FRYER'S FORD BRIDGE, 1890-91

CONWAY COUNTY, ARKANSAS

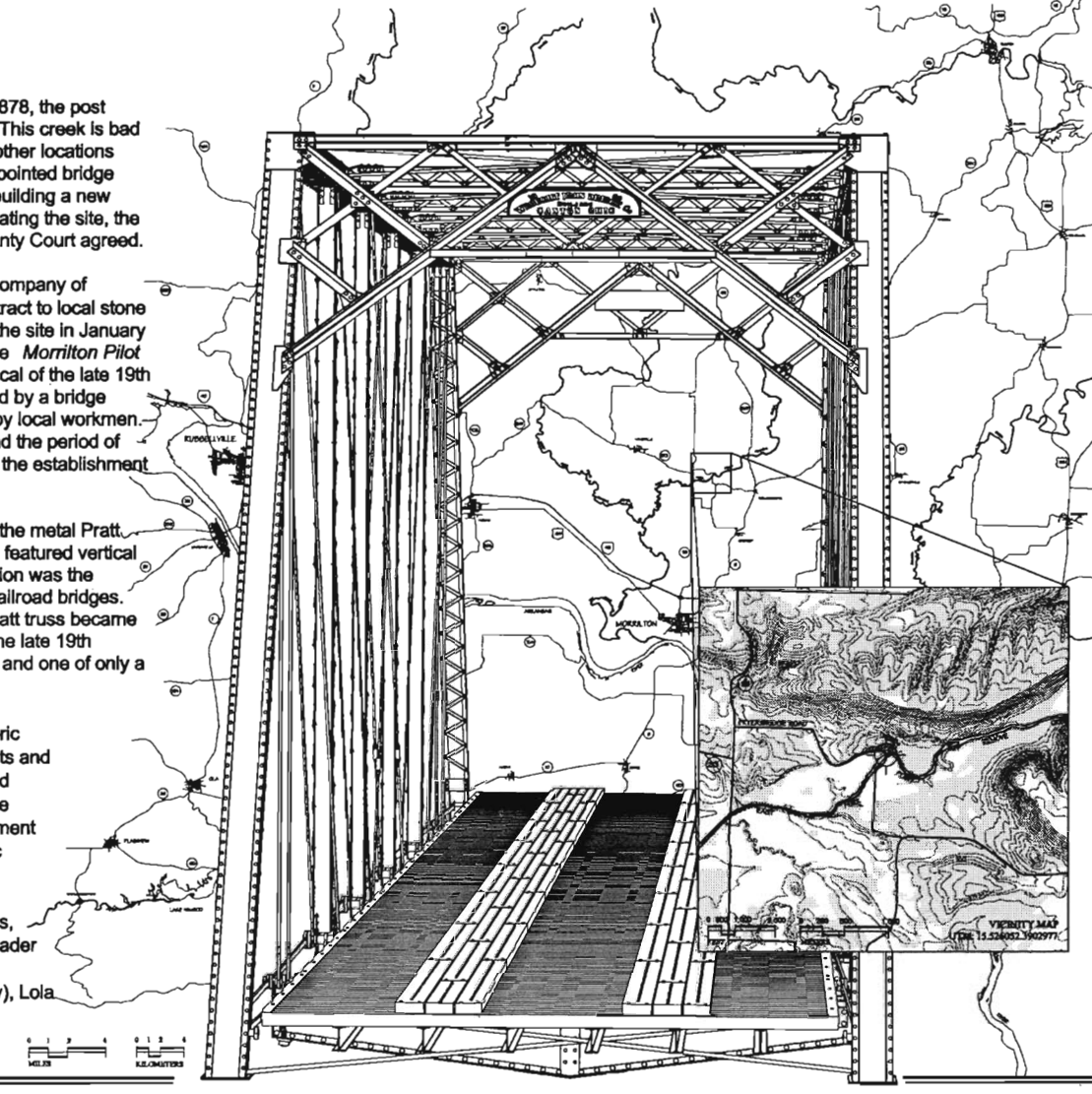
When the Solgohachia post office was established near this site in 1878, the post master located Point Remove Creek on his official report with the notation, "This creek is bad to cross." The Conway County Court authorized construction of bridges at other locations along the creek in the 1870's and 80's, but it was not until 1889 that they appointed bridge commissioners to examine sites "at or near Fryer's Ford for the purpose of building a new bridge." Originally, this was specified as a wooden bridge, but after investigating the site, the bridge commissioners advocated construction of an iron bridge and the County Court agreed.

In January 1890, the county let a contract to the Wrought Iron Bridge Company of Canton, Ohio for an iron superstructure costing $3,898, and a separate contract to local stone mason, Alfred Cook, for building stone abutments. The ironwork arrived at the site in January and was erected in the early spring of 1891. Upon the span's completion, the *Morrilton Pilot* stated: "The iron bridge at Friar's Ford is a beautiful structure." As was typical of the late 19th century, the Fryer's Ford Bridge was financed by county taxes, manufactured by a bridge manufacturing firm in another state, shipped to the site by rail, and erected by local workmen. It is highly representative of both the era of metal truss bridge technology and the period of Arkansas history that saw the development of county road systems, prior to the establishment of the Arkansas State Highway Commission.

The bridge is also an excellent example of a once-common truss type, the metal Pratt through truss. Patented in 1844 by Caleb and Thomas Pratt, the Pratt truss featured vertical members in compression and diagonal members in tension. This configuration was the reverse of the 1840 Howe truss that was used extensively for 19th century railroad bridges. While not immediately popular in its combination wood and iron form, the Pratt truss became one of the most popular truss types for moderate-span all-metal bridges in the late 19th century. The Fryer's Ford Bridge is the oldest in-service bridge in Arkansas and one of only a few surviving 19th century metal truss bridges in the state.

The Arkansas Historic Bridges Recording Project is part of the Historic American Engineering Record (HAER), a long-range program that documents and interprets historically significant engineering, industrial and maritime sites and structures throughout the United States. This project was cosponsored in the summer of 2005 by the Arkansas State Highway and Transportation Department (AHTD), Dan Flowers, Director of Highways and Robert W. Scoggin, Historic Resources Coordinator, Environmental Division.

The summer field team was under the direction of Thomas M. Behrens, HAER Architect. The recording team included Brian Carnahan, field team leader (University of Arkansas, Fayetteville), Amy James, Architect (University of Arkansas, Fayetteville), Tiziana Di Franscesco, Architect (US ICOMOS, Italy), Lola Bennett, HAER Historian (Stow, Massachusetts), and Jet Lowe, HAER Photographer.



HISTORIC AMERICAN ENGINEERING RECORD
AR-64

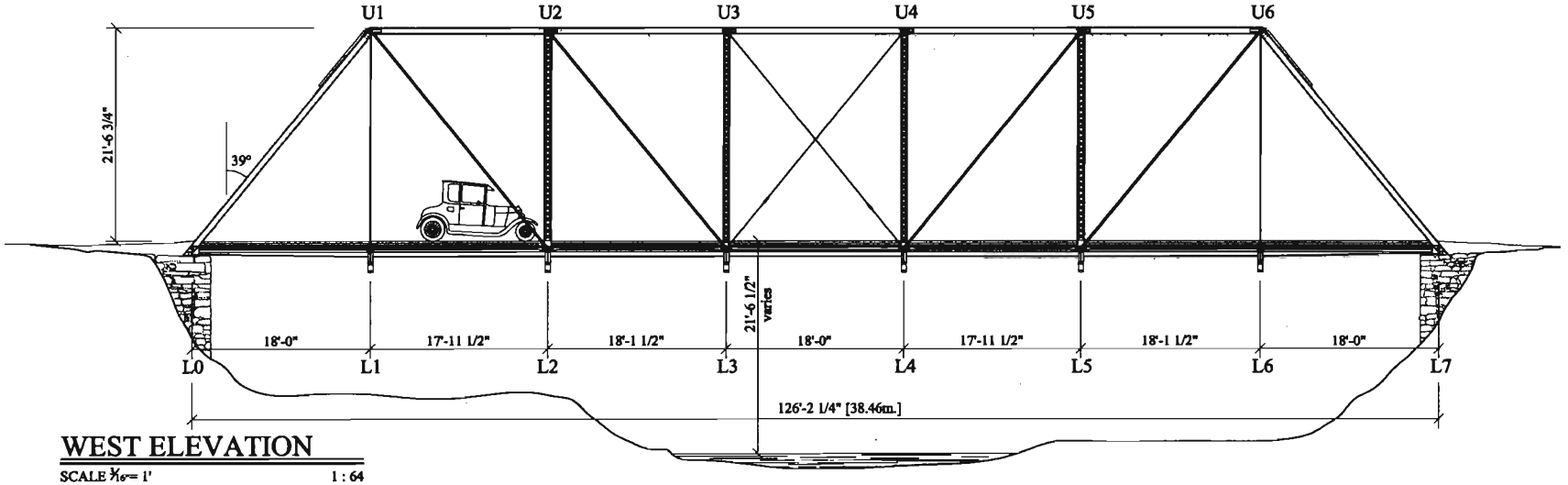
SHEET 1 OF 8

FRYER'S FORD BRIDGE (SOLGOHACHIA BRIDGE; FRY BRIDGE), 1890-91
SPANNING EAST FORK OF POINT REMOVE CREEK AT FRYER BRIDGE ROAD, (CR 67)
CONWAY COUNTY ARKANSAS

SOLGOHACHIA VICINITY

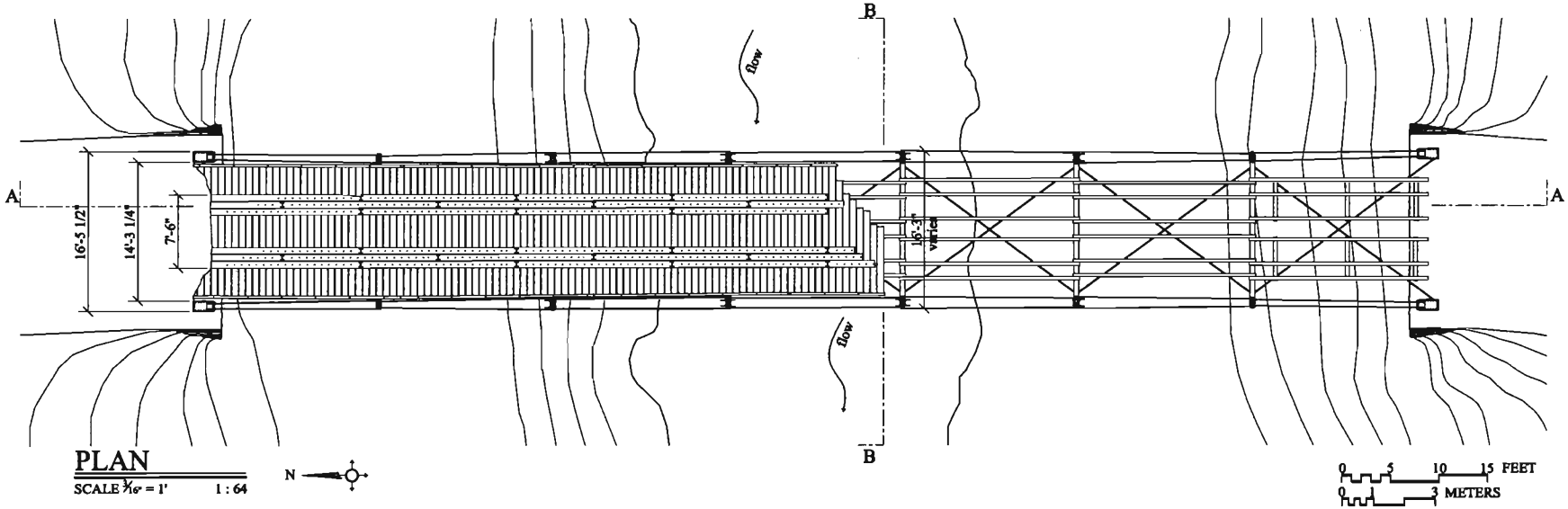
DELINEATED BY: BRIAN CARNAHAN, AMY JAMES, SUMMER 2005

ARKANSAS HISTORIC BRIDGES RECORDING PROJECT
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR



WEST ELEVATION

SCALE 3/16" = 1' 1 : 64



PLAN

SCALE 3/16" = 1' 1 : 64

DELINEATED BY: BRIAN CARNAHAN, AMY JAMES, SUMMER 2005

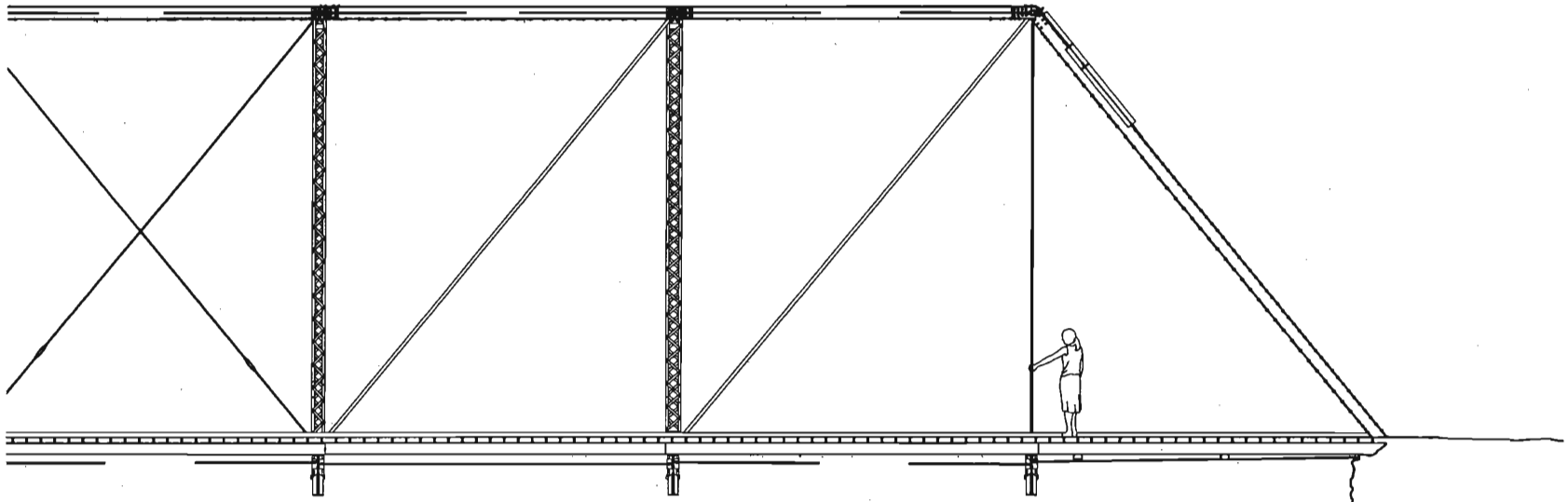
ARKANSAS HISTORIC BRIDGES RECORDING PROJECT
HISTORIC AMERICAN ENGINEERING RECORD
UNITED STATES DEPARTMENT OF THE INTERIOR

FRYER'S FORD BRIDGE (SOLGOHACHIA BRIDGE; FRY BRIDGE), 1890-91
SPANNING EAST FORK OF POINT REMOVE CREEK AT FRYER BRIDGE ROAD, (CR 67)
CONWAY COUNTY ARKANSAS

SOLGOHACHIA VICINITY

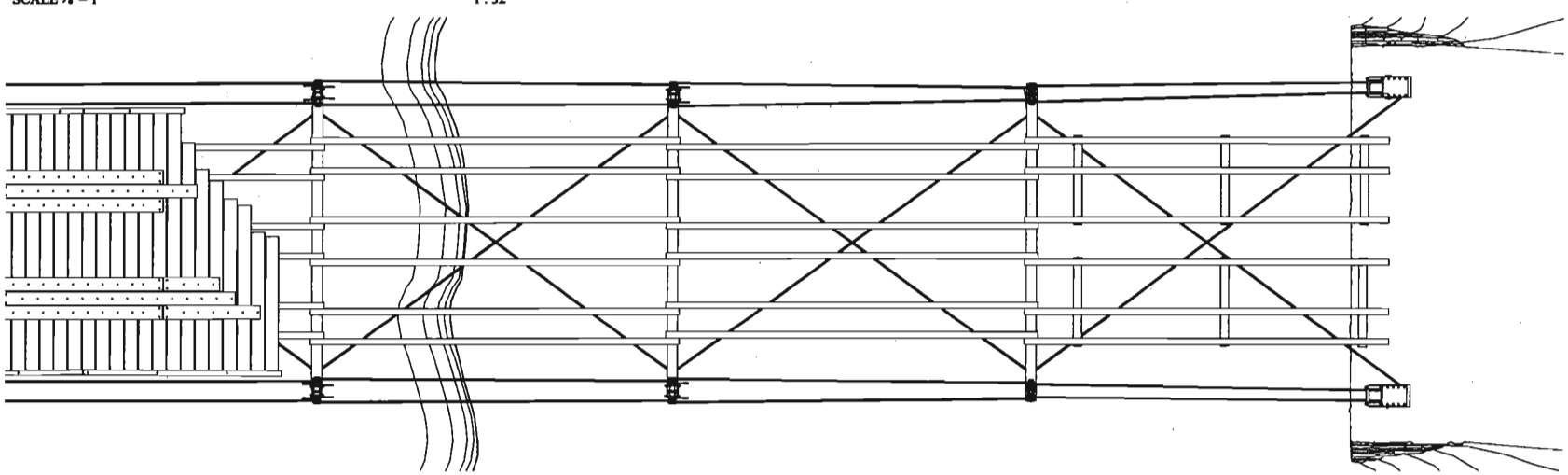
SHEET 2 OF 8

HISTORIC AMERICAN ENGINEERING RECORD AR-64



LONGITUDINAL SECTION AA

SCALE ⅜"= 1' 1 : 32



PLAN

SCALE ⅜"= 1' 1 : 32

N

0 1 2 3 4 5 10 FEET

0 1 2 3 METERS

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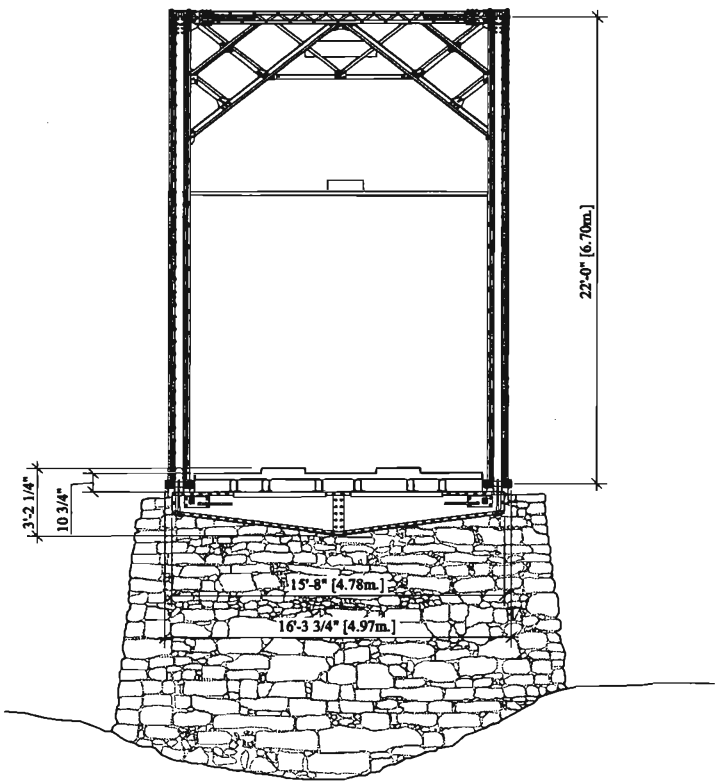
ARKANSAS HISTORIC BRIDGES
RECORDING PROJECT
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

FRYER'S FORD BRIDGE (SOLGOHACHIA BRIDGE; FRY BRIDGE), 1890-91
SPANNING EAST FORK OF POINT REMOVE CREEK AT FRYER BRIDGE ROAD, (CR 617)
CONWAY COUNTY ARKANSAS

SOLGOHACHIA VICINITY

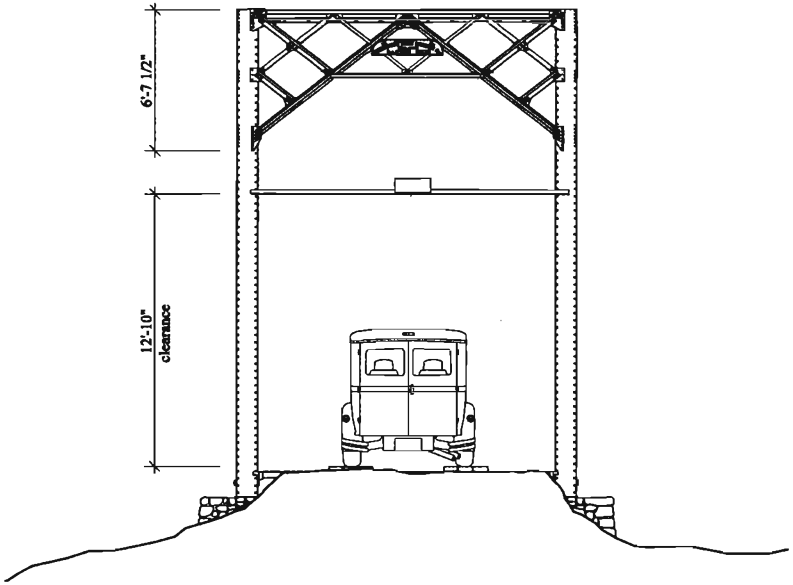
SHEET 3 OF 8

HISTORIC AMERICAN ENGINEERING RECORD AR-64



TRANSVERSE SECTION BB

SCALE 3/8"= 1' 1 : 32



SOUTH ELEVATION

SCALE 3/8"= 1' 1 : 32

0 1 2 3 4 5 10 FEET

0 1 2 3 METERS

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ARKANSAS HISTORIC BRIDGES
RECORDING PROJECT
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

SOLGOHACHIA VICINITY

FRYER'S FORD BRIDGE (SOLGOHACHIA BRIDGE; FRY BRIDGE), 1890-91
SPANNING EAST FORK OF POINT REMOVE CREEK AT FRYER BRIDGE ROAD, (CR 67)
CONWAY COUNTY ARKANSAS

SHEET 4 OF 8

HISTORIC AMERICAN ENGINEERING RECORD
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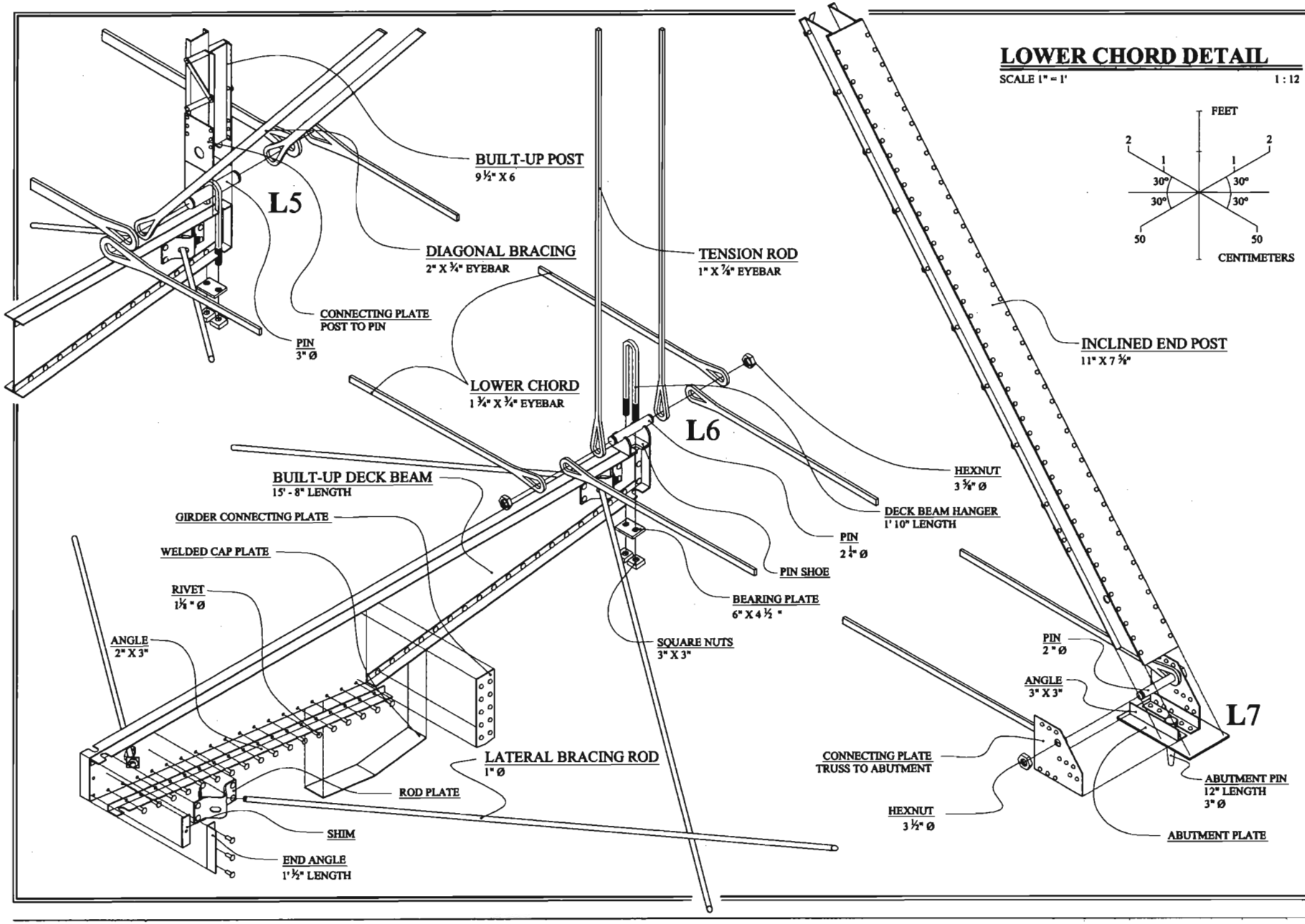
LOWER CHORD DETAIL
SCALE 1" = 1'
1 : 12
FEET
2
1
30°
30°
50
CENTIMETERS
L5
L6
L7
BUILT-UP POST
9½" X 6
DIAGONAL BRACING
2" X ¾" EYEBAR
CONNECTING PLATE
POST TO PIN
PIN
3" Ø
TENSION ROD
1" X ⅞" EYEBAR
LOWER CHORD
1 ¾" X ¾" EYEBAR
BUILT-UP DECK BEAM
15' - 8" LENGTH
GIRDER CONNECTING PLATE
WELDED CAP PLATE
RIVET
1⅛" Ø
ANGLE
2" X 3"
LATERAL BRACING ROD
1" Ø
ROD PLATE
SHIM
END ANGLE
1' ½" LENGTH
HEXNUT
3 ⅜" Ø
DECK BEAM HANGER
1' 10" LENGTH
PIN
2 ½" Ø
PIN SHOE
BEARING PLATE
6" X 4 ½ "
SQUARE NUTS
3" X 3"
INCLINED END POST
11" X 7 ⅜"
PIN
2 " Ø
ANGLE
3" X 3"
CONNECTING PLATE
TRUSS TO ABUTMENT
HEXNUT
3 ½" Ø
ABUTMENT PIN
12" LENGTH
3" Ø
ABUTMENT PLATE
DELINEATED BY: AMY JAMES, SUMMER 2005
ARKANSAS HISTORIC BRIDGES
RECORDING PROJECT
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR
FRYER'S FORD BRIDGE (SOLGOHACHIA BRIDGE; FRY BRIDGE), 1890-91
SPANNING EAST FORK OF POINT REMOVE CREEK AT FRYER BRIDGE ROAD, (CR 87)
CONWAY COUNTY
SOLGOHACHIA VICINITY
ARKANSAS
SHEET
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HISTORIC AMERICAN ENGINEERING RECORD
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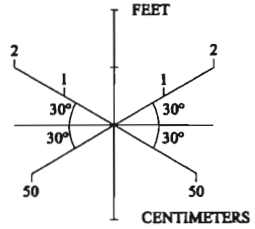
UPPER CHORD DETAIL

SCALE 1" = 1' 1 : 12



DELINEATED BY: AMY JAMES, SUMMER 2008

ARKANSAS HISTORIC BRIDGES RECORDING PROJECT
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UNITED STATES DEPARTMENT OF THE INTERIOR

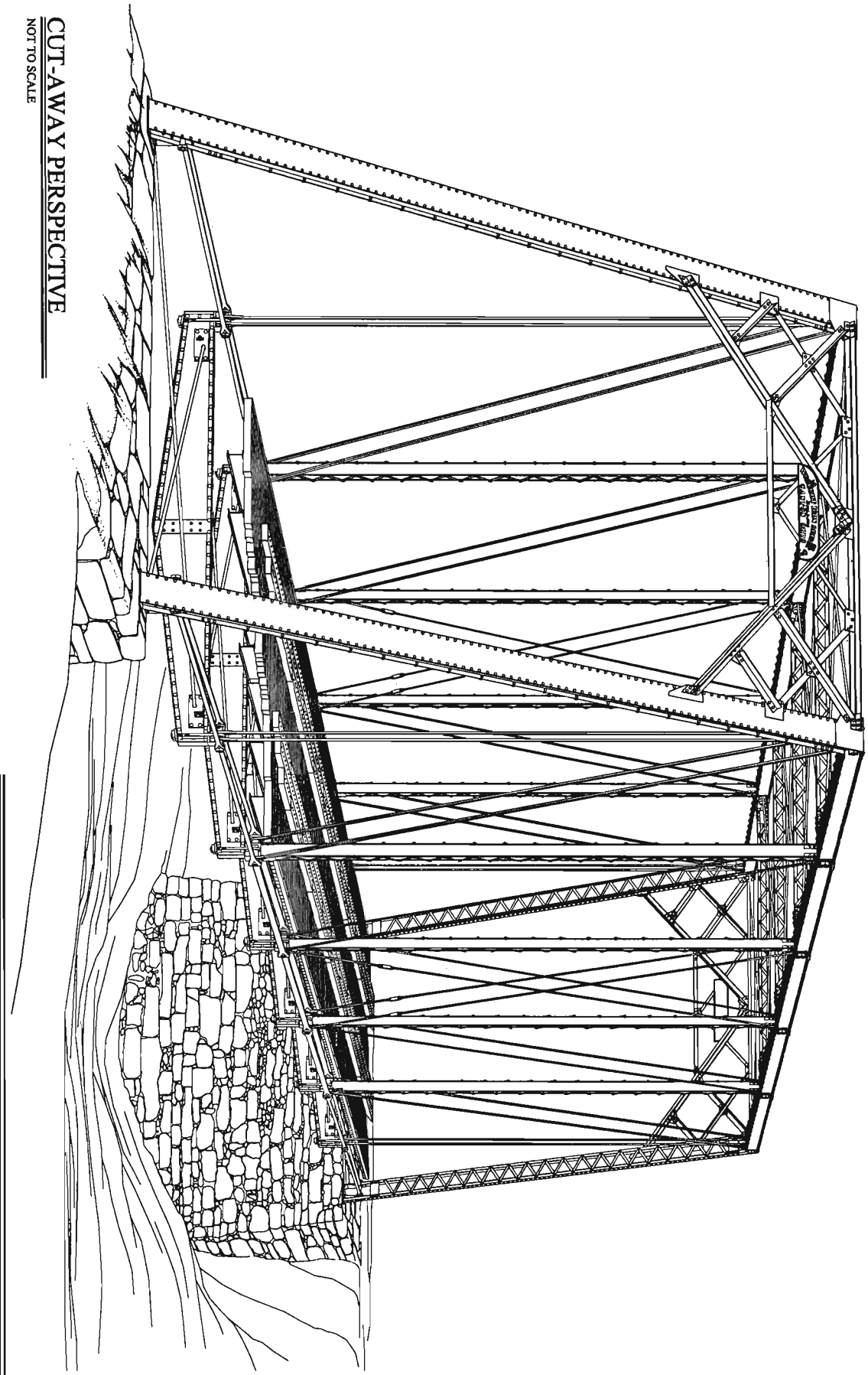
FRYER'S FORD BRIDGE (SOLGOHACHIA BRIDGE; FRY BRIDGE), 1890-91
SPANNING EAST FORK OF POINT REMOVE CREEK AT FRYER BRIDGE ROAD, (CR 67)
CONWAY COUNTY
ARKANSAS
SOLGOHACHIA VICINITY

SHEET 6 OF 8

HISTORIC AMERICAN ENGINEERING RECORD
AR-64

CUT-AWAY PERSPECTIVE

NOT TO SCALE



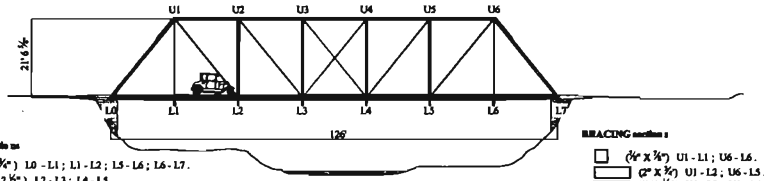
DELINEATED BY: AMY JAMES. SUMMER 2005

ARKANSAS HISTORIC BRIDGES RECORDING PROJECT NATIONAL PARK SERVICE UNITED STATES DEPARTMENT OF THE INTERIOR	FRYER'S FORD BRIDGE (SOLGOHACHIA BRIDGE; FRY BRIDGE), 1890-91 SPANNING EAST FORK OF POINT REMOVE CREEK AT COUNTY ROAD 67 SOLGOHACHIA, VICINITY — CONWAY COUNTY — ARKANSAS	SHEET 7 OF 8	HISTORIC AMERICAN ENGINEERING RECORD AR-64	

THREE BRIDGES

FRYER'S FORD BRIDGE: PRATT THROUGH TRUSS

SCALE ¼" = 1' 1:192



LOWER CHORD sections

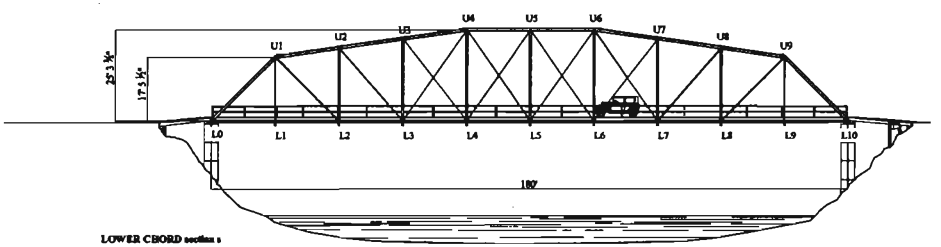
- (¼" X 1 ¼") L0 - L1 ; L1 - L2 ; L5 - L6 ; L6 - L7.
- (¼" X 2 ½") L2 - L3 ; L4 - L5.
- (¼" X 3") L3 - L4 .

BRACING sections

- (¼" X ¾") U1 - L1 ; U6 - L6.
- (2" X ¾") U1 - L2 ; U6 - L5 .
- (2" X ½") U2 - L3 ; U3 - L4 .
- (¾" ø) U3 - L4 ; U4 - L3 .

NIMROD BRIDGE: CAMELBACK THROUGH TRUSS

SCALE ¼" = 1' 1:192



LOWER CHORD sections

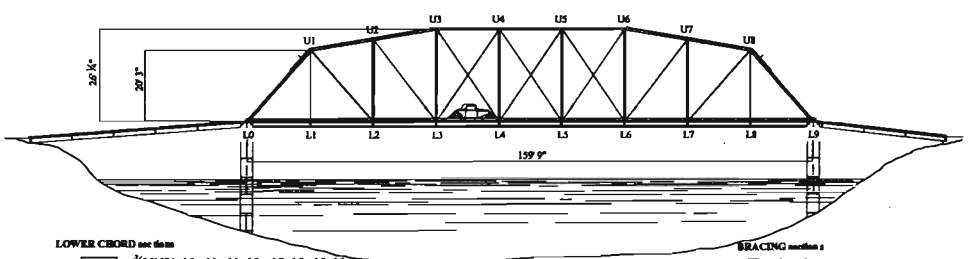
- (3" X ½") ALL CHORD.

BRACING sections

- (¾" X ¾") U1 - L1 ; U9 - L9.
- (3" X ½") U1 - L2 ; U9 - L8.
- (2" X ½") U2 - L3 ; U8 - L7.
- (¾" X ¾") U3 - L4 ; U4 - L3 ; U4 - L5 ; U5 - L4 ; U5 - L6 ; U6 - L5 ; U6 - L7 ; U7 - L6.

WARD'S CROSSING BRIDGE: CAMELBACK THROUGH TRUSS

SCALE ¼" = 1' 1:192



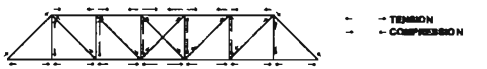
LOWER CHORD sections

- (¾" X 2") L0 - L1 ; L1 - L2 ; L7 - L8 ; L8 - L9.
- (¾" X 2 ¾") L2 - L3 ; L6 - L7.
- (¾" X 3") L3 - L4 ; L4 - L5 ; L5 - L6.

BRACING sections

- (¾" X ¾") U1 - L1 ; U8 - L8.
- (2" X 1") U1 - L2 ; U8 - L7.
- (1"ø) U2 - L3 ; U3 - L4 ; U4 - L5 ; U5 - L4 ; U6 - L5 ; U7 - L6.
- (¾" ø) U4 - L3 ; U5 - L6.

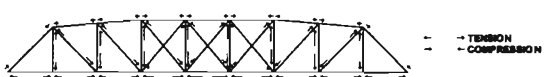
In 1844, Caleb Pratt and Thomas Willis Pratt received a patent for a timber and iron panel truss with vertical members in compression and diagonal members in tension. By keeping the compression members as short as possible (as opposed to a Howe truss, in which the diagonals are in compression), Pratt hoped to reduce lateral buckling. While not immediately popular in the combination wood and iron form, the Pratt truss became the seminal American truss type in the last quarter of the 19th century, when it was built in a simplified all-metal version. By the 1870's, the Pratt truss was the most popular type of truss for metal highway spans of up to about 150 feet. In the 20th century, the Pratt truss remained one of the two dominant metal truss types in America, the Warren truss being the other.



FORCE diagram: Pratt truss

For longer spans, the truss needs to be deeper at the center, where the greatest bending moments occur. One of the most economical ways to accomplish this is to make the upper chord polygonal in shape. This idea was suggested, but not claimed, in Pratt's 1844 patent; it was later patented, in 1870, by Charles Henry Parker of Boston. The Parker truss was popular for long spans well into the twentieth century, but where it has an indefinite number of slopes in the upper chord, the Camelback truss is distinguished by a polygonal upper chord of exactly five slopes, the minimum number needed to obtain the benefits of the polygonal chord.

The Camelback truss was commonly used for bridges of 150 to 200 feet in length, and these longer spans required the introduction of a few components not generally seen in standard parallel chord Pratt truss bridges. For instance, the increased depth of the Camelback truss requires extensive overhead bracing to keep the structure rigid. In addition, counterbraces are required AT all but the end panels to accommodate reversal of tension/compression forces, which only occur at the very center of the parallel chord truss. Both the Nimrod Bridge and Ward's Crossing Bridge have these features, while the Fryer's Ford Bridge does not.



FORCE diagram: Camelback truss

Yet while these bridges have some differences, their similarities are also striking. Although built at different dates, by different companies, the three bridges shown here share many common characteristics, most notably built up compression members, wrought iron tension members, and pinned connections. In addition, there are marked similarities in truss dimensions, panel widths, and sizes of the individual metal components. These similarities clearly illustrate the trend toward standardization and mass-production that occurred in the latter half of the 19th century, as bridge fabricating firms adapted railroad technology for a mass market.

DELINEATED BY: TIZIANA DI FRANCESCO, AMY JAMES, BRIAN CARNAHAN, SUMMER 2005

ARKANSAS HISTORIC BRIDGES
HISTORIC AMERICAN ENGINEERING RECORD
NATIONAL PARK SERVICE
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SOLGOHACHIA VICINITY

FRYER'S FORD BRIDGE (SOLGOHACHIA BRIDGE; FRY BRIDGE), 1890-91
SPANNING EAST FORK OF POINT REMOVE CREEK AT FRYER BRIDGE ROAD, (CR 67)
CONWAY COUNTY ARKANSAS

HISTORIC AMERICAN ENGINEERING RECORD AR-64

SHEET 8 OF 8