



A Context For Common Historic Bridge Types

NCHRP Project 25-25, Task 15

**Prepared for The
National Cooperative Highway Research Program
Transportation Research Council
National Research Council**

**Prepared By
Parsons Brinckerhoff and
Engineering and Industrial Heritage**

October 2005

NCHRP Project 25-25, Task 15

A Context For Common Historic Bridge Types

TRANSPORTATION RESEARCH BOARD
NAS-NRC
PRIVILEGED DOCUMENT

This report, not released for publication, is furnished for review to members or participants in the work of the National Cooperative Highway Research Program (NCHRP). It is to be regarded as fully privileged, and dissemination of the information included herein must be approved by the NCHRP.

**Prepared for The
National Cooperative Highway Research Program
Transportation Research Council
National Research Council**

**Prepared By
Parsons Brinckerhoff
and
Engineering and Industrial Heritage**

October 2005

ACKNOWLEDGEMENT OF SPONSORSHIP

This work was sponsored by the American Association of State Highway and Transportation Officials in cooperation with the Federal Highway Administration, and was conducted in the National Cooperative Highway Research Program, which is administered by the Transportation Research Board of the National Research Council.

DISCLAIMER

The opinions and conclusions expressed or implied in the report are those of the research team. They are not necessarily those of the Transportation Research Board, the National Research Council, the Federal Highway Administration, the American Association of State Highway and Transportation Officials, or the individual states participating in the National Cooperative Highway Research Program.

ACKNOWLEDGEMENTS

The research reported herein was performed under NCHRP Project 25-25, Task 15, by Parsons Brinckerhoff and Engineering and Industrial Heritage. Margaret Slater, AICP, of Parsons Brinckerhoff (PB) was principal investigator for this project and led the preparation of the report. Robert Jackson, AICP, formerly of Parsons Brinckerhoff, served as the principal author of a draft of Chapter 3 and led the effort to create the list of common bridge types. Eric DeLony of Engineering and Industrial Heritage provided technical assistance with all phases of the report development. The following PB staff also assisted with the development of the study. Larry McGoogin prepared the bridge drawings. Hal Kassoff served as contract manager, and he and Lisa Zeimer facilitated the development of the Task 15 study. Ms. Zeimer and Debra Skelly reviewed and edited the draft report. Bridge engineer Rex Gilley also assisted in addressing issues related to bridge engineering.

The preparers would like to thank the NCHRP 25-25, Task 15 project manager, Christopher Hedges, and the review panel for their guidance and comments on the report and associated products. The panel is comprised of:

Rowe Bowen, Georgia DOT
Susan Gasbarro, Ohio DOT
Paul Graham, Ohio DOT
William R. Hauser, New Hampshire DOT
Timothy Hill, Ohio DOT
Mary Ann Naber, FHWA
Nancy Schamu, State Services Organization

The preparers would also like to thank respondents to the Study Team's two queries for their excellent comments, photographs and information:

Amy Arnold, MI SHPO
Martha Carver, TN DOT
Richard Cloues, GA SHPO
Jim Cooper, Professor Emeritus, DePaul University
Kevin Cunningham, Del DOT
Randall Dowdy, MoDOT
Jim Draeger, WS SHPO
Robert Frame, Mead & Hunt
Dario Gasparini, Case Western Reserve University
Lee Gilleard, MO DNR
Patrick Harshbarger, Lichtenstein Consulting Engineers
Jeffrey Hess, Consultant
Craig Holstine, Wash State DOT
Andrew Hope, Caltrans
David Kelly, SC SHPO
Gerry Kuncio, Skelly & Loy

Mary McCahon, Lichtenstein Consulting Engineers
Jennifer Murdock, WV SHPO
Benjamin Resnick, GAI Consultants
Kara Russell, PENNDOT
Robert Scoggin, Arkansas Highway Department
David Simmons, Ohio Historical Society
Laurel Wallace, NM DOT

Special thanks to the peer reviewers and document editors:

Claudette Stager, National Register Program Coordinator, Tennessee SHPO
Martha Carver, Historic Preservation Section Manager, Tennessee DOT
Lisa Zeimer, AICP, Senior Professional Associate, Parsons Brinckerhoff
Debra Skelly, Certified Project Administrator, Parsons Brinckerhoff

Thomas Behrens, Architect with the Historic American Engineering Record/National Park Service, provided a digital copy of the HAER truss poster for use in this report. And lastly, special thanks to Bruce Criddlebaugh who gave permission to include “Bridge Basics” as an appendix to this report.

ABSTRACT

This study has been produced under the National Cooperative Highway Research Program (NCHRP). It is NCHRP Project 25-25, Task 15, “A Historic Context for Historic Bridge Types.” The study has been prepared by the firm of Parsons Brinckerhoff, with the assistance of Engineering and Industrial Heritage, and has been overseen by a review panel assembled specifically for the NCHRP 25-25 Task 15 study.

This study covers bridges built in the United States through 1955, up to the year of the passage of the Federal Aid Highway Act of 1956, which created the Interstate Highway System. It is intended to provide assistance to practitioners with assessing the historic significance of bridge types within the context of the United States, and can improve the significance evaluation process through providing a picture of the bridge types that are very common and those that are much less common, as well as providing an assessment of the technological and historical significance of the individual types. The study lays the foundation for evaluating whether a bridge to be removed requires additional documentation. (It is important to note that the study does not address one-of-a-kind and other rare historic bridges.)

Chapter 1 describes the research methodology, and provides background guidance to users of this study on assessing the significance of historic bridges, including assessing their individual eligibility for the National Register of Historic Places (NRHP).

Chapter 2 assists the user in determining where a bridge fits into the general historic context of bridge development in the United States. Many factors have influenced bridge development, and this chapter focuses on the evolution of the field of engineering, technological advancements, and important events that influenced bridge development history.

Chapter 3 presents the 46 most common historic bridge types identified. For each type, the study provides a brief development history; a description of the type and subtypes; identification of its period of prevalence; and a statement of its significance within the context of the most common bridge types identified in this study. This significance evaluation is geared toward the engineering significance of the bridge types, that is, NRHP Criterion C. Historic significance under NRHP Criterion A, however, is also factored into the evaluation of the bridge types.

The final Chapter (4) provides a table summarizing the significance assessments presented in Chapter 3. Issues encountered in the conduct of this study are identified, such as: 1) the lack of a national historic bridge database/repository for bridge studies; 2) the inability of the Study Team to identify the requested fifty common bridge types; 3) the lack of scholarship and NRHP listed or Historic American Engineering Record (HAER) recorded examples of the more recent bridge types, 4) use of inconsistent terminology in the numerous extant historic bridge studies; and 5) the inability of the Study Team to locate volunteer peer reviewers. The study also makes a number of recommendations for the near and distant future of studies and actions that can, along with this study, improve the bridge significance evaluation process.