

Park Avenue Bridge (San Francisco River Bridge)  
Clifton Townsite  
Park Avenue spanning San Francisco River  
Clifton  
Greenlee County  
Arizona

HABS No. AZ-179

HABS  
ARIZ  
6-CLIFT,  
11-

PHOTOGRAPHS  
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Buildings Survey  
National Park Service  
Western Region  
Department of the Interior  
San Francisco, California 94107

HABS  
ARIZ  
6-CLIFT,  
11-

HISTORIC AMERICAN BUILDINGS SURVEY

**PARK AVENUE BRIDGE**  
(San Francisco River Bridge)

HABS No. AZ-179

**Location:**

Clifton Townsite, Park Avenue spanning San Francisco River  
Clifton, Greenlee County, Arizona

**Date of Construction:**

1917-18

**Builder:**

Midland Construction Company

**Present Owner:**

Town of Clifton  
P. O. Box 1415, Clifton, Arizona 85533

**Present Use:**

Vehicular Bridge

**Significance:**

Listed on the National Register of Historic Places in 1988 as part of the thematic nomination of bridges in Arizona. Considered significant at the local level of significance as the "only pinned Parker vehicular truss identified in the State." Although pinned bridges were never common in Arizona, several were erected in the late nineteenth and early twentieth century. Only two remain, and the Clifton Bridge is the only Parker type. It is considered today as "one of Arizona's most important early vehicular spans."<sup>1</sup>

**Report Prepared By:**

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**Date:**

September, 1994

## PART I. HISTORICAL INFORMATION

### A. Physical History

1. Date of Erection: Construction of the bridge began in October of 1917. The bridge was opened to traffic on February 10, 1918.<sup>2</sup>
2. Engineer: Clifton Town Engineer A. J. Kerr drew the specifications for the bridge after consultation with Arizona Copper Company engineers. The designer of the bridge is not known.<sup>3</sup>
3. Original and subsequent owners: Ownership of the bridge has always been vested with the Town of Clifton.
4. Builder, contractor, suppliers: The bridge was constructed by the Midland Bridge Company of Kansas City, Missouri. Oliver Lord of Midland was the construction foreman in Clifton. Steel components for the bridge were milled by the Illinois Steel Company. Information on the Midland Bridge Company is scarce. For most of its existence it was structured as a partnership of two men, Henry Freygang and A.A. Trocon. Midland first appears in Kansas City directories in 1900 with Freygang and Trocon as proprietors in Room 658 of the Gibraltar Building. Midland was listed continuously in Kansas City directories until 1928, when it quit operations. In July of 1920 Midland reorganized as a corporation based in Augusta, Maine, with E.M. Leavitt as President and Albert Trocon as Vice President. Midland was active in Missouri during the first two decades of the twentieth century, bidding on and contracting for numerous small-scale county bridges. The Old St. Charles Bridge, built 1902-1904 over the Missouri River in St. Louis ranked among the firm's largest commissions. Midland erected pinned and riveted trusses throughout the West and Midwest, including Nebraska, Iowa, Wyoming, Colorado, Utah, and Arizona. The firm was probably at its peak of activity when it constructed the Park Avenue Bridge in Clifton in 1917-1918.<sup>4</sup>
5. Original plans and construction: It is unknown if any original plans or specifications for the bridge are extant. Records at Greenlee County and the Town of Clifton were consulted without success. Many Town records were lost during the 1983 flood. The Arizona Department of Transportation has an as-built drawing compiled after the 1983 flood. It is possible that copies of original drawings may have been retained by the Arizona Copper Company and are in the Phelps Dodge collections, but access to this material is restricted.<sup>5</sup>

The Clifton Town Council let the contract for bridge construction on May 7, 1917. Construction began in October of that same year. In November a reporter for the Copper Era newspaper noted the progress being made on the bridge, stating that "work is being pushed." The reporter estimated that the work on the concrete abutments would be completed in a few days and that then work would begin on the bridge proper, with the hope that it would be completed by January 1. On February 22, 1918, the Copper Era reported that the bridge had opened on February 10, with no fanfare or celebration and none was planned because "to the loyal Clifton citizen it is a thing of utility and a joy forever." Total cost of the bridge was \$27,079 plus \$4,000 for approach improvements. After constructing the new bridge, Midland Bridge Company began dismantling the old

bridge in preparation for moving it north of town. After the old bridge was removed, the sidewalks at the bridge approaches were completed. The old bridge was moved in April of 1918 at a cost of \$9,525.<sup>6</sup>

6. Alterations and additions: Historical references to repairs, alterations, and additions to the bridge are rare. One mention was found in the Copper Era in April of 1924 that the "Town of Clifton is repairing and re-planking the North Clifton Bridge this week." One can assume that such repairs took place on a fairly regular basis and that extraordinary repairs took place after flood events, but historical accounts of these changes are lacking.<sup>7</sup>

## B. Historical Context

Bridge historian Clayton B. Fraser attributes the construction of the Park Avenue Bridge to the need for a wider span because of heavy cross town traffic in Clifton. However, the immediate event which triggered decision to build the bridge is the flood of January 1916 which damaged the 1905 Park Avenue Bridge, which was relocated in 1918 and is known today as the Patterson Road Through Truss Wagon Bridge. The 1905 bridge replaced an earlier suspension bridge used for foot traffic only.<sup>8</sup>

On June 12, 1916, the Clifton Town Council appointed a committee of three members to meet with Arizona Copper Company President Norman Carmichael to discuss replacing two bridges over the San Francisco River: the North Clifton Bridge between East Clifton and the West side and the South Clifton Bridge connecting South Clifton with Hill's Addition. Within a month, the committee returned with a proposed improvement program for Clifton, including two bridges, a sewer system, and a town hall. During a meeting held the night of September 14, 1916, the Town Council voted to adopt an improvement plan which included two bridges. Council members directed Town Engineer A.J. Kerr to begin work on drafting the plans. On December 11, 1916, Council members set January 15, 1917 as the date of a \$160,000 bond election for the improvement program in the wake of the flood damage. Included in the plan were the two bridges, river walls, and road and highway improvements.<sup>9</sup>

On January 15, 1917, 173 of the 300 taxpayers in the Town of Clifton turned out to vote on the bond proposal. It carried by a vote of 158 in favor and fifteen against. In February, the Town Council approved Engineer Kerr's plans for the two bridges and set March 15 as the date when bids would be opened for the bond sale. On March 15, the Council ordered the bonds sold to the First National Bank of Clifton, the highest bidder. At the next meeting of the Council, members authorized advertising for construction bids for the bridges to be due on May 4, 1917.<sup>10</sup>

While waiting for the bids to come in, the Town Council continued consultation with the Arizona Copper Company over the bridge project. The Council opened the seven bids received on May 4, 1917 and submitted them to Town Engineer Kerr for evaluation and report. On May 7, Kerr recommended that the Council award the job for the "East Side" bridge to Midland Bridge Co. of Kansas City and that the bids for the Hill's Addition bridge be rejected because they were too high. The Council concurred in the recommendation and awarded the contract to Midland for the figure of \$25,839 plus \$1240 for approaches and sidewalks. Midland officials reported they would begin work in July and estimated it would take nine months to complete the job.<sup>11</sup>

Problems with the approach to the new bridge and moving the old bridge delayed the start of construction. In May of 1917, after a stormy session of the Council, members authorized the

purchase of the O.A. Risdon photography studio to move it out of the way of the bridge approach. This was an additional \$3800 expense. In July, the Council advertised for bids to move the old bridge one and one-half miles north of its location in town. This job was awarded to Midland. Construction then started in October of 1917 and was complete by February of 1918. The bridge opened to traffic on February 10.<sup>12</sup>

After the bridge itself was completed, Town Engineer Kerr was authorized to complete the work on the approaches by force account using hired labor. This final bit of work was completed in April. On May 6, 1918, the Town Council authorized the final payment to Midland on the North Clifton Bridge.<sup>13</sup>

## **PART II. DESCRIPTIVE INFORMATION**

The Park Avenue Bridge is a Parker (also known as Camel-Back) truss bridge which spans the San Francisco River, connecting Park Avenue on the east side of the river with Coronado Boulevard (Arizona Highway 666) on the west.

The Park Avenue Bridge is quite typical of the Parker truss type. The main characteristics of this truss type are a more-or-less horizontal bottom chord and a top chord which varies in depth to be deeper in the center of the span than at the supports. This form evolved to take advantage of the economies of modulating the depth of the truss with the moment forces being resisted. Steel Parker truss bridges are considered to be most economical in the span range of 180 to 360 feet. The Park Avenue Bridge is approximately 200 feet in length. It consists of two trusses which support a road bed between them and pedestrian walkways cantilevered from each side. Concrete abutments provide support at each end.

Each truss is composed of ten truss panels (see side elevation, AZ-179-3, and accompanying sketch). The end panels are triangular. Each of the interior panels is trapezoidal, with diagonal tension members. The four center panels are also provided with diagonal counters. Top chord members and batter posts are built up from back-to-back channels with rivetted lacing on the bottom and a solid cover plate on the top. The bottom chord at the first two truss panels at each end of the span are built-up from channels, lacing, and top plate as well. The remaining six interior truss panels have two pairs of eye bars each for the bottom chord. Compression web members are built up from back-to-back channels connected on each side by rivetted lacing. Diagonal web members are paired eye bars.

Truss connections follow typical practice. Each top chord member is reinforced with rivetted pin plates at the connection point. Each compression web member has solid stay plates rivetted to the end. The top chord, compression web member, and eye bars are connected with a pin and nut. Typical connections are shown in photographs AZ-179-10 and AZ-179-11. Bottom chord connections are similar.

The two primary trusses are connected at the bottom by the floor deck and at the top by angle bracing. The road bed (as viewed in photograph AZ-179-17) is supported by transverse floor beams which connect to the truss panel points. A secondary structure of longitudinal stringers spans between the floor beams. A wood timber deck completes the floor deck structure, topped by asphaltic concrete. Each deck panel is braced with steel rod X-bracing. The top chords of the trusses are connected at the panel points by built-up members of two pairs of back-to-back angles

with rivetted lacing between them. Steel angle X-braces in the plane of the vertical web members provide lateral stability to the paired trusses. Steel rod X-bracing in the horizontal plane of the top chords provides additional rigidity. Top chord bracing is seen in photographs AZ-179-12 and AZ-179-13.

Walkways are formed as an extension of the roadbed, and are achieved through a system of cantilevers from each panel point (see photograph AZ-179-18). The system of longitudinal stringers continues out to be supported on the cantilevers. The floor deck and walking surface is steel plates. Railings are built up from angles and lacing (see photograph AZ-179-14). Expanded metal netting fills the railing area.

Concrete abutments support the bridge bearing at each end. The western bearing, shown in photographs AZ-179-15 and AZ-179-16, is fixed. Although the eastern bearing was inaccessible and could not be inspected nor photographed, it is assumed to be an expansion bearing.

Ramped approaches at the east and west ends of the bridge are dissimilar. The western approach is built up with a concrete retaining wall (photograph AZ-179-8). This approach has a railing on its southern side built from a series of monolithic concrete posts connected by pipe rails. Many of these posts (photograph AZ-179-9) have been removed. The eastern approach has curved retaining walls built of local sandstone rubble (photographs AZ-179-6, AZ-179-7). Steel pipe rails protect pedestrians from the drop.

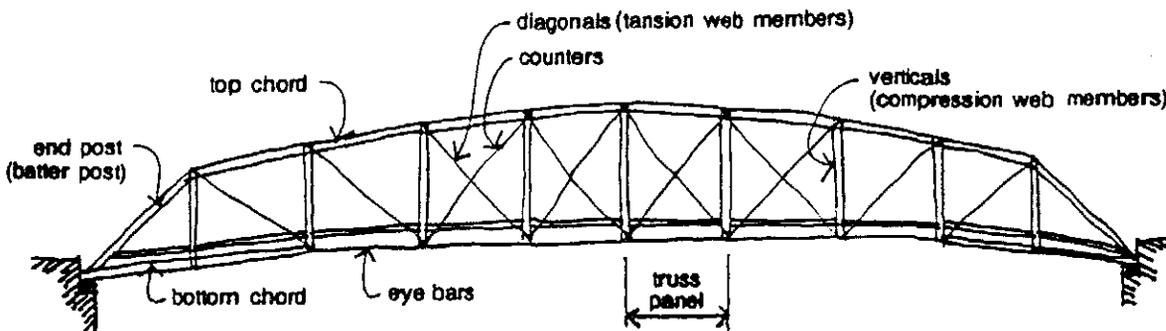
### PART III. SOURCES OF INFORMATION: ENDNOTES

1. HABS/HAER Inventory form for Park Avenue Bridge, prepared by Clayton B. Freser, April 1, 1987, on file at Arizona SHPO.
2. Copper Era February 22, 1918 (I, 1: 6).
3. Minutes of the Clifton Town Council June 12, 1916; Copper Era February 22, 1918 (I, 1: 6).
4. HABS/HAER Inventory form for Park Avenue Bridge, prepared by Clayton B. Freser, April 1, 1987, on file at Arizona SHPO; Copper Era April 19, 1918 (I, 1: 1); Hoye's 1900 Directory of Kansas City; letter from Michael S. Weichman, Senior Archaeologist of the State of Missouri Department of Natural Resources Historic Preservation Program, April 25, 1994.
5. Clifton Town Manager Merck Fooks allowed access to the remaining Town records but no copies of the original drawings were found. Greenlee County Engineer and Public Works Director Philip A. Ronnerud checked County files but could not find any drawings of the bridge. The Arizona Department of Transportation has a poor-quality set of "as-built" drawings prepared after the 1983 flood.
6. Minutes of the Clifton Town Council May 7, 1917; Copper Era May 11, 1917 (I, 1: 5); November 23, 1917 (I, 1: 2); February 22, 1918 (I, 1: 6); March 29, 1918 (I, 5: 2); April 19, 1918 (I, 1: 1).
7. Copper Era April 4, 1924 (I, 1: 3).
8. HABS/HAER Inventory form for Park Avenue Bridge, prepared by Clayton B. Freser, April 1, 1987, on file at Arizona SHPO; Peterson Road Through Truss Wagon Bridge National Register of Historic Places nomination form, prepared by Texas Tech University, February 12, 1981, on file at Arizona SHPO.

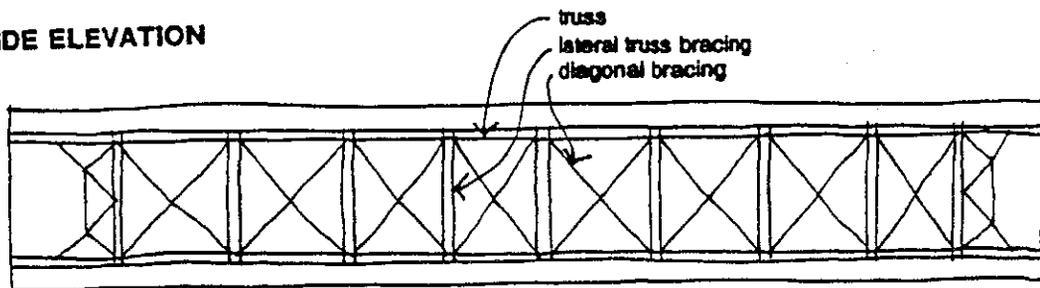
9. Minutes of the Clifton Town Council June 12, 1916; September 14, 1916; December 11, 1916; Copper Era July 7, 1916 (l, 1: 6); September 15, 1916 (l, 1: 6); December 15, 1916 (l, 1: 6) and (l, 7: 4-5).
10. Minutes of the Town Council of Clifton January 29, 1917; March 15, 1917; March 21, 1917; Copper Era January 19, 1917 (l, 1: 3); February 9, 1917 (l, 1: 3); March 16, 1917 (l, 1: 5).
11. Minutes of the Town Council of Clifton April 2, 1917; May 4, 1917; May 7, 1917; Copper Era May 11, 1917 (l, 1: 5). The rejected bid for the Hill's Addition Bridge was \$37,678; after the bids were re-advertised, the Council awarded the contract to Midland for a cost of \$42,000. See Minutes of the Town Council of Clifton June 27, 1917.
12. Copper Era May 11, 1917 (l, 4: 3); July 27, 1917 (l, 5: 2); November 23, 1917 (l, 1: 2); February 22, 1918 (l, 1: 6).
13. Minutes of the Town Council of Clifton April 1, 1918; May 6, 1918; Copper Era March 29, 1918 (l, 5: 2). The concrete bridge to Hill's Addition opened in September at a final cost of \$48,000. See the Copper Era September 13, 1918 (l, 1: 5-6).

#### PART IV. PROJECT INFORMATION

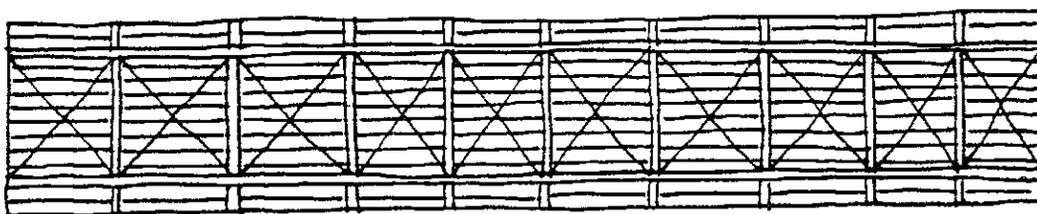
See HABS No. AZ-165 documentation.



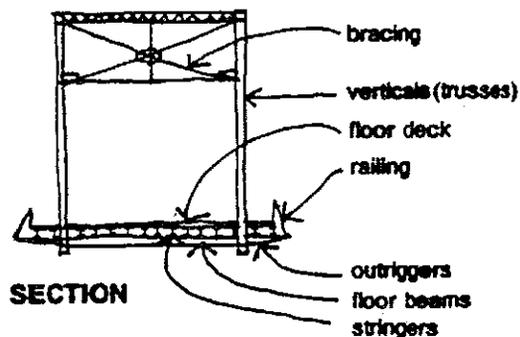
**SIDE ELEVATION**



**TOP VIEW**



**BOTTOM VIEW**



**SECTION**