

# Appendix F: Programmatic Section 4(f) Evaluation

This Page Left Blank Intentionally

# Programmatic Section 4(f) Evaluation

## U.S. 63 River Bridge and Approach Roadways Project

State Project No. 2515-21

May 1, 2015

Figure 1 – Location Map



Figure 2 – Project Area Section 4(f) Resources

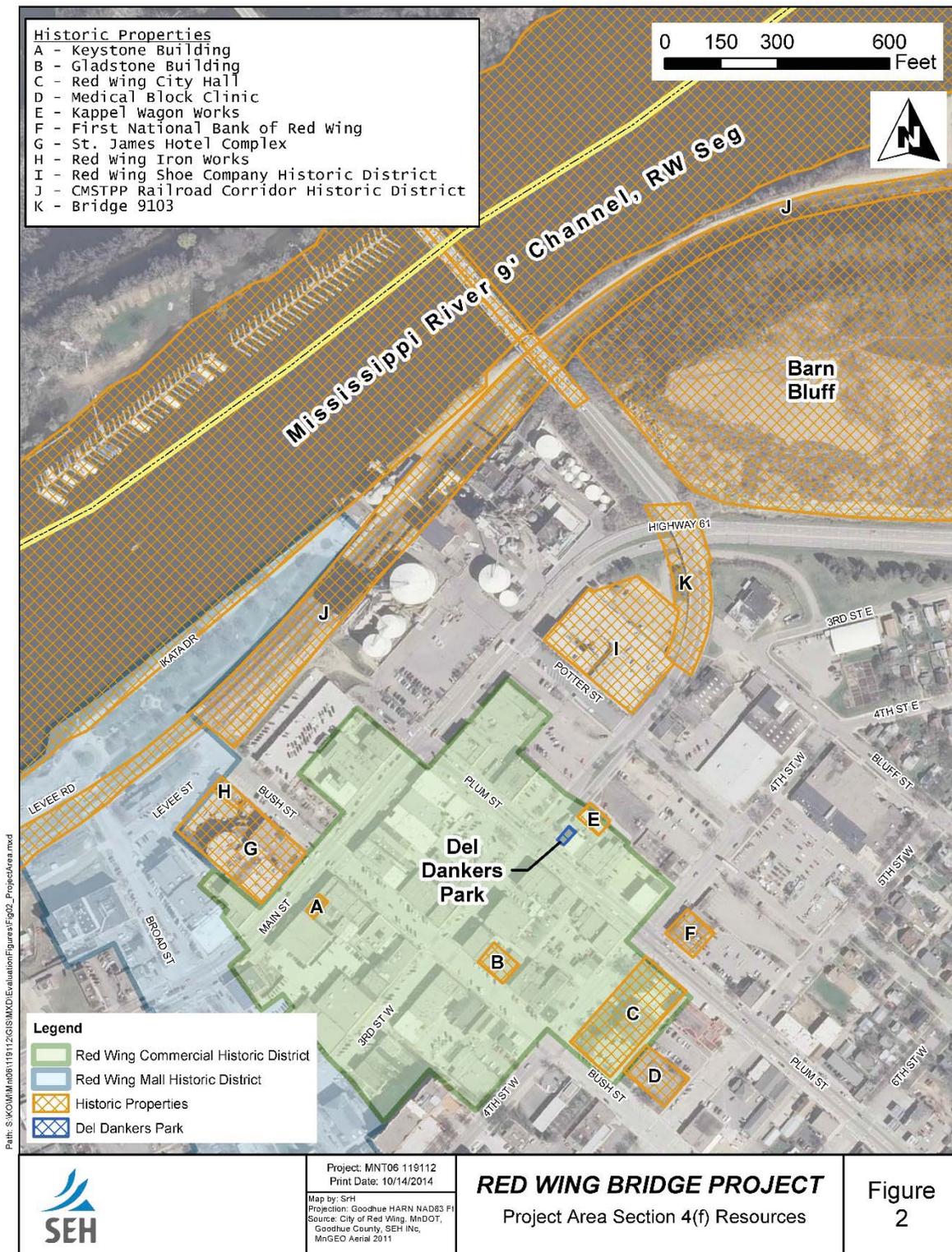
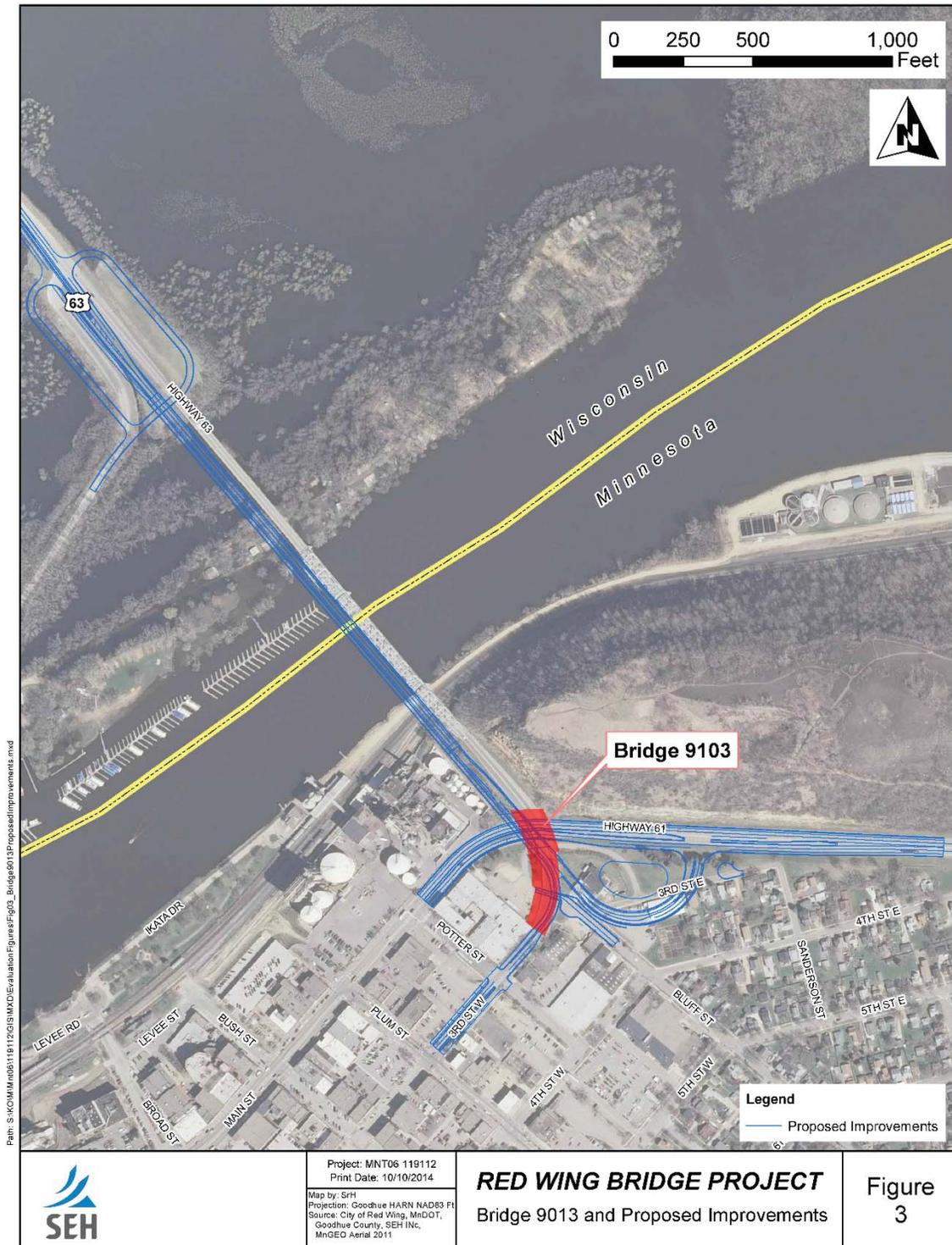


Figure 3 – Bridge 9103 and Proposed Improvements



# Table of Contents

	Page
<b>1.0 Introduction</b> .....	<b>1</b>
<b>2.0 Proposed Action and Need for Project</b> .....	<b>2</b>
<b>3.0 Description of Affected Section 4(f) Resource</b> .....	<b>3</b>
3.1 Bridge No.9103.....	3
<b>4.0 Impacts to the Section 4(f) Resource – Bridge 9103</b> .....	<b>4</b>
4.1 Preferred Alternative.....	4
<b>5.0 Avoidance Alternatives – Bridge 9103</b> .....	<b>4</b>
5.1 No-Build .....	6
5.2 Build a new structure at a different location without affecting the historic integrity of the old bridge .....	6
5.2.1 Build a new structure at a different location (i.e. parallel to the existing bridge) without affecting the historic integrity of the bridge .....	6
5.2.2 Build on Alternative Alignment Location without affecting the historic integrity of the bridge.....	7
5.3 Rehabilitate Bridge 9103 Without Affecting Historic Integrity.....	8
5.3.1 Rehabilitate Bridge 9103 and Retain Its Current Function.....	8
5.3.2 Rehabilitate Bridge 9103 as Part of Buttonhook Design .....	8
5.4 Avoidance Alternatives: Summary of Findings.....	9
<b>6.0 Measures to Minimize Harm – Bridge 9103</b> .....	<b>9</b>
<b>7.0 Coordination – Bridge 9103</b> .....	<b>9</b>
<b>8.0 Least Overall Harm Analysis of Alternatives That Use Section 4(f) Property</b> ...	<b>10</b>
<b>9.0 Conclusion</b> .....	<b>10</b>

## List of Figures

Figure 1 – Location Map.....	a
Figure 2 – Project Area Section 4(f) Resources.....	b
Figure 3 – Bridge 9103 and Proposed Improvements.....	c

## List of Appendices

Appendix A	Section 106 Programmatic Agreement (PA)
Appendix B	Minnesota Approach Alternatives Identification, Evaluation, and Screening Memorandum
Appendix C	New Bridge Location Feasibility Assessment Memorandum

# Programmatic Section 4(f) Evaluation - Review Draft

## U.S. 63 River Bridge and Approach Roadways Project

### 1.0 Introduction

The Section 4(f) legislation as established under the Department of Transportation Act of 1966 (49 USC 303, 23 USC 138) provides protection for publicly owned parks, recreation areas, historic sites, wildlife and/or waterfowl refuges from conversion to a transportation use. The FHWA may not approve the use of land from a significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that:

- There is no feasible and prudent alternative to the use of land from the property; and
- The action includes all possible planning to minimize harm to the property resulting from such use (23 CFR 774.3).

Additional protection is provided for outdoor recreational lands under the Section 6(f) legislation (16 USC 4602-8(f) (3)) where Land and Water Conservation (LAWCON) funds were used for the planning, acquisition or development of the property. These properties may be converted to a non-outdoor recreational use only if replacement land of at least the same fair market value and reasonably equivalent usefulness and location is assured. There are no Section 6(f) properties within the project impact area, therefore this document will not address Section 6(f) issues or process.

The purpose of this Section 4(f) Evaluation is to provide the information required by the Secretary of Transportation to make the decision regarding the proposed Section 4(f) use of Bridge 9103, a property protected by Section 4(f) legislation and which would be affected as a result of the construction of the Red Wing Bridge Project.

This Section 4(f) Evaluation describes all identified Section 4(f) properties which would be “used” by the proposed project alternative, potential impacts on those properties, and possible mitigation measures to minimize impacts. A “use” occurs (1) when land from a Section 4(f) site is acquired for a transportation project, (2) when there is an occupancy of land that is adverse in terms of the statute's preservationist purposes, or (3) when the proximity impacts of the transportation project on the Section 4(f) sites, without acquisition of land, are so great that the purposes for which the Section 4(f) site exists are substantially impaired (referred to as a constructive use).

The Section 4(f) process requires that any impacts from use of a park, recreation area, historic site, wildlife or waterfowl refuge for highway purposes be evaluated in context with the proposed highway construction/reconstruction activity. An inventory of these types of properties was completed based on a review of the design concept drawings. The project's

potential impacts on these properties were assessed. The following Section 4(f) property will be impacted by the proposed project:

- Bridge 9103 (U.S. 63 bridge over U.S. 61)

The proposed use of Bridge 9103 satisfies the requirements for use of a Programmatic Section 4(f) Evaluation for FHWA projects that necessitate the use of historic bridges by meeting the following criteria:

- **The bridge is to be replaced or rehabilitated with Federal funds.** The project is programmed in the 2015-2018 Minnesota STIP. The programmed funding includes approximately \$51-57 million of Federal funds which includes both the Minnesota and Wisconsin components of the project. Implementation of the preferred alternative would result in the replacement of Bridge 9103.
- **The resource is a historic bridge that is not a National Historic Landmark.** The bridge has been determined to be eligible for the National Register of Historic Places (NRHP). It is not a National Historic Landmark.
- **If the bridge is replaced, the existing bridge must be made available for alternative use.** The Minnesota Department of Transportation (MnDOT) will comply with the Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 123(f), Historic Bridges. Bridge 9103 is a curved concrete slab structure that cannot remain on its current alignment. In addition, (as described in Section 3.1 below), the historic property includes not just the bridge, but the curved approach features. Relocating the bridge and its approaches is not feasible, since the bridge is a continuous concrete slab and cannot be separated into pieces and moved. Therefore, the bridge will not be marketed for sale.
- **A Programmatic Section 4(f) Evaluation cannot be used for projects that require an Environmental Impact Statement (EIS).** The project does not cross a threshold that would require preparation of an EIS in 23 CFR 771.115.
- **The State Historic Preservation Office (SHPO) must concur in writing with the assessment of impacts and proposed mitigation.** SHPO has concurred with the Section 106 determination of effect and is a signatory to the Programmatic Agreement (PA) stipulating mitigation for the impact to Bridge 9103 (see Appendix A).

## 2.0 Proposed Action and Need for Project

The primary purposes of the Red Wing Bridge project are to continue providing a structurally sound bridge crossing of the Mississippi River Main Channel at Red Wing and of U.S. 61, as well as to provide acceptable mobility conditions for motorized and non-motorized traffic in the Downtown Red Wing Commercial/Historic District. Due to the condition of the existing bridges and maintenance requirements, the existing bridges will not adequately meet this need without extensive investment. Furthermore, given forecast growth in motorized and non-motorized traffic levels over the 20-year planning horizon the existing trunk highway network will not be able to address the mobility needs in the Downtown Red Wing Commercial/Historic District.

The project has secondary needs due to the role of U.S. 63 in the area transportation system and due to the physical and cultural setting of the project. The project needs to provide for continuity of U.S. 63 between Minnesota and Wisconsin. The crossings, connecting roadways, and intersection(s) need to maintain the connection of U.S. 63 to Trenton Island, Wisconsin, to U.S. 61 and to MN 58 in Red Wing. Maintenance of traffic -- both across the river and on the river -- needs to be maximized (i.e. as short an amount of time with total

closure as possible). Pedestrian and bicyclist facilities need to be at least maintained and potentially improved.

### 3.0 Description of Affected Section 4(f) Resource

#### 3.1 Bridge No.9103

##### **Maps of Section 4(f) property**

See Figures 1, 2, and 3 at the front of this report.

##### Size and location:

Bridge 9103 was completed in 1960 to serve as the approach bridge for the Eisenhower Bridge (Bridge 9040), which crosses the Mississippi River. The bridge carries U.S. 63 over U.S. 61. The same designers and builders worked on both bridges. Bridge 9103 is a 211 foot-long continuous concrete slab span. The longest span is 47' 6". Connected to the south end is a 220 foot long curving approach roadway that is supported on retained fill with cast-in place concrete retaining walls. Together the bridge and southern approach curve nearly 90-degrees from Red Wing's 3rd Street to the river crossing and lift traffic up to the elevation of the river bridge.

##### Ownership and type of Section 4(f) property:

The State of Minnesota is the owner of the bridge. The bridge and southern approach were designed and built together, and the boundaries of the National Register-eligible property include both (see Figures 2 and 3).

Bridge 9103 is eligible for the National Register under Criterion C (design and construction) in the area of Engineering. The bridge was determined eligible for the National Register as part of a statewide evaluation of post-1955 highway bridges conducted in 2010. Bridge 9103's National Register eligibility is based on two principal factors:

*Engineering Significance.* Bridge 9103 is the only horizontally-curved, continuous concrete slab bridge from the period 1955-1970 standing in Minnesota. In addition, the horizontal curve of 14 degrees is the greatest curvature for any extant bridge in Minnesota from the period.

*Exceptional Aesthetic Qualities.* Bridge 9103 is one of only four bridges identified in the post-1955 statewide bridge study that are eligible for the National Register for "high artistic value." The bridge and its southern approach were given special aesthetic consideration because of proximity to the new Eisenhower Bridge and to downtown Red Wing. Bridge 9103 and its southern approach are essentially unaltered. The property retains strong historic integrity in all seven categories cited in National Register eligibility criteria: location, design, setting, materials, workmanship, feeling, and association.

Some of the resources character defining features include:

- A long and continuous curved form created by the bridge superstructure and southern approach;
- Smooth concrete surfaces that emphasize the lean, sculpted design;
- A slim deck slab formed with shallow haunched arches over each bay;
- The approach roadway's smooth vertical retaining walls;
- Curved coping along the bridge fascia and approach walls;
- Distinctive piers, comprised of five evenly spaced columns;

- A continuous ornamental railing on the bridge and southern approach that emphasizes the length and shape of the horizontal curve.

Function of property and available activities:

This bridge provides a grade-separated crossing of U.S. 61 for the U.S. 63 approach to the Eisenhower Mississippi River Bridge, maintaining continuity for US 63 between Minnesota and Wisconsin and north-south continuity of US 61. Available activities include driving vehicles, walking or biking on the bridge.

Description and location of all existing and planned facilities:

The existing bridge facility is described above. Prior to the proposed action (described in Section 4.1 and shown in Figure 3), there were no plans for modifying the existing facility.

Access:

U.S. 63 provides access to the bridge.

Applicable clauses affecting the ownership:

None

Unusual characteristics reducing or enhancing the value of the property:

None

## 4.0 Impacts to the Section 4(f) Resource – Bridge 9103

### 4.1 Preferred Alternative

The preferred alternative includes replacing the existing river bridge (Bridge 9040) with a two-lane steel box girder bridge adjacent and immediately upstream. The preferred alternative also includes reconfiguring the Minnesota approach to establish a new U.S. 61/U.S. 63 at-grade intersection to the east of existing Bridge 9103, replacing Bridge 9103 over U.S. 61 with a new two-lane bridge. The preferred alternative would have direct impacts on the Section 4(f) property (Bridge 9103) by removal and replacement of the entire bridge and approaches. See Figure 7 in Appendix B.

## 5.0 Avoidance Alternatives – Bridge 9103

Development and evaluation of alternatives for this project included a range of alternatives to address the transportation needs (see Section 2.0 above), and to avoid/minimize impacts to Section 4(f) resources. The alternatives development and evaluation process is described in the 'Minnesota Approach Alternatives Identification, Evaluation and Screening Memorandum' ("Alternatives Memorandum", see Appendix B). The process included development of an initial range of alternatives for the Minnesota approach to the U.S. 63 river crossing (Concepts 1 through 8, described in Appendix B) that were assessed for how well they met the project needs and for construction feasibility. Two alternative concepts were recommended to be carried forward for further consideration: Rehabilitate Bridge 9103 (hereafter referred to as Alternative MN-1) and Button Hook Intersection with Slip Ramp (hereafter referred to as MN-3), which is also the preferred alternative described in Section 4.1 above. Alternative MN-1 (see Figure 5 in Appendix B) would avoid impacts to Bridge 9103. An additional alternative – MN-1A Rehabilitate Bridge 9103 plus making transportation improvements in downtown Red Wing (see Figure 5 in Appendix B) – was developed to avoid impacts to Bridge 9103, while trying to meet more of the transportation needs. These alternatives are referenced, where applicable, and compared to Section 4(f) criteria in Sections 5.1 through 5.3 below. An additional alternative – MN-2 Replace Bridge 9103 at its existing location – was also evaluated and described in the Alternatives Memorandum, but

was eliminated from consideration because it was not a Section 4(f) avoidance alternative and did not meet the transportation needs for the project, so it is not discussed in the avoidance alternatives discussion below.

Each of the alternatives described below were considered (as required for use of a Programmatic Section 4(f) Evaluation for the Use of a Historic Bridge) to avoid use of Bridge 9103. Sections 5.1 through 5.3 below describe the assessment of the avoidance alternatives with respect to the findings factors identified by FHWA at the Section 4(f) website at: <http://environment.fhwa.dot.gov/4f/4fbridge.asp>. The guidance states the following:

- For **'Build on New Location Without Using the Old Bridge'**: Describe investigations that have been conducted to construct a bridge on a new location or parallel to the old bridge (allowing for a one- way couplet), but, for one or more of the following reasons, this alternative is not feasible and prudent:
  - a. Terrain - The present bridge structure has already been located at the only feasible and prudent site.
  - b. Adverse Social, Economic, or Environmental Effects (Adverse SEE Effects)- Building a new bridge away from the present site would result in social, economic, or environmental impact of extraordinary magnitude.
  - c. Engineering and Economy - Where difficulty associated with the new location is less extreme than those encountered above, a new site would not be feasible and prudent where cost and engineering difficulties reach extraordinary magnitude.
  - d. Preservation of Old Bridge - It is not feasible and prudent to preserve the existing bridge, even if a new bridge were to be built at a new location.
- For **'Rehabilitation Without Affecting the Historic Integrity of the Bridge'**: Describe studies that have been conducted of rehabilitation measures, but, for one or more of the following reasons, this alternative is not feasible and prudent:
  - a. The bridge is so structurally deficient that it cannot be rehabilitated to meet minimum acceptable load requirements without affecting the historic integrity of the bridge.
  - b. The bridge is seriously deficient geometrically and cannot be widened to meet the minimum required capacity of the highway system on which it is located without affecting the historic integrity of the bridge.

In addition to the factors identified in the FHWA Programmatic Section 4(f) guidance, definitions of 'feasible' and 'prudent' from 23 CFR 774 are also considered when assessing avoidance alternatives. An alternative is not feasible if it cannot be built as a matter of sound engineering judgment (see 23 CFR 774.17). The six factors of prudence as detailed in FHWA's Section 4(f) Policy Paper (also based on prudence definition in 23 CFR 774.17) are as follow:

1. Does the alternative compromise the project to a degree that it is unreasonable to proceed in light of the project's stated purpose and need (i.e., the alternative doesn't address the purpose and need of the project);
2. Does the alternative result in unacceptable safety or operational problems;
3. After reasonable mitigation, does the alternative still cause severe social, economic, or environmental impacts; severe disruption to established communities; severe or

disproportionate impacts to minority or low-income populations; or severe impacts to environmental resources protected under other Federal statutes;

4. Does the alternative result in additional construction, maintenance, or operational costs of extraordinary magnitude;
5. Does the alternative cause other unique problems or unusual factors; or
6. Does the alternative involve multiple factors as outlined above that, while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

## 5.1 No-Build

The No-Build Alternative, as presented in the EA, would avoid any impacts to Bridge 9103. However, this alternative does not address the following primary project purpose and need objectives:

- Continue to provide a structurally sound crossing of U.S. 61;
- Improve Motorized and Non-Motorized Traffic Mobility on Trunk Highways within the Downtown Red Wing Commercial/Historic District

Since this alternative does not meet the project's stated purpose and need (prudence factor 1), this alternative was determined to not be a prudent avoidance alternative, and was not considered further. However, the No Build alternative will be described in the Environmental Assessment (EA) for this project, for comparison to the preferred alternative.

## 5.2 Build a new structure at a different location without affecting the historic integrity of the old bridge

### 5.2.1 Build a new structure at a different location (i.e. parallel to the existing bridge) without affecting the historic integrity of the bridge

This avoidance alternative would involve building a new US 61 overpass adjacent to Bridge 9103 which would allow retaining the structure of Bridge 9103, but its functionality would be replaced by the new bridge. Possible parallel locations would be to the east or west of Bridge 9103. Constructing a parallel bridge to the west would result in impacts to the Red Wing Shoe Historic District [see location of this District and Bridge 9103 in Figure 2]. This would result in Section 106 and Section 4(f) impacts [not 'prudent' based on 'Adverse SEE' Factor (b)].

Constructing a parallel bridge to the east would result in impacts to Barn Bluff [see location of this Section 106 resource in Figure 2] This would result in Section 106 and Section 4(f) impacts, and therefore would not be 'prudent' based on 'Adverse SEE' Factor (b). Also, in order for a new bridge/approach to be constructed adjacent to Bridge 9103, the existing approach to Bridge 9103 would be impacted. Since the approach is also a character defining feature, this would result in an adverse effect to Bridge 9103 under Section 106. In addition, existing Bridge 9103 would not serve any function, and would remain standing out of context and without any funding available to maintain the structure, since it would no longer be part of the Trunk Highway system, which is not prudent based on the 'Preservation of Old Bridge' Factor (d). This avoidance alternative would also not be prudent because it would not address the primary project need to improve traffic mobility in downtown Red Wing (prudence Factor 1 in Section 5.0 above).

### 5.2.2 Build on Alternative Alignment Location without affecting the historic integrity of the bridge

This section addresses avoidance alternatives that would relocate U.S. 63 to a new location which would allow existing Bridge 9103 to remain in place while shifting its functionality (carrying U.S. 63 traffic over U.S. 61 to connect to the river crossing bridge) to a different location. Given the existing interconnected functionality of Bridge 9103 and the U.S. 63 river crossing, there is no 'different' alignment (other than parallel to existing Bridge 9103, described in Section 5.2.1) that would provide the same function. So, based on assessment of the Terrain 'Findings' Factor (a) criteria (see Section 5.0 above), there is no prudent avoidance alternative that would achieve this function, since the present bridge structure has already been located at the only prudent location that would provide this function.

The only option for the Alternative Location avoidance alternative would involve moving the U.S. 63 river crossing and leaving the existing Bridge 9103 and approaches in place (but no longer serving a connection function, since the river bridge would be removed). As documented and illustrated in the New Bridge Location Feasibility Assessment, July 2, 2012 (see Appendix C), there were four river crossing alternative alignment locations addressed early in the project development process:

- Bench Street location (outside immediate downtown area)
- Broad Street location (within immediate downtown area)
- Bush Street location (within immediate downtown area)
- Plum Street location (within immediate downtown area)

See Figures 4 and 5 in Appendix C for maps of these locations.

During the evaluation of these alternatives, it was determined that the Bench Street (outside of downtown Red Wing) location should not be carried forward for consideration because of a variety of issues and impacts including, but not limited to, substantial additional wetland and floodplain impacts [not prudent with respect to the 'Adverse SEE Effects Factor (b),' described in Section 5.0 above], increased roadway and bridge length for US 63 traffic [not prudent with respect to the 'Engineering and Economy' Factor(c)], and impacts to the upper harbor conservation lands including Pottery Pond Park, which would be a Section 4(f) impact [not prudent with respect to the 'Adverse SEE Effects Factor (b)']. In addition, Bridge 9103 and its approaches would not serve any function, and would remain standing out of context and without any funding available to maintain the structures, since they would no longer be part of the Trunk Highway system, which is not prudent based on the 'Preservation of Old Bridge' Factor (d).

Each of the three alternate locations within the downtown area had substantial design challenges given the close proximity and vertical grade differences between the river and US 61 [not prudent with respect to Engineering and Economy Factor (c ) and Terrain Factor (a)]. In addition, each alternative would introduce substantial impacts to parklands, historic resources, commercial and industrial land uses, and the existing visual setting and sightlines in downtown Red Wing [i.e., would result in Section 4(f) impacts to other resources and not prudent with respect to Adverse SEE Effects Factor (b)]. Furthermore, a May 14, 2012 letter from the United States Coast Guard states that the three new downtown location alternatives are not acceptable from a navigational standpoint due to the proximity of the river bend immediately upstream [not prudent with respect to Engineering Factor (c )] In addition, existing Bridge 9103 and its approaches would not serve any function, and would remain standing out of context and without any funding available to maintain the structures, since

they would no longer be part of the Trunk Highway system, which is not prudent based on the 'Preservation of Old Bridge' Factor (d).

### **5.3 Rehabilitate Bridge 9103 Without Affecting Historic Integrity**

Two options, described and assessed below, were considered for rehabilitating Bridge 9103:

1. Rehabilitate Bridge 9103 and retain its current transportation function
2. Rehabilitate Bridge 9103 and incorporate it into a button-hook intersection

#### **5.3.1 Rehabilitate Bridge 9103 and Retain Its Current Function**

MnDOT completed a Bridge 9103 Rehabilitation Study in August 2013. This study examined potential rehabilitation alternatives that would avoid adverse effects to the bridge and approach structure. The report identified two feasible rehabilitation alternatives which maintained the Bridge's historic eligibility and provided a functional design solution for at least 20 years. The only difference between the two rehabilitation alternatives was the inclusion of TL-2 railing on the outside of the traffic lanes to improve safety.

The *Minnesota Approach Alternatives Identification, Evaluation, and Screening Memorandum* (Alternatives Memo)] dated September 8, 2014 (Appendix B) documents the extensive evaluation of the rehabilitation alternative, Alternative MN-1 (see Figure 4 in Appendix B), as well as a rehabilitation alternative (Alternative MN-1A, shown in Figure 5 in Appendix B) that included roadway modifications in the Downtown Red Wing Commercial Historic District to improve traffic operations to better meet the project primary need for improved mobility. Neither of these alternatives would be eliminated from consideration based on the two prudence factors – loading and capacity -- identified in the FHWA guidance [see Factors a and b listed in Section 5.0 above]. However, these alternatives were not prudent based on 23 CFR 774 criteria. Based on the analysis, Alternative MN-1A was eliminated because 1) the roadway modifications did not adequately address the need to improve motorized and non-motorized traffic mobility in the Downtown Red Wing Historic/Commercial District (prudence factor 1) and 2) because it would result in a Section 106 adverse effect to the Downtown Historic District and would impact Dankers Park in downtown Red Wing (both would be Section 4(f) impacts), therefore, Alternative 1A is not a Section 4(f) avoidance alternative. The Alternatives Memo also describes the rationale for eliminating rehabilitation Alternative MN-1 because it does not meet the project's primary mobility need (prudence factor 1). Therefore, it was concluded that avoidance alternative MN-1 for the rehabilitation of Bridge 9103 was not prudent, and it was eliminated from further consideration.

#### **5.3.2 Rehabilitate Bridge 9103 as Part of Buttonhook Design**

As part of an early project alternatives feasibility assessment [documented in *Minnesota Approach Alternatives Identification, Evaluation, and Screening Memo* dated September 8, 2014 and also summarized in *Minnesota Approach Alternatives Identification, Evaluation and Screening Memorandum*, included in Appendix B)], an alternative (Option 8) was considered which involved rehabilitation of Bridge 9103 and incorporating it into a buttonhook design. Unlike Alternative MN-1 and 1A described in Section 5.3.1, this alternative would address the primary mobility need. However, this alternative would require removal of the character-defining Bridge 9103 approach elements, which would result in a Section 106 adverse effect and also a Section 4(f) impact, so it is not an avoidance alternative.

## 5.4 Avoidance Alternatives: Summary of Findings

As described in Sections 5.1 through 5.3 above, there are no feasible and prudent alternatives that avoid impacts to Bridge 9103. The only remaining project alternative is the preferred alternative, MN-3, which does not affect any other Section 4(f) resources.

## 6.0 Measures to Minimize Harm – Bridge 9103

The FHWA Programmatic Section 4(f) guidance includes the following measures to minimize harm for historic bridges that are to be replaced:

1. The existing bridge is to be made available for an alternative use provided a responsible party agrees to maintain and preserve the bridge.
2. For bridges that are to be rehabilitated to the point that the historic integrity is affected or that are to be moved or demolished, the FHWA ensures that, in accordance with the Historic American Engineering Record (HAER) standards, or other suitable means developed through consultation, fully adequate records are made of the bridge.
3. For bridges that are adversely affected, agreement among the SHPO, ACHP, and FHWA is reached through the Section 106 process of the NHPA on measures to minimize harm and those measures are incorporated into the project. This programmatic Section 4(f) evaluation does not apply to projects where such an agreement cannot be reached.
4. For bridges that are to be rehabilitated, the historic integrity of the bridge is preserved, to the greatest extent possible, consistent with unavoidable transportation needs, safety, and load requirements.

With respect to minimization item 1 above, as detailed in Section 5.2.1, given the extremely constrained project site and scope of the proposed improvements it is not feasible to keep Bridge 9103, including the approach features, (historic property) in place. Furthermore, it is not feasible or practical to relocate the bridge and its approach features to another location for alternative use (see discussion in Section 1.0).

With respect to minimization items 2 and 3 above, the guidance regarding measures to minimize harm further indicates that for bridges which are adversely affected, agreement among SHPO, ACHP, and FHWA needs to be reached through the Section 106 process. MnDOT and the FHWA have been coordinating with SHPO, as part of the Section 106 process, to develop appropriate mitigation for the bridge. This mitigation will also be applicable to the Section 4(f) process. The agreed-upon mitigation is detailed in a Programmatic Agreement (PA) among MnDOT, FHWA and SHPO [see Appendix A]

Minimization item #4 is not applicable to this project, since the bridge is not proposed for rehabilitation.

## 7.0 Coordination – Bridge 9103

MnDOT completed the Bridge 9103 Rehabilitation Study in August 2013 in close coordination with FHWA and in consultation with SHPO. MnDOT and FHWA met several times to:

- Review the project purpose and need;
- Review the Bridge's background and significance;
- Establish the character defining features;
- Conduct a condition analysis;
- Define and assess rehabilitation alternatives;

- Develop recommendations and conclusions.

In addition, coordination has occurred and will continue with SHPO and the Red Wing Historic Preservation Commission regarding impacts, effects, and mitigation.

## 8.0 Least Overall Harm Analysis of Alternatives That Use Section 4(f) Property

As described in Section 5.0, there are no feasible and prudent alternatives that avoid impacts to Bridge 9103. The only remaining project alternative that meets all the project's primary needs is the preferred alternative, MN-3, which does not affect any other Section 4(f) resources. Therefore, no least harm analysis is required for this project.

## 9.0 Conclusion

In summary the key findings are as follows:

1. MN-1 (Bridge 9103 rehabilitation) and the No-Build avoidance alternatives do not meet the primary mobility need and therefore are not prudent;
2. Avoidance Alternative MN-1A addresses more of the mobility needs than Alternative MN-1, but results in impacts to other Section 4(f) resources (i.e. Downtown Commercial/Historic District and Dankers Park). Also, Alternative MN-1A does not fully meet the project mobility needs (a primary need), like the preferred alternative does;
3. Per the provisions of Section 106, there has been extensive coordination between MnDOT, FHWA, and SHPO and agreement has been reached among these parties with respect to all possible planning to minimize harm; project impacts to Bridge 9103; and mitigation, as outlined in the PA

Based upon the above considerations, there is no feasible and prudent alternative to the use of Bridge 9103. The proposed action includes all possible planning to minimize harm to this resource resulting from such use, including mitigation agreed to by the officials with jurisdiction over the resource.

---

# Appendix A

## Section 106 Programmatic Agreement

**PROGRAMMATIC AGREEMENT PURSUANT TO SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT, AS AMENDED, AMONG THE FEDERAL HIGHWAY ADMINISTRATION, THE MINNESOTA DEPARTMENT OF TRANSPORTATION, THE WISCONSIN DEPARTMENT OF TRANSPORTATION, THE MINNESOTA STATE HISTORIC PRESERVATION OFFICE, THE WISCONSIN STATE HISTORIC PRESERVATION OFFICE, THE U.S. ARMY CORP OF ENGINEERS, REGARDING THE REPLACEMENT OF THE EISENHOWER BRIDGE IN RED WING, GOODHUE COUNTY, MINNESOTA, AND PIERCE COUNTY, WISCONSIN (Minnesota State Project [S.P.] 2515-21)**

WHEREAS, the Federal Highway Administration (FHWA) is providing funding to the Minnesota Department of Transportation (MnDOT) and the Wisconsin Department of Transportation (WisDOT) for replacement of the Eisenhower Bridge over the Mississippi River in Red Wing, Goodhue County, Minnesota, and Pierce County, Wisconsin (Project); and

WHEREAS, FHWA has determined that the Project may affect historic properties listed in or eligible for the National Register of Historic Places and requires review under Section 106 of the National Historic Preservation Act and its implementing regulations at 36 CFR 800; and

WHEREAS, the Project will require permits from the St. Paul District U.S. Army Corps of Engineers (Corps) pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 USC Sect. 403) and Section 404 of the Clean Water Act (33 USC Sect. 1344); and

WHEREAS, in accordance with 36 CFR 800.2(a)(2) and as per the terms of the 2015 Section 106 Programmatic Agreement (2015 Statewide PA) among FHWA, the Corps, the Minnesota Historic Preservation Office (MnSHPO), and the Advisory Council on Historic Preservation (ACHP) regarding implementation of the Federal-Aid Highway Program in Minnesota, FHWA is the lead Federal agency for the purposes of Section 106 review; and

WHEREAS, FHWA has delegated its responsibilities, to a certain extent, for compliance with Section 106 in accordance with Federal law to the professionally qualified staff (as per 36 CFR 61) in the MnDOT Cultural Resources Unit (CRU), although the FHWA remains legally responsible for all findings and determinations charged to the agency official in 36 CFR 800; and

WHEREAS, FHWA has determined that Bridge No. 9103 is eligible for the National Register of Historic Places and the Project will have an adverse effect on this historic property by demolishing the structure, and MnSHPO has concurred with FHWA's finding; and

WHEREAS, FHWA cannot fully determine all of the effects of the Project on historic properties before a decision is required under the National Environmental Policy Act (NEPA); therefore, execution of this Programmatic Agreement (Agreement) is appropriate pursuant to 36 CFR 800.14(b)(1)(ii); and

WHEREAS, FHWA has consulted with MnSHPO and the Wisconsin State Historic Preservation Office (WisHPO) and they are signatories to this Agreement; and

WHEREAS, FHWA has consulted with Project sponsors MnDOT and WisDOT, and MnDOT, as the lead state agency, has agreed to certain responsibilities stipulated in this Agreement; and

FHWA has invited MnDOT and WisDOT to be signatories to this Agreement; and

WHEREAS, FHWA has consulted with the City of Red Wing (City) pursuant to 36 CFR 800.2(c)(1)(i), and has invited them to concur with this Agreement; and

WHEREAS, FHWA has consulted with the Red Wing Heritage Preservation Commission (HPC) pursuant to 36 CFR 800.2(c)(1)(i), and has invited them to concur with this Agreement.

NOW, THEREFORE, FHWA, MnSHPO and WisSHPO agree the undertaking will be implemented in accordance with the following stipulations in order to satisfy the responsibilities of FHWA and the Corps under Section 106 of the National Historic Preservation Act:

#### STIPULATIONS

The FHWA will ensure that the following measures are carried out:

##### STIPULATION I. IDENTIFICATION OF HISTORIC PROPERTIES

A. As Project activities are further defined, the MnDOT CRU, on behalf of the FHWA, will refine the APE in consultation with MnSHPO, as needed.

B. If the APE is revised to include areas not previously subject to historic property identification efforts conducted as part of this Project' MnDOT CRU will conduct additional investigations in those areas pursuant to Stipulation 3 of the 2015 Statewide PA.

C. Once MnDOT acquires the Project right-of-way, MnDOT CRU will conduct additional archaeological investigations for areas that were not accessible due to lack of landowner permission. Similar investigations will be conducted if during the design process additional parcels are identified that may be impacted or acquired. If archaeological sites are identified within the APE, FHWA will reopen consultation with Indian tribes that might attach religious and cultural significance to those properties under 36 CFR 800.2(c).

D. Any historic properties newly identified within the APE by MnDOT CRU will be added to the list of properties included in Appendix A upon written concurrence by the MnSHPO. An amendment to this Agreement under Stipulation VI is not necessary unless agreed upon by the signatories to the Agreement.

##### STIPULATION II. DISCOVERY DURING CONSTRUCTION

A. If previously unidentified historic properties are encountered during the Project construction, all ground-disturbing activities will cease in the area where any property is discovered, as well as in the immediately adjacent area. The contractor will immediately notify the MnDOT project manager and the MnDOT CRU of the discovery. The MnDOT CRU will record, document and evaluate the National Register

eligibility of resources in accordance with 36 CFR 800. If eligible properties are identified, the MnDOT CRU, in consultation with the MnSHPO (and WisSHPO as appropriate), will design a plan for avoiding or mitigating any adverse effects prior to resuming ground-disturbing work in the area of discovery.

B. If any previously unidentified human remains are encountered during the Project construction, all ground-disturbing activities will cease in the area where such remains are discovered as well as in the immediately adjacent area. The contractor will immediately notify the MnDOT CRU of the discovery of human remains. The FHWA (with the assistance of the MnDOT CRU) will work with the Office of the State Archaeologist (OSA) to perform any necessary tribal consultation in order to meet FHWA's responsibilities under Section 106. The MnDOT CRU will develop a reburial plan in consultation with the FHWA, the OSA, the MnSHPO, and, if appropriate, the Minnesota Indian Affairs Council (MIAC), prior to ground-disturbing work being allowed to proceed in the area of discovery. The FHWA will ensure that the terms of any reburial plan are fully implemented.

C. MnDOT will include in appropriate construction contracts provisions to ensure that items established in this stipulation are carried out by the contractor.

#### STIPULATION III. BRIDGE 9103 (GD-RWC-1387)

A. The Project will require the removal of Bridge 9103 (GD-RWC-1387) and its associated approach ramp. MnDOT CRU, in consultation with MnSHPO, will complete Minnesota Historic Properties Record (MHPR) documentation for Bridge 9103 and its approach ramp, in accordance with current MHPR Guidelines. The documentation will be completed prior to the start of construction on the new river crossing bridge and before any alterations are made to Bridge 9103 or its approaches. The draft MHPR documentation will be completed in consultation with MnSHPO and submitted to MnSHPO for review and acceptance. MnDOT CRU will submit final copies of the documentation to MnSHPO, the CITY, and the HPC.

#### STIPULATION IV. MEASURES TO MINIMIZE EFFECTS TO HISTORIC PROPERTIES

Plans for the new river crossing bridge and its Minnesota approach are still under development. These new structures including the new TH63/TH61 bridge, ramps, retaining walls, noise walls, pond, bicycle-pedestrian trail, and landscaping, have the potential for adverse effects (direct or indirect) on the Red Wing Mall District, St. James Hotel Complex, CMSTPP Railroad Corridor Historic District, Red Wing Commercial Historic District, Barn Bluff, Kappel Wagon Works, Hedin House, Miller House, Burdick Grain Company Terminal Elevator, Red Wing Iron Works, Red Wing Shoe Company and other historic properties (as listed in Attachment A). Measures to minimize effects to historic properties include the following:

##### A. Project Design Development and Plan Review

The Project design will effectively meet the project purpose and need, while avoiding, minimizing, and/or mitigating adverse impacts to historic properties. Avoidance of adverse effects is preferable and will be considered to the extent feasible.

1) MnDOT District 6 and its design team shall consult with MnDOT CRU throughout the project design of those project elements near the identified historic properties. Concepts for these design elements are currently under development through MnDOT's Visual Quality Advisory Committee (VQAC) process. Staff from MnDOT CRU and representatives from the CITY and HPC attended the VQAC meetings and the Visual Quality process took into consideration compliance with the Secretary of the Interior's Standards and Guidelines for the Treatment of Historic Properties (SOI Standards) for new construction adjacent to or near historic properties.

2) MnDOT CRU contracted with an historian to help ensure, throughout the design process, compliance with the SOI Standards for new construction adjacent to or near historic properties. These designs include the new river crossing bridge and elements of the Minnesota approach, including the new TH63/TH61 bridge ramps, retaining walls, noise walls, pond, bicycle-pedestrian trail, and landscaping.

3) MnDOT CRU and the historian have been and will continue to, review the initial plans and document any concerns or issues. MnDOT CRU has been and will continue to consult with the MnDOT District 6 Project Manager and submit documentation of concerns or issues; the District 6 Project Manager has been and will continue to work with CRU to address the changes and comments in the plans.

4) MnDOT CRU will again review draft final plans to ensure design elements agreed upon have been incorporated into the plans, and to determine if any areas beyond the reviewed APEs require survey work to determine if previously unidentified historic properties are present.

5) MnDOT CRU will submit final design plans and its findings of effect to MnSHPO for review and concurrence at the 30%, 60%, and 95% completion stage. The plans will be submitted to the other signatories and parties to this Agreement for review and comment. MnSHPO will have 30 days to review the plans.

6) If during Design Development and Plan Review, MnDOT CRU determines the SOI Standards are not able to be met and there are additional adverse effects, MnDOT CRU will provide any additional determinations to the MnSHPO, who will have 30 days to review and comment as per 36 CFR 800.3(c)(4). Any additional adverse effects identified will be addressed by amendment to this Agreement between MnDOT CRU and MnSHPO, after appropriate consultation with all signatories to the Agreement, the public, and the ACHP.

7) MnDOT CRU will submit final plans (i.e., 100% completion) to MnSHPO for the project record.

#### B. Design Changes After the Project is Underway

1) The project will be bid-built so changes to the plans are not anticipated. However, MnDOT District 6 will notify MnDOT CRU of any proposed changes to the final plans after the Project is underway. MnDOT CRU will determine the effect of these changes to historic properties and will provide any

additional determinations to the MnSHPO, who will have 30 days to review and comment as per 36 CFR 800.3(c)(4). Any additional adverse effects identified will be addressed by amendment to this Agreement between MnDOT CRU and MnSHPO, after appropriate consultation with all signatories to the Agreement, the public, tribes, and the ACHP.

#### C. Vibration Monitoring

MnDOT will develop and implement a Vibration Monitoring and Control and Mitigation Plan for Historic Properties, including Barn Bluff, to address potential issues related to vibrations caused by the project. MnDOT District 6 and its design team will consult with the MnDOT CRU, MnSHPO, the CITY, and HPC in the development of the plan. The plan will include a baseline vibration study to be conducted prior to any construction work. The plan will specify thresholds for vibration during construction and will include details about the preconstruction and post-construction building surveys, process, equipment (including crack-monitoring gauges), documentation standards, and frequency of monitoring. The draft plan will be submitted to MnDOT CRU for review and approval. MnDOT CRU will submit the plan to MnSHPO for review and concurrence, and to the CITY and HPC for review and comments.

#### STIPULATION V. STANDARDS

A. MnDOT CRU shall ensure that any products developed as mitigation for adverse effects to historic properties will meet the SOI Standards for Archaeology and Historic Preservation. Such products may include, but are not necessarily limited to, archaeological data recovery plans and final reports and MHPR documentation.

B. MnDOT CRU shall ensure that all work carried out pursuant to this Agreement will be done by or under the direct supervision of historic preservation professionals who meet the Secretary of the Interior's Professional Qualifications Standards (36 CFR 61).

#### STIPULATION VI. AMENDMENTS

The FHWA, MnSHPO, and the invited signatories to this Agreement may request in writing that it be amended, whereupon the parties shall consult to consider the proposed amendment. The regulations at 36 CFR 800 shall govern the execution of any such amendment.

#### STIPULATION VII. DISPUTE RESOLUTION

A. Should the FHWA, MnSHPO, or the invited signatories object at any time to any action proposed or the manner in which the terms of this Agreement are implemented, FHWA shall consult with such party to resolve the objection. FHWA consultation shall take place within 10 days of receipt of said objection and shall be documented in the form of meeting notes and/or written letter of response. If FHWA

determines, within 30 days of documenting consultation efforts with the objecting party, that the objection cannot be resolved, FHWA shall:

1) Forward all documentation relevant to the dispute, including the FHWA's proposed resolution, to the ACHP. The ACHP shall provide FHWA with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, FHWA shall prepare a written response that takes into account any advice or comments from the ACHP, signatories, and concurring parties, and provide them with a copy of this written response. FHWA will then proceed according to its final decision.

2) If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period after receipt of adequate documentation, FHWA may render a final decision regarding the dispute and proceed accordingly. In reaching its decision, FHWA shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the Agreement, and provide them and the ACHP with a copy of such written response.

3) FHWA's responsibilities to carry out all other actions subject to the terms of the Agreement that are not the subject of the dispute remain unchanged.

#### STIPULATION VIII. TERMINATION

The FHWA, MnSHPO, and the invited signatories to this Agreement may terminate the agreement by providing thirty (30) days' written notice to the other signatories, provided the signatories consult during the period prior to termination to agree on amendments or other actions that would avoid termination. If the agreement is terminated and the FHWA elects to continue with the undertaking, the FHWA will reinstate review of the undertaking in accordance with 36 CFR 800.3 through 800.13.

#### STIPULATION IX. DURATION

This agreement will terminate December 30, 2021 or upon mutual agreement of the FHWA, MnSHPO, and the invited signatories. Prior to such time, FHWA may consult with the other signatories to reconsider the terms of the Agreement and revise, amend, or extend it in accordance with Stipulation VI.

Execution of this agreement by the FHWA and the MnSHPO and implementation of its terms is evidence that the FHWA has taken into account the effects of its undertaking on historic properties and has afforded the Advisory Council on Historic Preservation opportunity to comment.

Signatories:

FEDERAL HIGHWAY ADMINISTRATION

\_\_\_\_\_ Date: \_\_\_\_\_

Dave Scott, Acting Division Administrator

MINNESOTA STATE HISTORIC PRESERVATION OFFICE

\_\_\_\_\_ Date: \_\_\_\_\_

Barbara M. Howard, Deputy State Historic Preservation Officer

WISCONSIN STATE HISTORIC PRESERVATION OFFICE

\_\_\_\_\_ Date: \_\_\_\_\_

XXXXXXXXXXXXX, Deputy State Historic Preservation Officer

MINNESOTA DEPARTMENT OF TRANSPORTATION

\_\_\_\_\_ Date: \_\_\_\_\_

Charles A. Zellie, Commissioner

WISCONSIN DEPARTMENT OF TRANSPORTATION

\_\_\_\_\_ Date: \_\_\_\_\_

Mark Gottlieb, P.E., Secretary of the Wisconsin Department of Transportation

UNITED STATES ARMY CORP OF ENGINEERS, ST. PAUL DISTRICT

\_\_\_\_\_ Date: \_\_\_\_\_

Daniel C. Koprowski, District Engineer and Comander

Concurring:

CITY OF RED WING

\_\_\_\_\_ Date: \_\_\_\_\_

Kay Kuhlmann, City Council Administrator

RED WING HERITAGE PRESERVATION COMMISSION

\_\_\_\_\_ Date: \_\_\_\_\_

Annette Martin, Chairperson

## ATTACHMENT A

## LIST OF NATIONAL REGISTER-LISTED AND –ELIGIBLE ARCHITECTURAL HISTORY PROPERTIES IN THE APE

LETTERS CORRESPOND TO MAP 4 IN PHASE II REPORT

- A. Red Wing Mall District (GD-RWC-001)
- B. St. James Hotel Complex (GD-RWC-004)
- C. Red Wing Residential Historic District (GD-RWC-022)
- D. CMSTPP Railroad Corridor Historic District (GD-RWC-1371)
- E. Red Wing Commercial Historic District (GD-RWC-1451)
- F. Barn Bluff (GD-RWC-280)
- G. Mississippi River 9' Channel (GD-RWC-1452)
- H. Kappel Wagon Works (GD-RWC-008)
- I. Sheldon Memorial Auditorium (GD-RWC-002)
- J. Lawther House (GD-RWC-023)
- K. Red Wing City Hall (GD-RWC-009)
- L. Hedin House (GD-RWC-1407)
- M. Luft Doublehouse (GD-RWC-746)
- N. Gladstone Building (GD-RWC-007)
- O. Medical Block Clinic (GD-RWC-1417)
- P. Hewitt Laboratory (GD-RWC-026)
- Q. Bridge 9103 (GD-RWC-1387)
- R. Miller House (GD-RWC-1422)
- S. Burdick Grain Company Terminal Elevator (GD-RWC-1383)
- T. Red Wing Iron Works (GD-RWC-005)
- U. Red Wing Shoe Company (GD-RWC-019)
- V. Keystone Building (GD-RWC-006)
- W. Chicago Great Western Depot (GD-RWC-015)
- X. Red Wing City Hospital Stairway (GD-RWC-1423)
- Y. First National Bank of Red Wing (GD-RWC-1439)

## LIST OF ARCHAEOLOGICAL PROPERIES THAT WILL NEED ASSESSMENT OF ELIGIBILITY IF POTENTIALLY IMPACTED

SITE AREAS ARE DEPICTED IN THE FIGURE 62. OF FINAL REPOT

21GD291  
 21GD292  
 21GD293  
 21GD294  
 21GD295  
 21GDDbj

---

## Appendix B

### Minnesota Approach Alternatives Identification, Evaluation, and Screening Memorandum



Building a Better World  
for All of Us®

## MEMORANDUM

TO: Chad Hanson, MnDOT

FROM: Chris Hiniker, AICP

DATE: September 8, 2014

RE: Red Wing Bridge Project  
Minnesota Approach Alternatives Identification, Evaluation, and Screening  
SEH No. MNT06 119112 14.00

The purpose of this memorandum is to document the rationale followed to identify, evaluate, and screen the range of Minnesota Approach alternatives considered as part of the Red Wing River Bridge Project. The Minnesota Approach is the last segment of the larger project to be defined. The other primary project components already defined include:

- River Crossing: Replace the existing river bridge with a two-lane steel box girder bridge immediately upstream from the current crossing;
- Wisconsin Approach: Construct a “jug-handle” intersection at 825th Street. This design provides a four-legged intersection with a median on US 63.

The remainder of this memorandum details the process that was used to develop, evaluate and screen alternatives to identify the most feasible, practical, and responsive Minnesota roadway approach option(s). Central to the process were multiple meetings involving MnDOT and FHWA staff, as well as meetings with project stakeholders, City staff, Project Advisory Committee (PAC) and listening sessions). The meetings were held at regular intervals as the process advanced. The memo is structured to follow the iterative process that was applied and included the following major steps:

- Developed Purpose and Need Statement;
- Identified Initial Minnesota Approach Concepts;
- Conducted Initial Feasibility Assessment;
- Refined Minnesota Approach Alternatives;
- Updated Purpose and Need Statement;
- Reviewed Range of Minnesota Approach Alternatives;
- Conducted Alternatives Evaluation and Screening.

### PURPOSE AND NEED STATEMENT

The Red Wing Bridge Project is being developed in accordance with the National Environmental Policy Act (NEPA). Developing a project's purpose and need statement is an important element of the NEPA process. Early in the Red Wing Bridge project development process, MnDOT and WisDOT worked closely with FHWA to define the project's purpose and need. As with many projects, the purpose and need has been a working document which has evolved as new/more detailed information became available as the project has progressed. The original purpose and need was dated August 15, 2012 and was updated on October 16, 2013. It included the following key elements:

**Primary Needs:**

- Need for Structurally Sound Crossing of the Mississippi River Main Channel at Red Wing
- Need for Structurally Sound Crossing of US 61

**Secondary Needs:**

- Need for Continuity of US 63
- Need for Connection to US 61 and MN 58
- Need for Adequate Bridge Capacity
- Need for Acceptable Traffic Operations and Safe Design
- Need for Maximum Maintenance of Traffic
- Need for Access to Trenton Island
- Need to Maintain or Improve Pedestrian/Bicycle Facilities

**Other Considerations:**

- Structural Redundancy
- Wisconsin Corridors 2030 Plan
- Geometrics
- Economic development
- Parking
- Regulatory Requirements
- Property Impacts

**IDENTIFICATION OF INITIAL MINNESOTA APPROACH CONCEPTS**

Building from the October 16, 2013 Purpose and Need statement and working with the Project Management Team (PMT), Technical Advisory Committee (TAC), and other public input; eight concept alternatives were developed as described and illustrated below.

**Concept 1 – Rehabilitate Bridge 9103**

This concept assumes Bridge 9103 is retained and rehabilitated as detailed in the Bridge 9103 Rehabilitation Study. No other roadway modifications are included with this concept.

**Concept 1**

**Concept 2 - Three Leg At-Grade Signalized Intersection**

This concept would remove the existing U.S. 63 Bridge (Bridge 9103) over U.S. 61 and create an at-grade T-intersection at the junction. The concept provides approximately 500 feet between the new intersection and Potter Street. The new intersection would require dual left turn lanes from U.S. 61 to U.S. 63. All other intersections would remain unchanged from the No Build conditions.

**Concept 2****Concept 3 - Three Leg At-Grade Signalized Intersection (U.S. 63 Direct Connection)**

This build alternative would remove Bridge 9103 over U.S. 61 and create an at-grade T-intersection at the junction; U.S. 63 would become the major movement with the east leg of U.S. 61 becoming the minor approach. This alternative provides approximately 500 feet between the new intersection and Potter Street.

### Concept 3



### Concept 4 - Four Leg At-Grade Signalized Intersection

This concept would remove the Bridge 9103 over U.S. 61 and create an at-grade four-leg signalized intersection. This alternative provides approximately 500 feet between the new intersection and Potter Street.

### Concept 4



This concept is comparable to the Concept 2 except it retains the connection to and from 3rd Street. All other intersections would remain unchanged from the No Build conditions.

**Concept 5 - Four Leg At-Grade Roundabout Intersection**

This concept would remove the Bridge 9103 over U.S. 61 and create an at-grade four-leg roundabout at the new junction of U.S. 61 and U.S. 63.

**Concept 5**

This concept provides approximately 600 feet between the new intersection and Potter Street and is comparable to Concept 4 described earlier except the intersection control is a roundabout rather than a traffic signal. All other intersections would remain unchanged from the No Build conditions.

**Concept 6 - Buttonhook Signalized Intersection**

This concept would replace the Bridge 9103 over U.S. 61 and create a new at-grade signalized intersection east of downtown. It provides approximately 1,100 feet between the new intersection and Potter Street.

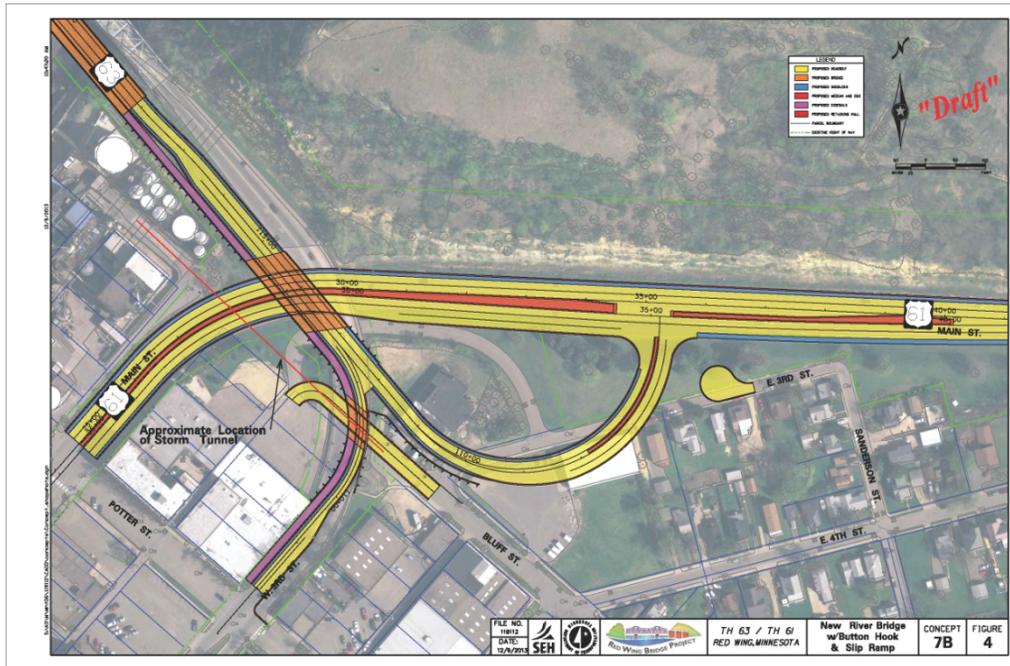
**Concept 6**

With this concept all river crossing traffic would flow through the new signalized intersection east of existing Bridge 9103. All other trunk highway intersections would remain unchanged from the No Build conditions.

**Concept 7 - Buttonhook Signalized Intersection with Slip Ramp**

This concept would replace the Bridge 9103 over U.S. 61 and create a new at-grade intersection east of downtown. In addition, the concept allows southbound U.S. 63 traffic to access downtown and MN 58 along a new one-way slip ramp to 3rd Street. This concept provides approximately 1,100 feet between the new intersection and Potter Street.

**Concept 7**



All other intersections would remain unchanged from the No Build conditions.

**Concept 8 - Buttonhook Intersection (Roundabout) Retain Bridge 9103**

This concept would retain Bridge 9103 over U.S. 61 and create a new at-grade intersection east of downtown. This intersection could either be a roundabout (as shown) or a signalized intersection. This alternative provides approximately 1,100 feet between the new intersection and Potter Street. This alternative is comparable to Concept 6 described earlier except the intersection control is a roundabout and the design assumes retaining Bridge 9103.

**Concept 8**



## FEASIBILITY ASSESSMENT OF CONCEPTS

With the concepts defined each were analyzed with respect to traffic operations, safety, key environmental considerations, right-of-way impacts, design standards, estimated costs, complexity, and compatibility with a potential future parallel river crossing bridge. Table 1 presents the evaluation results reflecting these criteria.

A summary of the conclusions drawn from the evaluation are listed below. It is important to note that this evaluation was conducted in 2012. Since then additional analysis has been completed and decisions have been made. One key decision is that the river crossing will be a two lane facility.

- Concept 1: Rehabilitate Bridge 9103
  - Retains Bridge 9103 (eligible for National Register)
  - Poorest traffic operations of all concepts
  - Minimal right-of-way and environmental effects
  - Recommendation – retain for further consideration.
- Concept 2: Three Leg At Grade Intersection (U.S. 61 Direct Connection)
  - Poor traffic operations
  - U.S. 61 grade raise might require fill next to Barn Bluff
  - Would require a four-lane U.S. 63 Bridge
  - Recommendation – remove from consideration because of very poor traffic operations and it requires a four-lane river crossing.
- Concept 3: Three Leg At Grade Intersection (U.S. 63 Direct Connection)
  - Major impacts to ADM facility
  - U.S. 61 grade raise might require fill next to Barn Bluff
  - Recommendation – remove from consideration given substantial right-of-way impacts and poor geometry.
- Concept 4: Four Leg At Grade Intersection
  - Good traffic operations (assuming a four-lane river crossing)
  - U.S. 61 grade raise might require fill next to Barn Bluff
  - 3rd Street connection improves downtown operations
  - Would require four-lane U.S. 63 Bridge
  - Recommendation – remove from consideration because it requires a four lane river crossing.
- Concept 5: Four Leg At Grade Intersection – Roundabout
  - Good traffic operations
  - Does not accommodate large trucks
  - Requires extensive right-of-way acquisition
  - Would require four-lane U.S. 63 Bridge
  - Recommendation – remove from consideration because it requires a four lane river crossing and does not accommodate large trucks.
- Concept 6: Button Hook Intersection
  - Improved traffic operations compared to over No-Build

- U.S. 61 at Plum Street Intersection still congested
  - Works with either two-lane or four-lane U.S. 63 Bridge
  - Recommendation – remove from consideration in lieu of Concept 7 which has much better traffic operations and retains more favorable access to MN 58 and downtown.
- Concept 7: Button Hook Intersection with Slip Ramp
    - Best traffic operations
    - 3rd Street connection improves downtown operations
    - Works with either two-lane or four-lane U.S. 63 Bridge
    - Recommendation – retain for further consideration.
- Concept 8: Button Hook Intersection – Roundabout
    - Decent traffic operations
    - U.S. 61 at Plum Street Intersection still congested
    - Does not accommodate large trucks
    - Works with either two-lane or four-lane U.S. 63 Bridge
    - Recommendation – remove from consideration because of substantial right-of-way impacts and it does not accommodate large trucks.

In summary, based on this initial assessment and stakeholder input, the following concepts were identified to be carried forward for further consideration:

- Concept 1 – Rehabilitate Bridge 9103
- Concept 7 – Button Hook Intersection with Slip Ramp

## REFINED MINNESOTA APPROACH ALTERNATIVES

Moving forward with the recommended concepts, additional design work was completed and coordination between MnDOT and FHWA staff was conducted. Much of these efforts focused on ensuring a full consideration of concepts that would enable Bridge 9103 to be retained given its National Register status. The additional sub-options to Concept 1 include:

### Sub-Option A

This concept was developed as an attempt to better address the downtown commercial historic district traffic issues while avoiding substantial right-of-way impacts. It includes signal timing modifications as well as capacity improvements including turn lane modifications, removal of some on-street parking, some sidewalk narrowing, curb radii modifications, and additional through lanes through restriping (Figure 1 - attached).

### Sub-Option B

This concept builds from Sub-Option A and attempts to more fully address the network related traffic issues referenced above. It includes even more substantial modifications to the downtown street network including additional through lanes and longer turn lanes. These modifications would require removal of additional on-street parking, further sidewalk impacts, and impact Dankers Park in the southeast quadrant of the Plum Street/3<sup>rd</sup> Street intersection. (Figure 2 - attached).

### Sub-Option C

Given Sub-Options A and B do not fully address the issues associated with the overlapping trunk highway system in downtown Red Wing, even more substantial changes to the downtown street network were considered. It was concluded the only effective solution to address all of the issues would be to redirect the majority of traffic from Main Street to 3rd Street. This would be accomplished by constructing a new

road segment from Main Street to 3rd Street between Dakota Street and West Avenue. In turn, Main Street would be realigned near West Avenue to connect with the newly realigned Main Street to 3rd Street connection (Figure 3 - attached). With this modification 3rd Street through downtown would become Highway 63 and traffic destined to the river crossing and Highway 58 south, would use 3rd Street rather than Main Street.

MnDOT and FHWA staff concluded that Sub-Option A was the only potentially viable sub-option to carry forward given the substantial right-of-way impacts and increased social, economic, and environmental (SEE) impacts to the downtown commercial historic district associated with Sub-Options B and C.

As a result of the extensive refinement efforts, five Minnesota Approach alternatives were defined for more detailed evaluation.

The alternatives are illustrated in Figures 47 (attached) and defined in detail as follows:

- Alternative MN-1 (former Concept 1): This alternative involves rehabilitating Bridge 9103 as documented in the Bridge 9103 Rehabilitation Study, August 2013. For purposes of this evaluation it is assumed this alternative includes cathodic protection and installation of a TL-2 railing. Cathodic protection is assumed because it is necessary to extend the service life of the rehabilitation project to the 20 year planning horizon. The TL-2 railing is assumed because it does not affect the historic eligibility of Bridge 9103, is relatively low cost, and represents a substantial safety benefit.
- Alternative MN-1A (former Concept 1 with Sub-Option A): This alternative includes rehabilitating Bridge 9103 as documented in the Bridge 9103 Rehabilitation Study, August 2013. For purposes of this evaluation it is assumed this alternative includes cathodic protection and the TL-2 railing. This alternative also includes modifications to the downtown Red Wing street network proposed to retain reasonable traffic operations through the 2042 forecast year (see Figures 4 and 5). The improvements identified in Figure 2 reflect a balance between maximizing opportunities to improve traffic flow and minimizing right-of-way, parking, and sidewalk impacts. The proposed improvements were defined through an iterative process which involved developing incremental changes and testing their effectiveness using the detailed traffic model developed for the overall project. This iterative process resulted in the improvements reflected in Figure 5.

The collective adjustments to lane configurations and on-street parking, as well as the curb and sidewalk modifications illustrated in Figure 5, do improve existing and forecast traffic operations. However, substantial roadway network issues associated with the tight urban grid pattern and overlapping trunk highway system result in substantial queuing, conflicting turning movements, congestion, and delays.

- Alternative MN-2 (new alternative, not studied in feasibility concepts): This is an additional alternative that allows retaining the existing roadway network, minimizing most environmental impacts, but removing Bridge 9103 and replacing it with a new bridge structure (see Figure 3). This alternative was added to allow for comparison of costs between Alternative MN-1 (rehabilitation of Bridge 9103) and a new bridge [with longer service life and lower on-going maintenance costs].
- Alternative MN-2A: Similar to Alternative 2, this option involves replacement of Bridge 9103 with a new bridge that maintains the existing approach roadway system with US 63 connecting into downtown Red Wing via 3rd Street. This alternative also includes modifications to the downtown Red Wing street network proposed to retain reasonable traffic operations through the 2042 forecast year (see Figures 5 and 6). The identified downtown street improvements are the same as Alternative MN-1A.
- Alternative MN-3 (former Concept 7): This alternative includes replacing Bridge 9103 with a new structure and button-hook ramp configuration that reorients the connection of US 63 to US 61 immediately east of downtown Red Wing. This alternative also includes a one-way slip-ramp which provides an option for southbound US 63 traffic to continue to have a direct access to downtown Red Wing and MN 58 via 3rd Street (see Figure 7).

## UPDATED PURPOSE AND NEED STATEMENT

Since completing the original project purpose and need statement in 2012, additional traffic studies performed as part of the concept/feasibility analysis highlighted more substantial traffic mobility issues than what was initially evident from the analysis completed in 2011 and 2012. The more recent traffic analyses showed that operational issues were more of a network mobility problem rather than an intersection problem, as previously documented. The shift in focus from an intersection perspective to a network perspective was important because it highlighted that the primary traffic issues were tied to the trunk highway network in the downtown area, not a specific intersection or intersections. Building from the expanded technical analysis, MNDOT met with City of Red Wing staff to ensure the community's perspectives and concerns were clearly understood. Through this coordination, City staff indicated that in addition to the motorized traffic issues, that nonmotorized travel is a major challenge in the downtown area, In particular the trunk highway segments (Main Street, Plum Street) are major challenges for pedestrian and bicyclist circulation.

Thorough review of this information led to discussions centered on refining the purpose and need to better account for motorized and non-motorized mobility issues along the trunk highway segments that extend through downtown Red Wing and connect to the river crossing. In addition, the mobility issues and concerns identified in the technical studies were consistent with public input received through the project's public engagement process. Given this information, MnDOT and FHWA concurred that "Need to Improve Motorized and Non-motorized Traffic Mobility on Trunk Highways within the Downtown Red Wing Commercial/Historic District" should become a primary need. Project stakeholders were given an opportunity to comment on these changes to the purpose and need through ongoing public engagement efforts. Stakeholders were supportive of mobility being designated as a primary need.

The major elements of the refined/updated purpose and need are as follows (additions are in italics and deletions are strike-through text):

### **Primary Needs:**

- Need for Structurally Sound Crossing of the Mississippi River Main Channel at Red Wing
- Need for Structurally Sound Crossing of US 61
- *Need to Improve Motorized and Non-Motorized Traffic Mobility on Trunk Highways within the Downtown Red Wing Commercial/Historic District*

### **Secondary Needs:**

- Need for Continuity of US 63
- Need for Connection to US 61 and MN 58
- Need for Adequate Bridge Capacity
- ~~Need for Acceptable Traffic Operations and Safe Design~~
- Need for Maximum Maintenance of Traffic
- Need for Access to Trenton Island
- Need to Maintain or Improve Pedestrian/Bicycle Facilities *on the US 63 River Bridge and US 61 Overpass*

### **Other Considerations:**

- Structural Redundancy
- Wisconsin Corridors 2030 Plan
- Geometrics
- Economic development
- Parking

- Regulatory Requirements
- Property Impacts

### REVIEW RANGE OF MINNESOTA APPROACH ALTERNATIVES

Following the update of the purpose and need, it was necessary to determine whether the alternatives defined previously should be modified and/or if additional alternatives needed to be considered. This step included a review of the technical information and reaching out to the public to provide an opportunity to review the refined purpose and need and potentially suggest new alternatives. The revised purpose and need was presented at a project listening session on May 27, 2014 and attendees were provided the opportunity to suggest different alternatives.

No written public input was received at the listening session regarding the refined purpose and need and no additional Minnesota approach alternatives were identified for consideration.

In addition, a separate meeting was held with City planning/engineering staff to discuss mobility issues downtown, including options the City has considered to address non-motorized traffic mobility, to determine if additional non-motorized alternative elements should be considered. Two concepts for potential improving pedestrian mobility were reviewed with City staff: 1) restricting pedestrian crossing opportunities [i.e., identifying 1 or 2 legs at the intersection as 'no ped crossing'] at high volume intersections, to decrease turning conflicts and 2) posting high volume intersections as 'No Turn on Red' for motor vehicles. City staff indicated that these options had been considered by the City before and rejected as not being feasible or effective. Therefore, these were not considered further for the Minnesota approach alternatives.

Since no new/additional feasible alternatives were identified in this review process, the five alternatives documented earlier in this memorandum were retained and carried forward for evaluation and screening. The alternatives include:

- MN-1
- MN-1A
- MN-2
- MN-2A
- MN-3

### ALTERNATIVES EVALUATION AND SCREENING

The alternatives evaluation and screening process centered on assembling a comprehensive list of evaluation criteria and applying the criteria to the Minnesota approach alternatives discussed above. The criteria were developed to account for and reflect the purpose and need statement, social, economic, and environmental (SEE) factors, and cost considerations. The evaluation criteria and five approach alternatives were organized into a comprehensive evaluation matrix to facilitate the evaluation and screening process (see Table 2 - attached).

MnDOT and FHWA staff met several times to review the matrix and discuss the screening process and results. The outcomes of these discussions are summarized below.

#### *Alternatives Not Carried Forward for Further Consideration After Screening*

It was concluded that Alternatives MN-1A and MN-2A should be eliminated from further consideration after initial screening because:

- They would introduce a Section 106 adverse effect (and a resulting Section 4(f) use) to the Downtown Commercial/Historic District;

- They would introduce a Section 4(f) impact to Dankers Park in Downtown Red Wing;
- The alternatives were originally developed in an effort to address the operational ‘needs’ related to geometrics (i.e., turning radii and turn lanes); however, the subsequent traffic analysis concluded they do not adequately address the overall trunk highway network mobility needs through the year 2042 forecast period. This, plus the identified Section 106 and 4(f) impacts with no other potential SEE benefits that would warrant retaining these alternatives, were the basis for dismissing these alternatives.

MnDOT and FHWA staff also concluded given full consideration of the purpose and need, SEE impacts, and cost factors included in the evaluation matrix that Alternative MN-2 should be removed from further consideration because it does not meet the primary need related to mobility, and results in removal of Bridge 9103, which would result in an adverse effect under Section 106 and result in a Section 4(f) use.

*Alternatives to be Carried Forward for Further Documentation Following Screening*

Following screening, only MN-1 and MN-3 remained as potential Minnesota approach alternatives. Staff discussed in great detail the relative trade-offs between the alternatives, which can be summarized as follows:

- MN-1
  - Positive attributes (compared to MN-3):
    - Retains Bridge 9103, thereby avoiding a Section 106 adverse effect and Section 4(f) impact;
    - Fewer right-of-way impacts;
    - No substantial changes in noise levels anticipated;
    - Lower capital cost
  - Negative attributes (compared to MN-3):
    - Greater motorized traffic mobility issues (network delay, longer queuing, longer travel times); Does not address mobility issues related to traffic volumes and pedestrian circulation/safety in the downtown commercial/historic district – therefore, this alternative does not meet the primary need to address mobility issues. Mobility issues are discussed in greater detail in the March 25, 2014 Traffic Analysis Report; also,
    - Higher on-going bridge maintenance costs; and
    - Shorter bridge service life
- MN-3
  - Positive attributes (compared to MN-1):
    - Improved mobility issues (reduced network delay, shorter queues, shorter travel times); the only alternative that meets the primary needs and fully addresses mobility issues related to traffic volumes and pedestrian circulation/safety in the commercial/historic district. Figure 8 illustrates the mobility benefits of MN-3, including the reduction in traffic volumes on Plum Street (MN 58) between U.S. 61 and 3<sup>rd</sup> Street (nearly 50% in the AM peak hour and 30% in the PM peak hour respectively). Mobility issues are discussed in greater detail in the March 25, 2014 Traffic Analysis Report;
    - Lower on-going bridge maintenance costs;
    - Longer bridge service life
  - Negative attributes (compared to MN-3):
    - Removes Bridge 9103 (a Section 106 adverse effect and Section 4(f) impact);
    - Greater right-of-way impacts;

- Potential increase in noise levels at residences adjacent to button hook loop;
- Higher capital cost;

Reflecting on these trade-offs, staff concurred with the following recommendations:

- Advance MN-3 as the recommended alternative, because it is the only alternative that addresses all of the primary purpose and need elements;
- Obtain input from SHPO and other Section 106 process stakeholders;
- Complete the Section 4(f) evaluation/decision-making and documentation process, including detailed consideration of Alternative MN-1, since it is the Section 4(f) avoidance alternative;
- Provide detailed documentation of the alternatives evaluation and decision-making process in the Environmental Assessment document

ah

Attachments:

Table 1 - Red Wing Roadway Initial Concepts Matrix

Figure 1 – Sub-Option A

Figure 2 – Sub-Option B

Figure 3 – Sub-Option C

Figure 4 - Concept MN-1

Figure 5 - Downtown Red Wing Street Network Improvements

Figure 6 - Concept MN-2

Figure 7 - Concept MN-3

Table 2 - Minnesota Approach Alternatives Evaluation Matrix

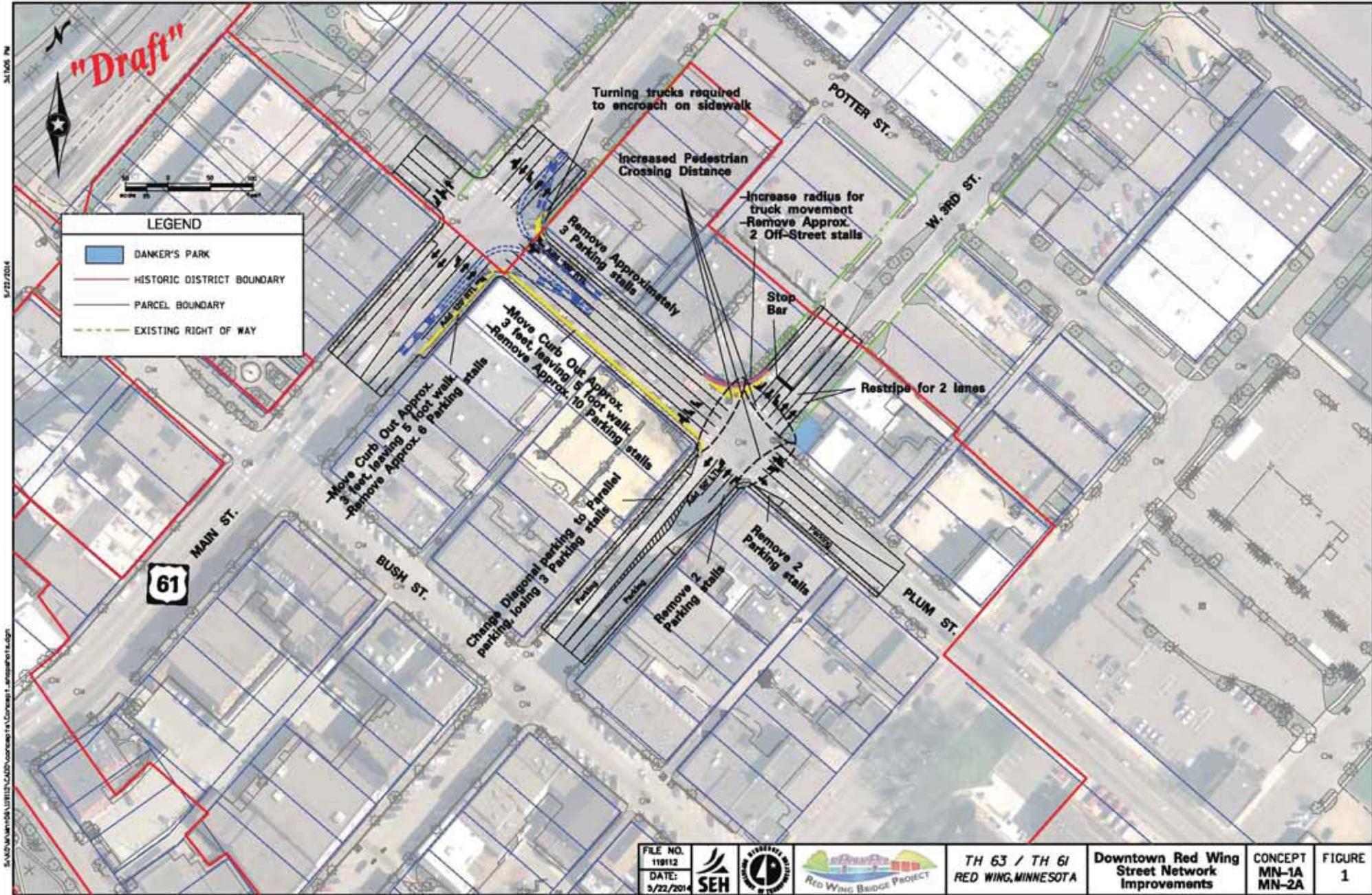
Figure 8 – Change in Traffic Demand Alternative 1 and 2 vs. Alternative 3

s:\ko\m\mnt06\119112\bridge and roadway alternatives analysis\alternatives analysis\mn approach alts eval and screening memo\draft - mn approach alt evaluation and screening memo - 7-8-14 new format.docx

Table 1 - Red Wing Bridge Project Approach Roadway Concept Alternative Evaluation Matrix – 7/11/12

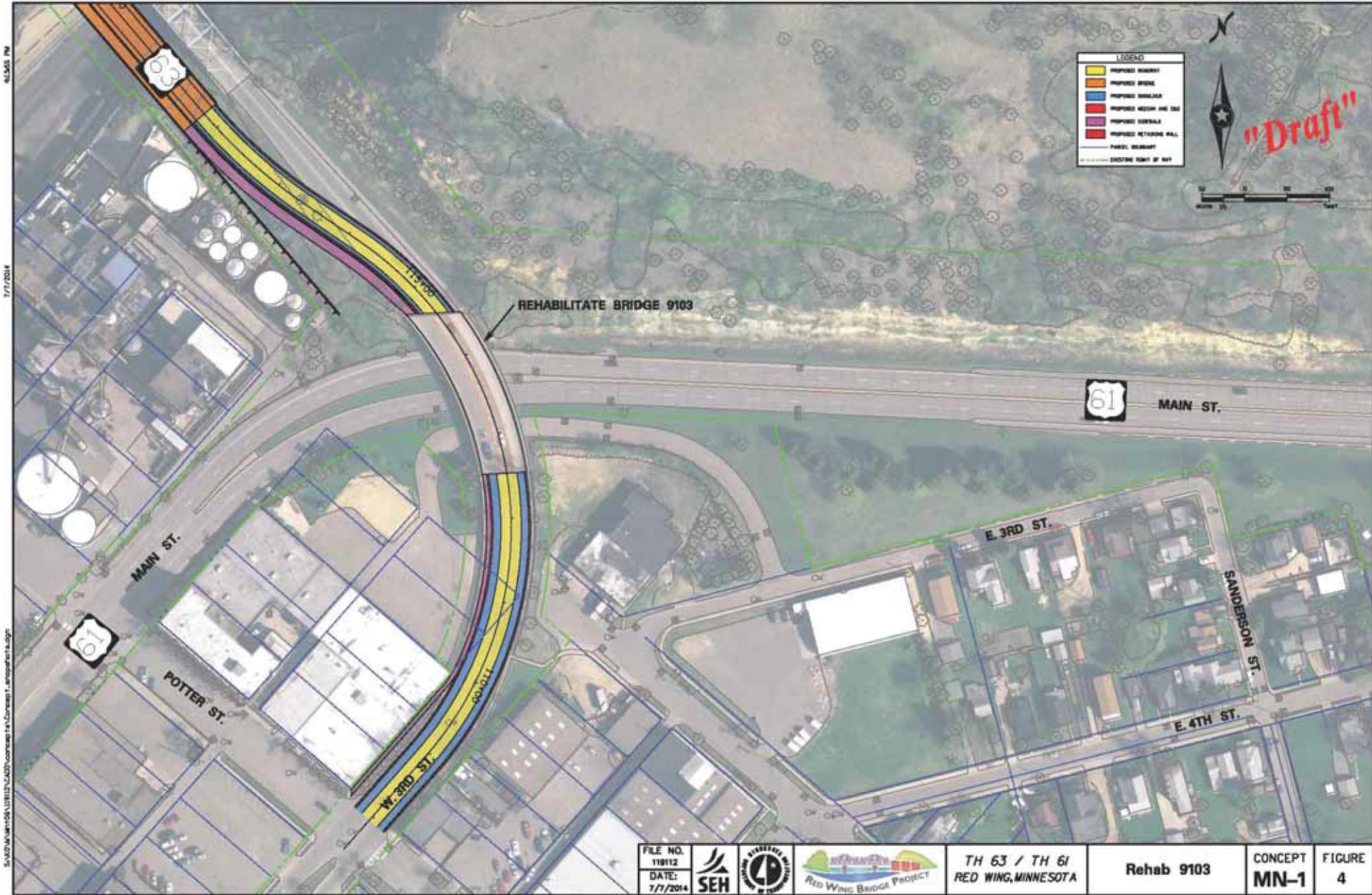
Evaluation Criteria	Concept 1 Rehabilitate Bridge 9103	Concept 2 Three-Leg At Grade Intersection	Concept 3 Three-Leg At Grade Intersection (63 Direct Connection)	Concept 4 Four-Leg At Grade	Concept 5 Four-Leg At Grade with Roundabout	Concept 6 Buttonhook Intersection	Concept 7 Buttonhook Intersection with Slip Ramp	Concept 8 Buttonhook Intersection with Roundabout
<b>Traffic Operations/Mobility</b> <ul style="list-style-type: none"> <li>TH 63</li> <li>TH 61</li> <li>Downtown Red Wing</li> <li>Access for Local Businesses</li> </ul>	Poorest traffic operations in year 2042	Poor operations in year 2042. Does not work with two-lane river crossing. Directs TH 63 traffic out of downtown Red Wing Shore access reconfigured Reduces traffic congestion at 3 <sup>rd</sup> /Plum Increased traffic at US 61/Plum	Directs TH 63 traffic out of downtown Promotes primary river crossing movement Red Wing Shoe access reconfigured Reduces traffic congestion at 3 <sup>rd</sup> /Plum Increased traffic at US 61/Plum	More favorable year 2042 traffic operations assuming a four lane river crossing Greater impact to Red Wing Shoe access Reduces traffic congestion at 3 <sup>rd</sup> /Plum More direct connection to TH 58 compared to Concepts 2 and 3	Favorable year 2042 traffic operations Truck path overlap between lanes might reduce capacity Greater impact to Red Wing Shoe access Reduces traffic congestion at 3 <sup>rd</sup> /Plum	Acceptable 2042 traffic operations, though queuing problems exist Directs TH 63 traffic out of downtown Red Wing Shoe access reconfigured Reduces traffic congestion at 3 <sup>rd</sup> /Plum Increased traffic at US 61/Plum	Most favorable year 2042 traffic operations Directs portion of TH 63 traffic out of downtown Red Wing Shoe access reconfigured Reduces congestion at 3 <sup>rd</sup> /Plum More direct connection to TH 58 compared to Concept 6	Favorable year 2042 traffic operations Truck path overlap between lanes might reduce capacity Directs TH 63 traffic out of downtown Greater impact to Red Wing Shoe access Reduces traffic congestion at 3 <sup>rd</sup> /Plum
<b>Safety</b> <ul style="list-style-type: none"> <li>Driver Expectancy</li> <li>Pedestrian/Bicycle Friendliness</li> </ul>	As currently exists	Standard intersection Sidewalk/Trail provided	Standard intersection Sidewalk/Trail provided	Standard 4-Leg intersection Sidewalk/Trail provided	Roundabout Sidewalk/Trail provided	Controlled intersection Sidewalk/Trail provided	Controlled intersection Sidewalk/Trail provided	Controlled intersection Sidewalk/Trail provided
<b>Environmental Impacts</b> <ul style="list-style-type: none"> <li>Section 106</li> <li>Section 4(f)</li> <li>Soil Conditions (Geotech/Contamination)</li> </ul>	Minimal	Bridge 9103 removal (Section 106 and 4f) TH 61 grade raise may require fill next to Barn Bluff Unknown soil conditions at warehouse building site	Bridge 9103 removal (Section 106 and 4f) TH 61 grade raise may require fill next to Barn Bluff Unknown soil conditions at warehouse building site	Bridge 9103 removal (Section 106 and 4f) TH 61 grade raise may require fill next to Barn Bluff Unknown soil conditions at warehouse building site	Bridge 9103 removal (Section 106 and 4f) TH 61 alignment pulled away from Barn Bluff; TH 63 alignment shifted closer Unknown soil conditions at warehouse building site	Bridge 9103 removal (Section 106 and 4f) Minimal Unknown soil conditions at warehouse building site	Bridge 9103 removal (Section 106 and 4f) Minimal Unknown soil conditions at warehouse building site	Able to maintain Bridge 9103 Minimal Unknown soil conditions at warehouse building site
<b>Right-of-Way/Property Impacts</b> <ul style="list-style-type: none"> <li>Proximity to Housing</li> <li>Visual/Noise</li> <li>Access</li> <li>Acquisitions</li> </ul>	Minimal/As currently exists	Staging would likely require acquisition of warehouse building	Major impacts to ADM	Staging would likely require acquisition of warehouse building	Extensive R/W acquisition	Closer to residential development with extensive R/W acquisition	Closer to residential development with extensive R/W acquisition	Closer to residential development with R/W acquisition
<b>Design Standards</b>	As currently met	Meets 30 mph design	Meets 30 mph design	Meets 30 mph design	Meets 30 mph design	Meets 30 mph design	Meets 30 mph design	Meets 30 mph design
<b>Estimated Construction Cost (not TPC)</b>	TBD	\$3.6M	\$3.4M	\$4.3M	\$4.0M	\$6.4M	\$6.6M	\$3.9M
<b>Construction Staging and Complexity/MOT</b>	Minor impact for Bridge Rehab	Divert TH 61 via temp alignment/Construct TH 63 in halves	Construct TH 61 in halves/under traffic	Divert TH 61 via temp alignment/Construct TH 63 in halves	Complex – non-closure requires shifted roundabout; several stages	Moderate – buttonhook constructed off-line and bridge in halves	Moderate – buttonhook constructed off-line and bridge in halves	Moderate – buttonhook constructed off-line and bridge in halves
<b>Compatibility with Parallel Bridge</b>	Compatible – walls required	Compatible – walls required	Non-compatible without extensive R/W impacts	Compatible – walls required	Compatible – walls required	Less compatible – would require wider bridge over TH 61	Less compatible – would require wider bridge over TH 61	Compatible – would likely require exception on bridge over TH 61

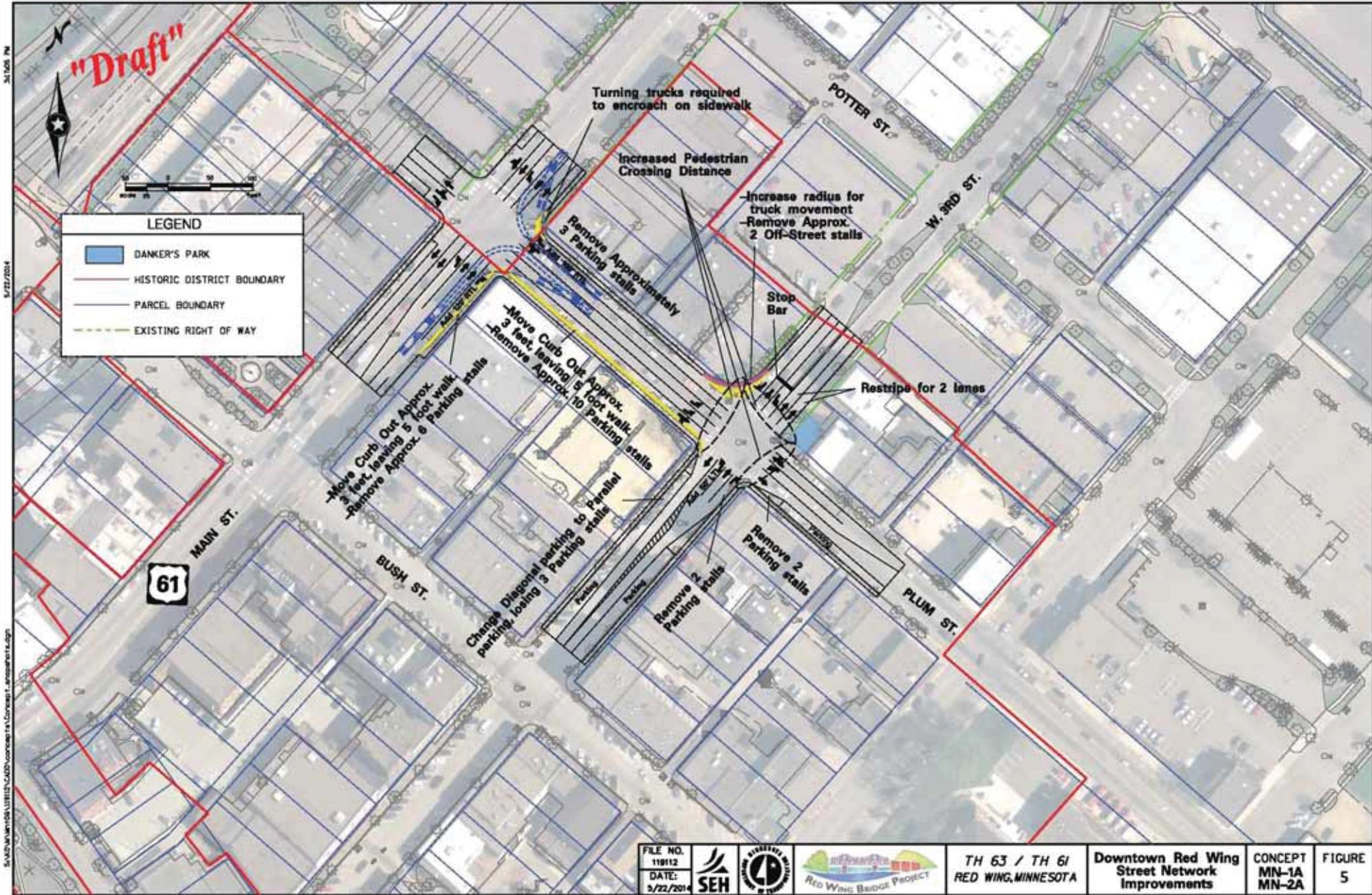
This Page Left Blank Intentionally

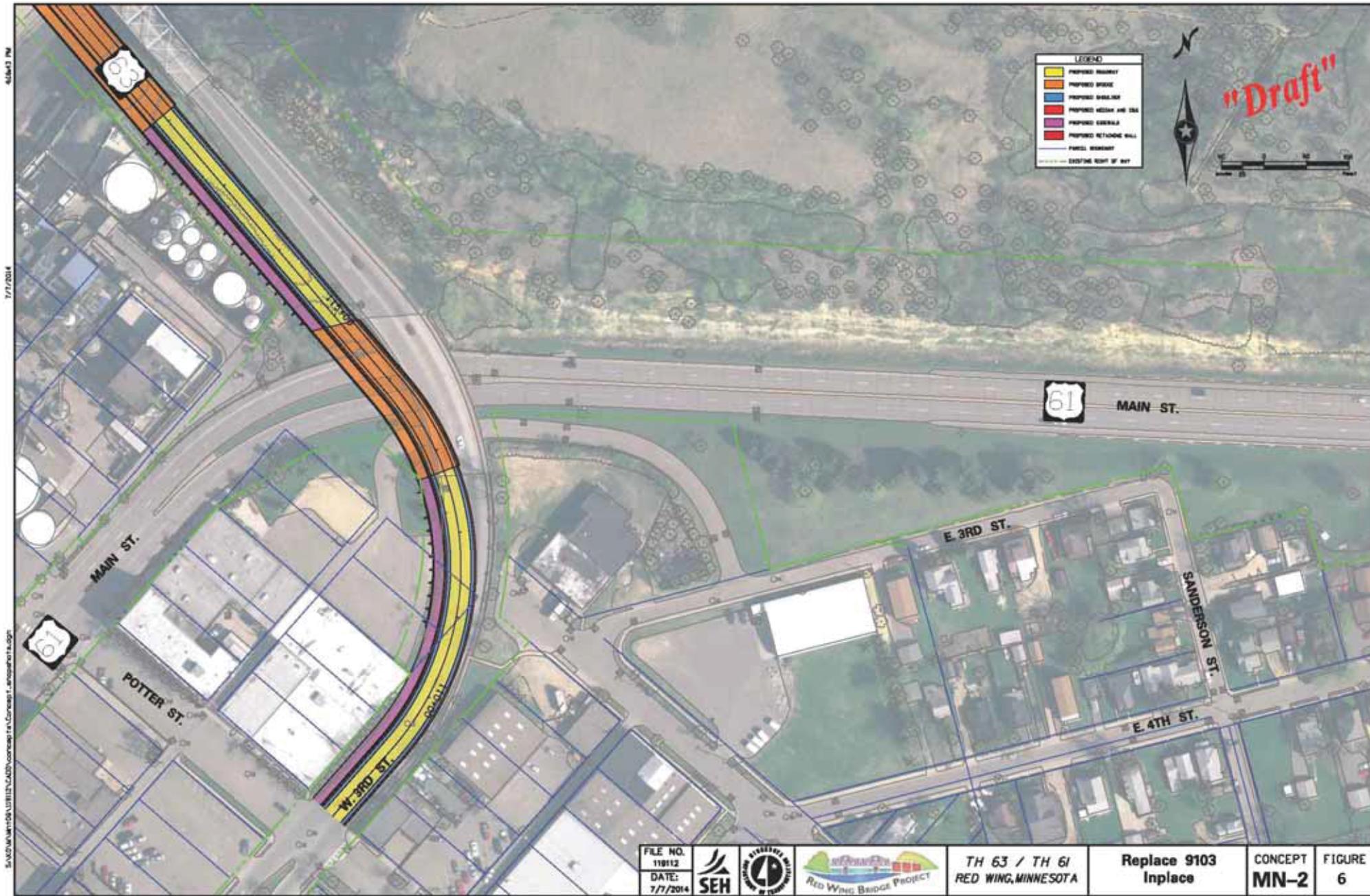


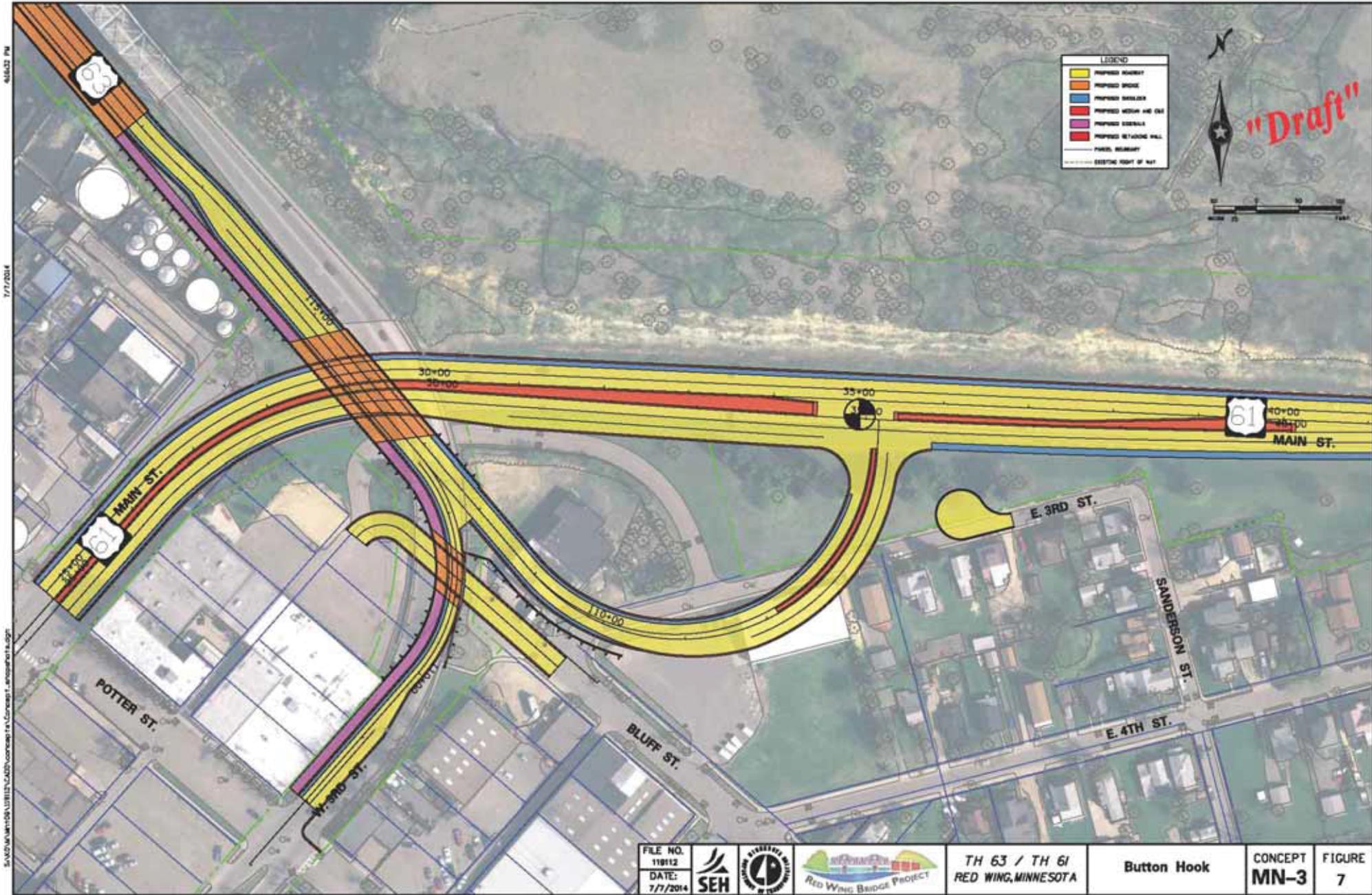












This Page Left Blank Intentionally

**Table 2 - Red Wing Bridge Project - Minnesota Approach Alternatives Evaluation Matrix**

EVALUATION CRITERIA		MN-1 - Rehab Bridge 9103 (includes cathodic protection & TL-2 railing)	MN-1A - Rehab Bridge 9103 with CBD Street modifications	MN-2 - Replace Bridge 9103 In-Place	MN-2A - Replace Bridge 9103 In-Place with CBD Street Modifications	MN-3 - Replace Bridge 9103 plus Button-hook with Slip-Ramp
<b>PRIMARY NEEDS</b>						
Structurally sound crossing of the Mississippi River	Ability to meet structural requirements	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives
Structurally sound crossing of US 61	Ability to meet structural requirements	Yes	Yes	Yes	Yes	Yes
Improve motorized and non-motorized traffic mobility on THs in downtown commercial/historic district	Year 2042 trunk highway network delay	564 hours; NOTE: Estimated delay is underestimated, due to limitations in model's ability to reflect adverse effects of grid street network, tight geometrics, & pedestrian conflicts.	133 hours; NOTE: Estimated delay is underestimated, due to limitations in model's ability to reflect adverse effects of grid street network, tight geometrics, & pedestrian conflicts.	564 hours; NOTE: Estimated delay is underestimated, due to limitations in model's ability to reflect adverse effects of grid street network, tight geometrics, & pedestrian conflicts.	133 hours; NOTE: Estimated delay is underestimated, due to limitations in model's ability to reflect adverse effects of grid street network, tight geometrics, & pedestrian conflicts.	84 hours
	Network motor vehicle traffic queue lengths; 2042 PM peak hour maximum queues at the seven analyzed intersections	8,795 feet;	6,163 feet; NOTE: reduction in queues at critical approaches is muted by the collective queue length of all intersection approaches	8,795 feet;	6,163 feet; NOTE: reduction in queues at critical approaches is muted by the collective queue length of all intersection approaches	5,361 feet; NOTE: reduction in queues at critical approaches is muted by reporting total queue length on all intersection approaches. Queues on trunk highways show a substantial reduction.
	Year 2042 total trunk highway network travel time	643 hours; NOTE: Estimated travel time is underestimated, due to limitations in model's ability to reflect adverse effects of grid street network	227 hours; NOTE: Estimated travel time is underestimated, due to limitations in model's ability to reflect adverse effects of grid street network	643 hours; NOTE: Estimated travel time is underestimated, due to limitations in model's ability to reflect adverse effects of grid street network	227 hours; NOTE: reduction in travel time exaggerated by limitations in model to reflect adverse effects of grid street network	173 hours
	Year 2042 PM peak hour travel time for a representative trip between the River Bridge and US 61/Broad Street	- River Bridge to US 61/Broad Street = 2 mins, 25 secs - US 61/Broad Street to River Bridge = 21 mins, 31 secs	- River Bridge to US 61/Broad Street = 1 min, 19 secs - US 61/Broad Street to River Bridge = 3 mins, 50 secs	- River Bridge to US 61/Broad Street = 2 mins, 25 secs - US 61/Broad Street to River Bridge = 21 mins, 31 secs	- River Bridge to US 61/Broad Street = 1 min, 19 secs - US 61/Broad Street to River Bridge = 3 mins, 50 secs	- River Bridge to US 61/Broad Street = 1 min, 15 secs - US 61/Broad Street to River Bridge = 1 min, 24 secs
	Change in trunk highway volumes on roadway segments within commercial/historic district, compared to No-Build	No Change	No Change	No Change	No Change	3rd Street between Plum and Potter, approximately 70% Reduction; Plum Street between Main and 3rd, 30% to 50% Reduction
	Turning movement volumes compared to No-build at key intersections (US 61/MN 58 and MN 58/3rd Street)	No Change	No Change	No Change	No Change	Main at Plum, 30% to 50% reduction; 3rd at Plum, 35% to 45% Reduction
	Change in peak hour truck right turn volumes compared to No-Build at key intersections with inadequate RT radii: US 61/MN 58 and MN 58/3rd Street	No Change	No Change	No Change	No Change	Main/Plum = 63% AM and 68% PM reduction; Plum/3rd = 93% AM and 96% PM reduction
	Pedestrian level of service (HCM analysis)	LOS B	LOS D	LOS B	LOS D	LOS B
	Pedestrian crossing delay at US 61/MN 58 and MN 58/3rd Street	No Change	No Change	No Change	No Change	Reduction in vehicle traffic enables changing signal cycles to increase pedestrian crossing times; Removal of SB LT phase at MN 58/3rd will increase the east side crossing time by up to 30 seconds per cycle.
	Change in intersection width for ped crossing compared to No Build	No Change	Increased walking distance for peds crossing the south leg of the US 61 at MN 58 intersection; and crossing the south, north, and east legs of the MN 58 at 3rd Street intersection	No Change	Increased walking distance for peds crossing the south leg of the US 61 at MN 58 intersection; and crossing the south, north, and east legs of the MN 58 at 3rd Street intersection	No change
	Change in number of traffic lanes crossed by pedestrians, compared to No Build	No Change	Increased number of approach lanes on the west and south legs of the US 61 & MN 58 intersection and at the east and north legs at the MN 58 & 3rd Street intersection increase ped exposure	No Change	Increased number of approach lanes on the west and south legs of the US 61 & MN 58 intersection and at the east and north legs at the MN 58 & 3rd Street intersection increase ped exposure	Reduction in vehicle traffic enables changes in lane striping which will decrease the number of approach lanes on the east and north legs of the MN 58 & 3rd Street intersection, reducing ped exposure
	Other changes in pedestrian and bicyclist 'quality of experience' (qualitative assessment)	No Change	1) Removal of on-street parking stalls eliminates "buffer" effect between pedestrians and vehicular traffic; 2) Narrower sidewalks reduce walkability & separation distance between motorized and non-motorized traffic.	No Change	1) Removal of on-street parking stalls eliminates "buffer" effect between pedestrians and vehicular traffic; 2) Narrower sidewalks reduce walkability & separation distance between motorized and non-motorized traffic.	Reduced turning traffic volumes decreases pedestrian/vehicle conflict potential and enhances pedestrian environment and walkability in commercial/historic district.

This Page Left Blank Intentionally

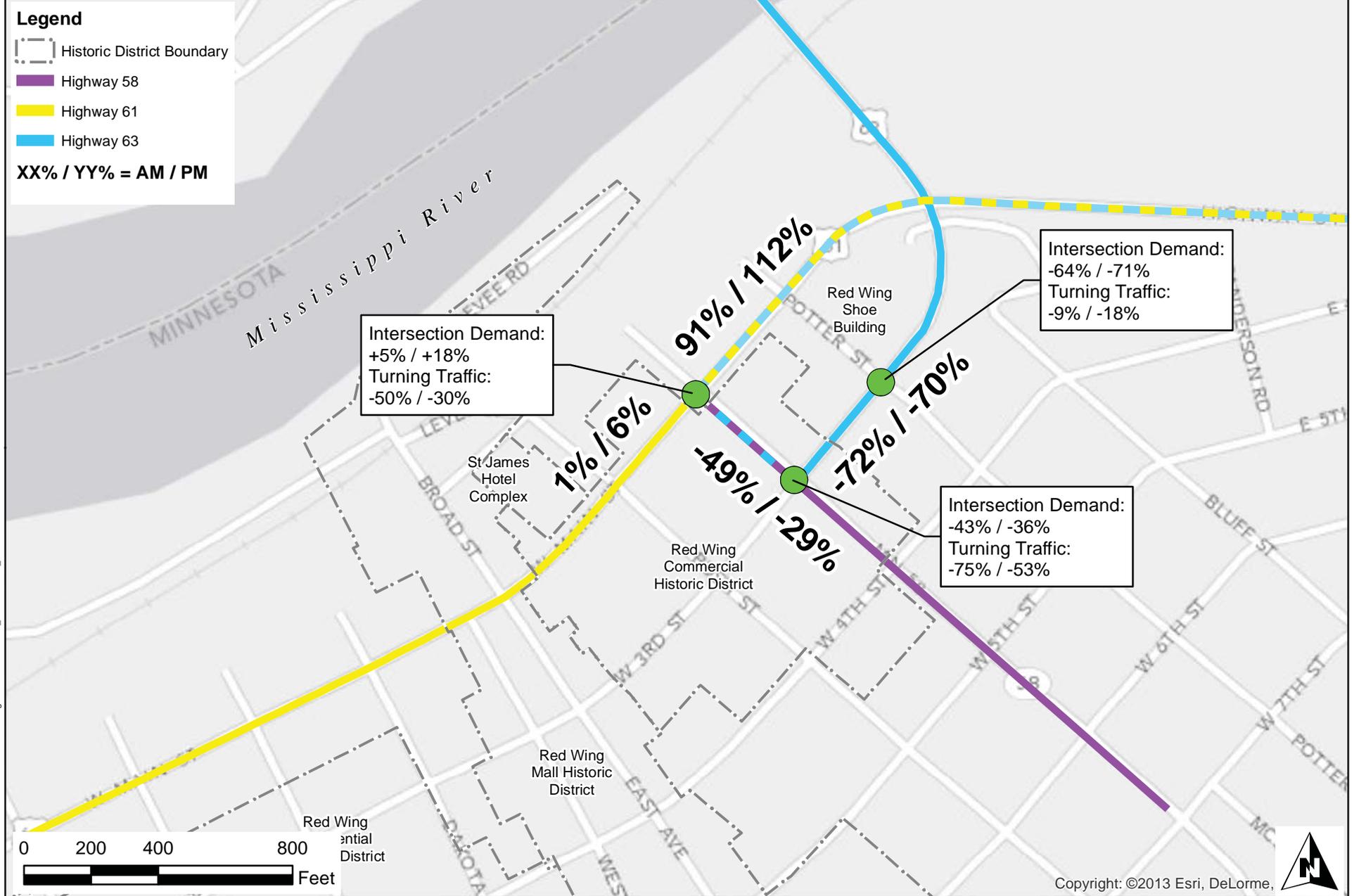
SECONDARY NEEDS						
Continuity of US 63	Ability to maintain continuity	Maintains continuity	Maintains continuity	Maintains continuity	Maintains continuity	Maintains continuity
US 63 connection to US 61 and TH 58	Ability to provide connection of US 63 to US 61	US 63 connection overlaps with MN 58	US 63 connection overlaps with MN 58	US 63 connection overlaps with MN 58	US 63 connection overlaps with MN 58	Improved by providing direct US 63 connection to US 61
	Ability to provide connection to MN 58	NB/SB connection provided via 3rd St.	NB/SB connection provided via 3rd St.	NB/SB connection provided via 3rd St.	NB/SB connection provided via 3rd St.	SB connection provided via 3rd St.; NB connection provided via US 61
Adequate Bridge Capacity	Ability to accommodate forecast year traffic volumes	Yes	Yes	Yes	Yes	Yes
Maximum maintenance of traffic	Duration of full closure of US 63	No full closure required	No full closure required	No full closure required	No full closure required	No full closure required
Access to Trenton Island	Ability to maintain access to Trenton Island	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives
Maintain or improve pedestrian/bicycle facilities on US 63 River Bridge and US 61 Overpass	Ability to maintain or improve pedestrian/bicycle facilities	Widens west side curb to a five foot sidewalk. 12 foot river crossing trail needs to be reduced to five feet at Bridge 9103. No separated bicycle facility. Maintains narrow right shoulder (used by bicyclists) on SB US 61 below Bridge 9103.	Widens west side curb to a five foot sidewalk. 12 foot river crossing trail needs to be reduced to five feet at Bridge 9103. No separated bicycle facility. Maintains narrow right shoulder (used by bicyclists) on SB US 61 below Bridge 9103.	Provides 12 foot separated multi-use trail at US 63 MN approach. Right shoulder (used by bicyclists) on SB US 61 below bridge can be widened to current standards.	Provides 12 foot separated multi-use trail at US 63 MN approach. Right shoulder (used by bicyclists) on SB US 61 below bridge can be widened to current standards.	Provides 12 foot separated multi-use trail at US 63 MN approach. Right shoulder (used by bicyclists) on SB US 61 below bridge can be widened to current standards.
OTHER CONSIDERATIONS						
Structural redundancy	Provide a structurally redundant river crossing	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives
Wisconsin Corridors 2030 Plan	Ability to meet stated LOS D or better objective	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives
Geometrics	Ability to accommodate truck turning paths	No improvement to the substandard turning radii at US 61/Plum Street and Plum Street/3rd Street	No major improvements to the substandard turning radii at US 61/Plum Street and Plum Street/3rd Street	No improvement to the substandard turning radii at US 61/Plum Street and Plum Street/3rd Street	Minor improvements to the substandard turning radii at US 61/Plum Street and Plum Street/3rd Street	Substantial improvement associated with reduction in turning truck traffic at the problem intersections
Economic development	Ability to maintain or improve traffic flow, based on City's goals/recommendations for promoting economic development	Continued degradation of downtown traffic flow and pedestrian environment not consistent with City's plans for economic development	Continued degradation of pedestrian environment, however, less degradation of motorized mobility compared to MN-1	Continued degradation of downtown traffic flow and pedestrian environment not consistent with City's plans for economic development	Continued degradation of pedestrian environment, however, less degradation of motorized mobility compared to MN-2	Reduction of truck and commuter traffic through downtown provides greater improvement in motorized and non-motorized mobility, consistent with City's plans for enhancing economic development
Parking	Increase or reduction of parking spaces	No change	Loss of 38 on-street stalls	No change	Loss of 38 on-street stalls	No change
Regulatory Requirements:						
Section 106	Potential for adverse effects on historic properties	No likely adverse effects identified.	Avoids impact to Bridge 9103. Likely adverse effect to Commercial Historic District from modifications to curbs and sidewalks (i.e., affect 'grid' that is character-defining feature).	Removes Bridge 9103 = Likely adverse effect.	Removes Bridge 9103 = Likely adverse effect. Likely adverse effect to Commercial Historic District from modifications to curbs and sidewalks (i.e., affect 'grid' that is character-defining feature).	Removes Bridge 9103 = Likely adverse effect.
	Section 4(f) impacts	No impacts	Section 4(f) Impacts: 1) Requires acquisition of a portion of Dankers Park at Plum Street and 3rd Street (section 4(f) use); 2) adverse effect on Commercial Historic District would be a Section 4(f) use.	Section 4(f) Impacts: Requires removal of Bridge 9103 = adverse effect would be a Section 4(f) use.	Section 4(f) Impacts: 1) Requires removal of Bridge 9103 = adverse effect would be a Section 4(f) use; 2) adverse effect on Commercial Historic District would be a Section 4(f) use; 3) Requires acquisition of a portion of Dankers Park at Plum Street and 3rd Street (section 4(f) use).	Section 4(f) Impacts: Requires removal of Bridge 9103 = adverse effect would be a Section 4(f) use
Navigational channel	Ability to maintain navigational clearance requirements	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives	NA to MN approach alternatives
Section 404 water quality requirements	Accommodations to treat storm water runoff and meet required practices	No accommodations required to treat runoff from Bridge 9103, however new ponding will be required to address Bridge 9040 runoff.	No accommodations required to treat runoff from Bridge 9103, however new ponding will be required to address Bridge 9040 runoff.	Yes	Yes	Yes

This Page Left Blank Intentionally

<b>SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS</b>						
	Number of parcels impacted	1 (for stormwater pond)	1 (for stormwater pond)	1 (for stormwater pond)	1 (for stormwater pond)	3 (for stormwater pond and button-hook)
Right-of-way impacts	Number of structures impacted; Number of relocations	1 (for stormwater pond); 0 relocations	1 (for stormwater pond); 0 relocations	1 (for stormwater pond); 0 relocations	1 (for stormwater pond); 0 relocations	3 (for stormwater pond and button-hook); 1 residential relocation
Social and Community	Cohesion [1] changes in street configurations; 2)connectivity within city]	1) No changes in street configurations. 2) Connectivity: No change to existing TH's looping through the downtown commercial historic district that City staff indicate 'sever' pedestrian access within downtown and between some residential neighborhoods and downtown.	1) No changes in street configurations. 2) Connectivity: No change to existing TH's looping through the downtown commercial historic district that City staff indicate 'sever' pedestrian access within downtown and between some residential neighborhoods and downtown.	1) No changes in street configurations. 2) Connectivity: No change to existing TH's looping through the downtown commercial historic district that City staff indicate 'sever' pedestrian access within downtown and between some residential neighborhoods and downtown.	1) No changes in street configurations. 2) Connectivity: No change to existing TH's looping through the downtown commercial historic district that City staff indicate 'sever' pedestrian access within downtown and between some residential neighborhoods and downtown.	1) Street configuration change: Requires severing East 3rd Street connection to Bluff Street. Similar level of access to Bluff Street from the neighborhood will be retained via 4th Street. 2) Connectivity: Beneficial change from decreases in TH traffic through downtown commercial historic district, decreasing the 'severing' effect identified by City staff.
	Community facilities impacted	No impacts	No impacts	No impacts	No impacts	May impact Bluff Community Garden.
Environmental Justice	Any disproportionate high and adverse impacts to minority or low income populations	No impacts	No impacts	No impacts	No impacts	City has identified the Bluff neighborhood as having a higher concentration of low income individuals as compared to the entire City. One residential acquisition identified in this neighborhood would not be a 'significant' impact. The EA will conduct a detailed assessment to determine whether any impacts, direct or indirect, (e.g., noise) are disproportionately high and adverse.
Economic	Potential loss of property tax revenue from property acquisitions	No impacts	No impacts	No impacts	No impacts	Minor loss of property tax collection due to removal of one residential property and a former warehouse now used for storage.
Floodplains	Impact to existing floodplains	No impacts	No impacts	No impacts	No impacts	No impacts
Natural resources	Wetlands	No impacts	No impacts	No impacts	No impacts	No impacts
	Mussels	No impacts	No impacts	No impacts	No impacts	No impacts
	Threatened & Endangered Species	No impacts	No impacts	No impacts	No impacts	No impacts
Hazardous Materials/Contamination	Contaminated materials impacts	Acquisition of a moderate to low risk contaminated parcel may be required for stormwater ponding	Acquisition of a moderate to low risk contaminated parcel may be required for stormwater ponding	Acquisition of a moderate to low risk contaminated parcel may be required for stormwater ponding	Acquisition of a moderate to low risk contaminated parcel may be required for stormwater ponding	Acquisition of a moderate to low risk contaminated parcel will be required
Noise	Potential change in noise levels at adjacent receptors	No change in proximity to noise receptors. No substantial changes in noise levels are anticipated.	No change in proximity to noise receptors. No substantial changes in noise levels are anticipated.	No change in proximity to noise receptors. No substantial changes in noise levels are anticipated.	No change in proximity to noise receptors. No substantial changes in noise levels are anticipated.	Includes new roadway segment in closer proximity to residential receptors. May result in increased noise levels for these receptors. Reduction in traffic levels in downtown may reduce noise levels for downtown receptors, including Dankers Park.
Air Quality	Impacts to adjacent receptors	No differentiating impacts anticipated	No differentiating impacts anticipated	No differentiating impacts anticipated	No differentiating impacts anticipated	No differentiating impacts anticipated
Visual Quality	Change in visual environment/change in views	No change	No change	Minor change given new US 61 overpass	Minor change given new US 61 overpass	More substantial change with new buttonhook and slip ramp to 3rd Street.
Cumulative Effects	Incremental SEE impacts from alternative plus foreseeable future actions	No cumulative SEE impacts anticipated, beyond the direct SEE impacts of the proposed alternative.	No cumulative SEE impacts anticipated, beyond the direct SEE impacts of the proposed alternative.	No cumulative SEE impacts anticipated, beyond the direct SEE impacts of the proposed alternative.	No cumulative SEE impacts anticipated, beyond the direct SEE impacts of the proposed alternative.	No cumulative SEE impacts anticipated, beyond the direct SEE impacts of the proposed alternative.
Relationship to Other Proposed Transportation Improvements	Relationship to Year 2015 Main Street Reconstruction Project	No substantive positive or negative impacts.	Negative impacts to pedestrian traffic would result from MN-1A increasing corner radii and narrowing sidewalks at the US 61/MN 58 intersection, which would lengthen ped crossings and be contrary to the improvements being made as a part of the US 61 Reconstruction project (year 2015). This conflicts with one of the goals of the project, which is to improve pedestrian mobility and safety by shortening ped crossing distances and reducing pedestrian exposure to motorized traffic.	No substantive positive or negative impacts.	Negative impacts to pedestrian traffic would result from MN-2A increasing corner radii and narrowing sidewalks at the US 61/MN 58 intersection, which would lengthen ped crossings and be contrary to the improvements being made as a part of the US 61 Reconstruction project (year 2015). This conflicts with one of the goals of the project, which is to improve pedestrian mobility and safety by shortening ped crossing distances and reducing pedestrian exposure to motorized traffic.	This alternative plus the Main Street project provide complementary benefits by MN-3 shifting traffic volumes at the US 61/MN 58 intersection from approach legs where bump-outs/ped crossing improvements are not being made to legs where bump-outs are being constructed as part of the Main Street Reconstruction project (year 2015). Traffic volumes due to MN-3 alternative would increase on US 61 east of Plum Street, which is outside of the downtown commercial historic district and outside the area where pedestrian improvements are being made with the Main Street reconstruction project. The two projects together would result in additive benefits to pedestrian traffic in the downtown commercial historic district.
<b>COST</b>						
Construction Cost Estimate 1/	2018\$	\$7,700,000	\$7,900,000	\$8,300,000	\$8,500,000	\$25,875,000
On-going Maintenance (20 years)	2018\$	\$3,500,000-\$4,100,000	\$3,500,000-\$4,100,000	\$1,300,000-\$1,500,000	\$1,300,000-\$1,500,000	\$1,300,000-\$1,500,000
Bridge Service Life	Number of years until major rehabilitation would be required	10 to 15 years, increased to 20 with cathodic protection 20 years	10 to 15 years, increased to 20 with cathodic protection 20 years	75	75	75

Notes  
 1/ Cost estimate reflects Minnesota approach improvements (to Minnesota-side river bridge abutment), right-of-way and contamination clean-up

This Page Left Blank Intentionally



Path: S:\KODM\mnt06\119112\GIS\MXD\ChangeInTrafficDemand\_119112\_V3\_85x11.mxd

	<p>3535 VADNAIS CENTER DR. ST. PAUL, MN 55110 PHONE: (651) 490-2000 FAX: (651) 490-2150 WATTS: 800-325-2055 www.sehinc.com</p>	<p>Project: MNT06 119112 Print Date: 03/26/2014 Map by: shack Projection: Goodhue County NAD83ft Source: Goodhue County, MnDNR, City of Red Wing, MnGEO</p>	<p><b>RED WING BRIDGE PROJECT</b></p> <p>Change in Traffic Demand Alternative 1 and 2 vs. Alternative 3</p>	<p>Figure 8</p>
--	--	---	---	---------------------

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.

---

# Appendix C

## New Bridge Location Feasibility Assessment Memorandum



## MEMORANDUM

TO: Chad Hanson, MnDOT

FROM: Chris Hiniker, Project Manager

DATE: Revised July 2, 2012

RE: Red Wing Bridge Project - FINAL New Bridge Location Feasibility Assessment  
SEH No. MNT06 119112 14.00

### **Purpose and Background**

MnDOT initiated the Red Wing Bridge Project in December 2011. The project includes the US 63 (Eisenhower) Bridge over the Mississippi River and the US 63 Bridge over US 61, as well as the highway connections to US 61, Minnesota TH 58, and approach roadways in the State of Wisconsin. The Eisenhower Bridge carries US 63 across the river from Red Wing and connects to the state of Wisconsin. The bridge provides the only regional crossing of the river for over 30 miles upstream or downstream for several communities on both the Wisconsin and Minnesota sides of the river.

Completed in 1960, the Eisenhower Bridge is a steel truss through-deck bridge that crosses the Mississippi River main channel at Red Wing, Minnesota. The bridge is 1,631 feet long, 35 feet wide, and stands 65 feet above the river. The two lane bridge currently carries an average daily traffic count (ADT) of 13,300 vehicles per day (vpd) (2012 count).

As documented in the project's Purpose and Need Statement, the primary purposes of the project are to provide structurally sound crossings of the Mississippi River and US 61. Secondly, the project will study future capacity needs and the accommodation of pedestrian/bicycle traffic across the bridge. An additional consideration is that within the city of Red Wing US 63 intersects with US 61 and TH 58 and this area experiences circulation and congestion problems.

The river bridge project has been anticipated for many years in the Red Wing community. During the Downtown Red Wing Transportation Study process in 2005, there were discussions about possible river crossing options including the potential for moving the bridge to a different location. Although the focus of the Red Wing Bridge Project now underway is on the current structure and crossing location, given the history of the river bridge subject it is important to address the feasibility of options for moving the river crossing location.

This memorandum documents the identification and assessment of new river crossing locations for US 63 and determines the viability of carrying one or more new location options into the more detailed stages of the alternatives analysis process.

### **Alternatives Analysis Philosophy and Process**

The basic philosophy in conducting an alternatives analysis is to follow a systematic process of defining a broad range of alternatives at a conceptual level and then progressing through an iterative process of assessing and screening at progressively greater levels of detail until a preferred alternative is selected. Key to this process in the early phases when a large number of options are being considered is to keep the analysis at a higher level and focus on identifying obvious fatal flaws. As the number of options is reduced, the level of detail increases and evaluation criteria for decision-making becomes more refined.

For bridge and other transportation corridor projects, the process of identifying alternatives typically begins by grouping potential improvement alternatives into one of two categories:

1. Existing Corridor Alternatives
2. New Corridor Alternatives

In the case of the Red Wing Bridge project the first group includes all alternatives using the existing river crossing location. The second group includes all alternatives that would establish a crossing at a new location. Options within the existing corridor are not addressed further in this memorandum but will be identified and assessed in detail as the study process advances.

The remainder of this memorandum focuses on identifying, assessing, and screening alternatives that involve a new crossing location for the US 63 river crossing. The conclusions from this process will be carried forward into the remainder of the alternatives development and evaluation process.

### **Identification and Assessment of New River Crossing Alternatives**

As noted previously, within the broad context of US 63, connecting Minnesota and Wisconsin, and traffic issues in downtown Red Wing, discussions of new crossing locations have occurred informally for several years. However, no formal assessment has been completed.

In 2011, as part of MnDOT's efforts in developing the purpose and need statement for the river bridge project and proceeding with cultural resource investigations, an area of potential effect (APE) was identified. The APE delineates the area within which the range of improvement alternatives are anticipated to be located. The APE delineated for the Red Wing Bridge project extends from the existing river bridge upstream to approximately Broad Street. Given Barn Bluff, existing land uses, and the existing street network, the APE encompasses the potentially practical and feasible bridge crossing options in the Downtown Red Wing area.

Prior to moving forward with the assessment of new crossing locations within the APE, it is important to address and document the consideration of possible alternatives beyond the scope of the APE.

#### ***Potential New River Crossing Alternatives Outside the Area of Potential Effect***

During the 2005 Transportation Study, the option of connecting at Bench Street west of the downtown area was discussed. However the feasibility of this option, see Figure 1, was not assessed during that process because it was beyond the study's scope.

The primary rationale to consider moving the river crossing to Bench Street from the current location includes the following:

- Bench Street is a major county arterial roadway (County State Aid Highway 1) that extends southwest across Goodhue County connecting with Highway 52.
- Bench Street provides a more direct access from Wisconsin to some of the larger retail centers as well as the Red Wing Medical Center.

Furthermore, in considering a new river crossing outside the immediate downtown area, it is practical to conclude that the only potentially feasible location is at Bench Street given the following factors:

- The course of the Mississippi River;
- Prominent topographical features such as Barn Bluff;

- A limited arterial and collector road network to connect with a new river crossing;
- Existing land uses;
- Extensive wetlands and floodplain;
- Extensive parkland and conservation lands, historic resources, and wildlife areas.

However, moving the river crossing to Bench Street introduces many impacts and challenges including:

- Substantial additional wetland and floodplain impacts (in Minnesota and Wisconsin);
- Removes the established crossing in the downtown area;
- Introduces additional travel and roadway length for traffic on TH 63;
- Removes more direct connection to Trunk Highway 58;
- Introduces significantly greater roadway construction costs as compared to any river crossing option in the downtown area;
- New crossing in a major bend of the navigable Mississippi River waterway;
- Requires additional and longer bridges;
- Impacts to the Upper Harbor conservation lands including Bay Point Park which is both a Section 4(f) and LAWCON/Section 6(f) resource;
- Probable need to conduct an Environmental Impact Statement (EIS);

Given these issues and impacts, it is reasonable to conclude it is more logical to pursue alternatives in the already established APE. Furthermore, the option of a new crossing at Bench Street will not be revisited unless all options within the APE are found to result in impacts approaching those associated with a relocated crossing connecting at Bench Street.

#### ***Potential New River Crossing Alternatives within the Area of Potential Effect***

The area within which additional river bridge alternative corridors will be considered includes locations immediately upstream, but still within Downtown Red Wing.

Given existing land uses and the established street network, the number of alternatives for new river crossing locations is limited to three, as illustrated on Figure 2. The three alternatives include:

- Plum Street
- Bush Street
- Broad Street

None of these options have been formally addressed as part of previous studies such as the 2005 Transportation Study. The primary characteristics and trade-offs associated with each alternative are presented below.

#### **Plum Street Alternative**

- Closest to the existing river crossing;
- Provides direct connection to Trunk Highway 58;
- Furthest of the three new location alternatives from the Mississippi River bend;
- Introduces lower speed reverse curve on the Wisconsin approach to the bridge;

- Crosses Levee Park;
- Least encroachment into the downtown area historic districts of the three new location alternatives;
- Establishing an at-grade connection at US 61 results in:
  - steep approach roadway grades
  - substantial impacts to ADM access
  - closing only access to upper level of the LaGrange municipal parking garage
  - substantial visual/sightline impacts to adjacent buildings, including several historic structures
- Impacts the Marina campground area operations greater than the Broad Street Alternative.

#### Bush Street Alternative

- Provides direct connection to Bush Street requiring heavier turning movements to access regional roadways;
- Closer to the Mississippi River bend as compared to the existing crossing and the Plum Street alternative;
- Introduces lower speed reverse curve on the Wisconsin approach to the bridge;
- Requires greater bridge length compared to the existing crossing and Plum Street Alternative;
- Crosses Levee Park;
- Impacts Levee Street approach to TH 61;
- Along with the Broad Street alternative, introduces the greatest encroachment into the downtown area historic districts, including the St. James Hotel;
- Establishing an at-grade connection at US 61 results in:
  - steep approach roadway grades
  - substantial impacts to St. James Hotel historic district;
  - impacts access to lower level of the LaGrange municipal parking garage
  - substantial visual/sightline impacts to adjacent buildings
- Impacts the Marina campground area operations greater than the Broad Street Alternative.

#### Broad Street Alternative

- Provides direct connection to Broad Street requiring heavier turning movements to access regional roadways;
- Closest of the three new location alternatives to the Mississippi River bend.
- Introduces lower speed reverse curve on the Wisconsin approach to the bridge;
- Requires greater bridge length compared to the existing crossing and Plum Street Alternative;
- Closest of the three new location alternatives to the historic depot;
- Impacts Levee Street approach to TH 61;
- Along with the Bush Street alternative, introduces the greatest encroachment into the downtown area historic districts, including the St. James Hotel;
- Establishing an at-grade connection at US 61 results in:
  - steep approach roadway grades
  - substantial impacts to St. James Hotel historic district;
  - substantial visual/sightline impacts to adjacent buildings

A plan and profile was developed for the Plum Street alternative to provide additional details to determine the technical feasibility of the new location alternatives. The Plum Street alternative was recommended for more detailed assessment over the other two alternatives because it is furthest from the river bend, avoids direct impacts to the St. James Hotel historic district, and provides a direct connection to TH 58. Furthermore the Plum Street alternative is representative of the other alternatives, since each has similar horizontal and vertical characteristics relative to grade changes and distance between the river and US 61.

The conceptual plan and profile for a new river crossing at Plum Street is illustrated in Figure 3. The profile was developed assuming a river crossing with the same horizontal and vertical clearance characteristics as the existing river bridge which are 421 feet horizontal clearance and a minimum of 64 feet vertical clearance. The profile indicates that with approach roadway grades exceeding five percent on the Minnesota side and potentially the Wisconsin side, the vertical clearance specifications of the existing bridge are not met. As a result, the approach roadways will need to be designed with steeper grades than shown on the graphic. The combination of steep approach grades as well as the reverse curves in the Wisconsin approach raise safety concerns given the function and purpose of Highway 63. The alignment depicted on Figure 3 creates an approach roadway on the Minnesota side that is approximately nine feet higher than the existing grade of Plum Street at the current access to ADM and the upper level of the LaGrange parking ramp. Any increase in grades for the approach roadway will increase the difference between existing and proposed grades at these locations.

In conclusion, each of the three new locations has very substantial design challenges given the close proximity and vertical grade differences between the river and US 61. In addition, each alternative would introduce substantial impacts to parklands, historic resources, commercial and industrial land uses, and the existing visual setting and sightlines in Downtown Red Wing. Furthermore, a May 14, 2012 letter from the Coast Guard states that the three alternatives are not acceptable from a navigational standpoint due to the proximity of the river bend.

## Findings

- The assessment of new river crossing locations concluded that Bench Street was the only potentially viable option outside the Downtown Red Wing area. However, given a range of impacts and/or challenges the Bench Street alternative should not be revisited unless all alternatives in the downtown area are found to result in impacts and/or challenges approaching or exceeding those associated with the Bench Street option.
- The assessment of new river crossing locations within Downtown Red Wing concluded there are very substantial technical issues as well as substantial social, economic, and cultural impacts associated with new river crossing location alternatives in the downtown area. As a result, these options are not recommended for further study at this time.
- Given the substantial issues associated with the range of new river crossing alternatives assessed in this memorandum, it is reasonable to conclude the Red Wing Bridge Project should focus on identifying and evaluating all potentially viable bridge rehabilitation or replacement options within the existing river crossing location. If the analysis of alternatives at the existing crossing location concludes there are no reasonable and feasible options, then the study process may revisit potential new location alternatives. Furthermore, if any alternative at the existing crossing location results in Section 4(f) or Section 106 impacts then consideration of avoidance alternatives, potentially including new location options, will be required.

ah

Attachments

s:\ko\m\mnt06\119112\correspondence\memos\new location memo\red wing bridge\_final new bridge location feasibility assessment memo 5-2-12 (revised 5-14-12, 5-29-12, 7-2-12).docx



Path: S:\K\O\Min\0611912\GIS\MXDFig01\_Relocation\_BenchSt.mxd

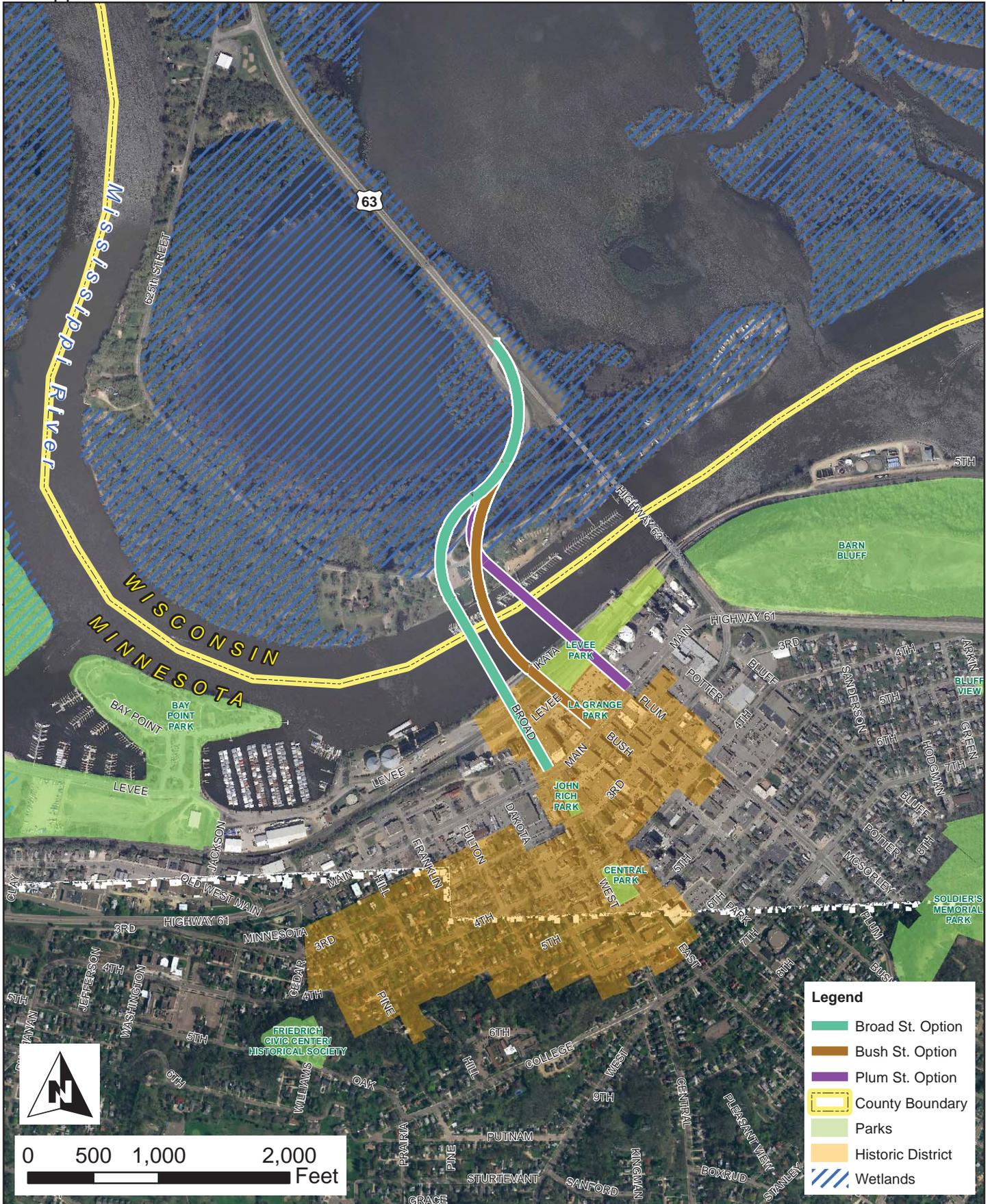


**Legend**

- Bench St. Option
- County Boundary
- Parks
- Historic District
- Wetlands

	Project: MNT06 119112 Print Date: 5/15/2012	<h2>RED WING BRIDGE PROJECT</h2> <h3>Bench Street Option</h3>	<h2>Figure 1</h2>
	Map by: SrH Projection: Goodhue HARN NAD83 Ft Source: City of Red Wing, MnDOT, Goodhue County, and SEH.		

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.



Path: S:\COM\Mn\0611912\GIS\MXDFig02\_Relocation\_Downtown\SS.mxd

**Legend**

- Broad St. Option
- Bush St. Option
- Plum St. Option
- County Boundary
- Parks
- Historic District
- Wetlands



Project: MNT06 119112  
 Print Date: 5/15/2012  
 Map by: SrH  
 Projection: Goodhue HARN NAD83 Ft  
 Source: City of Red Wing, MnDOT,  
 Goodhue County, and SEH.

**RED WING BRIDGE PROJECT**  
 Downtown New Location Options

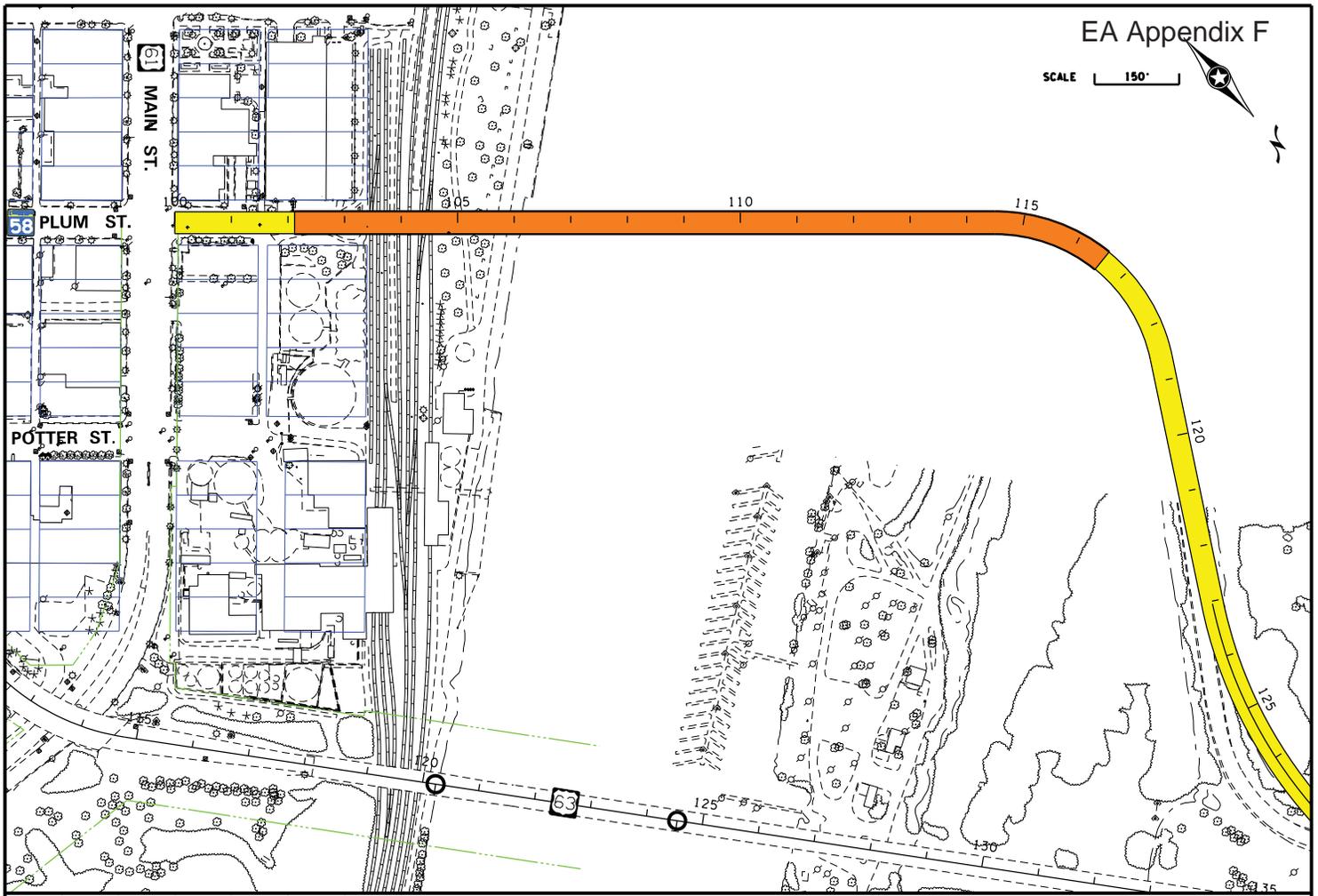
**Figure**  
 2

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.

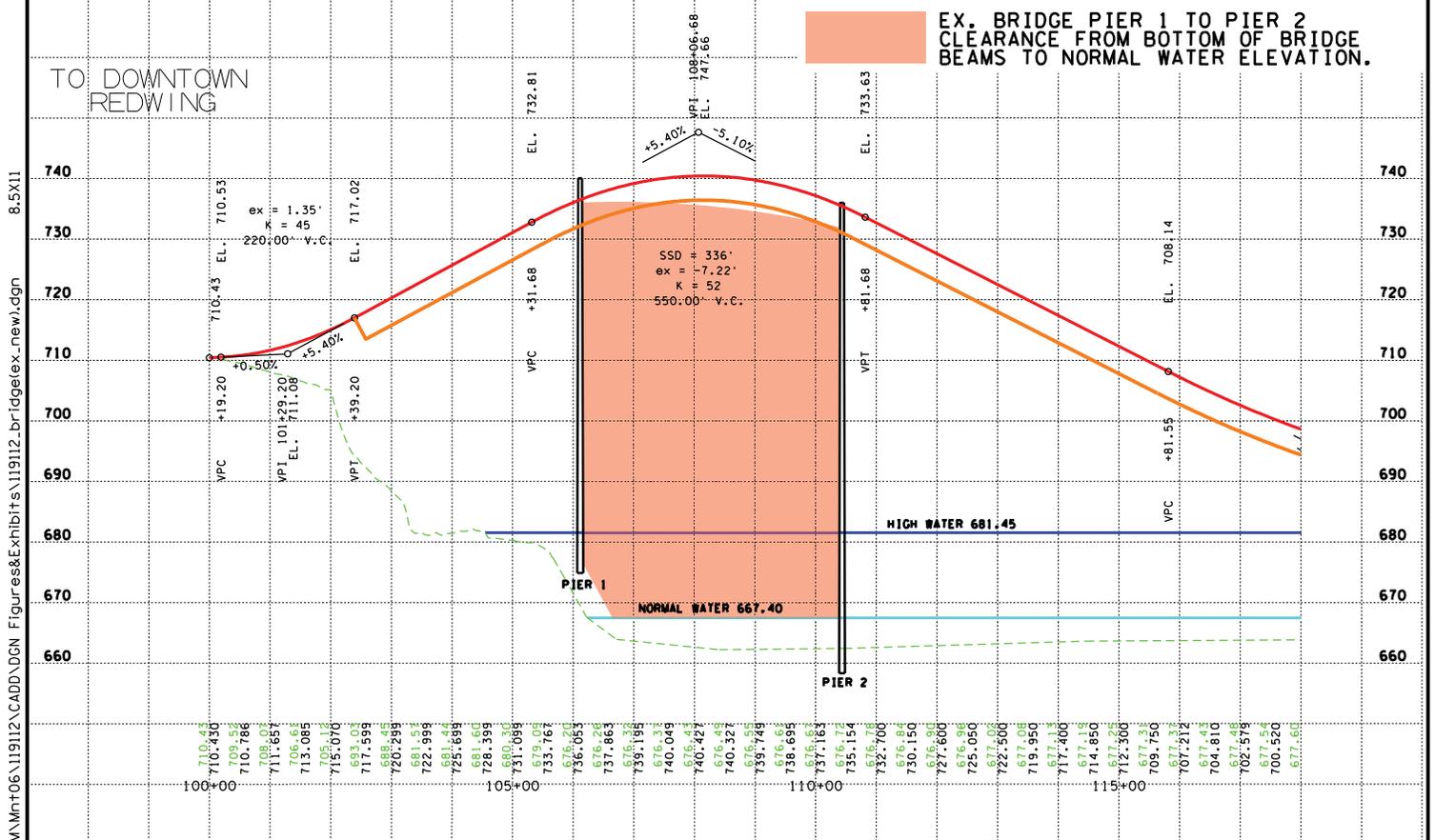


5:08:21 PM

5/14/2012



EX. BRIDGE PIER 1 TO PIER 2  
CLEARANCE FROM BOTTOM OF BRIDGE  
BEAMS TO NORMAL WATER ELEVATION.



8.5X11

S:\AKO\M.Mnt\06\119112\CAADD\DGN Figures&Exhibits\119112\_bridge(ex\_new).dgn

FILE NO.  
119112  
DATE:  
5/14/2012



TH 63 / TH 61  
RED WING, MINNESOTA

PLUM STREET  
ALTERNATIVE  
NEW BRIDGE LOCATION  
PLAN & PROFILE

FIGURE  
3