT RESURFACING	YES
7.	EXISTING I-55 SOUTHBOUND VERTICAL ALIGNMENT DOES NOT MEET POLICY RATE OF VERTICAL CURVATURE FOR 60 MPH. EXISTING CURVES ARE RATED AT 50 MPH AND ARE TO REMAIN. POSTED SPEED FOR I-55 SOUTHBOUND IS 50 MPH.	SUBMIT FOR FORMAL APPROVAL	YES
8.	EXISTING I-55 NORTHBOUND CURVE 55NB-1 (E = 3.1%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 5.3% FOR A RADIUS OF 2064.27'.	CORRECTIVE ACTION DURING "ULTIMATE IMPROVEMENTS" OR NEXT RESURFACING	YES
9.	EXISTING I-55 NORTHBOUND CURVE 55NB-2 (E = 1.9%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 4.2% FOR A RADIUS OF 3105.29'.	CORRECTIVE ACTION DURING "ULTIMATE IMPROVEMENTS" OR NEXT RESURFACING	YES
10.	EXISTING I-55 NORTHBOUND CURVE 55NB-3 (E = 3.1%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 5.5% FOR A RADIUS OF 1879.00'.	CORRECTIVE ACTION DURING "ULTIMATE IMPROVEMENTS" OR NEXT RESURFACING	YES
11.	EXISTING I-64 WESTBOUND CURVE 64WB-1 (E = 1.0%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 3.6% FOR A RADIUS OF 3926.39'.	CORRECTIVE ACTION DURINGTHE NEXT I-64 RESURFACING PROJECT (2015).	YES
12.	EXISTING I-64 WESTBOUND CURVE 64WB-2 (E = 1.1%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 3.8% FOR A RADIUS OF 3678.96'.	CORRECTIVE ACTION DURINGTHE NEXT I-64 RESURFACING PROJECT (2015).	YES
13.	EXISTING I-64 WESTBOUND CURVE 64WB-3 (E = 0.7%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 3.5% FOR A RADIUS OF 4190.73'.	CORRECTIVE ACTION DURINGTHE NEXT I-64 RESURFACING PROJECT (2015).	YES

14.	EXISTING I-64 WESTBOUND CURVE 64WB-4 (E = 1.8%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 5.3% FOR A RADIUS OF 2067.54'.	ADD ADITIONAL CHEVRONS AROUND CURVE AND MOUNT ON PARAPET WALL.	YES
15.	EXISTING I-64 WESTBOUND CURVE 64WB-5 DOES NOT MEET POLICY DESIGN SPEED OF 60 MPH (MINIMUM RADIUS = 1340').THE EXISTING RADIUS OF 755.61' MEETS POLICY FOR 45 MPH. POSTED SPEED FOR I-64 WESTBOUND SHOULD BE REDUCED TO 45 MPH AT THE INTERCHANGE.	POST AT 45 MPH ADVISORY SPEED AND ADD ADDITIONAL CHEVRONS	YES
16.	EXISTING I-64 WESTBOUND CURVE 64WB-5 (E = 7.4%) EXCEEDS THE MAXIMUM POLICY SUPERELEVATION RATE OF 6.0%.	SUBMIT FOR FORMAL APPROVAL	APPROVED
17.	EXISTING I-64 WESTBOUND CURVE 64WB-6 DOES NOT MEET POLICY DESIGN SPEED OF 60 MPH (MINIMUM RADIUS = 1340'). THE EXISTING RADIUS OF 1153.36' MEETS POLICY FOR 55 MPH. POSTED SPEED FOR I-64 WESTBOUND IS 50 MPH AT THE INTERCHANGE.	SUBMIT FOR FORMAL APPROVAL	APPROVED
18.	EXISTING I-64 WESTBOUND CURVE 64WB-6 (E = 8.0%) EXCEEDS THE MAXIMUM POLICY SUPERELEVATION RATE OF 6.0%.	SUBMIT FOR FORMAL APPROVAL	APPROVED
19.	EXISTING I-64 WESTBOUND VERTICAL ALIGNMENT DOES NOT MEET POLICY RATE OF VERTICAL CURVATURE FOR 60 MPH. EXISTING CURVES ARE RATED AT 50 MPH AND ARE TO REMAIN. POSTED SPEED FOR I-64 WESTBOUND IS 50 MPH AT THE INTERCHANGE.	SUBMIT FOR FORMAL APPROVAL	YES
20.	EXISTING I-64 EASTBOUND CURVE 64EB-1 (E = 2.6%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 5.4% FOR A RADIUS OF 2005.00'.	CORRECTIVE ACTION DURING "ULTIMATE IMPROVEMENTS" OR NEXT RESURFACING	YES
21.	EXISTING I-64 EASTBOUND CURVE 64EB-2 (E = 1.6%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 3.0% FOR A RADIUS OF 5000.00'.	RESURFACED IN 2007	YES
22.	EXISTING I-64 EASTBOUND CURVE 64EB-4 (E = 0.6%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 3.4% FOR A RADIUS OF 4290.73'.	MEMO TO OPERATIONS WITH ITEMS: (1) CLEAN THE MEDIAN GRATES IN THIS AREA EVERY SPRING AND FALL. (2) IMPROVE SE DURING THE NEXT RESURFACING IN THIS AREA (2015). (3) ON #22 AND # 23 MOVE THE 50 MPH SPEED LIMIT TO OUT PAST 18TH STREET.	YES
23.	EXISTING I-64 EASTBOUND CURVE 64EB-5 (E = 0.5%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 3.7% FOR A RADIUS OF 3778.96'.		YES
24.	EXISTING I-64 EASTBOUND CURVE 64EB-6 (E = 0.9%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 3.6% FOR A RADIUS OF 4026.39'.		YES
25.	EXISTING 55S64E CURVE 55S64E-1 (E = 3.0%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 4.0% FOR A RADIUS OF 2721.33'.	CORRECTIVE ACTION DURING "ULTIMATE IMPROVEMENTS" OR NEXT RESURFACING	YES
26.	EXISTING 55S64E CURVE 55S64E-2 (E = 6.6%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 7.9% FOR A RADIUS OF 285.00'.	EXTEND END OF GORE WITH A 4" WHITE TO WHERE TWO 12' LANES START, ADD PAINTED GORE CHEVRONS. PAINT "I-64 EAST AND "IL 3 NORTH' ON THE PAVEMENT IN EACH LANE. CHANGE GORE EDGELINES FROM 4" TO 8" WHITE, AND ADD SPLIT ARROW SIGN TO END OF CRASH CUSHION.	YES
27.	EXISTING RAMP J CURVE RAMPJ-1 (RADIUS = 110') DOES NOT MEET POLICY FOR 25 MPH DESIGN SPEED (MINIMUM RADIUS = 175'). THE PROPOSED RADIUS OF 110' MEETS POLICY FOR 20 MPH.	DO NOT POST ADVISORY SPEED, PLACE 180 DEGREE CURVE SIGN ACCORDING TO MUTCD.	YES

28.	EXISTING RAMP J CURVE RAMPJ-1 (E = 3.2%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 8.0% FOR A RADIUS OF 110.00’.	DO NOT POST ADVISORY SPEED, PLACE 180 DEGREE CURVE SIGN ACCORDING TO MUTCD.	YES
29.	EXISTING RAMP J ENTRANCE TERMINAL DOES NOT PROVIDE THE POLICY 610’ ACCELERATION LANE. THE EXISTING RAMP PROVIDES A 387’ ACCELERATION LANE AND IS PROPOSED TO REMAIN.	SUBMIT FOR FORMAL APPROVAL	APPROVED
30.	EXISTING RAMP K CURVE RAMPK-1 (E = 5.7%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 7.7% FOR A RADIUS OF 580.00’.	NO ACTION	YES
31.	EXISTING RAMP K CURVE RAMPK-2 (E = 6.3%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 7.9% FOR A RADIUS OF 520.00’.	NO ACTION	YES
32.	EXISTING RAMP K CURVE RAMPK-3 (E = 3.8%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 7.6% FOR A RADIUS OF 340.00’.	SUBMIT FOR FORMAL APPROVAL	APPROVED
33.	THE EXISTING RAMP B RIGHT ENTRANCE TERMINAL TAPER RATE OF 44:1 DOES NOT MEET THE POLICY TAPER RATE OF 50:1.	SUBMIT FOR FORMAL APPROVAL	APPROVED
34.	THE EXISTING CLEARANCE FOR 64W OVER ST. CLAIR DOES NOT MEET POLICY. THE EXISTING 14’-3 1/4 " CLEARANCE PROVIDED WILL BE MAINTAINED.	THESE ARE NOT CONSIDERED DESIGN EXCEPTIONS. FHWA NEEDS TO INFORM THE MILITARY THAT EXISTING CLEARANCES WILL REMAIN IN PLACE.	
35.	THE EXISTING CLEARANCE FOR 55S OVER ST. CLAIR DOES NOT MEET POLICY. THE EXISTING 13’-9" CLEARANCE PROVIDED WILL BE MAINTAINED.		
36.	THE EXISTING CLEARANCE FOR ST. CLAIR OVER 55N AND 64E DOES NOT MEET POLICY. THE EXISTING 15’-2 7/8 " CLEARANCE PROVIDED WILL BE MAINTAINED.		
37.	THE EXISTING CLEARANCE FOR 64W OVER 55S64E AND RAMP K DOES NOT MEET POLICY. THE EXISTING 15’-2 1/4 " AND 15’-0" CLEARANCES PROVIDED RESPECTVELY OVER 55S64E AND RAMP K WILL BE MAINTAINED.		
38.	THE EXISTING CLEARANCE FOR 55S64E OVER 55N DOES NOT MEET POLICY. THE EXISTING 15’-6" CLEARANCE PROVIDED WILL BE MAINTAINED.		

PROPOSED I-55/70/64 INTERCHANGE	
1.	PROPOSED I-55 SOUTHBOUND CURVE 55SB-1 (E = 4.9%) DOES NOT MEET THE POLICY SUPERELEVATION RATE OF 5.6% FOR A RADIUS OF 1801.50’.
2.	PROPOSED I-64 EASTBOUND CURVE 64EB-3 DOES NOT MEET POLICY DESIGN SPEED OF 60 MPH (MINIMUM RADIUS = 1340’). THE PROPOSED RADIUS OF 840.00’ IS AN IMPROVEMENT FROM THE EXISTING CONDITION (R = 716.20’) AND MEETS POLICY FOR 50 MPH. POSTED SPEED FOR I-64 EASTBOUND IS 50 MPH AT THE INTERCHANGE.
3.	THE PROPOSED DESIGN SPEED FOR RAMP 64W55N DOES NOT MEET THE POLICY OF 50 MPH. THE PROPOSED DESIGN SPEED IS 35 MPH DUE TO RESTRICTED RIGHT-OF-WAY.
4.	THE ENTRANCE RAMP TAPER FOR RAMP 64W55N IS 25:1 INSTEAD OF THE 50:1 REQUIRED PER BDE FIG. 37-6K. THIS IS REQUIRED IN ORDER TO PROVIDE ADEQUATE ACCELERATION DISTANCE OF 800’.
5.	THE PROPOSED RAMP A AUXILIARY LANE (LENGTH = 980’) DOES NOT MEET POLICY LENGTH OF 1500’ PER BDE FIGURE 37-6B.
6.	THE PROPOSED RAMP B RIGHT ENTRANCE TERMINAL IS MODIFIED FROM POLICY TO MATCH INTO EXISTING CONDITIONS. THE EXISTING TAPER RATE IS 44:1 VERSUS THE POLICY TAPER RATE OF 50:1. THE PROPOSED ENTRANCE TERMINAL INCREASES THE EXISTING ACCELERATION LENGTH APPROACHING I-64 BY 185’.

7.	THE PROPOSED RAMP E AUXILIARY LANE (LENGTH = 988’) DOES NOT MEET POLICY LENGTH OF 1500’ PER BDE FIGURE 37-6B.
8.	THE PROPOSED 55S64E EXIT TERMINAL DOES NOT MEET THE POLICY STANDARD EXIT TERMINAL TAPER LENGTHS. THE PROPOSED EXIT TERMINAL IS 660’ AND PROVIDES ADEQUATE DECELERATION LENGTH. IT HAS BEEN MODIFIED FROM THE STANDARD IN ORDER TO MATCH INTO THE EXISTING EDGE OF PAVEMENT ALONG THE RAMP.
9.	THE RAMP O EXIT TERMINAL IS MODIFIED FROM POLICY TO ELIMINATE THE NEED FOR WIDENING IMPROVEMENTS ON THE CSX RAILROAD BRIDGE AND PROVIDE A CURVE AT THE 6’-4" PHYSICAL NOSE TO ALLOW FOR ADEQUATE INTERSECTION SIGHT DISTANCE AT THE EXCHANGE AND RAMP O INTERSECTION.
10.	231’ OF DECELERATION DISTANCE IN LIEU OF 350’ OF DECELERATION DISTANCE IS PROVIDED BEFORE THE FIRST CURVE ON RAMP O IN ORDER TO PROVIDE THE STANDARD RAMP OPENING OF 300’. THE FIRST CURVE IS DESIGNED FOR 35 MPH.
11.	PROPOSED CURVE RAMPP-1 USES A 160’ RADIUS IN LIEU OF THE 175’ RADIUS REQUIRED BY POLICY. THIS IS REQUIRED DUE TO RESTRICTED RIGHT-OF-WAY AND A POTENTIAL UTILITY CONFLICT.
12.	THE PROFILE FOR 64W70W DOES NOT MEET POLICY OF +4.0%. THE PROPOSED UPGRADE IS +4.21%.
13.	THE PROPOSED I-64WB AND I-55NB MERGE DOES NOT MEET THE POLICY LEVEL OF SERVICE OF "C". THE PROPOSED LEVEL OF SERVICE IS "D".
14.	THE PROPOSED I-70EB AND I-55NB MERGE DOES NOT MEET THE POLICY LEVEL OF SERVICE OF "C". THE PROPOSED LEVEL OF SERVICE IS "D".
15.	THE PROPOSED I-55SB AND I-64EB DIVERGE DOES NOT MEET THE POLICY LEVEL OF SERVICE OF "C". THE PROPOSED LEVEL OF SERVICE IS "D".
16.	PROPOSED CURVE C-70E55N-2 SIGHT DISTANCE FOR THE INSIDE LANE DOES NOT MEET POLICY. THE PROPOSED INSIDE SHOULDER HAS BEEN INCREASED TO 10’ IN ORDER TO IMPROVE SIGHT DISTANCE FOR THE INSIDE LANE AND ALLOW FOR MORE AREA TO MANEUVER PAST AN OBJECT WITHIN THE DRIVING LANE. A THRU PARAPET TYPE BRIDGE RAILING IS PROPOSED ON THE INSIDE OF THIS CURVE IN ORDER TO MITIGATE SIGHT RESTRICTIONS. THE PROPOSED PARAPET WITH RAIL SHALL MEET TL-4 CRASHWORTHINESS REQUIREMENTS.

Table 7 – Anticipated Design Exceptions (Missouri)

I-70 NORTH INTERCHANGE	
1.	EXISTING VERTICAL CLEARANCE ON I-70 UNDER ST. LOUIS AVENUE IS 14’-9” (AT I-70 WB CENTERLINE, EAST SIDE). PROPOSED VERTICAL CLEARANCE IS 15’-2” INSTEAD STANDARD 16’-6”. STANDARD VERTICAL CLEARANCE CAN’T BE ACHIEVED WITHIN EXISTING RIGHT-OF-WAY. THE STRUCTURE WOULD BE SIGNED AT 15’-0”.
2.	EXISTING VERTICAL CLEARANCE ON I-70 UNDER MADISON STREET BRIDGE (SOUTHEAST CORNER OF THE BRIDGE AND OUTSIDE EDGE OF SHOULDER) IS 14’-9”. STANDARD VERTICAL CLEARANCE OF 16’-6” CAN’T BE ACHIEVED WITHIN EXISTING RIGHT-OF-WAY AND THE PROPOSED CLEARANCE IS 15’-2” THIS BRIDGE WOULD BE SIGNED AT 15’-0”.
3.	PROPOSED VERTICAL CLEARANCE ON THE RAMP 8 BRIDGE OVER RAMP 2, AT THE NORTHWEST CORNER OF THE BRIDGE (EDGE OF FLANGE OF OUTSIDE GIRDER) AT OUTSIDE SHOULDER, IS 15’-7” (STANDARD CLEARANCE IS 16’-6”). THIS EXCEPTION ALLOWS FOR THE EXISTING RAILROAD BRIDGE (THE GREAT RIVERS GREENWAY BRIDGE) TO REMAIN IN PLACE.THE STRUCTURE WOULD BE SIGNED AT 15’-5”.

4.	PROPOSED VERTICAL CLEARANCE ON THE RAMP 10 BRIDGE OVER INTERSTATE 44 WB (WEST SHOULDER OF I-44 WB) IS 15’-4”. STANDARD VERTICAL CLEARANCE IS 16’-6”. THE DESIGN REDUCED MAXIMUM UPGRADE GRADE TO 5 PERCENT (6 PERCENT IN THE FINAL DESIGN REPORT) TO LET HEAVY TRUCKS TO BETTER MAINTAIN SPEEDS. THIS STRUCTURE WOULD BE SIGNED AT 15’-2”.
5.	PROPOSED VERTICAL CLEARANCE ON WB PARKWAY BRIDGE OVER RAMP 10 (RIGHT EDGE OF SHOULDER OF RAMP 10) IS 15’-6” INSTEAD 16’-6” REQUIRED BY STANDARD. THIS DESIGN REDUCED THE MAXIMUM UPGRADE TO 5 PERCENT (6 PERCENT IN FINAL DESIGN REPORT) AND ALLOWS HEAVY TRUCKS TO BETTER MAINTAIN SPEEDS. THIS STRUCTURE WOULD BE SIGNED AT 15’-4”.
6.	ONE LANE DIRECTIONAL RAMP 2, OFF I-44 EB, IS 15’ WIDE INSTEAD STANDARD 18’. MINIMUM CURVATURE OF HORIZONTAL ALIGNMENT ALLOWS MOVEMENTS OF WB-67.
7.	EXISTING SHOULDER WIDTH, VARYING FROM 18’ TO 20’, HAS BEEN REDUCED IN TWO LOCATIONS ALONG I-70. PROPOSED WIDTH VARIES FROM 4’ TO 6’ DUE TO ADDITION OF A 12’ AUXILIARY LANE ON I-70 EB AND WB. THE FIRST LOCATION IS I-70 EAST, 250’ WEST OF MADISON STREET BRIDGE TO THE NEW RAMP 10. THE SECOND LOCATION IS I-70 WEST, FROM THE NEW RAMP 8 TO 400’ WEST OF MADISON STREET BRIDGE. STANDARD SHOULDER WIDTH IS 6’.

IV. Transportation Land Use Plans

The proposed improvements are not expected to alter the pattern of land use and zoning either in Missouri (city of St. Louis) or Illinois (St. Clair County/City of East St. Louis, Brooklyn, Fairmont City and Madison). The improvements will reinforce changing industrial/commercial land uses in East St. Louis. New highway construction will occur in an established urban context with predominant commercial and industrial use. Improvements have been design around need to strengthen existing activity centers (e.g. the St. Louis CBD) and existing transportation linkages.

The project is an element of the Transportation Improvement Plan (TIP) as well as the Statewide Transportation Improvement Plan (STIP) and as such has the support of the cities of St. Louis and East St. Louis, St. Clair County, as well as the local MPO, East West Gateway Coordinating Council. It is consistent with published plans and policies, including Downtown Now Plan for St. Louis.

The New Mississippi River Bridge Crossing project is included in the St. Louis region's 2015 Long Range Transportation Plan and the 2007-2010 Transportation Improvement Program (TIP). The project is compatible with land use plans for the project area.

V. Comprehensive Interstate Network Study

The New I-70 Mississippi River Bridge Crossing Project (Initial Phase Project) is designed to accommodate future projects, elements of FEIS Preferred Alternative Project, in the corridor including:

- Construction of a parallel Mississippi River Bridge expanding the number of lanes to eight
- Additional ramps to and from I-44 south of the new I-70 Missouri Interchange
- Relocation of I-70 from the Illinois approach structures of the new I-70 Mississippi River Crossing, east to I-55 including interchanges with IL 203 and Relocated IL 3
- Relocated IL 3 from Sauget to Venice including an interchange at Relocated I-70 near Packers Avenue
- Reconfigured I-55/64 Interchange near the Poplar Street Bridge in Missouri
- Ultimate design of Tri-Level Interchange (ramps to/from I-55/70 to/from I-70 Connection will be removed to allow reconstruction of two-lane ramps to/from I-64 to/from I-70 Connection).

Independent from the Mississippi River Crossing Project, a Design Report and EIS have been prepared (2001) for the relocation of IL 3 from Sauget to Venice, IL including an interchange with the relocated I-70 near Packers Avenue. Originally proposed as a partial diamond interchange, a Design Report Addendum and FEIS re-evaluation will be completed in spring of 2009 that provide for a full-access-interchange at this location. The proposed New I-70 Mississippi River Bridge Crossing improvements accommodate a future interchange with Relocated IL 3.

Figure 18 shows current interstate route marking in the project area. With the New I-70 Mississippi River Bridge Crossing Initial Phase project section of I-70 south of the proposed Missouri I-70 Interchange will be redesignated to I-44. The new bridge and approach highway, originally known as I-64 Connector, in Illinois will be signed as I-70. Interstate marking for Initial Phase project is shown on **Figure 19**. With the future construction of the Ultimate improvements I-70 mark will be assigned to Ultimate I-70 highway while section marked as I-70 in Initial Phase project will be redesignated to I-564 (this is a result of preliminary discussions among IDOT, MoDOT and FHWA that I-564 would be the appropriate marking for this highway. The formal route designation had not been initiated, nor had the I-564 marking been formally approved). This route marking as well as other in the project area, for the Ultimate Plan, is shown in **Figure 20**.

VI. Coordination with Transportation System Improvements

The FEIS documented public and private planning within the FEIS study area. Within the project area on the Illinois side, the FEIS noted that the city of Madison and private developers were exploring development along IL 203 in the vicinity of the Gateway International Raceway; the owners of the St. Louis National Stockyards property were working to redevelop this site for commercial and industrial users; and the railroad companies entertained long-term prospects for the development of their land holdings. To date, the City of Madison and private developers are still exploring development options.

The FEIS indicated that in Missouri, work was underway with the *Downtown Now!* project to develop a new downtown plan involving private-sector participation in implementation.[1] *Downtown Now!*'s Downtown Development Action Plan (Plan), officially adopted by the City of St. Louis, comprises $1.5 billion in public/private investment.[2] The Plan identified the I-70 project as the "transportation project that will have the most significant impact on the Downtown and the region since the completion of the Arch." The Plan expects the project to "provide new opportunities for the revitalization of the north side of Downtown" and "calls for 'world class' design excellence" for the bridge. It states that the "design should incorporate substantial landscaping to indicate a gateway to and from St. Louis." The Plan "established the following basic criteria for the development of the bridge and interchange":

- The interchange's height should be minimized (reference to the Missouri North interchange).
- The interchange connection with Downtown should be designed as a freeway to arterial type connection.
- The design of the interchange and related off ramps should maintain to the highest degree the existing predominant street grid within the surrounding neighborhoods.
- A grand entrance to Downtown from the north should occur at Tucker Boulevard.
- The design of the structures and other elements related to the project should be consistent with visual, urban design and maintenance requirements of an urban setting.

[1] *Downtown Now!* is a public/private partnership created in 1997 by then-mayor Clarence Harmon to develop a five-to-seven year action plan for revitalizing Downtown St. Louis, Missouri. The City Planning Commission adopted the Downtown Development Action Plan in December of 1999 (prior to the DEIS of April 2000 and the FEIS of March 2001). The 13-member Planning Commission, created during the reorganization of the City's development agencies, is the official planning commission for the City of St. Louis under state and local laws. Citywide and neighborhood plans adopted by the Commission become official City plans. (Information from 1999 press release, City of St. Louis Planning and Urban Design Agency: *City Planning Commission Adopts Downtown Development Action Plan*, Friday, December 17.)

[2] Available in Adobe Acrobat pdf format at http://www.downtownnow.org/html/actionplan.asp. Parts relevant to this project are in Volume 6.

The New I-70 Mississippi River Bridge Crossing is consistent with these elements of the Plan, except that, because of the reduced scale of the interchange, the "grand entrance" at Tucker will not be included in the Initial Phase project.

The FEIS noted that a planning study was under way to evaluate the City of St. Louis' Fifth Ward. Most of the project area is within the Fifth Ward. The Master Plan for the Fifth Ward was adopted, with revisions, by the City Planning Commission on March 6, 2002.[3] Parts of the Master Plan "are contingent upon Programmed Catalysts such as the new Mississippi River Bridge crossing" and the proposed expansion of MetroLink along North Florissant Avenue. A 2005 economic study in support of the Fifth Ward Master Plan concluded that there is support for residential development; and for manufacturing, business repair services, and wholesale trade industries, which currently employ a large share of Fifth Ward employees.[4]

The FEIS concluded that the Preferred Alternative will have no adverse effect on the character and viability of this largely commercial/industrial district between I-70 and the river. This conclusion is still valid for the revised interchange and river bridge approach configuration (Initial Phase).

[3] St. Louis Planning Commission, 2002. Resolution No. PDA-001-02-NBD, March 6.

[4] Development Strategies, 2005. Economic and Market Research in Support of a Comprehensive Plan for the Fifth Ward, St. Louis, Missouri, August 10.

VII. Status of Planning and NEPA

A Stage I study for a Mississippi River crossing involving study of the need for and alternative locations for a new river crossing at downtown St. Louis was begun in May 1992 and completed in November 1993. It defined the need for a new Mississippi river crossing connecting Illinois and Missouri at downtown St. Louis and identified two preliminary alignments, one north and one south of downtown with a reconstruction of the I-55/70/64 Tri-Level Interchange. Then following a change in federal regulations, MoDOT and IDOT in cooperation with the region's metropolitan planning organization (East-West Gateway Coordinating Council/EWGCC) conducted a Major Investment Study (MIS) from fall 1994 to spring 1997. The MIS was conducted as a stand-alone effort rather than being combined with a Draft Environmental Impact Statement (DEIS). The MIS considered all feasible alternatives and the north alignment was selected as the most feasible build alternative.

IDOT approved corridor protection on March 27, 1998, and it was filed in St. Clair County on June 12, 1998. The DEIS was prepared in 1997 through 2000. Public hearings were held on June 27 and June 28, 2000, and the comment period was closed on July 31, 2000, permitting an 87-day comment period. The Final Environment Impact Statement (FEIS) was circulated on April 20, 2001 and the close of comments was June 1, 2001. The Record of Decision (ROD) was signed on June 13, 2001. Subsequently, it was determined that funding for the entire project could not be secured to satisfy the Financial Plan requirements for a Major Project.

In May 2005, the two states initiated an effort to reduce the cost of the project. It resulted in various change including Mississippi River Bridge span reduction, reducing the scale of the interchange in Missouri with existing I-70, deferring the reconstruction of the Tri-Level Interchange in East St. Louis, deferring the connection between existing I-55/64/70 and the relocated I-70, and deferring the proposed improvements to ramps at the west side of the existing I-55/64/70 Poplar Street Bridge. Public meetings were held in the fall of 2005 announcing the reduced scope of the initial project. The estimated cost of the reduced scope project was $910 million. In August, 2005 the two states received a total of $239 million from the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). However, the two states could not agree on the resources to fund the remaining $671 million necessary to satisfy the Financial Plan requirements for a Major Project.

In January, 2006 (updated in January, 2007), FWHA issued a Major Project Guidance based on SAFETEA-LU. This guidance provided direction to section 1904 of SAFETEA-LU, which amended 23 U.S.C. 106 and made several significant changes to the requirements for Major Projects. One of the changes allows the scope of work described in the ROD to be divided into multiple operationally independent projects for the purpose of applying Major Project requirements.

In 2008 a Design Report Addendum and re-evaluations of the FEIS were prepared describing an operationally independent initial phase of the New Mississippi River Bridge Project. In May, 2008, public meeting were held to present the Initial Phase improvements to the public. In November, 2008, the final re-evaluation of the FEIS was approved by FHWA. The Initial Phase improvements are referred to as the "New I-70 Mississippi River Bridge Crossing", including:

- A new 4-lane, 2-way Mississippi River Bridge and approaches in Illinois and Missouri;
- A 4-lane roadway, primarily following the original I-64 connector alignment
- Various ramp improvements and local street improvements at the I-55/64/70 Tri-Level Interchange in East St. Louis;
- A new interchange connecting the new bridge to I-70 and to Cass Avenue north of downtown St. Louis.

The following timeline is anticipated for completion of the Initial Phase of the New I-70 Mississippi River Bridge Crossing:

Final EIS Re-evaluation	Approved on Nov. 5, 2008 by FHWA
Begin Design	July 2008
Complete Design (sufficient to begin initial contracts)	July 2009
Begin Construction	Early 2010
Complete Construction	2014-2016

Construction components can begin as soon as the design is complete. Early phase activities will include archeological surveying, completion of Phase II engineering, right-of-way acquisition, utility relocation, soil management for hazardous and non-hazardous waste, and wetlands mitigation. These activities are expected to take about 13 months.

Table 8 shows the anticipated breakdown in funding various components of the Proposed Initial Phase. The anticipated costs include engineering, land acquisition, utility adjustment, environmental mitigation and construction cost. These costs include inflation and contingencies.

Table 8 – I-70 Mississippi River Bridge Crossing, Initial Phase Costs

Component Description	**Estimated Cost**
Illinois Relocated I-70 Roadways (including the tri-level interchange	$264 million
Mississippi River Bridge (including Missouri and Illinois approach structures)	$306 million
Missouri North I-70 Interchange	$70 million
Total Estimated Costs:	**$640 million**

Funding Breakdown	
Component Description	**Estimated Amount**
Illinois Funding	$313 million
Missouri Funding	$88 million
Dedicated Federal Funding	$239 million

VIII. Operational Analysis

A. Traffic Demand Forecasting Model Results

Capacity on a transportation facility involves the maximum number of vehicles that can pass a given point during a specified time under prevailing traffic and environmental conditions. Multiple factors affect the capacity of a freeway and ramp such as: the number of lanes on the roadway, the locations and design speeds for on and off ramps, lateral obstructions close to the edge of the travel way, composition of the traffic stream, and the performance of downstream lanes.

A base case (no-build alternative) was defined to compare the traffic impacts resulting with and without the proposed action. Year 2030 was chosen as the design year to correspond with the transportation modeling that the region's MPO, East West Gateway Council of Governments (EWGCOG), conducted with their November 2007 TransEval Model. This traffic demand model includes the traffic analysis of current and planned development projects such as "Downtown Now!" and the "Fifth Ward Master Plan". The Downtown Now! and the Fifth Ward Master Plan are explained in detail in appendix B. Traffic data and analysis are presented for both the no-build alternative and the proposed action for this design year. A number of transportation improvements that did not exist when the model was prepared are expected to be built by the design year or are now open, including the following:

- Relocating IL 3
- Reopening the Eads Bridge (Now reopened)
- Additional interstate ramps to/from the King Bridge (Now open)
- Extending MetroLink from Scott Air Force Base to Mid-America Airport

These improvements will affect the Ultimate project, and they are incorporated into the definition of the no-build alternative. Thus, additional capacity and modes of transportation may be available by this project's design year that will affect traffic conditions in the study corridor.

Travel demand forecasting for this project used the classic four step process: 1) trip generation, 2) trip distribution, 3) mode choice, and 4) trip assignment. There are many advanced modeling features included in each step, enhancing the model's forecasting accuracy and providing a more realistic representation of the human travel behavior. Each step uses socioeconomic data to forecast the number of vehicles and passengers traveling on each link of the network. The network roadways, rail line, and bus routes along with land use data was provided by EWGCOG.

When characterizing roadway traffic flow, six levels of service (LOS) are used to describe traffic operation conditions. **Table 9** provides the LOS criteria established in the "2000 Highway Capacity Manual" (HCM). According to the manual, the defining parameter of freeway LOS is density, measured in units of passenger cars

per lane per mile (pcplpm). The LOS ratings, LOS A for superior traffic flow to LOS F for poor traffic flow, is assigned based on how densely cars are traveling on the roadway.

Table 9 - Freeway Level of Service

LOS	Density (pcplpm)	Speed (mph)	Description
A	0 to 10	65	Very light traffic, unimpeded operations
B	11 to 16	65	Light to moderate traffic; unimpeded operations
C	17 to 24	65	Moderate traffic; somewhat restricted maneuverability
D	25 to 32	64.5	Moderate to heavy traffic; significantly restricted maneuverability
E	33to 39.3 (2 lane) 33 to 43.4 (3 lane)	56 53	Heavy traffic; beginning of travel delays
F	Varies	Varies	Minor to severe congestion

The No Build traffic projections for design year 2030 estimate just over 215,000 vehicles crossing the four existing downtown bridges (McKinley, MLK, Eads and Poplar Street). This is an increase of 21 percent over the 2004 base year crossing. In addition, traffic is expected to increase by 19 percent on the other regional bridges (U.S Route 67, I-270 and I-255), as shown in **Table 10**.

Table 10 - Mississippi River Daily Crossings, 2030 No Build and 2030 Build

Location	2030 No Build	2030 Build
U.S. 67 (Clark) Bridge	40,000	41,000
I-270 (Chain of Rocks) Bridge	68,000	66,000
McKinley Bridge	19,000	19,000
New I-70 Bridge	NA	55,000
ML King Bridge	43,000	32,000
Eads Bridge	14,000	11,000
Poplar Street (I-55/64/70) Bridge	142,000	128,000
I-255 (JB) Bridge	58,000	56,000
Total All Bridges	384,000	408,000
Source: EWGCOG TransEval, November 2007.		

Table 11 shows the anticipated 2030 No Build and 2030 Interim levels of service (LOS) for regional bridges (westbound and eastbound) for both the AM and PM peak hours.

Table 11 – Mississippi River Crossings Level of Service

Location	No-Build 2030		Interim 2030	
	AM Peak (LOS)	PM Peak (LOS)	AM Peak (LOS)	PM Peak (LOS)
EASTBOUND				
US 67 (Clark) Bridge	B	C	B	C
I-270 (Chain of Rocks) Bridge	B	F	B	F
McKinley Bridge[1]	520 vph [2]	870 vph [2]	556 vph [2]	834 vph [2]
New I-70 Bridge	N/A	N/A	A	E
ML King Bridge	A	C	A	C
Eads Bridge	A	A	A	A
Poplar St. Bridge	B	F	B	E
I-255 (JB) Bridge	A	C	A	C
WESTBOUND				
US 67 (Clark) Bridge	B	B	B	B
I-270 (Chain of Rocks) Bridge	C	D	D	D
McKinley Bridge[1]	826 vph [2]	624 vph [2]	879 vph [2]	640 vph [2]
New I-70 Bridge	N/A	N/A	D	C
ML King Bridge	C	B	C	A
Eads Bridge	A	A	A	A
Poplar St. Bridge	D	C	D	C
I-255 (JB) Bridge	B	B	B	B

Source: HNTB October 2008
[1] *The McKinley Bridge was analyzed assuming a 2 lane bridge (1 lane in each direction). Therefore the roadway could not be analyzed as a basic segment and a LOS could not be given.*
[2] *Capacity at 2200 vph*

Under the No-build scenario, delays across the Poplar Street Bridge are projected to increase by almost 75 percent by the design year of 2030 (up to 55 minutes per vehicle). Travel speeds across the Poplar Street Bridge are projected to decrease by about 25 percent by 2030. This is due to the fact that the Poplar Street Bridge is currently near capacity. Any slight increase in traffic volume has a profound effect on travel speeds. Delays across the other downtown bridges are projected to increase by up to 86 percent, with speeds projected to decrease by 26 percent. As the delays

increase on all of the downtown bridges, the length of the peak hours of AM and PM traffic will continue to increase. These increases in congestion and delays will have an adverse impact on safety in the corridor.

Building a new bridge will cause a shift in study-area traffic patterns compared with base case condition (no-build). The New I-70 Mississippi River Bridge will reduce 2030 daily crossing of the Poplar Street Bridge from 142,000 (No build) to 128,000 (Build). This reduction (9.3 percent) in traffic will improve traffic flow, similar to capacity enhancement improvement (see **Table 9**).

B. Safety

Crash data provided by the Illinois Department of Transportation (IDOT) and Missouri Department of Transportation (MoDOT) were reviewed to assess the impact of the Relocated I-70 on traffic safety. **Table 12** summarizes crash data provided by IDOT for I-55/I-70 and I-64 between the Poplar Street Bridge and IL Route 111. As shown in **Table 12**, there was a total of 91 fatal and disabling injury crashes between 2001 and 2003 or 4.4 percent of the total crashes. Along the same route section two locations have been indentified as part 5% Selected Section Segment Map for 2008. First location is on I-70/55, approximately 0.35 mile long, from Poplar Street Bridge to the bridge over IL 3. The second is on I-70/55, approximately 0.68 mile long, from the bridge over Broadway Avenue to the bridge over Martin Luther King Drive. These crash types are the focus of the Illinois Comprehensive Highway Safety Plan (CHSP). The mission of the CHSP is to "develop, implement, and manage an integrated multi-stakeholder process to improve the attributes of roads, users and vehicles, to reduce traffic-related deaths and life-altering injuries in Illinois."

Table 12 - Poplar Street Bridge Approach (Illinois) Crash Summary (2001-2003)

Year	Fatal Crashes	Disabling Injury Crashes[5]	Injury Crashes	Total Crashes
2001	4	27	31	718
2002	2	25	27	698
2003	2	31	33	635
Total	8	83	91	2051

Source: IDOT March 2006

[5] The terminology used by the Illinois CHSP is actually "life-altering injury" (Type A) and refers to an injury that results in physical or mental diminishment. The more common term "disabling" was used for consistency with MoDOT terminology. CHSP classifies a fatality as a Type K crash.

Crash information from MoDOT for I-70, from the Poplar Street Bridge to approximately 9th Street, is summarized in **Table 13**. The fatal and disabling injury crashes are about 1.0 percent of the total crashes.

Table 13 - Poplar Street Bridge Approach (Missouri I-70) Crash Summary (2001-2004)

Year	Fatal Crashes	Disabling Injury Crashes	Total Fatal and Disabling Injury Crashes	Total Crashes
2001	1	3	4	235
2002	0	3	3	253
2003	0	2	2	263
2004	0	1	1	281
Total	1	9	10	1032

Source: MoDOT 10-12-2005

The 2001-2004 crashes for the section of I-64 from Jefferson Avenue to the Poplar Street Bridge are shown in **Table 14**. Similar to Illinois' CHSP, Missouri's Blueprint for Safer Roadways (Blueprint) was established to reduce fatal and serious injuries on Missouri roadways. The fatal and disabling injury crashes are about 1.2 percent of the total crashes.

Table 14 – Poplar Street Bridge Approach (Missouri I-64) Crash Summary (2001-2004)

Year	Fatal Crashes	Disabling Injury Crashes	Total Fatal and Disabling Injury Crashes	Total Crashes
2001	1	2	3	245
2002	1	3	4	252
2003	0	1	1	242
2004	0	4	4	246
Total	2	10	12	985

Source: MoDOT 10-12-2005

Table 15 summarizes the data in Tables 12 through 14 for 2001-2003.

Table 15 - Illinois and Missouri Fatal and Disabling and Total Crashes

Year	Total Fatal and Disabling Crashes	Total Crashes	%
2001	38	1198	3.2
2002	34	1203	2.8
2003	36	1140	3.2
Total	108	3541	3.0

The overall traffic patterns of the proposed New I-70 Mississippi River Bridge Crossing vary somewhat from those of the 2001 FEIS Preferred Alternative. The proposed Missouri North I-70 Interchange no longer includes the ramps to and from the south to the current section of I-70 that will be redesignated as I-44. This movement can be made using the Poplar Street Bridge and its approaches. However, an overall 9.3% decrease in traffic (2030) on the Poplar Street Bridge would be expected to reduce congestion and therefore improve safety.

Table 16 summarizes crash data provided by MoDOT for I-70 near Cass Avenue on the north side of City of St. Louis. This section of I-70 has experienced an accident rate that is four to five times greater than the statewide average for Missouri interstates between 2003 and 2007. This high accident rate is likely due to high traffic volumes and a constricted roadside with retaining walls and bridge abutments within the clearzone. **Figure 17** shows the High Traffic Crash Locations with data from 1996 to 1998 as well as the updated data from 2003 to 2007 near Cass Avenue. This review of the accident data will identify high accident type and locations and possible countermeasures to reduce these accidents.

Table 16 – I-70 near Cass Avenue Crash Summary (2003-2007)

Year	Fatal Crashes	Disabling Injury Crashes	Total Fatal and Disabling Injury Crashes	Total Crashes
2003	0	0	0	69
2004	0	0	0	69
2005	1	0	1	71
2006	1	2	3	101
2007	1	1	2	101
Total	3	3	6	411

Source: MoDOT 12-17-2008

A review of the accident data shows the following accident classes had 10 or more reported accidents in the 5 years between 2003 and 2007.

- REAR END (58-WB, 72-EB)
- OUT OF CONTROL (57-WB, 46-EB)
- PASSING (51-WB, 36=EB)
- RIGHT ANGLE (32-WB)
- FIXED OBJECT (10=WB)

A review of the accident locations shows the following segments within the I-70 MRB interchange area had a high concentration of accidents between 2005 and 2007.

EASTBOUND

EB1. Between the St. Louis Ave. on-ramp and the 10th Street off-ramp in the vicinity of the Madison Street bridge

WESTBOUND

WB1. In the vicinity of the Howard Street / 9th Street bridge

WB2. In the vicinity of the Madison Street bridge

Possible Countermeasures

The following items could be incorporated into the design of the Missouri North I-70 interchange to help reduce some of the existing accidents observed along this segment of I-70.

- **Divert traffic along new MRB**

The construction of the new MRB will divert a portion of the existing traffic south and east of the I-70 interchange. The reduction in traffic of this section of freeway should reduce the amount of accidents observed in the following high accident location: WB1.

- **Extend Eastbound St. Louis Ave. on-ramp to proposed Ramp 8 off-ramp**

The proposed design creates a full auxiliary lane between St. Louis Avenue and the I-70 MRB interchange. The lengthening of the St. Louis Ave. on-ramp acceleration lane should help reduce the number of rear-end accidents in the high accident location EB1.

- **Removal of the Howard Street/9th Street Bridge**

The existing Howard Sreet/9th Street bridge will be removed by this project and replaced by the bridges for the I-70 MRB interchange. The western abutments of the proposed bridges will be near the existing abutments of the existing Howard/9th Streets bridge, but the eastern abutments will be 10-30 feet further away from the I-70 westbound lanes due to the relocation of the 10th Street off-ramp (proposed Ramp 2). The widening of the clearzone in the westbound direction should reduce the number of accidents in location WB 1.

- **Improve Interstate Lighting**

The new MRB I-70 interchange will include improved freeway lighting in the interchange area through the installation of high mast lighting. Improved lighting has a history of high crash reductions and should improve the safety performance of I-70.

- **Install Rumble Strips/Stripes**

This project will include installation of rumble strips and rumble stripes in areas where the pavement will be replaced. This should assist in reducing the number of run of the road/out of control crashes.

- **Additional Dynamic Message Signs (DMS)**

The I-70 MRB project proposes the addition of DMS signs along I-70 and I-44 in the project area. The use of DMS to warn drivers of accidents has proven to reduce crashes, in particular rear-end crashes.

The New I-70 Mississippi River Bridge Crossing (Initial Phase projects) will maintain or improve all existing interstate movements in the project vicinity. Ramp movements are listed in **Table 4**.

Guidelines from the IDOT Highway Safety Improvement Program (HSIP) give some crash reduction factors expected from safety improvements. These guidelines indicate that general improvements, realignment and reconstruction have the potential to reduce all crash types. A transportation improvement that meets current design standards and reduces traffic from a congested existing facility will likely reduce traffic crashes.

The New I-70 Mississippi River Bridge Crossing will reduce 2030 daily crossings of the Poplar Street Bridge from 142,000 (No-build) to 128,000 (Build). This reduction (9.3 percent) in traffic will improve traffic flow, similar to a capacity enhancement improvement. The New I-70 Mississippi River Bridge Crossing will be constructed to modern freeway standards. Therefore, it is anticipated that the proposed improvements will reduce the fatal and disabling injury crashes on the Poplar Street Bridge and its approaches.

C. Access Analysis

Freeway segments and ramp merges/diverges for the New I-70 Mississippi River Bridge Crossing Initial Phase were analyzed using The TransEval, East-West Gateway's Travel Demand Model. Traffic volumes used in these analyses are shown on **Figures 21** through **29**. These figures also contain the results of analyses, indicated as LOS.

Tri-level Interchange of the New I-70 Mississippi River Bridge Crossing Initial Phase was analyzed using FHWA Highway Capacity Software. A corresponding output is located in Appendix A.

The Highway Capacity Software for the Missouri North I-70 Interchange of the New I-70 Mississippi River Bridge Crossing Initial Phase will be submitted upon its final design.