

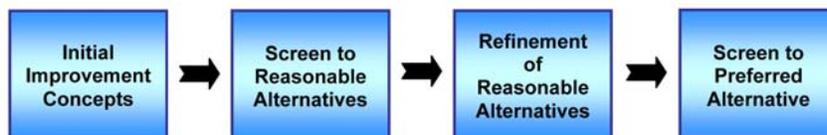


Initial Screening Report

A. Overview of Alternatives Development Process

The process identifies alignment alternatives for the proposed action that are reasonable and feasible from a technical, environmental impact and economic standpoint. It involves a screening of Initial Improvement Concepts to determine which concepts warrant future consideration within the alternatives development process. Based on the analyses of several factors, the alternatives development process then defines and evaluates the range of alternative alignments in sufficient detail to identify the feasible and prudent alignments (i.e., reasonable alternatives). A more detailed evaluation of the reasonable alternatives then identifies the alternative alignment that best serves the stated purpose and need. This evaluation of the reasonable alternatives will be discussed in the Environmental Impact Statement (EIS). The alternatives that best accomplish the purpose and need for the proposed action while providing acceptable impacts to both the natural and social environments is identified as the Preferred Alternative.

The process of alternative screening and ascending level of detailed evaluation assures decision-makers of the fulfillment of the improvement's goal, at a national, regional and local level, while developing informed consent with the reviewing agencies, stakeholders and general public. The screening process is performed in collaboration with the public and through agency coordination. The alternatives development process for the project is shown in the following figure.



B. Description of Proposed Action

The proposed action consists of improving the existing Rex Whitton Expressway (Whitton) consisting of a western terminus located at Bolivar Street with an eastern terminus of the study corridor at the Eastland Drive interchange and from 300 feet south of Whitton to McCarty Street on the north. Included in the proposed action is access from Whitton to the Missouri State Penitentiary (MSP) Redevelopment site, which is located north of McCarty Street.

C. Initial Improvement Concepts

The initial list of improvement concepts for the Whitton corridor includes a wide range of options. Several of these are reflective of the concepts developed during the Problem Definition Study completed in 2006. The EIS focuses on identifying concepts consistent with the project purpose and need. Initial improvement concepts are consistent with the corridor definition and its limits as established by the termini of the EIS.

Initial Improvement Concepts for the Whitton study corridor include the following:

- **No-Build Concept** – Maintain the existing pavement and bridges in the corridor.
- **Transportation System/Travel Demand Management and Transit Concept** – Improved traffic flow with low-cost improvements and low-cost transit service improvements.
- **Build Concepts** – Construct highway improvements within the study corridor.

1. NO-BUILD CONCEPT

Under the No-Build Concept, Whitton would remain in its present configuration and location. Only minor short-term safety and maintenance activities, including pavement overlays, routine maintenance and bridge repair would be included.

The No-Build concept is traditionally placed in feasibility studies and EIS documents to create baseline from which other concepts can be compared and the merits of all concepts evaluated. Since this concept precludes construction activities that would be associated with improving Whitton, many impacts, both positive and negative, associated with these improvements would not occur. Among these impacts are: expenditure of funds; land use changes that include converting existing development or public lands into highway right of way; increased economic development; and improved safety and accessibility.

The No-Build Concept is not a no-cost concept, since maintenance and repair of the existing roadway would be needed to ensure the continued transportation use of the corridor.

2. TRANSPORTATION SYSTEM/TRAVEL DEMAND MANAGEMENT AND TRANSIT CONCEPT

Transportation System Management (TSM) measures generally includes low-cost, traffic flow improvements to manage traffic congestion and improve the transportation system's efficiency. TSM includes the use of a wide range of strategies aimed at making more efficient use of the existing transportation facilities and infrastructure. Listed below are possible TSM improvements that could be considered for the Whitton corridor:

Right-In/Right-Outs, No Left Turns

This could include right-in/right-out only at Jefferson, Madison and Monroe from Whitton. This could also include no left turns from Jefferson, Madison or Monroe on to Whitton. These changes could be implemented via signage and could be implemented within the existing right of way.

One-way pair

One-way pairs could be utilized at Jefferson and Monroe to more efficiently move the traffic in the north and south directions. These changes could be implemented via signage and could be implemented within the existing right of way.

Intersection/Interchange Improvements

Minor interchange improvements including improvements to ramp merge and diverge configurations and at-grade intersection improvements. This could include realigning intersections and adding or improving existing traffic signal systems. These improvements would generally be implemented within existing right of way.

Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) are technology-based systems that are used to improve safety and more efficiently manage the transportation system. In the realm of roadway operations, ITS focuses on smoothing traffic flow through enhanced traveler information, minimizing the impact of incidents through the use of incident management and regulating traffic flow. Incident management strives to detect, respond, manage and clear incidents that impact traffic flow.

ITS may encompass a variety of components that are deployed by both public and private entities and can be deployed apart from or in combination with traditional transportation facility infrastructure improvements. Activities can include traffic sensors, closed-circuit television cameras, variable message signs, web pages, ramp metering, public safety communication links and media communication.

Transportation Demand Management and Transit

Transportation Demand Management (TDM) measures employ services that are designed to reduce congestion on existing transportation infrastructure by encouraging commuters or employers to use modes other than single occupant vehicles, alter time and location of trips (flexible work hours), support ridesharing or support increased transit use.

3. BUILD CONCEPTS

a. Mainline

For the mainline build concepts, both improvements to the existing roadway corridor and concepts on new alignment were considered. The six build concepts that were considered for the Whitton mainline include the following and are depicted in the **Project Exhibits** at the end of the text:

- Build Concept 1 (North Bypass)
- Build Concept 2 (South Bypass)
- Build Concept 3 (Max Lanes)
- Build Concept 4 (Viaduct)
- Build Concept 5 (Parkway)
- Build Concept 6 (Madison Overpass)

Build Concept 1 (North Bypass)

The northern bypass option is approximately 22 miles from the split with Hwy 54/63 to Hwy 50 south of the Missouri River. The bypass follows Hwy 94 east for 5 miles from the Hwy 54/63 split. The bypass then runs south following the Rivaux River. A major crossing of the Missouri River would be required. From the river the bypass continues south where it links up with Hwy 50 at the Route J/M interchange.

Build Concept 2 (South Bypass)

The southern bypass option is approximately 31 miles long and runs from Hwy 63 north of the Missouri River meeting up with the Hwy 179/Hwy 50 interchange west of Jefferson City and connects again with Hwy 50 at Militia Drive east of this study area. The bypass follows Hwy 179 southeast to Route B. From Route B the bypass runs east and then turns northeast to connect with Hwy 50 again at Militia Drive. This bypass would require a major crossing of the Missouri River and there would be numerous crossings of the Moreau River.

Build Concept 3 (Max Lanes)

This alternative was developed as part of the Problem Definition Study, and consists of providing additional lanes in the corridor to accommodate projected traffic. From Missouri Boulevard to Monroe, all intersections shall remain at-grade utilizing traffic signals. For this alternative the corridor will need to expand to an 11-Lane section from the Tri-Level Interchange to Missouri Boulevard in a distance of 1,000 feet without impacting the existing ramps of the Tri-Level Interchange. The corridor will be required to expand to a 12-Lane section between Missouri Boulevard and Broadway Street.

Build Concept 4 (Viaduct)

This alternative was also presented in the Problem Definition Study. The intersection at Missouri Boulevard will see some minor improvements but the interchange will remain at-grade. The improvements will include

a second left turn lane in each direction from Whitton and at Broadway Street for the eastbound lanes. In addition, a fourth lane will be carried through from Missouri Boulevard to Broadway Street to assist merging traffic. Continuing east, Whitton becomes a viaduct with the mainline traffic elevated over the existing pavement, and the existing pavement serving as access to the local street network.

The ramp intersections along Clark Avenue are upgraded to roundabouts and the existing curb and gutter along the outside edges of the pavement from Monroe eastward is replaced with a 10'-0" right shoulder.

Build Concept 5 (Parkway Interim/Future)

This alternative includes the same improvements at Missouri Boulevard as the Viaduct concept. In the areas of Jefferson, Madison and Monroe Streets, the median of the expressway is increased to 60'-0" to allow for left turn storage at these signalized, at-grade intersections. Roundabouts are installed at the ramp intersections along Clark Avenue and like the previous option, the existing curb and gutter along the outside edges of pavement is replaced with a 10'-0" right shoulder.

With the construction of the 60'-0" median, this option allows for future capacity expansion of the expressway in the areas of three at-grade intersections. The current left turn lanes can be eliminated to allow for the construction of an elevated roadway.

Build Concept 6 (Madison Overpass)

This alternative is similar to the Parkway option, except only a 30'-0" median is constructed to allow for dual left turn lanes at Jefferson Street and Monroe Street at these signalized, at-grade intersections. Monroe Street is elevated over the expressway to allow uninterrupted thru movement for persons using the local street network. To eliminate significant impacts to Wears Creek, a retaining wall is placed along the west side of the eastbound expressway movement.

b. Missouri State Penitentiary Site

The build concepts also include consideration of access to the MSP site. The five build concepts that were considered for redevelopment access include the following:

- Build Concept A (Lafayette)
- Build Concept B (Lafayette and Chestnut)
- Build Concept C (Clark Realignment)
- Build Concept D (Lafayette Interchange and Clark Realignment)
- Build Concept E (Clark One-Way Pair)
- Build Concept F (Eastland)

All of these MSP concepts are compatible with any of the six Mainline Build concepts and are depicted in the **Project Exhibits** at the end of the text.

Build Concept A (Lafayette)

This Lafayette Street option for prison access would run from Whitton to the MSP site on Lafayette Street alone. Lafayette Street is a street which will connect to the street system within the MSP development. This access would consist of a four-lane arterial type (two lanes of traffic in each direction with a center turn lane) roadway. This option would include construction of a standard diamond interchange at Lafayette Street.

Build Concept B (Lafayette and Chestnut)

The Lafayette Street and Chestnut Street option for prison access would run from Whitton to the MSP site on both streets. These streets would come to the MSP site at the two-major access points within the site. Each street would be two-lane, operating as one-way pairs, with Lafayette running southbound and Chestnut northbound to move traffic in and out of the site. In addition, half diamond interchanges would be constructed at Lafayette Street and Chestnut Street with service roads serving as local access from Lafayette Street to Clark Avenue with two slip-ramps immediately east of Chestnut Street.

Build Concept C (Clark Realignment)

The Clark Avenue concept would provide access from Whitton to the MSP site beginning at Clark Avenue's interchange with Whitton and ending at Capitol Avenue and Chestnut Street. The concept would include new roundabouts at the interchange. This access would consist of a four-lane arterial type (two lanes of traffic in each direction with a center turn lane) roadway that would move northwest off of the current Clark Avenue alignment to connect up to Olive Street and then directly into the MSP site.

Build Concept D (Lafayette Interchange and Clark Realignment)

The Lafayette Interchange and Clark Realignment option would provide access from Whitton to the MSP site via an interchange at Lafayette and then the interchange and realigned Clark Avenue. The interchange at Lafayette would be a half-diamond and would allow access to Lafayette Street from the eastbound lanes of Whitton. It would also allow traffic on Lafayette Street to enter Whitton going westbound. Lafayette Street, north of McCarty Street would maintain the footprint that it has today with the possibility for some restriping as warranted. The Clark Avenue interchange would be the same as described above in Concept C. However, the alignment of Clark Avenue would be a two-lane roadway (1 lane of traffic in each direction and a center turn lane) in this concept, not a four-lane road.

Build Concept E (Clark One-Way Pair)

The Clark Avenue concept would provide access from Whitton to the MSP site beginning at Clark Avenue interchange with Whitton, similar

to the options C and D. This concept would utilize two-lane, one-way pair streets to distribute traffic coming and going from the MSP site. The northbound traffic would follow Clark Avenue to Dawson Street. At the MSP site, the new one-way pair streets would intersect with the MSP Parkway, the main road running from east to west through the site. The southbound traffic would follow the MSP Parkway to connect with Olive Street and then follow southeasterly to Clark Avenue.

Build Concept F (Eastland)

This concept would provide access from Whitton to the MSP site beginning at Eastland Drive's interchange with Whitton and ending at Capitol Avenue and Chestnut Street. A four-lane, arterial-type roadway (two lanes of traffic in each direction with a center turn lane) would travel northwesterly from the Eastland Drive interchange to intersect with Hough Street. This concept would then follow along Hough to Riverside Drive then go southwest on Riverside Drive to access the prison.

D. Screening of Initial Improvement Concepts

1. CONCEPT SCREENING

The study team completed a preliminary screening by evaluating the relative effectiveness of each concept according to the methodology described above in Screening Criteria. The first step in the screening of the Initial Improvements Concepts involved an evaluation of how well each concept addresses the purpose and need for the project. If an Initial Improvement Concept did not meet the purpose and need of the project, the study team would not consider it further as a reasonable alternative. Concepts that appear to meet the purpose and need for the project and had no obvious extraordinary impacts that the study team could not address, were considered in more detail within the alternatives analysis.

The remaining concepts will be reviewed and further refined through coordination with stakeholder groups, public officials, and others who have an interest in a particular element of the project. **Table 1** shows the rating method for the Initial Improvement Concepts as they pertain to the Purpose and Need Criteria. **Table 2** provides a summary of the generalized screening evaluation completed for the Initial Improvement Concepts related to the Purpose and Need points.

**Table 1: Initial Improvement Concepts
Rating Method for Purpose and Need Criteria**

Rating Symbol	Description
●	Substantially Addresses Project Needs
◐	Moderately Addresses Project Needs
⊙	Fails to Address Project Needs
NA	Not Applicable

Table 2: Purpose and Need Screening of Initial Improvement Concepts

	Sufficient Capacity	Improve Traffic Operations	Structural and Roadway Needs	Access to Major Activity Centers
No-Build Options				
No-Build	⊖	⊖	⊖	⊖
TSM/TDM and Transit	◡	◡	⊖	⊖
Build Options				
By-Pass Options				
Concept 1 (North)	◡	◡	⊖	⊖
Concept 2 (South)	◡	◡	⊖	⊖
On Existing Alignment Options				
Concept 3 (Max Lanes)	●	●	●	●
Concept 4 (Viaduct)	●	●	●	●
Concept 5 (Parkway)	●	●	●	●
Concept 6 (Madison Overpass)	●	●	●	●
MSP Options				
Concept A (Lafayette)	NA	NA	NA	●
Concept B (Lafayette and Chestnut)	NA	NA	NA	●
Concept C (Clark Realignment)	NA	NA	NA	●
Concept D (Lafayette Interchange and Clark Realignment)	NA	NA	NA	●
Concept E (Clark One-Way Pair)	NA	NA	NA	●
Concept F (Eastland)	NA	NA	NA	◡

In addition to the purpose and need screening criteria, other criteria incorporated from social, environmental and engineering factors and input from project stakeholders were utilized to evaluate the Initial Improvement Concepts. These other criteria included generalized potential impacts to the built environment, natural areas, social environment and Section 4(f) properties, as well as order-of-magnitude project costs.

Table 3 provides a summary of the initial improvement concept rating method for the Initial Improvement Concepts related to other screening criteria. **Table 4** shows the screening of the Initial Improvement Concepts using other screening criteria.

Table 3: Initial Improvement Concept Rating Methods for Other Screening Criteria

Rating Symbol	Description
1	Project benefits greatly exceed current conditions and/or impacts are lower relative to other concepts.
2	Project benefits moderately exceed current condition and/or impacts are somewhat lower relative to other concepts.
3	Project benefits are equal to current conditions and/or are neutral in terms of impacts.
4	Project benefits are moderately less than current conditions and/or have higher impacts relative to other concepts.
5	There are no project benefits and/or the concept produced impacts that are considered unreasonable.
NA	Not Applicable
---	Unknown

Table 4: Other Screening of Initial Improvement Concepts

	Built Environment	Natural Areas (Wears Creek)	Tri-Level Interchange	Section 4(f) / 6(f)	Bicycle and Pedestrian Access	Neighborhood Cohesion	Land Use Compatibility	Cost
No-Build Options								
No-Build	1	1	3	1	4	1	1	---
TSM/TDM and Transit	1	1	3	1	4	4	1	Low
Build Options								
Bypass Options								
Concept 1 (North)	2	5	2	---	4	1	3	High
Concept 2 (South)	5	5	2	---	4	5	5	High
On Existing Alignment Options								
Concept 3 (Max Lanes)	5	4	5	4	5	5	2	Low
Concept 4 (Viaduct)	4	3	3	2	3	3	3	High
Concept 5 (Parkway)	3	4	3	2	3	3	3	Med
Concept 6 (Madison Overpass)	2	2	3	2	2	2	4	Med
MSP Options								
Concept A (Lafayette)	3	3	NA	5	5	3	3	Med
Concept B (Lafayette and Chestnut)	4	3	NA	5	5	4	4	High
Concept C (Clark Realignment)	4	2	NA	---	3	4	5	Med
Concept D (Lafayette Interchange and Clark Realignment)	4	3	NA	---	4	3	4	Med
Concept E (Clark One-Way Pair)	5	2	NA	---	2	5	5	Med
Concept F (Eastland)	5	5	NA	---	4	3	5	High

2. CONCEPTS ELIMINATED FROM FURTHER CONSIDERATION

Based on a comprehensive review of the Initial Improvement Concepts, the following concepts were eliminated from further consideration.

a. TSM/TDM and Transit

Deployment of the TSM/TDM and Transit Concept without other substantial improvements would not satisfy the purpose and need for the project related to addressing capacity, safety and access issues. Portions of these concepts such as ITS, signal timing, right-in/right-out, etc could be included in any of the build concepts in order to maximize the benefits of these concepts. Transit and other TDM measures such as carpool/vanpool should also be encouraged as part of the solution.

b. Mainline Build Concepts

Concept 1 (North Bypass)

The study team eliminated the North Bypass from consideration because it does not meet the purpose and need for the project. This option does not provide additional capacity or make enough improvement to the traffic operations on Whitton due to the out of distance travel and the traffic being carried on the connectors. The option does not make any improvements for structural and roadway needs or provide access to the major activity centers including the MSP site.

When looking at other screening criteria this option does have lower impacts to the built environment since much of the land along the alignment is currently agricultural. However, this option would require a new major river crossing of the Missouri River. This adds to the costs of this option as well as increases the environmental impacts. This option may be something that is considered in the future if growth warrants.

Concept 2 (South Bypass)

The study team eliminated the South Bypass alternative because it does not meet the purpose and need for the project. This option does not provide additional capacity or make enough improvement to the traffic operations on Whitton due to the out of distance travel and the traffic being carried on the connectors. The option does not make any improvements for structural and roadway needs or provide access to the major activity centers including the MSP site.

When looking at other screening criteria this option would have higher impacts to the built environment than the North Bypass. This option would also require a new major river crossing of the Missouri River. The option also crosses the Moreau River at several points. This adds to the costs of this option as well as increases the environmental impacts. This option may be something that is considered in the future if growth warrants.

Concept 3 (Max Lanes)

The Max Lanes concept would widen the existing Whitton to meet the projected traffic and capacity. This option has some advantages including maintaining current access, maintenance of traffic during construction is easier and the construction cost is relatively low. While this option meets the purpose and need for the project, it also has the most impacts to the study area.

This option has the largest footprint, which includes a 12-lane section from Missouri Boulevard and Broadway Street and an 11-lane section through Jefferson, Madison and Monroe Streets. Missouri Boulevard would operate at a Level of Service (LOS) E with some failing movements. Whitton would operate at a LOS C, B and D at Jefferson, Madison and Monroe Streets respectively and those crossroads would experience high delay. There are significant property impacts with this option and Wears Creek would be heavily impacted. There would be no safety improvements from the Tri-level to Monroe Street. Due to the impacts and the fact that this option could not be constructed without improvements to the Tri-level interchange, the study team eliminated this concept from further consideration.

c. MSP Concepts

Concept B (Lafayette and Chestnut)

This option for accessing the MSP site would impact several potentially eligible historic properties and Quinn Chapel because of the interchange configuration. More properties would be impacted on Chestnut Street, potentially including the cemetery, due to the steep grades there. Because of the geometric issues, the study team eliminated this option from further consideration.

Concept E (Clark One-Way Pair)

There would be residential impacts with this alternative but fewer than with the Clark Avenue Realignment concept. This option utilizes the existing Clark Avenue interchange with the addition of roundabouts. This would require a cul-de-sac at Elm Street. This option avoids the impacts associated with the Lafayette Street interchange options. However, the grades on the existing Clark Avenue cause geometric difficulties and the indirect impacts may be greater with the one-way pair. This option was eliminated from further consideration.

Concept F (Eastland)

This prison access concept does not meet the purpose and need for the project. There would be a large number of property acquisitions associated with this option and the topography presents significant geometric challenges. This alternative would allow for the use of the existing Eastland interchange. However, the out of distance travel and

indirect access to the MSP site make this concept unlikely to draw enough traffic. This option was eliminated from further consideration.

4. CONCEPTS RETAINED FOR ALTERNATIVES ANALYSIS

Based on a comprehensive review of the Initial Improvement Concepts, the following concepts are being retained for further consideration within EIS.

a. No-Build

There are a number of concerns related to the No-Build Concept not meeting the purpose and need for the project. The No-Build Concept does not address the need for additional capacity or improved traffic and safety operations on Whitton. The No-Build Concept also does not provide access to the major activity centers, including the MSP site. Due to these reasons, the concept does not meet the purpose and need for the project. However, it will be carried forward for further evaluation in the EIS as a baseline alternative for comparison.

b. Mainline Build Concepts

Concept 4 (Viaduct)

The advantages of this concept include making minor improvements at Missouri Boulevard which do not affect the Tri-level interchange. At Missouri Boulevard the LOS is F. Depending on the rate of traffic growth, Missouri Boulevard will fail somewhere between 2025 and 2030. The LOS at Jefferson, Madison and Monroe Streets is D, C and C respectively. The delay on these crossroads would be high. This option would address the needs for capacity and improvement of traffic operations as well as the addition of safety features.

The footprint for this concept is less than the Max Lanes, although it still impacts some nearby properties. Retaining walls can be used along Wears Creek to minimize the impacts to the natural environment. There would be a high construction cost associated with this option.

Concept 5 (Parkway)

This concept provides an additional thru-lane along Whitton at the triplets and allows for safety improvements such as the addition of shoulders along the corridor. The Missouri Boulevard improvements and thus the LOS is the same as for the Viaduct Concept. Jefferson, Madison and Monroe Streets would experience LOS F, E, and F respectively in 2035. This option allows for the accommodation of future traffic, by allowing for an elevated section in what would be a median in the short-term.

This concept would require placing Wears Creek in a box culvert and impact some of the nearby businesses. However, none of the listed or potentially eligible historic properties would be impacted. This option provides an opportunity for a parkway with a large 60-foot median.

Concept 6 (Madison Overpass)

This concept allows for an additional thru-lane along the mainline at the triplets which helps to address issues of capacity and traffic operations. Shoulders would be added along the corridor. Traffic traveling from north to south through this area of Jefferson City will be able to avoid getting on Whitton to get to their destination. The Missouri Boulevard improvements and thus the LOS is the same as for the Viaduct Concept. The LOS at Jefferson Street is B and there is a LOS D at Monroe Street. Madison Street would be grade separated with the overpass. The overpass would eliminate the possibility of elevating the mainline section of Whitton.

This concept would require large retaining walls along Madison Street which would affect the access to those properties immediately adjacent to Madison Street close to Whitton. This concept has greater impacts to property along Missouri Boulevard and mainline Whitton. This option does reduce westbound Hwy 50 to one lane at the tri-level interchange.

c. MSP Concepts

Concept A (Lafayette)

This option provides the most direct access to the MSP site and Lincoln University to the south of Whitton. The interchange at Lafayette Street would impact some potentially eligible historic properties and Quinn Chapel. This option would require four lanes so there would also likely be right of way impacts along Lafayette Street beyond the interchange, including but not limited to parking/driveway access.

Concept C (Clark Realignment)

The realignment of Clark Avenue to go northwest of the existing roadway would utilize the existing Clark Avenue interchange. Roundabouts would be added so traffic operations would change. This concept would require four lanes and have right of way impacts in realigning the street however, there would be less impacts to access to the homes in the area. This option could easily tie into the MSP site.

Concept D (Lafayette Interchange and Clark Realignment)

The Lafayette Interchange would provide access on Lafayette Street to the MSP site with some of the impacts of the full interchange but right of way needs will not be as extensive. Quinn Chapel would not be impacted by this alternative. However, the potentially eligible properties in the northwest corner of the new interchange would still be impacted. This concept would also allow the footprint of Lafayette Street north of Miller to remain the same as it is today. The realignment of Clark Avenue would be the same as described as above. This concept also allows for the phasing of these improvements to take place as traffic warrants.

