PROGRAMMATIC AGREEMENT
AMONG
THE FEDERAL HIGHWAY ADMINISTRATION,
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
AND
THE IOWA STATE HISTORIC PRESERVATION OFFICER
REGARDING
IMPLEMENTATION OF TRANSPORTATION ACTIVITIES
RELATING TO ALL MARSH ARCH BRIDGES
In The
STATE OF IOWA
Under The
FEDERAL AID HIGHWAY PROGRAM

WHEREAS, the Federal Highway Administration (FHWA) through its Federal Aid Highway Program activities assists the State of Iowa and its county boards of supervisors with Federal Aid Highway Program undertakings; and

WHEREAS, the FHWA has determined that various aspects of its Federal Aid Highway Program in Iowa may have an effect upon Marsh arch bridges which are considered eligible for inclusion in the National Register of Historic Places and has consulted with the Advisory Council on Historic Preservation (Council) and the Iowa State Historic Preservation Officer (SHPO) pursuant to 36 CFR § 800.13 of the regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

WHEREAS, the eleven Marsh arch bridges (see Appendix I) which survive in Iowa have been identified and evaluated through a statewide bridge survey completed in 1995 by Clayton Fraser, historic bridge consultant to the Iowa Department of Transportation, as having special significance as the patented works of a notable Iowa bridge designer, James Barney Marsh; and

WHEREAS, actions affecting one or more of the Marsh arch bridges need to be considered in light of the entire group of eleven surviving bridges; and

WHEREAS, the Lake City Bridge (FHWA No. 090830) in Calhoun County is being preserved for pedestrian purposes at the entrance to Rainbow Park adjacent to Highway N37 in Lake City and is not subject to the provisions of this Programmatic Agreement; and

WHEREAS, the Marsh arch bridges are constructed of reinforced concrete and are, therefore, suitable only for rehabilitation and preservation in place; and
WHEREAS, this Programmatic Agreement applies only to those Federal Aid Highway Program undertakings whose proposed actions are limited to the replacement or the rehabilitation of a Marsh arch bridge(s); and

WHEREAS, Boone, Dallas, Kossuth and Emmet counties which own and manage one or more of the surviving eleven Marsh arch bridges, have participated in consultation and have been invited to concur in this Programmatic Agreement; and

WHEREAS, the Iowa Department of Transportation (DOT) has participated in consultation and has been invited to concur in this Programmatic Agreement; and

WHEREAS, the definitions given in 36 CFR Part § 800.2 (see Appendix II) are applicable throughout this Programmatic Agreement;

WHEREAS, that counties which own and manage a Marsh arch bridge will have no further requirements to record or preserve their bridge in place once stipulation III (Performance Studies) and stipulation IV (Historical Study) are fully satisfied; and as specified in stipulation V, these counties have the latitude to decide, subject to the approval of the Federal Highway Administration acting through the Federal Aid Highway Program, whether to rehabilitate or to replace one of these bridges.

NOW, THEREFORE, the FHWA, the Iowa SHPO and the Council agree that with respect to the eleven Marsh arch bridges, the Federal Aid Highway Program shall be administered in accordance with the following stipulations in order to satisfy FHWA's Section 106 responsibility for individual undertakings affecting Marsh arch bridges; and

STIPULATIONS

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

I. INTRODUCTION

A. Marsh "rainbow" arch bridges were built throughout the country with particular popularity in the Midwest. They have special significance to Iowa for being the patented works of an Iowa bridge designer. Of the scant eleven "rainbow" arch bridges that still survive in the State of Iowa, nine are still in use on the vehicular road system, seven of which are in Boone County and one each in Dallas and Kossuth/Emmet Counties. Because their design or location characteristics give most of these reinforced concrete bridges limited potential to be rehabilitated for pedestrian or long-term vehicular uses, it is mutually agreed to apply the measures described below to each in this population of bridges.
II. PRESERVATION IN PLACE

A. The Beaver Creek Bridge (FHWA No. 078080), a single span design built in 1919 in Boone County, will be preserved and maintained in accordance with the recommended approaches in the Secretary of the Interior's Standards for Rehabilitation and Illustrated Guide for Rehabilitating Historic Buildings (1992). No construction, alteration, remodeling or any other activity shall be undertaken by the FHWA, Iowa DOT or Boone County which would affect the structural integrity and/or the appearance of the Beaver Creek Bridge (No. 078080) without the express prior written approval of the Iowa SHPO.

B. The Beaver Creek Bridge (FHWA No. 078080) was determined to be preserved in place by FHWA and the Iowa SHPO on the basis of its association with the transcontinental Lincoln Highway and because its width is satisfactory for current and future usage.

C. Any other Marsh Arch bridge may be preserved in place as part of Federal Highway Aid undertakings, if it is rehabilitated and maintained in accordance with the approaches recommended in the Secretary of the Interior's Standards for Rehabilitation and Illustrated Guide for Rehabilitating Historic Buildings (1992) and the plan(s) for its rehabilitation and maintenance have been approved by the Iowa SHPO.

III. HISTORICAL PERFORMANCE STUDIES

A. Introduction

1. Older reinforced concrete bridges such as the Marsh arch often are posted for lower traffic loads and are scheduled for replacement based on presumed structural deficiencies. If better information on the actual strength of old reinforced concrete bridges were available to supplement current analytical rating procedures, bridge engineers could achieve a more accurate and safe loading rating that, in itself, might promote a greater level of confidence in decisions made to retain some of these bridges in service for longer periods of time. The completed study of the actual strength of Marsh arch Bridges combined with similar analyses of other types of reinforced concrete bridges should encourage bridge management decision makers to give greater consideration to rehabilitation over bridge replacement.

2. An historical performance study differs from typical historical recordation by examining not the story of a bridge in relation to the arrival, popularity, and decline of similar bridges elsewhere, but rather by evaluating the long term structural success of this kind of bridge in meeting its designed capacity and load carrying functions through its proportioning of structural members and materials. Such a performance study also sheds additional light on the work of James B. Marsh by understanding how his bridges actually performed.
B. In order to establish the physical history of Marsh arch bridges and a general understanding of their behavior over time and under various loading schemes, the Iowa DOT will study and evaluate the performance of the following bridges:

1. Beaver Creek Bridge (FHWA No. 077250), a single span structure built in 1914 in section 27 of Union Township (T82N-R28W), Boone County; and
2. Beaver Creek Bridge (FHWA No. 077240), a single span structure built in 1919 in section 15 of Union Township (T82N-R28W), Boone County.

C. These performance studies will be completed through the Iowa Highway Research Board by structural engineers experienced in bridge analysis with the Bridge Engineering Center of the Engineering Research Institute at Iowa State University. The study is underway and will be completed on or before January, 1998. It will include, but is not necessarily limited to, the following elements:

- Description of the structural design and about how the design was executed in original construction of the bridge (e.g., parts which carried the load in the form of materials employed—steel frame, concrete reinforcing, and properties of the concrete aggregate—and their arrangement); and
- Record of past repairs and former rehabilitation measures done to keep the bridge in operating condition; and
- Service load tests through installation of strain gauges; and
- Incremental loading of the Marsh arch bridges and movement of a cable-pulled truck run back and forth over each at various locations; and
- Analysis of standard concrete cores and two steel samples (coupons) per bridge; and
- Corrosion evaluation; and
- Careful observations of the two bridges upon demolition to examine the structural characteristics of their original design in relation to identified strengths and weaknesses that have been shown through their subsequent years of use.

D. A single report intended for general readership which assesses together the results of each studied bridge supplemented with photos and drawings and, if appropriate, a videocassette tape recording, will address both the bridge condition over time and actions that might be taken to extend the life of other Marsh arch bridges generally. A draft of this report will be submitted by Iowa DOT to the SHPO for review and approval that the items specified in Stipulation III.C have been addressed. The Iowa SHPO will have thirty (30) days from receipt of the report to complete the review. The final report will address in writing any comments received from the Iowa SHPO.

E. Each of Iowa's ninety-nine counties will receive a copy of the final performance report as will the Kansas City regional office of the FHWA. Additionally, fifteen (15) copies will be provided to the Iowa SHPO so that he may distribute the report to any interested state historic preservation offices and other parties.
F. Marsh arch bridges No. 077250 and No. 077240 may only be demolished with the written approval of the Iowa SHPO provided within thirty (30) days of the receipt of a written request to that effect from the Iowa DOT.

G. Prior to the demolition of Marsh arch bridges No. 077250 and No. 077240, the Iowa DOT will photograph the bridges. The Iowa DOT will consult with the Iowa SHPO to determine the level of photographic documentation necessary. The Iowa DOT will submit the photographic documentation of these two bridges to the Iowa SHPO for review and approval within fifteen (15) days of receipt in order to satisfy Section 2.a(3)-(4) of Appendix III.

IV. PUBLISHED HISTORICAL STUDY OF THE ENTIRE GROUP OF BRIDGES REPRESENTING MARSH ARCH BRIDGE CONSTRUCTION IN IOWA

A. The Iowa DOT will prepare a study of the eleven Marsh arch bridges in order to gain greater appreciation for this era of bridge building and its Iowa designer. The study will be prepared according to the specifications set forth in Appendix III.

B. The study will be conducted by a person or persons under contract with the Historic American Engineering Record who at a minimum meet the Secretary of the Interior's Professional Qualification Standards (48 FR 44738-9) in history and who possess a demonstrated writing ability and a familiarity with the historical development of bridge technology.

C. The Iowa DOT, through contract with the Historic American Engineering Record, will prepare two copies of the study manuscript accompanied by illustrations ready for publication.

1. The Iowa DOT will submit the draft and final manuscript to the Iowa SHPO for review and approval. The Iowa DOT shall address in writing all comments received from the SHPO. If the SHPO does not comment within forty-five (45) days from receipt, the Iowa DOT may proceed with preparation of a final draft of the document.

2. One copy of the final manuscript will be submitted to Iowa Heritage Illustrated for consideration as an article in this magazine of popular history. The second copy of the final manuscript will be submitted to Boone County for production of the brochure identified in Stipulation IV.D.

D. Using the final manuscript, Boone County will produce a well illustrated brochure of approximately twenty pages in accordance with specifications contained in Appendix III. The county will submit a copy of the draft and final brochure (text, photographs/maps and layout) to the Iowa SHPO for review and approval. Boone County shall address in writing all comments received from the SHPO. If the SHPO does not comment within forty-five (45) days from receipt, Boone County may proceed with preparation of a final draft for publication of the final brochure.

E. The Iowa DOT will disseminate the brochure prepared by Boone County in accordance with Appendix III.
F. The Iowa DOT will commence the historical study by July 1, 1996 and complete all final products to satisfy this stipulation on or before September 1, 1997.

G. The approved manuscript and brochure will satisfy all documentation needs for the surviving population of Iowa's Marsh arch bridges as well as for individual members of that population.

V. BRIDGE TREATMENT

A. If the effect of a proposed Federal Aid Highway Program undertaking on historic properties is limited only to an effect on a Marsh arch bridge(s), the FHWA and the Iowa DOT may apply the procedures set forth in Stipulation V. If the proposed undertaking could affect any other historic property within the project's area of potential effect in addition to or other than a Marsh arch bridge then the FHWA will comply with 36 CFR § 800.4 through 800.6.

B. Until all the studies described in Stipulations III and IV are complete and approved by the Iowa SHPO, projects which propose to replace or rehabilitate Marsh arch bridges in Iowa will comply with 36 CFR 800.4 to 800.6.

C. Following completion of the studies described in Stipulations III and IV, the FHWA, the Iowa SHPO and the Federal Aid Highway Program project applicant(s) shall consult to determine whether an individual Marsh arch bridge will be replaced or rehabilitated and preserved in place.

1. Any proposal made to FHWA by a project applicant for the replacement or rehabilitation of a Marsh arch bridge will use the findings of the Historical Performance Studies completed in accordance with Stipulation III as the basis for a written analysis of the structural condition of the subject bridge. In addition, such proposals will also provide FHWA with a written evaluation of the functional condition of the bridge as well as a comparison of the costs of rehabilitation and replacement.

2. In consultation with the Iowa SHPO, the FHWA shall consider the treatment proposed by the project applicant for a Marsh arch bridge in light of the structural, functional and cost analyses. If the FHWA and the Iowa SHPO approve, the project applicant may implement the proposed treatment. If the FHWA, the Iowa SHPO and the project applicant cannot agree, the dispute will be handled in accordance with Stipulation VII.

3. Prior to providing its decision on any proposed treatment, the FHWA shall notify the public, including the community within in which the bridge is located, of the project applicant's proposal, providing them with thirty (30) days to express their views. The FHWA and the Iowa SHPO and the project applicant will consider any public comments which have been provided in reaching a decision on the proposed treatment.
D. Bridge Replacement

1. If the FHWA and the Iowa SHPO approve of the replacement of a Marsh arch bridge, the documentation produced in accordance with Stipulations III. and IV. is considered sufficient mitigation and no additional recordation of the bridge is needed.

2. In consideration of the replacement of a Marsh arch bridge and as additional mitigation, the FHWA or the Iowa SHPO may propose the salvage of significant bridge features. If such a proposal is put forth, the FHWA, Iowa SHPO, Iowa DOT and project applicant may consult to develop and implement measures to ensure that the selected features are removed by the project applicant in a manner that minimizes their damage and are delivered to an appropriate party for long-term curation.

3. In consultation with the Iowa SHPO and FHWA, the project applicant shall make a reasonable effort to design a bridge to replace the Marsh arch bridge that will not detract from the character and setting of any historic district to which the Marsh arch bridge might have contributed.

E. Bridge Rehabilitation

1. The FHWA shall ensure that the rehabilitation of individual Marsh arch bridges will be conducted in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (1992; Appendix III) so that the significant historic and engineering values of the bridges are preserved, and will take into account the findings of the Historical Performance Studies completed in accordance with Stipulation III.

2. The FHWA shall ensure that any sale, lease or other transfer of title of a Marsh arch bridge as part of a Federal Aid Highway program undertaking shall be conditioned with adequate legal restrictions to ensure the long-term preservation of the bridge’s significant historic and engineering features.

VI. DURATION OF AGREEMENT

A. This Programmatic Agreement will continue in full force and effect until such time as funds for Federal Aid Highway Program undertakings that may affect Iowa’s Marsh arch bridges are no longer authorized.

B. No extension or modification of this Programmatic Agreement will be effective unless all parties to the agreement have agreed to the extension or modification in writing.
VII. RESOLUTION OF DISPUTES

A. Should the Iowa SHPO or any interested person object within thirty (30) days, unless otherwise noted, to any plans, specifications or other documentation provided pursuant to this Agreement, the FHWA shall consult with the objecting party in an attempt to resolve the objection. If the FHWA determines that the objection cannot be resolved, the FHWA shall forward all documentation relevant to the dispute to the Council. Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

1. Provide FHWA with recommendations, which FHWA will take into account in reaching a final decision regarding the dispute or

2. Notify FHWA that it will comment pursuant to 36 CFR § 800.6 (b) and proceed to comment.

B. Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute, and FHWA’s responsibility to carry out all actions under this Programmatic Agreement that are not the subject of the dispute will remain unchanged.

VIII. PUBLIC OBJECTIONS

A. If at any time during the implementation of the measures stipulated in this Agreement, an objection should be raised by a member of the public to any measure or its manner of implementation, the FHWA shall take the objection into account and consult with the objecting party, the project applicant, the Iowa DOT and the Iowa SHPO to resolve the objection.

B. If the objection pertains to FHWA’s decision to implement standard mitigation measures pursuant to Stipulations III. and IV., the FHWA shall comply with 36 CFR § 800. 5 (e) and § 800.6.

IX. MONITORING

The Iowa SHPO and the Council may monitor any activities carried out pursuant to this Agreement, and the Council will review such activity, if so requested by any party to this Agreement. The Iowa DOT and FHWA will cooperate with the Iowa SHPO and the Council in carrying out these responsibilities. Conversely, the Iowa SHPO and the Council will endeavor to provide objective, constructive comments in a timely and professional manner whenever their participation is so requested by the FHWA in the furtherance of the objectives of this Agreement.
X. AMENDMENTS

At any time, any party to this Programmatic Agreement may propose that it be amended, whereupon the parties will consult in accordance with 36 CFR § 800.5(e) to consider such an amendment. Any resulting amendments shall be developed and executed in the same manner as this original Agreement.

XI. TERMINATION

Any party to this Agreement may terminate it by providing thirty (30) calendar days written notice to the other parties, provided that the parties will consult during the period prior to the date of termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the FHWA will comply with 36 CFR § 800.4 through § 800.6 with regard to individual undertakings covered by this Agreement.

XII. FAILURE TO COMPLY WITH THE AGREEMENT

In the event that the FHWA does not carry out the terms of this Agreement, the FHWA will comply with 36 CFR § 800.4 through § 800.6 with regard to individual Federal Aid Highway Program undertakings that could affect Marsh arch bridges.

Execution and implementation of this Programmatic Agreement evidences that FHWA has satisfied its responsibilities under Section 106 of the National Historic Preservation Act (16 U.S.C. 470f) for all individual undertakings of the Federal Aid Highway Program that might have an effect on Iowa's Marsh arch bridges.
Appendix I

Marsh Arch Concrete Road Bridges in Iowa, By County

<table>
<thead>
<tr>
<th>YEAR BUILT</th>
<th>COUNTY</th>
<th>TWP. RNG, SEC. NUMBER</th>
<th>I.D. NO.</th>
<th>FHWA NO.</th>
<th>BRIDGE NAME</th>
<th>SPANS &amp; LENGTH</th>
<th>BRIDGE TYPE</th>
<th>BUILDER</th>
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<tr>
<td>1914</td>
<td>Boone</td>
<td>82N-28W, S27</td>
<td>BOON17</td>
<td>077250</td>
<td>Beaver Creek Bridge</td>
<td>1-90'</td>
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<td>Marsh Engineering Company</td>
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<td>82N-25W, S27</td>
<td>BOON03</td>
<td>076930</td>
<td>Big Creek Bridge</td>
<td>1-50'</td>
<td>concrete Marsh arch</td>
<td>N.E. Marsh &amp; Son Const. Co</td>
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<td>BOON24</td>
<td>078170</td>
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<td>BOON23</td>
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<td>1-100'</td>
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Appendix II
DEFINITIONS
From 36 CFR Part 800.2: Protection of Historic Properties


(b) "Agency Official" means the Federal agency head or a designee with authority over a specific undertaking, including any State or local government official who has been delegated legal responsibility for compliance with Section 106 and Section 110(i) in accordance with law.

(c) "Area of potential effects" means the geographic area or areas within which an undertaking may cause changes in the character or use of historic properties, if any such properties exist.

(d) "Council" means the Advisory Council on Historic Preservation or a Council member or employee designated to act for the Council.

(e) "Historic property" means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register. This term includes, for the purposes of these regulations, artifacts, records, and remains that are related to and located within such properties. The term "eligible for inclusion in the National Register" includes both properties formally determined as such by the Secretary of the Interior and all other properties that meet National Register listing criteria.

(f) "Indian lands" means all lands under the jurisdiction or control of an Indian tribe.

(g) "Indian tribe" means the governing body of any Indian tribe, band, nation, or other group that is recognized as an Indian tribe by the Secretary of the Interior and for which the United States holds land in trust or restricted status for that entity or its members. Such term also includes any Native village corporation, regional corporation, and Native Group established pursuant to the Alaska Native Claims Settlement Act, 43 U.S.C. §1601, et seq.

(h) "Interested person" means those organizations and individuals that are concerned with the effects of an undertaking on historic properties.

(i) "Local government" means a city, county, parish, township, municipality, borough, or other general purpose political subdivision of a State.

(j) "National Historic Landmark" means a historic property that the Secretary of the Interior has designated a National Historic Landmark.

(k) "National Register" means the National Register of Historic Places maintained by the Secretary of the Interior.

(l) "National Register Criteria" means the criteria established by the Secretary of the Interior for use in evaluating the eligibility of properties for the National Register (36 CFR Part 60).

(m) "Secretary" means the Secretary of the Interior.

(n) "SHPO" means the official appointed or designated pursuant to Section 101(b)(1) of the Act to administer the State historic preservation program or a representative designated to act for the State Historic Preservation Officer.

(o) "Undertaking" means any project, activity, or program that can result in changes in the character or use of historic properties, if any such historic properties are located in the area of potential effects. The project, activity, or program must be under the direct or indirect jurisdiction of a Federal agency or licensed or assisted by a Federal agency. Undertakings include new and continuing projects, activities, or programs and any of their elements not previously considered under Section 106.