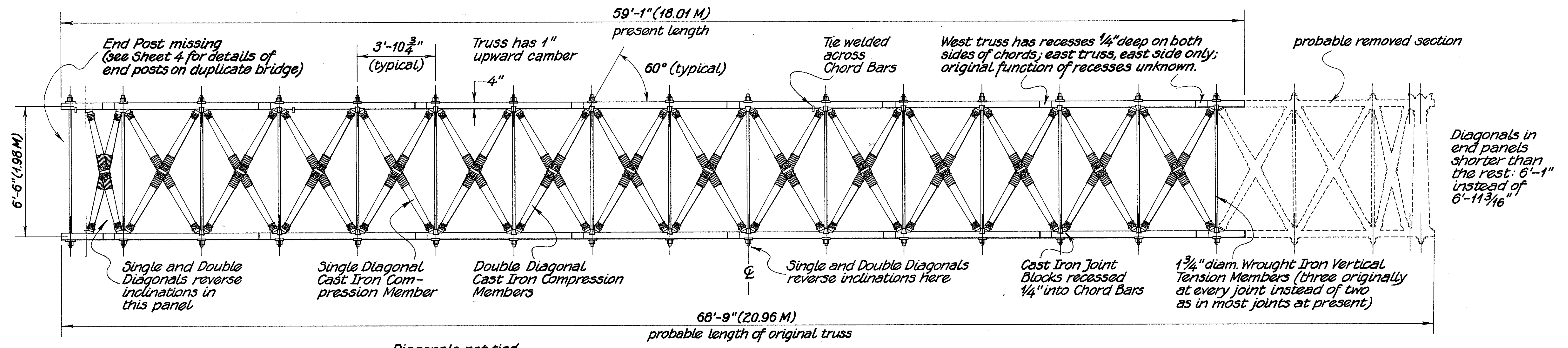


READING-HALLS STATION BRIDGE

MUNCY VICINITY * C. 1846 * PENNSYLVANIA

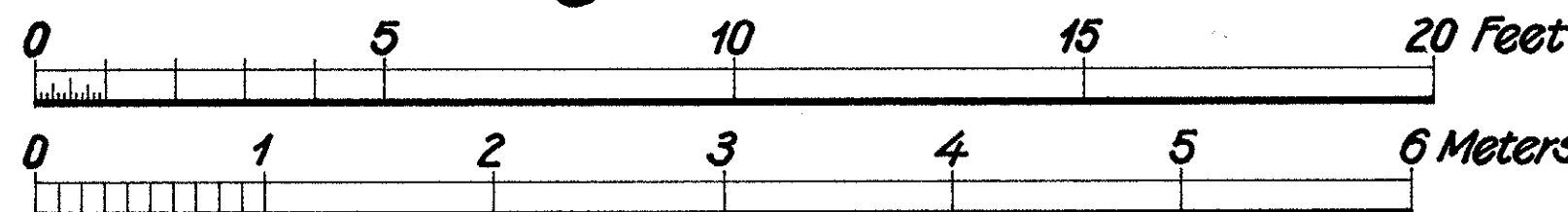


West Elevation

NOTE! Railroad rail floor beams, lateral bracing and wood deck construction omitted for clarity

Diagonals not tied to each other at crossing points

Scale: $\frac{3}{8}'' = 1'-0'' (1:32)$



Top and Bottom Chords each consist of four continuous $4'' \times 1\frac{1}{4}''$ wrought iron bars; minimum effective cross sectional area = 18.00 in^2 (at side recesses)

No builder's plate; no maker's name in any cast or wrought iron members

Spanning the former Philadelphia & Reading Railroad (now Conrail) tracks near Muncy, Pennsylvania, the Reading-Halls Station Bridge was one of three bridges fabricated c. 1846 to a design by Reading civil engineer Richard B. Osborne (1815-1899). As originally erected on the railroad's main line, the bridge was a 69-foot long 18-panel Howe truss with cast iron diagonal compression members and wrought iron top and bottom chords. Though it has been shortened by three panels and has lost its original cast iron end posts, the bridge still retains distinctive Egyptian Revival decorative motifs in its surviving castings. The other two bridges no longer exist.

This structure almost certainly contains the oldest all-metal bridge trusses still in active use in America. The first all-metal truss bridge used on an American railroad is widely thought to be the West Manayunk Bridge, also designed by Osborne but erected in 1845. Compared to this first bridge, the Reading-Halls Bridge

is more decoratively refined and shows improvements in mechanical design. Osborne's iron bridges reflect his program to double-track the Reading's main line and replace the railroad's timber bridges with stone or iron structures in order to prevent their being burned by boatmen from the Reading's rival, the Schuylkill Canal.

The railroad line the Reading-Halls Bridge now crosses was not built until the early 1870s and did not become part of the Reading until the 1880s. By this time, the greatly increased weights of locomotives and rolling stock had relegated this bridge and its duplicates to light duty rail or road service. When erected at its present site (sometime between 1884 and 1900), old railroad rails were placed between the trusses to support stringers and a wooden road deck. One of the bridge's duplicates survived into the 1960s carrying Route 83 across the Reading main line south of Reading, Pennsylvania. The other duplicate's fate has not been elucidated.

The Reading-Halls Station Bridge is currently owned by Conrail and is located in the midst of a privately owned farm divided by the railroad right-of-way. Potential visitors are warned that the bridge is located on private property and does not carry a public road.

Documentation of this bridge began in 1980 as a volunteer project on the part of Richard K. Anderson, Jr., HAER Staff Architect, with help from Elizabeth H. Anderson, Gregory G. Fitzsimons, and Donald C. Jackson, HAER Staff Engineer. The historical report was contributed by co-authors Richard Anderson and Professor Emory L. Kemp (History of Science and Technology, West Virginia University). Thanks are due to Edward M. Kutsch and Richard Sanders Allen for drawings and photographs of the Route 83 bridge which helped reconstruct the Reading-Halls Bridge end posts. Formal photographs were produced in 1984 by Jet Lowe, HAER Staff Photographer, with funding from the HAER Office.

DELIMITED BY: Richard K. Anderson, Jr., 1981, 1987.

GIFT TO THE HISTORIC AMERICAN ENGINEERING RECORD FROM RICHARD K. ANDERSON, JR., OFFICE OF HERITAGE CONSERVATION AND RECREATION SERVICE, UNITED STATES DEPARTMENT OF THE INTERIOR

READING-HALLS STATION BRIDGE : c. 1846

PART OF PRIVATE DRIVE OFF U.S. ROUTE 220, 1.2 MILE WEST OF JUNCTION OF U.S. ROUTE 220 AND STATE ROUTE 147 LYCOMING COUNTY

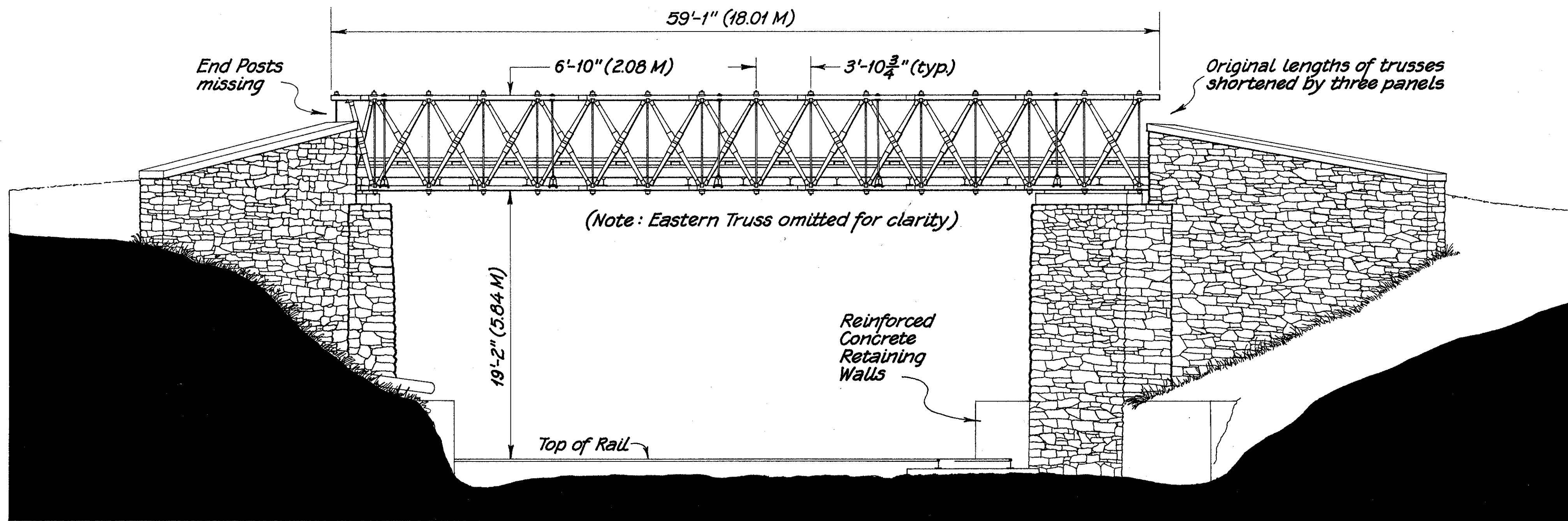
PENNSYLVANIA

SHEET 1 of 5

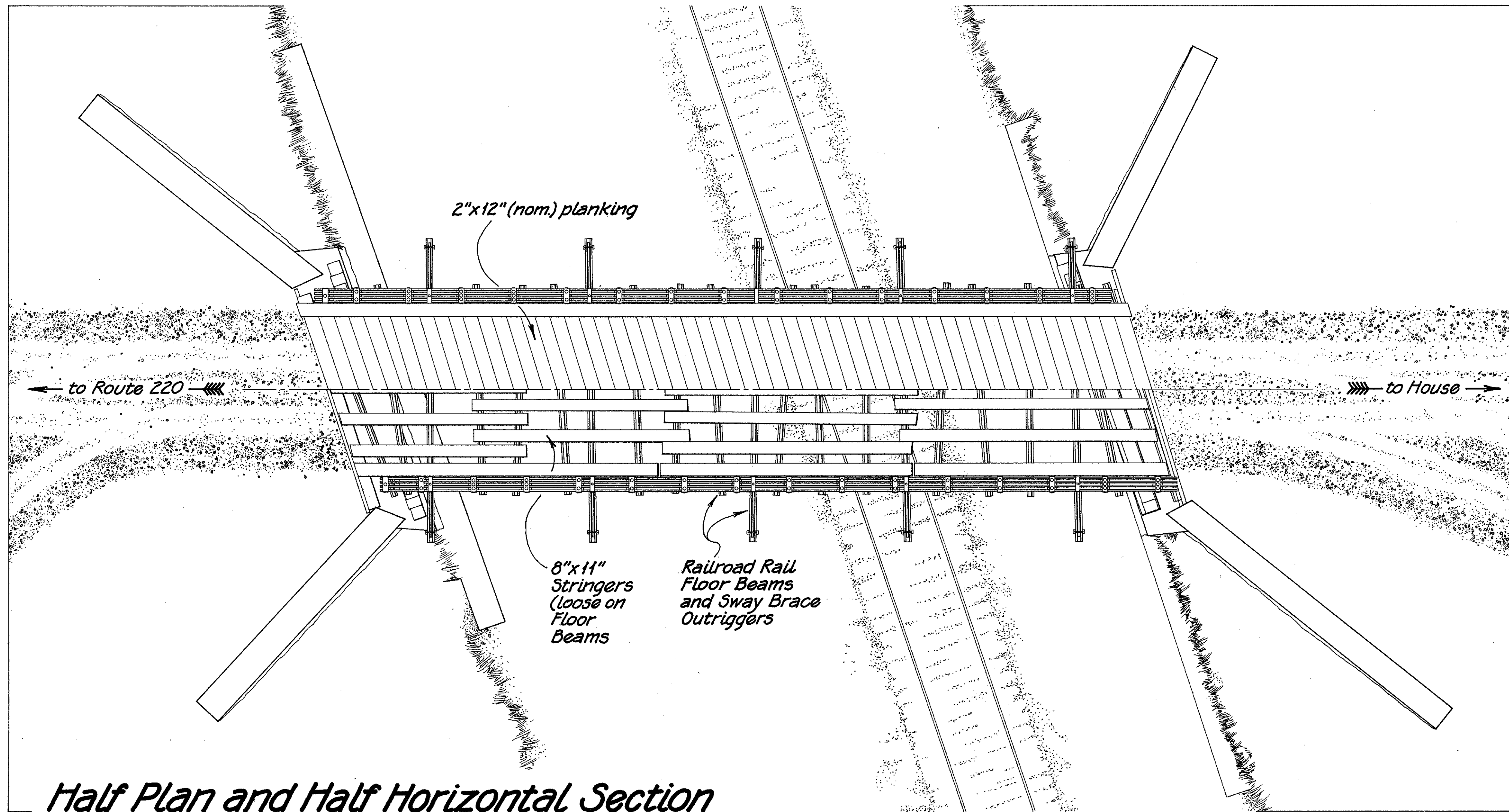
HISTORIC AMERICAN ENGINEERING RECORD

PA-55

IF REPRODUCED, PLEASE CREDIT: HISTORIC AMERICAN ENGINEERING RECORD, HERITAGE CONSERVATION & RECREATION SERVICE, NAME OF DELINEATOR, DATE OF THE DRAWING



West Elevation



Half Plan and Half Horizontal Section

BRIDGE

WILLIAMSPORT
PITTSBURGH
HARRISBURG PHILA.

State Map

Muncy

CONRAIL (Reading Railroad)
SUSQUEHANNA RIVER
CONRAIL (Penn Central)
W.B.R.
Bald Eagle Mountain

BRIDGE

220
147
220

Local Map

Scale: 1" = 2000'

0 0.5 1.0 1.5 Mi.
0 1.0 2.0 Km.

Based on U.S.G.S. 7.5 min. series topographic map, Muncy quadrangle, 1965 (photorevised 1973)

UTM: 18.346400.4566340

Scale: $\frac{3}{16}$ " = 1'-0"

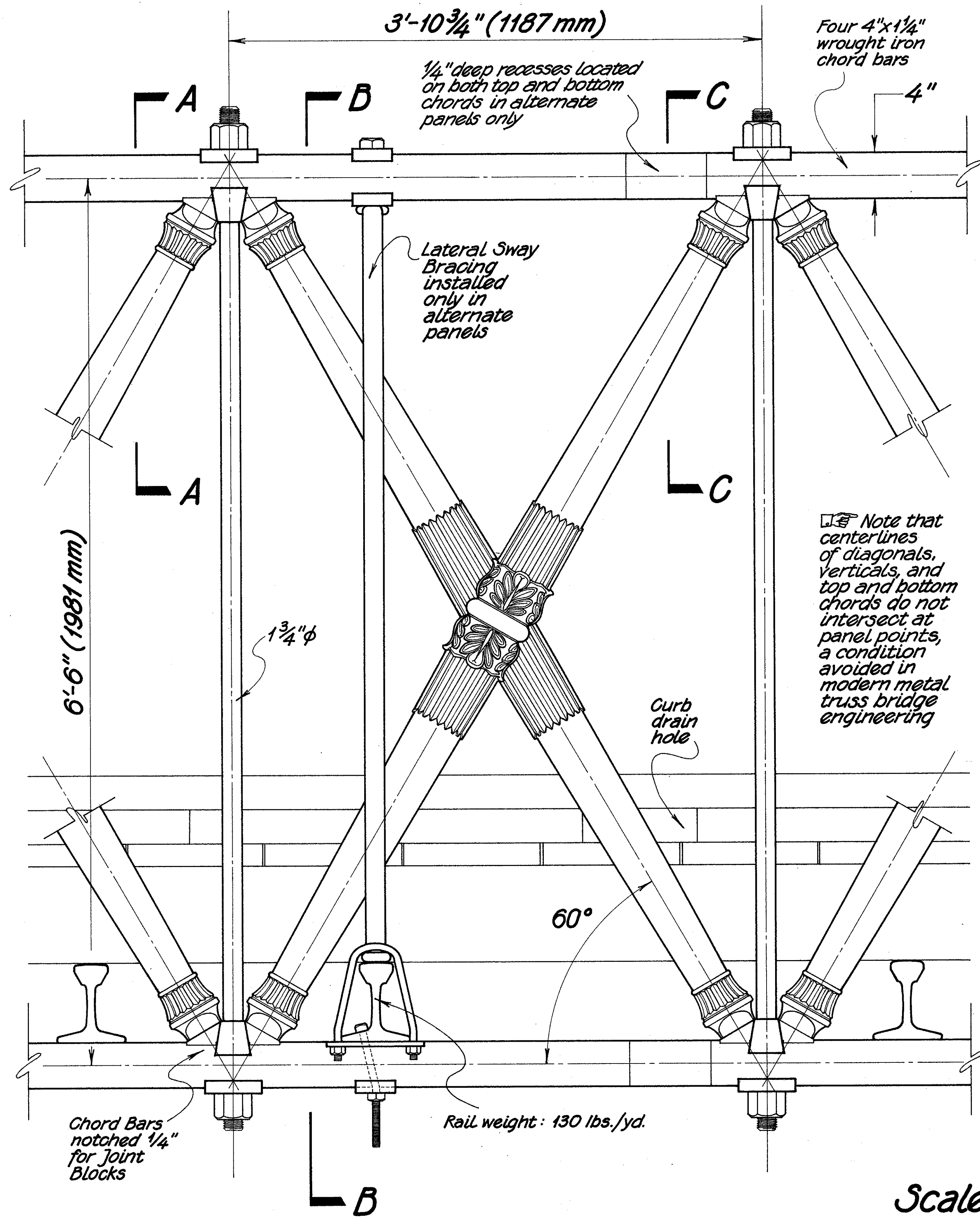
0 5 10 15 20 25 Feet
0 1 2 3 4 5 6 7 Meters

HISTORIC AMERICAN ENGINEERING RECORD
SHEET 2 of 5
PA-55

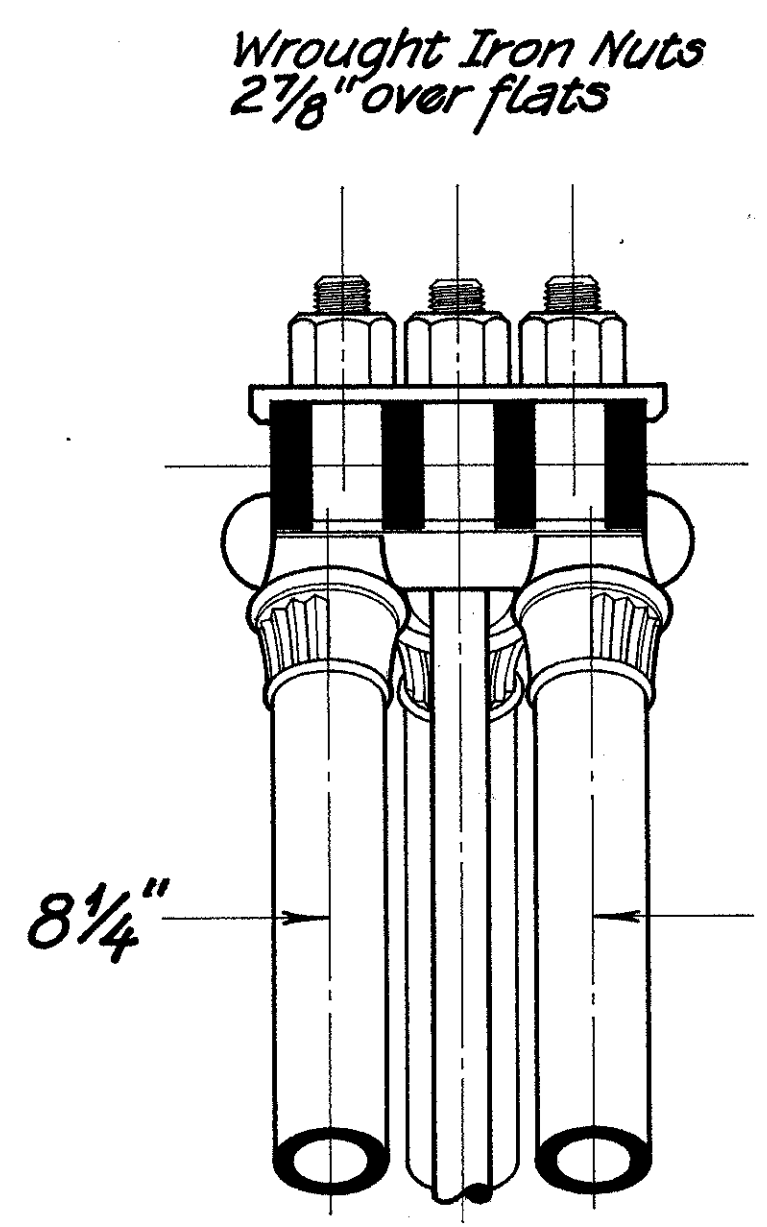
PART OF PRIVATE DRIVE OFF U.S. ROUTE 220, 1.2 MILE WEST OF JUNCTION OF U.S. ROUTE 220 AND STATE ROUTE 147
LYCOMING COUNTY
PENNSYLVANIA

DELINEATED BY: Richard K. Anderson, Jr., 1984.
GIFT to the HISTORIC AMERICAN ENGINEERING RECORD
FROM RICHARD K. ANDERSON, JR.
OFFICE OF HERITAGE EVALUATION
HERITAGE CONSERVATION AND RECREATION SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

IF REPRODUCED, PLEASE CREDIT: HISTORIC AMERICAN ENGINEERING RECORD, HERITAGE CONSERVATION & RECREATION SERVICE, NAME OF DELINEATOR, DATE OF THE DRAWING

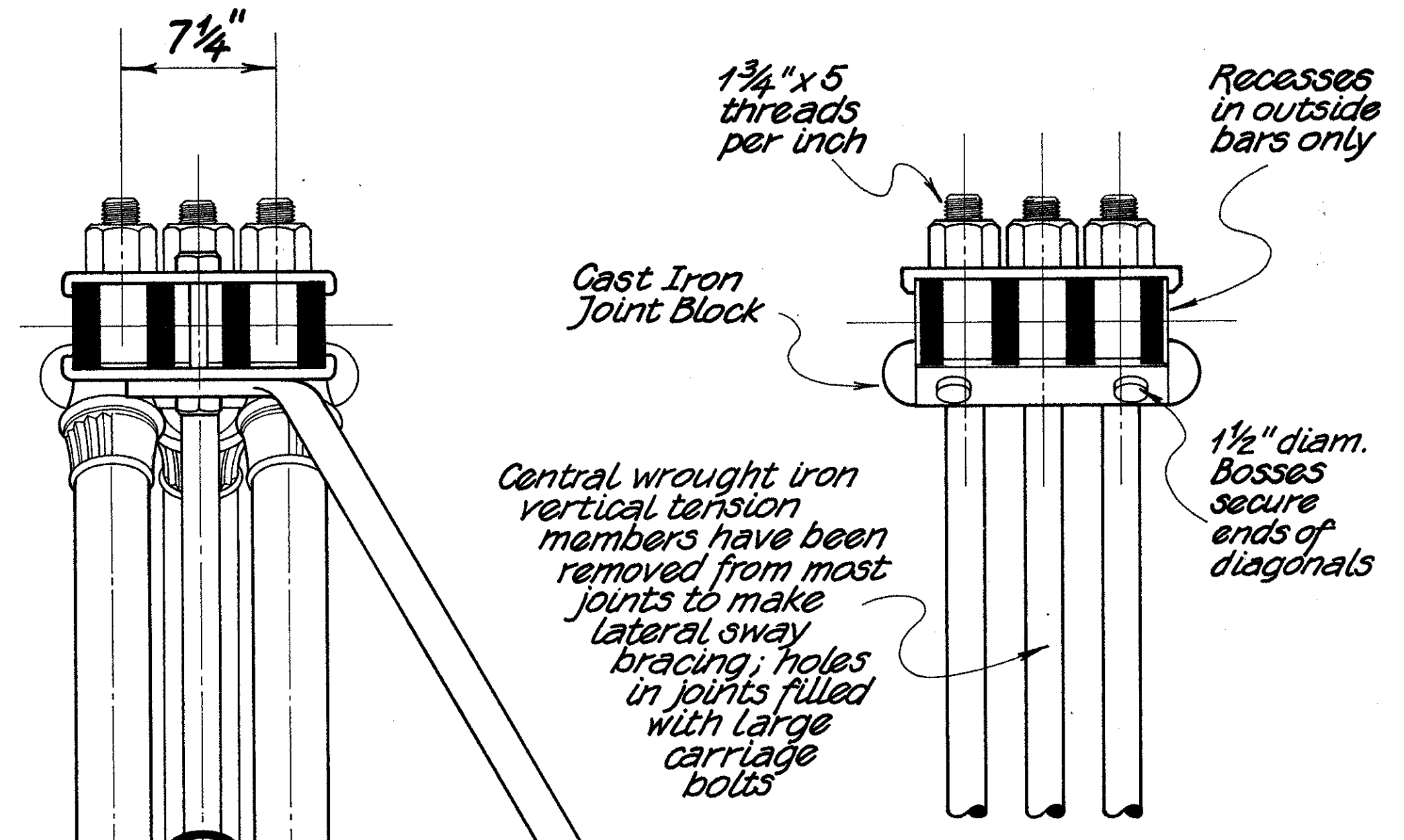
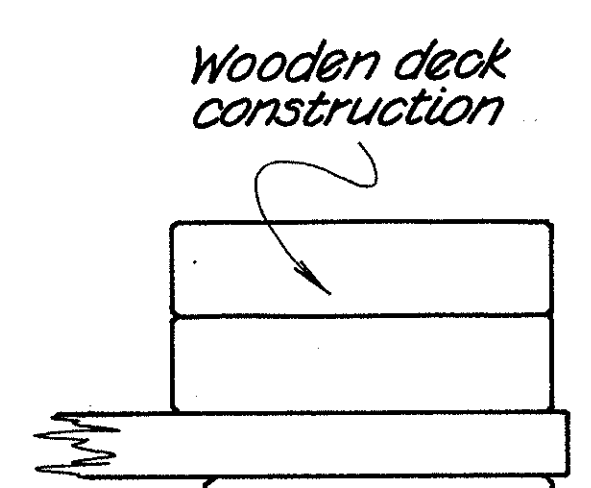


Note that centerlines of diagonals, verticals, and top and bottom chords do not intersect at panel points, a condition avoided in modern metal truss bridge engineering



Section A-A

Cast Iron Diagonals have hollow cores 1 3/4" in diameter (measured from a fractured member)



Section C-C

Braces were made from 1 3/4" diam. Wrought Iron Vertical Members by flattening and bending their ends (threads are still visible in the ends)

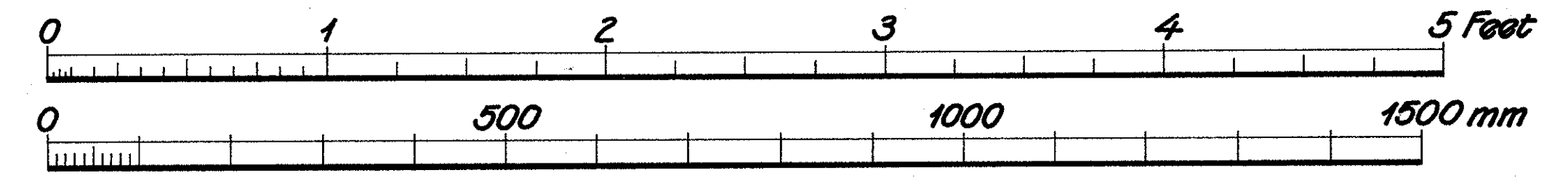
Rail continuous to sway brace on other side of bridge

Rail brands appearing on various rail webs:
 1302 G OH 13C-HF PATD © CARNEGIE ET USA 1627
 © CARNEGIE USA 93 OH HFB 1302 PATD
 [incomplete ?] H B56U STEELTON 1943 |||||||

Section B-B

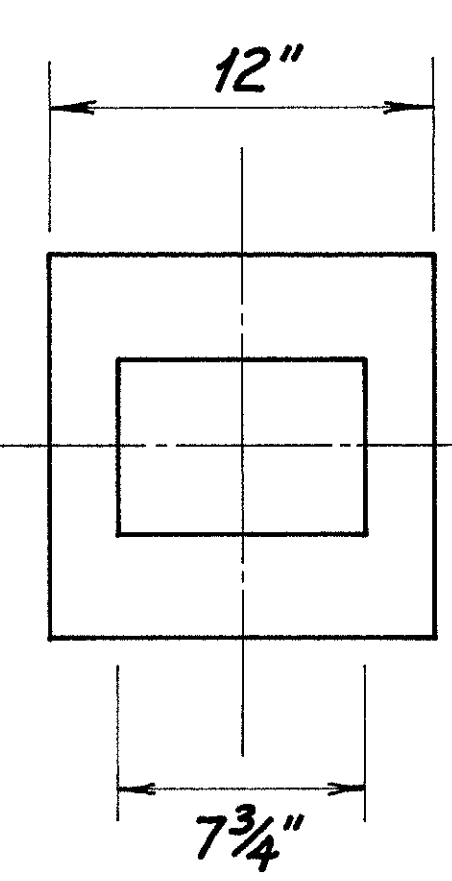
TYPICAL PANEL

Scale: 2" = 1'-0" (1:6)

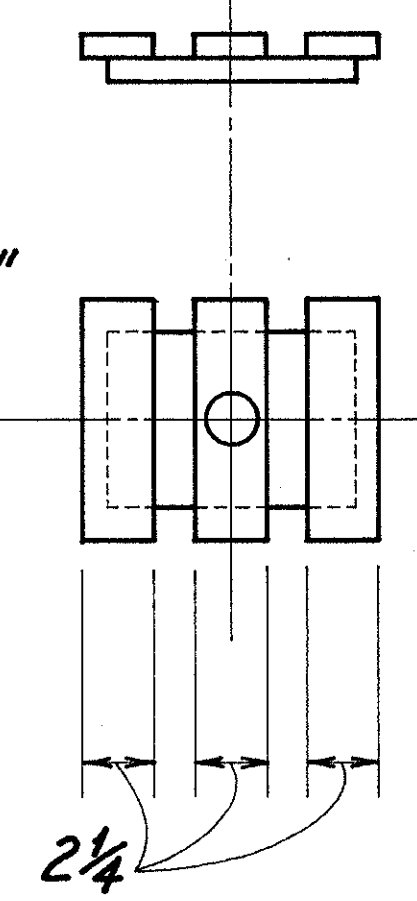


All four end posts are missing from the Reading-Halls Bridge. The one shown here, along with its chord bar spacing plate and "lotus petal" cap, is based on photographs and measured drawings made of a sister bridge in 1956 by

Top of End Post



Spacer



Edward M. Kutsch (see project field records and HAER photos PA-55-17 to 23). This second bridge carried State Route 83 over Reading Railroad tracks one mile south of Reading, Pennsylvania until c. 1965, when it was demolished. All other information is based on field measurements of the Reading-Halls Bridge.

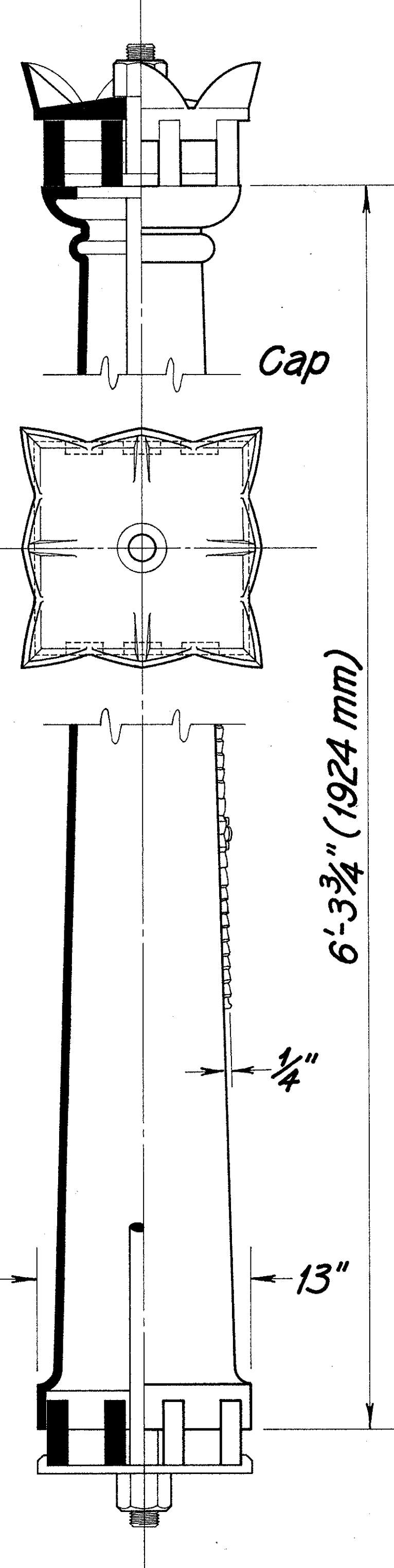
Paired diagonals reverse inclination in the surviving end panels of the Reading Halls Bridge and in the panels at both ends of the Route 83 bridge. This condition is probably not original, since the end panel joint blocks were cast with bosses positioned to incline the paired diagonals toward the truss centers.

The Reading-Halls trusses currently rest on 12"x24"x1/2" steel plates spiked to wooden sills. Originally, the ends of each truss rested directly on two widely spaced, 3" to 4" diameter iron rollers.

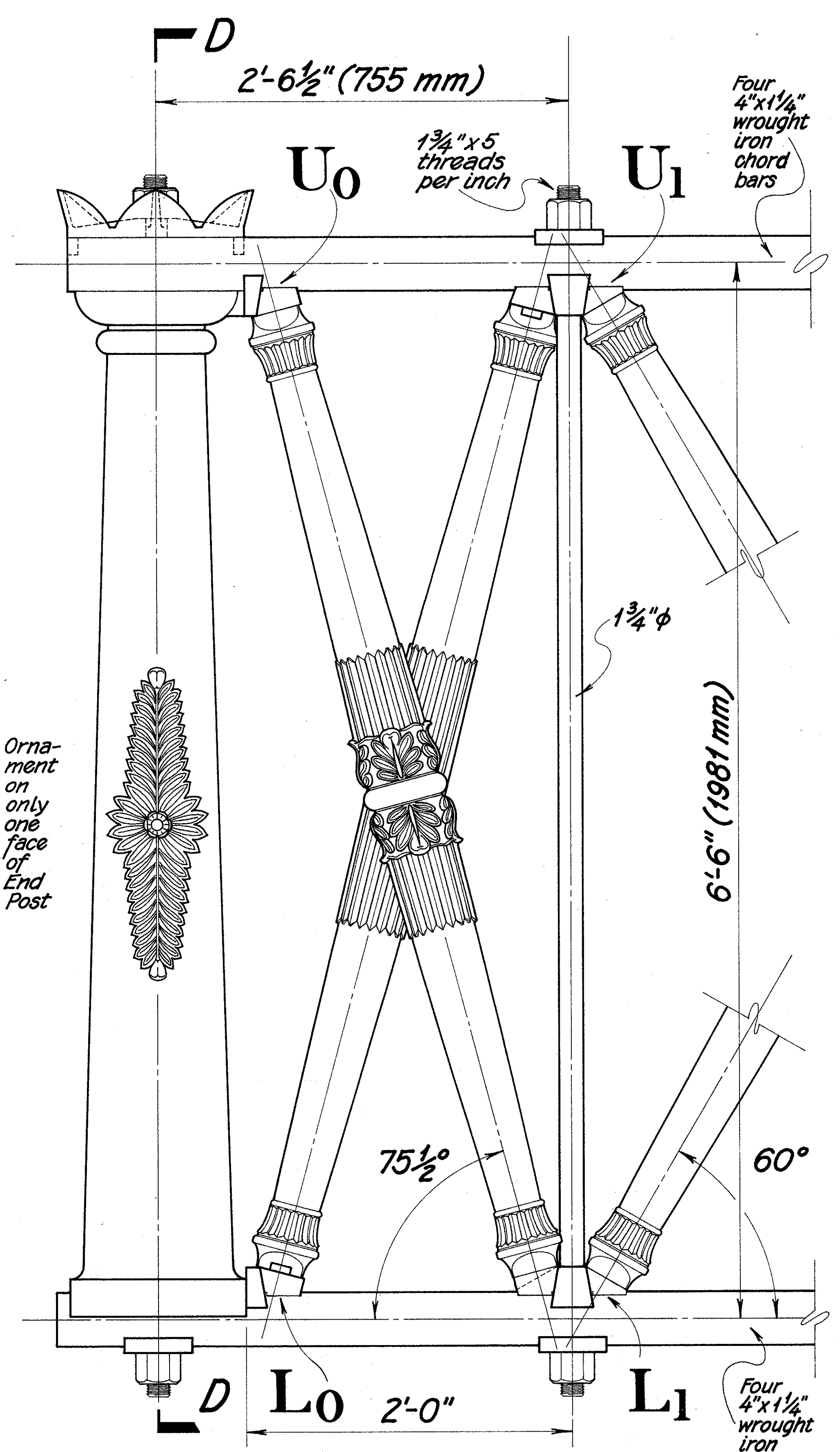
Deck structure omitted for clarity.

TYPICAL END PANEL AND END POST

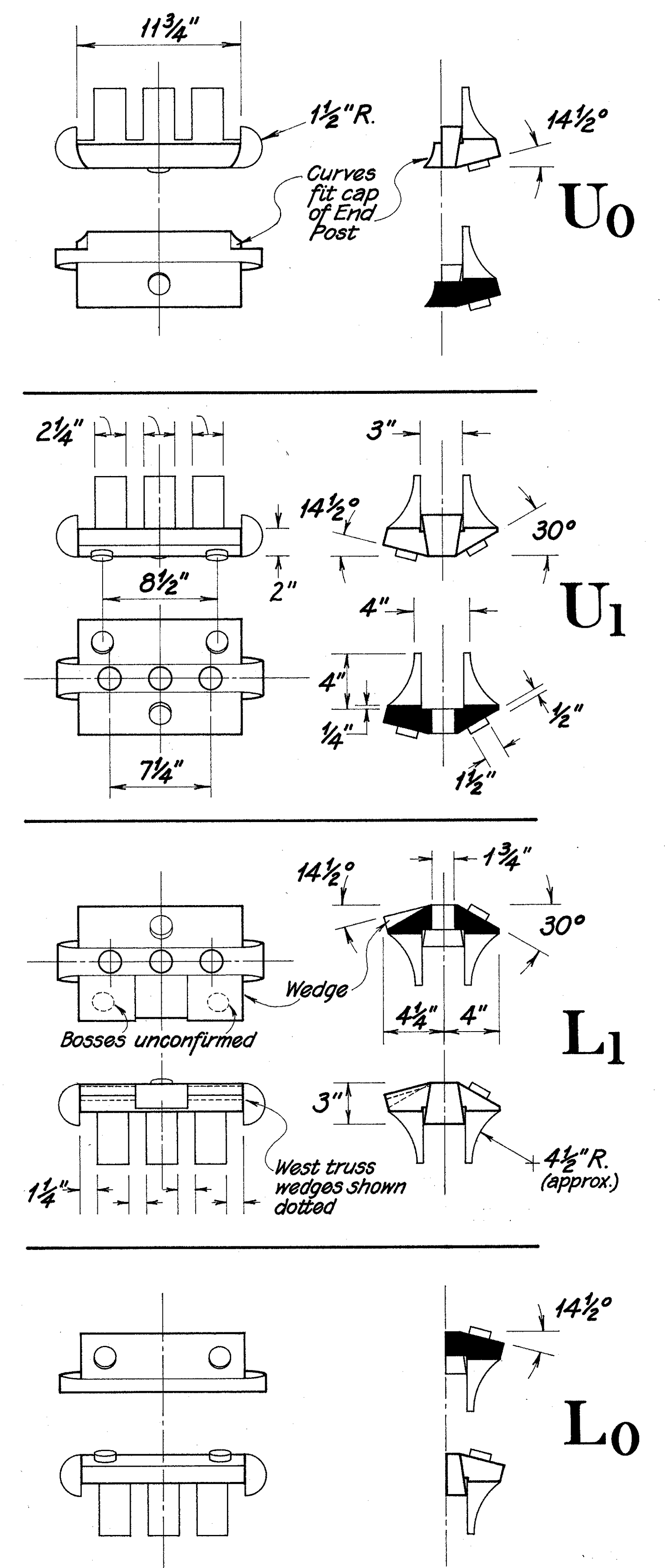
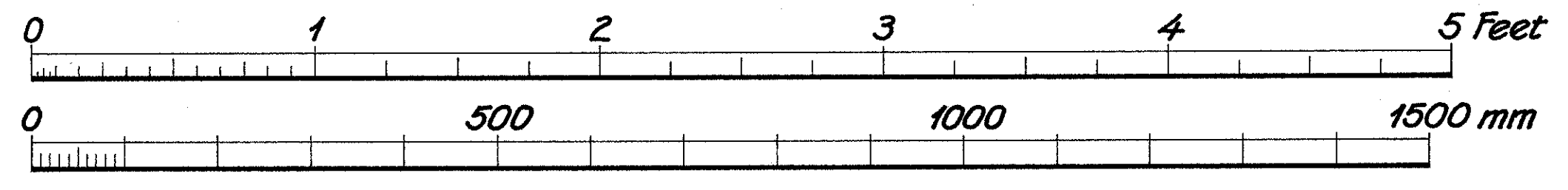
Section D-D End Elevation



Ornament on only one face of End Post

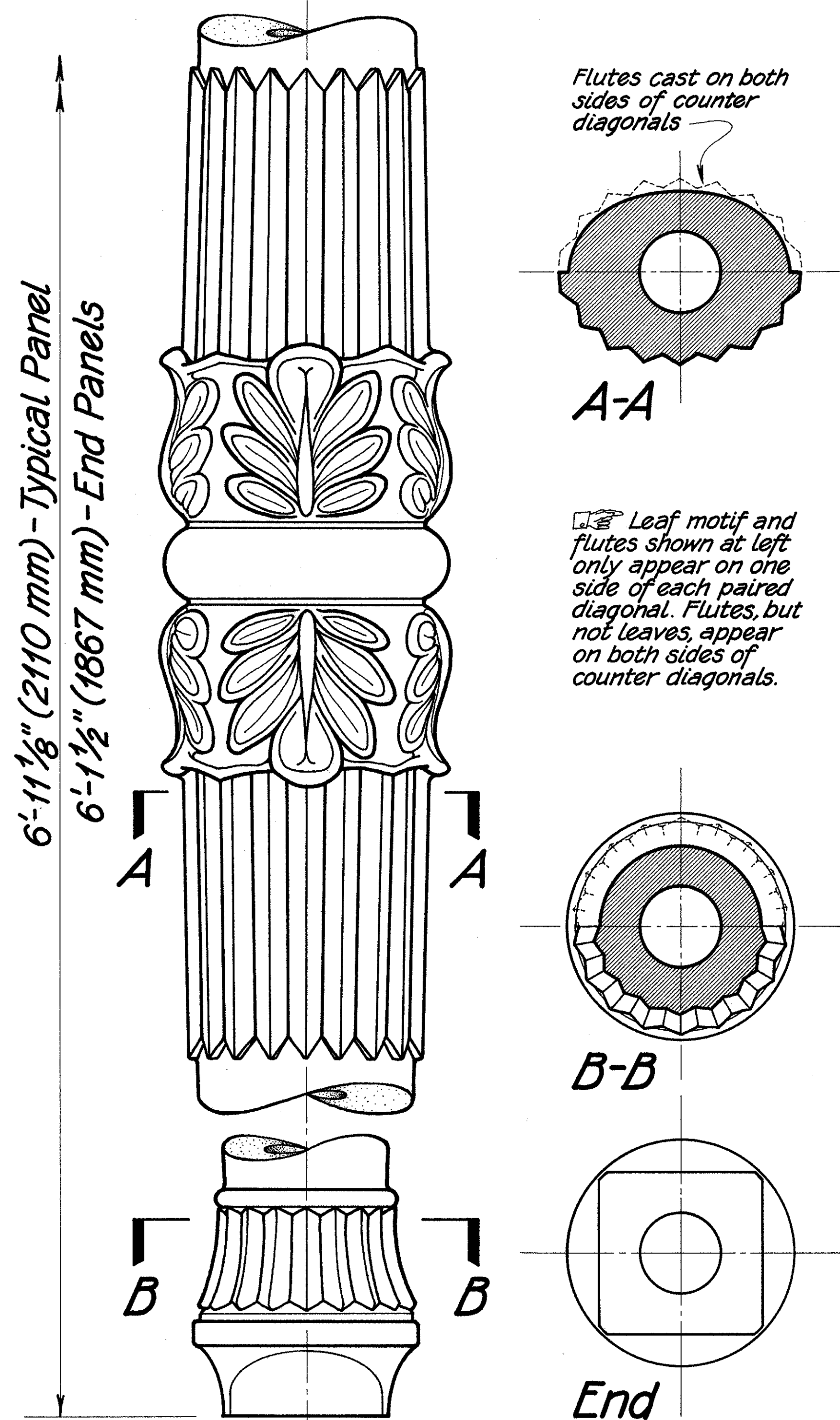


Scale: 2" = 1'-0" (1:6)

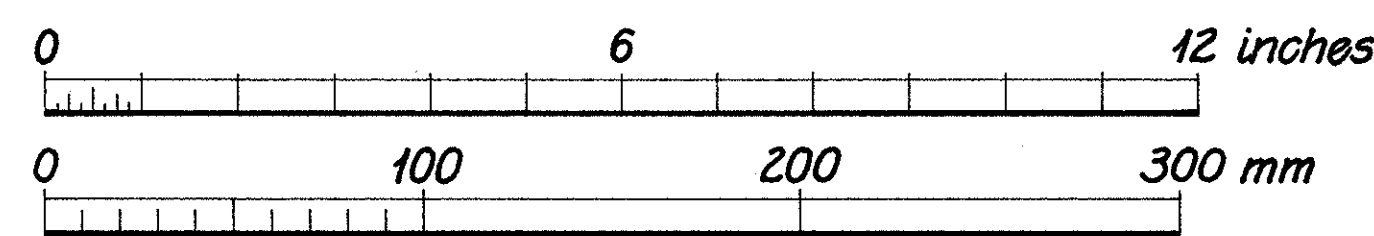


JOINT BLOCKS

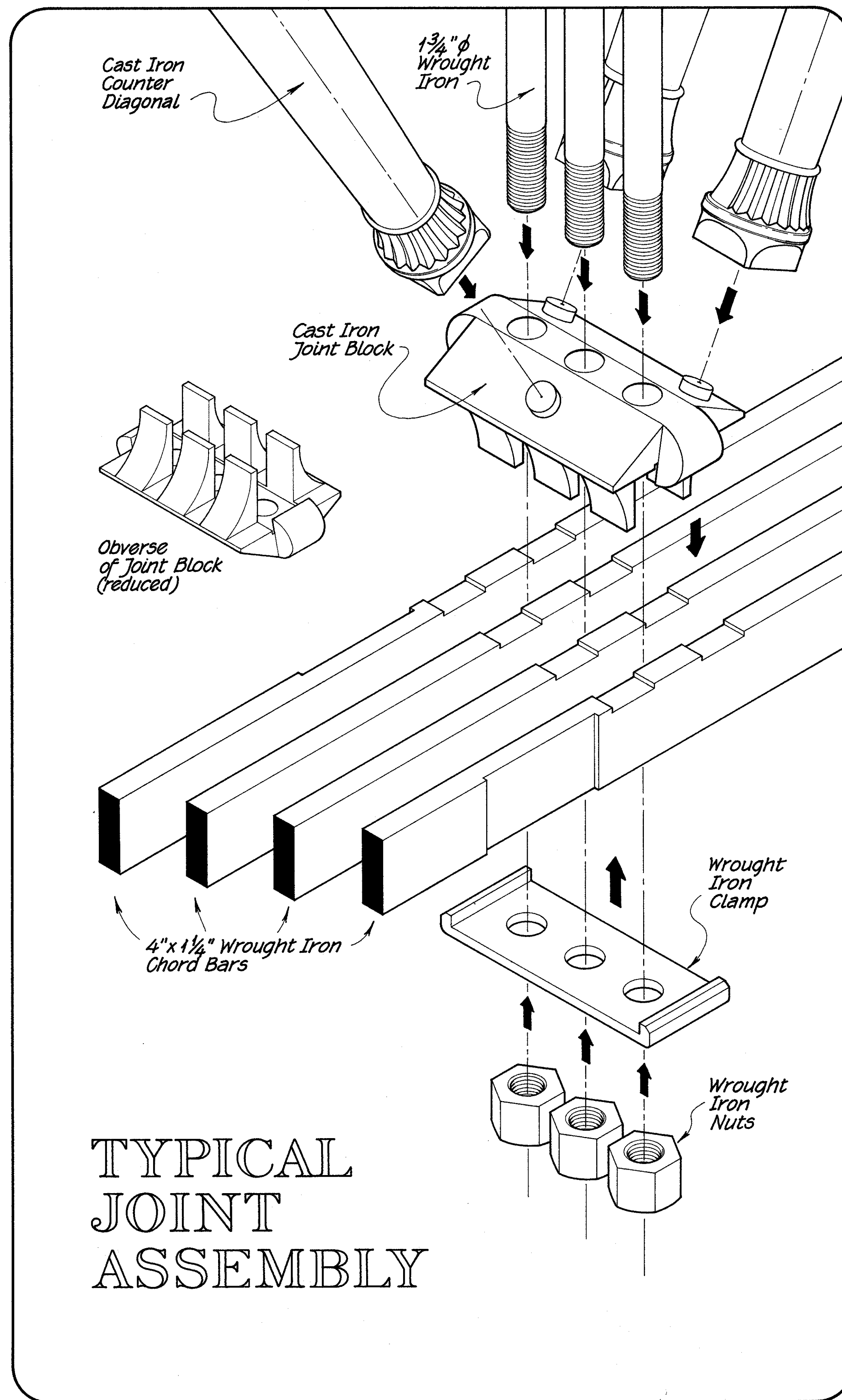
Dimensions shown are typical



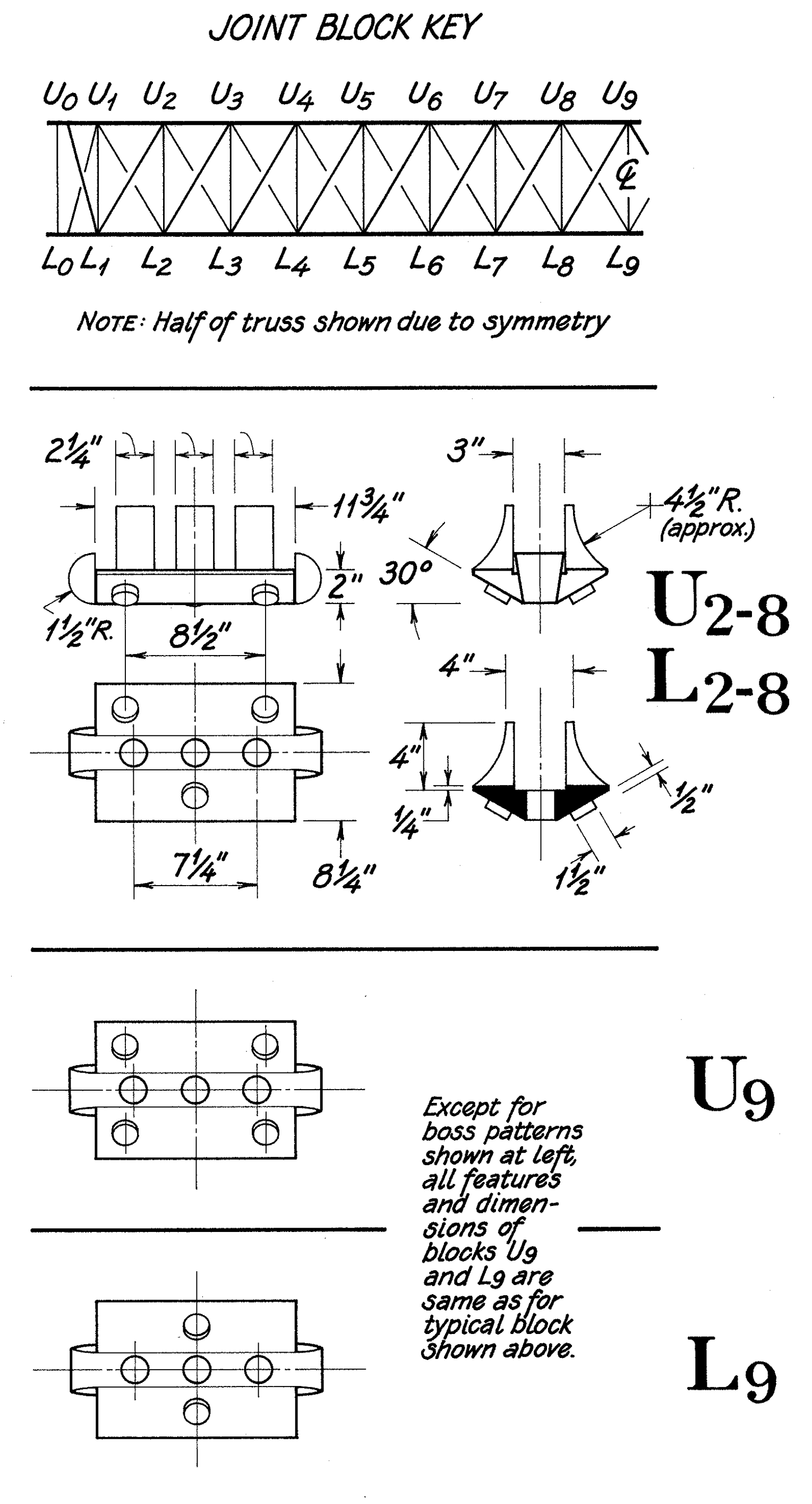
Scale: 6" = 1'-0" (1:2)



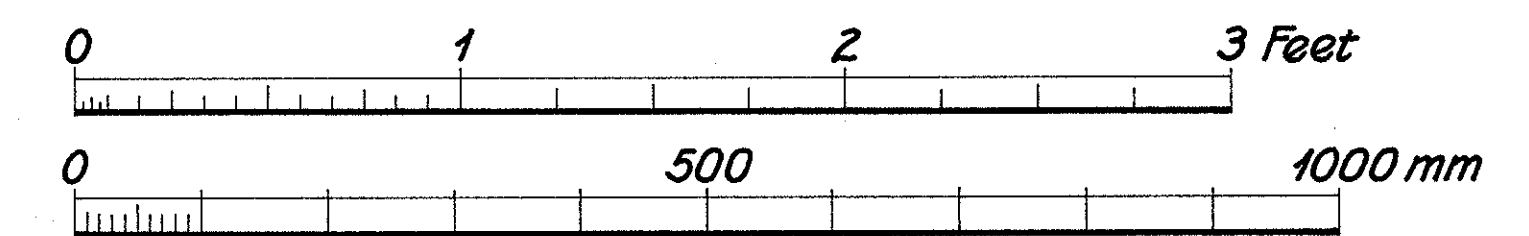
DIAGONAL DETAILS



TYPICAL JOINT ASSEMBLY



Scale: 2" = 1'-0" (1:6)



JOINT BLOCKS

DELINEATED BY: **Richard K. Anderson, Jr., 1987.**
 GIFT TO THE HISTORIC AMERICAN ENGINEERING RECORD
 FROM RICHARD K. ANDERSON, JR.
 OFFICE OF HERITAGE CONSERVATION AND RECREATION SERVICE
 UNITED STATES DEPARTMENT OF THE INTERIOR
 MUNCY VICINITY
 PART OF PRIVATE DRIVE OFF U.S. ROUTE 220, 0.6 MILE WEST OF JUNCTION OF U.S. ROUTE 220 AND STATE ROUTE 147
 LYCOMING COUNTY
 PENNSYLVANIA
 SHEET 5 OF 5
 HISTORIC AMERICAN ENGINEERING RECORD
 PA-55