

Gibson Bridge
Spanning the Watauga River
on Herb Hodge Road (B586)
Watauga Flats vicinity
Washington County
Tennessee

HAER No. TN-19

HAER
TENN,
90-WATFLA.V
1-

PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Southeast Region
Atlanta, Georgia 30303

HISTORIC AMERICAN ENGINEERING RECORD

HAER
TENN,
90-WATFLA.Y,
1-

Gibson Bridge

HAER No. TN-19

Location: Spanning the Watauga River on Herb Hodge Road (B586)
Watauga Flats vicinity, Washington County, Tennessee

Date of Construction: ca. 1916

Present Owner: Washington County Government
Jonesboro, Tennessee

Present Use: Vehicular bridge

Significance: The Gibson Bridge is significant as a somewhat rare surviving example of a once common truss type, the Pennsylvania (Petit) truss. It derives secondary significance from its association with the Nashville Bridge Company, Tennessee's most significant native bridge company.

Historian: Martha Carver
Tennessee Department of Transportation
August 1985

Edited and Transmitted by: Jean P. Yearby, HAER, 1987

The Gibson Bridge is located near Watauga Flats in northeast Washington County in East Tennessee. It is located over the Watauga River in a rural area. The Herb Hodge Road on which the bridge is located runs along the side of a wooded hill, then crosses the river, and then again continues along a wooded hillside.

This bridge was originally erected in 1916 by the Nashville Bridge Company for Cocke County.¹ The original location was apparently at the Grooms Bridge or Fugate Bridge site over the French Broad River in eastern Cocke County. By 1940, the National Forest Service had acquired the area surrounding the Grooms Bridge, and the bridge became unnecessary for any traffic needs. Concurrently, in nearby Washington County, a 1929 concrete arch bridge at the Gibson Bridge site was destroyed in a flood in August 1940. (Ruins from this concrete bridge remain underneath the existing truss bridge.) Washington County acquired the Old Grooms Bridge from Cocke County, and the firm of E. N. Matthews re-erected it at the Gibson Bridge site probably in early 1941.

The Pennsylvania (Petit) truss was once a relatively common truss type, but few examples now remain in Tennessee. Of the known examples of this type in Tennessee, all are modifications (similar to the Gibson Bridge) of the textbook design and all are associated with the Nashville Bridge Company.

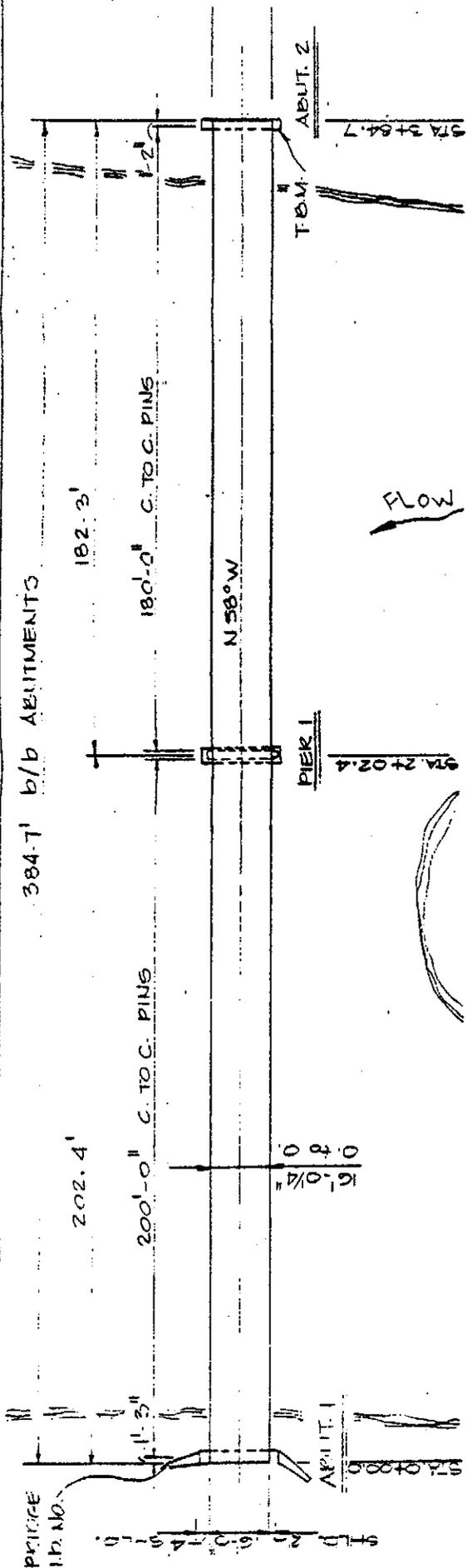
The bridge is 384.7 feet in length and contains two spans. Sitting on a concrete substructure, each of these two spans is a pin-connected steel modified Pennsylvania (Petit) truss. Truss one is 200 feet in length and 30 feet high. Truss two is 180 feet in length and 27 feet high. Each has a minimum vertical clearance of 14 feet. The curb-to-curb width is 14.4 feet, and the outside width is 18 feet. The substructure contains one pier and two abutments, all built of concrete. The pier is 26.4 feet high, 21.8 feet wide, and 5.1 feet thick; the side facing the stream flow contains a triangular-shaped nosing. Irregular in shape, abutment one is 21.0 feet long with wingwalls 11.5 feet and 89.3 feet in length. It is about 7.5 feet in height. Abutment two is much smaller in scale; it is 21.1 feet in length and only 0.9 foot in height. It has no wingwalls.

The top chords and endposts are channels with stay plates joined with cover plates and are all constructed with steel. The bottom chord is composed of double rectilinear eyebars. The vertical members are small channels with

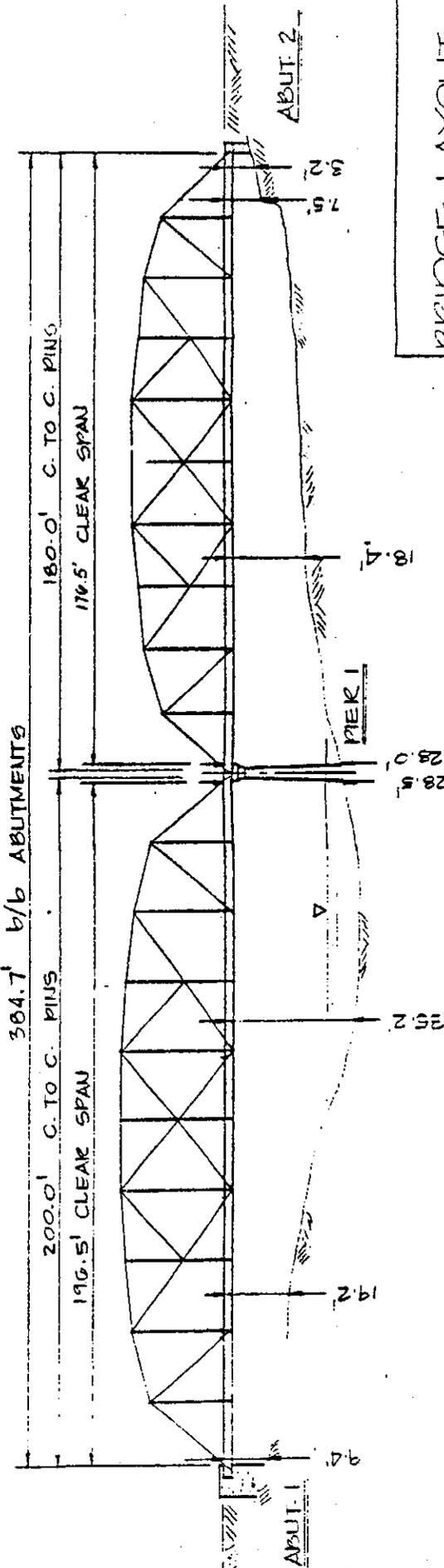
¹ This information was compiled from information provided by individuals in both counties, county court minutes, and from records of the Nashville Bridge Company. While it is impossible to definitively prove that this bridge is the Old Grooms Bridge in Cocke County that was erected by the Nashville Bridge Company, circumstantial evidence indicating this was substantial.

lacing; hip verticals are angles with battens. The diagonals are double rectilinedar eyebars, and the counters are double rectilinear eyerods. The mid-panel connections creating the subties, sometimes called "spider connections," contain two different members. The upper portion of this vertical connection is composed of two small channels with lacing like the vertical members. The lower portion of this member contains paired rectilinear eyerods.

Although the two truss spans have been moved, the bridge retains a high degree of integrity. The trusses appear to be unaltered. While dating from 1940-41, the substructure is compatible in appearance to many built in the 1910-1920 period. Also, the Nashville Bridge Company records indicate that the original bridge contained only these two truss spans. It is unclear if there were any approach spans.



PLAN

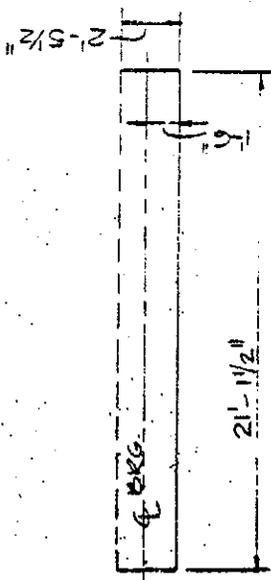


ELEVATION

LOOKING DOWNSTREAM

BRIDGE LAYOUT
 BRIDGE NO. 90-B586-0-00
 OVER WATAUGA RIVER
 WASHINGTON COUNTY

SUBSTRUCTURE
 BRIDGE NO. 10-B586-0.00
 OVER WATALIGA RIVER
 WASHINGTON COUNTY 2 of 4

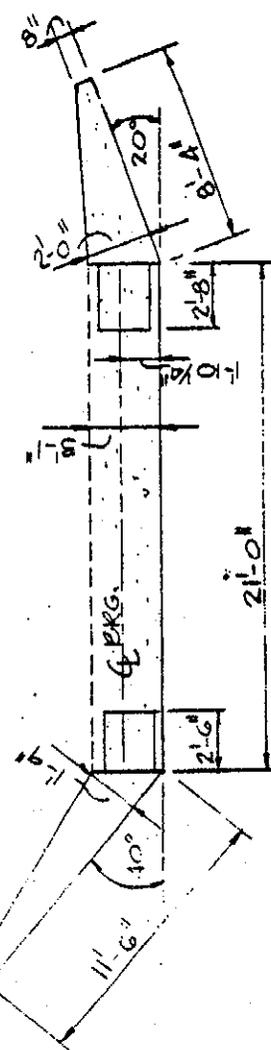


PLAN

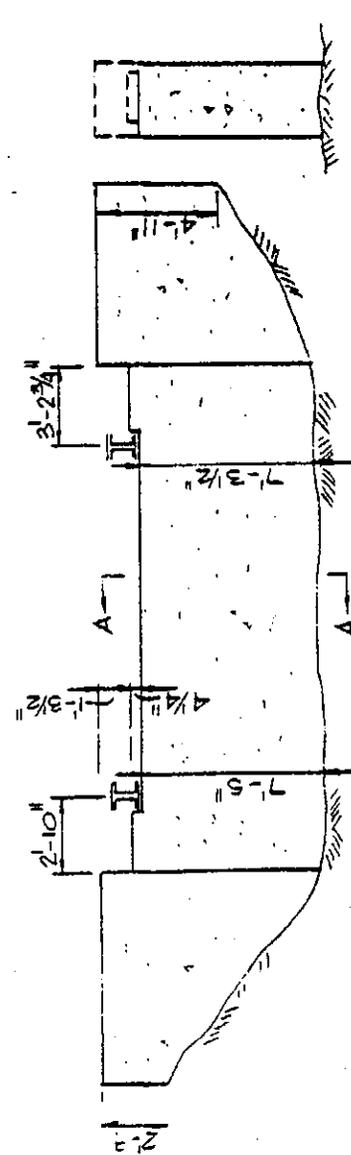


ELEVATION

ABUTMENT NO. 2



PLAN



ELEVATION

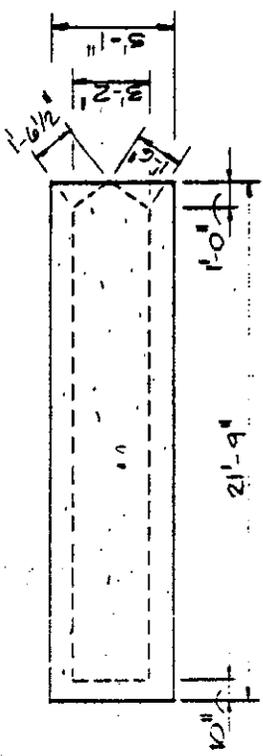
ABUTMENT NO. 1

SECTION AA

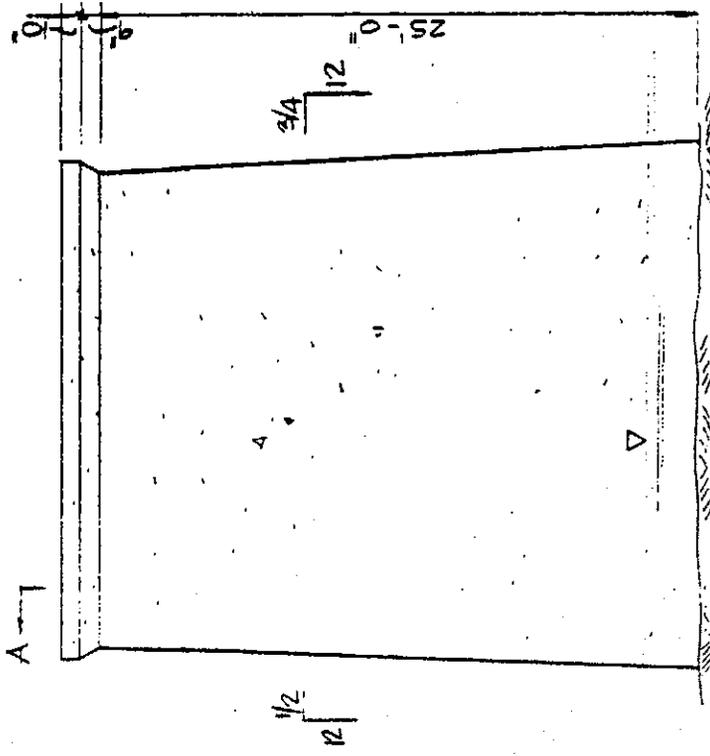
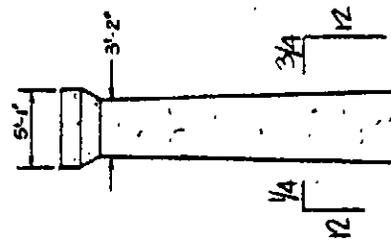
SUBSTRUCTURE
BRIDGE 90-B586-0-00
OVER WATAUGA RIVER
WASHINGTON COUNTY 3 of 9

PIER NO. 1

SECTION AA



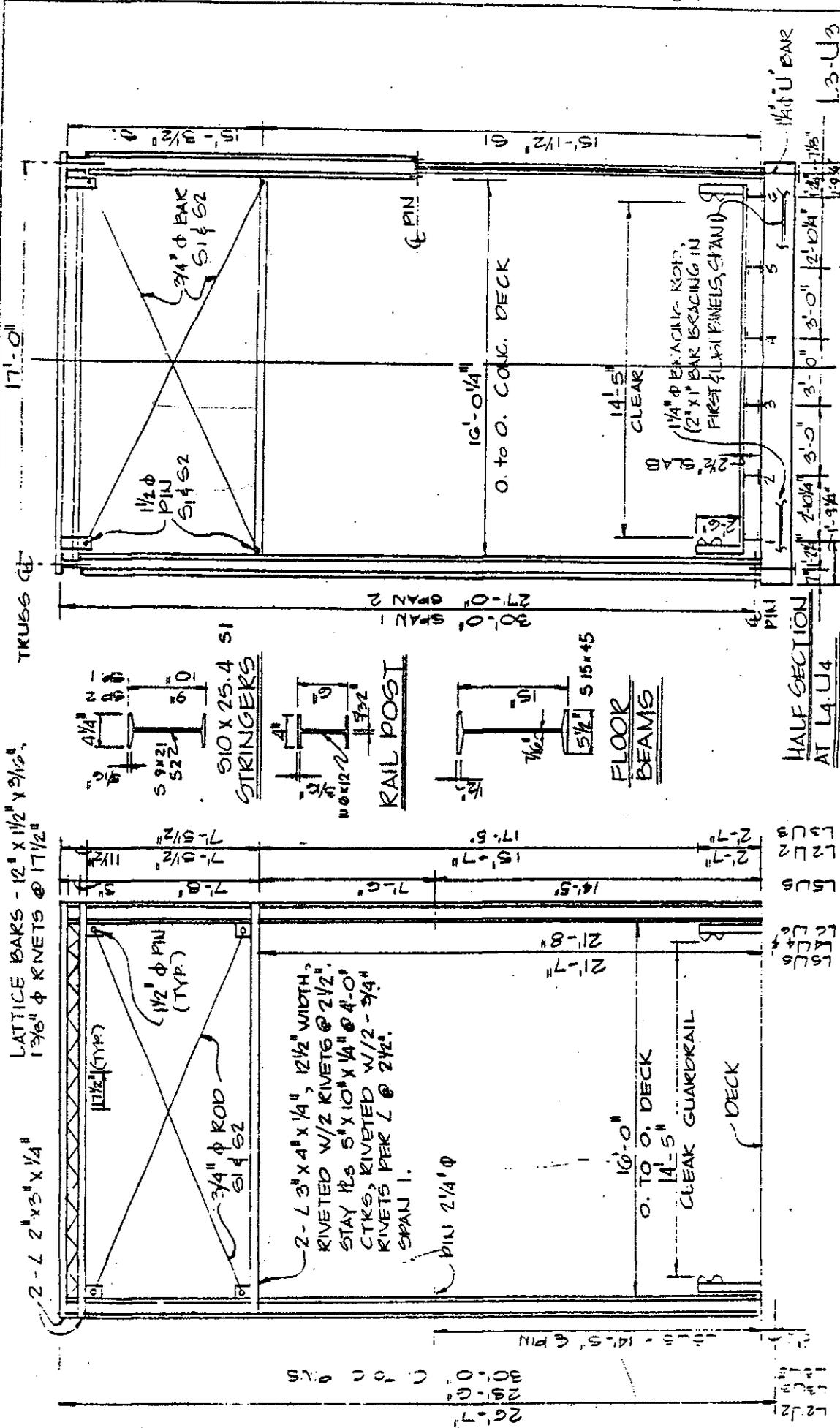
PLAN

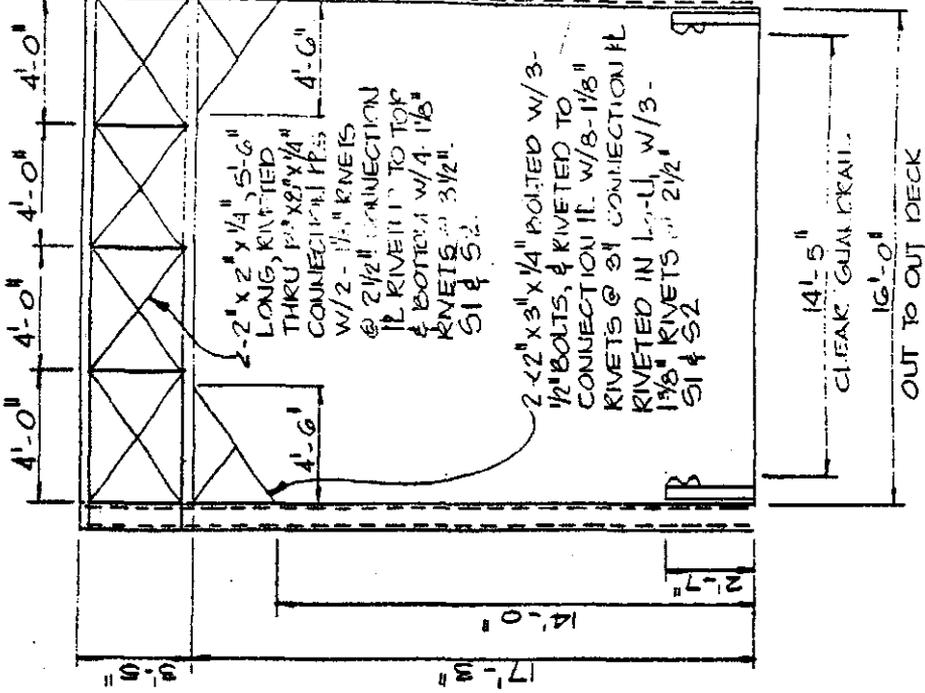


A-A ELEVATION

SUPERSTRUCTURE
 BRIDGE NO. 90-5586-0.00
 OVER WATALIGA RIVER
 WASHINGTON COUNTY 4.05.1

SECTION THRU DECK
 AT L2U2 THRU L6U6
 SPAN I

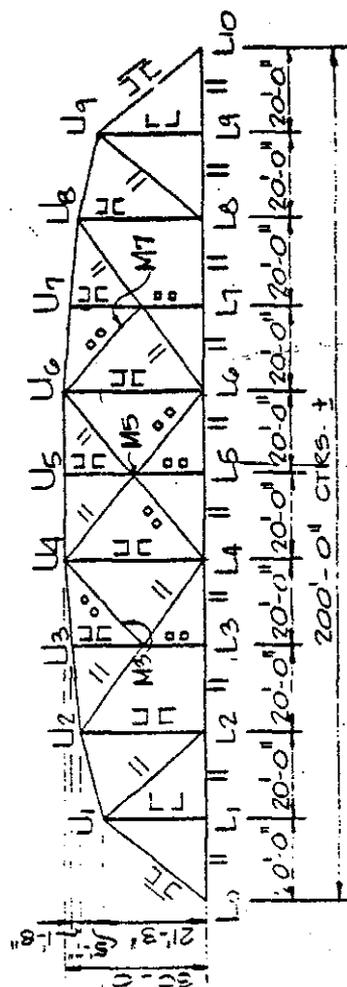
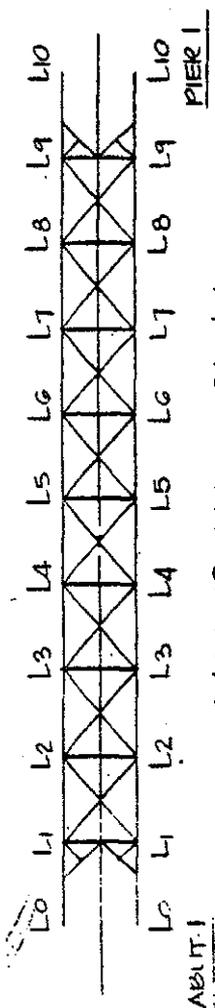




ENTRANCE PORTAL
SPAN I

SUPERSTRUCTURE
BRIDGE 92-B586-0.00
OVER WATALIGA RIVER
WASHINGTON COUNTY

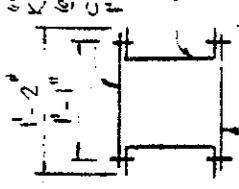
SPAN NO. 1



SEE SHEET 6 OF 9 FOR TRUSS MEMBER DETAILS

NOTE: RIVET DIMENSIONS ARE HEAD DIMENSIONS.

RIVETS IN TOP PL: 1 3/8" φ
 @ 3'-0" CTRS.
 RIVETS IN BOT. PL: 1 7/8" φ
 @ 2" COVER PL
 1'-2" X 5/16"



STAY PL 13 3/8" x 6" x 1/4"
 @ 3'-0" CTRS.

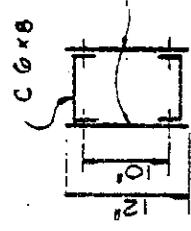
END POSTS & TOP CHORDS

- L0-U1, U1-U2, U2-U3, U3-U4, U4-U5, U5-U6, U6-U7, U7-U8, U8-U9



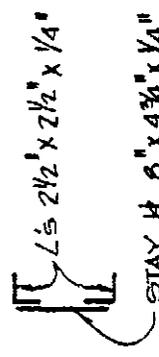
BOTTOM CHORDS

- L0-L1, L1-L2, L2-L3, L3-L4, L4-L5, L5-L6, L6-L7, L7-L8, L8-L9
- a = 3", b = VARIES, c = 3/4"
- L2-L3, L4-L5, L6-L7, L8-L9
- a = 3", b = VARIES, c = 1"
- L4-L5, L6-L7, L8-L9
- a = 4", b = VARIES, c = 1"



HANGERS

- L2-U2, M3-U3, L4-U4, M5-U5, L6-U6, M7-U7, L8-U8



HANGERS

- L4-U1, L9-U9



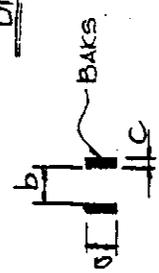
DIAGONALS

- L3-M3, L4-M5, M5-L5, M5-L6, U6-M7, M7-L7

• • • 1/8" φ

DIAGONALS

- M3 U4

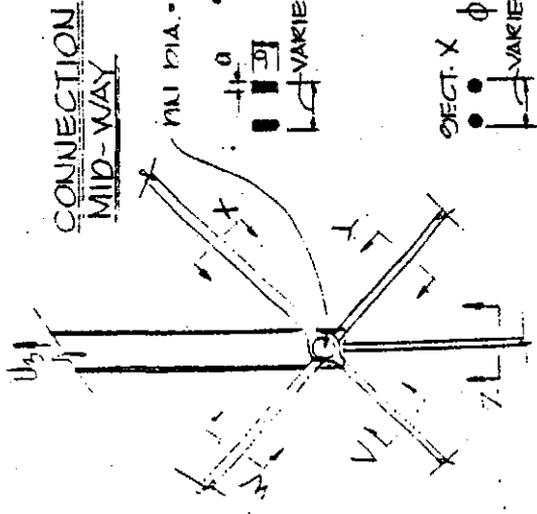


DIAGONALS

- U1-L2, U1-L8: a = 3", b = VARIES, c = 1/2"
- U2-M3, U1B-M7: a = 2", b = VARIES, c = 3/4"
- U4-M5, M5-U6: a = 1 1/2", b = VARIES, c = 5/8"
- M3-L4, M7-L6: a = 3", b = VARIES, c = 1/2"

TRUSS - SPAN I

SUPERSTRUCTURE
 BRIDGE NO. 90-1358-G-0-00
 OVER WATALIGA RIVER
 WASHINGTON COUNTY G.C.F. 1



CONNECTION
MID-WAY

MAX DIA. = 3"

U3-L2	
SECT.	b
W	2"
Y	3"
Z	7/8"

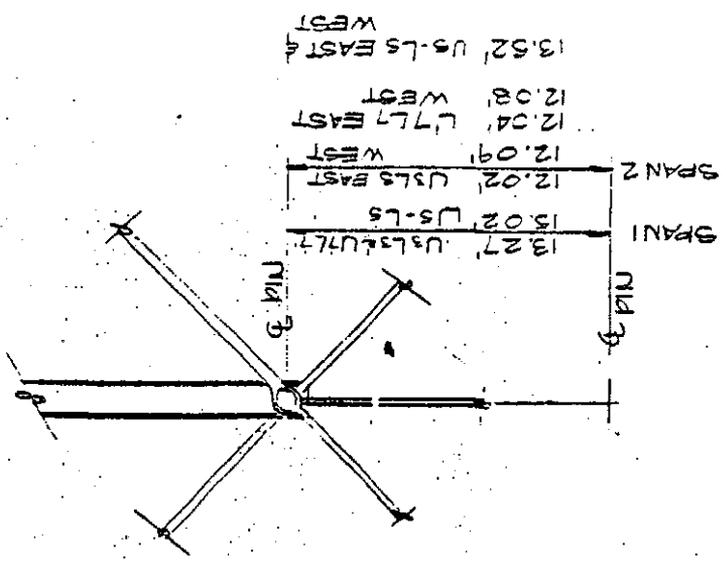
VARIES

U5-L5		
SECT.	a	b
W, X	5/8"	1/2"
V, Y	3/4"	3/4"
Z	7/8"	7/8"

U7-L7		
SECT.	a	b
W	3/4"	7/8"
X	3/4"	2"
Y	7/8"	7/8"
Z	1/2"	3"



- NOTE:
1. ALL MEMBERS HAVE EYE BAR ENDS @ CONNECTIONS.
 2. END OF CHANNELS W/ THRU PIN CONNECTION DOUBLE PLATED W/ 1/4" PL.
 3. TURN BUCKLES 4'-0" FROM CONNECTION.

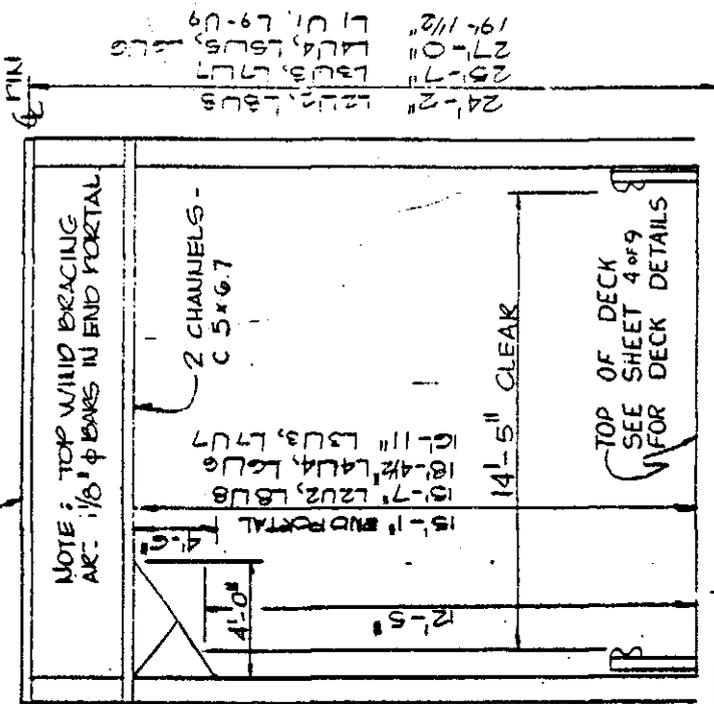


CONNECTION
MID-WAY

TRUSS-SPAN NO. 1

SUPERSTRUCTURE
BRIDGE NO. 90-B-586-0-00
OVER WATALIGA RIVER
WASHINGTON COUNTY

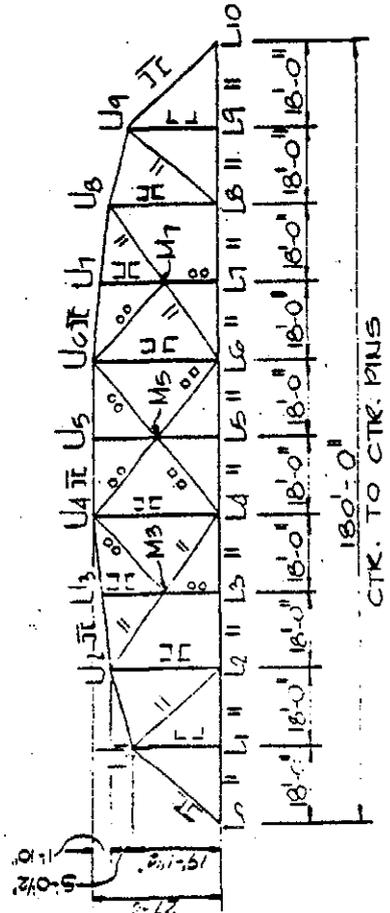
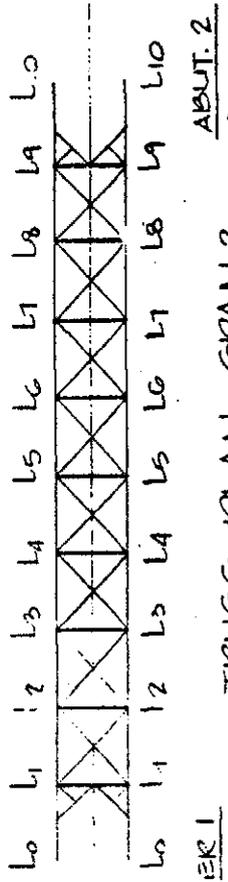
2 L6 3' x 7" v 1/4" END PORTAL
 2 L6 3' x 5" x 1/4" ALL OTHER PORTALS
 STAY IN 1/2" x 3/16" @ 1'-4" CTRS.



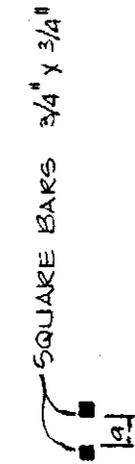
SECTION THRU SPAN 2

SUPERSTRUCTURE
 BRIDGE NO. 90-B586-0.00
 OVER WATAUGA RIVER
 WASHINGTON COUNTY

SPAN 2

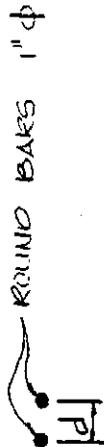


TRUSS ELEVATION - SPAN 2
 SEE SHEET 9 OF 9 FOR MEMBER DETAILS



DIAGONALS

L4-M5 & M5-L6: $a = 9 1/2"$

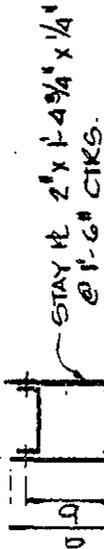


DIAGONALS

L3-M3
L7-M7
M3-U4, M7-U6
U4-M5, M5-L5,
M5-U6

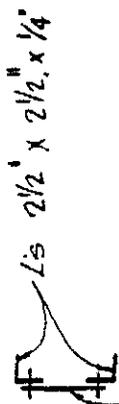
$d = 0"$ to $7"$
$d = 0"$ to $4 3/4"$
$d = 1'-0"$
$d = 4"$

CHANNEL C 6x8"



HANGERS

L2-U2, L8-U8	$a = 1'-0 7/16"$	$b = 10 7/16"$
M3-U3, M7-U7	$a = 1'-0 3/4"$	$b = 10 3/4"$
L4-U4, L6-U6	$a = 1'-0 1/4"$	$b = 10 7/16"$
M5-U5	$a = 1'-1"$	$b = 10 3/4"$



STAY $\# 8" \times 5/8" \times 1/8"$
C @ 3'-5" CTRS.

HANGERS

L1-U1 & L9-U9

COVER $\# 1'-2" \times 5/16"$

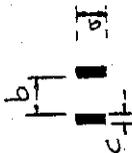
CHANNEL 9x15"

STAY $\# 6" \times 1/4" @ 3'-0" CTRS.$



END POSTS & TOP CHORD

L0-U1, U1-U2, U2-U3, U3-U4,
U4-U5, U5-U6, U6-U7, U7-U8,
U8-U9, U9-U10

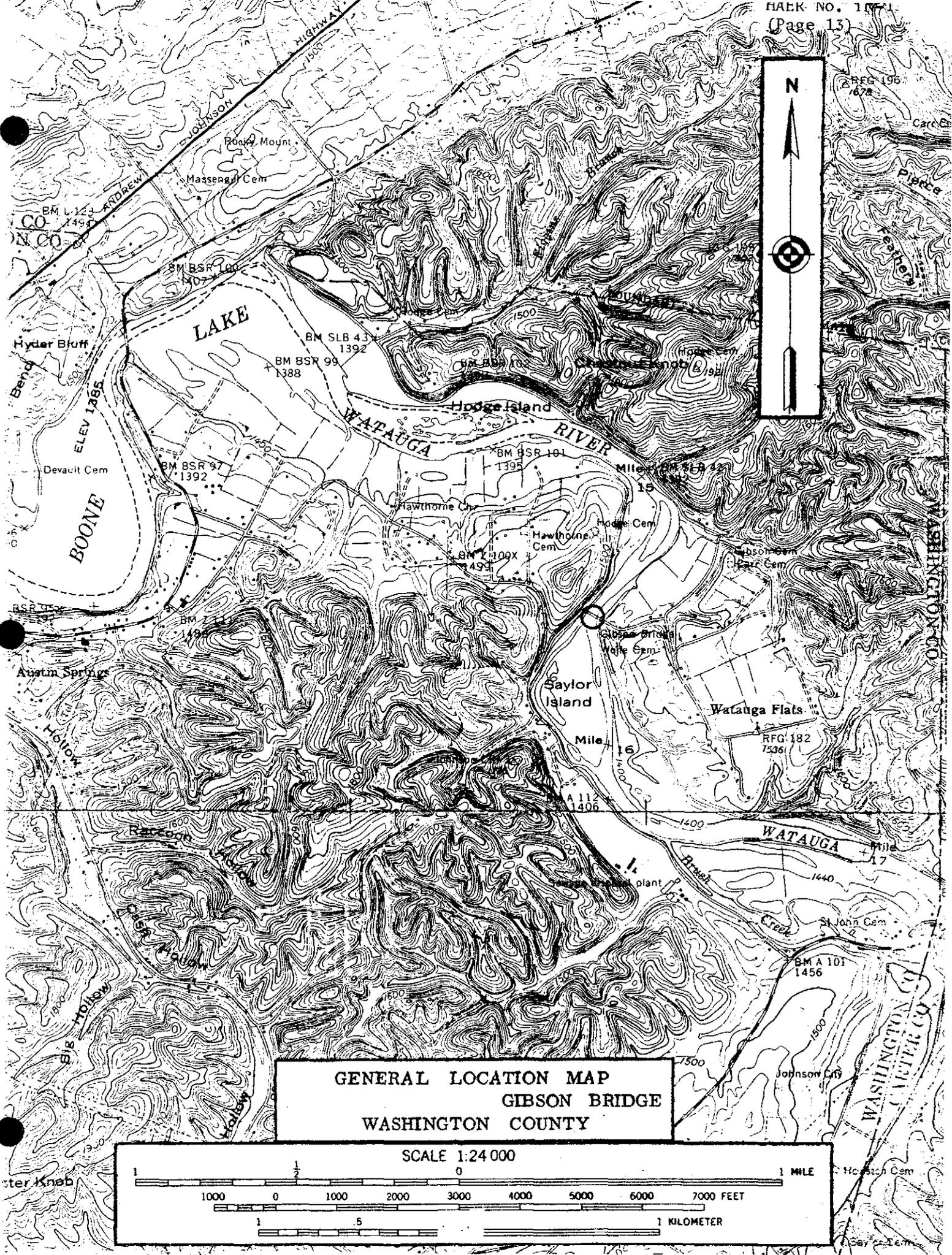


BOTTOM CHORDS & DIAGONALS

L0-L1	$a = 3"$	$b = 11"$ to $6"$	$C = 5/8"$
L1-L2	$a = 3"$	$b = 1'-0"$ to $7"$	$C = 3/4"$
L2-L3	$a = 3"$	$b = 11"$ to $9 3/4"$	$C = 7/8"$
L3-L4	$a = 3"$	$b = 1'-0 1/4"$ to $9"$	$C = 7/8"$
L4-L5	$a = 3"$	$b = 11 1/2"$ to $10 1/2"$	$C = 1"$
L5-L6	$a = 3"$	$b = 1'-0 1/2"$ to $9 1/2"$	$C = 1"$
L6-L7	$a = 3"$	$b = 9 1/4"$ to $10 1/4"$	$C = 7/8"$
L7-L8	$a = 3"$	$b = 11 3/4"$ to $7 7/8"$	$C = 7/8"$
L8-L9	$a = 3"$	$b = 8 1/2"$ to $10"$	$C = 1 1/16"$
L9-L10	$a = 3"$	$b = 5 3/4"$ to $10 1/4"$	$C = 1 1/16"$
U2-M3, M3-U3	$a = 2"$	$b = 10"$	$C = 3/8"$
U4-M5, M5-U4	$a = 2"$	$b = 3 1/2"$	$C = 5/8"$

TRUSS - SPAN 2

SUPERSTRUCTURE
BRIDGE NO. 1135
OVER WATAUGA RIVER
WASHINGTON COUNTY



**GENERAL LOCATION MAP
GIBSON BRIDGE
WASHINGTON COUNTY**

