

TEXAS DEPARTMENT OF TRANSPORTATION

Environmental Affairs Division, Historical Studies Branch

Historical Studies Report No. 2009-02

# Historic Bridge Programmatic Section 4(f) Guidelines and Standards of Uniformity

By Maryellen Ficker and Heather Goodson



# Historic Bridge Programmatic Section 4(f) Guidelines and Standards of Uniformity

April 2009



By Maryellen Ficker and Heather Goodson

Mead and Hunt, Inc.  
8217 Shoal Creek Boulevard  
Austin, Texas 78757

Historic Bridge Programmatic Section 4(f)  
Guidelines and Standards of Uniformity

Copyright © 2009 by the Texas Department of Transportation (TxDOT)

All rights reserved.

TxDOT owns all rights, title, and interest in and to all data and other information developed for this project. Brief passages from this publication may be reproduced without permission provided that credit is given to TxDOT and the author. Permission to reprint an entire chapter or section, photographs, illustrations, and maps must be obtained in advance from the Supervisor of the Historical Studies Branch, Environmental Affairs Division, Texas Department of Transportation, 118 East Riverside Drive, Austin, Texas, 78704. Copies of this publication have been deposited with the Texas State Library in compliance with the State Depository requirements.

For further information on this and other TxDOT historical publications, please contact:

Texas Department of Transportation  
Environmental Affairs Division  
Historical Studies Branch  
Bruce Jensen, Supervisor

Historical Studies Report No. 2009-02  
By Maryellen Ficker and Heather Goodson



**Historic Bridge Programmatic  
Section 4(f) Guidelines  
and  
Standards of Uniformity**

**Prepared for the  
Texas Department of Transportation**

**March 2009**

## **Executive Summary**

This technical report presents Guidelines and Standards of Uniformity (SOU) for Historic Bridge Programmatic Section 4(f) Evaluation documents. Part 1 of this document includes the Historic Bridge Programmatic Section 4(f) Guidelines and Part 2 includes the SOU. Mead & Hunt, Inc. (Mead & Hunt) prepared this report for the Texas Department of Transportation (TxDOT) under Work Authorization 578 05 SH003.

Part 1 of this technical report provides guidance in preparing Historic Bridge Programmatic Section 4(f) Evaluation documentation pursuant to the provisions of Title 23, Code of Federal Regulations (CFR) Section 774. The Guidelines provide TxDOT District Environmental Coordinators, cultural resources management staff, and other non-engineers with recommendations on gathering technical and engineering information for establishing a project's purpose and need as well as sufficient justification for the alternatives considered and measures to minimize harm. The Guidelines provide a legal overview of the Historic Bridge Programmatic Section 4(f) Evaluation document, the recommended process for writing these documents, and the components required for inclusion in the documents. Photographs, maps, and other visual aids are used to highlight information in the text and as examples of material recommended in the Programmatic Section 4(f) Evaluation documents.

Part 2 of this technical report includes the SOU for Historic Bridge Programmatic Section 4(f) evaluations, which is based on the Guidelines in Part 1. The SOU outlines the information, graphics, maps, and photographs required for Historic Bridge Programmatic Section 4(f) Evaluations. Following TxDOT's established SOU matrix format, the SOU has the tone and structure of existing TxDOT SOUs.

# Table of Contents

	Page
<b>PART 1 – Historic Bridge Programmatic Section 4(f) Guidelines</b>	
<i>I. Introduction</i> .....	1
<i>II. Section 4(f) Background</i> .....	2
<i>III. Process of Preparing a Programmatic Section 4(f) Evaluation</i> .....	6
<i>IV. Elements of Programmatic Section 4(f) Evaluation</i> .....	10
<i>Description of the Proposed Action</i> .....	11
<i>Description of the Section 4(f) Property</i> .....	16
<i>Purpose and Need Statement</i> .....	20
<i>Structural Deficiencies</i> .....	22
<i>Functional Inadequacies</i> .....	25
<i>Geometric Deficiencies</i> .....	30
<b><i>Alternatives Analysis</i></b> .....	<b>38</b>
1. <i>No Build Alternative</i> .....	43
2. <i>Bypass Alternatives</i> .....	44
2A. <i>Bypass Alternative - Constructing a New Bridge on a                 New Alignment</i> .....	44
2B. <i>Bypass Alternative - Upgrading Nearby Parallel                 Roadways</i> .....	46
3. <i>Rehabilitation (Avoidance) Alternatives</i> .....	48
3A. <i>Rehabilitation (Avoidance) Alternative - Continued                 Vehicular Use Carrying Two-Way Traffic</i> .....	49
3B. <i>Rehabilitation (Avoidance) Alternative – Continued                 Vehicular Use as a One-Way Pair</i> .....	51
3C. <i>Rehabilitation (Avoidance) Alternative – Pedestrian                 Use</i> .....	55
4. <i>Rehabilitation (Use) Alternative</i> .....	60
5. <i>Replace the Historic Bridge</i> .....	63
<b><i>Recommended Alternative</i></b> .....	<b>70</b>
<b><i>Measures to Minimize Harm</i></b> .....	<b>71</b>
<b><i>Coordination</i></b> .....	<b>76</b>
<b><i>Conclusion</i></b> .....	<b>77</b>
<i>List of Acronyms</i> .....	78
<i>Bibliography</i> .....	80
 <b>PART 2 – Historic Bridge Programmatic Section 4(f) Standards of Uniformity</b>	

## Appendices

- A Sample Outline of a Historic Bridge Programmatic Section 4(f) Evaluation
- B Examples of Incomplete and Complete Purpose and Need Statements
- C Bridge Marketing Notice
- D Three-Party Agreement Example
- E Relocation Package Example

## Tables

- 1 Participants and Roles in Programmatic Section 4(f) Evaluation Writing Process ..... 6
- 2 Project Location and Setting Information ..... 12

## Figures

- 1 Regulations, Policies, and Guidance Related to Section 4(f) Requirements ..... 5
- 2 Sample List of Typical Problems and Needs Associated with Structural Deficiencies, Functional Inadequacies, and Geometric Deficiencies ..... 21
- 3 Prudence Criteria for Avoidance Alternatives ..... 39
- 4 Alternatives Evaluation Matrix..... 66
- 5 Alternatives Evaluation Matrix Example..... 67

**List of Questions**

*What are historic bridges?..... 2*

*When does Section 4(f) apply to historic bridges?..... 2*

*What is considered a “use” of a historic bridge?..... 2*

*What is the difference between an individual and Programmatic Section 4(f) Evaluation? ..... 3*

*What are the criteria for a Programmatic Section 4(f) Evaluation?..... 3*

*Will Section 4(f) apply to a historic bridge that is left in place after a new bridge is constructed? ..... 3*

*How do other laws pertain to the Section 4(f) requirements? ..... 3*

*What information is used to write the Programmatic Section 4(f) Evaluation?..... 8*

*What needs to be included in a Historic Bridge Programmatic Section 4(f) Evaluation? ..... 10*

*What information is included in the Description of the Proposed Action section? ..... 11*

*What graphics should be included to supplement information in the Proposed Action section?..... 14*

*What is required in the Description of the Section 4(f) Property section?..... 16*

*What is needed for the physical description of the bridge and where do I get the information?..... 16*

*How is the historical significance documented?..... 17*

*What are character-defining features and how are they documented? ..... 19*

*What is the purpose and need statement? ..... 20*

*Is a low sufficiency rating of a bridge the only thing that needs to be referenced in the purpose and need statement? ..... 20*

*How is the need for the project demonstrated? ..... 20*

*How do I gather the information to describe the need for the project? ..... 22*

<i>What type of illustrations should be included to demonstrate need for the project?.....</i>	<i>33</i>
<i>How should the purpose of the project be stated?.....</i>	<i>37</i>
<i>Is the purpose and need statement the same for a Programmatic Section 4(f) Evaluation as it is for NEPA document?.....</i>	<i>37</i>
<i>What is the purpose of the Alternatives Analysis section?.....</i>	<i>38</i>
<i>What are avoidance alternatives?.....</i>	<i>38</i>
<i>What are use alternatives?.....</i>	<i>38</i>
<i>What is a feasible and prudent avoidance alternative?.....</i>	<i>38</i>
<i>What is the criterion for a feasible avoidance alternative?.....</i>	<i>39</i>
<i>How is an avoidance alternative determined to be prudent or not?.....</i>	<i>39</i>
<i>What alternatives must be considered?.....</i>	<i>40</i>
<i>What if there is no feasible and prudent avoidance alternative?.....</i>	<i>41</i>
<i>How is “least overall harm” determined?.....</i>	<i>41</i>
<i>How is the discussion of each alternative laid out?.....</i>	<i>42</i>
<i>What types of supporting graphics need to be included in the alternatives analysis?.....</i>	<i>65</i>
<i>What information goes in the Recommended Alternative section?.....</i>	<i>70</i>
<i>What are measures to minimize harm?.....</i>	<i>71</i>
<i>What is included in the Measures to Minimize Harm section of the document?.....</i>	<i>75</i>
<i>What type of information is included in the Coordination section?.....</i>	<i>76</i>
<i>What happens if an avoidance alternative is determined to be feasible and prudent?.....</i>	<i>77</i>
<i>What happens if more than one use alternative is determined to be feasible and prudent?.....</i>	<i>77</i>
<i>What is included in the Conclusion section?.....</i>	<i>77</i>

# Part 1: Historic Bridge Programmatic Section 4(f) Guidelines

Work Authorization 578 05 SH003

Contract No. 578 XX SH003

## I. Introduction

Section 4(f) of the US Department of Transportation Act of 1966 mandates that “special effort should be made to preserve ... historic sites” (49 United States Code 303). Historic bridges—those that are eligible for or listed in the National Register of Historic Places (NRHP)—are historic sites under this statute and are subject to Section 4(f) legal requirements. These Historic Bridge Programmatic Section 4(f) Guidelines (Guidelines) provide assistance in preparing Historic Bridge Programmatic Section 4(f) Evaluations (Programmatic Section 4(f) Evaluations) pursuant to the provisions of Title 23, Code of Federal Regulations (CFR) Section 774.

Programmatic Section 4(f) Evaluations document the engineering analyses and technical justifications used to determine if there is a feasible and prudent alternative to using a historic bridge. They also document that the selected alternative poses the least overall harm to the historic bridge after all possible planning to minimize harm has been incorporated into project planning efforts. Prepared by the Texas Department of Transportation (TxDOT) on the Federal Highway Administration’s (FHWA) behalf, the Programmatic Section 4(f) Evaluation becomes part of the proposed project’s public record and is reviewed by engineers and non-engineers alike. Ultimate decision-making responsibility and approval of the alternatives analysis lies with the FHWA.

The Guidelines were developed for the TxDOT District Environmental Coordinators, cultural resources management staff, and other non-engineers who are typically the authors of the Programmatic Section 4(f) Evaluations. In the past, understanding what information to use and where to obtain it has been particularly challenging for those non-engineers tasked with completing Programmatic Section 4(f) Evaluations. The Guidelines provide tools to aid preparers in gathering the technical and engineering information used to justify the Programmatic Section 4(f) Evaluation’s conclusions. Recommendations for establishing a collaborative process to prepare the Programmatic Section 4(f) Evaluation are also provided. The collaborative process will assist in relaying technical and engineering information to the non-engineer lay readers.

Provided in a question and answer format, the Guidelines provide a brief overview of the Section 4(f) legal requirements for historic bridges, describe the recommended process for writing Programmatic Section 4(f) Evaluations, and outline the type of information that should be included in the Programmatic Section 4(f) Evaluation documents.

*An annotated sample outline of a Programmatic Section 4(f) Evaluation is included in Appendix A. Use it as a quick reference in conjunction with these Guidelines.*

## II. Section 4(f) Background

### ***What are historic bridges?***

Historic bridges are bridges that are listed in or eligible for listing in the NRHP. There are two ways that TxDOT determines which bridges are eligible for listing in the NRHP—programmatic inventories and bridge-by-bridge evaluations. The programmatic inventories are conducted in accordance with Section 110 of the National Historic Preservation Act (NHPA). Since the 1990s, TxDOT has conducted the following programmatic bridge inventories:

- Metal Truss Bridge Inventory (1995)
- Depression Era Masonry Element Bridge Inventory (1997)
- Non-truss Bridge Inventory (1999)
- 1945-1965 Bridge Inventory (anticipated completion Fall 2009)

Another way bridges can be determined eligible is through the NHPA Section 106 process. Such determinations are conducted on a bridge-by-bridge basis and usually occur when a rehabilitation or replacement is proposed for the bridge. For more information regarding the Section 106 or Section 110 processes of the NHPA, please contact TxDOT's Environmental Affairs Division (ENV) Historical Studies staff.

### ***When does Section 4(f) apply to historic bridges?***

Section 4(f) applies because bridges listed or eligible for listing in the NRHP are historic sites as defined by 23 CFR 774.17. Section 4(f) applies when a project proposes a “use” of a historic bridge. A “use” occurs when the action diminishes, either by replacement or rehabilitation, the bridge’s historic integrity. In such cases, a Programmatic Section 4(f) Evaluation must be prepared.

### ***What is considered a “use” of a historic bridge?***

The FHWA determined that a historic bridge is used when it is demolished or when the historic quality for which the resource was determined to be eligible for listing in the NRHP is adversely affected by the proposed improvement as determined through NHPA Section 106 consultation with the State Historic Preservation Officer (SHPO). In circumstances, Section 4(f) applies and a Programmatic Section 4(f) Evaluation must be prepared.

If, through NHPA Section 106 consultation, the SHPO concurs that the proposed action does not affect the historic qualities of the bridge for which it was listed or determined eligible for listing in the NRHP, there is no Section 4(f) use of the bridge. For example, restoration, rehabilitation, or maintenance activities that do not affect the historic qualities of the bridge would not pose a Section 4(f) use. Therefore, if the project activities pose no adverse effect to the historic bridge under Section 106, there is no Section 4(f) use and Section 4(f) legal requirements do not apply. For more information about how Section 106 consultation pertains to Section 4(f), see page 3 or ask ENV Historical Studies staff.

***What is the difference between an individual and Programmatic Section 4(f) Evaluation?***

The primary difference does not lie in the contents of the Section 4(f) Evaluation or a relaxation of the standards of determining which alternatives are feasible and prudent. The difference is in the streamlined approval process and the amount of interagency coordination required. FHWA legal sufficiency review and Department of the Interior review are not required for a Programmatic Section 4(f) Evaluation. Interagency coordination occurs only with the SHPO through the National Historic Preservation Act (NHPA) Section 106 process. As a result, the timeline for approval of a Programmatic Section 4(f) Evaluation is often much shorter than that of an Individual Section 4(f) Evaluation.

***What are the criteria for a Programmatic Section 4(f) Evaluation?***

The Programmatic, rather than individual, Section 4(f) Evaluation may be applied if a project meets all the following criteria:

- Bridge is to be replaced or rehabilitated with Federal funds
- Project requires the use of a historic bridge, which is listed in or eligible for listing in the NRHP
- Bridge is not a National Historic Landmark (NHL)
- In reviewing the Section 4(f) Evaluation, the FHWA Division Administrator agrees that the justifications and data set forth in the Alternatives, Findings, and Mitigation sections of the evaluation document are the same as the facts of the project
- Agreement between TxDOT and the SHPO about the historic bridge is reached through the NHPA Section 106 consultation process

When a project does not meet one or more of these criteria, an Individual Section 4(f) Evaluation is required.

***Will Section 4(f) apply to a historic bridge that is left in place after a new bridge is constructed?***

If a historic bridge is left in place, its historic integrity is maintained, and a new bridge's proximity to the historic bridge does not adversely affect the historic bridge, Section 4(f) does not apply.

In these situations, the FHWA requires the establishment of a mechanism for continued maintenance to avoid the circumstance of harm to the historic bridge due to neglect. For off-system bridges, which are those bridges that are owned by counties or local jurisdictions, a two- or three-party agreement is usually undertaken to ensure continued maintenance on the bypassed bridge. State-owned bridges are retained as on-system bridges for continued maintenance.

***How do other laws pertain to the Section 4(f) requirements?***

The Programmatic Section 4(f) Evaluation may occur concurrently with other legal requirements such as the National Environmental Policy Act (NEPA) and Section 106 of the NHPA. Furthermore, coordination conducted under NHPA and NEPA inform the development of the Programmatic Section 4(f) Evaluation document.

When the use of a historic bridge is proposed, the NHPA Section 106 process and development of the Programmatic Section 4(f) Evaluation for a historic bridge are intertwined in many ways. First, the definition of “use” of a historic bridge depends upon the consultation with the SHPO under Section 106 of the NHPA. Second, most measures to minimize harm that are incorporated into the Programmatic Section 4(f) Evaluation are also included in Section 106 consultation. Third, Section 106 has public involvement requirements and the results of the public involvement should be incorporated in the development of the Programmatic Section 4(f) Evaluation. Lastly, a Programmatic Section 4(f) Evaluation may only be approved when the SHPO agrees with the actions that are to be taken regarding the historic bridge.<sup>1</sup> While such agreement occurs under the Section 106 process, the information provided to the SHPO for Section 106 consultation comes directly from the Programmatic Section 4(f) Evaluation.

NEPA and Section 4(f) are related as well. The purpose and need statements and the description of the selected alternative must match in the NEPA document and the Programmatic Section 4(f) Evaluation. Additionally, Section 4(f) is one of the many laws that falls under the NEPA umbrella and the results of the Programmatic Section 4(f) Evaluation are reported in the proposed project’s NEPA document. The results may be reported in the NEPA document through reference or by including the Programmatic Section 4(f) Evaluation as an appendix to the NEPA document. This decision is made on a project-by-project basis.

For more information regarding regulations, policies, or guidance regarding Section 4(f) or other laws that coincide with Section 4(f), see the sources listed in Figure 1.

---

<sup>1</sup> “Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges”

**Figure 1**

**Regulations, Policies, and Guidance Related to Section 4(f) Requirements**

*Department of Transportation Act*

*Section 4(f) (23 CFR 774)*

<http://www.fhwa.dot.gov/legsregs/legislat.html>

*Safe, Accountable, Flexible, Efficient Transportation Equity Act:*

*A Legacy for Users (SAFETEA-LU) Section 6009(a)*

<http://www.fhwa.dot.gov/legsregs/legislat.html>

The FHWA's Environmental Review Toolkit website provides information on and links to various regulations, policies, and guidance related to Section 4(f) requirements.

See <http://environment.fhwa.dot.gov/guidebook/index.asp> for the following policies and guidance:

*FHWA's Section 4(f) Policy Paper*

*FHWA's Guidance for Preparing and Processing Environmental  
and Section 4(f) Documents*

*FHWA's Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that  
Necessitate the Use of Historic Bridges*

*National Environmental Policy Act (42 USC 55§4321)*

[http://www.access.gpo.gov/uscode/title42/chapter55\\_.html](http://www.access.gpo.gov/uscode/title42/chapter55_.html)

*The National Historic Preservation Act*

*Section 106 (36 CFR 800)*

<http://www.achp.gov/nhpa.html>

### III. Process of Preparing a Programmatic Section 4(f) Evaluation

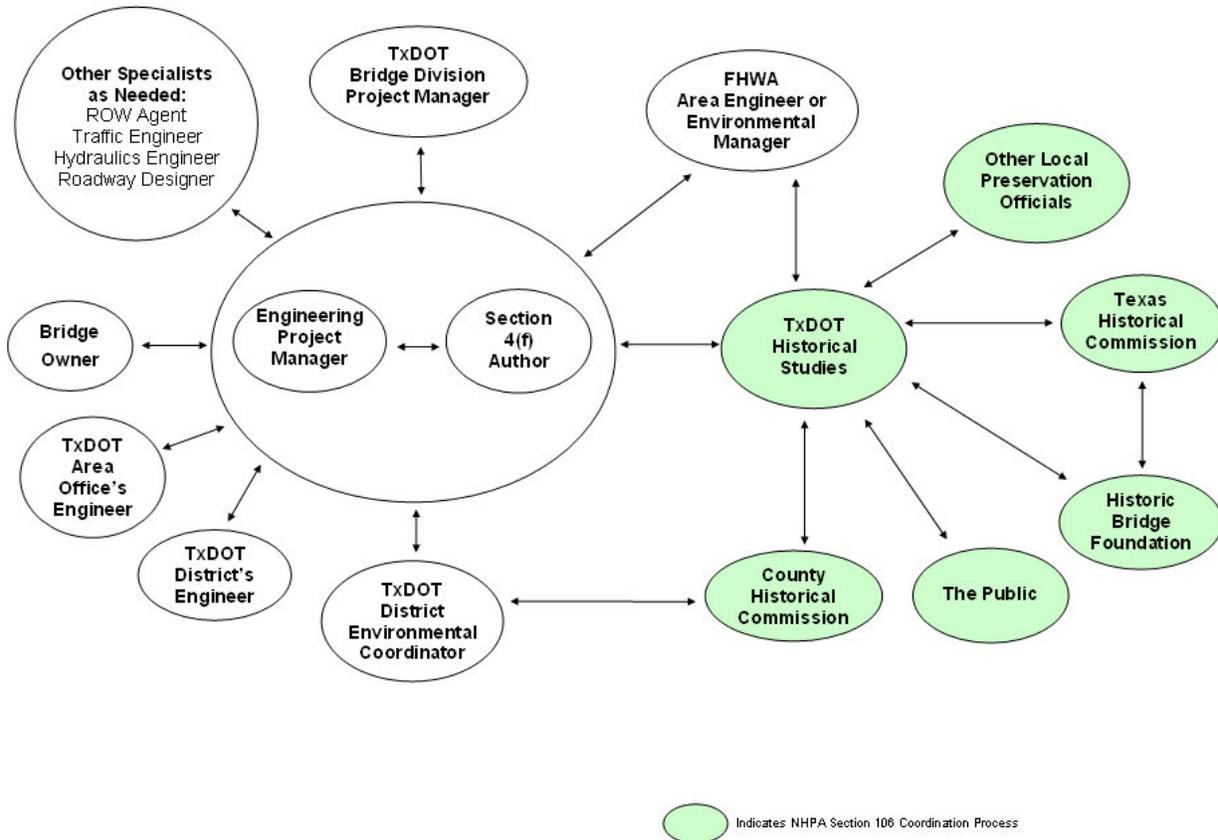
A Programmatic Section 4(f) Evaluation is a complex, technical document that draws upon data and input from various sources. The information-gathering component of the process is often the most time-consuming aspect. Identifying the potential need for a Programmatic Section 4(f) Evaluation as early as possible in the project development process and establishing clear and open lines of communications for information exchange are keys to streamlining the process. This section provides a recommended approach to the data gathering process of writing a Programmatic Section 4(f) Evaluation. These recommendations assume the TxDOT District Environmental Coordinator, TxDOT ENV Historian, or one of their consultants will be the evaluation's primary author.

The process of writing a Programmatic Section 4(f) Evaluation typically involves numerous people. Table 1 describes the likely participants and their roles.

**Table 1. Participants and Roles in Programmatic Section 4(f) Evaluation Writing Process**

<b>Participant</b>	<b>Role</b>
TxDOT Engineering Project Manager (District or Area Office Engineer in charge of project)	Primary liaison between author and other participants; conduit of information; general input on engineering details for alternatives analysis
Historic Bridge Programmatic Section 4(f) Evaluation Author	Determines information needs; compiles information into evaluation document
TxDOT District Environmental Coordinator	Liaison between participants and conduit of information to be used in evaluation (potential author)
TxDOT ENV Historian	Input on historical significance, character-defining features, and effects determinations; provides Section 106 coordination results (potential author)

Depending on the circumstances of each project, other participants may include the TxDOT Bridge Division's Project Manager, the FHWA Area Engineer or Environmental Manager, and local officials. The TxDOT Engineering Project Manager (Engineering Project Manager) in charge of the project is central to the writing process as they serve as the liaison with other technical participants for the information exchange necessary to complete the Programmatic Section 4(f) Evaluation. As the following graphic shows, the Engineering Project Manager and the Programmatic Section 4(f) Evaluation author work together throughout the evaluation data gathering and writing process, while relying on information and input from other participants.



**Consultation and Meetings**

Consultation among participants should occur throughout the process of preparing the Programmatic Section 4(f) Evaluation, whether via meetings, telephone calls, or other means. When the need to prepare a Programmatic Section 4(f) Evaluation is initially identified, it is recommended that a kick-off meeting be held with those who will be involved in writing or providing key information for the Programmatic Section 4(f) Evaluation. If an author for the Programmatic Section 4(f) Evaluation has already been identified, the Engineering Project Manager and the author should work together to set up the kick-off meeting. The kick-off meeting can be incorporated into the TxDOT District’s preliminary design meeting (e.g. Design Concept Conference or Preliminary Design Conference) if the potential need to prepare a Programmatic Section 4(f) Evaluation is identified in the early stages of project development.

At the kick-off meeting, the following activities should occur:

- Define each person’s role in the process
- Determine who will author the Programmatic Section 4(f) Evaluation (if not already determined)
- Establish the project’s need and purpose
- Outline alternatives and what type of information may be needed to describe each alternative
- Set due dates for providing needed information to appropriate person
- Discuss timeline for preparing Programmatic Section 4(f) Evaluation
- Establish the protocol for communication among participants
- Establish point(s) of contact

After the kick-off meeting, it is recommended that the primary participants visit the historic bridge and discuss its condition and the options available for the bridge. Subsequent meetings could be scheduled to focus on the details of the alternatives analysis. The subsequent meetings are an opportunity for participants to discuss each alternative, present opposing cases in order to enhance the justifications (i.e. play devil's advocate), and identify final data needs. Following this meeting, the Programmatic Section 4(f) Evaluation author should have the information necessary to prepare the draft document.

Throughout the process, the information exchange is ongoing and frequent. Therefore, consultation among the participants in the overall process is recommended.

### ***What information is used to write the Programmatic Section 4(f) Evaluation?***

The TxDOT Bridge Division's *Historic Bridge Manual* sets forth procedures that help historic bridge projects move through the project development process smoothly without undue delays or last minute surprises. One of the keys to the historic bridge project development process is the Historic Bridge Team (HBT).

The HBT is an interdisciplinary team formed for any project involving a historically significant bridge to develop a preservation feasibility analysis of the historic bridge. The HBT is formed by the TxDOT Bridge Division's Project Manager during the preliminary engineering and environmental analysis process. The report resulting from the team's work—HBT Report—forms the basis from which discussions about the Programmatic Section 4(f) Evaluation and alternatives analysis can begin. The TxDOT Bridge Division's Project Manager can provide the HBT Report if it is not provided at the outset of the Programmatic Section 4(f) Evaluation process.

Other sources of information that might be used to write the Programmatic Section 4(f) Evaluation include:

- Bridge condition evaluation report
- Bridge inspection reports
- Bridge Inspection Database data
- Traffic studies
- Accident statistics
- Federal Emergency Management Agency (FEMA) rating maps
- Right-of-way information
- TxDOT Design Standards and Guidelines
  - *Roadway Design Manual*
  - *Bridge Project Development Manual*
  - *Bridge Design Manual*
  - *Historic Bridge Manual*
- American Association of State Highway and Transportation Officials (AASHTO) Standards and Guidelines
  - *A Policy on Geometric Design of Highways and Streets (Green Book)*
  - Bridge Design Specifications
  - *Guidelines for Historic Bridge Rehabilitation and Replacement*

- FHWA Standards and Guidelines
  - *Technical Advisory: Guidance for Preparing and Processing Environmental and Section 4(f) Documents, Part IX (T 6640.8A)*
  - *Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges*
- NHPA Section 106 coordination
- Project's NEPA document (if available)
- Other project-related data or data from project-specific studies required as project warrants

## IV. Elements of Programmatic Section 4(f) Evaluation

### ***What needs to be included in a Historic Bridge Programmatic Section 4(f) Evaluation?***

The Historic Bridge Programmatic Section 4(f) Evaluation must include thorough explanations and detailed justifications for the engineering decisions that are made throughout the project planning process. In accordance with FHWA guidance, information in a Programmatic Section 4(f) Evaluation document should be organized under the following headings:

- Description of the proposed action
- Description of the 4(f) property
- Purpose and need
- Alternatives analysis
- Recommended alternative
- Measures to minimize harm
- Coordination
- Conclusion

*An annotated sample outline of a Programmatic Section 4(f) Evaluation is included in Appendix A. Use it as a quick reference in conjunction with Section IV of these Guidelines.*

The majority of the Programmatic Section 4(f) Evaluation is narrative; however, various types of graphics, photographs, and maps should be included to illustrate and support the information that is presented in the text of the document. The next section outlines the information that should be included in the Programmatic Section 4(f) Evaluation document, what types of questions should be addressed, where to find the information to answer the questions, and what illustrations should accompany the information presented in the text.

## Description of the Proposed Action

### ***What information is included in the Description of the Proposed Action section?***

The Description of the Proposed Action section serves as the introduction to the Programmatic Section 4(f) Evaluation and includes two main components:

1. Introduction and Section 4(f)'s applicability in proposed project
2. Specific information regarding the project location and setting

### **1. Introduction and Section 4(f)'s applicability in the proposed project**

The beginning of the document should begin by stating that a Programmatic Section 4(f) Evaluation is being completed because TxDOT proposes to replace or rehabilitate the subject bridge in accordance with the Statewide Transportation Improvement Program (STIP). When referencing the STIP, it is important to reference the years for which the STIP was issued. This section should also note if the bridge is eligible for or listed in the NRHP and that the proposed project calls for a “use” of the historic bridge. In addition, the text below must be included in the Proposed Action section of the document:

#### ***REQUIRED TEXT:***

In accordance with 23 CFR 774, the following Section 4(f) Evaluation provides a discussion for recommending that there are no feasible and prudent alternatives to the use of the bridge and the proposed action includes all possible planning to minimize harm to the historic bridge resulting from such “use”.

### **2. Specific information regarding the project location and setting**

Specific information regarding the project location and setting should be included in the Description of the Proposed Action section. In the description of the setting, it is important to describe the properties and landscape surrounding the project and to note the presence of other Section 4(f) properties located in the project area. Knowledge of other Section 4(f) properties in the project area is imperative when reviewing the avoidance alternatives later in the document. Table 2 below provides a list of the information that is recommended for inclusion in the project location and setting description, and where such information can be found.

**Table 2. Project Location and Setting Information**

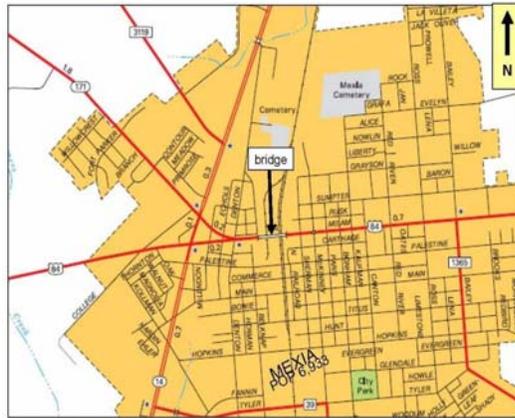
<b>Location and setting information</b>	<b>Source</b>
<b>Bridge-specific information</b>	
Road name or highway number	Bridge Inventory Database (BID)
Feature bridge crosses	BID
Location of subject bridge <ul style="list-style-type: none"> <li>Distance to nearby major highways</li> <li>Distance to nearby cities (rural bridges only)</li> </ul>	Aerial, topographic, or highway maps
<b>Roadway-specific information</b>	
Location of roadway in relation to other roads	Aerial, topographic, or highway maps
Length of roadway, if applicable (likely rural roads only)	Aerial, topographic, or highway maps
Orientation of roadway, such as north/south or east/west	Aerial, topographic, or highway maps
Function classification of roadway	BID, bridge inspection reports
Roadway surface	Photographs, site visit
Roadway width	BID
Average Daily Traffic (ADT)	BID
Year ADT count completed	BID
Projected ADT	NEPA document, HBT report
Projected year for ADT	NEPA document, HBT report
<b>Bridge's setting</b>	
General setting, for example: <ul style="list-style-type: none"> <li>Suburban</li> <li>Urban</li> <li>Rural</li> </ul>	Photographs, site visit, recent aerial photographs
Surrounding property types, for example: <ul style="list-style-type: none"> <li>Agricultural</li> <li>Residential</li> <li>Commercial</li> <li>Industrial</li> <li>Recreational</li> </ul>	Photographs, site visit, recent aerial photographs
Land use, for example: <ul style="list-style-type: none"> <li>Farms (specify type if possible)</li> <li>Ranches</li> <li>Natural gas or oil fields</li> <li>Railroad</li> </ul>	Photographs, site visits, recent aerial photographs

**Table 2. Project Location and Setting Information**

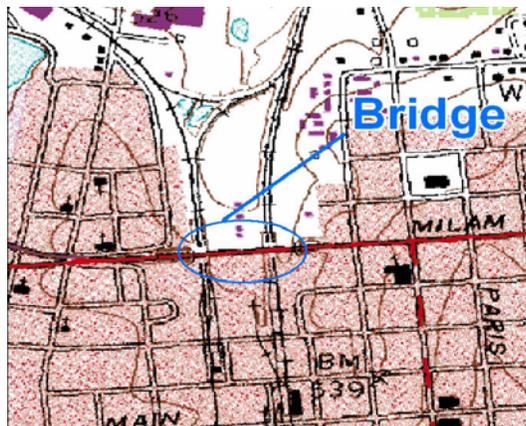
Location and setting information	Source
<p>Features and obstacles surrounding bridge, for example:</p> <ul style="list-style-type: none"> <li>• Canyons</li> <li>• Cliffs</li> <li>• Ravines</li> <li>• Railroad lines</li> <li>• Railroad bridges</li> <li>• Dams</li> </ul>	<p>Photographs, site visits, recent aerial photographs, topographic maps</p>
<p>Other Section 4(f) properties in project area, which may include:</p> <ul style="list-style-type: none"> <li>• significant publicly-owned public parks</li> <li>• publicly-owned recreation areas</li> <li>• publicly-owned wildlife and waterfowl refuges</li> <li>• publicly- or privately-owned historic sites listed in or eligible for the NRHP</li> </ul>	<p>TxDOT District Environmental Coordinator, Environmental Affairs Project Manager</p>

**What graphics should be included to supplement information in the Proposed Action section?**

Maps that show the project location must be included, and photographs of the project area are recommended. To accurately illustrate the project location, three types of maps are recommended for inclusion in the document and are illustrated below:



Roadway map showing location of bridge



Topographic map showing location of bridge



Aerial photograph with bridge identified

Photographs of the project area that show the bridge approaches, views looking upstream and downstream of the bridge, and land use surrounding the bridge are recommended. The photographs should be labeled to describe subject of image, including the location in relation to the historic bridge. Sample photographs with example captions are included below. (Note: Features of properties adjacent to the historic bridge location, such as the presence of fields shown in photographs below, could indicate the need to review the NRHP eligibility of adjacent properties to identify other potential Section 4(f) resources.)



Looking south along CR 250, brush and scattered trees surround the bridge



Looking north along CR 250



Looking downstream of bridge toward grazing fields east of the bridge



Looking upstream of bridge toward railroad tracks west of the bridge



Looking east from bridge toward fields east of the bridge



Looking northeast toward fields to the east of the bridge

## Description of the Section 4(f) Property

### ***What is required in the Description of the Section 4(f) Property section?***

The description of the Section 4(f) property includes detailed information regarding the bridge, its physical appearance, and its historical significance. The description of the Section 4(f) property should include the following information:

1. Physical description of the historic bridge
2. Historical significance of the structure
3. Bridge's character-defining features

Photographs of the bridge's superstructure, substructure, and deck should be included to supplement the description of the historic bridge. See Exhibit C in the Sample Outline (Appendix A).

### ***What is needed for the physical description of the bridge and where do I get the information?***

The physical description of the bridge should include a detailed narrative of the bridge's superstructure, substructure, approaches, and load capacity. The information that should be included in the physical description will vary from bridge to bridge; however, the list below provides the basic information that should be included in the physical description and location of the information.

Data Need	Source
<b><i>Superstructure</i></b>	
<b>All bridge types</b>	
Superstructure type and material	BID
Year built	BID
Builder, fabricator, and/or designer, if known	Historic Bridge Database (HBD)
Number of spans	BID, site visit, photographs, HBT report
Overall structure length	BID
Maximum span length	BID
Vertical clearance on and under the bridge	BID
Horizontal clearance	
• Bridge width	BID
• Roadway width on the bridge	
Skew or curve	BID, HBT report
Number of lanes on bridge	BID, site visit, photographs, HBT report
Width of lanes on the bridge	Engineering project manager
Shoulders on the bridge	
• If present, note width	Engineering project manager
• If not present, note absence	
Sidewalks	
• If present, note width	BID
• If not present, note absence	

<b>Data Need</b>	<b>Source</b>
Type of deck	BID, site visit, photographs, bridge inspection reports
Type of wearing surface	BID, site visit, photographs, bridge inspection reports
Type of bridge railing	Site visit, photographs
Sufficiency rating	BID, HBT report
Other information, as necessary	-
<b>For truss bridge types</b>	
Truss configuration	Site visit, photographs, ENV Historical Studies staff
Connection type	Photographs, site visit, bridge inspection reports, HBT report, ENV Historical Studies staff
Other information, as necessary	-
<b>For non-truss bridge types</b>	
Connection type, if steel	Photographs, site visit, bridge inspection reports, HBT report, ENV Historical Studies staff
Reinforcement, if concrete (reinforced or prestressed)	Bridge inspection reports, HBT report, as-built plans
Description of stone work and mortar details, if masonry	Photographs, site visit, HBT report, ENV Historical Studies staff
Other information, as necessary	-
<b>Substructure</b>	
Substructure material	Photographs, site visit, bridge inspection reports, HBT report
Number of piers	Photographs, site visit
Other information, as necessary	-
<b>Approaches</b>	
Roadway width at approaches	BID
Shoulder width at approaches	Engineering project manager
Guard rail or other fencing at approaches	Site visit, photographs
Other information, as necessary	-
<b>Load capacity</b>	
As-built load rating	BID, HBT report
Operating vehicular load rating	BID, HBT report, bridge inspection report
Operating pedestrian load rating	HBT
Other information, as necessary	-

### ***How is the historical significance documented?***

The historical significance of the bridge documents why the bridge is eligible for or listed in the NRHP, includes a statement of significance for the historic bridge, and describes the bridge's character-defining features. ENV Historical Studies staff provides the majority of the information that informs this section of the document. This section includes the following information:

- NRHP criteria and level of significance under which the bridge is eligible for or listed in the NRHP
  - A historic bridge is eligible or listed under *Criterion A* (Events), *Criterion B* (People), *Criterion C* (Design/Construction), and/or *Criterion D* (Information Potential), and

- A historic bridge is eligible or listed at the local, state, or national level of significance.<sup>2</sup>
  - Example text: The CR 515 bridge at Clear Creek is eligible for the NRHP under *Criterion C, Engineering*, at the local level of significance.
- Other designations, such as State Archeological Landmarks (SAL) or local landmarks, if applicable.<sup>3</sup>
- Significance statement that outlines why the bridge is listed in or eligible for the NRHP.

---

<sup>2</sup> As noted on page 3, a Programmatic Section 4(f) Evaluation cannot be completed for a bridge that is eligible for or listed in the NRHP under any criterion at the national level.

<sup>3</sup> On-system bridges that are listed in the NRHP are designated SALs.

**What are character-defining features and how are they documented?**

The bridge's character-defining features are the elements of the bridge that significantly contribute to its physical character and make it eligible for the NRHP. For example, the character-defining features of the NRHP-eligible Warren pony truss shown below are its polygonal top chord, riveted connections, and external sway braces. Without these character-defining features the bridge would not be listed, or eligible for listing, in the NRHP for its engineering merit. ENV Historical Studies staff is the best source for this information. To best document the character-defining features of a bridge, include photographs of these features in an exhibit of the Programmatic Section 4(f) Evaluation, as noted in the Sample Outline (Appendix A).



NRHP-eligible Warren Pony Truss



Character defining feature: Polygonal top chord



Character defining feature: External sway braces and riveted connections

## Purpose and Need Statement

### ***What is the purpose and need statement?***

The purpose and need statement justifies why a proposed project is necessary. It establishes the objective of the project. Establishing a detailed analysis of the purpose and need statement is vital to the development of the Programmatic Section 4(f) Evaluation since this statement lays the foundation for the alternatives analysis. Furthermore, the purpose and need statement must be parallel to the purpose and need statement in the NEPA document, which will require a coordination of effort.

See Appendix B for examples of Purpose and Need Statements

Establishing the need for the project is the most important part of the purpose and need statement since the need outlines the problem that exists and provides the justification for the expenditure of public funds to correct the problem. Conversely, the purpose defines the objective and focuses on the desired outcome for the traveling public. For this reason, this statement is sometimes informally referred to as the need and purpose statement since the need for the project should be established first and the purpose is determined second.

### ***Is a low sufficiency rating of a bridge the only thing that needs to be referenced in the purpose and need statement?***

While the sufficiency rating should be cited in the purpose and need, it alone is not adequate justification for the purpose and need statement.

Sufficiency ratings of bridges are not adequate to illustrate the purpose and need for a project. While factors regarding the bridge's physical condition and geometry inform sufficiency ratings, the ratings are only a tool indicating that a bridge is eligible for federal funding for rehabilitation (bridges with a score less than 75) or replacement of the structure (bridges with a score less than 50).<sup>4</sup> The sufficiency rating does not provide sufficient detail regarding the problems that prompted the need for the proposed action.

### ***How is the need for the project demonstrated?***

Since establishing the need for the project is essential to the overall development of the Programmatic Section 4(f) Evaluation, attention should be paid to demonstrating why the project must be completed. Demonstrating the need for a proposed project requires that specific details be outlined for each problem that the proposed action will address. Description of the needs of the project should be overt and easy to understand for the lay reader. The needs of the project cannot just be stated, they must be justified with supporting evidence. In essence, this portion of the Programmatic Section 4(f) Evaluation convinces the reader that the proposed action is defensible and warranted.

---

<sup>4</sup> *TxDOT Bridge Project Development Manual*

The types of needs often associated with bridge replacement projects fall into three main groups: structural deficiencies, functional inadequacies, and geometric deficiencies. A sample list of typical problems and needs associated with these three groups as related to historic bridges are illustrated in Figure 2.

**Figure 2**

- Sample List of Typical Problems and Needs Associated with Structural Deficiencies, Functional Inadequacies, and Geometric Deficiencies**
- *Structural deficiencies*
    - Physical condition of the bridge
    - Hydraulic problems causing scour and/or substructure deterioration
    - Load capacity rating of bridge does not meet minimum requirement of HS 20 for on-system bridges or minimum requirements noted in the *TxDOT Historic Bridge Manual* for off system bridges
  
  - *Functional inadequacies*
    - Bridge poses horizontal clearance restrictions
    - Bridge is narrower than the roadway and does not meet 3R design criteria for bridge width
    - Road is being upgraded and bridge is too narrow for upgraded facility, according to 3R design criteria
    - Bridge has a vertical clearance lower than the minimum of 14-feet, 6 inches and poses vertical clearance restrictions (can apply to through trusses, overpasses, and underpasses) that prevent use by specific types of vehicles such as tractor-trailers, recreation vehicles, and over-sized vehicles
    - Water overtops bridge deck during high water events, requiring periodic closure of the bridge
    - Bridge acts as a dam in high flood events and floods properties upstream
  
  - *Geometric deficiencies*
    - Poor line of sight approaching the bridge
    - Access to surrounding properties is limited or blocked due to configuration of bridge at crossing
    - At least one of the approaches has a curve that is too sharp

When writing the purpose and need section, the existing conditions and problems of the subject bridge should be described and grouped under these three categories. Therefore, the needs would be discussed under the headings *Structural Deficiencies*, *Functional Inadequacies*, and *Geometric Deficiencies*. In doing so, the reader is made clearly aware of the bridge's various problems that need to be addressed. Only discuss and include information regarding the needs identified by project engineers for your specific project. For example, if a bridge only has structural deficiencies and functional inadequacies, do not include a discussion of geometric deficiencies in the Purpose and Need Statement.

**How do I gather the information to describe the need for the project?**

To adequately explain the need for the project, the problems with the current bridge and/or roadway must be described thoroughly and in detail. Below are the types of questions that should be answered when describing the needs of a proposed action and the sources that can be reviewed or consulted to answer the questions. While additional questions may be warranted, the questions below are a springboard for describing the need for the proposed action.

**Structural Deficiencies**

Questions	Physical condition				
	HBT Report	Condition Evaluation	Bridge Inspection Reports	TxDOT Engineering PM	Other
What superstructure and/or substructure members/elements are in poor physical condition or are deteriorated?	X	X	X	X	
Are there fracture critical members of this bridge that require immediate attention/action? If so, what are the members and what are the issues requiring immediate attention/action?	X	X	X	X	
Why do the members/elements that are in poor physical condition/deteriorated require repair or replacement?	X	X	X	X	
How was it determined that these bridge members/elements require repair or replacement?	X	X		X	
According to the most recent bridge inspection report, what are the condition ratings for the members/elements that require repair or replacement?			X		
Are there TxDOT standards that dictate that these bridge members/elements require repair or replacement? If so, what are they?	X			X	<i>TxDOT Bridge Project Development Manual</i>

**Physical condition**

<b>Questions</b>	<b>HBT Report</b>	<b>Condition Evaluation</b>	<b>Bridge Inspection Reports</b>	<b>TxDOT Engineering PM</b>	<b>Other</b>
How do the bridge's current condition ratings compare to the TxDOT standards identified in answer to previous question?	X		X	X	
Does the railing need to be replaced? If so, why does it need to be replaced?	X			X	
What are the consequences if the bridge was closed?	X		X	X	Traffic engineer
How long is a detour route around the bridge?					BID; roadway maps; Area office engineer
Can the detour route handle similar traffic and vehicles as the existing bridge?					Bridge Inspection reports for bridge(s) on detour route to review current load ratings; traffic studies; local planning efforts
Do school buses or emergency vehicles need to use the bridge?	X			X	Area office engineer; city/county officials; traffic studies; local planning efforts

**Hydraulic problems causing scour and/or substructure deterioration**

<b>Question</b>	<b>HBT Report</b>	<b>Condition Evaluation</b>	<b>Bridge Inspection Reports</b>	<b>TxDOT Engineering PM</b>	<b>Other</b>
What superstructure and/or substructure members/elements are deteriorated due to hydraulic problems?	X	X	X	X	
How was it determined that these bridge members/elements require repair or replacement?	X	X	X	X	
According to the most recent bridge inspection report, what are the condition ratings for the members/elements that require repair or replacement?			X		

### Hydraulic problems causing scour and/or substructure deterioration

Question	HBT Report	Condition Evaluation	Bridge Inspection Reports	TxDOT Engineering PM	Other
Are there TxDOT standards that dictate that these bridge members/elements require repair or replacement? If so, what are they?	X			X	<i>TxDOT Bridge Project Development Manual</i>
What is causing the scour or substructure deterioration?	X	X	X	X	Hydraulics engineer
Is the flow in the channel causing the scour and/or deterioration? If so, how?	X	X	X	X	Hydraulics engineer
Is a modification required to the channel or streambed? If so, how would the channel or streambed be modified?	X			X	Hydraulics engineer
What are the consequences if the bridge was closed?	X		X	X	Traffic engineer
How long is a detour route around the bridge?					BID; roadway maps; Area office engineer
Can the detour route handle similar traffic and vehicles as the existing bridge?				X	Bridge Inspection reports for bridge(s) on detour route to review current load ratings; traffic studies; local planning efforts
Do school buses or emergency vehicles need to use the bridge?	X				Area office engineer; city/county officials; traffic studies; local planning efforts

### Load capacity of bridge is too low

Question	HBT Report	Condition Evaluation	Bridge Inspection Reports	TxDOT Engineering PM	Other
What is the current load rating of the bridge?	X		X		BID
What load was the bridge originally designed to carry?	X		X		As-built plans for the subject bridge
What is the minimum load capacity required for the roadway as dictated by TxDOT standards?	X			X	<i>TxDOT Bridge Project Development Manual</i> ; <i>TxDOT Historic Bridge Manual</i>

**Load capacity of bridge is too low**

<b>Question</b>	<b>HBT Report</b>	<b>Condition Evaluation</b>	<b>Bridge Inspection Reports</b>	<b>TxDOT Engineering PM</b>	<b>Other</b>
What members/elements of the bridge are causing the low load capacity rating?	X	X	X	X	
Is the bridge load posted?	X		X		Site visit
Are vehicles that exceed the bridge's current load rating using the bridge?	X			X	Area office engineer; city/county officials
What types of vehicles are these?	X			X	Area office engineer; city/county officials
What type of damage is the bridge sustaining when heavier vehicles use the bridge?	X	X	X	X	
What are the consequences if the bridge was closed?	X		X	X	Traffic engineer
How long is a detour route around the bridge?					BID; roadway maps; Area office engineer
Can the detour route handle similar traffic and vehicles as the existing bridge?				X	Bridge Inspection reports for bridge(s) on detour route to review current load ratings; traffic studies; local planning efforts
Do school buses or emergency vehicles need to use the bridge?	X				Area office engineer; city/county officials; traffic studies; local planning efforts

**Functional Inadequacies**

**Bridge poses horizontal clearance restrictions**

<b>Question</b>	<b>HBT Report</b>	<b>Condition Evaluation</b>	<b>Bridge Inspection Reports</b>	<b>TxDOT Engineering PM</b>	<b>Other</b>
What circumstances require a wider bridge at this location?	X			X	
Are there TxDOT standards that require a wider bridge at this location? If so, what are those standards?	X			X	<i>TxDOT Roadway Design Manual; TxDOT Historic Bridge Manual</i>
How does the bridge's horizontal clearance compare to the TxDOT standards?	X		X	X	BID

**Bridge poses horizontal clearance restrictions**

<b>Question</b>	<b>HBT Report</b>	<b>Condition Evaluation</b>	<b>Bridge Inspection Reports</b>	<b>TxDOT Engineering PM</b>	<b>Other</b>
What types of vehicles are using the structure?	X			X	Area office engineer, site visit (If needed, determine what types of vehicles use road based on surrounding property types)
Have there been accidents at the bridge? If so, how many and in what time period?	X			X	Area office engineer; traffic engineer; accident statistics, if available
Is the bridge sustaining damage from vehicles using the bridge? If so, what elements of the bridge have been impacted?	X	X	X	X	
Do damaged members pose a safety hazard or cause a reduced load capacity of the bridge?	X	X	X	X	
How long is a detour route around the bridge for wide vehicles?	X				BID; roadway maps; Area office engineer
Can bridges on the detour route handle wide vehicles?	X				Site visit, Bridge Inspection reports for bridge(s) on detour route
Does the width restriction cause school buses and emergency vehicles to avoid using the bridge?	X			X	Area office engineer

**Bridge is narrower than the roadway**

<b>Question</b>	<b>HBT Report</b>	<b>Condition Evaluation</b>	<b>Bridge Inspection Reports</b>	<b>TxDOT Engineering PM</b>	<b>Other</b>
Is problem caused by bridge having narrow or no shoulders, or does problem stem from bridge having fewer or narrower lanes than roadway?	X		X	X	Traffic engineer; roadway engineer
Do lanes have to merge at each bridge approach? If so, does this cause traffic delays?	X			X	Traffic engineer; site visit

**Bridge is narrower than the roadway**

<b>Question</b>	<b>HBT Report</b>	<b>Condition Evaluation</b>	<b>Bridge Inspection Reports</b>	<b>TxDOT Engineering PM</b>	<b>Other</b>
Has the disparity between the roadway width and bridge width caused accidents? If so, how many and in what time period?	X			X	Area office engineer; traffic engineer; accident statistics, if available
If so, have accidents damaged the bridge?	X	X	X	X	
Can bridge be used as part of a one-way pair?	X	X		X	

**Roadway is being upgraded and bridge is too narrow for the upgraded facility**

<b>Question</b>	<b>HBT Report</b>	<b>Condition Evaluation</b>	<b>Bridge Inspection Reports</b>	<b>TxDOT Engineering PM</b>	<b>Other</b>
Are there TxDOT standards that require the road to be upgraded? Is so, what are they?				X	Area office engineer; <i>TxDOT Roadway Design Manual</i>
What is the bridge's width compared to the TxDOT standard?	X			X	
Can road be tapered to the width of the historic bridge?	X			X	Traffic engineer; roadway designer
If not, why can't the road be tapered?	X			X	Traffic engineer; roadway designer
Can bridge be used as part of a one-way pair?	X	X		X	
Can a design exception be obtained to keep the bridge in service for the upgraded roadway? If not, why?				X	Traffic engineer; roadway designer

### Bridge poses vertical clearance restrictions

Question	HBT Report	Condition Evaluation	Bridge Inspection Reports	TxDOT Engineering PM	Other
What is causing the vertical clearance restrictions?	X			X	
What is the TxDOT standard that dictates the vertical clearance requirements?	X			X	<i>TxDOT Roadway Design Manual; TxDOT Bridge Project Development Manual</i>
What is the bridge's vertical clearance, compared to the TxDOT standard?	X			X	
What type of vehicles cannot use the bridge due to vertical restrictions?	X				Area office engineer, site visit (If needed, determine what types of vehicles use road based on surrounding property types, land uses)
Do school buses or emergency vehicles use the bridge?	X			X	Area office engineer
Do the height restrictions cause school buses and emergency vehicles to avoid using the bridge?	X			X	Area office engineer
Has bridge sustained damage when tall vehicles use the bridge? If so, what type of damage has it caused?	X	X	X	X	
How long is a detour route around the bridge?					BID; roadway maps
Can the detour route handle similar vehicles as the existing bridge?				X	Bridge Inspection reports for bridge(s) on detour route to review current vertical clearances

### Water overtops deck during high water events, requiring periodic closure of the bridge

Question	HBT Report	Condition Evaluation	Bridge Inspection Reports	TxDOT Engineering PM	Other
How often does water overtop bridge deck during high water events?	X			X	Area office engineer
Was the bridge designed too low to the waterway?	X		X	X	Hydraulics engineer

**Water overtops deck during high water events, requiring periodic closure of the bridge**

<b>Question</b>	<b>HBT Report</b>	<b>Condition Evaluation</b>	<b>Bridge Inspection Reports</b>	<b>TxDOT Engineering PM</b>	<b>Other</b>
Was the bridge designed to be overtopped?	X			X	
What has changed to make this condition unacceptable? Is it a TxDOT standard, FEMA requirement, or other circumstance such as safety considerations?	X			X	Hydraulics engineer
What are the consequences when bridge is closed during flood events?	X		X	X	
Has the bridge sustained damage during flood events?	X	X	X	X	
How long is a detour route around the bridge?					BID; roadway maps
Can the detour route handle similar traffic and vehicles as the existing bridge?				X	Bridge Inspection reports for bridge(s) on detour route to review current load ratings
Do school buses or emergency vehicles need to use the bridge?	X				Area office engineer

**Bridge acts as a dam in high flood events and floods properties upstream**

<b>Question</b>	<b>HBT Report</b>	<b>Condition Evaluation</b>	<b>Bridge Inspection Reports</b>	<b>TxDOT Engineering PM</b>	<b>Other</b>
What specifically causes the bridge to act as a dam?	X		X	X	Hydraulics engineer
When bridge acts like a dam, what types of safety hazards does that situation pose?	X		X	X	Area office engineer
How many times has the bridge caused flooding of properties upstream?	X		X	X	Area office engineer; hydraulics engineer
How much does the bridge increase flooding upstream in relation to how much flooding would occur with a new bridge in place?	X		X	X	Hydraulics engineer; FEMA rating maps
What types of properties are upstream?					Site visit; aerial photographs; topographic maps

### Bridge acts as a dam in high flood events and floods properties upstream

Question	HBT Report	Condition Evaluation	Bridge Inspection Reports	TxDOT Engineering PM	Other
Does flooding impact vacant land or buildings?					Site visit; aerial photographs; topographic maps
Are buildings upstream in the existing 100-year floodplain?					FEMA rating maps; hydraulics engineer
Can the detour route handle similar traffic and vehicles as the existing bridge?				X	Bridge Inspection reports for bridge(s) on detour route to review current load ratings
Do school buses or emergency vehicles need to use the bridge?	X				Area office engineer

## Geometric Deficiencies

### Poor line of sight approaching the bridge

Question	HBT Report	Condition Evaluation	Bridge Inspection Reports	TxDOT Engineering PM	Other
What circumstances cause poor line of sight approaching the bridge?	X			X	Area office engineer; traffic engineer
Has poor line of sight caused accidents? If so, how many and in what time period? Where are the accidents occurring?	X				Area office engineer; traffic engineer; accident statistics, if available
Has bridge sustained damage from these accidents? If so, what type of damage has it caused?	X	X	X	X	
What causes poor line of sight – man made obstacles or natural features?	X		X	X	Area engineer; site visit
Do school buses or emergency vehicles use the bridge?	X			X	Area office engineer
How long is a detour route around the bridge?					BID; roadway maps

**Access to surrounding properties**

<b>Question</b>	<b>HBT Report</b>	<b>Condition Evaluation</b>	<b>Bridge Inspection Reports</b>	<b>TxDOT Engineering PM</b>	<b>Other</b>
How has access to surrounding properties been limited or blocked?	X			X	Area office engineer; traffic engineer
What properties have limited or no access due to the presence of the bridge?	X				Site visit
Have properties always had limited or blocked access?					Historical maps and/or historical aerial photographs
Do travelers ignore traffic rules to access the properties?	X				Site visit; area office engineer; traffic engineer; accident statistics, if available
Have accidents occurred due to limited or no access to surrounding properties? If so, how many and in what time period?	X			X	Area office engineer, traffic engineer, accident statistics, if available
Can emergency vehicles access the properties?				X	Area office engineer; traffic engineer; site visit

**At least one of the approaches has a curve that is too sharp**

<b>Question</b>	<b>HBT Report</b>	<b>Condition Evaluation</b>	<b>Bridge Inspection Reports</b>	<b>TxDOT Engineering PM</b>	<b>Other</b>
What issues/problems does the sharp curve cause for vehicles using the bridge?	X			X	Area office engineer; traffic engineer
Has the sharp curve caused accidents at/near the bridge? If so, how many and in what time period?	X			X	Area office engineer; traffic engineer; accident statistics, if available
What type of vehicles cannot use the bridge due to the roadway curvature?	X			X	Area office engineer; site visit (If needed, determine what types of vehicles use road based on surrounding property types, land uses); local traffic data, if available

**At least one of the approaches has a curve that is too sharp**

<b>Question</b>	<b>HBT Report</b>	<b>Condition Evaluation</b>	<b>Bridge Inspection Reports</b>	<b>TxDOT Engineering PM</b>	<b>Other</b>
Do emergency vehicles and school buses avoid using the bridge? If so, what impact does this have on surrounding properties?	X			X	Area office engineer; traffic engineer
Are there properties that have limited or no access due to sharp curve? If so, which ones?	X			X	Area office engineer; site visit
Is realignment of road required?	X			X	Roadway engineer

**What type of illustrations should be included to demonstrate need for the project?**

The need for the project should be demonstrated with photographs, maps, and typical sections if possible. Not only do photographs and maps supplement the justification and need for the project, they also provide the lay reader a visual understanding of the problems at hand. Illustrations and photographs should be included in exhibits at the end of the Programmatic Section 4(f) Evaluation document, as illustrated in the Sample Outline (Appendix A).

Type of need	Illustrations to help demonstrate need
<b>All needs</b>	Map illustrating detour route around the existing bridge
<b>Structural deficiencies</b>	Photographs of deteriorated or damaged elements of the bridge



Upstream side of bridge showing exposed rebar

---

**Type of need**

**Illustrations to help demonstrate need**

---

Hydraulic problems causing scour and/or substructure deterioration

Photographs of scour and/or substructure deterioration



Piers collect debris causing damage to bents and channel flow is causing north abutment to rotate

---

Load capacity

Photographs of vehicles using bridge that exceed posted load, if available

Photographs showing specific bridge members/elements that cause low load capacity, if applicable



Overweight truck using the load-posted bridge

---

***Functional inadequacies***

---

Bridge poses horizontal clearance restrictions

Photographs of damaged bridge members caused by wide loads, if available

Photographs showing the width of the road in relation to the width of the bridge



Impact damage shown on downstream vertical member

---

**Type of need**

**Illustrations to help demonstrate need**

---

Bridge is narrower than the roadway

Typical sections of existing roadway and existing bridge

Aerial photographic maps or photographs showing the disparity between the roadway and bridge width

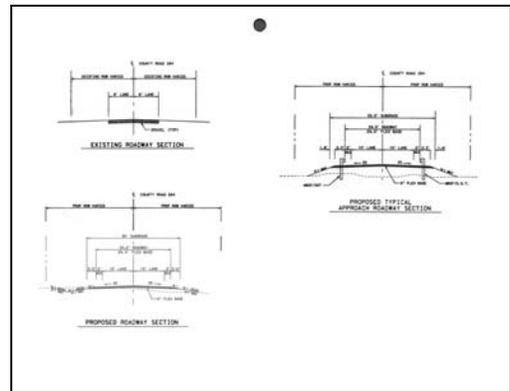


Looking east towards bridge showing taper of shoulders

---

Roadway is being upgraded and bridge is too narrow for the upgraded facility

Typical section of proposed roadway and typical section of existing bridge



Typical section showing difference in width between the existing bridge and proposed new roadway

---

Bridge poses vertical clearance restrictions

Photographs showing the elements that cause the vertical clearance restrictions

Photographs of damaged bridge members caused by vehicles that were too tall, if available



Impact damage at east portal

Type of need	Illustrations to help demonstrate need	
Water overtops bridge deck during high water events, requiring periodic closure of the bridge	Photographs of water overtopping bridge deck, if possible	
Bridge acts as a dam in high flood events and floods properties upstream	Photographs of bridge acting as a dam during a high flood event, if possible  Topographic map or aerial photograph illustrating water flow during high water events with the bridge in place, if available	
<b>Geometric deficiencies</b>		
Poor line of sight approaching the bridge	Photographs illustrating the poor line of sight	

Water overtopping bridge deck during high flood event

Bridge causing flooding during high-water event  
(Photo Credit: Tim Talley and Clifton Aero)

Oncoming traffic using one-lane bridge not visible

Type of need	Illustrations to help demonstrate need
--------------	--

Access to surrounding properties is limited or blocked

Photographs or labeled aerial maps showing relationship between the bridge and the properties that have limited or no access



Access across the river is limited for area businesses and homes

At one of the approaches, the curve is too sharp

Photographs or labeled aerial maps illustrating the turning radius



Curve in foreground and background are too sharp for school buses and emergency vehicles to use bridge

***How should the purpose of the project be stated?***

The purpose is the objective of the proposed action and it should state what the proposed action would accomplish. The purpose should always reference how the project will improve transportation along a roadway or corridor, which can often be stated in one or two sentences. An example of a Purpose and Need Statement is included in Appendix B.

***Is the purpose and need statement the same for a Programmatic Section 4(f) Evaluation as it is for NEPA document?***

The purpose and need statement in the Programmatic Section 4(f) Evaluation should be consistent with the purpose and need set forth in the NEPA document. Although the statements should address the same basic issues, the purpose and need statement in the Programmatic Section 4(f) Evaluation needs to be more descriptive and explanatory than the purpose and need statement that appears in the NEPA document.

## Alternatives Analysis

### ***What is the purpose of the Alternatives Analysis section?***

It is the intent of the Section 4(f) statute to avoid the use of historic sites, including historic bridges, as part of a proposed action unless there is no feasible and prudent alternative to that use. Therefore, the alternatives analysis evaluates each alternative to determine if there is a feasible and prudent alternative that avoids the use of a historic bridge. If a feasible and prudent alternative is identified that avoids the use of a historic bridge, that alternative must be chosen (see page 40 for a list of avoidance alternatives that must be considered). If no avoidance alternative is determined to be feasible and prudent, then an alternative that uses the historic bridge, while posing the least harm to the historic bridge, may be chosen.

As a result, the alternatives analysis must prove why each alternative is or is not feasible and prudent, and it should document the justification for the decision to proceed with the selected alternative. As in the purpose and need section, it is very important to document all aspects of engineering assessments and decisions, and to provide these in non-technical terms as much as possible for the lay reader.

### ***What are avoidance alternatives?***

Avoidance alternatives are those alternatives that do NOT cause a Section 4(f) use to the bridge. See page 2 for more information about what constitutes a “use” of a historic bridge.

### ***What are use alternatives?***

Use alternatives are those which cause a Section 4(f) use to the historic bridge. See page 2 for more information about what constitutes a “use” of a historic bridge.

## **Section 4(f) Feasible and Prudent Criteria for Avoidance Alternatives**

### ***What is a feasible and prudent avoidance alternative?***

Federal regulations define a feasible and prudent avoidance alternative “as one that avoids using a Section 4(f) property and does not cause other severe problems of a magnitude that substantially outweighs the importance of protecting the Section 4(f) property” (23 CFR 774.17).

Applying the criteria for a feasible and prudent avoidance alternative is a subjective process; however, it is critical to the Historic Bridge Programmatic Section 4(f) Evaluation that the alternatives analysis process is fully documented with supporting evidence. A comparison of current conditions to expected conditions under each avoidance alternative should be used when applying the feasible and prudent criteria. Furthermore, quantifying information included in the alternatives analysis will support the comparison. For example, providing the costs associated with alternatives will help inform a direct comparison of alternatives.

According to FHWA guidance, the use of the Section 4(f) property is to be balanced against competing factors, with a “thumb on the scale” in favor of preserving the Section 4(f) property.

The FHWA makes the ultimate decision on whether or not an avoidance alternative is feasible and prudent with the measurable evidence used to justify and support the alternatives analysis.

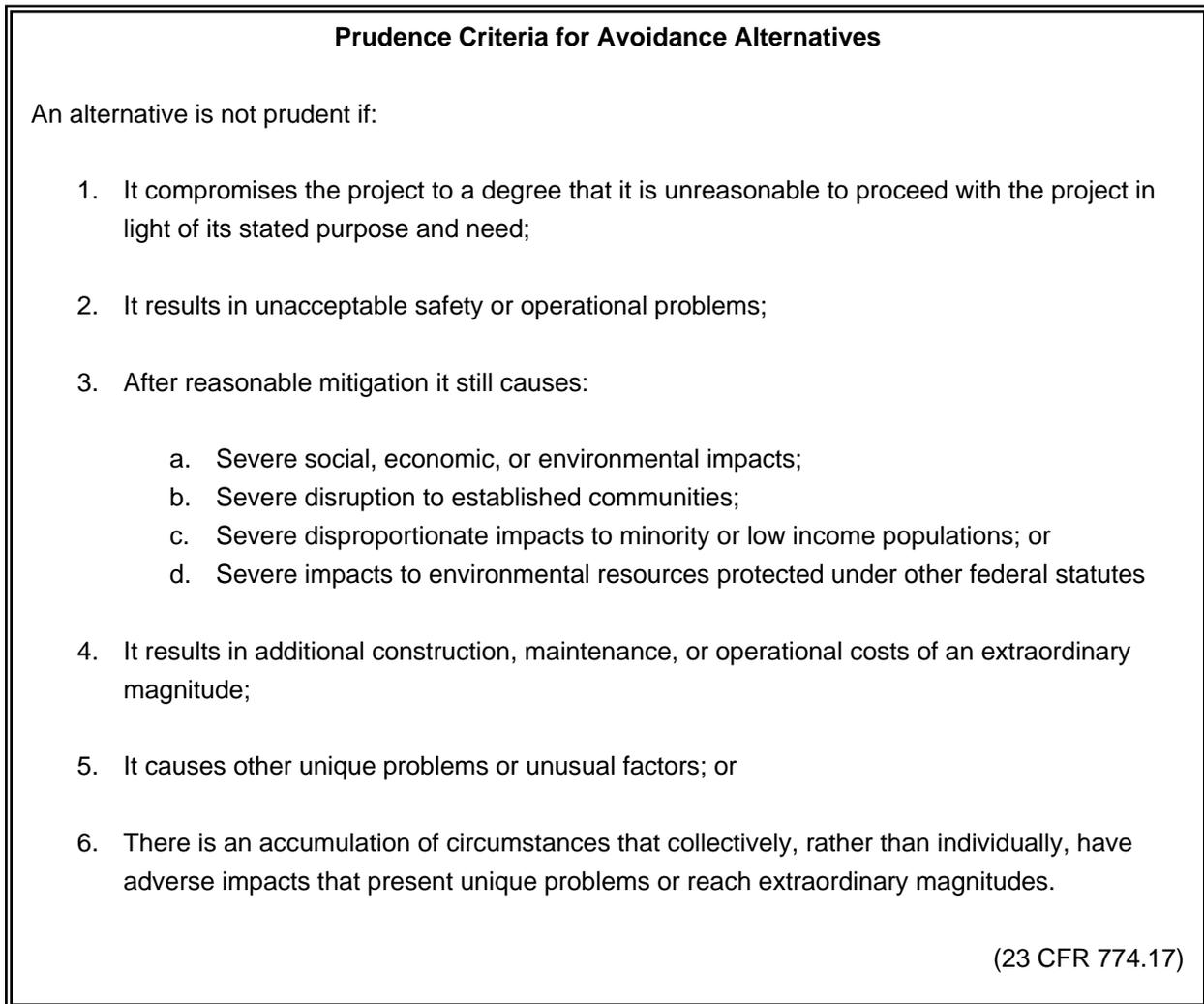
***What is the criterion for a feasible avoidance alternative?***

A feasible alternative is one that is possible to design and build using sound engineering judgment.

***How is an avoidance alternative determined to be prudent or not?***

Figure 3 provides the prudence criteria for avoidance alternatives:

**Figure 3**



Although not an inclusive list of examples, the FHWA's *Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges* provides a number of circumstances where an avoidance alternative would not be prudent:

- Current structure is built at the only feasible and prudent site, and building a new structure would pose extraordinary bridge and approach engineering and construction difficulty

- Extensive severing of productive farmlands
- Displacement of a significant number of families or businesses
- Serious disruption of established travel patterns
- Access and damage to wetlands
- Significantly increased roadway and structure costs
- Serious foundation problems
- Extreme difficulty in reaching the new site with construction equipment
- Lack of ability to achieve minimum design standards or meet requirements of various permitting agencies

Additionally, AASHTO's *Guidelines for Historic Bridge Rehabilitation and Replacement* provide instruction and examples for determining whether the avoidance alternative results in additional construction, maintenance, or operation costs of an extraordinary magnitude. The *Guidelines for Historic Bridge Rehabilitation and Replacement* also provide guidance to determine if a bridge is so structurally or geometrically deficient that it cannot be rehabilitated to meet acceptable load requirements without affecting the bridge's historic integrity.

***What alternatives must be considered?***

In accordance with FHWA guidance, Historic Bridge Programmatic Section 4(f) Evaluations must consider and fully discuss three avoidance alternatives: no build, bypass, and rehabilitation that does not affect the bridge's historic integrity. TxDOT explores variations within these alternatives to show that they have been fully considered. Therefore, the alternatives that must be considered are:

1. No build alternative – do nothing, which involves no expenditure of federal funding.
  
2. Bypass alternative – build a new structure at a different location without affecting the character-defining features and historic integrity of the existing historic bridge, as determined by NHPA Section 106 procedures. This alternative may require that the historic bridge be left in place as a monument. There are two ways in which a historic bridge can be bypassed:
  - A. Construct new bridge on same road
  - B. Upgrade nearby parallel roadways<sup>5</sup>
  
3. Rehabilitation (avoidance) alternative – rehabilitate the historic bridge without affecting the character-defining features and historic integrity of the structure, as determined by NHPA Section 106 procedures. The following rehabilitation alternatives should be considered:
  - A. Continued vehicular use carrying two-way traffic
  - B. Continued vehicular use as one-way pair
  - C. Pedestrian use

While the order in which the alternatives are presented does not matter, the FHWA puts particular emphasis on the rehabilitation (avoidance) alternative since it considers long-term preservation of the

---

<sup>5</sup> If parallel roadways can already sufficiently carry the vehicles that the historic bridge cannot, this alternative does not need to be included in the alternatives analysis.

historic bridge. Discussions regarding the feasibility and prudence of this alternative should be thoroughly described and detailed. If information regarding this alternative has not been fully explored and discussed in the HBT, a re-examination of the alternative may need to be completed.

As noted on page 1, the purpose of the Section 4(f) alternatives analysis is to determine if there is a feasible and prudent avoidance alternative. If an avoidance alternative is determined to be feasible and prudent, that alternative must be chosen; however, if no avoidance alternative is determined to be feasible and prudent, the alternatives analysis may include feasible and prudent alternatives that call for a use of the bridge. While it is not required by the FHWA, Historic Bridge Programmatic Section 4(f) Evaluations can include the discussion of more than one use alternative. The most common use alternatives are as follows:

- Rehabilitation (use) alternative – rehabilitate the historic bridge while affecting the historic integrity of the historic bridge, as determined by NHPA Section 106 procedures

OR

- Replacement – replace existing bridge with a new bridge at the same or nearby location.

***What if there is no feasible and prudent avoidance alternative?***

If the Programmatic Section 4(f) Evaluation concludes there is no feasible and prudent avoidance alternative from among the remaining alternatives that uses the historic bridge, then the only feasible and prudent use alternative that causes the least overall harm to the historic bridge can be recommended.

***How is “least overall harm” determined?***

According to 23 CFR 774.3, least overall harm is determined by balancing the following factors:

1. The relative significance of each Section 4(f) property
2. The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property)
3. The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection
4. The views of the official(s) with jurisdiction over each Section 4(f) property (Texas SHPO is the official with jurisdiction for historic bridges)
5. The degree to which each alternative meets the purpose and need for the project
6. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f)
7. Substantial differences in costs among the alternatives.

***How is the discussion of each alternative laid out?***

It is recommended that the discussion of each alternative be divided into three parts: the description of the alternative, the implications of the alternative in light of the established need for the project, and a recommendation of whether the alternative is feasible and prudent. First, the description of the alternative should include detailed information regarding the alternative, including the amount of right-of-way and temporary and permanent easements (in acres) required for the alternative. It should also state if the alternative poses a use to the historic bridge.

The second part of the alternative analysis should explain how the alternative does or does not correct the problems presented in the purpose and need statement. It is suggested that this discussion be subdivided by *Structural Deficiencies*, *Functional Inadequacies*, and *Geometric Deficiencies*.

Remember, only the applicable subheadings are used for the specific bridge's issues. For example, if a bridge only has structural deficiencies and functional inadequacies, do not include a discussion of how the alternative does or does not correct geometric deficiencies.

See Appendix A for the sample outline of a Historic Bridge Programmatic Section 4(f) Evaluation.

Lastly, each alternative should include a summary, which outlines the itemized costs of the alternative and describes why the alternative is recommended or is not recommended as feasible and prudent. See page 38 for guidance on how to determine if an alternative is feasible and prudent.

## 1. No Build Alternative

The no build alternative should begin by stating that this alternative means that no federal funds will be expended and that the proposed action would not occur. It should be noted that the no build alternative is an avoidance alternative since it would not use the historic bridge. The evaluation should consider all consequences of proceeding with the no build alternative to determine if it is feasible and prudent.

The author should rely heavily on the need that was set forth for the proposed action. The no build alternative should include much of the information presented in the purpose and need statement.

The following list outlines the type of details that should be included in the analysis of the no build alternative, the questions the author should ask, and the sources that may have the answers to these questions.

Each project has unique circumstances and existing conditions; therefore, the questions below are sample questions to ascertain the type of information that should be included for most projects. However, additional issues may need to be addressed to adequately investigate the no build alternative.

### 1. No Build Alternative

Information to be included	Questions to ask	Source
Needs as identified in the purpose and need statement explained in detail	---	Purpose and need statement
Short term and long term implications of performing routine maintenance	Who will perform maintenance on the bridge?  Can the bridge remain open in the short term if routine maintenance is performed?  Can the bridge remain open in the long term if routine maintenance is performed?  Will maintaining the bridge in its current state pose safety issues to the traveling public?  What is the cost of routine maintenance?	Purpose and need statement, HBT report, condition assessment, engineering project manager
Detour route around bridge	If detour route must be used, how long is it?  How will detour route impact the traveling public?  Will school buses or emergency vehicles have to use the detour route?  What impacts will detour route have to residents near the bridge?	Purpose and need statement

Once the questions above are answered, outline how the needs of the project (as stated in the purpose and need statement) will or will not be addressed by this alternative. Remember, the argument should always relate back to the established purpose and need statement.

## **2. Bypass Alternatives**

Bypass alternatives should also be considered as part of the alternatives analysis since they avoid the use of the historic bridge. There are two ways in which the historic bridge can be bypassed:

- A. Constructing a new bridge on a new alignment and leaving the existing bridge in place
- B. Upgrading nearby parallel roadways, diverting select traffic onto parallel roadways, and leaving the historic bridge in continued two-way vehicular use

### **2A. Bypass Alternative - Constructing a New Bridge on a New Alignment**

This alternative involves the construction of a new bridge adjacent to the historic bridge. Discussion of this bypass alternative should begin by stating that this alternative is an avoidance alternative since it would not use the historic bridge. The description of this alternative should include detailed information regarding the placement of the new bridge in relation to the existing bridge, the appearance of the new bridge, issues with hydraulics and water flow with the existing and new bridge in place, the amount of right-of-way required, information regarding the future maintenance of the historic bridge, and the cost of the alternative.

The following list outlines the type of details that should be included in the analysis of this alternative, the questions the author should ask, and the sources that may have the answers to these questions.

Each project has unique circumstances and existing conditions; therefore, the questions below are sample questions to ascertain the type of information that should be included for most projects. However, additional issues may need to be addressed to adequately investigate this alternative.

## 2A. Bypass Alternative - Constructing a New Bridge on a New Alignment

Information to be included	Questions to ask	Source
Location of new bridge	<p>Where exactly will the new bridge be in relation to the existing bridge?</p> <p>Will the new bridge be upstream or downstream from the existing bridge?</p> <p>Why does the new bridge have to be located on the selected side of the historic bridge?</p> <p>How many feet upstream or downstream will the new bridge be from the existing bridge?</p> <p>What hydraulic or safety issues dictate that the new bridge is put on the upstream or downstream side of the historic bridge?</p> <p>What other environmental resources would be impacted if the new bridge is put on the upstream or downstream side of the historic bridge?</p> <p>What roadway work will have to be included in the project to accommodate the new bridge or to meet TxDOT standards?</p>	HBT report; schematics of the alternative; engineering project manager; District environmental staff; ENV Project Management staff
Appearance of the new bridge	<p>What type of structure will the new bridge be?</p> <p>Will the new bridge change the setting of the existing bridge?</p>	Engineering project manager
Hydraulic issues	<p>How will the new and existing bridge impact the hydraulics in the waterway?</p> <p>How will the new and existing bridge impact flow rate, velocity, water level, and vorticity?</p> <p>If the new bridge is upstream from the existing bridge, will it change water flow in the channel and pose potential impacts to the existing bridge?</p>	HBT report; hydraulic analysis; engineering project manager, hydraulic engineer
New right-of-way for new alignment	<p>What is the amount (in acres) of new right-of-way required for this alternative?</p>	HBT report; engineering project manager; right-of-way agent
Other Section 4(f) resources	<p>Will the new alignment pose a use of any other Section 4(f) properties?</p>	District environmental staff; ENV Project Management staff

## 2A. Bypass Alternative - Constructing a New Bridge on a New Alignment

Information to be included	Questions to ask	Source
Maintenance of the existing bridge	<p>What will happen to the existing bridge?</p> <p>If the existing bridge will be left in place as a monument, how will the bridge be maintained?</p> <p>What is the cost of such maintenance?</p> <p>Who will maintain the structure?</p> <p>Who will be the parties to the two- or three-party agreement ensuring the future maintenance of the bridge if it is an off-system structure?</p>	HBT report; engineering project manager
Cost of the alternative	<p>What is the approximate cost of the new right-of-way? What is the basis for this estimate?</p> <p>What is the approximate cost for the new bridge?</p> <p>What is the approximate cost for the roadway work?</p> <p>What is the total cost of this bypass alternative, including mobilization, engineering, and contingencies? What is the breakdown of total costs?</p>	HBT report; engineering project manager

Once the questions above are answered, outline how the needs of the project (as stated in the purpose and need statement) will or will not be addressed by this alternative. Remember, the argument should always relate back to the established purpose and need statement.

### 2B. Bypass Alternative - Upgrading Nearby Parallel Roadways

This alternative involves upgrading nearby parallel roadways, diverting select traffic onto these roadways, and maintaining the historic bridge as a two-way vehicular bridge. The vehicles that should be diverted off the historic bridge are those that are too heavy, wide, or tall for the historic bridge as identified in the purpose and need statement. *If parallel roadways can already sufficiently carry the vehicles that the historic bridge cannot, and the parallel roadways do not require an upgrade to do so, this alternative does not need to be included in the alternatives analysis.*

Discussion of this bypass alternative should begin by stating that this alternative is an avoidance alternative since it does not call for a use of the historic bridge. The document should clearly outline the details of this alternative by describing the location of the parallel roadways; work involved in the upgrading of parallel roadways; the future maintenance of the historic bridge; implications of detouring

school buses, emergency vehicles, and traveling public onto parallel roadways; and the cost of the alternative.

The following list outlines the type of details that should be included in the analysis of this alternative, the questions the author should ask, and the sources that may have the answers to these questions.

Each project has unique circumstances and existing conditions; therefore, the questions below are sample questions to ascertain the type of information that should be included for most projects. However, additional issues may need to be addressed to adequately investigate this alternative.

### **2B. Bypass Alternative - Upgrade Nearby Parallel Roadways**

<b>Information to be included</b>	<b>Questions to ask</b>	<b>Source</b>
Maintenance of the existing bridge	<p>Will routine maintenance be sufficient for any identified structural deficiencies?</p> <p>What will happen if vehicles that are too heavy, wide, or tall still use the historic bridge after parallel roadways are upgraded?</p> <p>What measures will be taken to keep vehicles that are too heavy, wide, or tall from using the bridge?</p>	HBT report; engineering project manager
Location of nearby roadways	<p>Which nearby parallel roadways can be upgraded to handle the existing and projected traffic that currently uses the historic bridge?</p> <p>How far would the traveling public have to go on these roadways?</p>	HBT report; schematics of the alternative; engineering project manager
Upgrading the parallel roadways	<p>What work is involved in upgrading the parallel roadways to prepare them for traffic using the existing bridge?</p> <p>Will bridges on parallel roadways have to be replaced to upgrade these roads?</p> <p>Will roads have to be paved or widened?</p> <p>Is new right-of-way required on parallel roadway? If so, what is the amount of new right-of-way (in acres) required?</p>	HBT report; engineering project manager
School bus and emergency vehicle use of parallel roadways	What implications, including school bus and emergency vehicle access, does closing the bridge to vehicular traffic pose to residents near the bridge?	Purpose and need statement; HBT report; engineering project manager
Other Section 4(f) resources	Will upgrading nearby parallel roads pose a use to other Section 4(f) resources?	District environmental staff; ENV Project Management staff

## 2B. Bypass Alternative - Upgrade Nearby Parallel Roadways

Information to be included	Questions to ask	Source
Cost of the alternative	<p>What are the approximate maintenance costs for the historic bridge?</p> <p>What is the approximate cost of upgrading the parallel roadways?</p> <p>If applicable, what is the cost of replacing bridge(s) on parallel roadways?</p> <p>If applicable, what is the approximate cost of the new right-of-way?</p> <p>What is the total cost of this bypass alternative, including mobilization, engineering, and contingencies? What is the breakdown of total costs?</p>	HBT report; engineering project manager

Once the questions above are answered, outline how the needs of the project (as stated in the purpose and need statement) will or will not be addressed by this alternative. Remember, the argument should always relate back to the established purpose and need statement.

### 3. Rehabilitation (Avoidance) Alternatives

Rehabilitation alternatives that do **not** affect the historic integrity of the historic bridge must be considered as part of the alternatives analysis. Remember that according to FHWA guidance, if the historic integrity of the bridge is not affected, there is no use of that historic bridge. The historic integrity of a bridge is not affected when the character-defining features of the bridge are maintained and the *Secretary of the Interior (SOI) Standards for Rehabilitation* have been followed. Determining if the rehabilitation alternative affects the bridge's historic integrity is done in consultation between TxDOT, the FHWA, and the Texas SHPO under the National Historic Preservation Act.

The Rehabilitation (avoidance) alternatives are the most desirable alternative for the long-term preservation of the historic bridge. Since the FHWA and the Texas SHPO review information for this alternative very carefully, discussions regarding such alternatives should be thorough.

AASHTO's *Guidelines for Historic Bridge Rehabilitation and Replacement* provide procedures for defining when rehabilitation of a historic bridge is feasible and prudent based on engineering data and analysis. Since the *Guidelines for Historic Bridge Rehabilitation and Replacement* provide detailed information regarding rehabilitation of historic structures, it should be utilized by the Historic Bridge Team and the Engineering Project Manager when assessing the rehabilitation alternatives.

Three rehabilitation (avoidance) alternatives should be considered as part of Historic Bridge Programmatic Section 4(f) Evaluations:

- A. Rehabilitation (avoidance) alternative – continued vehicular use carrying two-way traffic
- B. Rehabilitation (avoidance) alternative – continued vehicular use as part of a one-way pair
- C. Rehabilitation (avoidance) alternative – pedestrian use

**3A. Rehabilitation (Avoidance) Alternative - Continued Vehicular Use Carrying Two-Way Traffic**

Discussion of this rehabilitation alternative should begin by stating that this alternative is an avoidance alternative since it does not call for a use of the historic bridge. The document should describe the members or elements that are in need of replacement or repair, the materials and construction techniques that will be used in the rehabilitation, the bridge’s load capacity before and after the rehabilitation, how the bridge will serve traffic following the rehabilitation, how the rehabilitation does not affect the historic integrity of the bridge, and the cost of the alternative.

The following list outlines the type of details that should be included in the analysis of this alternative, the questions the author should ask, and the sources that may have the answers to these questions. Please note that each project has unique circumstances and existing conditions; therefore, the questions below are sample questions to ascertain the type of information that should be included for most projects. However, additional issues may need to be addressed to adequately investigate this alternative.

**3A. Rehabilitation (Avoidance) Alternative - Continued Vehicular Use Carrying Two-Way Traffic**

Information to be included	Questions to ask	Source
Members/elements in need of replacement or repair	<p>What are the superstructure or substructure members/elements that need to be repaired or replaced?</p> <p>Why do they need to be repaired or replaced?</p> <p>Are there TxDOT standards that require that the superstructure or substructure members/elements need to be repaired or replaced? If so, what are they?</p> <p>Does the railing need to be replaced or repaired? How would the railing be repaired? Why does the railing need to be replaced?</p> <p>Is there a TxDOT standard that requires the repair or replacement of the railing?</p> <p>Are there alternatives to the standard railing design that could be used?</p>	Purpose and need

### 3A. Rehabilitation (Avoidance) Alternative - Continued Vehicular Use Carrying Two-Way Traffic

Information to be included	Questions to ask	Source
Materials and construction techniques	<p>Is it possible to replace deteriorated, cracked, or failed members, connection types, or other elements in kind?</p> <p>What types of repairs are necessary for these members, connection types, and elements?</p> <p>Can deteriorated, cracked, or failed members be repaired with additional materials bolted to it?</p> <p>If rivets have to be replaced, can they be replaced with rivets or dome-headed bolts?</p> <p>If concrete has to be repaired, how would the repairs be accomplished? Would the concrete be patched or reconstructed, or would another method be used?</p> <p>Does the bridge have to be lifted off the substructure? What is the lifting plan for the bridge?</p> <p>If bridge's superstructure and/or substructure need cleaning, how will they be cleaned?</p> <p>Does the bridge need to be painted? What color would the bridge be painted? How does the proposed color compare to the historic color?</p>	HBT report; engineering project manager
Bridge's load capacity and strength	<p>What is the AASHTO design standard for load capacity for the roadway type on which the project is located?</p> <p>Will the bridge's load capacity be raised to the minimum AASHTO design standard? If not, can a design exception be granted?</p>	HBT report, engineering project manager
Traffic needs	<p>Can the bridge safely handle two-way traffic after rehabilitation?</p> <p>Will school buses and emergency vehicles be able to use the bridge after rehabilitation?</p>	HBT report, engineering project manager

### 3A. Rehabilitation (Avoidance) Alternative - Continued Vehicular Use Carrying Two-Way Traffic

Information to be included	Questions to ask	Source
Historic integrity of the bridge	Will this rehabilitation alternative call for the retention of the bridge's character-defining features? If so, which features?  How does this rehabilitation alternative follow the <i>SOI Standards</i> ?	ENV Historical Studies staff
Cost of the alternative	What is the approximate cost for the rehabilitation work?  What is the cost of cleaning and painting the bridge, if applicable?  What is the total cost of this rehabilitation alternative, including mobilization, engineering, and contingencies? What is the breakdown of the total cost?	HBT report; engineering project manager

Once the questions above are answered, outline how the needs of the project (as stated in the purpose and need statement) will or will not be addressed by this alternative. Remember, the argument should always relate back to the established purpose and need statement.

### 3B. Rehabilitation (Avoidance) Alternative – Continued Vehicular Use as a One-Way Pair

Discussion of this rehabilitation alternative should begin by stating that this alternative is an avoidance alternative since it does not call for a use of the historic bridge. In addition to many of the same issues that are addressed in Alternative 3A, which can be incorporated into the discussion by reference, the analysis of this alternative should include details regarding the new bridge and its appearance, location, and potential impacts to the historic bridge. Additionally, this alternative must outline how much new right-of-way will be required, how much it costs, and how such cost estimates were established.

The following list outlines the type of details that should be included in the analysis of this alternative, the questions the author should ask, and the sources that may have the answers to these questions.

Each project has unique circumstances and existing conditions. Therefore, the questions below are sample questions to ascertain the type of information that should be included for most projects. However, additional issues may need to be addressed to adequately investigate this alternative.

**3B. Rehabilitation (Avoidance) Alternative - Continued Vehicular Use as a One-Way Pair**

<b>Information to be included</b>	<b>Questions to ask</b>	<b>Source</b>
Members/elements in need of replacement or repair	<p>What are the superstructure or substructure members/elements that need to be repaired or replaced?</p> <p>Why do they need to be repaired or replaced?</p> <p>Are there TxDOT standards that require that the superstructure or substructure members/elements need to be repaired or replaced? If so, what are they?</p> <p>Does the railing need to be replaced or repaired? How would the railing be repaired? Why does the railing need to be replaced?</p> <p>Is there a TxDOT standard that requires the repair or replacement of the railing?</p> <p>Are there alternatives to the standard railing design that could be used?</p>	Purpose and need

### 3B. Rehabilitation (Avoidance) Alternative - Continued Vehicular Use as a One-Way Pair

Information to be included	Questions to ask	Source
Materials and construction techniques	<p>Is it possible to replace deteriorated, cracked, or failed members, connection types, or other elements in kind?</p> <p>What types of repairs are necessary for these members, connection types, and elements?</p> <p>Can deteriorated, cracked, or failed members be repaired with additional materials bolted to it?</p> <p>If rivets have to be replaced, can they be replaced with rivets or dome-headed bolts?</p> <p>If concrete has to be repaired, how would the repairs be accomplished? Would the concrete be patched or reconstructed, or would another method be used?</p> <p>Does the bridge have to be lifted off the substructure? What is the lifting plan for the bridge?</p> <p>If bridge's superstructure and/or substructure need cleaning, how will they be cleaned?</p> <p>Does the bridge need to be painted? What color would the bridge be painted? How does the proposed color compare to the historic color?</p>	HBT report; engineering project manager
Bridge's load capacity and strength	<p>What is the AASHTO design standard for load capacity for the roadway type on which the project is located?</p> <p>Will the bridge's load capacity be raised to the minimum AASHTO design standard? If not, can a design exception be granted?</p> <p>Will school buses and emergency vehicles be able to use the bridge after rehabilitation?</p>	HBT report; engineering project manager

### 3B. Rehabilitation (Avoidance) Alternative - Continued Vehicular Use as a One-Way Pair

Information to be included	Questions to ask	Source
Location of new bridge	<p>Where exactly will the new bridge be in relation to the existing bridge?</p> <p>Will the new bridge be upstream or downstream from the existing bridge?</p> <p>What hydraulic or safety issues dictate that the new bridge is put on the upstream or downstream side of the historic bridge?</p> <p>What other environmental resources would be impacted if the new bridge is put on the upstream or downstream side of the historic bridge?</p> <p>How many feet upstream or downstream will the new bridge be from the existing bridge?</p> <p>What roadway work will have to be included in the project to accommodate the new bridge or to meet TxDOT standards?</p>	HBT report; schematics of the alternative; engineering project manager
Appearance of the new bridge	<p>What type of structure will the new bridge be?</p> <p>Will the new bridge change the setting of the existing bridge?</p>	Engineering project manager
Hydraulic issues	<p>How will the new and existing bridges impact the hydraulics on the waterway?</p> <p>How will the new and existing bridges impact flow rate, velocity, water level, and vorticity?</p> <p>If the new bridge is upstream from the existing bridge, will it change water flow in the channel and pose potential impacts to the existing bridge?</p>	HBT report; hydraulic analysis; engineering project manager; hydraulic engineer
New right-of-way for new bridge	What is the amount of new right-of-way (in acres) required for the construction of the new bridge?	HBT report; engineering project manager; right-of-way agent
Other Section 4(f) resources	Will the new alignment pose a use of any other Section 4(f) properties?	District environmental staff; ENV Project Management staff
Historic integrity of the bridge	<p>Will this rehabilitation alternative call for the retention of the bridge's character-defining features? If so, which features?</p> <p>Does this rehabilitation alternative follow the <i>SOI Standards</i>?</p>	ENV Historical Studies staff

### 3B. Rehabilitation (Avoidance) Alternative - Continued Vehicular Use as a One-Way Pair

Information to be included	Questions to ask	Source
Cost of the alternative	<p>What is the approximate cost for the rehabilitation work?</p> <p>What is the approximate cost of the new structure?</p> <p>What is the approximate cost for the roadway work?</p> <p>What is the approximate cost of the new right-of-way? What is the cost estimate based upon?</p> <p>What is the approximate cost of cleaning and painting the bridge, if applicable?</p> <p>What is the total cost of this rehabilitation alternative, including mobilization, engineering, and contingencies? What is the breakdown of total cost?</p>	HBT report; engineering project manager

Once the questions above are answered, outline how the needs of the project (as stated in the purpose and need statement) will or will not be addressed by this alternative. Remember, the argument should always relate back to the established purpose and need statement.

### 3C. Rehabilitation (Avoidance) Alternative – Pedestrian Use

Discussion of this rehabilitation alternative should begin by stating that this alternative is an avoidance alternative since it does not call for a use of the historic bridge. Since this alternative calls for the rehabilitation of the historic bridge and the construction of a new bridge, many of the same issues that are covered by Alternative 3B must also be included or referenced in the analysis of this alternative. It is important to note that load capacity and safety requirements for pedestrian bridges are not the same as vehicular bridges. As a result, additional information regarding pedestrian load ratings and railings should be included in the discussion of this alternative.

The following list outlines the type of details that should be included in the analysis of this alternative, the questions the author should ask, and the sources that may have the answers to these questions. Please note that each project has unique circumstances and existing conditions; therefore, the questions below are sample questions to ascertain the type of information that should be included for most projects. However, additional issues may need to be addressed to adequately investigate this alternative.

### 3C. Rehabilitation (Avoidance) Alternative - Pedestrian Use

Information to be included	Questions to ask	Source
Members/elements in need of replacement or repair	<p>What are the superstructure or substructure members/elements that need to be repaired or replaced?</p> <p>Why do they need to be repaired or replaced?</p> <p>Are there TxDOT standards that require that the superstructure or substructure members/elements need to be repaired or replaced? If so, what are they?</p> <p>Does the railing need to be replaced or repaired? How would the railing be repaired? Why does the railing need to be replaced?</p> <p>Is there a TxDOT standard that requires the repair or replacement of the railing?</p> <p>Are there alternatives to the standard railing design that could be used?</p>	Purpose and need

### 3C. Rehabilitation (Avoidance) Alternative - Pedestrian Use

Information to be included	Questions to ask	Source
Materials and construction techniques	<p>Is it possible to replace deteriorated, cracked, or failed members, connection types, or other elements in kind?</p> <p>What types of repairs are necessary for these members, connection types, and elements?</p> <p>Can deteriorated, cracked, or failed members be repaired with additional materials bolted to it?</p> <p>If rivets have to be replaced, can they be replaced with rivets or dome-headed bolts?</p> <p>If concrete has to be repaired, how would the repairs be accomplished? Would the concrete be patched or reconstructed, or would another method be used?</p> <p>Does the bridge have to be lifted off the substructure? What is the lifting plan for the bridge?</p> <p>If bridge's superstructure and/or substructure needs cleaning, how will they be cleaned?</p> <p>Does the bridge need to be painted? What color would the bridge be painted? How does the proposed color compare to the historic color?</p>	HBT report; engineering project manager

### 3C. Rehabilitation (Avoidance) Alternative - Pedestrian Use

Information to be included	Questions to ask	Source
Location of new bridge	<p>Where exactly will the new bridge be in relation to the existing bridge?</p> <p>Will the new bridge be upstream or downstream from the existing bridge?</p> <p>What hydraulic or safety issues dictate that the new bridge is put on the upstream or downstream side of the historic bridge?</p> <p>What other environmental resources would be impacted if the new bridge is put on the upstream or downstream side of the historic bridge?</p> <p>How many feet upstream or downstream will the new bridge be from the existing bridge?</p> <p>What roadway work will have to be included in the project to accommodate the new bridge or to meet TxDOT standards?</p>	HBT report; schematics of the alternative; engineering project manager
Appearance of the new bridge	<p>What type of structure will the new bridge be?</p> <p>Will the new bridge change the setting of the existing bridge?</p>	Engineering project manager
Hydraulic issues	<p>How will the new and existing bridge in place impact the hydraulics on the waterway?</p> <p>How will the new and existing bridge impact flow rate, velocity, water level, and vorticity?</p> <p>If the new bridge is upstream from the existing bridge, will it change water flow in the channel and pose potential impacts to the existing bridge?</p>	HBT report; hydraulic analysis; engineering project manager; hydraulic engineer
New right-of-way for new bridge	<p>What is the amount of new right-of-way (in acres) required for the construction of the new bridge?</p>	HBT report, engineering project manager; right-of-way agent
Other Section 4(f) resources	<p>Will the new alignment pose a use of any other Section 4(f) properties?</p>	District environmental staff; ENV Project Management staff

### 3C. Rehabilitation (Avoidance) Alternative - Pedestrian Use

Information to be included	Questions to ask	Source
Use as pedestrian bridge	<p>What type of protective railing or fencing needs to be added to the bridge for pedestrian or bicycle use?</p> <p>Is there a local interest or need for a pedestrian bridge at this location?</p> <p>Are there existing facilities (sidewalks, trail systems, other pedestrian walkways, and/or parks) or plans for future facilities, nearby the historic bridge that promote the structure's use as a pedestrian bridge?</p>	Engineering project manager; area office engineer; site visit
Historic integrity of the bridge	<p>Will this rehabilitation alternative call for the maintenance of the bridge's character-defining features? If so, which features?</p> <p>Does this rehabilitation alternative follow the <i>SOI Standards</i>?</p>	ENV Historical Studies staff
Maintenance of the existing bridge	<p>Who will perform maintenance on the structure?</p> <p>Who will be the parties to the two- or three-party agreement ensuring the future maintenance of the bridge if it is an off-system structure?</p>	HBT report; engineering project manager

### 3C. Rehabilitation (Avoidance) Alternative - Pedestrian Use

Information to be included	Questions to ask	Source
Cost of the alternative	<p>What is the approximate cost for the rehabilitation work?</p> <p>What is the approximate cost of painting and cleaning the bridge, if applicable?</p> <p>What is the approximate cost for the protective railing?</p> <p>What is the approximate cost of the new structure?</p> <p>What is the approximate cost for the roadway work?</p> <p>What is the approximate cost of the new right-of-way? What is the cost estimate based upon?</p> <p>What is the cost of this rehabilitation alternative, including mobilization, engineering, and contingencies? What is the breakdown of total cost?</p>	HBT report; engineering project manager

Once the questions above are answered, outline how the needs of the project (as stated in the purpose and need statement) will or will not be addressed by this alternative. Remember, the argument should always relate back to the established purpose and need statement.

#### 4. Rehabilitation (Use) Alternative

Discussion of this rehabilitation alternative should begin by stating that this alternative is a use alternative since it would affect the historic integrity of the historic bridge. Since this alternative calls for the rehabilitation of the historic bridge, many of the same issues that are covered by Alternative 3 must also be included in the analysis of this alternative.

The following list outlines the type of details that should be included in the analysis of this alternative, the questions the author should ask, and the sources that may have the answers to these questions. Please note that each project has unique circumstances and existing conditions; therefore, the questions below are sample questions to ascertain the type of information that should be included for most projects. However, additional issues may need to be addressed to adequately investigate this alternative.

#### 4. Rehabilitation of the Historic Bridge that Affects the Historic Integrity of the Historic Bridge

Information to be included	Questions to ask	Source
Members/elements in need of replacement or repair	<p>What are the superstructure or substructure members/elements that need to be repaired or replaced?</p> <p>Why do they need to be repaired or replaced?</p> <p>Are there TxDOT standards that require that the superstructure or substructure members/elements need to be repaired or replaced? If so, what are they?</p> <p>Does the railing need to be replaced or repaired? How would the railing be repaired? Why does the railing need to be replaced?</p> <p>Is there a TxDOT standard that requires the repair or replacement of the railing?</p> <p>Are there alternatives to the standard railing design that could be used?</p>	Purpose and need
Materials and construction techniques	<p>Why can't members, connection types, or other elements be replaced in-kind?</p> <p>What types of repairs are necessary?</p> <p>If concrete has to be repaired, how would the repairs be accomplished? Would the concrete be patched or reconstructed, or would another method be used?</p> <p>Does the bridge have to be lifted off the substructure? What is the lifting plan for the bridge?</p> <p>If bridge's superstructure and/or substructure needs cleaning, how will they be cleaned?</p> <p>Does the bridge need to be painted? What color would the bridge be painted? How does the proposed color compare to the historic color?</p> <p>What roadway work will have to be included in the project to meet TxDOT standards?</p>	HBT report; engineering project manager

#### 4. Rehabilitation of the Historic Bridge that Affects the Historic Integrity of the Historic Bridge

Information to be included	Questions to ask	Source
Historic integrity of the bridge	<p>Which character-defining features of the historic bridge will be modified or replaced by the rehabilitation work?</p> <p>How would rehabilitation work affect character defining features?</p> <p>In what ways does the rehabilitation work not meet the <i>SOI Standards</i>?</p>	ENV Historical Studies staff; HBT; engineering project manager
Bridge's load capacity and strength	<p>What is the AASHTO design standard for load capacity for the roadway type on which the project is located?</p> <p>Will the bridge's load capacity be raised to the minimum AASHTO design standard? If not, can a design exception be granted?</p> <p>Will school buses and emergency vehicles be able to use bridge after rehabilitation?</p>	HBT report; engineering project manager
Other Section 4(f) resources	<p>Will the new alignment pose a use of any other Section 4(f) properties?</p>	District environmental staff; ENV Project Management staff
Cost of the alternative	<p>What is the approximate cost for the rehabilitation work?</p> <p>What is the approximate cost of painting and cleaning the bridge, if applicable?</p> <p>What is the approximate cost for the roadway work, if applicable?</p> <p>What is the total cost of this rehabilitation alternative, including mobilization, engineering, and contingencies? What is the breakdown of total cost?</p>	HBT report; engineering project manager

Once the questions above are answered, outline how the needs of the project (as stated in the purpose and need statement) will or will not be addressed by this alternative. Remember, the argument should always relate back to the established purpose and need statement.

## 5. Replace the Historic Bridge

Discussion of this replacement alternative should begin by describing the replacement alternative in detail and stating that this alternative is a use alternative since it would affect the historic integrity of the bridge. The description of the alternative should describe any realignment of the roadway, new right-of-way or easements that are required by the replacement alternative, and what type of structure will replace the existing historic bridge.

The following list outlines the type of details that should be included in the analysis of this alternative, the questions the author should ask, and the sources that may have the answers to these questions.

Each project has unique circumstances and existing conditions; therefore, the questions below are sample questions to ascertain the type of information that should be included for most projects. However, additional issues may need to be addressed to adequately investigate this alternative.

### 5. Replace the Historic Bridge

Information to be included	Questions to ask	Source
Appearance of the new bridge	What type of structure will the new bridge be?	Engineering project manager
Hydraulic issues	How will the new bridge impact the hydraulics on the waterway?	HBT report; hydraulic analysis; engineering project manager; hydraulic engineer
Bridge's load capacity and strength	What will the load capacity of the new bridge be?	HBT report; engineering project manager
	Will school buses and emergency vehicles be able to use bridge when the new bridge is in place?	
New right-of-way for new bridge	Is a realignment of the road necessary?	HBT report; engineering project manager; right-of-way agent
	What roadway work will have to be included in the project to meet TxDOT standards?	
	Is new right-of-way required for replacement?	
	What is the amount of new right-of-way (in acres) required for the construction of the new bridge?	
	What is the approximate cost of the new right-of-way cost?	
Other Section 4(f) resources	What is the basis for the cost estimates?	District environmental staff; ENV Project Management staff
	Will the new alignment pose a use of any other Section 4(f) properties?	

## 5. Replace the Historic Bridge

Information to be included	Questions to ask	Source
Cost of the alternative	What is the estimated cost of the new structure?  What is the estimated cost to demolish the existing bridge?  What is the approximate cost for the roadway work?  What is the total cost of this replacement alternative, including mobilization, engineering, and contingencies? What is the breakdown of total cost?	HBT report; engineering project manager

Once the questions above are answered, outline how the needs of the project (as stated in the purpose and need statement) will or will not be addressed by this alternative. Remember, the argument should always relate back to the established purpose and need statement.

***What types of supporting graphics need to be included in the alternatives analysis?***

Supporting graphics should be included as attachments to the Programmatic Section 4(f) Evaluation to strengthen the alternatives analysis. As previously noted, graphics provide the non-engineer with a visual understanding of what is being described in the text. Therefore, the following graphics should be included.

- Alternatives evaluation matrix
- Typical sections
- Schematics or line drawings illustrating alternatives in relation to the historic bridge or any other 4(f) resource

**Alternatives evaluation matrix**

An alternatives evaluation should be included to show comparable information regarding the avoidance and use alternatives side-by-side. While there are several ways to show how the alternatives compare to each other, the matrix illustrated in Figure 4 is recommended since it includes the issues considered in the alternatives analysis. An example of a completed matrix is included in Figure 5.

**Figure 4. Alternatives Evaluation Matrix**

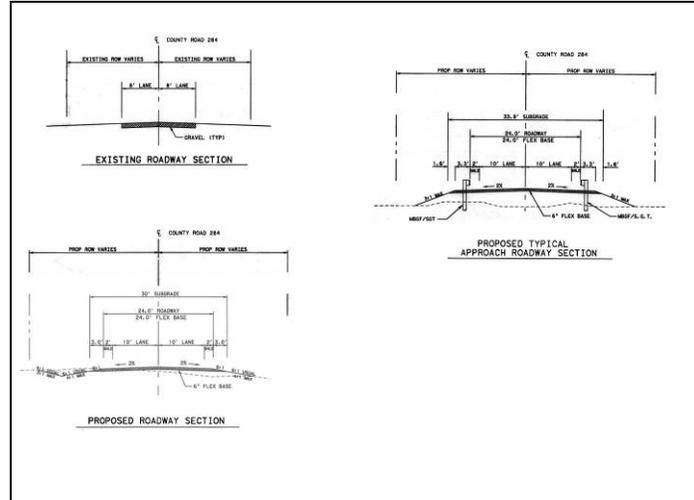
Alternative	Does alternative use the historic bridge?	Meets Need and Purpose for the Project?	Does the project address the following deficiencies? 1) Structural; 2) Functional; 3) Geometric	Costs			Social, Economic or Environmental Impacts?	Constructability/ Safety/Design Issues?
				Construction (\$)	ROW Amount and Cost (\$)	Total cost (\$)		
1. No-build	No	Yes/No	1) Yes/No 2) Yes/No 3) Yes/No	Cost	ROW in acres and cost	Cost	If applicable, explain	If applicable, explain
2. Bypass alternative	No	Yes/No	1) Yes/No 2) Yes/No 3) Yes/No	Cost	ROW in acres and cost	Cost	If applicable, explain	If applicable, explain
3A. Rehabilitation (avoidance) alternative – continued two-way vehicular use	No	Yes/No	1) Yes/No 2) Yes/No 3) Yes/No	Cost	ROW in acres and cost	Cost	If applicable, explain	If applicable, explain
3B. Rehabilitation (avoidance) alternative – one-way pair	No	Yes/No	1) Yes/No 2) Yes/No 3) Yes/No	Cost	ROW in acres and cost	Cost	If applicable, explain	If applicable, explain
3C. Rehabilitation (avoidance) alternative – pedestrian use	No	Yes/No	1) Yes/No 2) Yes/No 3) Yes/No	Cost	ROW in acres and cost	Cost	If applicable, explain	If applicable, explain
4. Rehabilitation (use) alternative	No	Yes/No	1) Yes/No 2) Yes/No 3) Yes/No	Cost	ROW in acres and cost	Cost	If applicable, explain	If applicable, explain
5. Replacement alternative	Yes	Yes/No	1) Yes/No 2) Yes/No 3) Yes/No	Cost	ROW in acres and cost	Cost	If applicable, explain	If applicable, explain

Figure 5. Alternatives Evaluation Matrix Example

Alternative	Does the alternative use the historic bridge?	Meets Purpose and Need for the Project?	Does the project address the following deficiencies? 1) Structural; 2) Functional; 3) Geometric	Costs			Social, Economic, or Environmental Impacts?	Constructability/Safety/Design Issues?
				Construction (\$)	ROW Amount and Cost (\$)	Total cost (\$)		
1. No-build	No	No	1.) No 2.) No 3.) N.A.	N.A.	N.A.	N.A.	None	Backwall pressure on the substructure and deterioration of superstructure would continue and would lead to eventual closure of the bridge. Bridge does not meet the required HS 20 load capacity for on-system bridges.
2. Bypass alternative	No	Yes	1.) Yes 2.) Yes 3.) N.A.	\$1,218,429	1.0 acre (\$10,000)	\$1,228,429	Impact to 1.71 acres of vegetation	Backwall pressure on the substructure and deterioration of superstructure would continue. In its isolated location, the bridge may suffer vandalism.
3A. Rehabilitation (avoidance) alternative – continued 2-way vehicular use	No	No	1.) No 2.) No 3.) N.A.	\$1,266,429	1.0 acre (\$10,000)	\$1,276,429	Impact to 1.71 acres of vegetation	Backwall pressure on the substructure and deterioration of the superstructure would continue. Bridge would not meet the required HS 20 load capacity for on-system bridges.
3B. Rehabilitation (avoidance) alternative – one-way pair	No	No	1.) No 2.) No 3.) N.A.	\$1,454,973	No new right-of-way required	\$1,454,973	Impact to 1.71 acres of vegetation	Backwall pressure on the substructure and deterioration of the superstructure would continue. Although the new bridge would have adequate load capacity, the historic bridge would not meet the required HS 20 load capacity for on-system bridges.
3C. Rehabilitation (avoidance) alternative – pedestrian use	No	Yes	1.) Yes 2.) Yes 3.) N.A.	\$1,266,429	1.0 acre (\$10,000)	\$1,276,429	Impact to 1.71 acres of vegetation	Backwall pressure on the substructure and deterioration of the superstructure would continue. In its isolated location, there is not a need for a pedestrian walkway in this area, and the bridge may suffer vandalism.
4. Rehabilitation (use) alternative	Yes	Yes	1.) Yes 2.) Yes 3.) N.A.	\$1,759,101	1.0 acre (\$10,000)	\$1,769,101	Alternative poses an adverse effect to the historic bridge. A temporary detour would be utilized during construction activities and cause short-term inconvenience to the traveling public. Impact to approximately 0.6 acre of vegetation (only 0.08 acre permanent impact from bridge and road footprint).	Long term affects of leaving the existing substructure free standing is unknown.
5. Replacement alternative	Yes	Yes	1.) Yes 2.) Yes 3.) N.A.	\$1,266,429	No new right-of-way required	\$1,266,429	Removal of the historic bridge is an adverse effect. A temporary detour would be utilized during construction activities and cause short-term inconvenience to the traveling public. Impact to approximately 0.6 acre of vegetation (only 0.08 acre permanent impact from bridge and road footprint).	None

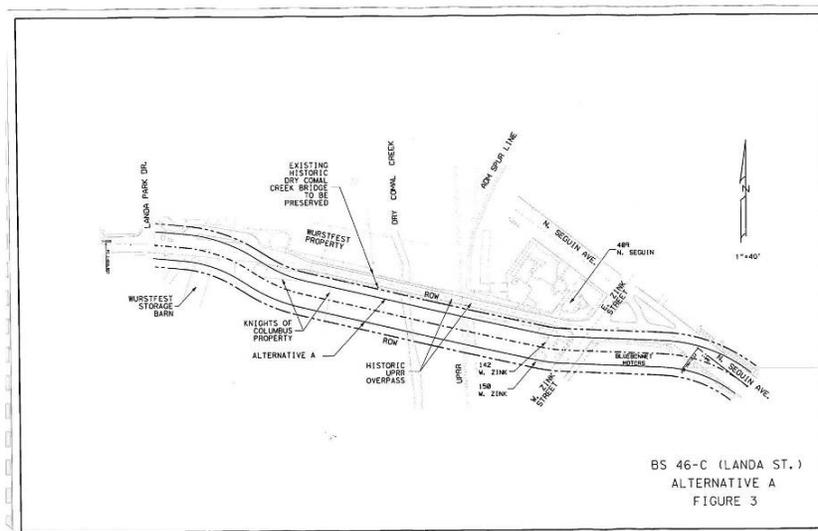
## Typical sections

Typical sections should be included to illustrate the width of the existing and proposed bridge, and right of way.



## Schematics or line drawings

While not required, schematics or line drawings can be extremely helpful when illustrating the alternatives considered for the proposed project. They do not need to be elaborate; however, they should show each alternative in relation to the historic bridge.





## Recommended Alternative

***What information goes in the Recommended Alternative section?***

The recommended alternative section should specifically note which alternative is recommended as feasible and prudent, and therefore is the recommended alternative for the proposed action. This statement should be short and explicit.

An example recommended alternative statement is as follows:

*TxDOT proposes to replace the existing historic bridge located on CR 1234 at No Name Creek with a new bridge structure. This is the only feasible and prudent alternative and, therefore, Alternative 5 is the recommended alternative.*

## Measures to Minimize Harm

### ***What are measures to minimize harm?***

In addition to evaluating if there is a feasible and prudent avoidance alternative, the law requires the consideration of all possible planning to minimize harm to the historic bridge. Determined on a project-by-project basis, measures to minimize harm to historic bridges are generally grouped into two categories: planning efforts and mitigation. Planning efforts occur during the project development phases, prior to the completion of the Section 4(f) process. On the other hand, mitigation includes actions that will be taken following the completion of the Section 4(f) process that compensate for residual impacts to the historic bridge. It is important to consider and incorporate both types of measures into projects.

### **Planning Efforts**

The project team can include many types of planning efforts that attempt to lessen the impacts to the historic bridge. Three common types of planning efforts—design modifications, consideration of public input, and bridge marketing—are outlined below; however, circumstances may warrant additional planning efforts.

#### *Design modifications*

Modifications to the design that lessen the harm to the historic bridge are considered and should be noted as measures to minimize harm in the Programmatic Section 4(f) Evaluation. The following are examples of design modifications that would lessen the impacts to the historic bridge:

- Hiding strengthening members on a rehabilitated bridge
- Replacing rivets with dome-head bolts
- Replacing rivets in-kind (shown in photograph on right)
- Use of non-standard or aesthetic railing for rehabilitated bridge



Example of design modifications: Replacing rivets during rehabilitation rather than using bolts

#### *Consideration of public input*

The historic bridges that are the subjects of the Programmatic Section 4(f) Evaluations are public property. It is important to incorporate input from the public, advocacy groups, and preservation officials into the project's planning process. Input gathered during public meetings or hearings held in compliance with Section 106 of the NHPA and/or NEPA should be considered by project planners and included in the measures to minimize harm section of the Programmatic Section 4(f) Evaluation.

Additionally, consultations with the Historic Bridge Foundation, the County Historical Commission, and the SHPO that may occur as part of the Section 106 process should also be incorporated into the evaluation as a measure to minimize harm. For controversial projects, project engineers may consider having a charrette and inviting the public to provide their input into the design.

### *Bridge marketing*

FHWA policy requires that if any historic bridge (regardless of type) is to be replaced, it must be made available to a state, local, or responsible private entity. Proactively finding a location for the historic bridge in the same county or region is recommended because keeping the bridge within the same general area is preferred. Approaching local officials and park commissioners should be considered before other potential recipients or marketing the bridge to the public. TxDOT's Area Offices' engineers may provide suggestions of local entities that may be potential recipients of the bridge. It is important to remember, however, that the Texas SHPO requires that if a bridge spanned water in its historic location, it must span a waterway in its new location. If a recipient cannot be found through proactive measures, TxDOT must market the bridge to the public.

TxDOT has a bridge marketing program to market publicly available bridges. Copies of documentation, such as public notices in newspapers and certification of publication related to the bridge marketing effort, should also be included. Examples of a public notice and proof of publication are included in Appendix B. For information regarding the relocation of historic bridges, please see the section on mitigation below.

For step-by-step instructions about the bridge marketing program, see TxDOT Bridge Division's *Historic Bridge Manual*.

If a recipient for the historic bridge is not located through marketing efforts, mothballing the historic bridge should be considered. Mothballing is a method to protect the historic bridge by storing it until a recipient can be identified. When mothballing is undertaken, careful planning to protect the bridge members and elements is necessary. See the National Park Service's *Preservation Brief No. 31, Mothballing Historic Buildings* for additional information on the mothballing process.

### **Mitigation**

In consultation between TxDOT and the SHPO, as well as any other applicable parties, mitigation options are identified. It is important to remember that SHPO concurrence is **required** prior to implementing a mitigation plan. Consultation provides an additional opportunity to "think outside the box" to identify possible mitigation options. The cost of mitigation should be a reasonable public expenditure in relation to the severity of impacts to the 4(f) resource. Although each situation will be unique and it is not possible to anticipate all possibilities, the following are a few examples that may help generate discussion about other options:

#### *Relocation*

Relocation is a mitigation option common for truss bridges as they are generally structures that are designed to be moved.

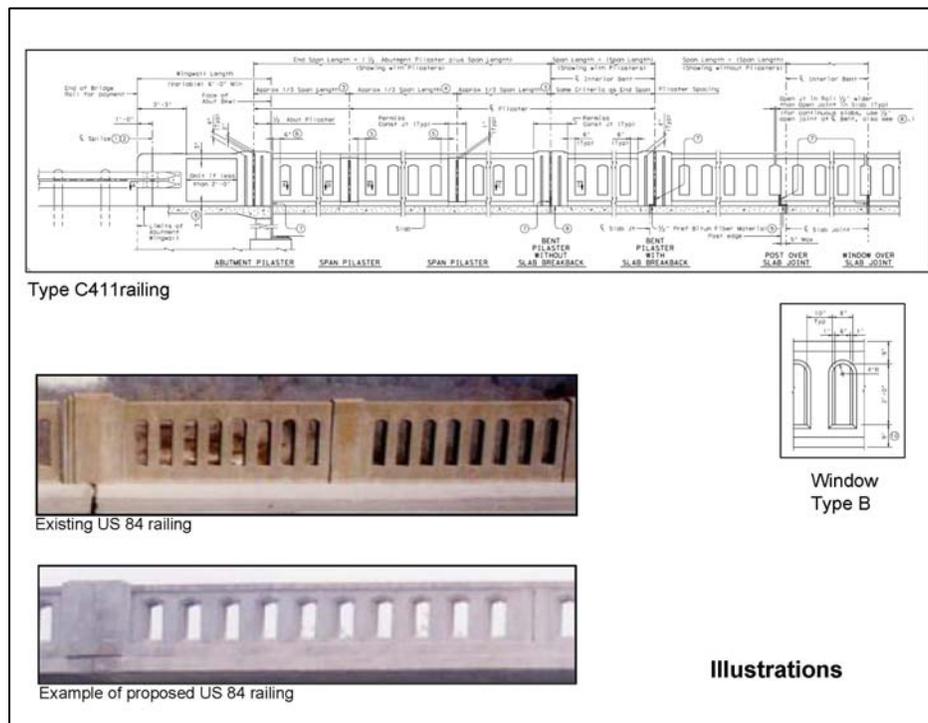
Once a recipient of the historic bridge is found, TxDOT must enter into a two- or three-party agreement with the recipient describing TxDOT's and the recipient's responsibilities toward the bridge as a result of the relocation. A relocation plan, developed and used in the NHPA Section 106 effects determination, is included in the Programmatic Section 4(f) Evaluation as an exhibit (see Appendices D and E for examples of a three-party agreement and relocation package, respectively).

### Documentation

For bridges that are to be rehabilitated to the point that the historic integrity is affected, or that are to be moved or demolished, a detailed history of the bridge, high-quality photographs, and drawings of the bridge are made in accordance with the Historic American Engineering Record (HAER) standards, or other suitable means of documentation developed through consultation with the SHPO.

### New bridge aesthetics/design

If a new vehicular bridge is to be built, engineers can make the new bridge aesthetically pleasing or evocative of the historic bridge. For example, a variable depth concrete slab bridge can be replaced with a variable depth box girder bridge. Another example is using a crash-test railing that is reminiscent of the historic bridge's railing (as shown below). Remember that coordination with the SHPO should be conducted prior to proceeding with this type of mitigation effort.



New bridge designed with crash-tested railing reminiscent of the historic bridge's railing

## Interpretation

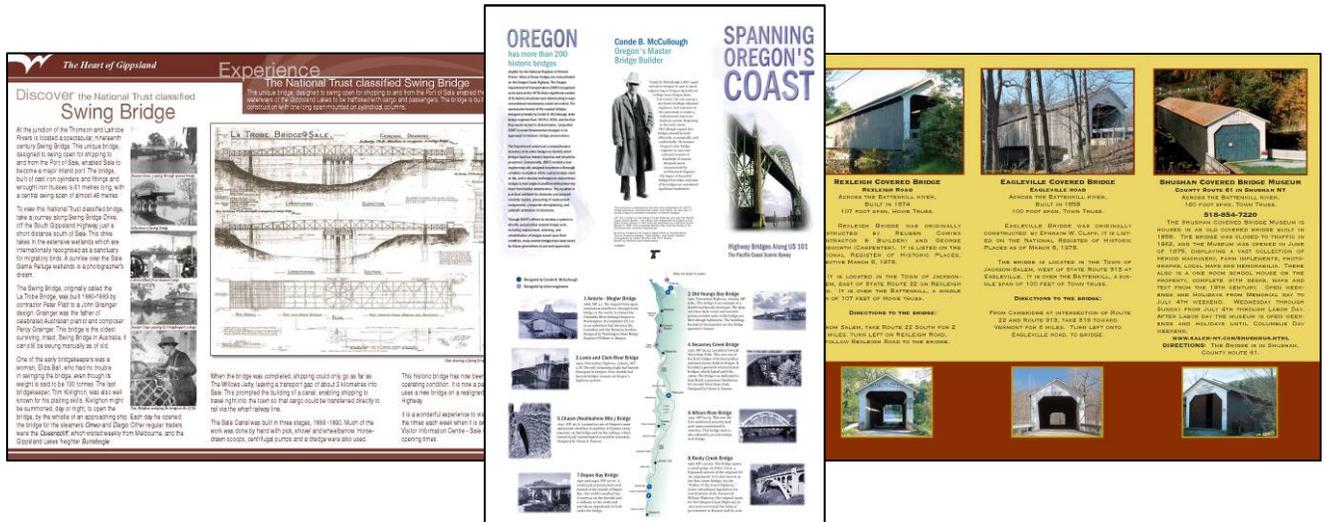
Interpretive signs or plaques can be placed at a historic bridge or new bridge to explain the history and engineering significance of the historic bridge.



Plaque near a rehabilitated bridge to describe the bridge's history

## Educational materials

Educational materials developed as mitigation can be targeted toward the general public, such as informational brochures and driving tour pamphlets, or the materials regarding the historic bridge can be developed in conjunction with local schools and targeted toward children. This is an opportunity for creativity in developing the mitigation plan.



Examples of educational materials targeted at the general public

***What is included in the Measures to Minimize Harm section of the document?***

In this section of the Programmatic Section 4(f) Evaluation, the measures to minimize harm and mitigation should be fully described. Provide information such as:

- Steps taken in decision-making process to identify measures to minimize harm
- Details about each measure to minimize harm
- Description of how each measure balances factors described in 23 CFR 774.3 to impose the least harm on the Section 4(f) property (see page 41 for additional information on how to determine least harm)
- Documentation of bridge marketing effort
- Description of agreements, such as two- and three-party agreements, to be executed and implemented in order to carry out measures, if applicable
- Documentation of public meeting(s), if applicable
- Bridge relocation plan, if applicable

## Coordination

***What type of information is included in the Coordination section?***

The Texas SHPO, FHWA, TxDOT, and other consulting parties must reach an agreement regarding the alternative selected and measures to minimize harm via the National Historic Preservation Act procedures. For this reason, it is important to clearly document the agreements reached through the NHPA Section 106 process and include supporting documentation, such as coordination and consultation letters, that illustrates such agreement. The document should identify with whom the coordination occurred, how coordination was conducted, when it was conducted, and the topic of coordination.

## Conclusion

***What happens if an avoidance alternative is determined to be feasible and prudent?***

If an avoidance alternative is determined to be feasible and prudent, the avoidance alternative must be selected. Since an avoidance alternative means that there is no use of the historic bridge, completion of a Programmatic Section 4(f) document is not required.

***What happens if more than one use alternative is determined to be feasible and prudent?***

Just as with the avoidance alternatives, if more than one use alternative is determined to be feasible and prudent, the alternative that poses the least overall harm to the historic bridge must be chosen. For information about the least overall harm determination, please see page 41.

***What is included in the Conclusion section?***

The Conclusion section should state which alternative is recommended as the feasible and prudent alternative that poses the least overall harm to the historic bridge. Then, if a use alternative is selected, the following text must be included:

***REQUIRED TEXT:***

“Based upon the above considerations, it is recommended there is no feasible and prudent alternative to the use of the Section 4(f) property, the XX Bridge, and the proposed action includes all possible planning to minimize harm to the property resulting from such use.”

## List of Acronyms

AASHTO - American Association of State Highway and Transportation Officials

ADT - Average Daily Traffic

BID - Bridge Inventory Database

BRG - Texas Department of Transportation Bridge Division

CFR - Code of Federal Regulations

CHC - County Historical Commission

ENV - Texas Department of Transportation Environmental Affairs Division

FEMA - Federal Emergency Management Agency

FHWA - Federal Highway Administration

HAER - Historic American Engineering Record

HBD - Historic Bridge Database

HBF - Historic Bridge Foundation

HBT - Historic Bridge Team

NBI - National Bridge Inventory

NEPA - National Environmental Policy Act

NHL - National Historic Landmark

NHPA - National Historic Preservation Act

NRHP - National Register of Historic Places

SAFETEA-LU - Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users

SAL - State Archeological Landmarks

SHPO - State Historic Preservation Officer

SOI - Secretary of the Interior

SOU - Standards of Uniformity

STIP - Statewide Transportation Improvement Program

THC - Texas Historical Commission

TxDOT - Texas Department of Transportation

## Bibliography

Claxton, Theresa, e-mail message to Maryellen Ficker, September 10, 2008.

Federal Highway Administration. "Guidance for Preparing and Processing Environmental and Section 4(f) Documents, Technical Advisory 6640.8A." (Federal Highway Administration, October 1987.) Accessed July 2008 at <<http://www.fhwa.dot.gov/legsregs/directives/techadvs/t664008a.htm>>.

—. "Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges." (Federal Highway Administration, 1983.) Accessed August 2008 at <<http://www.environment.fhwa.dot.gov/projdev/4fbridge.asp>>.

—. "Project Development: Section 4(f)." (Federal Highway Administration, n.d.) Accessed July 2008 at <<http://www.environment.fhwa.dot.gov/projdev/PD5sec4f.asp>>

—. "Section 4(f) Checklist." (Federal Highway Administration Western Resource Center, May 1997.) Accessed July 2008 at <<http://www.fhwa.dot.gov/cadiv/docs/4fcheck.doc>>.

—. "Section 4(f) Final Rule: New Guidance on a Complex Regulation." *Successes in Stewardship Monthly Newsletter*, March 2008. Accessed August 2008 at <<http://www.environment.fhwa.dot.gov/strmlng/newsletters/mar08nl.asp>>.

—. "Section 4(f) Policy Paper." (Federal Highway Administration Office of Planning, Environment and Realty, Project Development and Environmental Review, March 2005.) Accessed July 2008 at <<http://www.environment.fhwa.dot.gov/projdev/4fpolicy.asp>>.

Harshbarger, J. Patrick, McCahon, Mary E., Pulluro, Joseph J., and Shaup, Steven A. *Guidelines for Historic Bridge Rehabilitation and Replacement*. American Association of State Highway and Transportation Officials Standing Committee on the Environment, 2007.

Henderson, Kitty (Executive Director, Historic Bridge Foundation), interview with Maryellen Ficker and Heather Goodson, August, 27, 2008.

Holmes, Jill (Environmental Coordinator, Texas Department of Transportation Wichita Falls District), interview with Heather Goodson and Maryellen Ficker, September 11, 2008.

Mahon, Scott. "TxDOT unveils 4 plans for Landa Street Bridge." *The Herald-Zeitung*, February 16, 2005.

Maley, Barbara and Claxton, Theresa (Environmental Managers, Federal Highway Administration Texas Division), interview with Maryellen Ficker and Heather Goodson, September 3, 2008.

Maryland Department of Transportation. "Section 4(f) Interactive Training." Accessed August 2008 at <<http://www.section4f.com>>.

Noble, Dianna (Director, Texas Department of Transportation Environmental Affairs Division), interview by Heather Goodson and Maryellen Ficker, September 12, 2008.

Ohio Department of Transportation. "Office of Environmental Services Section 4(f) Handbook." (Ohio Department of Transportation, n.d.) Accessed July 2008 at <http://www.environment.fhwa.dot.gov/strmlng/searchresults.asp?keyword=&StateSelect=Ohio&CategorySelect=all&startrow=1&ResultsSelect=10>.

—. "Programmatic Agreement for Applicability Determination and Programmatic Section 4(f) Between the Federal Highway Administration and the Ohio Department of Transportation – Agreement Number 11018." (Ohio Department of Transportation, 2001.) Accessed July 2008 at <http://www.environment.fhwa.dot.gov/strmlng/searchresults.asp?keyword=&StateSelect=Ohio&CategorySelect=all&startrow=1&ResultsSelect=10>

O'Toole, Michael (Director of Project Development, Texas Department of Transportation Bridge Division) and Rummel, Tom (Project Manager, Texas Department of Transportation Bridge Division), interview with Heather Goodson and Maryellen Ficker, September 12, 2008.

*Parks, Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites.* Code of Federal Regulations, Title 23, parts 771 and 774 (2008).

*Parks, Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites - Correction.* Federal Register, Vol. 73, no. 107 (2008).

Pennsylvania Department of Transportation. "Nationwide/Programmatic Section 4(f) Evaluation for Projects that Necessitate the Use of Historic Bridges." (Pennsylvania Department of Transportation, April 2007.)

*Policy on lands, wildlife and waterfowl refuges, and historic sites.* U.S. Code Vol. 49, sec. 303 (2006).

*Preservation of parklands.* U.S. Code Vol. 23, sec. 138 (2006).

Rhodes, Mike (Environmental Coordinator, Texas Department of Transportation Waco District), interview by Maryellen Ficker and Heather Goodson, August 29, 2008.

Rummel, Tom, e-mail messages to Maryellen Ficker and Heather Goodson, September 12 and 17, 2008.

Tally, Tim and Clifton Aero. Photograph of Meridian River. *The Bosque Globe*. Volume 10, No. 12.

Texas Department of Transportation. "Comments on Draft Programmatic Section 4(f) – County Road 403 at Camp Creek Bridge, Washington County, Texas." (Texas Department of Transportation, n.d.)

—. "Draft Historic Bridge Team Report – County Road 227 at Briar Creek, Young County, Texas."

(Texas Department of Transportation, August, 2008.)

- “Draft Programmatic Section 4(f) Evaluation for a Historic Bridge – Skalak Road at West Mill Creek, Austin County, Texas.” (Texas Department of Transportation, March 2001.)
  - “Draft Programmatic Section 4(f) Evaluation - Gregory Road at Duck Creek, Denton County, Texas.” (Texas Department of Transportation, June 2005.)
  - “Programmatic Section 4(f) Evaluation – County Road 284 at Leon River, Hamilton County, Texas.” (Texas Department of Transportation, March 2006.)
  - “Programmatic Section 4(f) Evaluation – County Road 314 at Station Creek, Coryell County, Texas.” (Texas Department of Transportation, July 2007.)
  - “Programmatic Section 4(f) Evaluation – Gruene Road at Guadalupe River, Comal County, Texas.” (Texas Department of Transportation, n.d.)
  - “Programmatic Section 4(f) Evaluation – Loop 230 at Colorado River, Bastrop County, Texas.” (Texas Department of Transportation, October, 2003.)
  - “Programmatic Section 4(f) Evaluation – State Highway 94 at Neches River, Angelina and Trinity Counties, Texas.” (Texas Department of Transportation, October, 2005.)
  - “Programmatic Section 4(f) Evaluation – United States Highway 84 at Sabine River, Shelby County, Texas.” (Texas Department of Transportation, May 2007.)
  - “Programmatic Section 4(f) Evaluation – United States Highway 84 at Union Pacific Railroad, Limestone County, Texas.” (Texas Department of Transportation, June 2007.)
  - “Historic Bridge Manual.” (Texas Department of Transportation Bridge Division, 2006.)
  - “4(f) Evaluation Guidance.” (Texas Department of Transportation Environmental Affairs Division, n.d.)
  - “Project Coordination Process for Bridges 50 Years Old or Older in Texas.” (Texas Department of Transportation Environmental Affairs Division, 2002.)
- Utah Department of Transportation. “Memorandum Regarding Section 4(f) Final Rule 23 CFR 774 – Preparation of Interim Guidance and Required Revisions for Current Section 4(f) documents.” (Utah Department of Transportation, April 2008.) Accessed July 2008 at <http://www.udot.utah.gov/main/f?p=100:pg:295315469568359600:::1:T,V:288,>>
- West Virginia Department of Transportation. “Final Section 4(f) Evaluation – Delbarton Arch Bridge/County Road 65/5 at Pigeon Creek, Mingo County, West Virginia.” (West Virginia Department of Transportation, n.d.)

**Appendix A. Sample Outline of a Historic Bridge Programmatic Section  
4(f) Evaluation**

**DRAFT**  
**Programmatic Section 4(f) Evaluation**

**County Road 1234 at No Name Creek bridge replacement**  
**Somewhere County, Texas**  
**TxDOT CSJ 0000-00-000**

**Prepared for the**  
**Federal Highway Administration**  
**and**  
**Texas Department of Transportation**

**Month Year**

**Draft Programmatic Section 4(f) Evaluation**  
**County Road 1234 at No Name Creek bridge replacement**  
**Somewhere County, Texas**  
**TxDOT CSJ 0000-00-0000**

## **Description of the Proposed Action**

### Introduction/Section 4(f) Applicability

*Include:*

- *Project CSJ*
  
- *Location of bridge*
  
- *Statewide Transportation Improvement Plan that includes bridge project*
  
- *How bridge was determined NRHP-eligible*
  - *For example, the bridge was determined eligible as part of the 1995 Metal Truss Inventory.*
  
- *Note that the proposed action uses the historic bridge*
  
- *Required Text: The proposed action would result in a use of the NRHP-eligible bridge. In accordance with 23 CFR 774, the following Section 4(f) Evaluation provides a discussion recommending that there are no feasible and prudent alternatives to the use of the bridge and the proposed action includes all possible planning to minimize harm to the historic bridge resulting from such use.*

*\*For more information about what to include in this section, see page 11 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

### Project Location and Setting

*Include:*

- *Bridge-specific information*
- *Roadway-specific information*
- *Bridge setting*

*\*A full list of what should be included in this section and where to find it is included on pages 12-13 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

## **Description of Section 4(f) Property**

### Physical Description

*Provide:*

- *The physical description of the historic bridge, including detailed information about the superstructure and substructure*

*\*A full list of what should be included in this section and where to find it is included on pages 16-17 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

### Significance of the Section 4(f) Property

*Explain:*

- *The historical significance of the structure*
- *The bridge's character-defining features*

*\*A full list of what should be included in this section and where to find it is included on pages 17-19 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

## **Purpose and Need**

*Include an introductory paragraph that:*

- *Summarizes the main, overarching problems with the bridge, or needs for project*
- *States the purpose of the project*

### Structural deficiencies

- *Carefully and thoroughly describe the structural deficiencies of the bridge*

### Functional inadequacies

- *Carefully and thoroughly describe the functional inadequacies of the bridge*

### Geometric deficiencies

- *Carefully and thoroughly describe the geometric deficiencies of the bridge*

*Note: if the bridge does not have all three types of needs, only include headings and describe the types of needs that the bridge has. For example, if a bridge only has structural deficiencies and functional inadequacies, do not include a discussion of geometric deficiencies in the Purpose and Need and Alternatives Analysis.*

*\*A full list of what should be included in this section and where to find it is included on pages 22-32 and 37 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

# Alternatives Analysis

## **1. No Build Alternative**

*Provide an introductory section that, at a minimum, includes:*

- *Statement that says that there would be no use of the Section 4(f) resource as there would be no federal funding or project costs directly related to this alternative.*
- *Information regarding how the bridge will fare if routine maintenance is only completed on the bridge*

### Structural Deficiencies

*Describe how no build would affect the structural deficiencies outlined in the purpose and need*

### Functional Inadequacies

*Describe how no build would affect the functional inadequacies outlined in the purpose and need*

### Geometric Deficiencies

*Describe how no build would affect the geometric deficiencies outlined in the purpose and need*

### Summary

*Describe:*

- *If the alternative is feasible and prudent (see pages 38-39 of the Historic Bridge Programmatic Section 4(f) Guidelines to determine if the alternative is feasible and prudent)*
- *If the alternative meets the purpose and need*
- *The long term affects of proceeding with this alternative, including how long the detour route is, should the bridge eventually be closed*

*\*For information regarding how to document this alternative, see pages 43-44 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

## **2A. Bypass Alternative - Constructing a New Bridge on a New Alignment**

*Provide an introductory section that, at a minimum, includes:*

- *Statement that indicates this alternative is an avoidance alternative since it would not use the historic bridge and that the historic bridge would be left as a monument*
- *Description of the alternative:*
  - *Note if the new bridge will be constructed upstream or downstream from the historic bridge.*
  - *Justify why that side was chosen. Remember to note the appropriate hydraulic, safety, and environmental issues that contributed to the reason why the upstream or downstream side was chosen.*

- Describe the new bridge.
- Note how much new right-of-way will be required with this alternative.

Structural Deficiencies

*Describe how this alternative would affect the structural deficiencies outlined in the purpose and need.*

Functional Inadequacies

*Describe how this alternative would affect the functional inadequacies outlined in the purpose and need.*

Geometric Deficiencies

*Describe how this alternative would affect the geometric deficiencies outlined in the purpose and need.*

Summary

*Include an itemized list of costs associated with this alternative. At a minimum, provide the cost of the new bridge, right-of-way costs, and roadway work.*

*Describe:*

- *If the alternative is feasible and prudent (see pages 38-39 of the Historic Bridge Programmatic Section 4(f) Guidelines to determine if the alternative is feasible and prudent)*
- *If the alternative meets the purpose and need*
- *The long term affects of proceeding with this alternative*

*\*For information regarding how to document this alternative, see pages 44-46 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

**2B. Bypass Alternative – Upgrade nearby parallel roads**

*Provide an introductory section that, at a minimum, includes:*

- *Statement that indicates this alternative is an avoidance alternative since it would not use the historic bridge and describe what would happen to the historic bridge*
- *Description of the alternative:*
  - *Specify and describe the location of the parallel roadways*
  - *Outline the work involved in the upgrading of parallel roadways*
  - *State how the historic bridge will be maintained and who will be responsible for the maintenance*

Structural Deficiencies

*Describe how this alternative would affect the structural deficiencies outlined in the purpose and need.*

### Functional Inadequacies

*Describe how this alternative would affect the functional inadequacies outlined in the purpose and need.*

### Geometric Deficiencies

*Describe how this alternative would affect the geometric deficiencies outlined in the purpose and need.*

### Summary

*Include an itemized list of costs associated with this alternative. At a minimum, provide the cost of the new bridge, right-of-way costs, and roadway work.*

*Describe:*

- *If the alternative is feasible and prudent (see pages 38-39 of the Historic Bridge Programmatic Section 4(f) Guidelines to determine if the alternative is feasible and prudent)*
- *Note the implications of detouring school buses, emergency vehicles, and traveling public onto parallel roadways*
- *If the alternative meets the purpose and need*
- *The long term affects of proceeding with this alternative*

*\*For information regarding how to document this alternative, see pages 46-48 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

## **3A. Rehabilitation (avoidance) alternative – Continued Vehicular Use for 2-way traffic**

*Provide an introductory section that, at a minimum, includes:*

- *Statement that indicates this alternative is an avoidance alternative since it would not affect the historic integrity of the bridge and therefore would not use the historic bridge*
- *Description of the alternative:*
  - *Describe in detail the proposed repairs to the superstructure and substructure*
  - *Describe why such repairs will not affect the historic integrity of the bridge*

### Structural Deficiencies

*Describe how this alternative would affect the structural deficiencies outlined in the purpose and need.*

### Functional Inadequacies

*Describe how this alternative would affect the functional inadequacies outlined in the purpose and need.*

### Geometric Deficiencies

*Describe how this alternative would affect the geometric deficiencies outlined in the purpose and need.*

### Summary

*Include an itemized list of costs associated with this alternative. At a minimum, provide the cost of the repairing the historic bridge, cleaning and painting the historic bridge, and any proposed roadway work.*

### *Describe:*

- *If the alternative is feasible and prudent (see pages 38-39 of the Historic Bridge Programmatic Section 4(f) Guidelines to determine if the alternative is feasible and prudent)*
  
- *If the alternative meets the purpose and need*

*\*For information regarding how to document this alternative, see pages 49-51 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

### **3B. Rehabilitation (avoidance) alternative – One-way pair**

*Provide an introductory section that, at a minimum, includes:*

- *Statement that indicates this alternative is an avoidance alternative since it would not affect the historic integrity of the bridge and therefore would not use the historic bridge*
  
- *Description of the alternative:*
  - *Describe in detail the proposed repairs to the superstructure and substructure. If the repairs are **exactly** the same as those in Alternative 3A, reference the repairs described in Alternative 3A.*
  
  - *Describe why such repairs will not affect the historic integrity of the bridge.*
  
  - *Note if the new bridge will be constructed upstream or downstream from the historic bridge.*
  
  - *Justify why that side was chosen. Remember to note the appropriate hydraulic, safety, and environmental issues that contributed to the reason why the upstream or downstream side was chosen.*
  
  - *Describe the new bridge.*
  
  - *Note how much new right-of-way will be required with this alternative.*

### Structural Deficiencies

*Describe how this alternative would affect the structural deficiencies outlined in the purpose and need.*

### Functional Inadequacies

*Describe how this alternative would affect the functional inadequacies outlined in the purpose and need.*

### Geometric Deficiencies

*Describe how this alternative would affect the geometric deficiencies outlined in the purpose and need.*

### Summary

*Include an itemized list of costs associated with this alternative. At a minimum, provide the cost of the repairing the historic bridge, cleaning and painting the historic bridge, constructing the new bridge, cost of new right-of-way, and any proposed roadway work.*

### *Describe:*

- *If the alternative is feasible and prudent (see pages 38-39 of the Historic Bridge Programmatic Section 4(f) Guidelines to determine if the alternative is feasible and prudent)*
  
- *If the alternative meets the purpose and need*

*\*For information regarding how to document this alternative, see pages 51-55 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

### **3C. Rehabilitation (avoidance) alternative – pedestrian**

*Provide an introductory section that, at a minimum, includes:*

- *Statement that indicates this alternative is an avoidance alternative since it would not affect the historic integrity of the bridge and therefore would not use the historic bridge.*
  
- *Description of the alternative:*
  - *Describe in detail the proposed repairs to the superstructure and substructure, including the installation of pedestrian railing, if applicable.*
  
  - *Describe why such repairs will not affect the historic integrity of the bridge.*
  
  - *Note if the new bridge will be constructed upstream or downstream from the historic bridge.*
  
  - *Justify why that side was chosen. Remember to note the appropriate hydraulic, safety, and environmental issues that contributed to the reason why the upstream or downstream side was chosen.*
  
  - *Describe the new bridge.*
  
  - *Note how much new right-of-way will be required with this alternative.*

### Structural Deficiencies

*Describe how this alternative would affect the structural deficiencies outlined in the purpose and need.*

### Functional Inadequacies

*Describe how this alternative would affect the functional inadequacies outlined in the purpose and need.*

### Geometric Deficiencies

*Describe how this alternative would affect the geometric deficiencies outlined in the purpose and need.*

## Summary

*Include an itemized list of costs associated with this alternative. At a minimum, provide the cost of the repairing the historic bridge, cleaning and painting the historic bridge, constructing the new bridge, cost of new right-of-way, and any proposed roadway work.*

## *Describe:*

- *If the alternative is feasible and prudent (see pages 38-39 of the Historic Bridge Programmatic Section 4(f) Guidelines to determine if the alternative is feasible and prudent)*
  
- *If the alternative meets the purpose and need*

*\*For information regarding how to document this alternative, see pages 55-60 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

## **4. Rehabilitation (use) alternative<sup>1</sup>**

*Provide an introductory section that, at a minimum, includes:*

- *Statement that indicates this alternative is a use alternative since it would affect the historic integrity of the bridge.*
  
- *Description of the alternative:*
  - *Describe in detail the proposed repairs to the superstructure and substructure.*
  - *Describe how such repairs will affect the historic integrity of the bridge*
  - *Note why this rehabilitation (use) alternative is considered.*

## Structural Deficiencies

*Describe how this alternative would affect the structural deficiencies outlined in the purpose and need.*

## Functional Inadequacies

*Describe how this alternative would affect the functional inadequacies outlined in the purpose and need.*

## Geometric Deficiencies

*Describe how this alternative would affect the geometric deficiencies outlined in the purpose and need.*

## Summary

*Include an itemized list of costs associated with this alternative. At a minimum, provide the cost of the repairing the historic bridge, cleaning and painting the historic bridge, and any proposed roadway work.*

---

<sup>1</sup> While it is not required by FHWA, Historic Bridge Programmatic Section 4(f) Evaluations can have more than one use alternative. For more information about what a use alternative is, see page 38 of the *Historic Bridge Programmatic Section 4(f) Guidelines*.

*Describe:*

- *If the alternative is feasible and prudent (see pages 38-39 of the Historic Bridge Programmatic Section 4(f) Guidelines to determine if the alternative is feasible and prudent)*
  
- *If the alternative meets the purpose and need*

*\*For information regarding how to document this alternative, see pages 60-62 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

## **5. Replace Historic Bridge<sup>2</sup>**

*Provide an introductory section that, at a minimum, includes:*

- *Statement that indicates this alternative is a use alternative since it would result in the use of the historic bridge.*
  
- *Description of the alternative:*
  - *Describe in detail the new bridge.*
  - *Describe any roadway work associated with this alternative.*

### Structural Deficiencies

*Describe how this alternative would affect the structural deficiencies outlined in the purpose and need.*

### Functional Inadequacies

*Describe how this alternative would affect the functional inadequacies outlined in the purpose and need.*

### Geometric Deficiencies

*Describe how this alternative would affect the geometric deficiencies outlined in the purpose and need.*

### Summary

*Include an itemized list of costs associated with this alternative. At a minimum, provide the cost of constructing the new bridge, any proposed roadway work, and any proposed new right-of-way.*

*Describe:*

- *If the alternative is feasible and prudent (see pages 38-39 of the Historic Bridge Programmatic Section 4(f) Guidelines to determine if the alternative is feasible and prudent)*
  
- *If the alternative meets the purpose and need*

*\*For information regarding how to document this alternative, see pages 63-64 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

---

<sup>2</sup> While it is not required by FHWA, Historic Bridge Programmatic Section 4(f) Evaluations can have more than one use alternative. For more information about what a use alternative is, see page 38 of the *Historic Bridge Programmatic Section 4(f) Guidelines*.

## **Evaluation Matrix**

*Include a matrix of alternatives considered. Example matrices are on pages 66-67 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

## **Recommended alternative**

*State the alternative that is recommended for the proposed action.*

*\*For information regarding how to write this section of the document, see pages 70 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

## **Measures to minimize harm**

### Planning Efforts

*Describe:*

- *Planning efforts that were used in an attempt to minimize the impacts to the historic bridge; this can include the Historic Bridge Team process and resulting report*
- *Any design modifications or types of in-kind repairs that were considered*
- *Bridge marketing efforts*

### Mitigation

*Explain the mitigation efforts that will be completed prior to the project's commencement. Mitigation efforts typically include relocation, documentation, interpretation/signage, educational materials, and incorporating aesthetics or special design features into new bridges.*

*\*For information regarding how to write this section of the document, see pages 71-75 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

## **Coordination**

*Provide a summary of all coordination efforts with the SHPO, HBF, CHC, bridge owner (if bridge is off-system), the public, or other interested parties.*

*\*For information regarding how to write this section of the document, see page 76 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

## **Conclusion**

*Include a statement that specifically mentions which alternative is recommended. This section must also include the following statement:*

*“Based upon the above considerations, it is recommended that there is no feasible and prudent alternative to the use of the Section 4(f) property, the XX Bridge, and the proposed action includes all possible planning to minimize harm to the property resulting from such use.”*

*\*For information regarding how to write this section of the document, see page 77 of the Historic Bridge Programmatic Section 4(f) Guidelines.*

## **Exhibits**

### Exhibit A – Project Location Maps

*See page 14 for list of maps that should be included.*

### Exhibit B – Photographs of Project Setting

*See page 15 for types of photographs that should be included.*

### Exhibit C – Photographs of the Historic Bridge

*Include photographs of the superstructure, substructure, deck, and all character-defining features of the bridge. For more information on the photographs that should be included see pages 16, 19, and 33-37.*

### Exhibit D – Schematics and Typical Sections

*See pages 68-69 for examples of the schematics and typical sections that should be included.*

### Exhibit E – Coordination

*Include copies of all correspondence with SHPO, CHC, HBF, bridge owner (if bridge is off-system), public, or any other interested parties.*

### Exhibit F – Bridge Marketing

*Include copies of all bridge marketing materials. See page 72 for discussion of bridge marketing and see Appendix C of the Historic Bridge Programmatic Section 4(f) Guidelines for example materials to include.*

**Appendix B. Examples of Incomplete and Complete Purpose and Need Statements**

### **Example of Incomplete Purpose and Need Statement**

Although it possesses local historical significance, the existing bridge structure has continuing structural deficiencies, functional inadequacies, and low vehicular load ratings, making it dangerous for ongoing vehicular traffic, including oil service trucks, agricultural vehicles, and school buses in the area. The purpose and need for this project is to provide a safe and efficient crossing over No Name Creek along CR 1234 that meets the current and future needs. TxDOT Bridge Division performed a condition evaluation of the No Name Creek bridge. The bridge has a sufficiency rating of 24.0 and must be replaced.

### **Example of Complete Purpose and Need Statement**

The existing bridge exhibits structural deterioration and worsening hydraulic issues that result in severely reduced load capacity, while functional issues related to the bridge's narrow width limit its ability to accommodate agricultural vehicles and implements that operate in the immediate area. The purpose and need of the project is to provide a safe and efficient crossing over No Name Creek along CR 1234 with the structural and functional capacity meeting current and projected traffic requirements, including specialized oilfield service and agricultural vehicles that operate in the area.

#### *Structural Deficiencies*

The existing CR 1234 at No Name Creek bridge displays major structural deficiencies and general deterioration to both substructure and superstructure elements. Most importantly, the bridge's abutments, particularly the south abutment, are in poor and deteriorating condition. The No Name Creek channel is aligned at a 15-degree skew to the existing structure and narrows by approximately five to seven feet at the CR 1234 bridge. The water flow direction and channel constriction cause turbulent flow at the structure and allow water to seep behind the abutment backwalls, particularly at the bridge's northeast and southwest corners. Embankment pressure behind the abutments has resulted in the inward shifting of the steel abutment columns/truss endposts and caused buckling of the bottom chord of the truss.

The bridge's south abutment, made up of steel pile columns and a timber backwall, was rated in poor condition in the December 2006 inspection report. The report noted that the flange and web of the steel column on the west side of the south abutment were cracked at the connection with the column cap, weakening the connection. The 2006 inspection report and the May 2008 condition assessment both noted that the south timber backwall was severely decayed.

At the bridge's north abutment, severe rusting and deterioration of the northeast endpost/abutment column, with an estimated 90 percent section loss, required immediate repairs to prevent bridge closure in 2002. A concrete collar was added to the lower half of the deteriorated steel column to encase the deteriorated material. New timber backwall planks were also inserted behind the columns. The repairs were noted as "adequate" in the 2006 inspection report; however, a slight gap is now present between the north backwall and the north end of the bridge, which may indicate renewed water seepage behind the recently repaired abutment.

The condition assessment also listed severe rust at the remaining steel endpost/abutment columns with up to 50 percent section loss evident on these character-defining features of the bridge. Since section loss of the northeast endpost/abutment column previously led to the closure of the bridge, the deteriorated condition of the remaining endpost/abutment columns should be addressed promptly.

In the mid-1990s the poor load capacity of the bridge's metal truss led Somewhere County to add metal supports under the floorbeam at the midpoint of the bridge channel. With this addition, the bridge's timber stringers now act as the bridge's load-carrying members rather than the steel truss. According to the December 2006 inspection report, the bridge's timber stringers exhibited "moderate weathering and decay" and the May 2008 condition assessment of the bridge stated the timber stringers were in "overall poor condition due to weathering, decay, warping, and cracking." The metal truss superstructure, which no longer functions as the bridge's load-carrying system, also exhibits bent vertical and diagonal members due to collision impact, sagging bracing members, and widespread minor to moderate rust.

Due to poor condition of the abutments and the timber stringers, the bridge received an Operating load rating of HS 4.1 in the May 2008 condition assessment. Previously, the findings of the December 2006 bridge inspection resulted in an Operating load rating of HS 5.7 and an Inventory load rating of HS 4.6. These figures indicate that the bridge's load capacity is decreasing over time due to its structural deficiencies and overall deterioration. The bridge is currently load posted at 5,000 pounds axle or tandem weight limit. School buses used this crossing until 1998, when the poor structural capacity of the bridge led to discontinuance of the school bus route on CR 1234 at this location.

Currently, the bridge does not meet TxDOT's reduced minimum design criteria for continued vehicular use of an off-system historically significant bridge. The reduced design criteria require an Operating load rating of at least HS 5 for a historically significant bridge with ADT of fewer than 50 vehicles per day and with an available alternate detour route less than five miles in length (TxDOT Historic Bridge Manual, 2-13).

In spite of the load restrictions, the bridge is commonly used by heavy-load and wide-load vehicles, such as oil field service vehicles and agricultural equipment. Typical oil field vehicles include vacuum trucks and hot-oil trucks. Types of agricultural equipment using the road are: large tractors; mowers and balers for hay production; and grain combines, row tillers, and harvesters for wheat and sorghum production. A detailed study of car/truck percentage use of the bridge has not been conducted. However, TxDOT Alpha District staff estimate that half of the bridge's average daily traffic of 20 vehicles per day is truck traffic.

If the bridge were closed due to structural deficiencies and low load capacity, local traffic would be required to use a detour route. As shown in Exhibit A, the shortest detour route for through north-south traffic is via Tree Farm Road, FM 15, and Mesa Road, with an added detour distance

of approximately two miles. The detour route can accommodate vehicles of similar or greater loading than the CR 1234 at No Name Creek bridge. It should be noted that property owners adjacent to the existing bridge have land on both sides of No Name Creek and currently use the CR 1234 crossing to access their property. Closure of the CR 1234 bridge would require them to travel approximately 4.2 miles to reach their property on either side of No Name Creek.

#### *Functional Inadequacies*

The existing bridge has a deck width of 12.2 feet, with structural vertical, diagonal, and endpost members that extend approximately three feet above the bridge deck. The approach roadway varies from approximately 14 feet to 17 feet in width. No guard fence or railing is present at the approaches and delineators are missing on the bridge corners. With the sharp transition between approach roadway and bridge deck, collision damage is evident on the bridge's four corner endposts and two center verticals, as well as many diagonal members. The damage to these structural elements was likely caused by wide-load agricultural or oil field equipment using the structure. According to TxDOT's Historic Bridge Manual, the alternative minimum design criteria for off-system, historically significant bridges allows for a clear roadway width of 10 feet when the bridge has an ADT of fewer than 50 vehicles per day and an available alternate detour route less than five miles in length (*TxDOT Historic Bridge Manual*, 2-13). However, the agricultural vehicles and implements commonly operating in the area have widths that meet or exceed the bridge's 12.2-foot horizontal clearance. Therefore, use of the alternative "Minimum Criteria to Support Continued Use by Vehicular Traffic Off the State Highway System" (hereinafter "Minimum Criteria") would not be appropriate for this bridge.

As noted above, the shortest detour route for north-south traffic is approximately two miles in added distance, with a greater distance for adjoining property owners who need to access their property on both sides of No Name Creek. The detour route can accommodate vehicles of similar or greater width than the CR 1234 at No Name Creek bridge.

Another functional issue is repeated drift and debris collection at the bridge, resulting from the channel constriction and the mid-1990s installation of the center support. The December 2006 bridge inspection report noted "heavy build-up of drift," including debris "lodged against stringers in south span." The May 2008 condition assessment reported similar observations, with "a moderate amount of drift caught at the bridge." A September 2008 field visit to the bridge showed debris again lodged against the center support and abutments, with driftwood wedged into the bridge's stringers and bottom chord. As seen in the photographs in Exhibit C, drift timber and other debris collects on the upstream side of the bridge, clogging the channel and impeding water flow. The reduction in water flow results in occasional upstream flooding and overtopping of the bridge deck during heavy rain and high-flow events. Debris collection at the bridge also causes increased scour, which can lead to many maintenance issues. Another concern is the possibility of debris hitting the center supports, resulting in damage to or failure of these load-carrying substructure members.

Due to its structural deficiencies and functional inadequacies, the bridge received a sufficiency rating of 24.0 out of a possible 100 points. The sufficiency rating measures a bridge's capability to remain in vehicular service, based on a formula incorporating condition rankings, load capacity, roadway and structure geometrics, traffic counts, presence of suitable detour routes, and other bridge inspection factors. This rating is used when determining if federal funding can be used for rehabilitation and/or replacement of an existing bridge structure.

**Appendix C. Bridge Marketing Notice**



**Public Notice  
Historic Bridge Available**

The Federal Highway Administration and the Texas Department of Transportation (TxDOT) announce the availability of a historic steel and concrete girder bridge (Non-truss) for relocation and preservation in compliance with the U.S. Secretary of Interior's Standards for Treatment of Historic Properties. The bridge is located on United States Highway 84 over the Union Pacific Railroad in Mexia, Limestone, County.

The bridge was built in 1937. It consists of fifteen 40ft simple-spans of concrete T-beams and two 50ft simple-spans of steel I-beams. The bridge has a total length of 700ft and an overall width of 52.5ft. Technical difficulties and substantial costs associated with relocating and reconstructing the bridge should be anticipated.

Limited financial assistance is available to help with relocation costs. The Waco District of TxDOT will be accepting reuse proposals until April 6, 2007. For more information, please contact Karie Brown at (254) 867-2743.

*Marketing this historic bridge to a responsible party is required under Title 23, U.S. Code, Section 144.*

The Mexia Daily News  
 PO Box 431  
 Mexia, TX 76667  
 (254) 562-2668  
 Classified Ad Invoice

*KARIE*

TEXAS DEPT OF TRANSPORTATION/ WACO  
 100 SOUTH LOOP DRIVE  
 WACO, TX 76704-2858

(254) 867-2700  
 Cust # a 5382  
 Date 03/23/07  
 Due 04/07/07

*Carol Thompson*

Ad #	Text	Start	Stop	Days	Class	Words	Lines	Inches	Amount
45972930	3 x 3 T.J.DOT Hwy 84 B	03/23/07	03/23/07	1	201	7	4	0.50	34.20
	097WACO071								

PLEASE RETURN ONE COPY WITH PAYMENT. THANK YOU!

Total 34.20

PIN/ 15508707682991 / 15912930/6202

SRC UNIT 061 RCT/SERV DATE 3/23/07

ORDER# N/A ORDER DATE 3/19/07

AGENCY VERIFICATION/AUDIT HAS BEEN PERFORMED, THE SERVICES RENDERED AND/OR GOODS RECEIVED, AND THE INVOICE(S) CORRECTLY CORRESPONDS WITH THE AUTHORITY UNDER WHICH PROCUREMENT WAS MADE. THE INVOICE(S) IS (ARE) TRUE AND UNPAID START DATE 3/19/07

0409760056-03-053 34.20 120711

FY DIST SEG DETAIL AMOUNT FUNC. OBJ.

**PAID**

RECEIVED  
 MAR 29 2007  
 TEXAS DEPT. OF TRANS.  
 WACO DISTRICT

097-0648

# The Mexia **DAILY NEWS**

R. LYNNETTE COPLEY  
PUBLISHER

P.O.Box 431, Mexia, Texas 76667-0431 (254) 562-2868 Fax (254) 562-3121

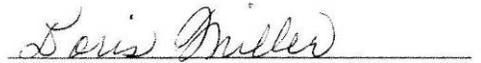
State of Texas

County of Texas Limestone

Before me, the undersigned authority, on this day personally appeared Lynette Copley who being by me duly sworn, deposes and says that she is the Publisher of The Mexia Daily News; that said newspaper is regularly published in Mexia, Limestone County, Texas, and generally circulated in Limestone and Freestone Counties, Texas; that the attached notice was published in said newspaper on the following date(s), to wit: March 23, 2007

  
Newspaper Representative Signature

Subscribed and sworn to me this the 29 day of March, 2007, to certify which witness my hand and seal of office.

  
Notary of Public in and for the State of Texas

(Seal)

  
My Commission Expires 08/16/2009





Form 474  
 (Rev. 2/2000)  
 (GSD-EPC Word 97)  
 Page 1 of 1

**ORDER AUTHORIZING ADVERTISEMENT FOR PUBLIC MEETING OR HEARING**

March 19, 2007

District: 09  
 Order No.: 097WAC071

Control: 0056-03-053  
 Project: US 84 @ UPRR  
 Highway: US 84  
 County: Limestone

Mexia Daily News  
 P.O. Box 431  
 Mexia, TX 76667

Attn: Advertisement Department

Please print the attached advertisement for bids in your newspaper on the following date(s):

Desired publication date(s) i.e.: Friday, March 23, 2007

**Attach a clipping of the advertisement to your invoice.**

**Submit invoice to:**

Texas Department of Transportation  
 100 South Loop Drive  
 Waco, TX 76704-2858

Please send invoice to above Office. If further information is needed, please contact **Karie Brown**, (254) 867-2743

**IMPORTANT:  
 INVOICES MUST BE SUBMITTED WITHIN  
 THIRTY (30) DAYS AFTER ADVERTISEMENT  
 IS COMPLETED.**

Sincerely,  
  
 Richard J. Skopik, P.E.  
 Waco District Engineer

**INSTRUCTIONS FOR ISSUING OFFICE:**

Original to newspaper; (2) copies for purchase order file, (1) copy of which will support the invoice.

Issuing Office is to insert the Order Number.



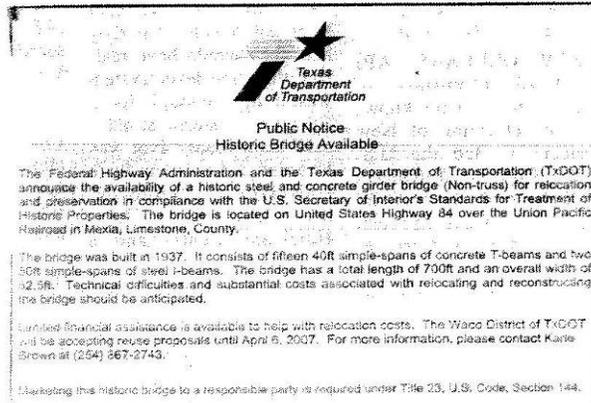
**Public Notice  
Historic Bridge Available**

The Federal Highway Administration and the Texas Department of Transportation (TxDOT) announce the availability of a historic steel and concrete girder bridge (Non-truss) for relocation and preservation in compliance with the U.S. Secretary of Interior's Standards for Treatment of Historic Properties. The bridge is located on United States Highway 84 over the Union Pacific Railroad in Mexia, Limestone, County.

The bridge was built in 1937. It consists of fifteen 40ft simple-spans of concrete T-beams and two 50ft simple-spans of steel I-beams. The bridge has a total length of 700ft and an overall width of 52.5ft. Technical difficulties and substantial costs associated with relocating and reconstructing the bridge should be anticipated.

Limited financial assistance is available to help with relocation costs. The Waco District of TxDOT will be accepting reuse proposals until April 6, 2007. For more information, please contact Karie Brown at (254) 867-2743.

*Marketing this historic bridge to a responsible party is required under Title 23, U.S. Code, Section 144.*



**Appendix D. Three-Party Agreement Example**

CSJ # 0909-29-034  
District # 09  
Code Chart 64 # \_\_\_\_\_  
Project: CR 284 @ Leon River

STATE OF TEXAS §  
COUNTY OF TRAVIS §

**ADVANCE FUNDING AGREEMENT AMENDMENT  
For Bridge Replacement or Rehabilitation  
Off the State System:**

**AMENDMENT  
FOR THE PRESERVATION AND ADAPTIVE USE  
OF A HISTORIC BRIDGE  
OFF THE STATE SYSTEM (THREE-PARTY)  
Amendment Number # 1**

**THIS AMENDMENT (the Amendment)** is made by and between the State of Texas, acting by and through the Texas Department of Transportation, hereinafter called the State; and Hamilton County, a political subdivision of this state, hereinafter called the Local Government, acting by and through its duly authorized officials, and City of Hamilton, hereinafter identified as the Recipient.

**WITNESSETH**

**WHEREAS**, the State and the Local Government executed an agreement on November 10, 2005 to effectuate a project to replace the bridge under the off-state system federal-aid highway bridge replacement and rehabilitation program (HBRRP); and

**WHEREAS**, the date for letting the highway bridge replacement project to contract construction is tentatively scheduled for October, 2006; and

**WHEREAS**, the existing bridge being replaced has been listed or determined eligible for listing on the National Register of Historic Places, i.e., a "historic bridge"; and

**WHEREAS**, Title 23, Section 144(o) United States Code established the Historic Bridge Program to provide for the rehabilitation, reuse and preservation of Historic Bridges; and

**WHEREAS**, the Historic Bridge Program provides that any State which proposes to demolish a Historic Bridge for a replacement project under the HBRRP shall make the bridge available for donation to recipients which may be public or private entities; and

**WHEREAS**, it is mutually agreeable between the State and Local Government for ownership of the Historic Bridge to be reassigned to the Recipient for preservation in accordance with the Historic Bridge Program; and

CSJ # 0909-29-034  
District # 09  
Code Chart 64 # \_\_\_\_\_  
Project: CR 284 @ Leon River

**WHEREAS**, the Recipient submitted a proposal to the State evidencing its desire to acquire and preserve the Historic Bridge under the provisions of the Historic Bridge Program; and

**WHEREAS**, the Recipient's proposal is acceptable to the State and is included as a part of this agreement as Exhibit A

### **A G R E E M E N T**

**NOW, THEREFORE**, in consideration of the premises and of the mutual covenants and agreements of the parties hereto to be by them respectively kept and performed as hereinafter set forth, it is agreed as follows:

#### **Article 1. Assignment of Ownership of the Historic Bridge**

- A. Ownership of the Historic Bridge is relinquished by the Local Government and assumed by the Recipient at a time mutually agreed upon in writing by all the parties, or when the work performed by the State as outlined in Exhibit B is completed and the bridge is in the care, custody, and control of the Recipient.
- B. Ownership by the Recipient includes full and immediate responsibility for all future legal and financial matters relating to the Historic Bridge, including compliance with applicable federal, state, and local government laws, rules, and regulations.

#### **Article 2. Adaptive Use of the Historic Bridge**

- A. The Historic Bridge shall not be used on a public road as a vehicular traffic facility
- B. The Recipient shall preserve and maintain the Historic Bridge and the features that give it its historical significance, adhering to the provisions of the U.S. Secretary of Interior's Standards for Rehabilitation (36 CFR 67) hereby incorporated by reference and made a part of this agreement as though fully set forth herein.

The Recipient shall consult with the State Historic Preservation Officer (SHPO) in the future prior to altering, renovating, or transferring ownership of the Historic Bridge.

- C. The Recipient shall permit the State or its authorized representative access to any temporary or permanent relocation site to perform any activities required to execute the work. The Recipient shall provide for all necessary real property and utility adjustments needed for performance of the work on sites not owned or to be acquired by the State.
- D. After completion of the modification, restoration and/or preservation work on the Historic Bridge as described by the Recipient and contained in the approved proposal (Exhibit A), the State will visit the site solely for the purpose of confirming that the work has been accomplished.

**Article 3. Scope of Work and Funding**

- A. The work to be accomplished by the State is described in Exhibit B. The work to be accomplished by the Recipient is described in Exhibit C. Exhibits B and C are attached hereto and made part of this agreement. Funding obligations for the State and funding obligations for the Recipient are described in Exhibits B and C, respectively.
- B. The state auditor may conduct an audit or investigation of any entity receiving funds from the state directly under the contract or indirectly through a subcontract under the contract. Acceptance of funds directly under the contract or indirectly through a subcontract under this contract acts as acceptance of the authority of the state auditor, under the direction of the legislative audit committee, to conduct an audit or investigation in connection with those funds. An entity that is the subject of an audit or investigation must provide the state auditor with access to any information the state auditor considers relevant to the investigation or audit.

**Article 4. Indemnification**

- A. If the Recipient is a non-governmental entity, the Recipient shall indemnify and hold harmless the State and its officers and employees from all damages, claims, and liabilities, including those arising from injury to or death of persons or loss of or damage to property, arising out of, incident to, or in any manner connected with the relocation, maintenance, or operation of the Historic Bridge, which indemnification shall extend to and include any and all court costs, attorney's fees, and expenses related to or connected with any claims or suits for damages and shall, if requested in writing by the State to do so, assist with or relieve the State from defending any suit brought against it.
- B. If the Recipient is a governmental entity, the parties to this Amendment agree that no party is an agent, servant, or employee of the other party and each party agrees it is responsible for its individual acts and deeds as well as the acts and deeds of its contractors, employees, representatives, and agents.

**Article 5. Termination**

- A. This Amendment may be terminated by any of the following conditions:
  - 1. By mutual agreement and consent of all parties or by any party, upon thirty (30) days written notice to the other parties.
  - 2. By the State giving written notice to the Recipient as a consequence of Recipient's failure to satisfactorily perform the responsibilities and obligations set forth in this Amendment. Proper allowance will be made for circumstances beyond the control of the Recipient, as determined by the State. The Recipient will be afforded thirty (30) days to remedy the breach as outlined by the State.

CSJ # 0909-29-034  
District # 09  
Code Chart 64 # \_\_\_\_\_  
Project: CR 284 @ Leon River

Where termination is required due to failure of the Recipient to perform its agreed to responsibilities and obligations, the State may move the Historic Bridge to a temporary site or take other action without further consultation with the Recipient. Subject to consultation with the SHPO and concurrence of the Local Government, such actions may include demolition.

- B. Termination of this Amendment shall extinguish all duties, obligations and liabilities of the State and Local Government under this Amendment. Additionally, the Recipient shall not perform any actions to take over and/or remove the Historic Bridge from the existing location. The Recipient shall reimburse the State or the Local Government for any costs incurred on behalf of the recipient up to the time of termination.

**Article 6. Gratuities**

Texas Transportation Commission policy mandates that employees of the State shall not accept any benefit, gifts, favors or gratuities from any person or business doing business with the State under this agreement. The only exceptions allowed are ordinary business lunches and items that have received the advance approval of the State's Executive Director. Any person or organization doing business with the State may not make any offer of benefits, gifts, favors or gratuities to State employees, except as mentioned hereinabove. Failure on the part of the Recipient to adhere to this policy may result in termination of this agreement.

**Article 7. Incorporation of Provisions**

The applicable provisions of the agreement under which this Amendment is made are incorporated into this Amendment as if fully set forth herein.

**Article 8. Signatory Warranty**

The signatories to this Amendment warrant that each has the authority to enter into this Amendment on behalf of the organization or entity they represent.

CSJ # 0909-29-034, 035  
District # 09  
Code Chart 64 # 50098; 18050  
Project: STP 2006(831) TE  
NBI Structure # 09098AA0284001

IN WITNESS WHEREOF, duly authorized representatives of the State, the Local Government, and the Recipient have signed triplicate counterparts of this Amendment.

**THE LOCAL GOVERNMENT**

By: Fred Cox  
Signature  
Fred Cox  
Printed Name  
Title: Hamilton County Judge  
Date: July 3, 2006

**THE RECIPIENT**

By: Roy Rumsey  
Signature  
ROY RUMSEY  
Printed Name  
Title: Mayor  
Date: 7-3-06

**THE STATE OF TEXAS**

Executed for the Executive Director and approved for the Texas Transportation Commission for the purpose and effect of activating and/or carrying out the orders, established policies or work programs heretofore approved and authorized by the Texas Transportation Commission.

By: William R. Cox  
William R. Cox, PE  
Director, Bridge Division  
Date: 7-12-06

CSJ # 0909-29-034  
District # 09  
Code Chart 64 # \_\_\_\_\_  
Project: CR 284 @ Leon River

**Exhibit A  
Recipient's Proposal**

This Recipient's Proposal includes the agreed upon responsibilities of the parties with respect to the Project. By execution of this amendment, the parties agree to perform the work and provide the funding described in this Recipient's Proposal.

The State will provide for transportation of the Bridge to the Recipient's Pecan Creek Park.

The Recipient (City of Hamilton) will allow the State to store the Bridge at Pecan Creek Park for preliminary remediation work. Hamilton County or the City of Hamilton will provide police vehicles to escort the Bridge from the existing site to the Pecan Creek Park.

After the preliminary remediation work is accomplished and the final site is made ready, the Recipient will allow the Bridge to be moved to its city park on a hike and bike trail.

The Recipient plans to cooperate with the State in order to develop the site and rehabilitate the Bridge in accordance with applicable federal and state standards. Responsibilities of the parties under this cooperative plan are described in Exhibit B and C.

**Exhibit B**

At its own expense, the State:

- (1) will perform any required environmental studies and remediation on the Bridge structure;
- (2) will develop the plans, specifications, and estimates necessary for rehabilitation of the Bridge; and,
- (3) will cooperate with the Recipient to determine the best method for constructing the Bridge improvements and establishing the Bridge at its final location.

**Exhibit C**

At its own expense, the Recipient will provide a suitable location for the Bridge in its park and will allow the State necessary access for placement and construction activities at the location. The Recipient will ensure that utilities will not hinder placement of the Bridge and will relocate any utilities that must be moved.

The Recipient will maintain the Bridge at its own cost in accordance with the requirements of this amendment.

**Appendix E. Relocation Package Example**

### **Description of Project Area**

The proposed project will relocate and rehabilitate the Bowstring Steel Truss Bridge over the Leon River to Pecan Creek Park in the City of Hamilton in Hamilton County. The City of Hamilton is located in central Texas, 85 miles south west of Dallas on US 281. The City of Hamilton has an estimated population of 2,937.

The existing Pecan Creek Park is linear in design, traversing through a portion of the City of Hamilton. The park was originally developed during the 1980's with a Land and Water Conservation Grant administered by the Texas Parks and Wildlife Department (TPWD). Pecan Creek Park includes trails, playground equipment and other amenities and is a common meeting and recreational area for local residences. Additionally, the existing park provides pedestrian access from the residential areas located on the south side of town to the commercial area around the county courthouse. Pecan Creek traverses the entire length of the City of Hamilton.

The City of Hamilton has received additional funding from the TPWD for the expansion of Pecan Creek Park through a Land and Water Conservation Grant. The City of Hamilton has purchased an additional 48 acres on the north side of the City. The park will be developed in several phases. The newly acquired property is bounded on the south side by the existing Pecan Creek Park. Construction is currently ongoing including the development of the baseball fields, trails, lighting and playground equipment.

### **Proposed Use of the Bridge**

The City of Hamilton included a master development plan for the extension of Pecan Creek Park in the grant approved by the TPWD. The master plan included the relocation and rehabilitation of a historic bridge to be incorporated into the trail system as a pedestrian bridge. Additional improvements to the park include: baseball fields, multi-purpose fields, playground, picnic areas, volleyball, concessions, restrooms and approximately 4,275 linear feet of hike and nature trails. Supporting roads, parking areas, trail heads and utilities will also be included in the development of the park.

The bridge will span Pecan Creek which runs through the park from the south to the north. The incorporation of the bridge into the trail design will provide access to the park facilities on either side of Pecan Creek. Currently, residences are required to use public roads to cross the Pecan Creek, which poses certain safety hazards to pedestrian traffic.

Texas Department of Transportation will remove the existing Leon River Bridge and relocate the structure to Pecan Creek Park. The bridge will have its steel members repaired, cleaned and painted. New decking will be added and a pedestrian railing will be installed to meet pedestrian load requirements. Abutments will be constructed and the bridge approaches will be connected to the park trails. Relocation, rehabilitation, construction of the abutments, decking and pedestrian railings will be funded by the Statewide Transportation Enhancement Program (STEP). The City of Hamilton will assume maintenance of the bridge, which will be included in the city budget. The proposed project to relocate the Leon River Bridge to Pecan Creek Park has been endorsed by the Hamilton County Historical Chairman, City of Hamilton and Hamilton County **Appendix F**.





Approximate location of bridge over Pecan Ck looking south



Opposite side of the Pecan Ck looking north



Pecan Creek flows year round over limestone bedrock.



Looking north west from bridge location towards baseball fields and all purpose field.

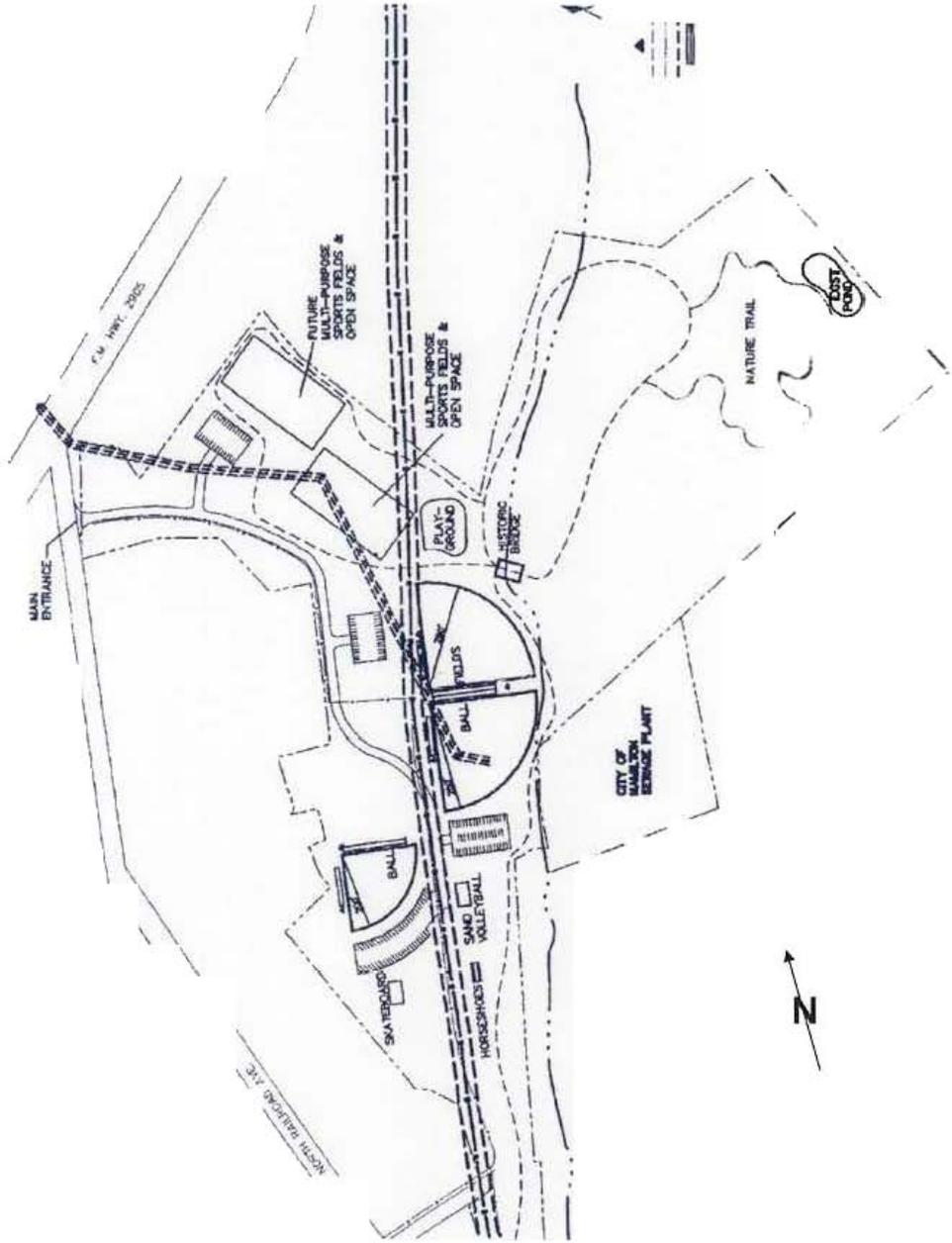


Trail head looking towards sports field and Pecan Creek



Parking lot (under construction) near baseball fields.

# Master Plan for Proposed Park



**PART 2 – HISTORIC BRIDGE PROGRAMMATIC SECTION 4(f) STANDARDS OF UNIFORMITY**

**STANDARDS OF UNIFORMITY FOR NON-ARCHEOLOGICAL HISTORIC BRIDGE  
PROGRAMMATIC SECTION 4(F) DETERMINATION REPORTS IN FHWA PROJECTS  
REVIEW CHECKLIST**

DISTRICT/COUNTY \_\_\_\_\_ HIGHWAY \_\_\_\_\_ CSJ \_\_\_\_\_

CONTRACTOR \_\_\_\_\_ SUBMITTAL DATE \_\_\_\_\_ REVIEWED BY \_\_\_\_\_

Reports with required documentation for determining impacts to historic bridges as Section 4(f) historic sites will be reviewed for compliance with the following checklist, in addition to 23 CFR 774 of the Department of Transportation Act of 1966, Federal Highway Administration's (FHWA) *Section 4(f) Policy Paper* dated March 1, 2005 and FHWA's *Section 4(f) Final Rule* dated March 12, 2008. Reports submitted with all **YES** responses will automatically be accepted. One or more **NO** responses may result in acceptance pending specified revisions or clarifications, or in rejection depending on the nature of the issue. Reports are comprised of several components that allow Texas Department of Transportation's (TxDOT) Environmental Affairs Division and FHWA to assess whether project-related impacts to Section 4(f) properties meet all reporting standards.

	<b>FORMAT CRITERIA</b>	<b>MEETS CRITERION?</b>
1.	Cover page includes: identification of the bridge with the roadway carried and feature crossed, district(s), county(ies), CSJ(s), and states "Prepared for the Federal Highway Administration."	
2.	Report includes the following elements: <ul style="list-style-type: none"> <li>• Description of Proposed Action</li> <li>• Description of the Section 4(f) property</li> <li>• Purpose and Need</li> <li>• Alternatives Analysis</li> <li>• Measures to Minimize Harm</li> <li>• Coordination</li> <li>• Conclusion</li> <li>• Exhibits (as needed)</li> </ul>	
	<b>DESCRIPTION OF THE PROPOSED ACTION</b>	
3.	Report states the reason a Programmatic Section 4(f) evaluation is being completed and references project listed in Statewide Transportation Improvement Program (STIP), including date of STIP.	
4.	Report discusses the Section 4(f) applicability and includes the required text: "In accordance with 23 CFR 774, the following Section 4(f) evaluation provides a discussion for recommending that there are no feasible and prudent alternatives to the use of the historic bridge and the proposed action includes all possible planning to minimize harm to the historic bridge resulting from such 'use.'"	
5.	Report discusses the proposed project location and setting by describing the properties and landscape surrounding the historic bridge.	
6.	Report discusses the presence of any other Section 4(f) properties located in the project area.	
7.	Report includes adequate maps and photographs illustrating the project area. At a minimum, the report includes the following maps: <ul style="list-style-type: none"> <li>• Roadway map showing location of bridge</li> <li>• Aerial photograph, USGS 7.5' quadrangle topographic map, or equivalent showing location of bridge.</li> </ul>	

8.	<p>Report includes photographs that illustrate multiple views surrounding the bridge, including, but not limited to:</p> <ul style="list-style-type: none"> <li>• Bridge approaches</li> <li>• Views looking upstream and downstream of the bridge</li> <li>• Land use surrounding the bridge</li> </ul> <p>These photographs are 3.5" x 5" color representations printed on matte finish photographic paper or 3.5" x 5" color representations printed on matte white, premium or photo quality laser or inkjet paper. Photographs must be original prints or electronic presentations of at least 1200 x 1600 pixel resolution quality.</p> <p>Photographs are labeled describing each view in relation to the historic bridge.</p>	
<b>DESCRIPTION OF THE SECTION 4(f) PROPERTY</b>		
9.	<p>Report includes physical description of the historic bridge, discusses the bridge's historical significance and its eligibility for listing in the National Register of Historic Places based on established criteria and aspects of integrity, and identifies and describes the bridge's character-defining features.</p>	
10.	<p>Report includes photographs illustrating multiple views of the bridge's superstructure, substructure, and deck. Photographs also illustrate and identify the bridge's character-defining features. These photographs are 3.5" x 5" color representations printed on matte finish photographic paper or 3.5" x 5" color representations printed on matte white, premium or photo quality laser or inkjet paper. Photographs must be original prints or electronic presentations of at least 1200 x 1600 pixel resolution quality.</p> <p>Photographs are labeled describing each view of the historic bridge.</p>	
<b>PURPOSE AND NEED STATEMENT</b>		
11.	<p>Report includes a detailed discussion of the purpose and need statement with the needs of the project divided into the following three categories, as applicable:</p> <ul style="list-style-type: none"> <li>• structural deficiencies</li> <li>• functional inadequacies</li> <li>• geometric deficiencies</li> </ul>	
12.	<p>Report includes photographs, maps, and existing typical sections to illustrate existing conditions and need for proposed action, as needed. Photographs are 3.5" x 5" color representations printed on matte finish photographic paper or 3.5" x 5" color representations printed on matte white, premium or photo quality laser or inkjet paper. Photographs must be original prints or electronic presentations of at least 1200 x 1600 pixel resolution quality.</p>	
<b>ALTERNATIVES ANALYSIS</b>		
13.	<p>Report provides brief, introductory overview of all alternatives considered.</p>	
14.	<p>Report includes discussions of the following alternatives:</p> <ul style="list-style-type: none"> <li>• No Build Alternative</li> <li>• Bypass alternatives <ul style="list-style-type: none"> <li>○ Construct new bridge on same road</li> <li>○ Upgrade parallel roadways (if applicable)</li> </ul> </li> <li>• Rehabilitation (avoidance) alternatives <ul style="list-style-type: none"> <li>○ Continued vehicular use carrying two-way traffic</li> <li>○ Continued vehicular use as a one-way pair</li> <li>○ Pedestrian use</li> </ul> </li> </ul>	
15.	<p>Report includes discussion of at least one use alternative, such as Rehabilitation (use) alternative and/or Replacement alternative.</p>	
16.	<p>Discussion of each alternative is divided by project needs, as applicable:</p> <ul style="list-style-type: none"> <li>• structural deficiencies</li> <li>• functional inadequacies</li> <li>• geometric deficiencies</li> </ul>	

17.	Discussion of each alternative includes a summary that: 1) demonstrates substantive analysis of each alternative to justify their dismissal or selection based on their feasibility and prudence; and 2) includes an itemized list of each alternative's cost (except the No Build).	
18.	Report includes detailed information regarding why a use alternative is recommended for the proposed action.	
19.	Report includes graphics to strengthen the alternatives analysis. An alternatives analysis matrix and typical sections are included. If available, schematics or line drawings illustrating alternatives in relation to the historic bridge or any other 4(f) property are included.	
<b>RECOMMENDED ALTERNATIVE</b>		
20.	Report definitively states which alternative is recommended for the proposed action.	
<b>MEASURES TO MINIMIZE HARM</b>		
21.	Report discusses all possible planning measures to minimize harm to the historic site from the proposed action through design modifications that lessen impacts to allow for preservation and continued function of historic site(s)	
22.	Report discusses historic bridge marketing efforts.	
23.	Report discusses TxDOT consultation regarding these measures with the State Historic Preservation Office (SHPO), Historic Bridge Foundation (HBF), County Historical Commission (CHC), and consulting parties, if any, pursuant to Section 106 of the National Historic Preservation Act (NHPA).	
24.	Report discusses public meeting(s) and/or hearing(s), if applicable.	
25.	Report discusses all mitigation or measures to compensate for harm from residual impacts to preserve integrity of the historic bridge, including relocation, design aesthetics, archival documentation of the historic bridge in its current appearance and condition, or other measures as identified through Section 106 consultation.	
26.	Report evaluates whether costs of mitigation are a reasonable public expenditure in light of severity of impacts.	
27.	If applicable, report includes supporting documentation for measures to minimize harm and mitigation as an exhibit.	
<b>COORDINATION</b>		
28.	Report discusses the results of coordination among TxDOT, SHPO, FHWA, HBF, CHC, and other consulting parties via Section 106 procedures	
29.	Report includes coordination letter(s) with SHPO, HBF, CHCs, and consulting parties if any, as an exhibit.	
<b>CONCLUSION</b>		
30.	Report includes the following text: "Based upon the above considerations, it is recommended that there is no feasible and prudent alternative to the use of the Section 4(f) property, the XX Bridge, and the proposed action includes all possible planning to minimize harm to the property resulting from such use."	
<b>APPROVAL</b>		
31.	Report contains no factual errors affecting the finding(s) and is therefore approved for acceptance. (Reviewer comments required if <b>No</b> )	
32.	COMMENTS:	