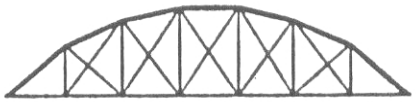


Historic Bridge Reuse

The Surface Transportation and Uniform Relocation Assistance Act of 1987 (STURAA) encourages all states to rehabilitate, reuse and preserve historic bridges to be affected by highway projects. Historic bridges must be made available to state and local governments, and to private groups and individuals.

MoDOT, the Missouri counties, and some Missouri cities advertise the availability of historic bridges in magazines, newspapers and on the Internet. They are advertised for reuse in place, or at a new location.

Recipients must agree to maintain the features that make a bridge historic, and assume all future legal and financial responsibility.

Historic bridges are not "sold" to recipients-They are given away. However, potential recipients must show that they are capable of maintaining an historic bridge in accordance with established standards for historic bridges.

Money in amounts up to 80 percent of the estimated cost of standard demolition may be available for preservation of an historic bridge in place, or at a new location. Enhancement funds may also be available.

Interested parties must submit an acceptable proposal within a designated time frame. All proposals are reviewed by MoDOT, the Federal Highway Administration (FHWA), and the State Historic Preservation Office (SHPO).

MoDOT's Cultural Resources Unit maintains a list of available historic bridges in Missouri. The list is updated at least once a year.

Need a Bridge? Contact MoDOT.

This brochure was prepared to foster a better understanding of historic bridges in Missouri and to recognize MoDOT's attention to historic bridges involved in highway projects. For more information on historic bridges consult the following sources:

Condit, Carl W. *American Building: Materials and Techniques from the First Colonial Settlements to the Present.* Chicago, IL: University of Chicago Press, 1982.

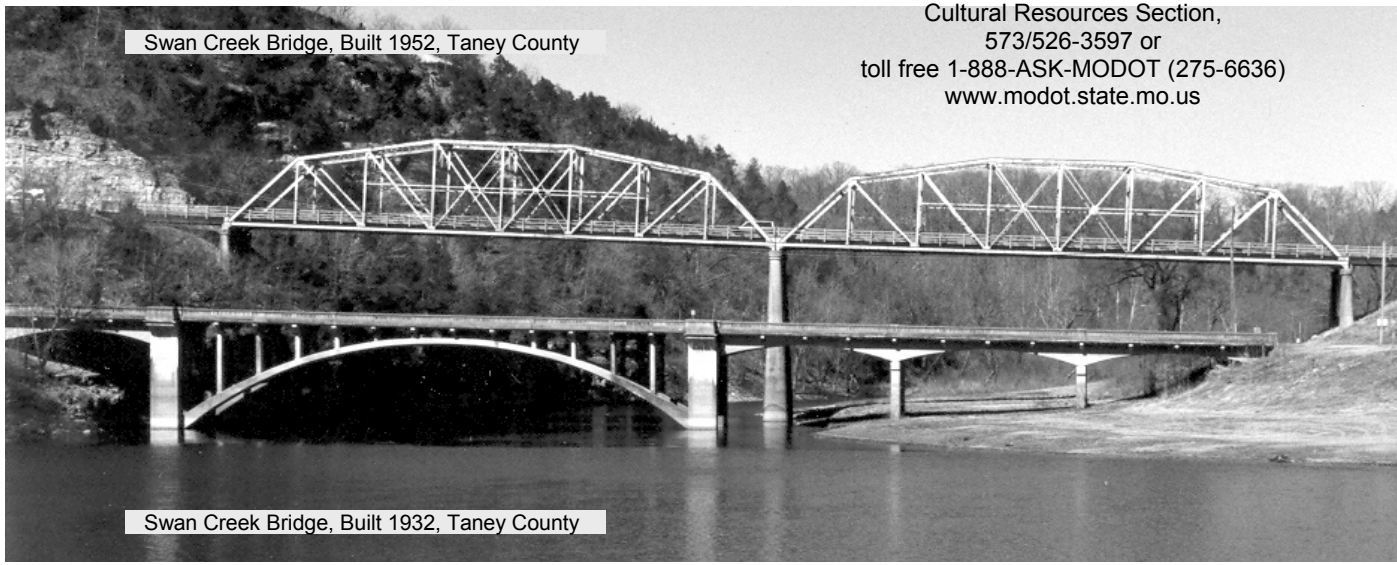
Delony, Eric. *Landmark American Bridges.* New York, NY: American Society of Civil Engineers, 1993.

Fraser, Clayton B. *Missouri Historic Bridge Inventory* Loveland, CO: FraserDesign, Inc. 1996.

Hayden, Robert. *Suspension Bridges over the Osage River*. U.S. Army Corps of Engineers, Kansas City, MO: 1980.

Jackson, Donald C. *Great American Bridges and Dams.* Washington D.C.: The National Trust Press, 1988.

Acknowledgements:
MoDOT Historic Bridge Coordinator Randy Dawdy developed this brochure. MoDOT Senior Cartographer Sue Olson, and MoDOT Architectural Historians Karen Daniels, Sandy Marshall, and Toni Prawl provided assistance.



Swan Creek Bridge, Built 1952, Taney County

Swan Creek Bridge, Built 1932, Taney County

HISTORIC BRIDGES AND TRANSPORTATION PROJECTS IN MISSOURI

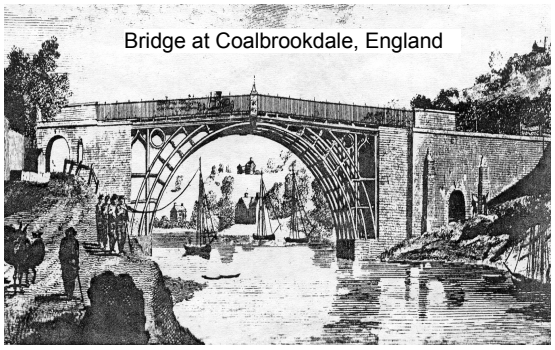
For Additional Information Contact:
Missouri Department of Transportation,
Cultural Resources Section,
573/526-3597 or
toll free 1-888-ASK-MODOT (275-6636)
www.modot.state.mo.us

MoDOT and Historic Bridges

Missouri Department of Transportation (MoDOT) projects that use federal funds or require federal permits or licenses are subject to various federal laws and regulations. When planning transportation improvements throughout the state, MoDOT must give special consideration to historic properties. Historic properties are buildings, structures, sites, districts and objects that are listed or eligible for listing in the National Register of Historic Places (NRHP). Historic bridges are classified as structures under this definition. MoDOT is responsible for identifying and managing historic bridges associated with its projects as the department strives “to preserve, enhance and support Missouri’s transportation systems.”

Through consultation with the Missouri State Historic Preservation Office (SHPO), MoDOT and its consultants evaluate cultural resources as projects develop so historic properties can be identified early and avoided when possible. Clayton Fraser's 1996 draft *Missouri Historic Bridge Inventory* provides a valuable source of information on historic bridges in the state, along with individual bridge evaluations in terms of NRHP eligibility.

When historic bridges cannot be avoided, MoDOT often attempts to minimize the project’s impact to them. If no prudent and feasible avoidance alternative exists, mitigation measures will depend on several factors, but usually involve recordation such as Historic American Engineering Record (HAER) documentation; and sometimes advertisement for adaptive reuse in place or at a new location. MoDOT consults with several parties—property owners, the public, SHPO, Federal Highway Administration and the Advisory Council on Historic Preservation—to determine the appropriate mitigation.



Bridge at Coalbrookdale, England

Some Bridge History

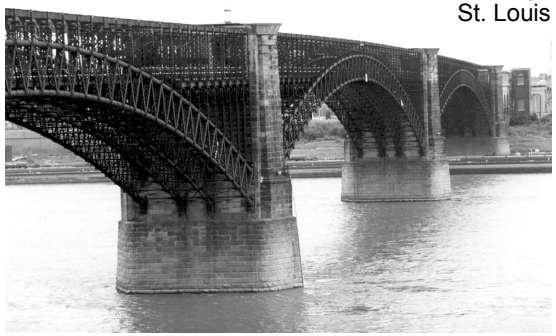
In addressing historic bridges in Missouri, the term "bridges" collectively refers to both public and privately owned highway, railroad and pedestrian bridges, viaducts, and culverts. The study of bridges is called Pontology. Though architects have provided much valuable input into the design of bridges, traditionally bridge building has been the business of skilled craftsmen as well as academically trained engineers. The Romans organized bridge building and employed skilled workers to perfect the structural stone arch to support roads and aqueducts. They developed the first concrete and poured it into cofferdams to form bridge footings below existing water levels. In 1779, the first all-metal (cast iron) bridge was constructed at Coalbrookdale, England, spanning 100 feet across the River Severn. In 1816 the world's first wire suspension bridge was built over the Schuylkill River in Philadelphia. In 1839 the oldest existing all-metal bridge in the U.S. was built on the Cumberland Road in Brownsville, Pennsylvania.

The introduction of railroad technology to the United States not only revolutionized transportation, it also revolutionized bridge design. The first railway bridge in the U.S., built by the Baltimore and Ohio (B&O) Railroad in 1830, was a wooden arch design. Most bridge builders up to 1840 were carpenters who considered bridge construction as a trade. But wood was flammable. In 1845, the first iron railway bridge in the U.S. was built by the Philadelphia and Reading Railroad.

Missouri produced the nation's first steel bridges. The Eads Bridge built from 1867 to 1874 spanning the Mississippi River at St. Louis features tubular steel arches and granite faced limestone piers. Also, the earliest all-steel bridge in Missouri and the United States was the Glasgow Bridge, built in 1879 by the Chicago and Alton Railroad across the Missouri River. Approximately 800,000 tons of steel were used in the structure. It was replaced in 1899.

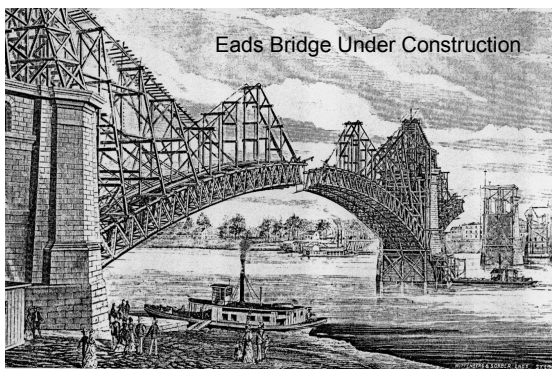
Since the mid-1800s a host of innovative designs were applied to bridge construction on railroad lines. Many of these designs, along with some newer designs, were carried over to highway bridges as automobiles became more prevalent. In 1921, after the passage of the Centennial Road Law and the Federal Aid Highway Act, the creation of a separate bridge bureau strengthened the Missouri State Highway Department's efforts to expand and standardize highway bridge design. Many of these standard designs are still in use today.

Eads Bridge
St. Louis



A Survey of Missouri Bridges

Fraser's statewide historic bridge inventory study encompassed about 11,000 bridges and grade separations, which included several bridge types erected before 1951: concrete slabs, concrete girders, concrete arches, timber stringers, timber trusses, metal stringers, metal girders, metal trusses, metal arches, suspensions and masonry arches. Of these, approximately 400 bridges are on or at least eligible for inclusion to the National Register of Historic Places (NRHP). Copies of Fraser's 1996 draft *Missouri Historic Bridge Inventory* can be consulted at three locations in Jefferson City: MoDOT's Cultural Resources Unit at 601 West Main Street, the State Historic Preservation Office (SHPO) at 115 East High Street, and the Federal Highway Administration (FHWA) regional office at 206 Adams Street.



Eads Bridge Under Construction