



Chapter 5

Preferred Alternative

Since the beginning of the Milton-Madison Bridge Project in August 2008, several factors have arisen which have guided the project team to select the Superstructure Replacement Alternative with Minimal Approaches as the Preferred Alternative. The following sections discuss the reasons for this selection.

5.1 Condition of the Existing Bridge

Multiple inspections of the existing US 421 Bridge have been undertaken over the past few years. The *Needs and Deficiencies Report* includes available inspections from the past 20 years. The findings of the 2009 Fracture Critical Inspection were published as an addendum to this report. **Table 5.1** presents the results from previous inspections, based on the National Bridge Inspection Standards developed by the FHWA. These standards rate bridge components on a 0 (failed) to 9 (excellent) scale, based on the overall visible conditions.

Table 5.1 – Condition Ratings for the US 421 Bridge

Component	Inspection Report					
	1995	2000	2002	2006	2009*	2009**
Superstructure	3	6	6	5	4	4
Stringers/Girders/Beams	4	6	6	5	5	5
Floor Beams	3	6	5	4	4	4
Trusses (Main Members)	5	7	6	4	3	4
Trusses (Bracing, Portals)	5	7	7	7	5	4
Substructure	6	6	6	6	6	6

* 2009 Fracture Critical Inspection findings, published March 2009

** 2009 In-Depth Inspection findings, published August 2009

As the table shows, the bridge's condition has deteriorated rapidly over the past decade. This is also shown in the sufficiency rating, which is used to identify structures that may need repair or replacement. Bridges rated 50.0 or less on a scale of 0 to 100 are eligible to receive federal bridge replacement funding. As of 2009, KYTC assigned the Milton-Madison Bridge a sufficiency rating of 6.5, the lowest of any of the eleven Ohio River bridges between Indiana and Kentucky. This rating is based on a variety of factors including structural adequacy, safety,

geometry, the importance of the bridge within the larger transportation network, and other considerations.

Over the past 15 years, KYTC has invested over \$11 million to maintain the bridge in its current condition. This started with a major rehabilitation effort in 1997 to address structural deficiencies. This effort consisted of deck replacement, structural steel repairs, concrete patching, and painting. In the nine years between the 1997 rehabilitation and the 2006 inspection, the floorbeams and main truss members deteriorated substantially to the condition that they are rated as structurally deficient again.

These findings suggest that the bridge has a limited service life remaining. Based on the condition of the aging steel members and the volume of traffic that has crossed the bridge since it first opened to traffic, the bridge will have to be closed to traffic by 2020-2025. Extensive work will be required in the next few years to keep the river crossing open.

5.2 Impacts to Historic Resources and Parks

Historic resources are protected by various federal regulations. Most notably, Section 106 of the National Historic Preservation Act and Section 4(f) of the US Department of Transportation Act protect historic resources from impacts caused by transportation uses. For National Historic Landmarks, Section 110 of the National Historic Preservation Act also provides an added higher level of protection. The following paragraphs explain how these laws affect the decision-making process.

The Section 106 process “seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation ... The goal of the consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties.”¹ Coordination with Section 106 consulting parties for the Milton-Madison Bridge Project began in February 2009.

Section 110 establishes a higher standard of care for projects that may directly or adversely affect National Historic Landmarks. Section 110 specifies that projects should “to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmark.”² Projects should include consideration of all prudent and feasible alternatives that avoid effects on National Historic Landmarks. Impacts to resources within the National Historic Landmark have been determined through consultation with Section 106 parties and are further described in **Chapter 7**.

Section 4(f) protects historic properties and publicly owned parks, recreation areas, wildlife refuges. By law, a Section 4(f) property may be converted to a transportation use only if there is no prudent and feasible alternative and the project includes all possible planning to minimize harm to the resource. A Section 4(f) discussion in **Chapter 8** examines the range of alternatives considered, the effects the Proposed Action creates on 4(f) properties, and measures considered to minimize and mitigate harm.

¹ 36 CFR § 800.1(a)

² Section 110(f) of the National Historic Preservation Act, codified as 16 USC 470

5.2.1 Impacts from the Proposed Action

The Proposed Action is the reasonable alternative that would have the fewest effects on historic properties. The Proposed Action would not result in relocations of historic homes or businesses because no additional right-of-way would be acquired with this alternative. However, it would require removal of the truss itself, a resource determined eligible for listing in the National Register.

In Indiana, the structure spans Jaycee Park with a wider river crossing within the existing bridge right-of-way. It would require construction of new land piers and a larger abutment within the existing bridge right-of-way. These are not anticipated to have an adverse effect on the recreational features of the park. It is possible that areas currently occupied by recreational features (volleyball courts and picnic shelters) may be needed for construction staging. If that is necessary, any amenities temporarily unavailable during construction would be relocated to a nearby space so that their use would not be interrupted. The park is protected under Section 4(f) and FHWA proposes to make a *de minimis* finding for effects on the park, as discussed in **Chapter 8**.

Because the Ferry Street Boat Ramp in Madison is already permanently closed for public use, it is not considered an active recreational resource. Therefore, it is not subject to Section 4(f) protection. However, the Milton Boat Ramp would be unavailable for public use during the construction period. To offset this loss, the project team would construct a temporary boat launching facility in Milton west of the existing bridge and restore the existing boat ramp to its existing condition or better following use of this property. Potential Section 4(f) issues and coordination are discussed in **Chapter 8** of this document.

Every alternative considered would result in the use of Section 4(f) property; therefore, there is no prudent and feasible avoidance alternative for Section 4(f) resources. (Supporting information is provided in **Chapter 8**.) However, the Proposed Action would have the least overall harm on parks, recreation areas, and historic sites. This alternative minimizes harm to historic resources and incorporates mitigation measures to offset any indirect impacts. Coordination under the Section 106 process helped develop strategies to avoid, minimize, and mitigate indirect adverse impacts on historic resources, outlined in the project's MOA.

5.3 Other Community Impacts

The Proposed Action also has the fewest direct impacts on both communities. It does not require any additional right-of-way acquisition. or displacement of homes or businesses.

However, the Proposed Action would result in a potential short-term negative economic impact to the communities. To construct a replacement superstructure, the cross-river link must be closed to traffic for an estimated 12 months. The economic impact on local residents and business owners was carefully weighed against other concerns during the decision-making process. Both states are committed to mitigating these impacts to the degree possible by providing a ferry service and emergency medical helicopter transport during construction and offering contractor incentives to minimize the length of time the bridge must be closed to traffic. Economic and community impacts are discussed in more detail in **Chapter 4**.

5.4 Funding Availability

Funding for transportation projects is scarce in today's economy. Both states must balance limited funding to cover many important needs throughout the state. Annually, Kentucky receives \$60 million in federal bridge replacement funding and Indiana receives \$50 million. These funds must be divided among all of the aging bridge structures statewide.

Recent bridge inspection reports show the need to replace the US 421 Milton-Madison Bridge in the near future.

The availability of federal stimulus funding represents an opportunity for the Milton-Madison Bridge Project to compete against other projects around the country. As part of the American Recovery and Reinvestment Act of 2009, the US Department of Transportation is making \$1.5 billion in Transportation Investment Generating Economic Recovery (TIGER) Grants available to state and local governments. TIGER grants are being competitively offered for projects that improve the condition of existing infrastructure, improve regional economic competitiveness, improve quality of life within communities, promote sustainability, and improve safety. Priority is given to projects which can be substantially complete by February 2012.

Because the Proposed Action is contained entirely within existing state owned right-of-way, the lengthy right-of-way acquisition process is not required. By implementing a design-build process, incorporating innovative construction techniques, and offering construction incentive payments for minimizing the closure time of the bridge, this alternative can meet the February 2012 deadline for completion.

5.5 Selection Rationale

The Superstructure Replacement Alternative with Minimal Approaches is the Preferred Alternative because

- It can be constructed before the existing bridge must be closed due to its deterioration.
- It causes the least overall harm to Section 4(f) resources.
- It avoids direct impacts to the National Historic Landmark and other historic resources.
- It requires no structural displacements or partial parcel takes.

Table 5.2 compares the impacts resulting from the Proposed Action to impacts associated with the other four alternatives recommended for detailed study. The Proposed Action impacts fewer resources than the other alternatives considered.

Selection of the final alternative will be completed only after consideration of impacts and public hearing comments.

Table 5.2 – Side-by-side comparison of alternative impacts

	Superstructure Full Approaches	Proposed Action	Tiber Creek A	Tiber Creek B	Canip Creek
PROPERTY/PARCEL DIRECT IMPACTS					
Businesses displaced	14	0	5	6	2
Residences displaced	9	0	10	20	29
Churches displaced	0	0	1	1	0
Parks Impacted	1	1	1	0	1
Other parcels with Partial Takes	27	0	58	69	65
ADVERSE EFFECTS ON ELIGIBLE HISTORIC RESOURCES					
Adverse Effect on National Historic Landmark	Yes	No	Yes	Yes	Yes
Other Districts adversely affected	2	0	1	1	2
Adverse Effect on Bridge	Yes	Yes	Potential	Potential	Potential
Other Eligible Structures adversely affected	0	0	2	3	2
COMMUNITY AND ECONOMIC IMPACTS					
Closure during Construction	Yes	Yes	No	No	No
Detour Length (miles)	50	50	0	0	0
IMPACTS TO THE NATURAL ENVIRONMENT					
Stream Crossings	0	0	1	1	2
Forested Habitats	Yes	No	Yes	Yes	Yes
Farmlands	No	No	No	No	Yes
Approaches out of the 100-year Floodplain	Yes	No	Yes	Yes	Yes
CONSTRUCTION COSTS					
Estimated Cost (millions)	\$167	\$131	\$189	\$199	\$219
Jobs Created	1,820	1,420	2,050	2,160	2,380