Note: This is an adaptation of a report currently in the HAER collection at the Library of Congress to illustrate the outline format: engineering structures.

HISTORIC AMERICAN ENGINEERING RECORD

HONEY RUN BRIDGE
(Carr Hill Road Bridge)

HAER No. CA-312

Location: Spanning Butte Creek at bypassed section of Honey Run Road (originally Carr Hill Road), Paradise vicinity, Butte County, California

Honey Run Bridge is located at latitude: 39.75972, longitude: -121.62083. The coordinate represents the west end of the bridge. It was obtained in September 2002 by plotting its location on the Hamlin Canyon, California Quad map. The Honey Run Bridge has no restriction on its release to the public.

Present Owner: Butte County, California; the Honey Run Bridge Association cares for the structure

Present Use: Historic landmark and tourist attraction

Significance: Honey Run Bridge is the best preserved of four surviving examples of Pratt-type wood covered bridges in the United States. Thomas and Caleb Pratt patented the Pratt truss in 1844, which features wood compression members and iron tension members. The design, favored for its strength and adaptability, became the standard American truss for moderate spans on both railroads and highways by 1870 and remained so well into the twentieth century.

Historian: 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/Historic American Landscapes Survey, a division of the National Park Service, U.S. Department of the Interior. The Federal Highway Administration funded the project.

Part I. Historical Information

A. Physical History:

1. Dates of construction: 1886-1887

2. Engineer: American Bridge Company, San Francisco

3. Builder: American Bridge Company, San Francisco

4. Original plans and construction: In September 1886, the Butte County Board of Supervisors ordered the County Clerk to publish a notice to contractors for plans and proposals for a wood bridge across Butte Creek at the Carr Hill Road crossing. In this notice, the supervisors listed the following specifications.

> The bridge in the center to be at least 7 feet above high water mark; center piers to be two iron cylinders, about 5 and 9 feet in height respectively, filled with concrete, resting on the large rocks that project in the stream; the western shore pier also to be an iron cylinder filled with concrete. There is to be a clear span over the main channel not less than 125 feet in length; a rock wall or abutment to be built at each end about 5 feet high, rock to be laid in cement mortar. Total length of bridge needed, 240 feet, width 16 feet. To be constructed in a substantial manner, and all square timbers to be of No. 1 spruce. The Board prefers the Howe Truss pattern for the longest span, and strain beam for short spans, but bidders may make their bids in whatever kind of truss they prefer.[1]

Physical and documentary evidence indicates that the bridge was not covered at the time of its construction.

5. Alterations and additions: The timber trusses of the center and westerly span are now covered with metal sheathing, which would have been unnecessary if the bridge had been sided and roofed when first built. In 1901, George Miller sent a letter to the Board of Supervisors stating,

> the flooring and timbers were very badly decayed and it was necessary to replace the whole floor system with new materials which in my judgement makes the bridge as good as the original. I would also recommend that the bridge be housed-in, the cost which would be about $560.00.[2]

No written records have been found to document when the bridge was covered, but presumably it was done soon after Miller's recommendation.

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[1] "Notice to Contractors," *Chico Enterprise*, April 1886.

[2] The letter, quoted in a Butte County Historical Society bulletin, has not been located, but Miller's recommendation to house the bridge was also reported in "Report on Bridge Work," *Chico Enterprise*, July 5, 1901.

Later alterations included rehabilitation of the bridge in 1972. At some point, a sprinkler system was installed along the full length of the bridge's roof.

B. Historical Context:

California's Covered Bridges

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. That number had dropped to seventeen by 1954.[3] Today, there are nine covered bridges in California (see Appendix A).[4]

Construction

As was typical in California, the discovery of what was reportedly the single biggest piece of gold ever found in North America, a 54-pound gold nugget in Dogtown (later Magalia) in Butte County, caused people to flock to the county.[5] In 1883, local citizens petitioned the Butte County Board of Supervisors for a road from Butte Creek Canyon to Paradise Ridge. The county authorized construction of the road and awarded the contract to A.H. Chapman. In May 1885, a committee visited the worksite and reported "a very good mountain road…was being constructed with great care, so as to prevent washouts and landslides."[6] During the trip the committee also chose the site for a bridge across Butte Creek, near the intersection of Centerville Road.

Three proposals were received in response to the Butte County Board of Supervisors published notice calling for plans and proposals for a wood bridge crossing Butte Creek. The contract was awarded to the American Bridge and Building Company for $4,295. George Miller was appointed superintendent of construction. The bridge was described in the newspaper as follows:

> On Wednesday, a contract was let by the Board for the building of a Pratt truss iron combination bridge at the Butte Creek crossing of the Carr Hill road. The price to be paid is $4,295. The bridge is to be 240 feet in length, and 18 feet in width, the piers are to be iron cylinders 44 inches in diameter filled with concrete, the spans are 126 feet, 80

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[3] S. Griswold Morley, *The Covered Bridges of California* (Berkeley: University of California Press, 1938), 1; 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] Joseph F. McGie, *History of Butte County, Volume 1 (1840-1919)* (Oroville, CA: Butte County Board of Education, 1982), 59. According to George Mansfield's *History of Butte County*, 74, the gold nugget netted $10,690.

[6] John S. Waterland, "Behind the Building of Honey Run Bridge," *Chico Enterprise-Record*, January 3, 1988, 68.

> feet and 39 feet. The bridge is to be a strong and durable structure of the best class of bridge architecture.
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> A contract was also let for the building of the same style and general plan of bridge at Rock Creek on the Chico and Shasta road for $2,050. Both bridges are to be built by the American Bridge Company of San Francisco, and are to be ready for travel by December 1st.[7]

On January 3, 1887, Miller reported the bridge had been completed in accordance with the contract, and the Butte County Board of Supervisors accepted it.[8] Honey Run Bridge, as it was known, was probably so-called because of the honeybees that nested in the buttes surrounding the bridge.

Alterations

The Butte County Department of Public Works initiated plans for a new two-lane highway bridge just upstream of the covered bridge after a truck crashed into the Honey Run Covered Bridge on April 12, 1965, collapsing the eastern span. While the replacement bridge was under construction in 1965-66, public support grew in favor of restoring and preserving the covered bridge. A thousand people signed petitions, the Honey Run Covered Bridge Association was formed, and funds were donated for reconstruction. The bridge underwent rehabilitation in 1972.

Pratt Truss

The Honey Run Bridge uses Pratt trusses, which were developed by Caleb and Thomas Pratt. Born in 1812 to Boston architect Caleb Pratt, Thomas Pratt was educated in building construction. He studied architecture at Rensselaer Polytechnic Institute and subsequently went on to work for the Army Corps of Engineers. In 1833 he began designing bridges for railroads and was employed as a structural engineer by a number of railroad companies throughout his career.

In 1844, Thomas and Caleb Pratt received a patent for a combination wood and iron truss with verticals in compression and diagonals in tension. This configuration, a reversal of the 1840 Howe truss, shortened the compression members and reduced the danger of buckling. Developed at a time when railroads were placing new demands on bridges and the structural action of trusses was just beginning to be understood, the Pratt truss was one of several truss types that heralded the transformation from empirical to scientific bridge design. While the type was not immediately popular for wood spans, the Pratt truss came to be favored for its straightforward design, strength, and adaptability. By 1870, in a simplified all-metal version, it

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[7] "Bridge Building in Chico," *Chico Enterprise*, October 8, 1886.

[8] Many modern sources state that this bridge was built in 1896, after a flood washed out the existing one at this site; however, no documentary evidence has been found to confirm that date. According to 1901 county records, the Carr Hill Road Bridge was in a state of disrepair at that time, suggesting that more than five years had elapsed since its construction. In addition, the 1886 specifications closely correlate with the physical description of the present bridge. Together, this information strongly suggests that the present bridge was built in 1886, not 1896 as was previously believed.

had become the standard American truss for moderate road and railroad spans and remained so well into the twentieth century.

Part II. Structural/Design Information

A. General Statement:

1. Character: Honey Run Bridge exemplifies a typical bridge using Pratt trusses, which were in widespread use in the late nineteenth century.

2. Condition of fabric: Good

B. Description: The Honey Run Bridge is a three-span timber covered bridge on 3'-diameter iron cylinder piers and mortared fieldstone abutments. The total length of the bridge is 241'. The northern span is a kingpost truss measuring 30' long and 7'-6" high. The center span is a Pratt truss measuring 128' long and 23' high. The southern span is also a Pratt truss that is 80' long and 15'-6" high. The trusses are spaced 18' apart. The timber deck has a width of 17'-6" between wood plank side railings.

The northern span is framed as a kingpost truss. The sloped compression members are 10" x 10" timbers, joined at center span. The lower chords are a pair of $^{7}/_{8}$" square bars that pass through the lower ends of the sloped compression members. The sloped members and the bottom chord are connected at midspan by a pair of kingrods, vertical $^{7}/_{8}$" square bars with threaded ends, which pass through a metal plate below the transverse floor beam and another plate above the upper compression members, where they are fixed with nuts. Outriggers have been incorporated with the transverse floor beam to provide lateral stability and a supplemental timber bent has been added to increase the load-bearing capacity of the span.

The center span is framed as a six-panel modified Pratt through truss, featuring horizontal upper and lower chords connected by vertical wood compression members, diagonal iron tension members, and sloped wood endposts. The upper chords are 12" x 14" timber beams, and the lower chords are paired $^{5}/_{8}$" x 2-$^{1}/_{2}$" metal eyebars. The chords are connected by 7" x 8" vertical timber posts and paired rods or rectangular bars. The rods and bars are crossed in two center panels and angle up towards the ends in the end panels. The trusses are cross-braced overhead with timbers and rods at each panel point. There are metal rod sway braces between the trusses at the plane of the lower chord in each of the six panels. The floor system is supported by 12" x 18" transverse floor beams suspended below the lower chord at each panel point. The five 12" x 18" timber transverse floor beams have heavy steel channel-type beams bracketed to the sides (apparently a modern addition). There are ten lines of longitudinal stringers on top of the transverse floor beams. The transverse floor beams extend to the outside of the trusses and support the framework (nailers) for the wall covering. The deck consists of 4" x 12" x 18" timbers laid transversely on the stringers, and 3" x 12" running boards laid longitudinally on top of the deck.

The southern span is framed as a five-panel modified Pratt through truss.[9] The upper chord is a 10" x 12" timber member, and the lower chord is paired $^{1}/_{2}$" x 2" or $^{5}/_{8}$" x 2" metal eye bars. The chords are connected by 6" x 8" vertical timber posts and paired $^{3}/_{4}$"-diameter rods or $^{9}/_{16}$" x 1-$^{1}/_{2}$" bars. The rods and bars are crossed in the center panel and angle up towards the ends in the end panels. The truss is braced overhead with timbers and rods at each panel point. There are metal sway braces between the trusses in each panel both overhead and under the deck. The panels of each truss are connected at both the top and bottom chord with a 2"-diameter steel pin through the fabricated metal assembly that holds the ends of the timber members and eye bars, or rods, in place. There is a floor beam suspended below the lower chord at each pin. The pin passes through the lower lateral bracing ($^{3}/_{4}$"-diameter rods with looped ends), the eyes of the lower chord, the diagonal rods, and looped rods suspending the transverse floor beams. The looped rods pass alongside the floor beam and through a metal plate below each beam, where they are secured with nuts.

The roof system is composed of 2" x 4" rafters that frame from the top nailers on the outside of the trusses. The rafters are spaced 24" apart and support 2" x 4" wood purlins to which corrugated metal roofing is fastened. There are 1" x 6" wood collar ties between the rafters. The height of the gable roof over each span corresponds to the height of each truss, giving the center span a noticeably higher roofline than the end spans. The sprinkler system extends the full length of the roof.

The timbers of the two original spans (northerly and center) are covered with sheet metal on the top and both sides, evidence that the bridge was originally uncovered. The exterior of the bridge is currently covered the full height of the trusses with vertical board siding fastened to 4" x 4" framing generally supported on the ends of the transverse floor beams, which extend beyond the outer face of the trusses. The entire housing, including the roof, appears to be a self-supporting structure with the lower nails resting on the transverse floor beams and piers. This was presumably done to transfer the dead load of the walls and roof to a direct loading position on the truss. The center span has two 1' x 3' windows on each side (one in each of the two center panels). The portals are straight with hipped openings. A relatively new sign over the north portal reads “Honey Run Covered Bridge 1894.” Iron gates have been installed at both portals to secure the bridge at night.

The abutments are mutated fieldstone, and the column piers are riveted iron tubes filled with concrete. The lower chords of the center span rest on bolster beams over the piers. The floor stringers of the end spans rest on large bedding timbers on top of the abutment face walls.

C. Site Information: The Honey Run Bridge spans the Butte Creek at the Carr Hill Road crossing.

[9] This span was rebuilt with new timber following the 1965 truck accident.

Part III. Sources of Information

A. Primary Sources:

Butte County Board of Supervisors. *Minutes*, 1883-1965.

Butte County Department of Public Works. *Bridge Records*.

Chico Enterprise [Chico, California], 1886.

Mansfield, George C. *History of Butte County, California*. Los Angeles: Historic Record Company, 1918.

McCoy, B.L. "Official Map of the County of Butte, California, 1901."

McGann, James. "Official Map of the County of Butte, California, 1886."

Wetherbee, Ira A. *Butte County California Illustrations*. Oakland: Smith & Elliot, 1877.

B. Secondary Sources:

Adams, Kramer A. *Covered Bridges of the West: A History and Illustrated Guide*. Berkeley, CA: Howell-North, 1963.

Becker, Donald. "Honey Run Covered Bridge." Undated, typed manuscript in the files of the Butte County Department of Public Works, Oroville, California.

Honey Run Covered Bridge Association. *Honey Run Covered Bridge: An Historical Site Preserved*. Paradise, California: Dick Ehrsam Printing, n.d.

_____. "Honey Run Covered Bridge and the Butte Creek Canyon Area, Butte County, California." Ca. 1965.

"Honey Run Covered Bridge." *Butte County Historical Society Diggins* 2 (Summer 1967).

"Honey Run Covered Bridge." National Register of Historic Places Nomination Form, listed in 1988.

McDonald, Lois. "The Roads and Bridges of Butte Creek Canyon." *Butte County Historical Society Diggins* 38 (Spring-Summer 1994): 30-38.

McGie, Joseph F. *History of Butte County, Volume 1 (1840-1919)*. Oroville, CA: Butte County Board of Education, 1982.

Morley, S. Griswold. *The Covered Bridges of California*. Berkeley: University of California Press, 1938.

Waterland, John S. "Behind the Building of Honey Run Road." *Chico Enterprise-Record*, January 3, 1988, 68.

Wells, Harry L. *History of Butte County, California*. San Francisco: Francis Valentine & Co., 1882.

Appendix A: Extant Covered Bridges in California

World Guide #	Bridge Name	Location (County)	Date of Construction	Type of Truss	Builder
WG #05-29-01	Bridgeport[10]	Nevada	1862	Howe	Virginia Turnpike Co.
WG #05-50-01	Knight's Ferry[11]	Stanislaus	1864	Howe	Schuylkill Construction Co.
WG #05-44-03	Powder Works[12]	Santa Cruz	1872	Smith	Pacific Bridge Co.
WG #05-22-01	Wawona[13]	Mariposa	1875	Queenpost	Galen Clark
WG #05-58-01	Oregon's Creek	Yuba	1882	Queenpost	Thomas Freeman
WG #05-44-02	Felton	Santa Cruz	1892	Warren	Cotton Brothers & Co.
WG #05-04-01	Honey Run	Butte	1896	Pratt	American Bridge Co.
WG #05-12-02	Berta's Ranch	Humboldt	1936	Queenpost	WPA
WG #05-12-05	Zane's Ranch	Humboldt	1937	Queenpost	WPA

[10] See Historic American Engineering Record (HAER), National Park Service, U.S. Department of the Interior, "Bridgeport Covered Bridge," HAER No. CA-41, and Historic American Buildings Survey (HABS), National Park Service, U.S. Department of the Interior, "Covered Bridge," HABS No. CA-1401.
[11] See HAER, National Park Service, U.S. Department of the Interior, "Knight's Ferry Bridge," HAER No. CA-314, and HABS, National Park Service, U.S. Department of the Interior, "Covered Bridge," No. CA-158.
[12] See HAER, National Park Service, U.S. Department of the Interior, "Power Works Bridge," HAER No. CA-313.
[13] See HAER, National Park Service, U.S. Department of the Interior, "Wawona Covered Bridge," HAER No. CA-106.