

CHAPTER II: ALTERNATIVES

This chapter focuses on the process used to create and evaluate the range of alternatives developed during the EC-EIS to correct the existing and future problems identified in **Chapter I**. The development and evaluation of alternatives were based on engineering evaluations, agency coordination, consideration of social, economic, and environmental impacts, and public input. This chapter will:

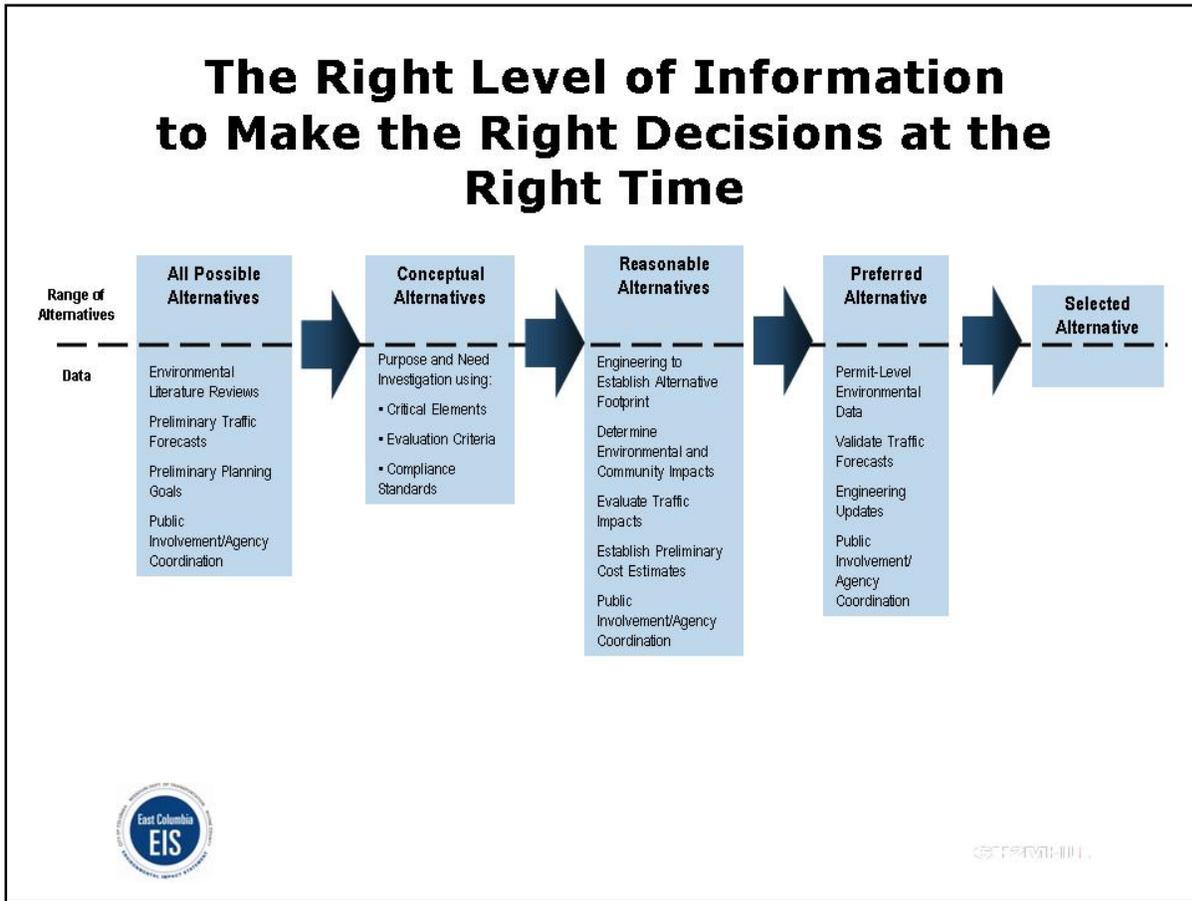
1. Summarize the process used to arrive at the Preferred Alternative presented in the DEIS.
2. Present clarifications since the DEIS.
3. Discuss the partner's concurrence with the Preferred Alternative.

A. Summary of the Alternative Development Process

The process used to identify the Preferred Alternative, presented in the DEIS, was based on a series of screenings. These screenings involved the identification of a wide range of initial **Conceptual Alternatives** that could potentially address the transportation needs determined during the initial evaluation for the project. The conceptual alternatives were broad and non-specific. Investigations were conducted to develop the conceptual alternatives into configurations that were suitable for implementation and called the **Reasonable Alternatives**. The reasonable alternative that accomplishes the purpose and need for the proposed action, while avoiding, minimizing, or mitigating impacts to the social and natural environment was identified as the **Preferred Alternative**. The Preferred Alternative is subject to circulation, coordination, and evaluation in the DEIS. During the DEIS process, the Preferred Alternative may be accepted, refined, rejected, or replaced. This decision is presented in the FEIS. The Preferred Alternative for the EC-EIS is a refinement of the original Preferred Alternative, and will be identified as the **Selected Alternative** upon its final acceptance in the Record of Decision (ROD). **Figure II-1** depicts the overall process of alternative development and evaluation.

The no-build alternative was considered throughout the project and would consist of maintaining the current roadways in essentially their current condition. Routine maintenance would continue to be conducted, and occasional minor safety upgrades would be implemented. No capacity additions or major improvements would be made. Overall, the no-build alternative does not meet the objectives of the project purpose and need. It serves as a baseline condition against which the changes associated with the other alternatives can be evaluated.

FIGURE II-1
 Process of Alternative Development and Evaluation



1. Conceptual Alternatives

The initial alternatives were called conceptual alternatives. The conceptual alternatives were established using engineering judgment, existing planning goals, public involvement information, and potential environmental impacts. Technical feasibility and preliminary project costs were also considered during the development of conceptual alternatives. Nine conceptual alternatives were identified as shown graphically in **Exhibit II-1**.

Conceptual alternatives were also developed to address the conditions identified in the traffic analysis. Projects programmed and committed for construction were considered in the traffic analysis using a design year of 2030. These projects make up the background conditions for the no-build condition. Current deficiencies, locations of congestion, and crash rates within the study area are expected to worsen, as discussed in **Chapter I**. Traffic volumes are projected to exceed their capacity and intersections are expected to operate poorly. Increases in crashes are also expected.

The primary screening tool used to evaluate the conceptual alternatives was an analysis of how well each conceptual alternative could satisfy the project’s purpose and need. Those that were determined to at least minimally satisfy the project’s purpose and need were advanced

for further consideration. The discussion that follows provides a description of the methodology used to evaluate the conceptual alternatives. To minimally address the project’s purpose and need, a conceptual alternative should satisfy a majority of the evaluation criteria for each of the three elements.

Element #1: Address Traffic Congestion and Safety Concerns within the Existing Roadway Network

The evaluation criteria used to determine how well traffic congestion and safety concerns were addressed with each conceptual alternative included the following:

Is congestion on the existing roadway network improved as compared to existing conditions? The standard used to evaluate congestion was the LOS data for roadways in the study area. To minimally achieve the project’s purpose and need, an alternative should improve the LOS over the conditions predicted for the no-build alternative.

Are identified crash hotspots addressed? The standard used to evaluate crashes was based on an examination of the 2003 to 2007 crash record. Those areas that displayed a disproportionate crash rate or had a prevalence of severe crashes were identified as crash hotspots. To minimally achieve the project’s purpose and need, an alternative should address each hotspot within its footprint.

Is the design year LOS at the secondary roadway intersections adequate? To minimally achieve the project’s purpose and need, a conceptual alternative should enable achievement of a 2030 LOS no lower than LOS E at intersections that fall within its footprint.

Are emergency service response times hindered by traffic bottlenecks? As intersection operation becomes less efficient, emergency service runs will become increasingly affected. To minimally achieve the project’s purpose and need, an alternative should have adequate pathways to existing Emergency Management System (EMS) stations.

Element #2: Complete the Major Highway Linkages between Eastern Boone County and Columbia

The evaluation criteria used to determine how well conceptual alternatives complete the major highway linkages between eastern Boone County and Columbia include the following:

Is the proposed roadway network consistent with the MRP? Within the study area, the MRP identifies three major north–south roadways and four major east–west roadways. To minimally achieve the project’s purpose and need, an alternative must maintain the number of roadway connections specified in the MRP.

Does the proposed roadway system provide adequate connections to I-70, US-63, and Route 740? Within the study area, there are three interchanges along US-63 and two interchanges

Major Elements of the EC-EIS Purpose & Need

- Address traffic congestion and safety concerns
- Connect the major highway linkages between Eastern Boone County and Columbia
- Provide access to East Columbia



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along I-70. To minimally achieve the project's purpose and need, an alternative should provide connections to a majority of the interchanges.

Is the alternative consistent with the roadway type identified in CATSO's MRP? The CATSO MRP identifies the roadway types for the roadways included in the MRP. To minimally achieve the project's purpose and need, an alternative should be consistent with the roadway type identified in the MRP.

Element #3: Provide Adequate Transportation Infrastructure for Access to Eastern Columbia

The evaluation criteria used to determine how well the conceptual alternatives would provide adequate infrastructure include the following:

Does the alternative create a discernable community gateway? A successful community gateway has the following attributes: it is identifiable and visible, it projects the community's image, it enhances uses and activities, and it provides important access and linkages. To minimally achieve the project's purpose and need, an alternative should reasonably address each of the attributes of a successful gateway.

Will the alternative allow for the accommodation of adequate pedestrian/bicycle facilities? While the creation of pedestrian or bicycle facilities is not an explicit purpose for the project, an effective gateway should allow accommodations for pedestrians and bicyclists. To minimally achieve the project's purpose and need, an alternative should (1) have no obvious hindrance to constructing bridges that would accommodate existing and proposed trails, and (2) have no clear right-of-way constraints that would prevent the roadway from being designated as a bikeway "Green Route."

Will the alternative accomplish the area's growth or development goals? To minimally achieve the project's purpose and need, an alternative should not be classified as inconsistent with essential community goals by the City of Columbia, CATSO, or Boone County.



Conceptual alternatives SC-1, SC-2, RR-1, and RR-2 satisfy a majority of each of the three purpose and need critical elements. These four alternatives were advanced for further consideration as the project's reasonable alternatives.

Only conceptual alternatives SC-1, SC-2, RR-1, and RR-2 satisfy a majority of the evaluation criteria that define each of the three purpose and need critical elements. These four alternatives were advanced for further consideration as the project's reasonable alternatives.

2. Reasonable Alternatives

Starting with the conceptual alternatives, engineering evaluations were conducted (tempered by agency coordination; social, economic, and environmental constraints; and public input) to develop configurations that were suitable for implementation. These alternatives were called reasonable alternatives and were developed to conform to appropriate design standards that allow for the establishment of preliminary project footprints. As a result, detailed impact assessments, cost estimates, and traffic evaluations were possible.

Exhibit II-2 provides a composite image of the reasonable alternatives. **Exhibit II-3** shows a conceptual depiction of the cross section for Route 740 and the other roadway types

associated with this project. The following elements were investigated during the reasonable alternatives stage of the project:

a. Extension of Stadium Boulevard (Route 740) from US-63 to I-70

Five possible alignments for the extension of Stadium Boulevard (Route 740) were developed. All alignments are compatible with the other components necessary to create a complete project. Each alignment includes the configuration of Stadium Boulevard as an expressway (a controlled access highway). For the purposes of alternative development and impact quantification, the expressway is assumed to be a four-lane divided highway. The actual design configuration of the roadway is subject to modification based on future funding constraints and/or practical design considerations. The five possible alignments are as follows:

SC-2A – Route 740 extension uses a new alignment north of the North Fork of Grindstone Creek to the St. Charles interchange on I-70.

SC-2B – Route 740 extension uses a new alignment south of the North Fork of Grindstone Creek to the St. Charles interchange on I-70.

SC-2C – Route 740 extension uses a new alignment to the north of the North Fork of Grindstone Creek and then adjacent to the existing St. Charles Road corridor to the St. Charles interchange on I-70.

RR-2A – Route 740 extension uses the existing Richland Road corridor to the Route Z interchange on I-70.

RR-2B – Route 740 extension uses a new alignment to the Route Z interchange on I-70.

b. Improvement of Route WW from US-63 to Olivet Road

Three possible alignments for the improvement of Route WW were developed. All the reasonable alternatives are compatible with the extensions of Route 740. Each alignment includes the configuration of Route WW as a major arterial west of the Route 740 extension and as a minor arterial east of the Route 740 extension. The footprint may be as wide as 300 feet. Alignments WWA, WWB, and WWC are identical, except in the vicinity of the Boone County Fire Protection District Station 12 (980 El Chaparral Avenue) and the Lighthouse Community Church (4275 Route WW).

WWA – Route WW improved along the existing alignment. It is not possible to avoid relocations in the vicinity of the fire station.

WWB – Route WW is routed north of the fire station and the Lighthouse Community Church. The configuration requires connections between the new and existing routes.

WWC – Route WW is routed between the fire station and the Lighthouse Community Church. The configuration also requires connections between the new and existing routes.

The reasonable alternatives for Route WW (WWA, WWB, and WWC) are very similar and the analysis concluded that WWA was superior. Within the DEIS, figures and matrices are used to present and compare the costs and benefits of all the various ways investigated for improving Route WW.

c. Possibility of a Ballenger Lane Extension

The appropriateness of a Ballenger Lane extension has been investigated throughout the development of the EC-EIS. All the reasonable alternatives are compatible with a Ballenger Lane extension.

Each reasonable alternative has a Ballenger Lane extension appropriate with the corresponding Stadium Boulevard extension. Each version of a Ballenger Lane extension follows the same basic alignment, although the length and roadway connections vary. Other basic alignments were eliminated from consideration due to the limitations associated with the extension’s termini and the distribution of the resources that the extension would affect. The Ballenger Lane extension is depicted as a major arterial, with a footprint possibly as wide as 300 feet. The alignment used minimizes relocations, facilitates desired roadway connectivity, advantageously crosses the Hominy Branch, and maximizes the possibility for an at-grade intersection connecting the Ballenger Lane extension to the existing I-70 Drive southeast.

The impacts associated with the reasonable alternatives were determined through investigations of traffic impacts, right-of-way impacts, environmental impacts, community impacts, relocation impacts and engineering impacts, along with an examination of compatibility with CATSO priorities. **Chapters III and IV** of the DEIS present the details of the various resource-specific investigations conducted for the reasonable alternatives. These impacts are also summarized in **Table S-1**.

Costs were also important in the evaluation of the reasonable alternatives. **Table II-1** summarizes the costs of the reasonable alternatives. It is important to note that these costs are estimates. They were developed using procedures with a level-of-accuracy range of plus 90 percent to minus 45 percent of the actual construction cost. It is also important to note that these costs are subdivided into the project’s major components and that the financing for the Ballenger Lane extension will be obtained by the local partners.

TABLE II-1 Summary of Costs Associated with EC-EIS Components	
Reasonable Alternative	Total Cost
Route 740 Extension - SC-2A	\$ 39,800,000
Route 740 Extensions - SC-2B	\$ 52,200,000
Route 740 Extensions - SC-2C	\$ 49,000,000
Route 740 Extensions - RR-2A	\$ 96,500,000
Route 740 Extensions - RR-2B	\$ 72,800,000
Ballenger Extension for SC-2A	\$ 34,000,000
Ballenger Extension for SC-2B	\$ 33,300,000
Ballenger Extension for SC-2C	\$ 26,800,000
Ballenger Extension for RR-2A	\$ 33,300,000
Ballenger Extension for RR-2B	\$ 39,600,000



TABLE II-1 Summary of Costs Associated with EC-EIS Components	
Reasonable Alternative	Total Cost
Improvement of Broadway/Route WW - WWA	\$ 22,000,000
Improvement of Broadway/Route WW - WWB	\$ 22,200,000
Improvement of Broadway/Route WW - WWC	\$ 22,900,000

3. Preferred Alternative

The reasonable alternative that accomplishes the purpose and need for the proposed action, while avoiding, minimizing, or mitigating the impacts to the social and natural environment, was identified in the DEIS as the Preferred Alternative. The key design elements of the Preferred Alternative include the following:

The Extension of Route 740 (Stadium Boulevard)—SC-2A

- The Preferred Alternative uses a new alignment from the existing US-63 interchange to the St. Charles Road interchange at I-70.
- The Route 740 extension is planned to be an expressway.
- Overpasses will be investigated at the Lemone Industrial Boulevard (proposed) and Rustic Road.
- At-grade intersections will be required at Route WW, Richland Road/ Ballenger Lane, and Grace Lane/ St. Charles Road (existing). The intersection of Richland Road and Ballenger Lane with Route 740 is at a common location.



Important Decision-Making Elements Leading to the Preferred Alternative

- SC-2A achieves the project's purpose and need.
- SC-2A closely conforms to the CATSO MRP.
- SC-2A avoids new major stream crossings.
- SC-2A minimizes residential relocations.
- SC-2A minimizes total construction costs.
- SC-2A minimizes project footprint.
- SC-2A connects to the St. Charles Road/ I-70 interchange.
- The SC alternatives maximize the usage expected at the I-70 interchanges.
- The SC alternatives maximize the potential for attracting vehicles that might otherwise use I-70/US-63.
- The SC alternatives minimize the amount of diversion of Columbia-bound traffic through a Route Z/WW pathway.
- WWA minimizes impacts and best maintains appropriate traffic patterns on Route WW.

The Improvement of Route WW—WWA

- The improvement will extend from US-63 to Olivet Road and use the existing alignment; the footprint will be widened to the side that minimizes impacts to existing resources.
- Route WW is planned to be a major arterial west of the Route 740 extension and a minor arterial east of the Route 740 extension.
- All existing intersections on Route WW will be maintained.
- The crossing of Grindstone Creek (North Fork) will involve the realignment of Route WW. This will eliminate a tight curve and also facilitate the proposed intersection with the extension of Route 740.

The Extension of Ballenger Lane

- This element will be processed as a locally sponsored project.
- The Ballenger Lane extension is planned to be a major arterial.
- The Ballenger Lane extension is expected to include an at-grade intersection with the existing I-70 Southeast (outer road).
- The intersection of Richland Road and Ballenger Lane with Route 740 is at a common location (a modification from the reasonable alternative).

A complete depiction of the Preferred Alternative is contained in **Exhibits II-4A to 4G**.



Ballenger Lane Extension

The Ballenger Lane extension would be processed and financed as a local project.

The financing for the Ballenger Lane extension may ultimately include federal funding obtained by the local partners. Should federal funding be involved in the Ballenger Lane extension financing, this document would clear the project under NEPA and would mandate that the project be in accordance with the environmental commitments in this document.

B. Clarifications Since the DEIS

On April 3, 2009, the DEIS for the EC-EIS project was made available for review. The DEIS was distributed to federal, state, and local governmental, regulatory, and administrative entities. Copies of the DEIS were also made available at seven locations for public viewing. Electronic copies were available on the project Web site.

Following the distribution of the DEIS, several major outreach efforts were initiated:

- Web Site Updates
- A Project Newsletter
- Newspaper Display Advertisements
- Press Releases
- Online Public Hearing
- Public Hearing

These efforts led to the extensive discussions and clarifications contained in **Chapter V.B**. However, the Preferred Alternative, as depicted in the DEIS, remains essentially unchanged.

This FEIS will be subject to circulation, coordination, and evaluation. At this point, the Preferred Alternative will be identified as the Selected Alternative. The National Environmental Policy Act (NEPA) process will conclude with a ROD that concisely outlines the selected alternative, its impacts, and the mitigation, monitoring, and enforcement provisions associated with the selected alternative.

C. Concurrence of the Project Partners

Because of its complexity, a multi-component project team was assembled to investigate the needs and propose solutions for the EC-EIS project. The project team included MoDOT, the City of Columbia, and Boone County. A partnering agreement provided the three parties with guidance towards working together cooperatively to fulfill NEPA requirements associated with this project.

The Columbia City Council's resolution endorsing the Preferred Alternative, the Boone County Commission's letter supporting the Preferred Alternative, and CATSO's letter endorsing the Preferred Alternative are contained in **Appendix I**.