NPS Form 10-900
(Oct. 1990)

OMB No. 10024-0018

United States Department of the Interior
National Park Service

SENT TO D.C.
4-14-99

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Third Street Bridge

other names/site number Structure Number 090-9912, Municipal Street MS 2800 (IDOT Inventory Base

2. Location

street & number Third Street, between Pine Street and Elm Street ☐ not for publication

city or town Delavan ☐ vicinity

state Illinois code IL county Tazewell code 179 zip code 61734

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this ☒ nomination ☐ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property ☒ meets ☐ does not meet the National Register criteria. I recommend that this property be considered significant ☐ nationally ☒ statewide ☐ locally. (☐ See continuation sheet for additional comments.)

William L. Wheeler /SHPO 4-12-99
Signature of certifying official/Title Date

Illinois Historic Preservation Agency
State of Federal agency and bureau

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. (☐ See continuation sheet for additional comments.)

Signature of certifying official/Title Date

State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that the property is: Signature of the Keeper Date of Action

☐ entered in the National Register.
☐ See continuation sheet.

☐ determined eligible for the National Register
☐ See continuation sheet.

☐ determined not eligible for the National Register.

☐ removed from the National Register.

☐ other, (explain:) _____

5. Classification

Ownership of Property
(Check as many boxes as apply)

- ☐ private
- ☒ public-local
- ☐ public-State
- ☐ public-Federal

Category of Property
(Check only one box)

- ☐ building(s)
- ☐ district
- ☐ site
- ☒ structure
- ☐ object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
0	0	buildings
0	0	sites
1	0	structures
0	0	objects
1	0	Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(Enter categories from instructions)

Transportation/road-related (vehicular)
Transportation/pedestrian-related

Current Functions
(Enter categories from instructions)

VACANT / NOT IN USE

7. Description

Architectural Classification
(Enter categories from instructions)

OTHER: Double intersection Warren pony truss.

Materials
(Enter categories from instructions)

foundation concrete
walls N/A
roof N/A
other Wrought iron, steel, wood

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets.)

Third Street Bridge
Name of Property

Tazewell, Illinois
County and State

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- ☐ **A** Property is associated with events that have made a significant contribution to the broad patterns of our history.
- ☐ **B** Property is associated with the lives of persons significant in our past.
- ☒ **C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- ☐ **D** Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply.)

Property is:

- ☐ **A** owned by a religious institution or used for religious purposes.
- ☒ **B** removed from its original location.
- ☐ **C** a birthplace or grave.
- ☐ **D** a cemetery.
- ☐ **E** a reconstructed building, object, or structure.
- ☐ **F** a commemorative property.
- ☐ **G** less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)
Engineering

Period of Significance
c.1870s - 1907

Significant Dates
1907

Significant Person
(Complete if Criterion B is marked above)
n/a

Cultural Affiliation
n/a

Architect/Builder
Kellogg Bridge Company

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

Bibliography
(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

- ☐ preliminary determination of individual listing (36 CFR 67) has been requested
- ☐ previously listed in the National Register
- ☐ previously determined eligible by the National Register
- ☐ designated a National Historic Landmark
- ☐ recorded by Historic American Buildings Survey # _____
- ☐ recorded by Historic American Engineering Record # _____

Primary location of additional data:

- ☐ State Historic Preservation Office
- ☒ Other State agency
- ☐ Federal agency
- ☐ Local government
- ☐ University
- ☐ Other

Name of repository:
Illinois Department of Transportation and bibliography

Third Street Bridge
Name of Property

Tazewell, Illinois
County and State

10. Geographical Data

Acreage of Property less than one acre

UTM References
(Place additional UTM references on a continuation sheet.)

	Zone	Easting	Northing
1	16	283990	4472110
2			
3			
4			

☐ See continuation sheet

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Richard J. Kerhlikar, Illinois Licensed Structural Engineer 081-004575
Crawford, Murphy & Tilly, Inc.
organization Consulting Engineers date February 1, 1999

street & number 2750 W. Washington St. telephone 217-787-8050

city or town Springfield state IL zip code 62702

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items
(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of SHPO or FPO.)

name City of Delavan

street & number 219 Locust Street telephone 309-244-7146

city or town Delavan state IL zip code 61734

Narrative Description

Although pony truss vehicular bridges still exist across the state, the quadrangular double-intersection Warren lattice truss on the Third Street Bridge is the only known example of such a structure in Tazewell County. This bridge, originally built between 1870 and 1881 as a structure to serve railroad traffic, was moved to Delavan in 1907 where it was converted to a vehicular bridge. It is only one of two known double intersection Warren truss bridges in Illinois. According to the Illinois Historic Bridge Survey and based on evidence from the name plate, it is the oldest known metal truss bridge in Illinois. This nomination consists of one contributing structure.

The Third Street Bridge is located within the corporate limits of the city of Delavan in Tazewell County, Illinois. Tazewell County is located in the mid-central part of the state. The bridge crosses two sets of railroad tracks oriented in a north-south direction, serving the Taloma Farmers Grain Company under an agreement with the Illinois Central Railroad and the city of Delavan. The land use in the vicinity of the bridge on the east side of the tracks is residential, while the west side is the edge of the business district.

The Third Street Bridge connects two sections of Third Street, a municipal street (MS 2800) interrupted by the railroad line. The bridge and its approaches are oriented in an east-west direction. The north-south railroad bed below is at skew of approximately ten degrees.

The bridge is entered on the Primary List of the Illinois Historic Bridge Survey published September 30, 1998.[1] The Historic Bridge Survey is compiled under provisions of a memorandum of understanding among the Federal Highway Administration, the Illinois Historic Preservation Agency and the Illinois Department of Transportation Bureau of Design and Environment. The bridge has been identified on the Historic Bridge Survey as eligible to be placed on the National Register of Historic Places.

General Description

The Third Street Bridge has two spans.[2] The main span is a pony truss, metal quadrangular lattice double intersection Warren truss, sixty-two feet, six inches long, consisting of eight panels (an inclined triangular panel at each end and six square interior panels). The members in the upper chord of the inclined ends are of same cross section as the top chord of the truss. Its internal diagonal members are designed to carry both tensile and compressive forces. The

diagonal members are supplemented by vertical members only in the panels adjacent to the inclined end panels. The diagonal members in this truss which form triangular shapes and the riveted connections are distinguishing characteristics of the Warren truss constructed in this period. The truss portions of the bridge are fundamentally sound; the built up plates and riveted connections show very good workmanship.

The second span, referred hereinafter as the approach span, is at the east end of the bridge and has a span of seventeen feet, five inches. The approach span is constructed of timber stringers and a timber deck. Cast-in-place concrete abutments anchor the east approach span and west end of the Warren truss. A built-up metal lattice bent (pier) supports the east end of the Warren truss and the approach span. The bridge has no ornamentation.

A bridge name plate is located on the west inclined end panel of the south truss. The upper portion of the bridge plaque is missing, believed to have been removed by vandals sometime since the entire plaque was last photographed in April, 1992. At that time, the plaque read "Kellogg. Bridge. Co. Buffalo. N.Y."[3] The remnants of a bridge number is located on the outside face of a horizontal timber rail near the west end of the north truss, and reads "D 1570."

Superstructure

The bridge superstructure consists of one main pony truss span, double intersection Warren truss with eight panels. The vertical leg and horizontal leg of the end triangular panels are each eight feet long. The six interior panels are each eight feet high and eight feet wide. The center to center distance between the trusses is twenty-four feet. The height between the upper and lower chords is eight feet and the top chord of the truss is approximately seven feet above the timber deck surface. The timber plank deck is 22.8 feet wide, consisting of a 17.8 foot wide section to carry vehicular traffic and a 4.6 foot wide area for pedestrian use. The portion of the timber deck designated to carry traffic is overlaid with a one-inch thick layer of asphalt (bituminous concrete) which was added at a later (unknown) time. The truss members are symmetrical about the center of the truss. The vertical underclearance at the railroad tracks is 18.4 feet.

The upper and lower chords of the Warren truss consist of built-up wrought iron[4] plates and angles connected by round-head rivets to form a "T" section. The main top and bottom chord flange plate is twelve inches wide by ⅜ inches thick. A "T" is formed with two angles, four inches, by three inches by ⅜ inches thick and a perpendicular (web) plate twelve inches high by ⅜ inches thick.

On the top and bottom chords, a wrought iron cover plate (twelve inches wide by ⅜ inches thick) is connected with rivets across the four interior truss panels.

There is a splice in the web of the top and bottom truss chords in the third panel from the east end of the truss. The splice plates are on both sides of the web. The plates are ⅜ inches thick and contain three rows of rivets - two rows of ten rivets and one row of six rivets.

In the web of the upper truss chord at the three middle truss panels, there are four open rivet holes in a grid pattern, spaced 3½ inches apart horizontally and 3½ inches apart vertically, each hole having a diameter of ⅞ inches. These holes are part of the original construction of the truss, serving as riveted connection points for inclined lateral bracing (from the top chord to the floor beams) on the inside face of the truss when the structure was a railroad bridge. In 1907, when the bridge was set in place at the Third Street site, the lateral bracing was removed, leaving the holes open.

There are two outriggers on each truss, located between the second and third panel from each end. The outriggers consist of a series of double angles, connected at the top and bottom truss chords. The connection in web of the top truss chord has four rivets, in the same grid pattern as the open rivet holes in the three middle truss panel points described in the previous paragraph. The upper inclined pair of double angles are four inches by three inches by ⅜ inches thick with the four inch legs facing back-to-back. The short horizontal pair of double angles with legs back-to-back, are three inches by three inches by ⅜ inches thick and extend outward from the top of the main lower truss chord (cantilever bracket) and are connected by rivets to the pair of inclined double angles with a ⅜ inch thick gusset plate. The lower part of the cantilever bracket is an inclined pair of double angles with legs back-to-back, three inches by three inches by ⅜ inches thick and extends upward from the bottom of the main lower truss chord. It is connected to the upper inclined pair of double angles and the horizontal pair of double angles by the same ⅜ inch thick gusset plate.

Although the outriggers appear to be part of the original truss in all respects, metallurgical analysis has revealed that the angles are steel.[5] It is believed that the outriggers were added to the truss in 1907 when the inclined lateral bracing at these two locations was removed.

The diagonal members of the truss are cast iron double angles, four inches by three inches by ⅜ inches thick, with legs facing back-to-back. The diagonal members are connected to the top and

bottom truss chords with ⅜ inch thick gusset plates and fill plates. Connections are accomplished with round headed rivets. The double intersecting diagonals are connected by three rivets and one threaded bolt at the intersection. It appears that there were originally four rivets at the intersection of the diagonal members. One rivet was removed and replaced at a later time with a threaded nut and bolt to connect the timber railing to the inside face of the truss.

A system of timber posts and rails is located along the inside (roadway) face of the truss span, along the outer edge of the east approach span and along the east abutment wingwalls. The timber posts measure four inches by seven inches and rise 43½ inches above the wood deck walking surface. There are twelve posts on the south truss and thirteen posts on the north truss. The post spacing varies from six feet, ten and one half inches to eight feet. A timber cap rail measuring 6¼ inches wide by 2⅛ inches thick, carries horizontally and continuously across the top of the post. There are three continuous horizontal timber rails fastened to the vertical face of the four inch by seven inch posts. Each rail measures approximately 6¼ inches wide and 2⅛ inches thick. The top of the lowest continuous horizontal rail is twelve inches above the wood deck walking surface. The middle rail is twenty seven inches from the wood deck walking surface. The top of the highest rail is at the top of the posts, 43½ inches above the wood deck.

Prior to an automobile accident on October 30, 1992, a system of timber posts and rail separated the roadway from the pedestrian walkway. The posts and rails were removed after the accident, but a series of photographs taken during a bridge inspection six months before the accident have been used to depict the timber rail and post system as follows:

> The pedestrian post and rail system appear to be constructed from the same size timber materials which made up post and rail system along the inside (roadway) face of the truss spans. The system consists of eleven posts, rising above the surface of the bridge deck by approximately the same dimension as the rail system along the inside (roadway) face of the truss spans (43½ inches). There are two continuous horizontal rails mounted on <u>both</u> sides of the timber posts and a continuous horizontal cap rail. The cap rail member, carries continuously from the west end to the east end. At the last post on the east end, the cap rail member is inclined downward, about forty five degrees and appears to be fastened (with nails) to the surface of the bridge deck. The lower horizontal rail fastened to the vertical face of the posts and appears to be approximately eighteen inches above the wood deck walking surface. The top of the higher horizontal rail appears to be about 43½ inches above the wood deck walking surface. [6]

There are eight floor beams connected to the lower chord between each truss panel.[7] Seven of the eight floor beams are "I" sections with a continuous plate, twelve inches deep and ⅜ inches thick serving as the web and a pair of top and bottom flange angles, five inches by three inches

by ⅜ inches thick. One floor beam (between the second and third panel from the east end) consists of two built-up twelve-inch deep metal channel sections, webs facing back to back with a ⅜ inch thick by twelve inches deep (sandwich) plate between the channel sections to form a symmetrical "I" section. The top and bottom flange of the channel section is five inches wide. Top and bottom cover plates, ½ inch thick and seven inches wide completes the make-up of this one floor beam.

The floor beams do not appear to be part of the truss system when the bridge originally served as a railroad bridge. The original floor beams were likely to have been more substantial in cross section to carry rail traffic. Additionally, it is likely that the original floor beams were shorter in length, making the width of the bridge smaller than it is today. It is believed that new, longer floor beam members were installed in 1907 when the bridge was moved to Delavan. It is likely that since that time, at least one or more of the members were replaced when the timber bridge deck was repaired or replaced.

Twenty-one timber stringers, twelve inches deep, span between the floor beams at approximate equal spaces across the width of the bridge. The ends of these timber stringers are fitted between the top and bottom flanges of the metal floor beams. The timber stringers bear on top of the bottom flange of the built-up metal floor beams.

Timber deck planks (2½ inches thick by 9½ inches wide) bear transversely across the top of the timber stringers. A second layer of timber deck (two inches thick by 9⅝ inches wide) is laid at right angles to, and on top of, the 2½ inch by 9½ inch planks.

The bearings for the Warren truss at the west abutment consist of built up metal plates and hex headed anchor bolts with a square raised metal washer. The east end of the Warren truss bears on the built-up metal cross beam of the pier bent.

The second (east) span of the bridge is seventeen feet, five inches long and consists of twenty-one timber stringers (four inches thick and twelve inches deep). The west end of the timber stringers bear on the metal cross beam of the pier bent; the east end of the stringers bear on built-up timber plates at the east abutment. Timber deck planks (2¼ inches thick by 9½ inches wide) bear transversely across and over the top of the timber stringers. A second layer of timber deck (2 inches thick by 9-⅝ inches wide) is laid at right angles to the 2¼ inch by 9½ inch planks.

Substructure

The abutments are cast-in-place formed concrete. The horizontal form lines, (at approximately six inch centers) on the abutment breast walls are indicative of early cast in place concrete construction practice.

The pier is a single plane frame, consisting of two main columns on each end and a horizontal top cross beam with a short interior built-up metal lattice column and interior inclined lattice bracing elements that are encased in formed concrete at the ground line. It is believed that the pier structure is not part of the original railroad truss system. The concrete encasement around the metal elements at the ground line is more recent, but the time of construction is unknown.

Each pier column is a built-up system consisting of four channel sections arranged in a symmetrical configuration to distribute the load in the compression member as equally as possible. A pair of channels, with webs facing back-to-back, takes the shape of an "I" section and forms the central, inner element of the column. Another (third) outer channel is located at the top of the "I" with the inside face of the web and the flanges of the channel turned downward. The last (fourth) outer channel is located at the bottom of the "I" section with the inside face of the web and the flanges of the channel turned upward. Each channel is nine inches deep, having flanges 2⅜ inches deep and ⅜ inches thick.

The columns are 16'-1" high from the base of the concrete foundation to the top of the column. The top horizontal member of the pier frame consists of four angles (two at the top and two at the bottom) and a middle flat (web) plate configured to form the shape of an "I" section. The web plate is eighteen inches deep and ⅜ inches thick. The two angles at the top of the web are three inches by five inches and ½ inch thick. The two angles at the bottom of the web have the same dimensions.

Two inclined braces form the shape of an "X" between the two main columns of the bent. Each brace consists of two angles, three inches by three inches by ⅜ inches thick with 2¼ inch by ⅜ inch thick lacing bars separating the two angles by 10½ inches. The two inclined cross braces are fastened at the intersection of the horizontal members with a metal plate and rivet fasteners. An intermediate column brace, half-way between the two main columns, rises from the concrete footing and terminates at the intersection of the two "x" braces. The intermediate column brace consists of a pair of three by three angles ⅜ inches thick, without lacing bars.

The condition of the wrought iron truss members is good. The riveted connections are very solid and tight and functioning. On the top chord of the truss, pack rust between the cover plate and the main chord plate has caused the cover plate to warp. On the bottom chord of the truss, the extent of pack rust is similar but the cover plate has not exhibited warping to the same extent as the cover plate on the top chord. There are very few missing rivets. Despite the level of pack rust in the top and bottom truss chords, very few elements in the truss itself need to be replaced if the structure is to remain as a bridge to carry vehicular traffic, since the truss was originally designed as a railroad bridge. The condition of the metal floor beams is very poor and needs to be replaced. The condition of the timber stringers between the floor beams and the timber deck is poor and needs to be replaced.

End Notes

[1] Illinois, State of. Historic Bridge Survey, Statewide Index, September 30, 1998.
[2] A more detailed description of the bridge, with photographs and sketches is included in a Bridge Condition Report, prepared in April, 1998 by the firm of Crawford, Murphy & Tilly, Inc., Consulting Engineers.
[3] The bridge was photographed during a biannual bridge inspection on April 14, 1992, by Crawford, Murphy & Tilly, Inc., Consulting Engineers. At that time, there was a horizontal crack across the plaque but the plaque remained intact.
[4] A photomicrographic metallurgical analysis was conducted on three samples taken from the truss and outrigger members. The samples were tested by Richard W. Little, P.E. of R. W. Little & Associates, Professional Metallurgical Engineering in Peoria, Illinois. Results are presented in a report dated January 25, 1999.
[5] Metallurgy report by R. W. Little & Associates, Richard W. Little, P.E., January 25, 1999.
[6] The bridge was photographed during a biannual bridge inspection on April 14, 1992, by Crawford, Murphy & Tilly, Inc., Consulting Engineers. These photographs were used to depict the railing which separated the pedestrian surface from the roadway surface.
[7] It should be noted that there are nine "panel points" in the lower chord of the truss. There is one "panel point" at the west bearing end, one "panel point" at the east bearing end and one "panel point" between each of the eight panels. The eight panel points referenced here consist of the seven interior panel points and one panel point at the west bearing end of the truss. The ninth panel point is at the east end of the truss. The top horizontal cross member of the pier serves as the "floor beam" at this last panel point.

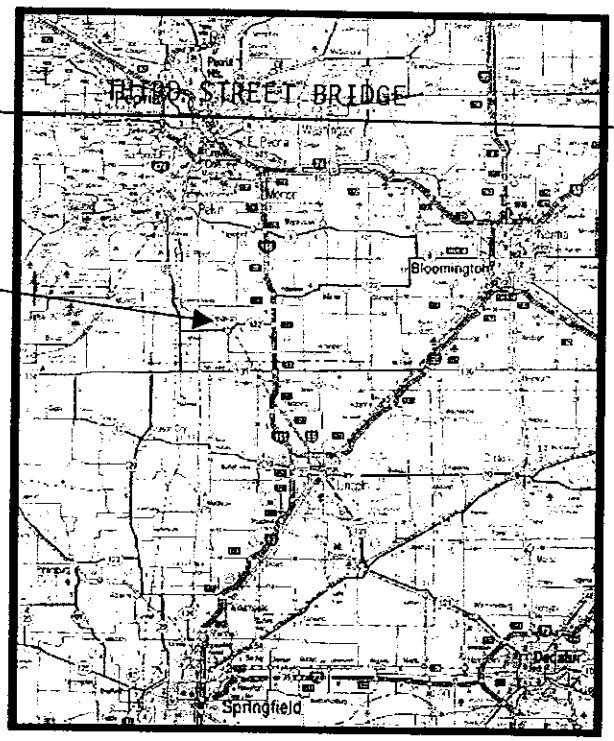
United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

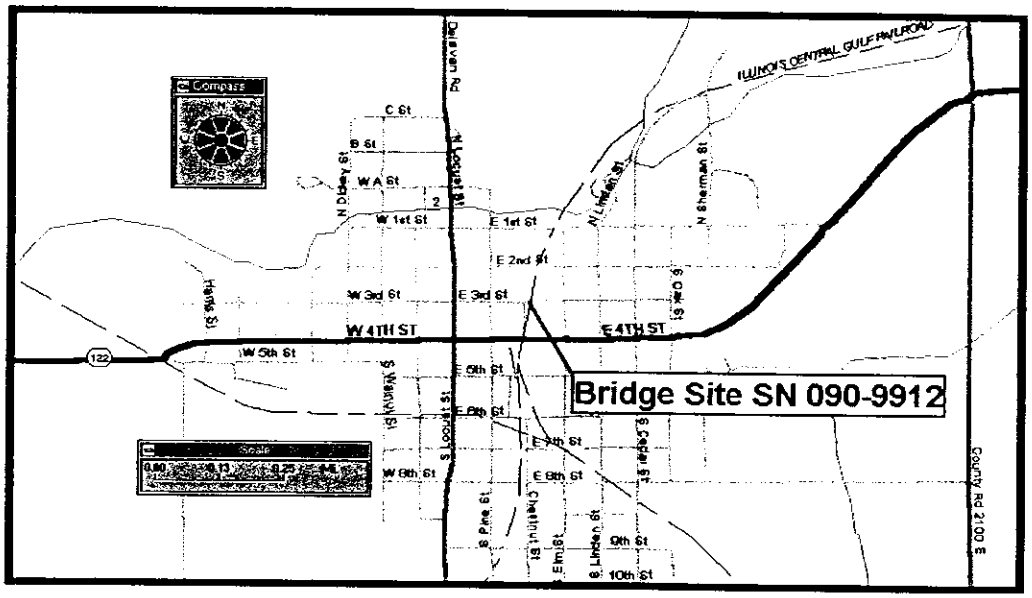
Section number 7 Page 8

THIRD STREET
BRIDGE
DELAVAN, ILLINOIS
S.N. 090-9912

NW Quarter, Section 10
T22N R4W, 3rd PM



STREET MAP
THIRD STREET BRIDGE



Narrative Statement of Significance

Summary

The Third Street Bridge is eligible for the National Register of Historic Places under Criterion C, in the area of significance of engineering, embodying the distinctive characteristics of the Warren truss bridge type. The period of significance is c. 1870s when the bridge was originally constructed, to 1907 when the bridge was moved from an unknown location in Tennessee[8] and erected in Delevan. The bridge is one of only two known double intersection Warren trusses remaining in Illinois and the only known one of this type in Tazewell County. The bridge is significant on a statewide basis—it is entered on the Primary List of the Illinois Historic Bridge Survey, published by the Illinois Department of Transportation on September 30, 1998. According to the Illinois Historic Bridge Survey and based on evidence from the nameplate, it is the oldest known metal truss bridge in Illinois. The Third Street Bridge meets Criteria Consideration B as it was removed from its original location but it is significant primarily for its engineering value. The bridge maintains a high degree of historic integrity although it has been removed from its original location. Historically the structure was a railroad bridge but was converted to a highway bridge when it was moved to its present location in 1907. The bridge retains its historic materials including its wrought iron Warren trusses. The bridge also maintains a high degree of integrity in its design, workmanship, and feeling as it conveys the design characteristics of the Warren truss bridge engineering type. In terms of its location and setting, although the bridge was moved in 1907 to its present location, it continued to function as a bridge spanning a railroad cut for the Chicago & Alton Railroad through Delevan, Illinois.

Engineering

Truss bridges, whether of wood or metal (or a combination of the two), are characterized by a structural assemblage of many relatively small members joined together in a series of triangles that interconnect to form the bridge. Bridge builders liked to use truss bridges because of the comparative ease of fabricating, hauling and assembling the individual members.[9]

The specific type of truss depends on the arrangement of members in the truss and the nature of forces that they are called-on to resist. Generally, truss members can be distinguished as being in tension or compression. Members are in tension when forces act to pull it apart from either end. Members are in compression when forces act to push it together from either end.[10]

There are three basic types of truss systems for bridges: the *through* truss, the *pony* truss and the *deck* truss. A *through* truss receives traffic loads through the bottom chord and has lateral

bracing connecting across the top chords of the truss. A *through* truss is best visualized by a motorist as a truss with the roadway going through the structure. The *pony* truss is similar to the through truss; however, there is no lateral bracing connected across the top chords of the truss (open at the top). The *deck* truss receives traffic loads through the top chord of the truss and is best visualized by a motorist as a bridge with the roadway sitting on top of the truss.[11]

Truss bridges were first constructed from timber materials, as Colonial America was fortunate to have an abundant supply of forests. Early timber trusses were quite simple and normally constructed in the form of king post trusses.[12]

Truss bridge technology emerged in the nineteenth century with a number of designs that were patented. Theodore Burr patented the Burr arch truss in 1817 and Ithiel Town, an architect and builder, patented the Town truss in 1820.[13] In 1840, William Howe patented the Howe truss and in 1841, Whipple's iron bowstring truss was patented (Whipple truss).[14] Other successful and widely used truss inventions of the nineteenth century included the Bollman truss (1852), the Fink truss (1854), the Post truss and the Thacher truss.[15]

Noteworthy advances in the materials of construction took place in the mid and latter half of the nineteenth century with the development of power driven machines and advances in the understanding of the theory of structural engineering.[16] In 1847, Squire Whipple was the first American (and possibly the first in the world) to publish a book on truss analysis titled "*A Work on Bridge Building*."[17] The book was ignored for years, but it marked the beginning of rational bridge design in the United States.[18] Timber materials in bridge construction were soon replaced by cast iron and wrought iron. The use of steel was slow, due to concerns with failure of members in tension. In 1866, the Bessemer process of steel conversion was not widely accepted and in 1869, the British were prohibited from using steel in bridges. The prohibition in Britain continued until 1877, after the open hearth method of steel production was established.[19]

In the United States by 1890, performance of steel was no longer questioned and common structural shapes such as plates, channels and angles emerged. The cost of the steel members were very competitive with wrought iron and by 1895, production of wrought iron in large quantities had faded.[20]

In the last half of the nineteenth century, the two truss types achieved enormous popularity. The first was the Pratt truss, patented in 1844 by Thomas Pratt and Caleb Pratt.[21] The Pratt truss featured vertical compression members and diagonal tension members. The Pratt truss was not complicated and did not require complex shop fabrication work.[22]

The second truss type to achieve enormous popularity was the Warren truss, one of the last major truss types developed in the nineteenth century. It is named after a British engineer, Captain James Warren, who patented the truss with another Englishman, Willoughby Theobald Monzani, in 1848.[23] It is uncertain as to who introduced the Warren truss to the American bridge builders as the Warren truss did not become widely used in the United States until the early twentieth century.[24]

Characteristics of the Warren truss include diagonal members which carry both tensile and compressive forces[25] and its is the diagonals that give the truss its "triangular" outline.[26] In certain Warren truss designs, diagonal members are supplemented by vertical members and such trusses are referred to as Warren trusses with verticals.

During much of the late nineteenth century, American truss bridge builders used pin connections to hold the various members together. In a pinned connection, holes are drilled in the ends of members and were then aligned with each other. A cylindrical pin, similar to a large metal dowel, was pushed through the aligned holes to form a structural connection.[27]

Such pin connections were very popular in the railroad bridge industry, as this type of connection allowed for rapid erection of trusses. Also, engineers found it easier to analyze stresses in a truss when pin connections were utilized. On the other hand, pin connections were susceptible to loosening, particularly under the vibrating loads caused by fast-moving large trains.

Interest in Warren trusses soared with railroad companies, when the railroads began using riveted connection technology to replace the popular pin connections. Riveted connections resulted in a much more rigid structural joint. However, it was difficult to install rivets by hand in the field and as a result, much of the early riveting was performed in a bridge fabricator's shop. It was practical for a bridge builder to shop fabricated shorter trusses and ship the elements to the site.[28] It was not until the late 1800's and 1890's that the development of portable pneumatic riveting systems made it practical to field assemble bridge components.[29]

With the use of portable pneumatic riveting systems, field riveting became widespread and Warren trusses became quite popular. For this reason, the double intersection Warren truss emerged as a very popular variation of the Warren truss.[30] The classification "double intersection" is derived by the configuration in which two triangular web systems are superimposed upon each other. Span lengths of double intersection Warren trusses range from 75 feet to 400 feet.[31]

The driving of rivets is described in 1941 by Linton E. Grinter, PhD., C.E. in his book titled "Design of Modern Steel Structures," as follows:

> "*Driving Rivets*: The rivet head with one head already formed is heated until it glows and inserted into the hole. Then, either by direct pressure or by a series of blows, a second head is formed before the rivet becomes entirely black. The most satisfactory rivets are produced with direct pressure (air, hydraulic or steam) by use of a power or bull riveter. The riveter grips the rivet between its jaws and produces the head by direct pressure of perhaps 50 tons or even more. The head is formed by *squeezing* the rivet. Naturally, the plastic rivet steel is squeezed out to fill the hole adequately. In close work or where the riveter cannot reach around the member, and for field connections, the rivet head is usually formed by the air hammer. No distinction is made in regard to the strength of shop rivets made by direct pressure and by the pneumatic hammer, but the former are to be preferred. A hammered rivet may be "over driven," which means driven too cold, with the result that its head is easily knocked off. Hand hammered rivets were common in the early days of riveting, but they are unusual today. Bolts are considered at least equally effective and less expensive." [32]

Warren trusses with riveted construction became quite popular with railroad companies in the early 1900's. Warren trusses became the standard for long span railroad bridges and even superceded the Pratt truss for shorter spans.[33] The intense competition between numerous bridge building companies in the northeastern and midwestern United States, and the drive to produce more economical trusses caused a rise in popularity of Warren truss and Pratt truss designs.

Truss bridges became standardized around the end of the nineteenth century. It was in this time period in the United States that the use of wrought iron was fading away and steel became the structural material of choice. The intense competition between the numerous bridge companies caused many of the firms to go out of business or consolidate.[34, 35] As the standardization of truss types developed, the Warren trusses (and Pratt trusses) remained popular into the twentieth century. In the 1920's and 1930's the state of Connecticut established standard specifications which limited the design of steel trusses to the Pratt and Warren types for highway bridges.[36]

The name plate on the Third Street Bridge before the upper half of the plate was removed sometime after April 1992 read, *"KELLOGG. BRIDGE. CO. BUFFALO. N. Y."* Presently, the lower half of the name plate that remains attached to the west end of the south truss and reads, *"BUFFALO. N. Y."* An April, 1992 photograph documents the complete wording on the name plate. [37]

The Kellogg Bridge Company of Buffalo, New York was organized by Charles Kellogg in 1870. The annual operating capacity in tons of finished work is not known. The company remained in business until 1881 when it was acquired in that year by Central Bridge Company of Buffalo, New York. In 1884, Central Bridge Company became part of Union Bridge Company based out of New York City. The shop closed c. 1890 and the American Bridge Company acquired the remainder of the Union Bridge Company in 1900.[38]

On the basis of the documented history of the Kellogg Bridge Company of Buffalo, New York, fabrication of the present Third Street Bridge was accomplished between 1870 and 1881.

By recognizing the existence of two different bridge building competitors carrying the same name of Charles Kellogg and who lived only 140 miles apart, one can also gain an appreciation of the restless nature of the bridge building business and the potential confusion with the number of different bridge building companies operating in the United States during the latter half of the nineteenth century:

> The Charles Kellogg who operated the Buffalo, New York business (and the fabricator of the Third Street Bridge), died in 1891 and also operated three other bridge building companies between 1857 and 1870 before organizing the facility in Buffalo, New York. These operations included *Charles Kellogg and Company*, Detroit, Michigan (1857-1863), *Superintendent of Detroit Bridge and Iron Works*, Detroit, Michigan (1863-1868), and *Kellogg, Clarke and Company*, Philadelphia, Pennsylvania (1870-1881). The son of Charles Kellogg, Charles H. Kellogg, (not a competitor) advertised in 1889 as a "contracting engineer, iron work and bridge builder." There is some speculation that this son (Charles H. Kellogg), directed the *Kellogg Iron Works*, Buffalo, New York (1894) and the *Kellogg Iron Bridge Works*, Buffalo, New York (1891-1901 and later).[39]
>
> The other Charles Kellogg (competitor) built wood railroad bridges in north central Pennsylvania (c. 1865-1871) and operated *Kellogg and Maurice*, Athens, Pennsylvania (1871-1884), *Union Bridge Company*, Athens, Pennsylvania (1884-1887), and *Elmira Bridge Company*, Elmira, New York (1889-c1892).[40]

Records of the bill of sale, records of bidding documents, and documentation of Delavan City Council action on issues regarding the Third Street bridges have not been located. A more concise history of the bridge is revealed through a metallurgical examination of small metal fragments extracted from the bridge truss elements. This metallurgy, together with history revealed by the name plate affixed to the truss, a thorough investigation of a uniform pattern of open holes in the top chord of the truss, and a structural engineering analysis of the cover plates,

resolves a gap in time between the known fabrication time period (1870 to 1881) consistent with the period of operation of the Kellogg Bridge Company in Buffalo, New York, and newspaper accounts documenting the construction of the present Third Street Bridge (1907).

Numerous newspaper accounts show that all of the bridges at the Third Street site were constructed, owned and maintained (although poorly) by the railroad company. With its relatively short span, the truss is believed to have been completely fabricated in the Buffalo, New York shop (the truss was short enough for this to occur) and originally erected by the railroad company at an unknown site in Tennessee,[41] as a pony truss bridge to carry railroad traffic. The bridge originally included five inclined lateral support brackets, connected between the top chord of the truss and the floor beams. The connection of the lateral support brackets at the top chord of the truss was between connections of two opposing diagonal members in the top chord. These lateral support brackets are essential elements in a railroad bridge, to maintain stability of the top chord of truss during the passage of heavy trains.

When the need for a new bridge at Third Street in Delavan became apparent to the railroad company, railroad officials found the double intersection Warren pony truss railroad span at an unknown Tennessee[42] site, which had a length sufficient to span the tracks at Third Street. The bridge floor beams and the internal lateral braces were disassembled from the main truss elements. The truss was transported by rail to its present Third Street site, in 1907.

Upon its arrival at the Third Street site, the truss span and its floor beams were reconnected (field riveting was becoming easier during this time) and set onto the west abutment. To provide more open roadway space during the conversion from a railroad bridge to a roadway bridge, the five inclined lateral support brackets connected between the top chord of the truss and the floor beams were <u>not</u> replaced, leaving a pattern of four open holes in the top chord of the truss at each of the five lateral support bracket locations. At two of these locations, inclined members of outriggers (steel members) were connected to the top chord by rivets, occupying the holes formerly utilized for the internal lateral braces.

A pier was erected to support the east end of the truss, since the span of the truss was not sufficient to reach the grade line on the east side. To fill the gap between the pier and the east grade line, a wooden approach span was built.

The Third Street Bridge is an excellent representative of a short span double intersection Warren pony truss bridge constructed in the early years of its popularity in the United States. The length

of the truss itself (sixty two feet, six inches) is unusual considering that it is shorter than the documented range of lengths of double intersection Warren (lattice) trusses of 75 to 400 feet.[43] The bridge is a good example of the use of riveted connection technology and an unusual example of the use of a Warren truss to serve pedestrians and vehicle needs in a city street / municipal setting, since Warren trusses were more commonly used in bridges to carry railroad traffic at that time.

Community History

The Third Street Bridge is located on the eastern edge of the business district, crossing two sets of railroad tracks. The tracks presently serve a local grain cooperative, the Toloma Farmers Grain Company, during peak farming periods.

Located in Central Illinois, the city of Delavan is set in a rolling prairie between Interstate 155 and Route 29 on the east and west and just five miles north of U.S. Route 136. The former Gulf Mobile & Ohio Railroad, now the Illinois Central Railroad runs east and west through Delavan. At one time the Petersburg and Tonica Railroad line ran north-south through Delavan just two blocks east of Locust Street, the principal street in the business area. Streets running east from Locust (Third and Fourth Streets) rose up over viaducts to give plenty of headroom for this rail line, thus avoiding dangerous surface rail crossings.

The village of Delavan became an incorporated municipality in October 1865. The Village was reincorporated under a new State law in July 1872 and incorporated as a City in 1888. Town growth was slow with a population of only 500 when the village was incorporated in 1888.[44]

Delavan was founded as a temperance town and continued that way for a number of years. The drinking and non-drinking factions brought the issue up for vote on several occasions with the last vote taken in 1913. "Should the Township continue to be Anti-Saloon Territory?" - 352 affirmative votes, 115 negative votes. After the repeal of the 18th Amendment, there was little interest in the issue and tavern licenses were issued.[45]

Development of the Delavan community was slow until the first railroad was introduced into the community and created the need for the Third Street Bridge.[46]

The first railroad built through Delavan was known as the Petersburg and Tonica Railroad. The right-of-way grading had been completed by the year 1857 and operations over completed

portions of the line began in 1867. The name of the railroad was changed to the St. Louis, Jacksonville and Chicago Railroad when the Chicago, Alton and St. Louis Railroad offered to finance the completion of the railroad if the line would be terminated in Bloomington instead of Tonica located in LaSalle County. This railroad, running north and south through Delavan, played an important part in the economic development prior to the modern highways. The line became a feeder for the Chicago, Alton and St. Louis Railroad and was later re-organized and renamed the Chicago and Alton Railroad. This became known as the Jacksonville branch or as the "Jack" line of the Chicago and Alton Railroad. Access was gained to the Kansas City, Missouri and Gateway Railroad in 1879 after the Chicago and Alton Railroad purchased several Missouri shortlines.[47]

On July 18, 1931, the bankrupt Chicago and Alton Railroad came under the control of the Baltimore and Ohio Railroad as "The Alton Route Railroad." The Alton Railroad Company was purchased by Gulf, Mobile and Ohio Railroad on May 31, 1947. This company existed for just over twenty-five years and then merged with Illinois Central Railroad on August 10, 1972, forming the Illinois Central Gulf Railroad.[48]

The Illinois Central Gulf Railroad's operation of the "Jack" line was short lived. By 1972, country branch lines were a thing of the past as they had lost their usefulness to paved roads and motor trucks. Actually, the "Jack" line had not made money since World War II. The Illinois Central Gulf Railroad had required its operation as a convenience. The only big shipper on the line was National By-Products, Inc. of Mason City, Illinois.

On January 10, 1980, the Interstate Commerce Commission gave Illinois Central Gulf Railroad permission to abandon 28.8 miles of track between Jacksonville and Mason City effective May 9, 1980. Car loading from National By-Products, Inc. at Mason City prolonged freight service between Bloomington, Delavan and Mason City until the early fall of 1982. At that time, Illinois Central Gulf Railroad was granted permission to abandon this portion of the line. The rail through Delavan was removed during August, 1984.[49]

Soon afterwards, the city of Delavan acquired the railroad right-of-way to serve as a pedestrian connection between the city's two parks, Veterans Park on the south side of Fourth Street and Lake Park, located north of First Street. Nine years after the rail was removed, the Toloma Grain Company, located at the intersection of Sixth and Chestnut streets, entered into a multi-year agreement with the city of Delavan and reconstructed two sets of tracks, from the grain company's facility and extending northward beneath Illinois Route 122 (Fourth Street Bridge)

and the Third Street Bridge, to a terminating point approximately 300 feet north of the Third Street Bridge and immediately south of Second Street. The grain company uses the track to store rail cars containing grain primarily during the fall harvest season.[50] The rail now connects to the east-west railroad line, the Illinois Central Railroad, in the city block bounded by Sixth Street on the north, Seventh Street on the south, Chestnut Street on the east and Elm Street on the west.

Newspaper accounts document the existence of three different bridges carrying Third Street over the railroad line, prior to the installation of the double intersection Warren truss bridge in 1907, which remains standing today.

Over the years, from the initial onset of its construction, the Third Street Bridge has associated with it, a history of disagreements and arguments between the citizens of Delavan, the City Council and the Railroad. The first of these is documented beginning with a series of local news stories in 1876 which describe the first Third Street Bridge.

> March 1876. *"Fix the Bridge. Wouldn't it be a good idea to commence the new century in Delavan by building a close board railing instead of the open railing on the sides of the bridge near the Phillips' House? Such an improvement would make it less dangerous for small children and more pleasant for grown persons."*[51]

> September 1876. *"Local Laconics. The C & A construction train gang is widening the ditch in front of the Phillips' House."* [52] *"Town Board Proceedings. A regular meeting of the Board of Trustees was held in the office of Clerk Appleton Tuesday evening last, at which all of the members were present with the exception of Fred Starz. The Clerk was authorized to notify the C & A Railroad Company to repair bridge on Third Street."* [53]

> September 1877. *"The City Attorney was notified to instruct the C & A Railroad company to repair the bridge across Chestnut on Third Street, and also several road crossings which are out of repair."* [54]

Newspaper accounts of the second bridge over Third Street report that the original Third Street Bridge over the railroad was replaced in 1878. Its materials of construction are not documented, but it is believed that the 1878 bridge is one of timber construction or a combination of timber and wrought iron.

There were two disputes with the second bridge – one being the narrow pedestrian walkways across the bridge and a second dispute associated with conditions at the east end of the bridge, as this series of news articles from 1878 reports:

> February 1878. *"A new bridge was this week erected across the C & A track on Third Street."* [55]
>
> March 1878. *"The New Bridge. The new bridge across the C & A cut on Third Street is very substantial and well constructed, but the foot walks at the sides are entirely too narrow. The street and alley committee of the village board should have insisted on a wider passage."* [56]
>
> January 1881. *"The Third Street Bridge over the C & A railroad continues to be a bridge of sighs. The melancholy Dane who superintends the city highways may be at fault, or it may be the fault of the railroad company, but the work remains unfinished and in an extremely unpleasant condition for pedestrians. We understand that the Company refuses to lengthen the decline on the east end. If the Company was obliged to fix one end, it would appear to an ordinary mind that it is likewise obliged to fix the other. However, as the city attorney is also attorney for the railroad, the village and the people may look for no special effort being made to remedy the evil."* [57]
>
> October 1881. *"Grading. The Alton company has at last got at the Third Street Bridge grades, and the approaches to the bridge are being materially improved."* [58]
>
> November 1881. *"Poor grade. The grade on the eastern approach to the Third Street railroad bridge is entirely insufficient and the town board should not accept it. If the company is properly 'gone at' they will build a satisfactory grade. It is very much needed and should be built."* [59]

Newspaper accounts of yet another (third) bridge over Third Street reports that the replacement bridge is one of iron and timber construction. The dispute surrounding the conditions at the east end of the bridge has not been resolved, as this series of news articles from 1899 explains:

> May 1899. *"New Bridge. Chicago & Alton workmen have dismantled and torn away the old wooden viaduct on Third Street and will replace it with a new structure of iron. The work is now in progress and will require about two months for completion."* [60]
>
> May 1899. *"New Viaduct. The approaches for the new iron bridge over the C & A on Third Street have been completed. The carpenters will be here this week to do their part of the work, and the iron workers will follow."* [61]
>
> July 1899. *"City Council. Many altercations occurred at the city council last Saturday night, and the bone of contention came in for a thorough picking. The meeting wa called to order at 8:30 o'clock by his honor, Mayor G.G. Waltmire. Alderman Lambard called attention to the fact that the approaches to the viaduct on Third Street had not been repaired since the new bridge was constructed, and wanted to know what was to be done about it. The alderman all agreed that it was the duty of the railroad company to fix the approaches to the bridge. City Attorney Gillmore was asked for legal light on the subject and gave as his opinion that in the absence of an ordinance, made at the time the bridge was built, regulating the construction and maintenance of the same and approaches, the council could not force the construction of approaches to the bridge. The bridge on Fourth Street is regulated by ordinance and the one on Third Street is supposed to be, although that particular ordinance has been lost. Alderman Burbridge was of the opinion that it was the duty of the street and alley committee to see that the railroad put in the walks at once, and if the C & A railroad didn't see fit to do so, to put them down themselves, and submit a bill to the railroad company. A motion was made instructing the street and alley committee to take prompt action in the case. What action they will take is problematical."* [62]
>
> September 1899. *"City Council. The city council met in regular monthly session Tuesday night. Chairman Briggs of the street and alley committee reported that the C & A railroad would repair approaches to the Third Street viaduct some time next week."* [63] *"Repaired. The bridge across the C & A railroad on Fourth*

Street has been thoroughly repaired. New plank have replaced the old and it has been otherwise fixed up." [64]

September 1899. *"At Last! We are more than delighted that we can announce to the public that the approaches to the Third Street viaduct across the C & A tracks have at last been replaced and the abused east side residents are probably more delighted, now that they can realize the pleasure of walking across the bridge in the good old fashioned way. Three long months have flitted fitfully away since the street was first torn up. A very satisfactory report will probably be received and placed on file at the next meeting of the city council."* [65]

The double intersection Warren truss bridge that stands today was put into service to carry Third Street over the railroad in 1907. The following newspaper account of the event was reported to the public as follows:

August 1907. *"The new bridge over the Alton tracks on Third Street was completed and thrown open to use Saturday afternoon. It is a solidly built structure after the same style as the old one, but about a foot higher. The old bridge was built twenty years ago. While waiting for the new bridge to be built the street was closed to all except foot passengers for about two months."* [66]

Reasons why the east approach span of the Third Street Bridge is not of the same type of construction as the main span Warren truss become apparent after viewing an old photograph and considering the quoted newspaper accounts.

It was evident that the bridge approaches were never well planned by the railroad company. Finding a structure that would span the tracks appeared to be the first and foremost priority of the railroad company. It was also evident that a lesser priority for the railroad company was to provide adequate means for transportation for members of the Delavan community.

It was not uncommon practice for builders and excavators to construct moderately deep earthen excavations along a railroad line when encountering variable topographic conditions. Cutting excavations through areas where the earth rises up was the railroad company's way to assure that a railroad track would be as level as possible. Such excavations also provide a safer overhead means of travel (by a bridge) for pedestrians, horse drawn carriages and motor cars. The railroad line between Fourth Street and Third Street was excavated for this purpose.

To minimize construction costs, the builders, in the absence of sound engineering principles, kept the volume of excavations at an absolute minimum. The resulting slope of an excavation is therefore very steep or nearly vertical and often unstable.

A photograph of a large Colony House, also referred to as the Phillips House[67] which was located at the southeast corner of the bridge, provides answers to the problems at the east end of the bridge which were documented in the newspaper accounts.

The Phillips House, built in 1837 [68] prior to the time of the railroad, burned down in 1897, after the railroad began operations in 1867. The photograph was taken some time in the late 1860's or 1870's and depicts the (westerly) front of the Phillips house. The foreground of photograph also clearly shows the badly eroded and nearly vertical eastern slopes of the railway excavation in front of the Phillips House. A map of Delavan in the 1870's,[69] and another map of Delavan in 1910 [70] confirms the proximity of the railroad tracks to the building's plot of land on the map labeled "Hotel Lot."

Most soils in Illinois are not capable of withstanding a vertical excavation of fifteen to twenty feet depth; the result of such a vertical excavation is an unstable condition with the earthen materials eroding and constantly falling away. Though not obvious, such conditions are depicted in the photograph.

It is very likely that the east approach span, a controversy since the railroad was built, was repaired a number of times due to continuing instability of the excavation. It is likely that the east span of the existing bridge was built only after the Phillips House was destroyed by fire, giving more room to flatten (and lengthen) the east slope to prevent the sides from further failures.

Accounts of life-long residents of Delavan point to the significance of "*The Loop*," a traditional course through the streets of Delavan which was traversed by many of the local residents and includes the [now closed] Third Street Bridge. The following are explanations of "*The Loop*" which are reminisced by Delavan residents Perry Cremeens (a retired engineer), Mayor Charles Denman (current Mayor of Delavan), Mr. Glen Allen (a retired farmer) and Robert Culbertson (a practicing Attorney at Law).

The following description of "The Loop" is brought to mind by Mr. Perry Cremeens, a retired electrical engineer, born in 1917, raised in Delavan and now retired and living in the community:

> *"For as long as any living Delavan residents can remember, the Third Street Bridge was a part of what the local citizens referred to as "the Loop." The Loop started at the east end of the intersection of Oak and Third street (the eastern end of Third). The Loop continued over the East Third Street Bridge, intersecting the northern section of the business district at Locust street, then continuing to the westerly edge of Third street at Harris. The route included Harris street over to Fourth street and back east through the residential area and business district, over the Fourth Street bridge and back east to its beginning at Oak and Third. By taking this route, residents would cross all the "hot spots" in town. They traveled through the town's most prestigious residential sections of West Third and Fourth streets, through the business district and past the park. People walked the Loop, skated the Loop, and drove the Loop. It was an important part of our culture growing up."* [71]

The following recollection of "The Loop" is offered by Mayor Denman:

> *"As a young person growing up in Delavan, the last thing you did before you went home at night was to drive around the Loop to see who was out and what was happening."* [72]

Mr. Glen Allen, age 91 and a retired farmer recalls "The Loop" in through these accounts:

> *"Mrs. D. L. (Agnes) Rowe was married to the local drug store owner. They lived in a house on Third street one block east of the bridge. According to her, when kerosene streetlights still lit the community, one was located at the east end of the bridge. It became a tradition after the local boys won an indoor baseball game, which was played at the Armory, for the team to make the trek to the bridge to extinguish this light. This was a signal to the townsfolk that they had won a victory."* [73]

> *"It was customary for everyone to take "the Loop." The upper class society proudly drove their carriages around the Loop. Mrs. Margaret Allen, Mrs. Mary Wood, Mrs. Edna Crabb, and Mrs. Wellington Wayne were frequently seen in*

their finery and beautiful carriages driving the Loop. The first electric cars in Delavan, also owned by some of these same individuals, could be seen taking the Loop. When giving rides to anxious passengers for the first time, those rides consisted of doing the Loop." [74]

"So important were they to the community, that the Loop, (Third and Fourth Streets) were the first to be paved." [75]

Robert Culbertson, a lifelong resident and currently practicing law in Delavan stated:

"When driving around in the family car was still considered good entertainment, many families took the occasion to do so following dinner on Sunday afternoon. They drove the Loop." [76]

For the eighty year period spanning from 1907 to 1987, there is no other known significant documentation about the bridge.

In 1987, the Illinois Department of Transportation performed a biannual inspection of the bridge and required the city of Delavan to post (erect signs for) a three ton load limit on the bridge.[77] During that same year, the city of Delavan investigated funding sources for repair or replacement of the bridge, but funding could not be obtained.

In 1989, another biannual bridge inspection was made in which the Illinois Department of Transportation determined after closer investigation, that the maximum single unit vehicle load crossing the bridge could be increased to six tons. The Illinois Department of Transportation still called for the city to erect signs to indicate to the motoring public of the maximum allowable loading on the bridge.[78] Despite this change in the bridge rating, the condition of the structural elements in the bridge continued to deteriorate.

A routine biennial bridge inspection was performed on April 14, 1992 for the city of Delavan by the firm of Crawford, Murphy and Tilly, Incorporated, a consulting engineering firm from Springfield, Illinois. A subsequent written report dated May 12, 1992 identified that the floor members were in very poor condition. The letter included a recommendation to the City Council that the bridge should be posted for a weight limit of six tons and included four other additional recommendations " . . . to preserve the functional and structural integrity of the bridge." [79]

While the bridge remained open to traffic, the city of Delavan began investigating possibilities of removing the bridge. The following account was reported in the local newspaper:

> June 1992. *"Alderman Richard Brenneman, Chairman of the Streets and Alleys Committee, presented to the council a cost estimate from Crawford, Murphy & Tilly, for the demolition of the Third Street Bridge. The matter will be considered at a meeting of the Finance Committee."* [80]

While the efforts to seek funding continued, an automobile accident occurred at the bridge on October 30, 1992. On that Friday evening, a motorist driving under the influence of alcohol, struck the wooden divider rail separating the passenger walkway from the vehicle lane on the bridge. Several posts and railings were damaged or destroyed in the accident. The city immediately erected lighted barricades to prevent any additional vehicles to cross the bridge. Shortly after the accident, city maintenance personnel removed all of the wooden railing and posts that separated the traffic from the pedestrian lane, and the bridge remained closed to traffic.

During the following months of November and December of 1992, a decision was made to keep the bridge closed to vehicular traffic. On December 16, 1992 the city of Delavan formally notified the Illinois Department of Transportation that the bridge was closed and that the city was in the process of obtaining proper barricades and signs for permanent closure of the bridge.

Even as the bridge itself remains closed to traffic, there is strong support in this history rich community, to restore the bridge with the traffic lane and pedestrian lane separated by timber railing. Restoring the bridge to serve vehicular and pedestrian traffic is within the realm of possibility, since the truss elements were originally used to carry railroad traffic. Not only would the bridge's restoration enhance the community, but reopening the Third Street Bridge would allow pedestrians and the motoring public to once again experience "*The Loop,*" the traditional course through the streets of Delavan.

End Notes

[8] Interview with John B. Goeken, lifelong resident of Delavan, 6 February, 1999.
[9] Donald C. Jackson, Great American Bridges and Dams, (Washington D.C.: Preservation Press, 1988), pp. 20-21.
[10] Jackson, p 21.
[11] T. Allan Comp and Donald Jackson, Bridge Truss Types: A Guide to Dating and Identifying, American Association for State and Local History, Technical Leaflet 95, History News 32 (1977), p. 3.
[12] Jackson, p. 23.
[13] Jackson, pp. 22-25.
[14] Eric Delony, Landmark American Bridges, (New York: Historic American Engineering Record, American Society of Civil Engineers), pp 42-67.
[15] DeLony, pp. 2-67; Jackson pp. 23-26.
[16] Hubert Shirley-Smith, The World's Great Bridges, (New York: Harper & Row, 1965), pp. 91-92.
[17] David Jacobs and Anthony E. Neville, Bridges, Canals & Tunnels, The Engineering Conquest of America, (New York: The American Heritage Publishing Company, 1968), p. 35.
[18] DeLony, p. 42 & p. 67.
[19] Shirley-Smith, p. 76.
[20] Bruce Clouette and Matthew Roth, Connecticut's Historic Highway Bridges, (Connecticut Department of Transportation in cooperation with the Federal Highway Administration, 1991), p. 9.
[21] Comp, p. 6; Jackson, p. 27.
[22] Jackson, p. 24.
[23] P.A.C. Spero & Company, Delaware Historic Bridges Survey and Evaluation, (Delaware Department of Transportation Historic Architecture and Engineering Series No. 89, 1991), p. 44; Jackson, p. 27; DeLony, P. 43.
[24] Donald C. Jackson, "Railroads, Trusses and the Rise of the Civil Engineer," Civil Engineering Magazine, (A Special Issue Celebrating ASCE's 125th Anniversary, Turning Points in U.S. Civil Engineering History), Vol. 47, No. 10, October 1977), p 97; Jackson, Great American Bridges and Dams, p. 27.
[25] Jackson, Great American Bridges and Dams, p. 27.
[26] Jackson, Civil Engineering Magazine, p. 97.
[27] Jackson, Civil Engineering Magazine, p. 97; Jackson, Great American Bridges and Dams, pp. 28-29.
[28] P.A.C. Spero & Company, Delaware Historic Bridges Survey and Evaluation, (Delaware Department of Transportation Historic Architecture and Engineering Series No. 89, 1991), p. 43.
[29] David A. Simmons, " "The Continuous Clatter": Practical Field Riveting." Industrial Archeology, Volume 23, Number 21 (1997), p. 5;Jackson, Great American Bridges and Dams, pp. 28-29.
[30] Jackson, p. 29.
[31] Comp, p. 10.

Endnotes continued on the next page.

[32] Linton E. Grinter, Design of Modern Steel Structures, (New York: The Macmillan Company, 1941), p. 13.
[33] David Weitzman, Traces of the Past, A Field Guide to Industrial Archaeology, (New York: Charles Scribner's Sons, 1980), p 111.
[34] Jackson, Great American Bridges and Dams, pp. 29-30.
[35] Bruce Clouette and Matthew Roth, Connecticut's Historic Highway Bridges, (Connecticut Department of Transportation in cooperation with the Federal Highway Administration, 1991), p. 7.
[36] Clouette, p. 15.
[37] Refer to Bridge Condition Report, April, 1998, by Crawford, Mruphy & Tilly, Inc. Consulting Engineers.
[38] Victor C. Darnell, Directory of American Bridge Building Companies 1840-1900, (Washington, D.C.: Society for Industrial Archaeology, Occasional Publication No. 4, 1984) pp. 36-37.
[39] Darnell, p. 37 & p. 87.
[40] Darnell, p. 87.
[41] Interview with John B. Goeken, lifelong resident of Delavan, 6 February, 1999.
[42] Interview with John B. Goeken, lifelong resident of Delavan, 6 February, 1999.
[43] Comp, p. 10.
[44] Delavan History Book Committee. Delavan Illinois 1837-1987, (Delavan, Illinois: The Delavan Times, 1987), pp. 19–21.
[45] Workers of the Federal Writers' Project of the Works Progress Administration of the State of Illinois (WPA). Delavan 1837-1937, A Chronicle of 100 Years, (Delavan, Illinois: The City of Delavan, Illinois, 1937) p. 20.
[46] Delavan History Book Committee, Delavan, Illinois 1837-1987, p. 8; A second railroad, the Pekin, Lincoln and Decatur, running east and west, was surveyed in 1867. It later became part of the Peoria, Decatur and Evansville, and finally the Illinois Central Railroad. The opening of the two railroad lines enabled Delavan to become a thriving agricultural center with the establishment of additional stores, a newspaper, a bank, and a flour mill.
[47] Delavan History Book Committee, Delavan, Illinois 1837-1987, p. 8.
[48] Delavan History Book Committee, Delavan, Illinois 1837-1987, p. 8.
[49] Delavan History Book Committee, Delavan, Illinois 1837-1987, p. 8.
[50] Delavan Citizen Bridge Committee, Meeting Minutes, (statements by Mayor Charles Denman), October 27, 1998.
[51] "Fix the Bridge." The Delavan Times. March 24, 1876.
[52] "Local Laconics." The Delavan Times. September 8, 1876.
[53] "Town Board Proceedings." The Delavan Times. September 8, 1876.
[54] "Village Board Proceedings." The Delavan Times. September 6, 1877.
[55] "Local Laconics." The Delavan Times. February 28, 1878.
[56] "The New Bridge." The Delavan Times. March 7, 1878.
[57] "The Bridge." The Delavan Times. January 27, 1881.
[58] "Grading." The Delavan Times. October 20, 1881.
[59] "Poor Grade." The Delavan Times. November 3, 1881.

Endnotes continued on the next page.

[60] "New Bridge." The Delavan Times-Press. May 4, 1899.
[61] "New Viaduct." The Delavan Times-Press. May 25, 1899.
[62] "City Council." The Delavan Times-Press. July 13, 1899.
[63] "City Council." The Delavan Times-Press. September 7, 1899.
[64] "Repaired." The Delavan Times-Press. September 7, 1899.
[65] "At Last." The Delavan Times-Press. September 21, 1899.
[66] "Bridge Completed." The Delavan Times-Press. August 28, 1907.
[67] Delavan History Book Committee, Delavan Illinois 1837-1987, p. 26.
[68] Delavan History Book Committee, Delavan Illinois 1837-1987, p. 26; Charles C. Chapman & Company, A History of Tazewell County Illinois, p. 434, 441; In the Spring of 1837, a party of carpenters and builders headed by W. W. Crossman from Providence, Rhode Island arrived. They erected the Colony House as the southeast corner of East Third and Chestnut, (an area later referred to as the Hotel Block). The Colony House, (also known as the Delavan House), was to be divided into compartments suitable for family house-keeping, for the accommodation of the settlers, until they should be able to build their own places. Lumber for the Colony House and for several early homes was shipped from the East. When the first rooms of the Colony House were completed, Mrs. W.W. Crossman, wife of the builder, came to Delavan to stay, thus becoming the first woman settler. The building was completed in the spring of 1838. After the inhabitants of the town had erected their homes, the Colony House was leased to Ira B. Hall, formerly of Springfield. (While living in Springfield, Mr. Hall was intimately associated with Abraham Lincoln, Stephen A. Douglas and others of Illinois' honored sons.) Ira B. Hall opened it as a hotel in 1840. Shortly after, the Chicago, Peoria, and Springfield Stagecoach Line, which had been passing a half mile west of Delavan, was induced to change its route to Delavan. The Delavan House (formerly the Colony House) became a scheduled station for the coach company and a point where the four horse teams were changed. Over the years, guests who registered at the Delavan House included Abraham Lincoln, Steven A. Douglas, Judge David Davis, and Judge Steven T. Logan. The Delavan House was sold to James Phillips in 1845 and subsequently became known as the Phillips House. The building was destroyed by fire in 1879. The original Colony House, is seen in this picture as the Phillips House. According to Delavan Historical Society President and lifelong Delavan resident, Glenn Allen, the bottom portion of the photo depicts the original excavation for the railroad which was being built. The Third Street Bridge was built adjacent to this site.
[69] Map of Delavan Tazewell Co. Ills. T22N. R4W of 3rd P.M, Atlas Map of Tazewell County Illinois, (Devenport Iowa: Andreas, Lyter & Company, published after 1872), p. 56.
[70] (Map of) Delavan & Delavan Twp., Standard Atlas of Tazewell County, Illinois including Plat Book, (Chicago: Geo. A. Ogle & Co., 1910), p.36-37.
[71] Perry Cremeens, Meeting Minutes, Delavan Community Meeting, (Mr. Cremeens is a retired electrical engineer, born in 1917, raised in Delavan and now retired and living in Delavan), 3 September, 1998.
[72] Mayor Charles Denman, Meeting Minutes, Delavan Citizen Bridge Committee, (Mayor of Delavan, term May, 1997 to May, 2001), 27 October, 1998.
[73] Glen Allen, Interview, (Mr. Allen is 91 years of age and a retired farmer. He helped establish the Delavan Historical Society and is a former president of that organization. He is also a well known benefactor to many community organizations), November 12, 1998.
[74] Glen Allen, Interview, November 12, 1998.
[75] Glen Allen, Interview, November 12, 1998.

Endnotes continued on the next page.

[76] Robert Culbertson, Meeting Minutes, Delavan Rotary Meeting, (Mr. Culbertson, Attorney at Law, was born in 1932 and is a lifelong resident of Delavan, currently practicing law. His firm, Culbertson, Culbertson & Allen, is located in Delavan), October 6, 1998.
[77] Lloyd E. Dixon, Letter to Ms. Penny L. Bright, Delavan City Clerk, Bridge Rating, (Illinois Department of Transportation, May 18, 1987), p. 1.
[78] Lloyd E. Dixon, Letter to Honorable Suzanne Hoover, Mayor of Delavan, Bridge Rating, (Illinois Department of Transportation, November 13, 1989), p. 1.
[79] Thomas R. Casson and Richard J. Kerhlikar, Letter to Honorable Mayor and City Council, (Crawford, Murphy & Tilly, Inc., Consulting Engineers, May 12, 1992), pp. 1-2 with attachments.
[80] "City Considers Demolition Of Third Street Bridge." The Delavan Times. June 10, 1992.

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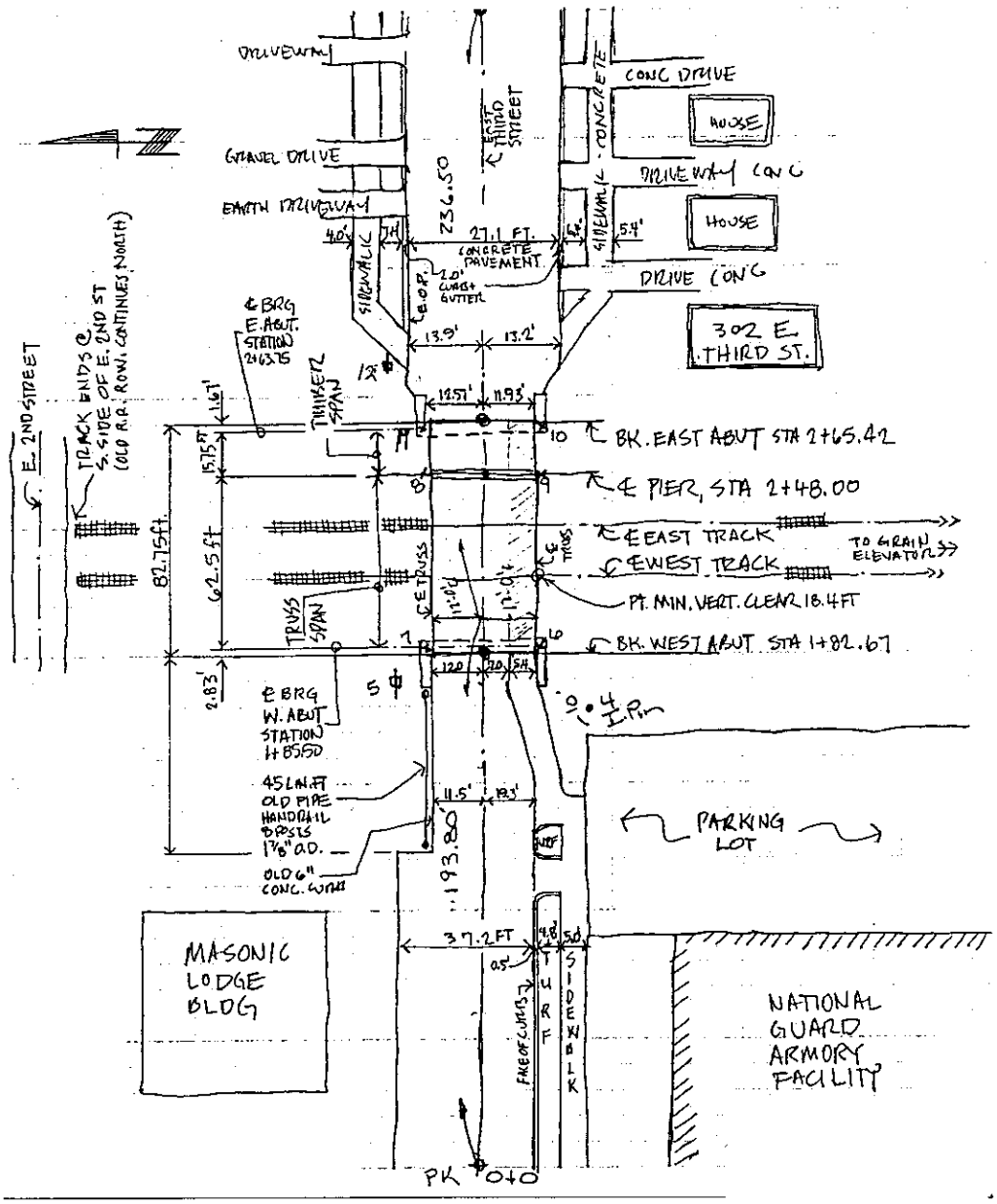
Verbal Boundary Description

The northerly boundary line begins at the farthest northwest corner of the west abutment's north wing wall, and extends in an easterly direction, following the line of the bridge structure, to include only the land on which the bridge stands, to the farthest northeast corner of the east abutment's north wing wall. The southerly boundary line begins at the farthest southwest corner of the west abutment's south wing wall, and extends in an easterly direction, following the line of the bridge structure, to include only the land on which the bridge stands, to the farthest southeast corner of the east abutment's south wing wall. The west boundary line begins at a point at the farthest northwest corner of the west abutment's north wing wall and extends in a southerly direction, following the line of the structure, to include only the land on which the bridge stands, to the farthest southwest corner of the west abutment's south wing wall. The east boundary line begins at a point on the farthest northeast corner of the east abutment's north wing wall and extends in a southerly direction, following the line of the structure, to include only the land on which the bridge stands, to the farthest southeast corner of the east abutment's south wing wall. Refer also to the Location Map.

Boundary Justification

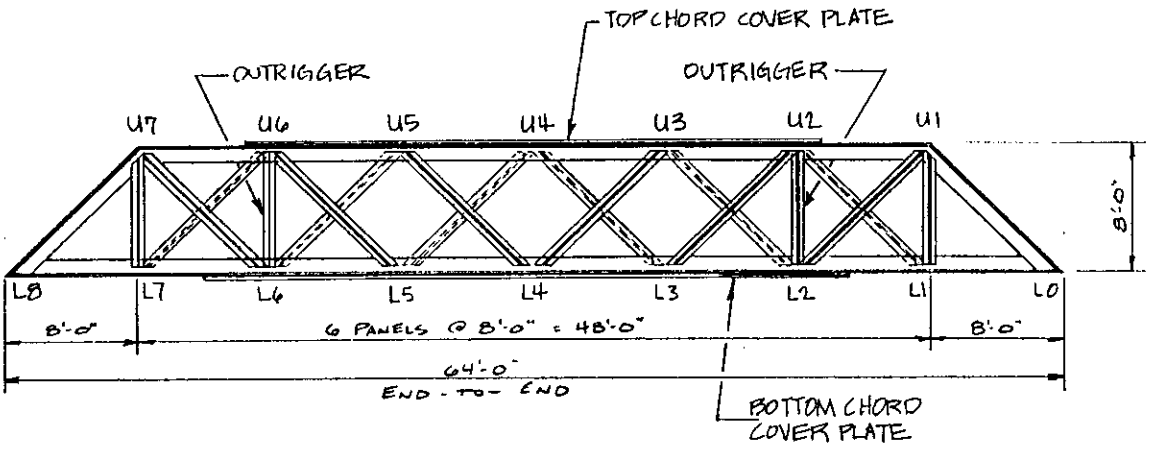
The boundary includes only that portion of land which directly relates to the Third Street Bridge, its structural elements, including the metal pier, the cast-in-place concrete abutments and wing walls.

The site is located in the Northwest quarter of Section ten, Township twenty-two North, Range four West, in the Third Principal Meridian (NW 10 T22N R4W, 3rd PM).



SITE TOPO SKETCH

THIRD STREET BRIDGE, DELAVAN



EXISTING TRUSS ELEVATION

1/8" = 1'-0"

(LOOKING NORTH AT EXTERIOR FACE)

ELEVATION

EXISTING TRUSS

United States Department of the Interior

NATIONAL PARK SERVICE
1849 C Street, N.W.
Washington, D.C. 20240

IN REPLY REFER TO:

The Director of the National Park Service is pleased to announce actions on the following properties for the National Register of Historic Places. For further information contact Edson Beall via voice (202) 343-1572, fax (202) 343-1836, regular or E-mail: Edson_Beall@nps.gov

Visit our web site at http://www.cr.nps.gov/nr

MAY 28 1999

WEEKLY LIST OF ACTIONS TAKEN ON PROPERTIES: 5/17/99 THROUGH 5/21/99

KEY: State, County, Property Name, Address/Boundary, City, Vicinity, Reference Number, NHL, Action, Date, Multiple Name

ARKANSAS, SEBASTIAN COUNTY, Fort Smith National Cemetery, 522 Garland Ave. and S. 6th St., Fort Smith, 99000578, LISTED, 5/20/99 (Civil War Era National Cemeteries MPS)
CALIFORNIA, LOS ANGELES COUNTY, Willmore, The, 315 W. Third St., Long Beach, 99000579, LISTED, 5/20/99
CALIFORNIA, MODOC COUNTY, Jess Valley Schoolhouse, Cty. Rd. 64, Likely vicinity, 99000582, LISTED, 5/20/99
CALIFORNIA, SANTA CLARA COUNTY, Allen, Theophilus, House, 601 Melville Ave., Palo Alto, 99000580, LISTED, 5/20/99
ILLINOIS, FULTON COUNTY, Palmer, Hiram, House, 703 E. Fort St., Farmington, 99000589, LISTED, 5/20/99
ILLINOIS, KANE COUNTY, Holy Cross Church, 14 N. Van Buren St., Batavia, 99000587, LISTED, 5/20/99
ILLINOIS, STEPHENSON COUNTY, Central House, 210 W. High St., Orangeville, 99000585, LISTED, 5/20/99
ILLINOIS, TAZEWELL COUNTY, Third St. Bridge, Third St., bet. Pine and Elm Sts., Delavan, 99000586, LISTED, 5/20/99
LOUISIANA, EAST BATON ROUGE PARISH, Port Hudson National Cemetery, 20978 Port Hickey Rd., Zachary, 99000591, LISTED, 5/20/99 (Civil War Era National Cemeteries MPS)
LOUISIANA, EAST BATON ROUGE PARISH, Southern University Historic District, Netterville Dr. and Swan Ave., Baton Rouge, 99000590, LISTED, 5/20/99
LOUISIANA, LA SALLE PARISH, Trout--Good Pine School, School Rd., Good Pine, 99000592, LISTED, 5/20/99
MISSISSIPPI, WILKINSON COUNTY, Woodville Historic District (Boundary Increase II), Roughly along Depot, First West, Main, Second South, Sligo, Third South, and Water Sts., Woodville, 99000594, LISTED, 5/20/99
MISSOURI, BUCHANAN COUNTY, St. Joseph Public Library--Carnegie Branch, 316 Massachusetts St., St. Joseph, 99000595, LISTED, 5/20/99
MISSOURI, PULASKI COUNTY, Onyx Cave, 14705 Private Drive 8541, Newburg vicinity, 99000529, LISTED, 5/21/99
MONTANA, GALLATIN COUNTY, Adams Block, 123 Main St., Three Forks, 99000597, LISTED, 5/20/99
MONTANA, LEWIS AND CLARK COUNTY, Mann Gulch Wildfire Historic District, Mann Gulch, tributary of the Missouri River, Helena vicinity, 99000596, LISTED, 5/19/99
NEW YORK, DELAWARE COUNTY, Christ Episcopal Church, 41 Gardiner Pl., Walton, 99000563, LISTED, 5/18/99
OKLAHOMA, MUSKOGEE COUNTY, Fort Gibson National Cemetery, 1423 Cemetery Rd., Fort Gibson, 99000601, LISTED, 5/20/99 (Civil War Era National Cemeteries MPS)
OREGON, CLATSOP COUNTY, Leinenweber, Christian, House, 3480 Franklin Ave., Astoria, 99000604, LISTED, 5/20/99
OREGON, DESCHUTES COUNTY, Moore, Robert D., House, 545 NW Congress St., Bend, 99000603, LISTED, 5/19/99
OREGON, LINCOLN COUNTY, Pacific Spruce Saw Mill Tenant Houses, 146, 162, 178, and 192 NE Sixth St., Toledo, 99000602, LISTED, 5/20/99
OREGON, MULTNOMAH COUNTY, Cobb, Samuel, House, 1314 SE 55th Ave., Portland, 99000607, LISTED, 5/20/99
OREGON, MULTNOMAH COUNTY, Holden, William B., House, 6347 SE Yamhill, Portland, 99000605, LISTED, 5/20/99
OREGON, MULTNOMAH COUNTY, Miller, Claude Hayes, House, 13051 SE Claybourne St., Portland, 99000606, LISTED, 5/20/99
PENNSYLVANIA, BRADFORD COUNTY, Welles, Ellen and Charles F., House, 1 Grovedale Ln., Wyalusing Township, 99000608, LISTED, 5/20/99
PENNSYLVANIA, FAYETTE COUNTY, Oak Hill Estate, US 40, 0.25 mi. W of US 119, North Union Township, 99000514, LISTED, 5/12/99
SOUTH CAROLINA, SPARTANBURG COUNTY, New Hope Farm, 10088 Greenville Hwy., Wellford, 98000558, LISTED, 5/20/99
TEXAS, HARDIN COUNTY, Kirby--Hill House, 210 Main St., Kountze, 99000610, LISTED, 5/20/99
UTAH, CARBON COUNTY, Clerico Commercial Building, 4985 N. Spring Glen Rd., Spring Glen, 99000619, LISTED, 5/20/99
UTAH, CARBON COUNTY, Manina, Camillo, House, Approx. 1756 W 400 N, Spring Glenn, 99000618, LISTED, 5/20/99
UTAH, SALT LAKE COUNTY, Silver Brothers' Iron Works Office and Warehouse, 550 W 700 S, Salt Lake City, 99000622, LISTED, 5/20/99 (Salt Lake City Business District MRA)
VERMONT, CALEDONIA COUNTY, Mathewson Block, Jct. of Main St. and Maple St., Lyndon, 99000623, LISTED, 5/20/99