

Bridgeport Covered Bridge
Bridgeport
Nevada County
California

HAER No. CA-41

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

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Historic American Engineering Record
National Park Service
Department of the Interior
Washington, D. C. 20240

HISTORIC AMERICAN ENGINEERING RECORD

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Bridgeport Covered Bridge

HAER No. CA-41

Location: Over South Fork of Yuba River, 10 miles Northeast of Smartville, Nevada County, California. (Bridgeport)

Date of Construction: 1862

Builder: David Ingefield Wood

Original Owner: Virginia City Turnpike Company

Significance: The Bridgeport Covered Bridge is 233 feet long and was originally built as part of a toll road intended to serve the development of the Comstock Lode around Virginia City, Nevada. It is a Howe Truss bridge with an auxiliary arch.

Transmitted by: Jean P. Yearby, HAER, 1985

ADDENDUM TO
BRIDGEPORT COVERED BRIDGE
Over South Fork of Yuba River, 10 miles
Northeast of Smartville
Bridgeport
Nevada County
California

HAER No. CA-41

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ADDENDUM TO:
BRIDGEPORT COVERED BRIDGE
National Covered Bridges Recording Project
Spanning South Fork of Yuba River at bypassed section of
Pleasant Valley Road (originally Virginia Turnpike) in South Yuba
River State Park
Bridgeport
Nevada County
California

HAER CA-41
CAL,29-BRIGPO,1-

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWINGS

FIELD RECORDS

HISTORIC AMERICAN ENGINEERING RECORD

National Park Service
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240-0001

HISTORIC AMERICAN ENGINEERING RECORD

Addendum to BRIDGEPORT COVERED BRIDGE HAER No. CA-41

One data page was previously transmitted to the Library of Congress in 1985.

Location: Spanning South Fork Yuba River at bypassed section of Pleasant Valley Road (originally Virginia Turnpike), Bridgeport, Nevada County, California

UTM: 10.655651.4350836, French Corral, California, Quad.

Structural Type: Howe through truss covered bridge

Date of Construction: 1862

Builder: Virginia Turnpike Company

Owner: State of California, Department of Parks and Recreation

Previous Use: Vehicular bridge

Present Use: Historic landmark and tourist attraction

Significance: The Bridgeport Covered Bridge was built in 1862 to replace an earlier span that washed out in a flood. It was an integral part of the Virginia Turnpike, a heavily traveled route through the Sierras during the gold rush era. The bridge is significant as one of the longest single-span surviving covered bridges in the United States.¹

Historian: Researched and written by Lola Bennett, September 2002

Project Information: The National Covered Bridges Recording Project is part of the Historic American Engineering Record (HAER), a long-range program to document historically significant engineering and industrial works in the United States. HAER is administered by the Historic American Buildings Survey/Historic American Engineering Record, a division of the National Park Service, U.S. Department of the Interior. The Federal Highway Administration funded the project.

Related Documentation: HABS CA-1401, Covered Bridge

¹ Bridgeport Bridge has a reported clear span of 210' (upstream side) and 208' (downstream side). The covered bridge at North Blenheim, New York (HABS No. NY-48; HAER No. NY-331) originally had a clear span of 210'. After modifications to the abutments, the present clear span is 199'-1".

Chronology

- 1848 Gold discovered in California
- 1849 Gold discovered on South Yuba River
- 1850 California becomes 31st state
- 1851 Miner Robert Wilson describes Bridgeport as "*a little town at a bridge*"
- 1856 Virginia Turnpike Company formed
- 1858 Toll bridge built at this site
- 1859 Virginia Turnpike becomes part of Hennes Pass route through the Sierras
- 1862 Bridgeport Bridge destroyed in a flood and subsequently rebuilt
- 1876 David Wood's son Samuel becomes sole owner of the Virginia Turnpike Company.
- 1901 Samuel Wood sells Bridgeport Bridge to Nevada County
- 1934 Bridgeport Bridge recorded by the Historic American Buildings Survey
- 1948 Bridgeport Bridge designated California Historical Landmark No. 390
- 1962 Bridgeport Bridge slated for demolition
- 1969 Nevada County Historical Society raises \$3,000 for bridge rehabilitation
- 1970 Bridgeport Bridge rehabilitated
- 1970 Bridgeport Bridge designated a National Historic Civil Engineering Landmark
- 1971 Bridgeport Bridge listed on the National Register of Historic Places
- 1973 Bridgeport Bridge bypassed
- 1984 State of California assumes ownership of Bridgeport Bridge
- 1985 Bridgeport Bridge recorded by the Historic American Engineering Record
- 1996 Bridgeport Bridge rehabilitated after being damaged in a flood
- 2002-3 Bridgeport Bridge recorded by the Historic American Engineering Record

Introduction

Within a year of the discovery of gold at Sutter's Mill at Coloma in 1848, the population of California tripled. The urgent demand for roads and bridges was initially met by the establishment of privately financed ferries, turnpikes and toll bridges. In 1850, John T. Little of Castine, Maine, built California's first covered bridge at Salmon Falls. By 1860, there were at least one hundred toll bridges in the gold mining region of California. The majority of these were timber truss bridges and, presumably, many of them were covered. Over time, however, the covered bridges were replaced with new structures, or lost to floods, fires, vandalism, neglect or decay. By 1938 there were still thirty covered bridges in California.² That number dropped to 17 by 1954.³ Today there are 9 historic covered bridges in California.⁴

WG #05-29-01	Bridgeport	Nevada County, CA	1862	Howe truss	Virginia Turnpike Co.
WG #05-50-01	Knight's Ferry ⁵	Stanislaus County, CA	1864	Howe truss	Schuykill Construction Co.
WG #05-44-03	Powder Works ⁶	Santa Cruz County	1872	Smith truss	Pacific Bridge Co.
WG #05-22-01	Wawona ⁷	Mariposa County	1875	Queenpost truss	Galen Clark
WG #05-58-01	Oregon's Creek	Yuba County, CA	1882	Queenpost truss	Thomas Freeman
WG #05-44-02	Felton	Santa Cruz, CA	1892	Warren truss	Cotton Brothers & Co.
WG #05-04-01	Honey Run ⁸	Butte County, CA	1896	Pratt truss	American Bridge Co.
WG #05-12-02	Berta's Ranch	Humboldt County, CA	1936	Queenpost truss	WPA
WG #05-12-05	Zane's Ranch	Humboldt County, CA	1937	Queenpost truss	WPA

² S. Griswold Morley, *The Covered Bridges of California* (Berkeley: University of California Press, 1938), p.1.

³ Richard Sanders Allen, "Covered Bridges in California," *Connecticut River Valley Covered Bridge Society Bulletin* 2 (June 1955): 5.

⁴ California also has several non-authentic or non-historic covered bridges that have appeared in recently published lists, including: Aptos Creek Bridge (1974); Jacoby Creek (1969); Castleberry (1984); Roaring Camp (1969) and Brookwood (1969).

⁵ See HAER No. CA-314, Knights Ferry Bridge and HABS No. CA-158, Knight's Ferry Covered Bridge

⁶ See HAER No. CA-313, Powder Works Bridge.

⁷ See HAER No. CA-106, Wawona Covered Bridge.

⁸ See HAER No. CA-312, Honey Run Bridge.

Description

The Bridgeport Bridge is a single-span Howe truss wooden covered bridge with an auxiliary wooden arch. The total length of the bridge is 229 feet (portal to portal)⁹, with a clear span of 208'-0".¹⁰ The truss is approximately 18 feet high from the top of the upper chord to the bottom of the lower chord and 19'-0" wide overall, with a roadway width of 15'-6". Each truss has 24 panels and two end panels, each of the main panels measuring 8'-9" on center.

The Douglas fir trusses are framed in the manner patented by William Howe in 1840. The upper chord is composed of seven 3"x16" planks¹¹ laid flat and bolted together with ¾" diameter rods. The lower chord is comprised of seven 2"x15" planks fastened together in a similar manner. The chords are connected by paired 4½"x10" wooden diagonals (angling down and out from the center of upper chord), intersected by single 4½"x8" wooden counter braces, pairs of vertical 1¼" square wrought iron rods at each panel point, and 9½"x14" vertical wooden endposts. The diagonals and counter diagonals are fastened together with 1" diameter threaded rods at their intersection. The end panels have single crossed 7½"x14" diagonals, notched and bolted together, and a pair of vertical rods next to the end posts. The diagonals bear on triangular cast iron thrust block assemblies at the upper and lower chords, while the rods pass through openings in the casting and through the chord, where they are fastened on the far side with a plate and nuts.

Each truss is flanked by a pair of auxiliary segmented timber arches. Each arch is comprised of 5"x13"x20' timbers, butted end-to-end, and fastened to the diagonal truss members with threaded rods and nuts. There are wooden spacer blocks wedged between the arch and counter diagonals. The arches spring from cast concrete skewbacks on the face wall of the abutments, rise approximately 20 feet to the crown and span 208'-0". The arches are tied to the skewbacks with steel plates and rods.

The lower chords of the bridge rest on wooden bolster beams (6"x12" timbers bolted together) on top of the abutment face walls. The mortared stone abutments appear to have been rebuilt at an unknown date.¹² At each panel point, a 12"x12" transverse floor beam is bolted to the bottom of the lower chord. There are nine lines of stringers laid longitudinally on top of the floor beams. The deck is two layers of 1½"x11" plank flooring laid diagonally on the stringers, with longitudinal running boards on top.

The roof system (all new) bears on 3"x12" tie beams below the upper chord at each panel point. Lateral bracing consists of 3"x8" timbers notched into the upper chord at every other panel point. The rafters frame into the upper chord and are spaced approximately 2 feet apart. There

⁹ Historic photographs of the bridge indicate that the length of the housing was once significantly longer, perhaps the 251 feet that has been quoted in some sources. The shelter panels at the portals were cut back in the 1970s.

¹⁰ One abutment face tapers, so that the clear span measures about 208' under one truss, and about 210' under the other.

¹¹ It is likely that planks were used to avoid the expense of hewn timbers.

¹² The ends of the arch now rest approximately where the truss seats used to be.

are collar ties between the rafters. The gable roof is covered with wood shingles fastened to longitudinal wooden purlins (spaced at 2-foot intervals) on top of the rafters.

The exterior of the bridge is covered with wooden sugar pine shingles to the eaves, with the outline of the arch clearly visible. The shingles are fastened to $\frac{3}{4}$ "x2 $\frac{1}{2}$ " lathes on $1\frac{3}{4}$ "x3" vertical nailers on the exterior faces of the trusses. The portals are straight with squared openings, open gables, and heavy timber sway braces between the end posts and the tie beam. There are three 30"x33" window openings on each side of the bridge, in the center panel and the fourth panel from each end.

History

In 1849, gold was discovered along the South Yuba River in Nevada County, and a mining camp was established near this site. There was a bridge at this location by 1851, when miner Robert Wilson described in his journal crossing the South Yuba River near Bridgeport, "a *little town at a bridge.*"¹³

In 1856, David Wood¹⁴ and eleven associates formed the Virginia Turnpike Company for the purpose of building a 14-mile road from Anthony House, a stagecoach stop five miles south of Bridgeport, to North San Juan. According to this description in an 1859 report to the California State Legislature, a new bridge was built:

*At about sundown we reached Wood's Crossing, over the South Fork of the Yuba River. Mr. Wood has, at large expense, built a most excellent mountain road, about ten miles long, one-half on either side of the river, and over the stream a firm, substantial bridge. For passing over the road, and crossing the bridge, each traveler, on horseback, is charged fifty cents, and those with vehicles in proportion, so that the outlay of ten thousand dollars proves a good investment.*¹⁵

In 1859, the Virginia Turnpike became part of a wagon road from Marysville, California to Virginia City, Nevada. Known as the Hennes Pass route, this was the lowest and most heavily

¹³ Allan F. Ottlay, California State Library, letter to Mr. and Mrs. B.K. Dunshee, 9 July 1963. Copy on file at California State Historic Preservation Office, Sacramento, California.

¹⁴ In 1850, Virginia native David Wood immigrated to California with his wife and children, settling near Point Defiance on the South Yuba River. Wood established a sawmill at Forest City and a mercantile store at French Corral. As president of the Virginia Turnpike Company, he oversaw the construction of the Bridgeport Bridge. He also built another toll bridge a mile and a half downstream at Point Defiance.¹⁴ In 1869, he sold his share in the company to his son Samuel and son-in-law, Joseph Jasper for \$500. The following year, the family moved to Wheatland, where David Wood died in 1875.

¹⁵ "Report of Visiting Committee to Examine Farms, Orchards, Vineyards, Nurseries, Mines, Mining, Etc.," *Appendix to Journals of the Senate, Tenth Session of the Legislature of the State of California, 1859*, p. 175.

traveled road through the Sierras. At the height of the Gold Rush, as many as 100 wagons a day crossed the bridge at Bridgeport.¹⁶

In the winter of 1861-62, massive floods washed out five bridges on the South Yuba River, including the one at Bridgeport.¹⁷ A few months later, the Virginia Turnpike Company rebuilt the bridge just below the old crossing. No details of the construction have been found.

The completion of the Central Pacific Railroad in 1869 drastically decreased travel on the Henness Pass route, although the Bridgeport Bridge continued to be used by miners. Decreasing revenues for the owner as well as public desire for free bridges eventually led to Nevada County's purchase of the bridge in 1901.

In 1948 the bridge was designated California Historical Landmark No. 390, but transportation safety issues continued to threaten its survival. In 1962, the bridge was slated for demolition, but historic preservationists fought to preserve it, raising the necessary funds for its rehabilitation in 1970-71. The bridge was subsequently designated a National Historic Civil Engineering Landmark and listed on the National Register of Historic Places. In 1973, the California Department of Transportation built a new concrete bridge upstream, and Bridgeport Bridge stopped carrying traffic.

In 1979, the California State Parks Department and Sequoia Challenge, a non-profit land trust, made an agreement to acquire and protect land along the historic river canyon. This led to the creation of the South Yuba River State Park in the mid 1980s. In 1984, the California State Parks Department purchased the Bridgeport Bridge from Nevada County. Subsequently, an existing ranch house was converted into a visitor center and ranger station.

Design

During the 1830s and 40s, demand increased for standardized bridges that could be rapidly erected and easily maintained to keep pace with the growth of the nation's railroad network. In 1840, Massachusetts millwright William Howe (1803-1852) patented a timber truss with parallel upper and lower chords connected by wood diagonals in compression and iron verticals in tension. First to incorporate iron for primary structural members, the Howe truss improved on the 1830 Long truss by replacing the vertical wood members with adjustable wrought iron rods to overcome the inherent difficulty of creating tension connections in wood structures.

William Howe's first bridge, a small railroad bridge at Warren, Massachusetts, was so successful that the Western Railroad's Chief Engineer, George Washington Whistler, gave him the contract for the biggest bridge on the line—an enormous seven-span deck truss bridge across the Connecticut River at Springfield, erected in 1842. The Howe truss soon became the most widely used wooden truss for railroad bridges, because it offered the rigidity of the Long

¹⁶ Clinton H. Lee, Mark Michalski and David A. Comstock, "The Bridgeport Covered Bridge," *Nevada County Historical Society Bulletin* 50 (January 1996): 3.

¹⁷ *Nevada Democrat*, 10 December 1861: 2.

truss, but had simpler framing connections and could be erected quickly and adjusted easily. In 1878, the American Society of Civil Engineers stated: "*for simplicity of construction, rapidity of erection, and general utility [the Howe truss] stands without rival.*"¹⁸

Used extensively for railroad bridges in the United States and Europe during the mid-nineteenth century, the timber Howe truss gradually gave way to similar structures with cast iron compression members and wrought iron tension members. There are well over one hundred Howe truss covered bridges surviving in the United States today.

¹⁸ "Bridge Superstructure," *Transactions of the American Society of Civil Engineers*, 1878, p.340.

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