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IOWA  
3-POST.V, 1-

RED BRIDGE  
(Yellow River Bridge)  
Iowa Bridges Recording Project  
Spanning over the Yellow River on abandoned  
county road, 7.3 miles N.E. of Postville  
Postville Vicinity  
Allamakee County  
Iowa

HAER No. IA-76

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WRITTEN HISTORICAL & DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD  
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P.O. Box 37127  
Washington, D.C. 20013-7127

HISTORIC AMERICAN ENGINEERING RECORD

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RED BRIDGE  
(Yellow River Bridge)

HAER No. IA-76

**Location:** Spanning the Yellow River on a county road, 7.3 miles northeast of Postville; Franklin Township, Allamakee County, Iowa.  
UTM: 15.4776320.628160  
USGS: Section 15, Township 96 North, Range 5 West

**Date of Construction:** 1920

**Designers:** Harry Orr, Allamakee County Engineer

**Builders:** Ainsworth L. Powell

**Fabricators:** Worden-Allen Company, Milwaukee, Wisconsin; Ryerson Co.; City Lumber

**Present Owner:** Allamakee County

**Present Use:** Abandoned

**Significance:** The Red Bridge is a 98' combination wood and iron Pratt through truss, the remaining example in Iowa of an uncovered timber truss, with only a few remaining in other parts of the United States.

**Historians:** Richard Vidutis, James Hippen

**Project information:** This document was prepared as part of the Iowa Historic Bridges Recording Project performed during the summer of 1996 by the Historic American Engineering Record (HAER). The project was sponsored by the Iowa Department of Transportation (IDOT). Preliminary research on this bridge was performed by Clayton B. Fraser of Fraserdesign, Loveland, Colorado.

EVENTS SCHEDULE

1872 - The earliest map (drawn by John Ratcliffe) to show the Jesse Helfer Mill adjacent to the road crossing the Yellow River in the immediate area of the Red Bridge.

1916 - flood destroys previous bridge, also a Pratt truss timber-iron combination, and washes out part of eastbound portion of road ending at the Red School House.

1920 - Allamakee County designs and lets a new bridge similar in design to previous structure. Constructed by local contractor A.L. Powell within a few hundred feet west of the previous crossing. A new road built straight and northward.

1948 - the Red Bridge repaired with new timber replacements.

1974 - county structure inventory and appraisal of Red Bridge lists many structural and hardware problems needing repairs.

1980s - with wooden deck and stringers removed and approaches barricaded, the Red Bridge is abandoned.

## INTRODUCTION

The Red Bridge spans the Yellow River northeast of Postville, in Section 15 of Franklin Township, Allamakee County, Iowa. The structure replaced a previous bridge of identical design lost in the 1916 flood at a crossing originating with the Jesse Helfer mill of the 1870s. Designed by a county engineer, the 98' bridge was let to a series of private contractors in 1920 to be fabricated and erected for a cost of \$2304.74. The Red Bridge was repaired in 1948 and carried local traffic until its closure in the 1980s at which time the timber deck and stringers were removed and the approaches barricaded.

The uncovered composite wood-iron design of the Red Bridge was popular between the 1850s and 1890s, the formative years in Iowa counties. They could not afford the substantial iron and masonry bridges for their developing road systems and opted for wood construction sacrificing longevity for economy. Without the protection afforded covered bridges, exposed wooden bridges lasted for about twenty years before having to be repaired or replaced. Few counties continued to build wooden bridges after the turn of the century.

The Red Bridge features a timber-iron composite Pratt truss configuration, with timber compression members and forged iron tension members. The upper-chord timbers are bolted to the timber verticals using iron plates; the iron eyerod lower chords are pinned to the verticals. From these pins the floor beams are hung using U-bolts. Standing abandoned and in deteriorating condition, the Red Bridge is distinguished today as the last uncovered timber truss remaining in the State of Iowa. It is an important resource from what once was a large group of early timber roadway bridges. The history of the Red Bridge and the area of the crossing is directly connected with the history of the Yellow River and the water powered mills that the early settlers built along its banks.

### I. REGIONAL HISTORY

After the departure of the Winnebago Indians from the Upper Iowa River Valley in 1848 the first Europeans began to arrive in northeast Iowa to settle along the river valleys of Allamakee, Winneshiek, and Howard Counties. The earliest settlements in Allamakee County were in the valley of the Yellow River. On April 4, 1844, the Clayton County commissioners established the "Yellow River precinct" and in the following year the first election was held in a house on the Yellow River. During the 1850s the towns of Nezekaw, Ion, Buckland, Volney, Smithfield, and Manchester

were located and platted on the banks of the Yellow River.<sup>1</sup> Franklin Township, in Allamakee County, where the Red Bridge is located, was organized in December 1853 when its boundaries were established by the county court, with the east and west sides two miles further east than they are now. In 1854 the population was 321 and by 1910 it had grown to 825.<sup>2</sup>

The rivers of the region which attracted the settlers--the Upper Iowa, the Yellow, the Turkey, and its tributaries the Little Turkey and Volga--wind through deep ravines creating abundant water power to drive water wheels.<sup>3</sup> The largest river in the area is the Upper Iowa which originates just across the border in Minnesota and then empties into the Mississippi by New Albin in Allamakee County after draining an area of 1057 square miles. At the Mississippi the rivers form intricate networks of channels creating a region of lakes and bayous that occupy the broad plain of the Mississippi between Lansing and the Minnesota border.<sup>4</sup> The rugged terrain of the region meant that the good tillable land was limited already from the earliest days of settlement. By 1880 only thirteen mills had been built along the Upper Iowa in part because the descent of the river gradually loses its steep gradient below Decorah making the area less favorable for water milling.<sup>5</sup>

The continued search for good water power, lumber, and farm land, led settlers to areas south of the Upper Iowa into the valley of the Yellow River.<sup>6</sup> Known before the Declaration of Independence was signed, the Yellow River was first noted by Europeans when in the 1760s Jonathan Carver mentioned the river in his published travel memoirs showing the "Yallow River" on his map of 1778.<sup>7</sup> The origin of the Yellow River lies in Winneshiek County and although it is a small river, just 44 miles long with a basin of 235 square miles, the main branch extends westward to the very

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<sup>1</sup>William J. Petersen, Iowa: The Rivers of Her Valleys (Iowa City: The State Historical Society of Iowa, 1941), p. 62.

<sup>2</sup>Ellery M. Hancock, Past and Present of Allamakee County, Iowa. (Chicago: The S.J. Clarke Publishing Co., 1913), p. 327.

<sup>3</sup>Ibid., Petersen, p. 86.

<sup>4</sup>Ibid., p. 49.

<sup>5</sup>Ibid., p. 54.

<sup>6</sup>Ibid.

<sup>7</sup>Ibid., Petersen, pp. 56-57.

doorstep of Ossian where it is 1,271' above sea level. The Yellow River is one of the smaller streams of the area draining the southern parts of Allamakee and Winneshiek Counties.

The most distinctive characteristic of the river is its degree of incline of 27.6' per mile. Only three other streams have steeper runs in their flow to the Mississippi. The Yellow River, with its numerous minor streams, is noted by geologists as one of the best examples of what is called a "widely branching dendritic type" of waterway. Such waterways are usually formed in unglaciated or geologically old regions having a relatively broad basin, numerous and widely branching tributaries which are so uniformly distributed that their entire basins are effectively drained. There are eleven such streams in northeastern Iowa.<sup>8</sup>

As lands west of the Mississippi opened up for settlement in the 1850s, the prairies slowly changed to wheat fields, and the need for grist and saw mills increased with saw mills making good use of the virgin stands of oak, ash, maple, elm and walnut that grew along the rivers.<sup>9</sup> Water power was extensively developed for gristmills, flour mills, sawmills, and woolen mills along its banks and on the banks of tributary creeks.<sup>10</sup> The early years of settlement in the Yellow River Valley saw the building of mills along the swift running streams as early settlers soon realized that the narrow bed and swift descent of the Yellow River made it an ideal stream to harness water power. The very first water mill built in Iowa was on the Yellow River in 1831 by troops from Fort Crawford. It was a saw mill erected about three miles from the mouth of the river and named the Jeff Davis Mill, in honor for the young soldier who eventually became the President of the Confederate States of America.<sup>11</sup> There were seven mills on the Yellow River in Franklin Township, shown on a map of 1859, and by the 1860s and 70s "the valley of the Yellow River was one of the liveliest industrial centers west of the Mississippi. Towns were built and many more plotted on paper. By 1875 the Yellow River had at least a dozen mills along its banks<sup>12</sup> including the Jesse

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<sup>8</sup>Ibid., p. 60.

<sup>9</sup>Kenneth Green, "Ghosts Along the Yellow River Valley," in Allamakee County, Iowa History (Dallas: Taylor Publishing Co., 1989), p. 34.

<sup>10</sup>Ibid., Petersen, p. 88.

<sup>11</sup>Ibid., Petersen, pp. 60-61.

<sup>12</sup>Jacob A. Swisher, Iowa: Land of Many Mills (Iowa City: The State Historical Society of Iowa, 1940), p. 88.

Helper Mill at the crossing where the Red Bridge stands today. With the fast proliferation of water mills along its waterways, the whole northeast corner of the state became known as the "Switzerland of Iowa."

Optimism ran so high for the region to become a major economic thoroughfare that on October 10, 1856, the Mississippi and South Pass Railroad Company was incorporated for the purpose of building a railroad along the Yellow River Valley starting at the Mississippi through the Territories of Minnesota, Nebraska to South Pass in western Wyoming over one thousand miles away. But the grand plans never panned out mainly because of the difficult terrain. As the country expanded westward, settlers looked to western Iowa and beyond. Many of the early towns along the Yellow River Valley, built in the 1850s, including the mills which supported the towns, eventually disappeared. By 1879 milling had reached its peak with between 25 to 30 mills along the 45 mile stretch of the Yellow River and its tributaries. And by the 1880s a decline in milling developed due to a combination of higher local land prices, the introduction of more profitable crops other than wheat, problems with insects such as chinch bugs and grasshoppers, and improved transportation--all of which conspired to force wheat lands to move farther west. With the days of large wheat crops coming to an end, the need for mills eventually vanished. Another factor which added to the decline of milling in Allamakee County was the disastrous floods of 1880. Great rains continued for almost one month from May to June in the upper Mississippi Valley creating floods which swept away crops, dams, bridges and mills.<sup>13</sup> Today the entire population of the four southern townships of Allamakee County is less than the town of Waukon, the largest town in the area<sup>14</sup> and the Yellow River has come to be known as the "River of Lost Mills."<sup>15</sup>

Construction of the early mills required a dam to be built usually of logs and piling some distance from the mill so as to force the water along a separate stream called a "millrace" which concentrated the flowing water and directed it onto the water wheel. After the water along the race turns the wheel it continues along a "tailrace" back into the river.

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<sup>13</sup>Ibid., Green, p. 34.

<sup>14</sup>Ibid., Petersen, p. 62.

<sup>15</sup>Ibid., p. 89.

## II. HISTORY OF THE BRIDGE

Located in rural Franklin Township, Allamakee County, Iowa, the Red Bridge spans the Yellow River, 7.3 miles northeast of Postville and stands at the southern end of an easement road coming off of the Smithfield Road and traversing the farmland of Harva and Vernalene Oelberg<sup>16</sup>.

The area of the crossing where the Red Bridge stands over the Yellow River most likely is a vestige of the era when Iowa was being settled from the 1850s to the 1880s and its prairie sod turned and wooded areas cleared to make way for farmland. Many small local mills were erected at that time to provide flour and cut lumber. The Jesse Helfer Mill was one such mill from that early era of settlement.

The Red Bridge is the current crossing over the Yellow River. According to Mr. Oelberg, pilings from an earlier bridge<sup>17</sup> still exist within 200' and 300' on the southern bank of the river and to the east of the present bridge. The earliest map of Franklin Township (1872),<sup>18</sup> shows a mill adjacent to the crossing on land owned by Jesse Helfer. A search of Waukon land records does not identify when the road was first run through the forest towards the valley or who first owned the land at the site, but other records show that Mr. Helfer was actually a resident of Kansas. A mill, such as the Helfer Mill, would have required a road next to it for raw materials to be brought in and finished products taken out. Whether the Helfer Mill was a grist or saw mill is not known. Very likely it was both for as the forest in the area of the Yellow River Valley surrounding the Red Bridge was slowly cleared, the newly opened land would have been used to plant crops. Perhaps Mr. Helfer was an investor in the area's evolving

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<sup>16</sup>Mr. Harva Oelberg is the current owner of the land through which an easement leads to the abandoned Red Bridge. Interested in local history, Mr. Harva was a very helpful and enthusiastic informant who contributed useful details about the previous bridge and the old road which ran through his pastures. He provided an oral history of the Red Bridge as he knows it from his parents, from other members of the local community, and from his own knowledge of the bridge and the land. He was interviewed on June 1 and 2, 1996.

<sup>17</sup>According to Mr. Oelberg, the previous bridge was identical to the wood and iron combination bridge built in 1920.

<sup>18</sup>John G. Ratcliffe, Map of Allamakee County, Iowa (published by the author, 1872). See Appendix A, Fig. 3.



economy who wanted to profit from the extensive stands of timber and the developing wheat fields. An early map from 1875<sup>19</sup> shows the land surrounding the mill, and most of the valley in that area, as forested; in fact Franklin Township is depicted as the most heavily wooded township in Allamakee County with the possible exception of the rugged lands of Iowa Township in the northeast corner. Another map depicting wooded areas in Franklin Township is from 1913,<sup>20</sup> and shows the area with far fewer trees than in 1875. Trees were cleared from the valley and the land slowly transformed into the pasture and farmland found there today. It can be assumed that the Helfer Mill processed some of those local trees.

The map from 1872 also shows that Mr. Helfer had two other small parcels of land each within a mile of the mill: one parcel was on a road extending from Smithfield Road and north of the mill, and the other parcel northwest of the mill close to Smithfield Road; Smithfield Road is the main east-west thoroughfare to which all north-south roads in the area are connected. Without drawing conclusions, it is also interesting to note that in all three cases Mr. Helfer's land is next to owners with the surname of Clark. The 1872 map of Franklin Township shows Jesse Helfer had an ideal site in Franklin Township; the river provided ample power for the mill, and a series of roads offered easy access. The north-south road ran to Smithfield Road, an east-west connector, and to his other two parcels. These were located less than a mile from his mill and thick with groves of harvestable trees. Apparently, his economic activities in the region were short lived because the next map of Allamakee County from 1875,<sup>21</sup> and all following maps, no longer show Mr. Helfer as having land in Franklin Township.

According to Mr. Oelberg, the 1916 flood, which carried away the earlier Red Bridge, also rerouted the Yellow River slightly northward through what was the millrace of the Helfer Mill.<sup>22</sup> In doing so it also washed away a section of the old road which

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<sup>19</sup>Ibid., Andreas. See Appendix A, Fig. 4.

<sup>20</sup>Good Road Map of Allamakee County, Iowa (Des Moines, 1913). See Appendix A, Fig. 5.

<sup>21</sup>Ibid., Andreas. See Appendix A, Fig. 4.

<sup>22</sup>The flood also ended apparent plans at forming a settlement at the old Helfer Mill location. Mr. Harva said that his land deeds, which we did not have a chance to examine, show that back in the 1910s parcels of land around the original crossing were delineated and the area was to be developed into a settlement.

turned immediately eastward after crossing the river and roughly paralleled it. Once the old road crossed the river it followed section lines eastward and then sharply turned northward until it ended at School House No. 3 (referred to locally as the Red School House) on Smithfield Road. The old road maps of Allamakee County after 1917<sup>23</sup> no longer show the old road turning eastward on the north side of the river but depict a new straight road heading northeast skewed at the same 15 degree angle as the placement of the Red Bridge across the Yellow River. But why the bridge is skewed is not clear. Perhaps its placement was dictated by the angle at which the easement road approaches the river across Mr. Oelberg's land, or perhaps the angle of flow of the river may have changed through time as it did suddenly during the 1916 flood.

The crossing provided by the Red Bridge is part of the local infrastructure which, besides allowing access to the Helfer Mill (erected on the north bank of the river and just inside the valley), was maintained after the mill disappeared because it continued performing its other (perhaps primary) function, in that part of the valley, as the only level spot for a river crossing and the only opening between hills. The latitude for placing a level crossing along that portion of the river is about equal to the distance between where the two bridges were erected, about 200'-300'. The southeast bank consists of an unscalable densely wooded steep hill of sandstone (rising about 200' above the river) just under one-half mile long around which the river curves as it flows eastward. And the southwest shoreline starts to incline southwestward from the crossing area forming a southern tier of hills (also about 200' high) in that part of the Yellow River Valley. The nearest other river crossings are about 1 1/4 miles to the east at the old town of Smithfield and 1 mile to the northwest off of Smithfield Road.

The origin of name "Red Bridge" is unclear. Mr. Harva Oelberg, who was born and raised on the land next to the bridge crossing has never heard it referred to as the "Red Bridge." Yet the Bridge Record<sup>24</sup> at the Allamakee County Engineer's Office in Waukon lists it in 1921 as the Red Bridge. Other theories offered were that the bridge used to be painted red, or that it refers to the Red School House (school no. 3) on Smithfield Road at whose doorstep the old road from the Red Bridge used to end.

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<sup>23</sup>See Appendix A, Fig. 6.

<sup>24</sup>There are two books titled the "Allamakee County Bridge Record, No. 1" and both have entries on the Red Bridge. Located at the Allamakee County Engineer's Office, Waukon, Iowa.

According to the Allamakee County Bridge Record the Red Bridge (bridge no. 12<sup>25</sup>) was built and is owned by Allamakee County. The date of entry in the Bridge Record for the Red Bridge is January 15, 1921, meaning it most likely was constructed in 1920. The record lists Harry Orr as the County Engineer, Geo. Clarks, F. Thompson and O. Thompson as Supervisors, and John Kelly as the County Auditor. An estimated cost for fabrication and construction was placed at \$2,500. The actual contract price of the bridge was \$2,304.74. Of that total, \$330 went to the Worden Allen Co. for structural steel, \$63.14 to the Ryerson Co. for hardware, \$425 to City Lumber (which city is not specified), and \$1,386.60 for labor to Ainsworth L. Powell. According to other contracts entered in the Bridge Record, Mr. Powell lived in Postville during the time of construction.

The bridge was precious to people since it cut through hilly terrain and crossed a river; therefore, it allowed access to the interior of the valley, a means by which to cross the valley, and a connection to other east-west or north-south roads. These roads were important for social, political, and local economic reasons for they linked the area's farms and mills (such as the Helfer Mill) with banks in Waukon and other towns, and provided access the county seat in Waukon.

The Red Bridge is currently abandoned. The date the county decided to officially abandon it is not known. Yet it was still sufficiently strong enough to cross in the early 1980s. The "Iowa Structure Inventory and Appraisal"<sup>26</sup> sheet dated April 5, 1974, gives the bridge's overall dimensions and evaluates the condition of the Red Bridge (listed there as bridge no. PWA 219). The Appraisal sheet describes the Red Bridge as being skewed 15 degrees, 99.5' long, 132' long with approach spans, and 13.9' wide at the deck. It also enumerates structural and hardware problems and suggests what kinds of repairs should be made. The problems listed were conditions of fatigue cracks in the timber and metal, caissons cracked and splitting with the concrete starting to break up, cracked chord plates, missing pins, and rotting backwall and cap. Since these same conditions are still observable today, it is assumed that considering the cost of repairs and the underused status of the crossing, the county decided not to repair the bridge but to continue using it until it had to be abandoned.

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<sup>25</sup>The USGS map lists the Red Bridge as bridge number 792. USGS Map, Rossville Quadrangle, Allamakee County, Iowa, 7.5 minute series (topographic), 1971.

<sup>26</sup>Located at the Allamakee County Engineer's Office, Waukon, Iowa.

Another reason prompting the county to abandon the bridge was the condition of the deck. According to Harva Oelberg, wood from the deck occasionally would be carted off by persons unknown so that eventually the county decided to take the whole deck off the bridge to prevent accidents.

### III. DESIGN AND TECHNOLOGY OF THE RED BRIDGE

The Red Bridge is a combination (timber and iron) Pratt through truss. The trusses are slightly skewed, 15 degrees according to a 1974 inspection.<sup>27</sup> The reason for this skew construction has not been established, as the bridge is not in a difficult site and was the first structure built in this location. Perhaps an error in laying out the end piers was the cause.

The single-span bridge is nominally 100' in length, 16'-6" high, and 15' wide. Of its seven panels, the central five are 14' in length while the end panels are 15'. The upper chord and end posts are made of twin timbers, 6" by 12" each, spaced 1" apart. The vertical web members are single 6" by 12" timbers. The floor beams are paired 6" by 12" timbers, with chamfered ends. The remaining components, the tension members, are ferrous metal, wrought iron or steel. The bottom chord is formed by various combinations of looped rods and looped bars, ranging from two rods in the end panels to six bars in the center panel. The trusses are pin-connected, except at the hip joint. Top and bottom lateral systems are made of rods. The various detail parts, such as nuts, washers, bearing plates, etc. vary in quality of finish: some are factory products, others look like the work of a local blacksmith.

Currently the bridge is without deck and stringers. Both were fabricated of 3" by 12" timbers, and were largely intact in 1984. The bridge, however, had been closed by that year, and an attempt made to bring it down by cutting one hip vertical. Since then the deck and stringers were removed and some lower chord bars removed or loosened.<sup>28</sup>

The substructure of the bridge consists of four cylinder piers, two as built, filled with concrete, at one end, and the other two modified with additional concrete in lieu of the cylinder iron. Each pier is linked by an "I" beam which takes the place of the

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<sup>27</sup>Iowa (Dept. of Transportation) Structure Inventory and Appraisal, April and May 1974.

<sup>28</sup>The author (Jim Hippen) measured the bridge in 1980 and photographed it extensively in 1984.

end floor beam between the trusses. It is not discernible if the ends of the trusses are anchored to the tops of the piers.

The Red Bridge is important in that it represents a very common truss system, the Pratt, executed in a manner appropriate to a half-century earlier. For Iowa, not only the choice of the combination form, but many of the details of construction were anachronistic in 1920.

Before discussing these details, it is well to note the meaning of the word "combination" as applied to a specific type of bridge construction. In the years before the Civil War, when the development of Iowa's infrastructure was just getting underway, truss design was in constant flux and terminology was not fixed. George L. Vose, in 1857, wrote of "cast and wrought [iron] combination" bridges.<sup>29</sup> The word "combination" was likewise applied to bridges that combined the materials of wood and iron, such as the early Howe and Pratt designs of the 1840s, which were all wooden except for certain joint parts and the web tension members.<sup>30</sup> However, the word soon became limited to a specialized meaning: wood and iron bridges. More that, it signified a bridge where the compression members were made of wood and the tension members of wrought iron. By 1874 the Wrought Iron Bridge Company, although recommending all-iron structures, advertised a "combination truss bridge," in Post truss configuration, where the wood and iron were distributed as in the Red Bridge.<sup>31</sup> The King Iron Bridge & Manufacturing Co. likewise, in 1884, offered a "combination type truss bridge." A Pratt truss, this bridge was built with many of the details found in the Red Bridge.<sup>32</sup> By the first decade of the twentieth century, the definition was established.

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<sup>29</sup>Handbook of Railroad Construction. (Boston: Munroe, 1857), p. 195.

<sup>30</sup>Vose, Handbook, 147-155; Mansfield Merriman and Henry S. Jacoby, A Text-book on Roofs and Bridges, Part III, Bridge Design (New York: Wiley, 1911), pp. 8-10, 14-17.

<sup>31</sup>Designs of Wrought Iron Bridges (Canton, Ohio: W.I.B. Co., 1874).

<sup>32</sup>Catalogue (Cleveland, Ohio: King Iron Bridge & Manufacturing Co., 1884).

In a combination bridge the top chords and the intermediate posts are made of timber, while the tension members are made of iron or steel. Combination bridges are usually made of the Pratt type.<sup>33</sup>

Although now the only surviving combination bridge in Iowa (a lone Howe truss in Marion County has wooden lower chords, and is not a combination bridge in the strict sense), the Red Bridge represents the last of many such bridges built in the state. King, for instance, lists six in Iowa in their 1884 catalogue along with 55 iron bridges. Surviving photographic evidence shows combination bridges with heavy timber chords, as in the Red Bridge, in Boone, Humboldt, and Pottawattamie counties. Combination bridges with what appear to be laminated chords are documented in Tama and Woodbury counties. All of these were Pratt trusses.<sup>34</sup>

Combination bridges were still being constructed in the United States in the twentieth century, but this took place mainly in areas where timber was plentiful and transportation costs high. The designs of these twentieth-century bridges included sophisticated joint castings, which made them better but more expensive.<sup>35</sup> The Red Bridge was of a type not considered "standard" by the Iowa State Highway Commission, which had oversight of bridge contracts exceeding \$2,000.<sup>36</sup> The Allamakee County records do not indicate that the highway commission approved the project; perhaps the fact that the \$2,304.74 total cost was divided among four contractors made the bridge exempt from state control.<sup>37</sup>

The details of the Red Bridge indicate that it was a local design, based on precedents from the previous century. For

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<sup>33</sup>Milo S. Ketchum, The Design of Highway Bridges (New York: McGraw-Hill, 1912), p. 399.

<sup>34</sup>Postcards in author's (Jim Hippen) collection, ca. 1905-1915.

<sup>35</sup>Ibid., Ketchum, pp. 399-402.

<sup>36</sup>Iowa State Highway Commission, Report...1920, pp. 37-39; Iowa State Highway Commission, Bridge Standards, Book I, Obsolete (June 1972), sheets G4-G10.

<sup>37</sup>Allamakee County Bridge Record, Number One, Oelberg Bridge. This name for the bridge is based on the landowner, Mr. Oelberg; however, other sources call it the Red Bridge.

example, the joints at the lower chord panel points are almost identical to those shown in the 1884 King catalogue. Other joints, such as the hip and end posts, are similar. The looped bars used in the chords and web diagonals are not the upset eye bars one would expect in 1920. One pair of bars exhibit what appear to be forged welds. The sizes of the bars are irregular and the nuts and washers are not standardized. In sum, a lot of the iron work looks like salvaged material or hand fabrication. However, the county paid \$330 to the Worden-Allen Co. for "structural steel."<sup>38</sup> Worden-Allen, of Chicago, was affiliated with the Lackawanna Bridge Co. of Buffalo.<sup>39</sup> They may have supplied some second-hand material, or some of the iron work may have come from the earlier bridge in the area which was destroyed by the flood of 1916. "Hardware" was purchased from "Ryerson," which we may presume to be Joseph T. Ryerson & Son, of Chicago. They sold bolts, nuts, threaded rods, turnbuckles, and other such necessities for the bridge.<sup>40</sup> "City Lumber" provided the timbers, and A.L. Powell was the contractor.<sup>41</sup>

Although an antiquated design when built in 1920, the Red Bridge proved serviceable for 60 years. It is an authentic example of recreated nineteenth-century bridge technology, made possible by the continuity of techniques and probably by survivals of older bridges in the area.

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<sup>38</sup>Ibid.

<sup>39</sup>MacRae's Blue Book: America's Greatest Buying Guide 10 (1919), pp. 113, 682.

<sup>40</sup>Ibid., MacRae's Blue Book, pp.9-10, 1326; Ryerson's Ready Reference: A Complete Hank Book and Stock List of Steel and Iron (Chicago: Ryerson, 1913), pp. 508-525.

<sup>41</sup>Allamakee County Bridge Record, Number One.

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APPENDIX B

List of Illustrations

1. Profile sketch of the Red Bridge. James Hippen, 1996.
2. Map of the Yellow River Valley (and the location of the Jesse Helfer Mill and the Red Bridge). William J. Petersen, Iowa: The Rivers of Her Valleys. Iowa City: The State Historical Society of Iowa, 1941. P.59.
3. Ratcliffe, John G. Map of Allamakee County, Iowa. Published by the author, 1872.
4. Andreas, A.T. Illustrated Historical Atlas of the state of Iowa, 1875.
5. Good Road Map of Allamakee County, Iowa. Des Moines, Iowa, 1913.
6. Plat Book of Allamakee County, Iowa. Rockford, Illinois: W.W. Hixson and Co. No date. (Published between 1917 and 1941).
7. USGS Map. Rossville Quadrangle, Allamakee County, Iowa. 7.5 minute series (topographic), 1971.

# RED BRIDGE

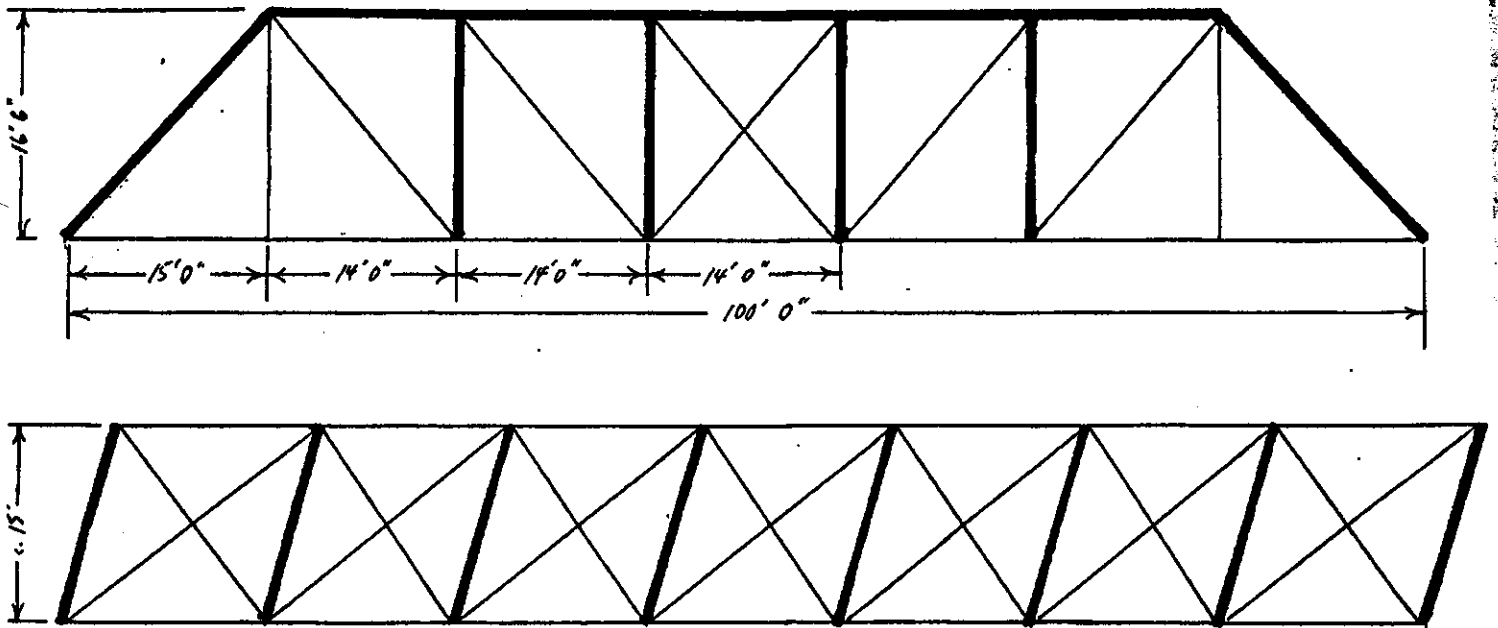


Fig.1 Profile sketch of the Red Bridge. James Hippen, 1996.

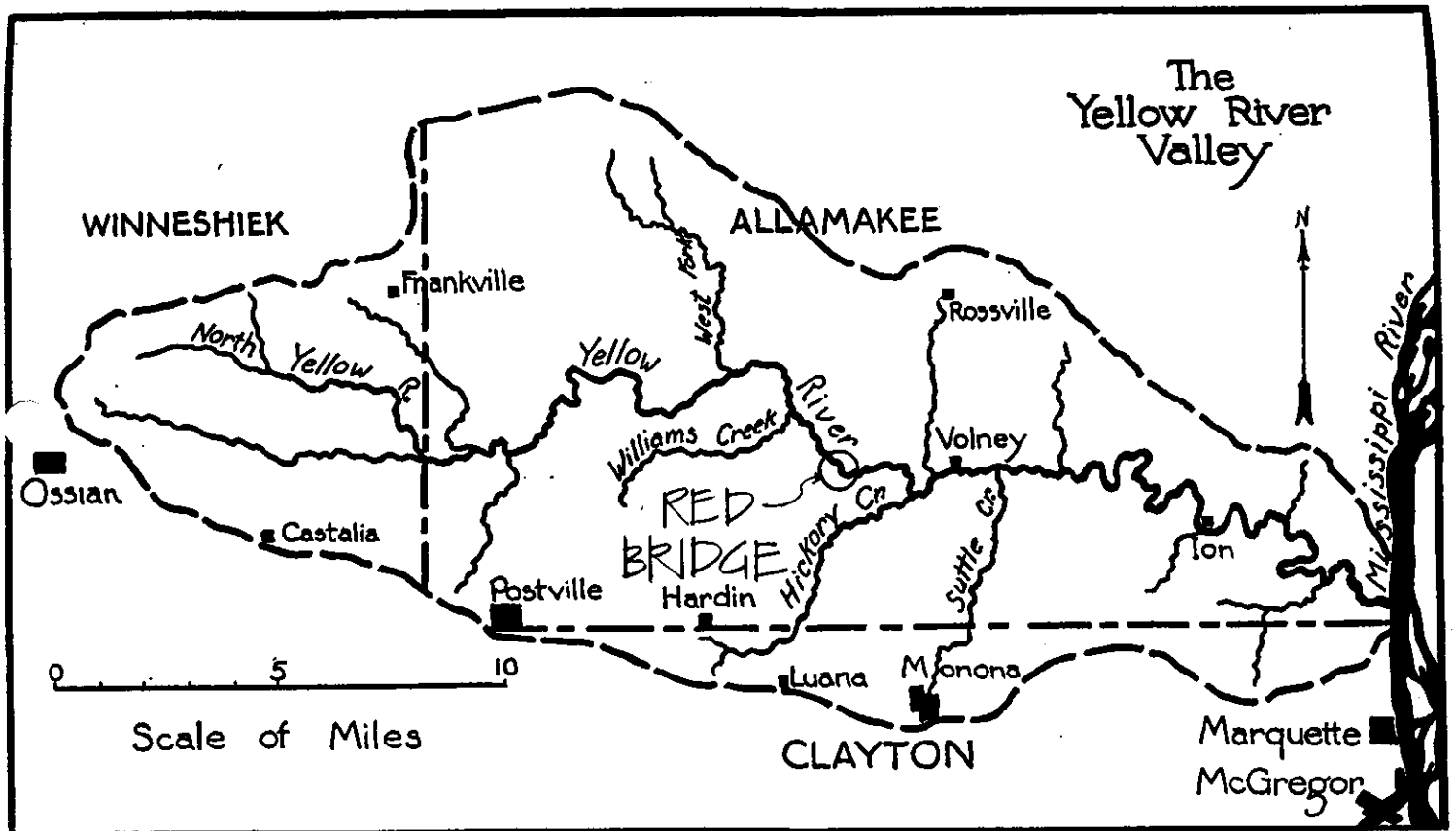


Fig.2 Map of Yellow River Valley and J. Helfer Mill/Red Bridge. William J. Petersen, Iowa: The Rivers of Her Valleys, p.59.

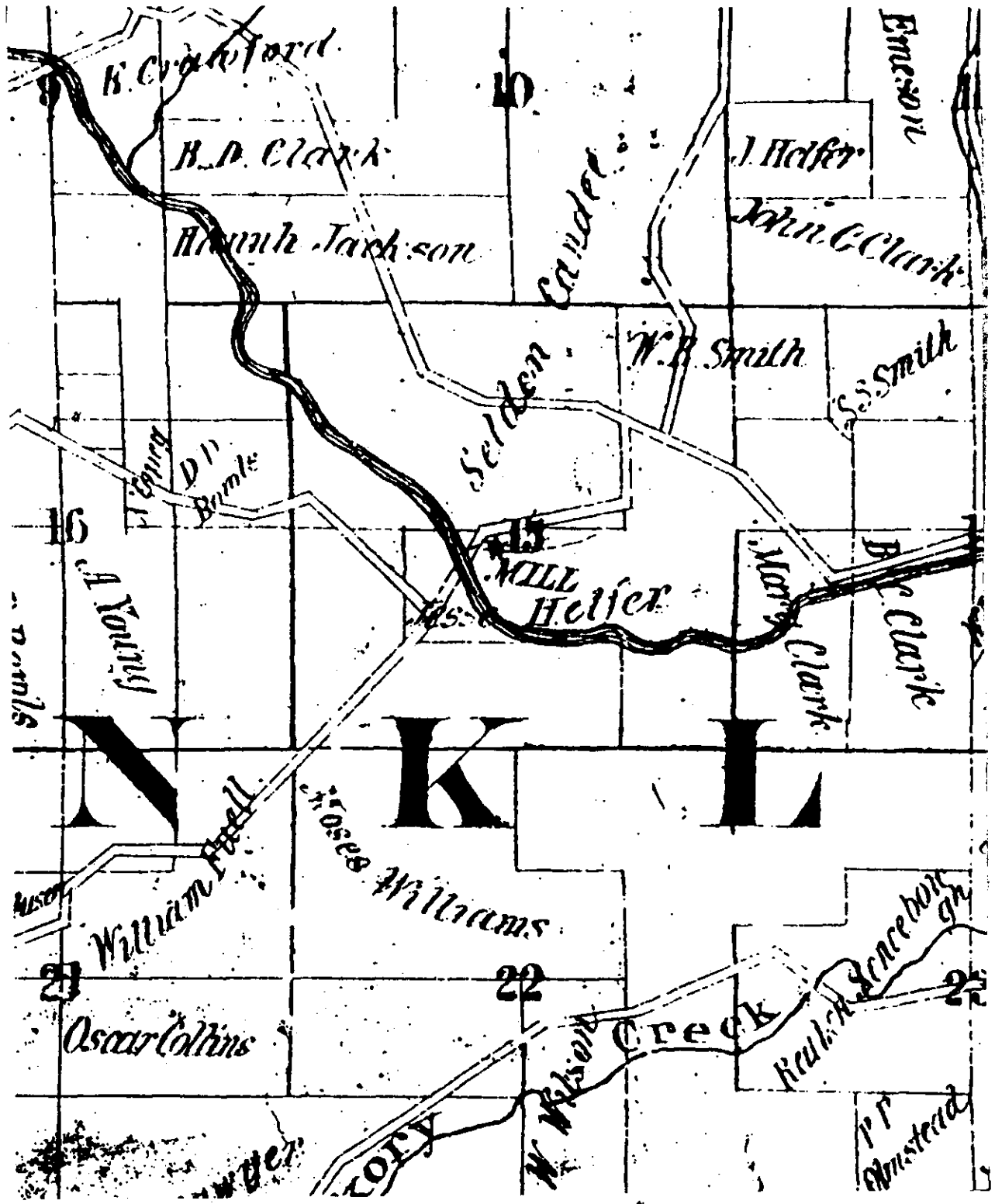


Fig. 3 Section 15, Franklin Township. Ratcliff, John G. Map of Allamakee County, Iowa. Published by the author, 1872.



Fig. 4 Section 15, Franklin Township. Andreas, A.T.  
Illustrated Historical Atlas of the State of Iowa,  
1875.

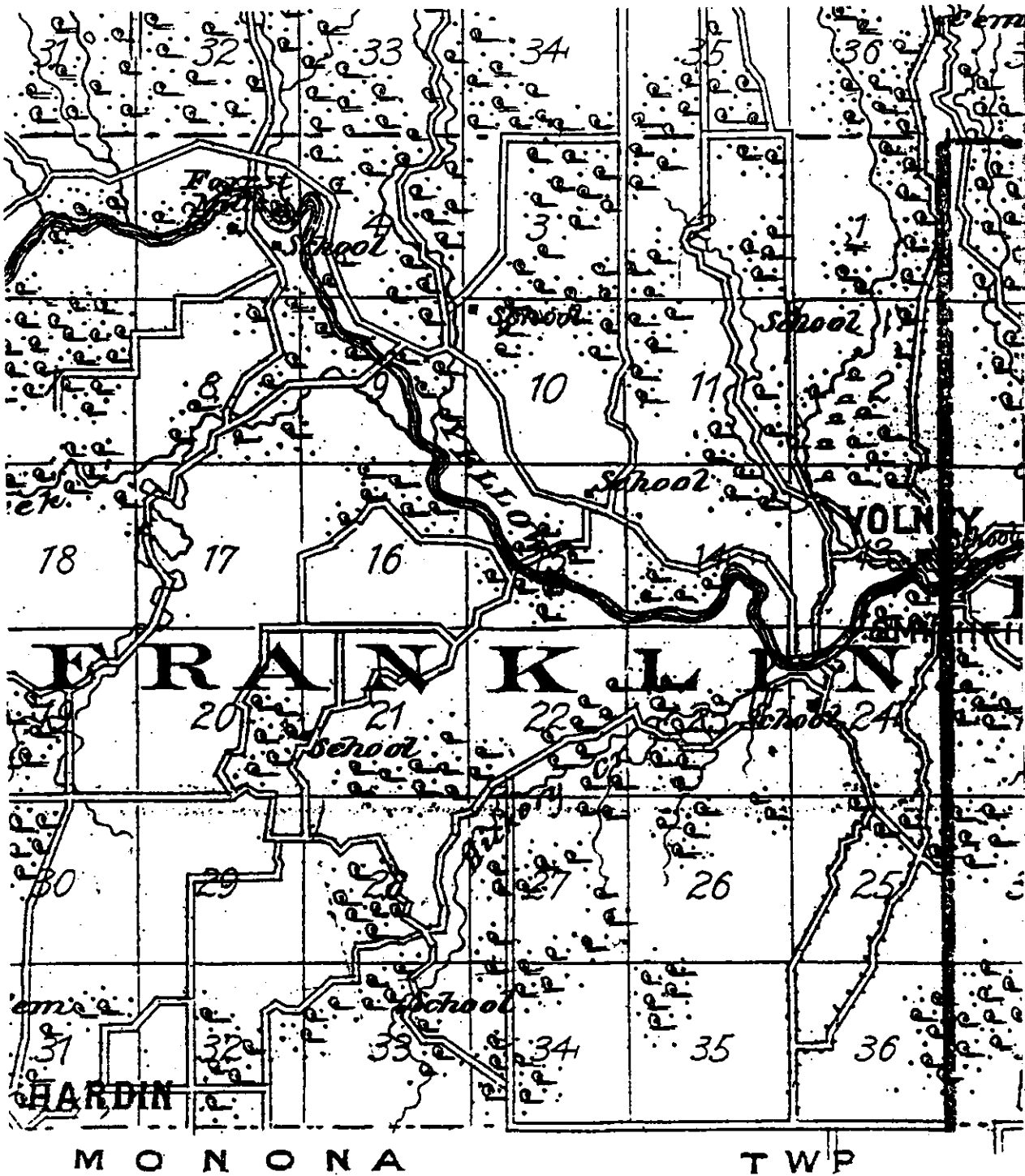


Fig.5 Section 15, Franklin Township. Good Road Map of Allamakee County, Iowa. Des Moines, Iowa, 1913.

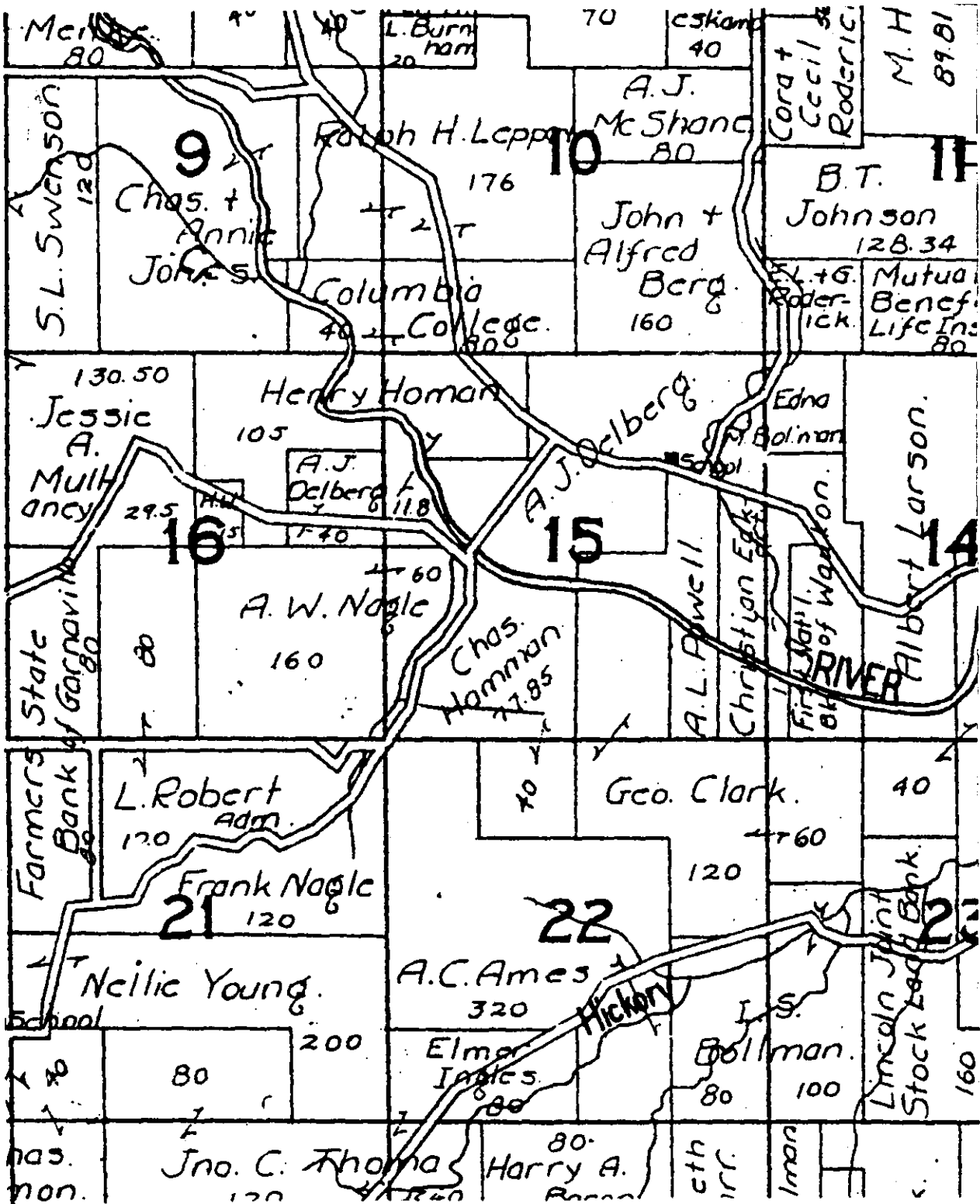


Fig. 6

Section 15, Franklin Township. Plat Book of Allamakee County, Iowa. Rockford, Illinois: W.W. Hixson and Co. No date. (Published between 1917 and 1941).



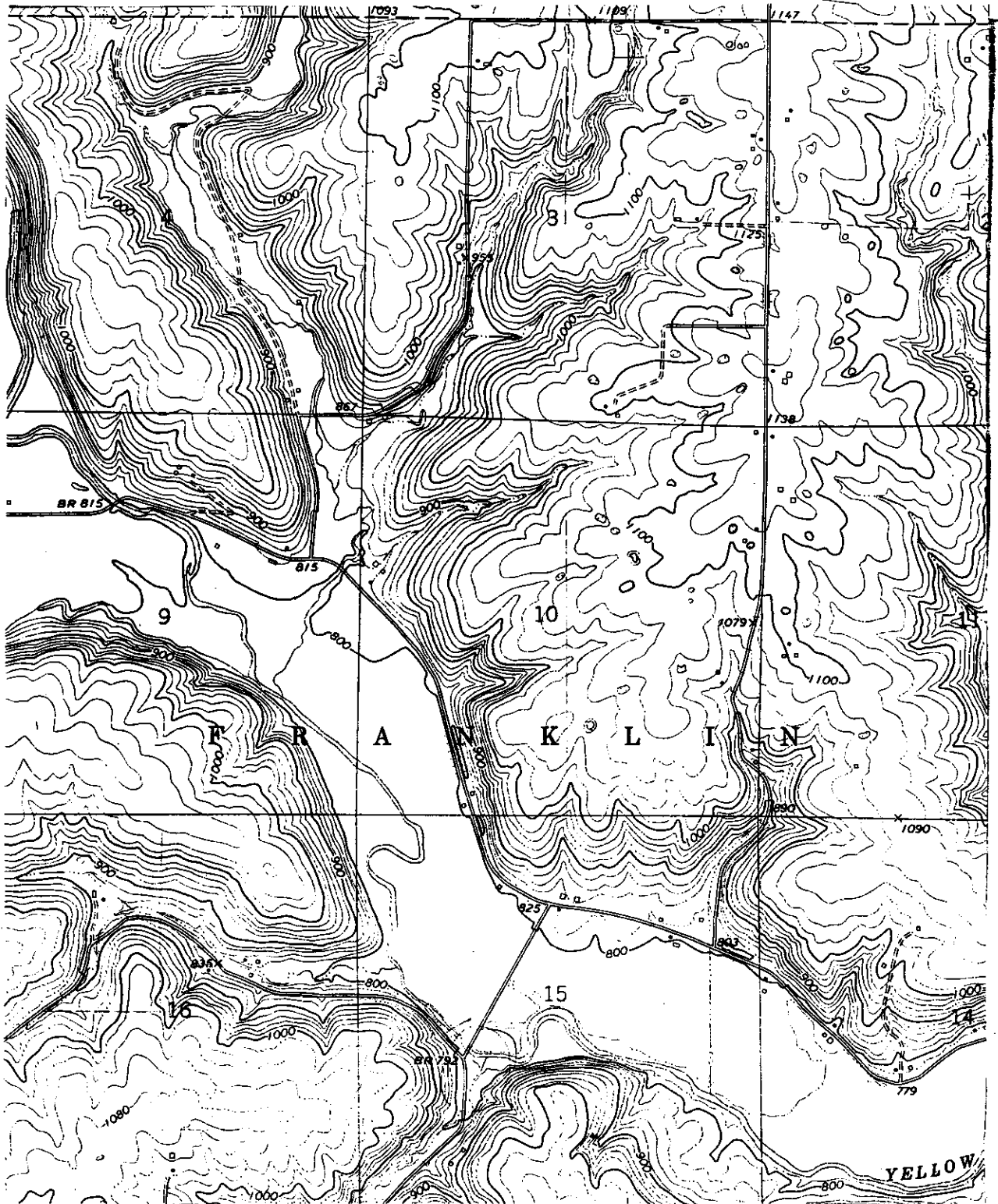


Fig.7 USGS Map. Rossville Quadrangle, Allamakee County, Iowa.  
7.5 minute series (topographic), 1971

APPENDIX A

Research Statement

Research Limitations

All possible sources for design prints, historic photos, and design-fabrication-construction data for the Red Bridge were searched: the Allamakee County Engineer's Office, land records at the Waukon Court House, the Allamakee County Historical Society, Waukon Public Library, Allamakee County history books, and contacts were made with local historians. In spite of the efforts, no documented information was uncovered with the exception of the *Bridge Record* held at the County Engineer's Office in Waukon. That source contained the basic facts of when the Red Bridge was built, what companies were involved in fabricating and constructing it, and how much it cost. A.L. Powell's (the builder of the Red Bridge) grandson, was contacted with questions regarding the existence of his grandfather's business files and possible old photos. Unfortunately, no such documentation is believed to exist any longer among the Powell descendants.

Future Directions for Researching the Red Bridge

Land records at the Waukon City Hall listed the residency of Jesse Helfer as Kansas. A more detailed study of land records may clarify which city in Kansas Mr. Helfer comes from. Records in that city may clarify Mr. Helfer relationship with the crossing and with other landowners in Franklin Township such as the Clarks.

There may be more information available among the elderly population of the Yellow River Valley including old photographs. The Waukon Historical Society was not sure what they had in their collection because it was said to be unorganized or unindexed as of this writing. They may have photographic materials as yet unidentified.

ADDENDUM TO  
RED BRIDGE

(Yellow River Bridge)

Iowa Historic Bridges Recording Project II

Spanning Yellow River at abandoned County Road

Postville vic.

Allamakee County

Iowa

HAER No. IA-76

HAER  
IOWA  
3-POST.V,  
1-

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD

National Park Service

1849 C Street, NW

Washington, DC 20240

ADDENDUM TO  
RED BRIDGE  
HAER No. IA-76  
(Page 26)

HISTORIC AMERICAN ENGINEERING RECORD

RED BRIDGE  
(Yellow River Bridge)

HAER  
IOWA  
3-POST. V,  
1-

This appendix is an addendum to a 25-page report previously transmitted to the Library of Congress.

**APPENDIX: ADDITIONAL REFERENCES**

Interested readers may consult the Historical Overview of Iowa Bridges, HAER No. IA-88: "This historical overview of bridges in Iowa was prepared as part of Iowa Historic Bridges Recording Project - I and II, conducted during the summers of 1995 and 1996 by the Historic American Engineering Record (HAER). The purpose of the overview was to provide a unified historical context for the bridges involved in the recording projects."