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WAPSIPINICON RIVER BRIDGE
Iowa Bridges Recording Project
Spanning the Wapsipincon River,
on Previous State Highway 151
Anamosa
Jones County
Iowa

HAER No. IA-82

BLACK & WHITE PHOTOGRAPHS

XEROGRAPHIC COPIES OF COLOR TRANSPARENCIES

WRITTEN HISTORICAL & DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Department of the Interior
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Washington, D.C. 20013-7127

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HISTORIC AMERICAN ENGINEERING RECORD

WAPSIPINICON RIVER BRIDGE

HAER No. IA-82

Location:	Spanning the Wapsipinicon River on southwest edge of Anamosa, Jones County, Iowa. UTM: 15.641260.4602220 USGS: Section 14, Township 84 North, Range 4 West
Date of Construction:	1887
Designers:	Unknown
Builders:	Unknown
Fabricators:	Milwaukee Bridge and Iron Company; James Milne
Present Use:	An off-road walking bridge.
Significance:	Unaltered example of a metal Pratt through truss, unusual lattice vertical posts which may be unique to the Milwaukee Bridge and Iron Co.
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).

EVENTS SCHEDULE

1839 - Calvin Reed is contracted and paid $2,900 by Unites States Government to build a wooden bridge across the Wapsipinicon River at Anamosa located between the present Riverside Cemetery and the flat on the other side of river at the bend on the old Military Road from Dubuque to Iowa City.

1841 - swollen spring river washes the bridge downstream.

1845 - Mr. Huggins of Galena, Illinois takes contract to build second wooden bridge and sublets contract to George Walworth for $1,000.

1853 - wooden bridge is taken down because of decayed condition and new third wooden bridge erected in its place.

1861 - Jones County Board of Supervisors is formed to take over work previously done by county judge.

June 1862 - Jones County Board of Supervisors is petitioned about deteriorated condition of third wooden bridge. Bridge committee condemns bridge and gives H.C. Metcalf license to operate ferry service across Wapsi.

January 2, 1863 - H.L. Palmer is given contract for $1,350 to construct last bridge of wooden materials; other source puts price at $2,500.

February 6, 1873 - fourth wooden bridge pronounced unsafe and torn down.

April 10, 1873 - first iron bridge completed by Iron Bridge Company, Cleveland, Ohio for $5,544. Board of supervisors does not approve the new bridge because major problems.

September 1873 - "head man" from Iron Bridge Co. arrived in Anamosa to oversee corrections; bridge finally accepted by board.

April 1887 - repaired iron bridge collapses with portion of drove of cattle.

May 1887 - more than a dozen bridge companies arrive for bridge letting. Shiffler Bridge Works Co., Pittsburgh, awarded $5,250 contract for a 170′ long, 16′ wide iron truss bridge. Milne and Son, Scotch Grove, were contracted to build abutments.

June 1887 - board discovers overlooked bid for $3,000 submitted by letter from the Milwaukee Bridge and Iron Works Co.

July 1887 - board dissolves contract with Shiffler Bridge Co. in favor of one with Milwaukee Bridge.

November 1887 - bridge at Anamosa completed and accepted by the board for a total cost of $8,225.25: superstructure for $3,000; abutments for $5,060; and filling for $165.

1920 to 1929 - congested motor travel across the bridge is difficult because of its narrow width.

1929 - new bridge built 200 yards to the west of the iron bridge in conjunction with U.S. Highway 161 project.

1955 - the Anamosa iron bridge is finally closed to vehicular traffic.

1975 - funds raised to restore the bridge for the nation's bicentennial.

INTRODUCTION

The Wapsipinicon Bridge at Anamosa is an unaltered iron Pratt through truss. It was built in 1887, 47 years after the first bridge was built in Anamosa. The Anamosa iron Pratt truss was the fifth bridge to be built in the same location providing a southern access to Anamosa, the county seat, and to the extensive array of mills immediately at the bridge's north approach.

I. REGIONAL HISTORY

The vast area of Iowa was included in the Louisiana Purchase, approved by Congress in 1803. In 1807, Iowa was included in the Territory of Illinois; in 1812, in the Territory of Missouri; in 1834, with the Black Hawk Purchase, all of the territory west of the Mississippi and north of the northern boundary of Missouri was made a part of the Territory of Michigan. In September, 1834, the Legislature of Michigan established two precincts, or counties, in Iowa. These counties were Dubuque and Des Moines. In 1836 the Territory of Wisconsin was organized and Iowa became part of that political division. Meeting in October 21, 1837, the Legislature of the Territory of Wisconsin subdivided Dubuque county into Dubuque, Clayton, Jackson, Benton, Clinton, Johnson, Scott, Delaware, Buchanan, Cedar, Fayette, Keokuk, Linn, Jones Counties. Jones County was organized November 12, 1838, during the first territorial legislature, after the separation of Iowa from Wisconsin.[1]

Fairview Township is situated in the western tier of townships in Jones County. After the original large tracts of timberland were mostly consumed, farmers started using coal. The land they settled consists of rich black loam especially well adapted to growing corn and small grain. The Wapsipinicon River enters at the northwest corner of the township, runs southeasterly, and enters Jackson Township near the center of the township line. Buffalo Creek enters a little west of the center and unites with the Wapsipinicon just west of the city of Anamosa. On these streams a large number of mills were erected with a substantial number being flouring mills. The whole township is well watered by these streams and their numerous tributaries.[2]

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[1]R.M. Corbit, History of Jones County, Iowa. Vol. 1. (Chicago: S.J. Clarke Publishing Co., 1910), pp. 26-7.

[2]History of Jones County, Iowa. (Chicago: Western Historical Co., 1879, p. 115.

Besides being the county seat since 1847, at the time the iron Pratt truss was built, Anamosa was a progressive business center, first settled in 1838.[3]

II. HISTORY OF THE WAPSIPINICON RIVER BRIDGE

Four wooden bridges preceded the iron Pratt through truss Wapsipinicon River Bridge at Anamosa. In 1839 Calvin Reed was contracted by the United States Government to build a wooden bridge across the Wapsipinicon River at Anamosa to be located between the present Riverside Cemetery and the flat on the other side of river at the bend. This first wooden bridge was on the Old Military Road from Dubuque to Iowa City and cost $2,900.[4] It lasted two winters, and in 1841 swollen spring rivers washed the bridge downstream. In 1845 Mr. Huggins of Galena, Illinois was contracted to build Anamosa's second wooden bridge but he sub-let the contract to George Walworth for $1,000. By 1853 the wooden bridge was taken down because of its decayed condition and a new third wooden bridge erected in its place.[5]

In 1861 the Jones County Board of Supervisors[6] was formed to take over work previously done by the county judge. It formed a bridge committee and in June 1862 the board was petitioned about the deteriorated condition of the third wooden bridge. The bridge committee condemned the bridge and gave H.C. Metcalf license to operate a ferry service across Wapsi until a new bridge was constructed. On January 2, 1863, H.L. Palmer was given a contract

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[3]Ibid., pp. 287-88, 300.

[4]Ibid., p. 349.

[5]Bertha Finn, "Bridges over Wapsie, A Story of "ups and downs," in Anamosa, 1838-1988, A Reminiscence. Edited by Bertha Finn, et al. (Monticello, Iowa: The Monticello Express, 1988), p.25. The information in this article on the Anamosa bridges was taken from newspaper articles in the Anamosa *Eureka*. Unfortunately, they are not referenced.

[6]With the formation of the Board of Supervisors, the issue of appropriations took on the custom whereby the Board made appropriations in part for the building of bridges, expecting the remainder to be raised by subscription: "an appropriation would be made with the understanding that the citizens most interested in the bridge would subscribe and pay $1 to every $2 expended by the county..." (History of Jones County, Iowa. Chicago: Western Historical Co., 1879, p. 349).

for $1,350 to construct what was to be Anamosa's last bridge made of wooden materials. Another source states that this bridge, built at Metcalf's and Graham's Mills, cost $2,500 with the county paying about one-half.[7] It lasted ten years before it too was condemned by the bridge committee on February 6, 1873, and torn down.[8]

On April 10, 1873, Anamosa's first iron bridge was completed by Iron Bridge Company, Cleveland, Ohio for $5,544. But the board of supervisors did not approve the new bridge because the arches were not true, the floors were sunken, its length was 2' shy of being completed, and the new bridge was higher than the old one causing approach problems. The board considered legal action. The Ohio company promised a new bridge but nothing was done until September when the "head man" from the Iron Bridge Co. arrived in Anamosa to oversee corrections; the bridge finally was accepted by the board.[9]

Anamosa's first iron bridge, with its defects corrected, lasted fourteen years when, on April 1887, it suddenly collapsed with a 22 head portion of a drove of cattle being led across it. The people of Anamosa once again took to crossing the river at the old ford, a few rods below the dam to the east of the bridge.[10]

Wasting no time, the board of supervisors advertised for bids on a new iron bridge. On May 1887 more than a dozen bridge companies arrived for the bridge letting. The Shiffler Bridge Works Co., Pittsburgh, was pronounced the lowest bidder and was awarded a $5,250 contract for a 170' long, 16' wide iron truss bridge. Milne and Son of Scotch Grove was contracted to build abutments at $5.25 per square yard. The abutments were to be 9' thick at the base and 6' at the top. They were to be 5' further apart than before and the wings were to be 24' long. But the whole process of planning and constructing the bridge took a curious turn of events when about a month later in June the board discovered a letter it had somehow overlooked from the Milwaukee Bridge and Iron Works Co. The letter turned out to be a bid of $3,000 submitted for the Anamosa bridge. The letter explained that the company usually did not personally appear at bridge lettings

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[7]Ibid., History of Jones County, Iowa, 1879, p. 349.

[8]Ibid., p. 26.

[9]Ibid., p. 26-7.

[10]Ibid., p. 27.

because the cost of country bridges could be easily ascertained at the firm's office. Impressed by Milwaukee Bridge and Iron's low price, the board dissolved the contract with Shiffler Bridge Co. in July after many meetings and discussions, and awarded the contract to Milwaukee Bridge and Iron Works Co. The work was to be completed by September 23 of the that year; the erection process was to take anywhere from 10 days to two weeks once the bridge parts arrived. But by September 29 the issue of the local paper, the Eureka, mentions unavoidable delays in shipping the new iron bridge. In October it was still delayed, and finally, in November 1887 the iron Pratt through truss bridge at Anamosa was pronounced completed and was accepted by the board for a total cost of $8,225.25: superstructure for $3,000; abutments for $5,060; and filling for $165.[11]

The period from 1920 to 1929 was marked by the increase in motor vehicle traffic in Anamosa. This made motor travel across the bridge a congested affair and dangerous because of the bridge's narrow width. There was talk of getting rid of the iron bridge and building another one 50' in the air in the vicinity of the Wapsi State Park. Nothing came of this plan until 1929 when a new bridge was built 200 yards to the west of the iron bridge by the cemetery in conjunction with the U.S. Highway 161 project. The old iron bridge continued being used because of its local popularity but, finally, in 1955 the Anamosa iron bridge was closed to vehicular traffic but remained open to pedestrians. In 1975 funds were raised to restore the bridge for the nation's bicentennial.[12]

The crossing at Anamosa across the Wapsipinicon River was always needed in order to maintain a local avenue of transit in an intrastate road system and allowed people in Anamosa a means by which to cross the river to the southern shore lands to the south in Jones County. Anamosa also was an important major center of milling which demanded access by road and bridge.

The region in which Anamosa is found is in the Wapsipinicon River basin. The swiftness of the river, and the nearby Buffalo, attracted early settlers who put the rivers to use running mills. The first dam and mill to be built at the spot of the Anamosa bridges were put up in 1840 by Calvin Reed and a Mr. Jenkins. The ownership of the mill changed hands in 1847 when Horace C. Metcalf, James Graham, and James Hudson bought the property; Mr.

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[11]Ibid., p. 27-8.

[12]Ibid., p. 28-9.

Metcalf was instrumental in the development of the city and maintained business interests in milling in Anamosa for quite a few years. They built a new dam at the Wapsi and a four-story mill in 1857. By 1870 Metcalf, who now had controlling interest in the milling property, sold the mill to Doan and Sons. But the very next year H. Metcalf returned to the Wapsi dam and constructed a new grist mill just below Doan's mill. At this time a road leading into the area was widened and opened to the public. By 1888 the mills at the Wapsi by Anamosa were drawing trade from as far away as Tipton and Mt. Vernon; the mills were running day and night and turned out 300 sacks of flour per day. Finally the mills were closed because of a combination of damage from weather, the decreased use of wheat by farmers, and the growth of power companies at the site who needed land.[13]

III. DESIGN AND TECHNOLOGY OF THE WAPSIPINICON RIVER BRIDGE

The Wapsipinicon bridge at Anamosa is a pin-connected Pratt through truss. Built in 1887, it represents the peak of design of iron wagon bridges. The span is 160′ and the height 27′-8".[14] Overall the bridge looks solid; there is no visible sag or twist. However, to get beyond what is, perhaps, too subjective an observation, one should look at the details. The plates and channels are both heavy enough sections and the rivet spacing is close enough so that little or no rust build-up between plates has occurred. The upper lateral struts and ties are carefully designed so that their axes intersect the centers of the panel joints. True eye bars are used in the lower chords and principal diagonals. The lacing of the web verticals is dense, that is it makes acute angles with itself, rather than the widely spaced obtuse angled lacing found on many iron bridges. This makes for a stronger post. Even details which were less than forward looking were done in a first class manner. The floor beams, for example, are hung beneath the lower chords, a system which was easier to erect in the field but contributed little to lateral stability.

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[13]Bertha Finn, "Early Mills, A reason for Anamosa to Grow," pp. 33-37; Joyce Merritt, "H.C. Metcalf, Lights up Anamosa," pp. 42-4, in Anamosa, 1838-1988, A Reminiscence. Edited by Bertha Finn, et al. (Monticello, Iowa: The Monticello Express, 1988).

[14]Estimates based on measurement of photographs. The bridge is not in Fraserdesign, Iowa Historic Bridge Inventory (1993), nor have any plans been found in the files of the Iowa Department of Transportation. The bridge has been closed to vehicular traffic since 1955. A steel girder highway bridge was built just to the west in 1928.

However, the beam hangers (inverted U-bolts) were made of square bar stock so that they had a proper bearing on the lower chord pin.

In addition to this excellence in construction, the bridge was designed with a fine eye to esthetics. The web verticals are oriented with their laced sides in line with the trusses. The upper lateral struts and the portal braces, one at the top and another about 10' down, are formed of laced girders. Progressing through the bridge, the user sees a frame of uniformly scaled iron lacing, combining lightness with a sense of solidity. And, in the tradition of the trade, some cast-iron ornament was added. Here again the choice was superb. A large closed urn surmounts the four corners of the bridge, above each hip joint. The company builder's plate, in a restrained classical style, proclaims "1887 MILWAUKEE BRIDGE & IRON WORKS." Connecting the urns and the plate along the top of the upper portal brace is a cresting or fence of fleur-de-lis pattern. The ornament is minimal and fits the structural style of the bridge to perfection.

The firm responsible for this line bridge did not build a great number of spans in Iowa.[15] Milwaukee Bridge and Iron Works was, however, one of the largest bridge building companies in Wisconsin.[16] Founded in 1872, they advertised as follows in 1887, the year Wapsipinicon bridge was built

> The above concern has a capacity for 200 men and their specialty is wrought iron, railroad and highway bridge-building; they give special attention to their work, and have built for all the large railway companies and nearly all the large cities of the northwest....It is a fact worthy of mention that the Milwaukee Bridge and Iron Works have reduced their business to such perfection

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[15]The Iowa Historic Bridge Inventory list only one surviving bridge built in 1893 by the "Milwaukee Bridge and Iron Company" in Lyon County (LYON08). The HAER inventory card equates the "Company" with the "Works." George H. Danko, in The Development of the Truss Bridge, 1820-1930, with a Focus Toward Wisconsin (Madison: State Historical Society of Wisconsin, 1976), pp. 65-66, lists the two firms separately. Victor C. Darnell, A Dictionary of American Bridge-Building Companies, 1840-1900 (Washington: Society for Industrial Archeology, 1984), p. 74, lists only Milwaukee Bridge and Iron Works.

[16]Ibid., Darnell, Directory, p. 80.

> through labor saving machinery that they are now producing iron bridges at nearly the cost of wood, and this taken together with the fact of the exceedingly low prices of iron render the iron bridge the most economical as it is the most durable of structures.[17]

Although apparently doing little business in Iowa, the company prospered and was combined with 23 others in 1900 into the American Bridge Company.[18]

The masonry abutments of the bridge are of a quality equal to the iron work. The stone is rock-faced coursed ashlar, undoubtedly from the local quarries in Stone City of Anamosa.[19] The contractor's stone plaque reads "JAMES MILNE BUILDER 1887."

In its details and overall design the Wapsipinicon bridge at Anamosa is a valuable example of the best efforts of American iron bridge builders in the last nineteenth century.

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[17]Charles B. Harger, Milwaukee Illustrated: Its Trade, Commerce, Manufacturing Interests, and Advantages as a Residence City (Milwaukee: 1887), p. 92.

[18]Ibid., Darnell, pp. 85-86.

[19]James Hippen, In Robert F. Sayre, ed., Take This Exist: Rediscovering the Iowa Landscape (Ames: Iowa State University Press, 1989), pp 194-98.

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APPENDIX A Bridge Design for the Wapsipinicon River Bridge

Microfilm files at the Iowa Department of Transportation, Ames, Iowa. Located under File 5278.

1. *Bridge Site at Anamosa, Iowa*. Scale 1" = 150'. Undated. [1 sheet]

APPENDIX B List of Illustrations

Fig.1 Profile sketch of the Wapsipinicon River Bridge at Anamosa, Iowa. Jim Hippen, 1996.

Fig.2 "Bridge Site at Anamosa, Iowa." Topographic map. Undated. Located at the Iowa Department of Transportation, Ames, Iowa.

Fig.3 USGS Map. Anamosa Quad. 1973. 7.5 min. series.

WAPSIPINICON BRIDGE - ANAMOSA

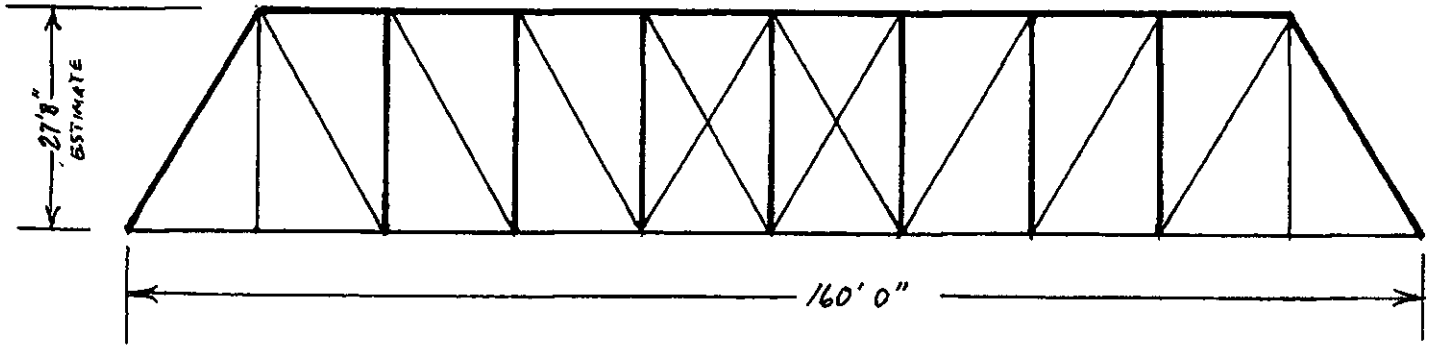

Fig.1 Profile sketch of the Wapsipinicon River Bridge at Anamosa, Iowa. Jim Hippen, 1996.

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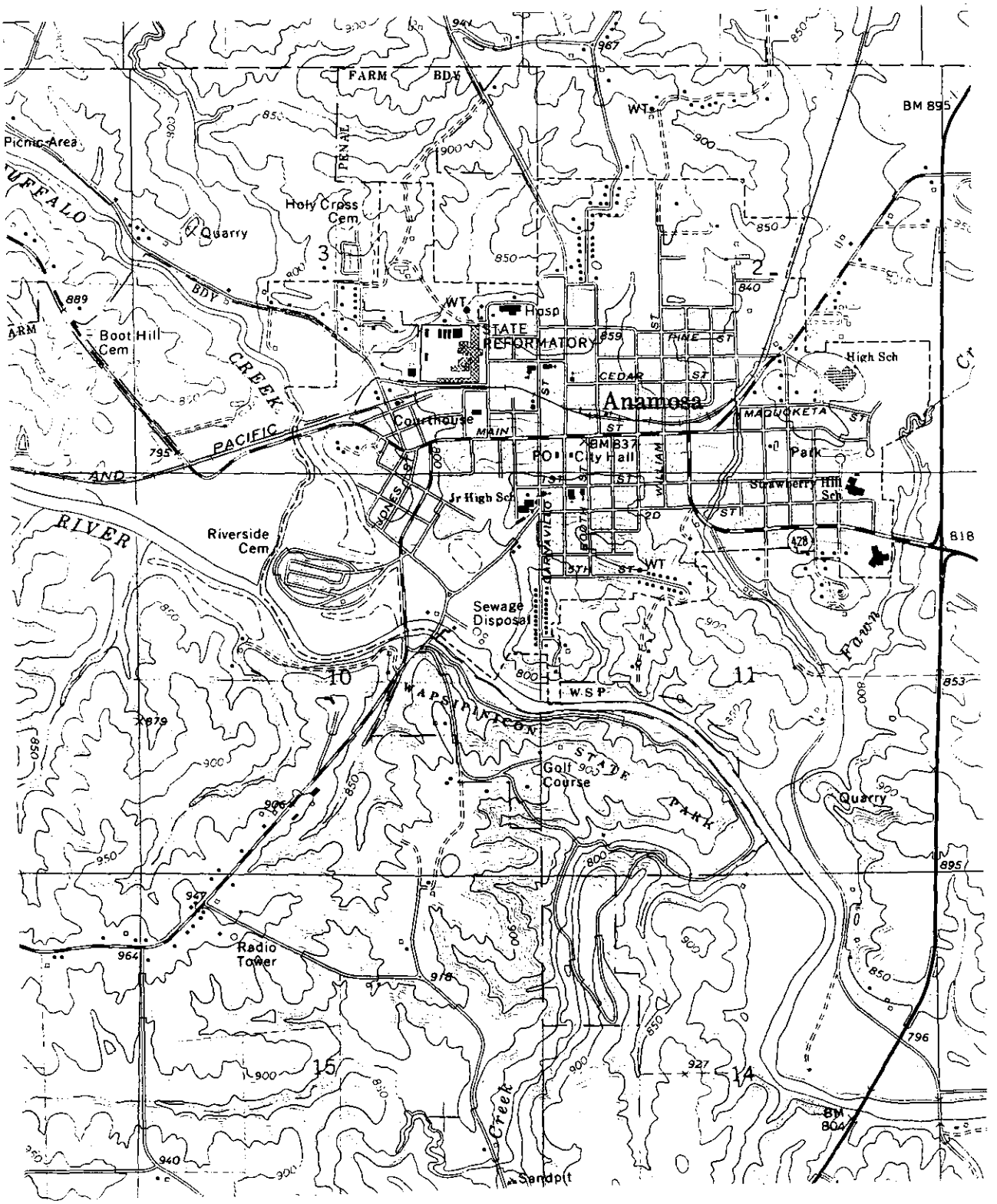

Fig.3 USGS Map. Anamosa Quad. 1973. 7.5 min. series.

APPENDIX C Research Statement

Research Limitations

Neither bridge designs nor historic photographs were found for the Anamosa bridge.