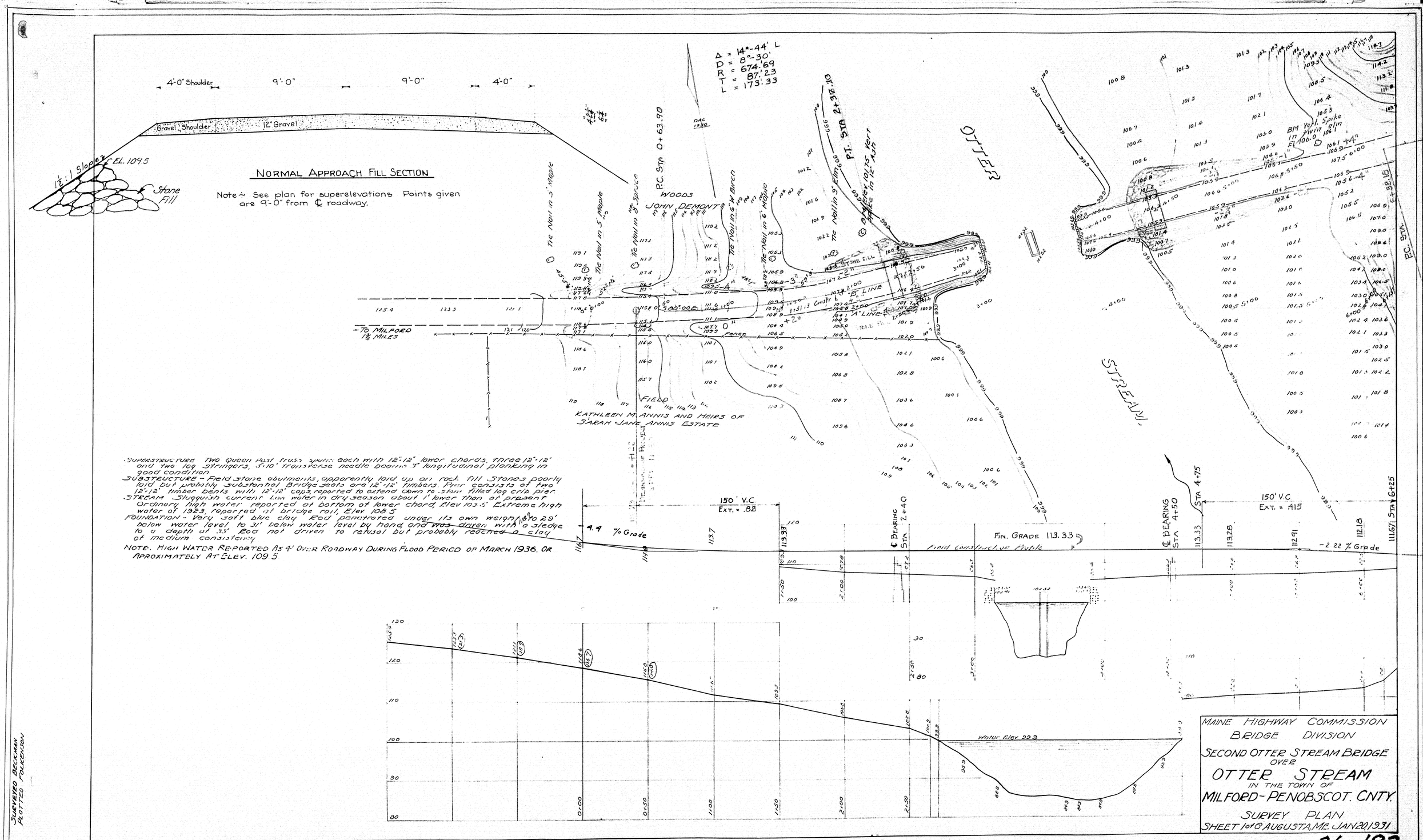


SUPERSTRUCTURE Two Queen Post truss spans each with 12"x12" lower chords, three 12"x12" and two log stringers, 3"x10" transverse needle beams 3" longitudinal planking in good condition

SUBSTRUCTURE - Field stone abutments, apparently laid up on rock fill Stones poorly laid but probably substantial Bridge seats are 12"x12" timbers Pier consists of two 12"x12" timber bents with 12"x12" caps, reported to extend down to stone filled log crib pier.

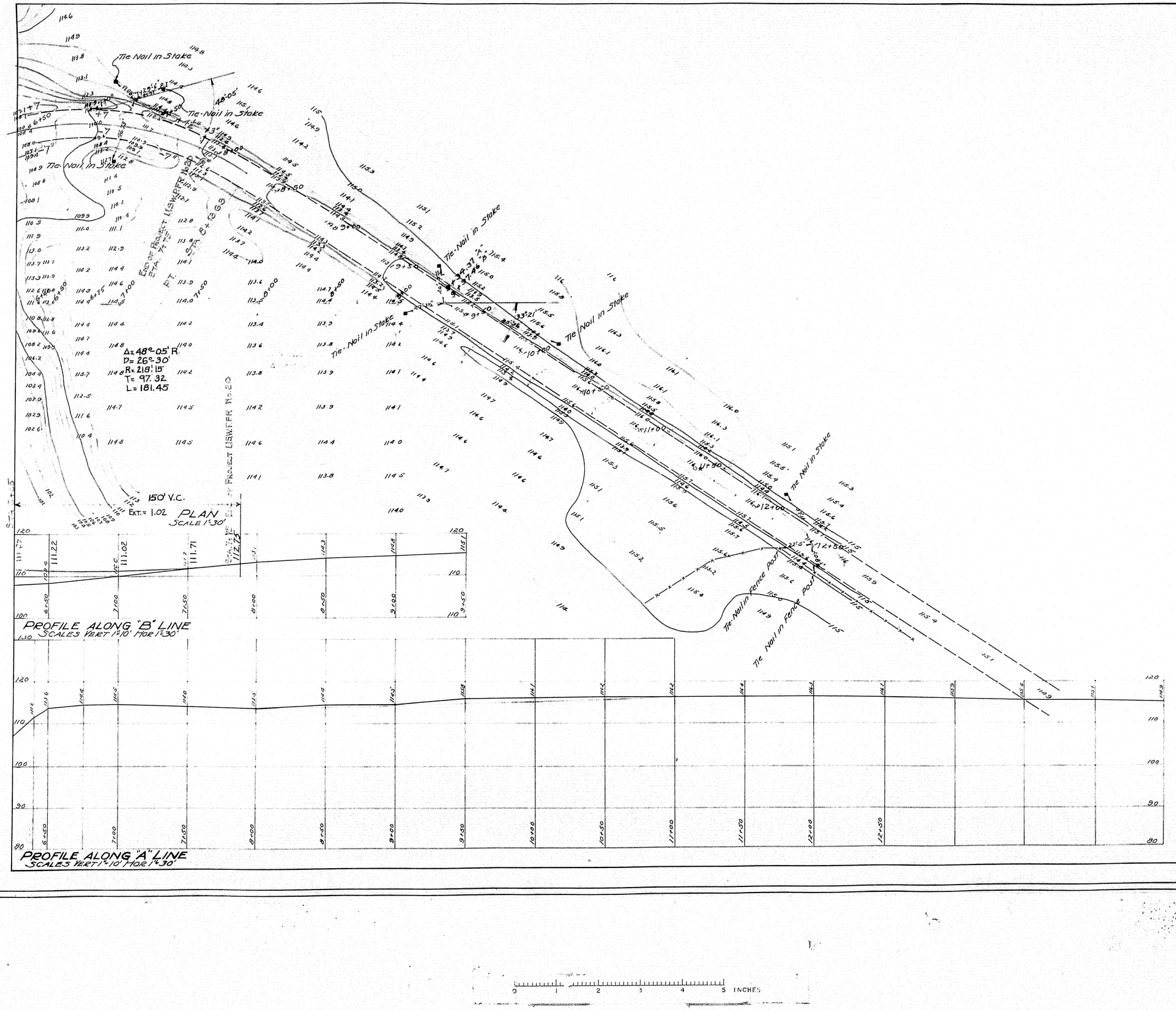
STREAM Sluggish current Low water in dry season about 1' lower than at present Ordinary high water reported at bottom of lower chord, Elev 103.5 Extreme high water of 1923, reported at bridge rail, Elev 108.5

FOUNDATION - Very soft blue clay Rod penetrated under its own weight 18 to 29' below water level to 31' below water level by hand, and was driven with a sledge to a depth of 33' Rod not driven to refusal but probably reached a clay of medium consistency

NOTE. HIGH WATER REPORTED AS 4' OVER ROADWAY DURING FLOOD PERIOD OF MARCH 1936, OR APROXIMATELY AT ELEV. 109.5

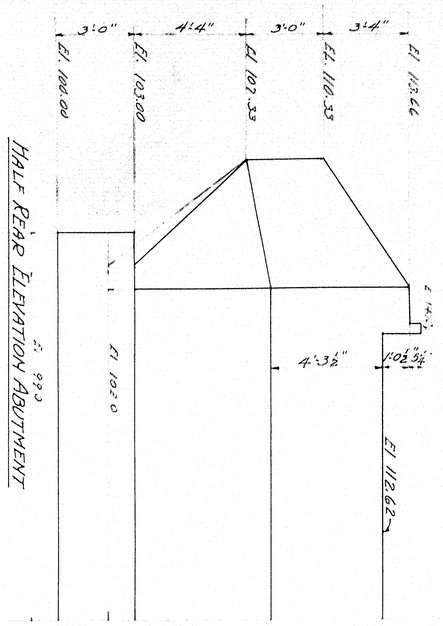
MAINE HIGHWAY COMMISSION
BRIDGE DIVISION
SECOND OTTER STREAM BRIDGE
OVER
OTTER STREAM
IN THE TOWN OF
MILFORD-PENOBSCOT. CNTY.
SURVEY PLAN
SHEET 1 of 6 AUGUSTA, ME. JAN 20, 1931

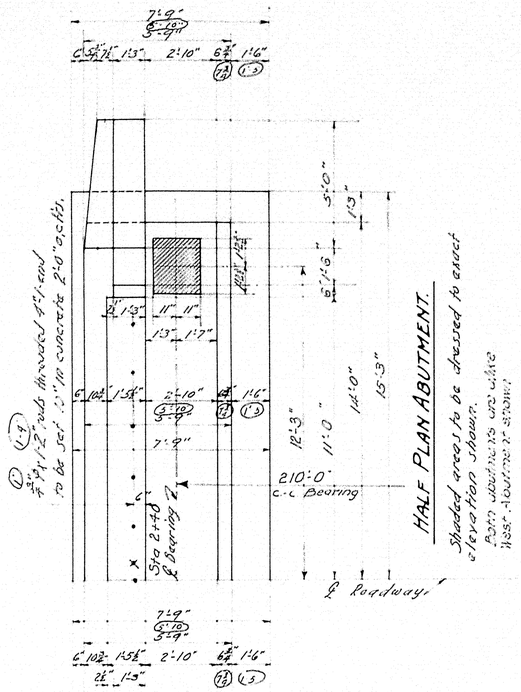
26-182

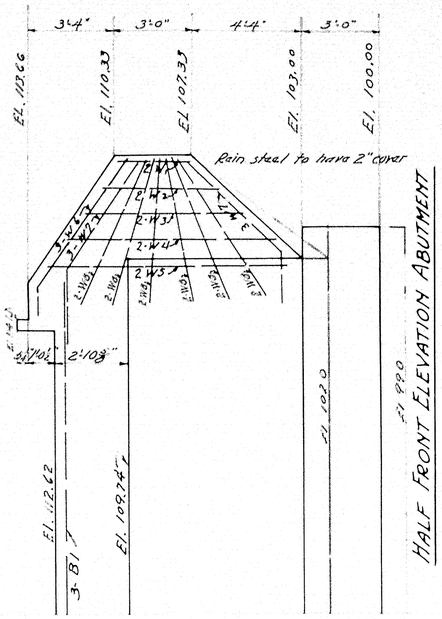


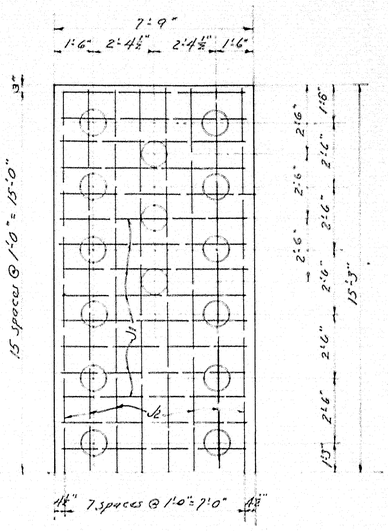
MAINE HIGHWAY COMMISSION
BRIDGE DIVISION
SECOND OTTER STREAM BRIDGE
OVER
OTTER STREAM
IN THE TOWN OF
MILFORD-PENOBSCOT, CNTY.
SURVEY PLAN
SHEET 2 of 6 AUGUSTA, ME. JAN. 20, 1931

26-183







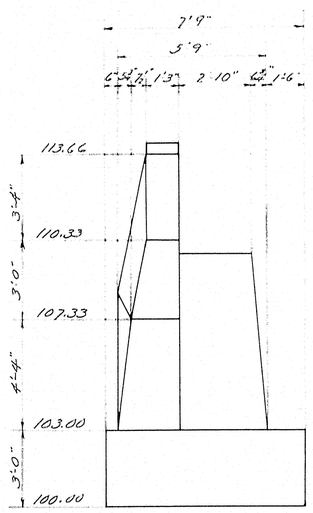


FOOTING PLAN SHOWING
PILE LAYOUT AND REIN. STEEL

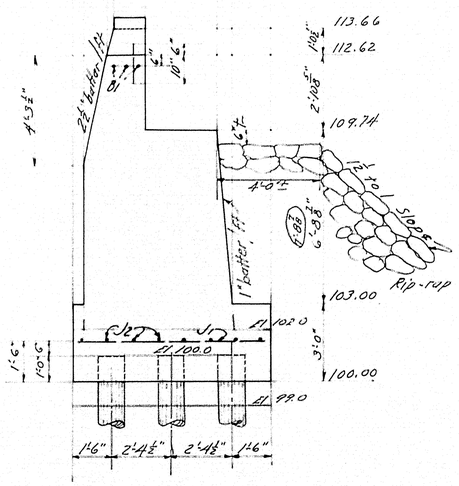
PILE NOTE -
60 piles required
17 tons - Load per pile

CONCRETE
All concrete to be class "B"

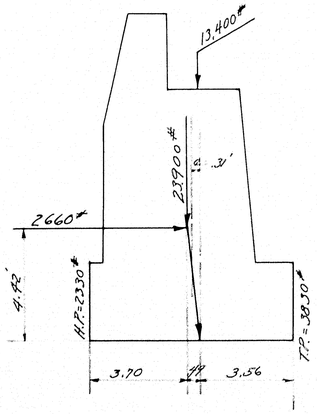
Field changes indicated in brown or thus



END ELEVATION



ABUTMENT SECTION



ABUTMENT ANALYSIS

Design Hamilton
Traced Strout
Checked G.B.

Town	10-47
Bridge	2754

STATE HIGHWAY COMMISSION
BRIDGE DIVISION
SECOND OTTER STREAM BRIDGE
OVER
OTTER STREAM
IN THE TOWN OF
MILFORD
PENOBSCOT CO.
SUBSTRUCTURE
Sheet 3 of 6 Augusta, Me. July 1936

26-184

0 1 2 3 4 5 INCHES

Exterior Stringer.

D.L.M. = 216 × 26.25² × 1.5 = 223,300'#
L.L.M. = 4.5/5 × 946,025 = 851,400
I = .331 = 281,800
1,356,500'#

S = 1,356,500 / 18,000 = 75.4

USE 17 7/8" CB × 47#

Interior Stringers

D.L.M. = 245 × 26.25² × 1.5 = 253,200'#
L.L.M. = 5/4 × 946,025 = 1,182,500
I = .331 = 391,400
1,827,100'#

S = 1,827,100 / 18,000 = 101.5

USE 20 7/8" C.B. × 59#

Floor Beam

D.L. Concentrations 5700, 6450, 6450, 6450, 5700
D.L. Uniform 98#/'
2.25 5.0 5.0 5.0 5.0 2.25
24.5
L.L. Concentrations 13,400 13,400 13,400 13,400
5.5 6.0 3.0 6.0 4.0

RL D.L.C. = 15,375

RL L.L.C. = (4+10+13+19)/24.5 × 13,400 = 25,159

D.L.C.M. = 15,375 × 12.25 - 6450 × 5 - 5700 × 10 = 99,100'#
L.L.C.M. = 25,159 × 11.5 - 13,400 × 6.00 = 208,900
I. = .282 = 58,900
D.L.U.M. = 98 × 24.5² × 1/8 = 7,400
374,300'#

S = 374,300 / 1500 = 249.5

Use 27" C.B. × 98#

Designed by L.P.
Plan by Hamilton
Traced by Hanan
Checked by G.B.

Cast Steel Rocker Expansion End

Cast Steel Shoe - Fixed End

Stringers
Exterior = 17 7/8 CB × 47#
Interior = 20 7/8 CB × 59#
Conn Ls - 4 × 3 1/2 × 3/8

Floor Beams
27" CB. × 98#
Conn Ls - 2Ls 4 × 3 1/2 × 7/16
- 2Ls 6 × 4 × 7/16

Typical Half Cross Section

~Notes~

To be detailed in accordance with "STATE HIGHWAY COMMISSIONS SPECIFICATIONS FOR STEEL HIGHWAY BRIDGES". Other sections of equal strength may be substituted for those shown, but no allowance for extra weight will be allowed caused by such substitutions. All field connections of main members to be sub-punched and reamed to metal templates or with members assembled. Rivets in all main members of truss, lower laterals and floor to be 7/8"∅; top laterals, sway frame and portals to be 3/4"∅.

LOADING ~ H-15

WIND ~ 50# per sq. ft. on 1 1/2 times the area of the truss as seen in side elevation for top system 30# per sq. ft. on 1 1/2 times the area of the truss as seen in side elevation plus 200# lin. ft. for bottom system.

DEAD LOAD ~ 1116# per lin. ft. of truss.

UNIT STRESSES ~ Tension = 18000 #/□"

Compression = $P = \dfrac{18000}{1 + \dfrac{(L/r)^2}{13500}}$

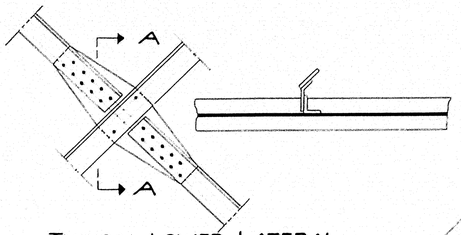
Town	10-47
Bridge	2754

State Highway Commission
Bridge Division

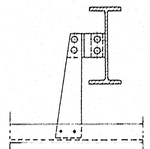
Second Otter Stream Bridge
over
Otter Stream
in the town of
Milford
Penobscot Co.

Stress Sheet
Sheet 4 of 6 Augusta, Me. July 1936

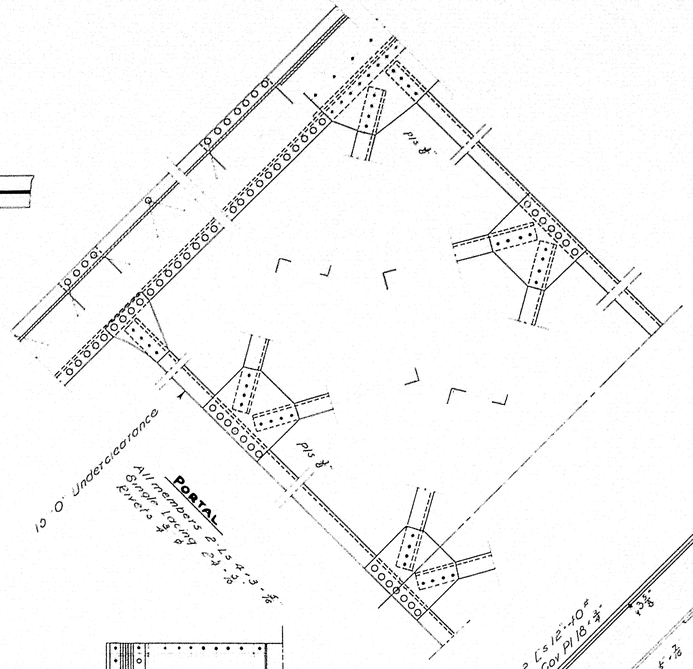
26-185



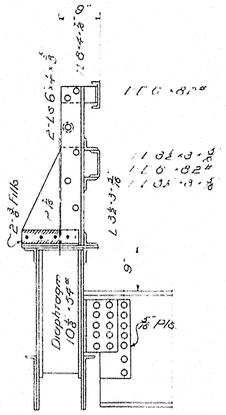
TYPICAL LOWER LATERAL
INTERSECTION AND HANGER SUPPORT



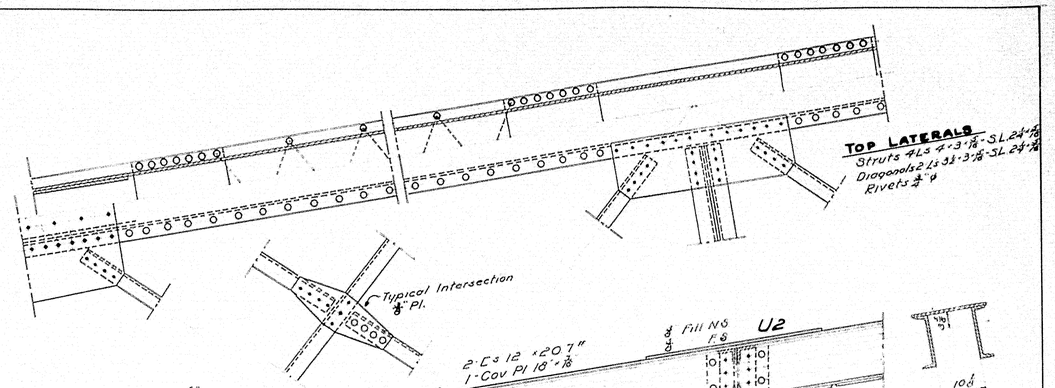
VIEW A-A

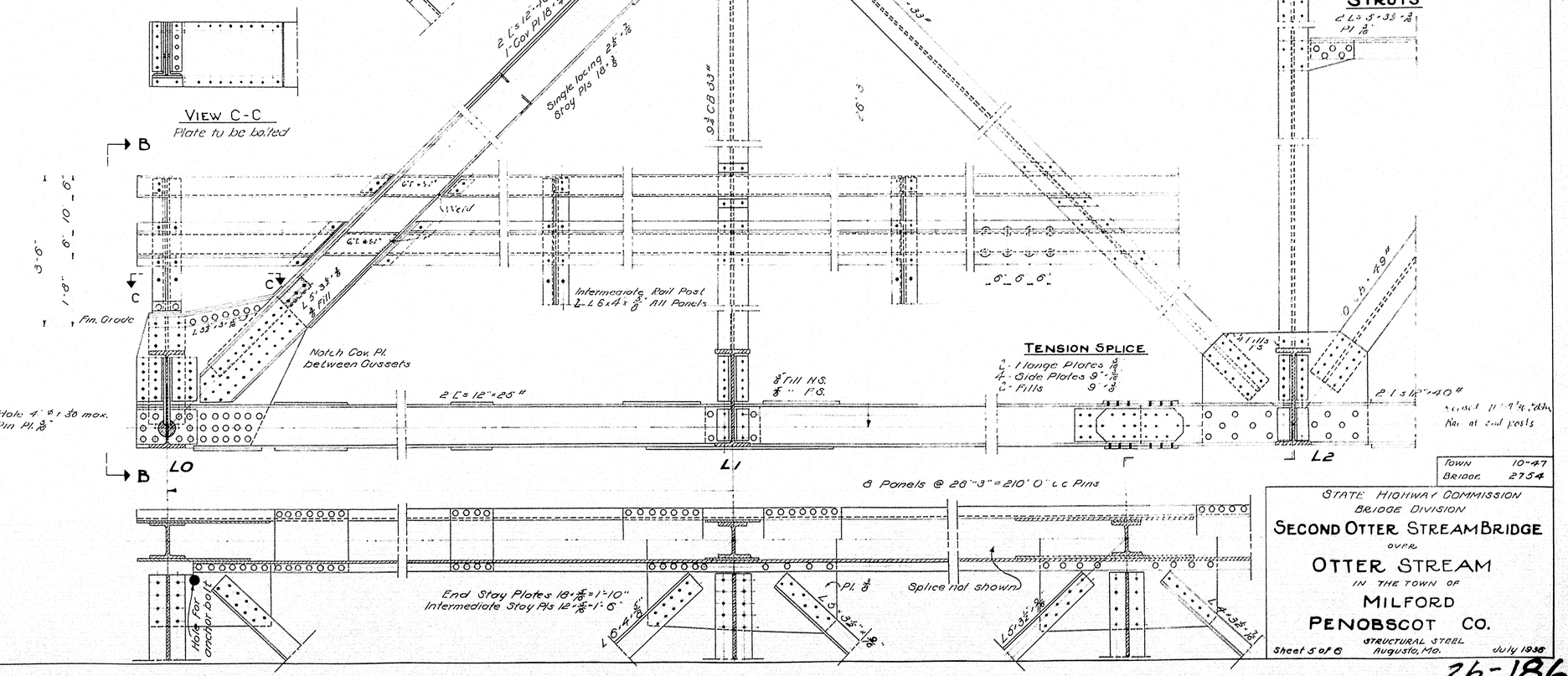


VIEW C-C
Plate to be bolted



VIEW - B-B





Designed - C.L.P.
Plan - Hamilton
Traced - Honan
Checked - G.B.

Town	10-47
Bridge	2754

STATE HIGHWAY COMMISSION
BRIDGE DIVISION

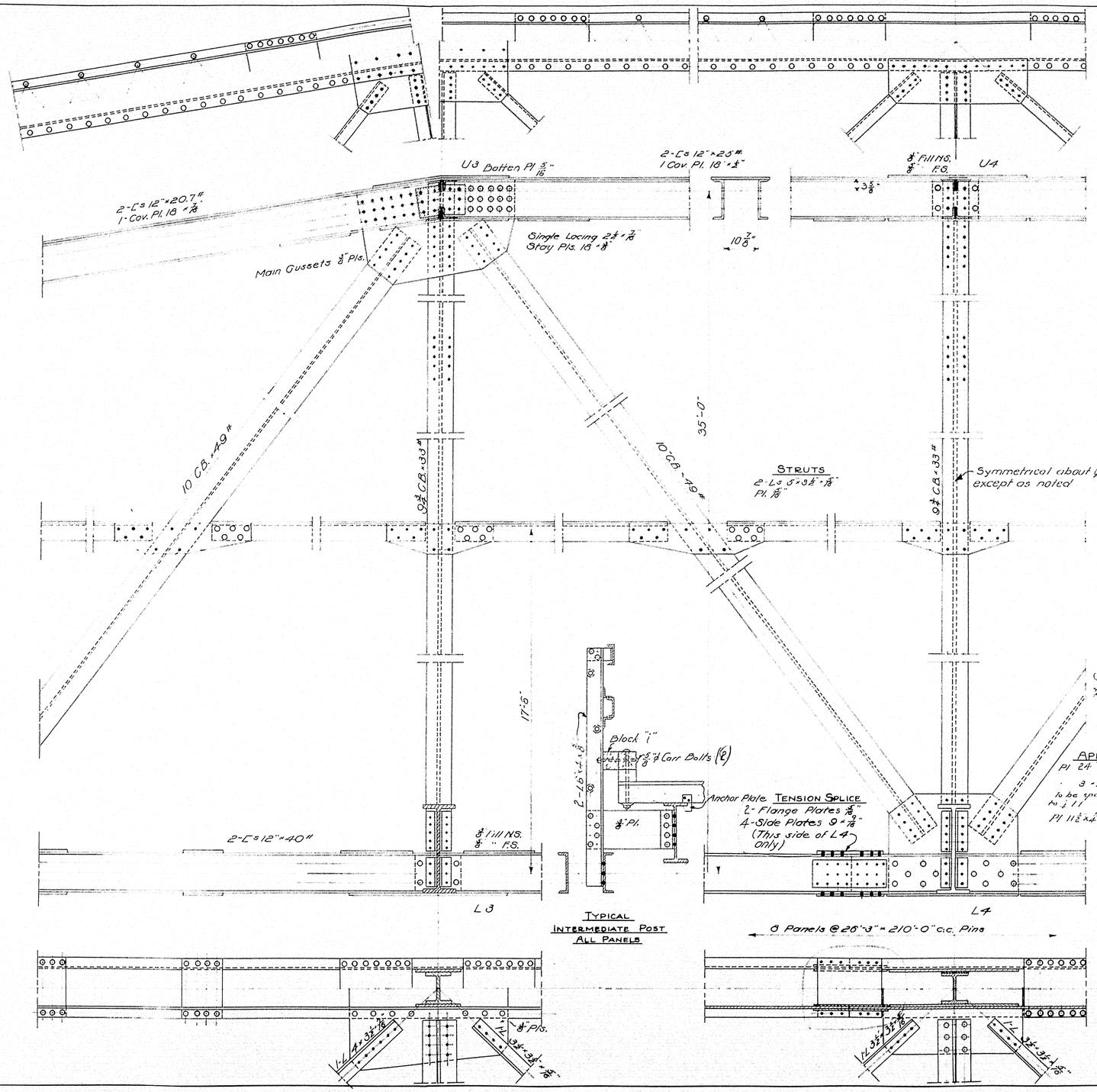
SECOND OTTER STREAM BRIDGE
OVER
OTTER STREAM
IN THE TOWN OF
MILFORD
PENOBSCOT CO.

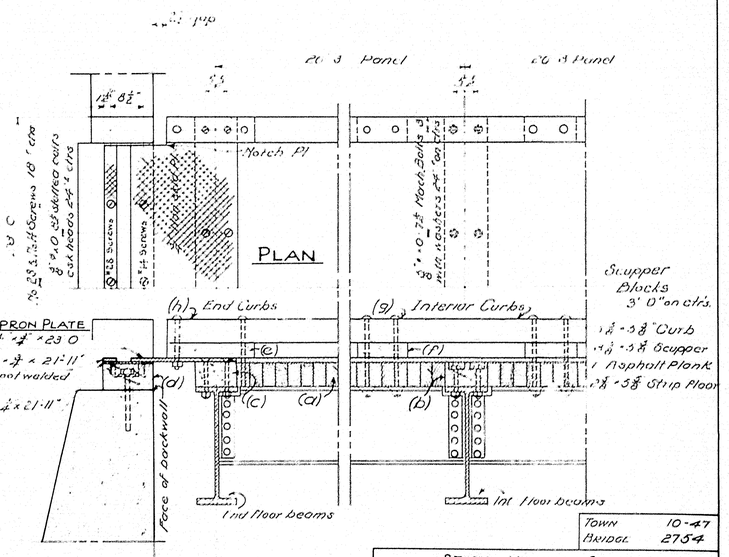
STRUCTURAL STEEL
Augusta, Me.

Sheet 5 of 6

July 1938

26-186





LONGITUDINAL SECTION FLOOR

See sheet #4 for TRANSVERSE SECTION

TIMBER SCHEDULE

MARK	NO. REQ'D	DRESS	FIN. SIZE	LENGTH	LOCATION
a	935	D4S	2 5/8"×5 3/8"	23'-0"	Strip Floor
b	7	"	5 3/8"×9 1/2"	23'-0"	Int. Floor Beams
c	2	"	5 7/8"×9 1/2"	23'-0"	End Floor Beams
d	2	"	7 1/2"×11 1/2"	21'-11 1/2"	Backwall timber
e	4	"	3 5/8"×5 3/8"	1'-6 1/2"	End Scupper Blocks
f	138	"	3 5/8"×5 3/8"	1'-0"	Int. " "
g	24	"	5 3/8"×5 3/8"	16'-0"	Curbs
h	4	"	5 5/8"×5 5/8"	16'-6 1/2"	End curbs
i	20	"	4"×5 3/8"	0'-8"	Rail Post Blocks

4811 sq. ft. 1" Asphalt Plank (exact area)
1575 Anchor Plates (to fasten strip floor to flange of stringers)

BOLT LIST – TIMBER

SIZE	NO.	KIND	LENGTH	WASHERS	LOCATION
5/8" ϕ	280	Carr.	1'-6"	280 (cast)	Curbs scup floor
5/8" ϕ	168	Machine Hex. Boat Nuts	0'-6 1/2"	168 (cut)	Int. floor bm timber
5/8" ϕ	40	Carr.	0'-11"		Curb Scuppers Rail Post Blocks
1" ϕ	24	Rods Ring 4"	1'-4"	24 (cut)	Backwall timber
5/8" ϕ	24	Slotted Heads	0'-8 1/2"		End Floor Beam Timbers

REINFORCING STEEL – SUBSTR'E

MARK	SIZE	NO. REQ'D	LENGTH	LOCATION
B1	3/4" ϕ	6	26'-0"	Backwall
J1	" "	62	7'-3"	Footing
J2	" "	16	30'-0"	"
W1	" "	8	2'-9"	Wings
W2	" "	8	4'-9"	"
W3	" "	8	6'-6"	"
W4	" "	8	8'-3"	"
W5	" "	8	10'-6"	"
W6	" "	12	7'-0"	"
W7	" "	24	8'-0"	"
W8	" "	48	7'-6"	"

All steel to be plain bars of structural grade.
All dimensions to center lines of steel.

Town 10-47
Bridge 2754

STATE HIGHWAY COMMISSION
BRIDGE DIVISION

SECOND OTTER STREAM BRIDGE

OVER

OTTER STREAM

IN THE TOWN OF

MILFORD

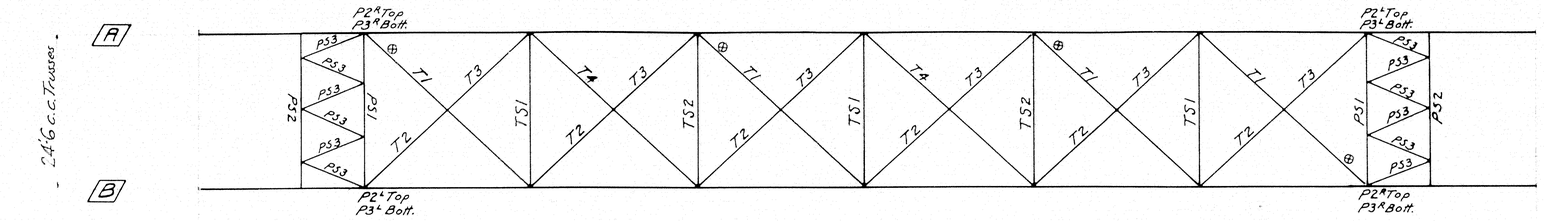
PENOBSCOT CO.

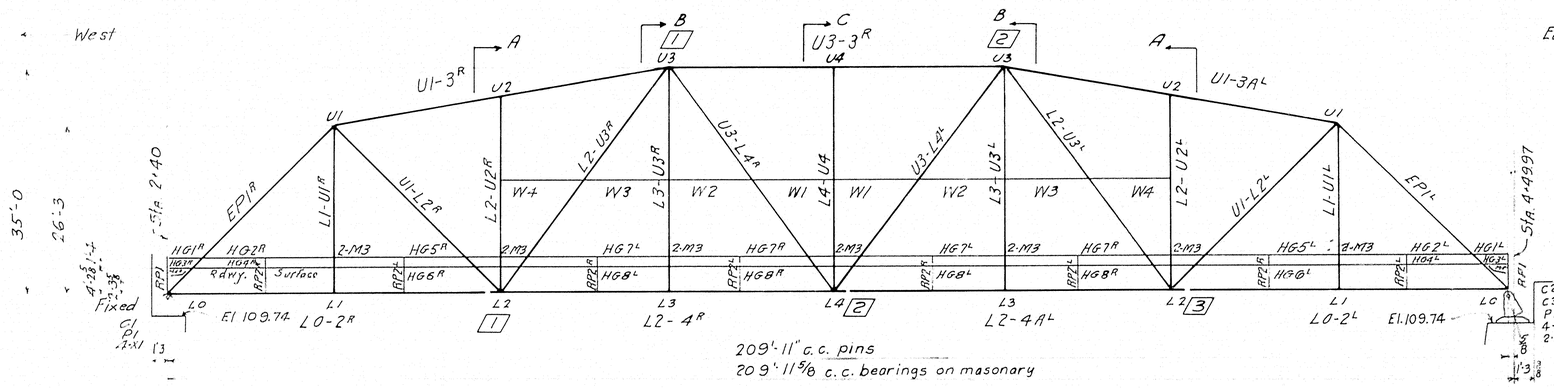
STRUCTURAL STEEL
Sheet 6 of 6 Augusta, Me. July 1938

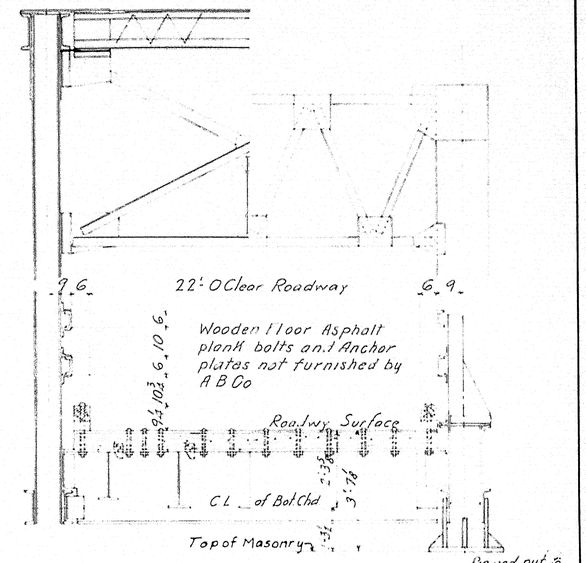
Designed - C.L.
Plan - Hamilton
Traced - Hanan
Checked - G.B.

26-187

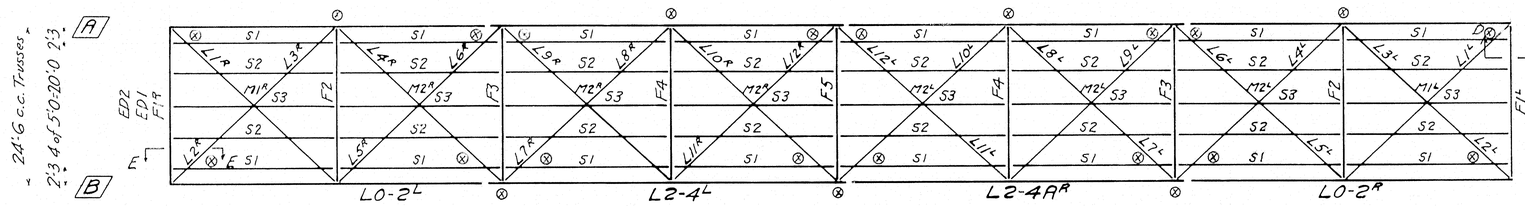
0 1 2 3 4 5 INCHES







HALF INT. SECTION HALF END VIEW



Note to Erector
In order to have the rockers vertical under full dead load at at normal temperature, they should be inclined to the vertical as here shown when erection is begun
The distances given are for a normal temperature of 68°F. Make correction of measuremts for effect of temperature on the tape of 1/8" for span length for each 8°F below or above 68°F.
Field connections Riveted except Hub Guards which are bolted.

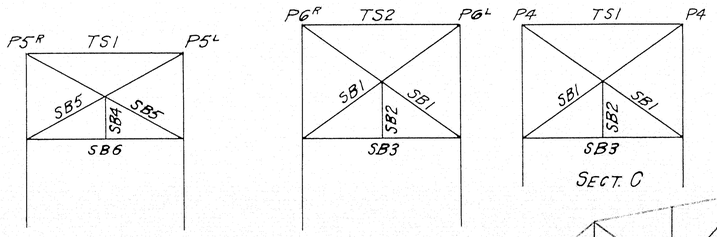
ORDER H383

LIST OF SHEETS	
E1	Erection Plan
1a&b	Trusses
2	Floor
3	Sway Bracing
4	End Dams
5	Laterals
6	Portals

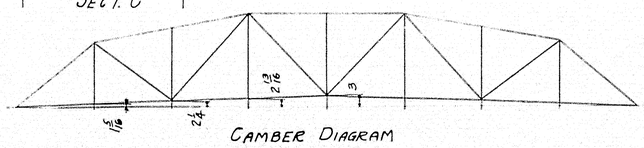
ORDER H384

LIST OF SHEETS	
1	Hub Guards

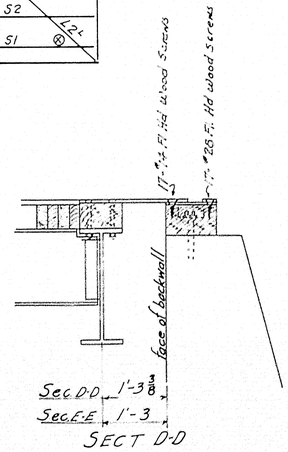
MATCHMARKS FOR TOP & BOTTOM CHORDS.
BOTTOM CHORDS LETTERED A-B.
" " SPLICES NUMBERED 1-2-3.
TOP CHORDS LETTERED A-B.
" " SPLICES NUMBERED 1-2.



SECT. A SECT. B SECT. C



CAMBER DIAGRAM



SECT D-D
SECT E-E

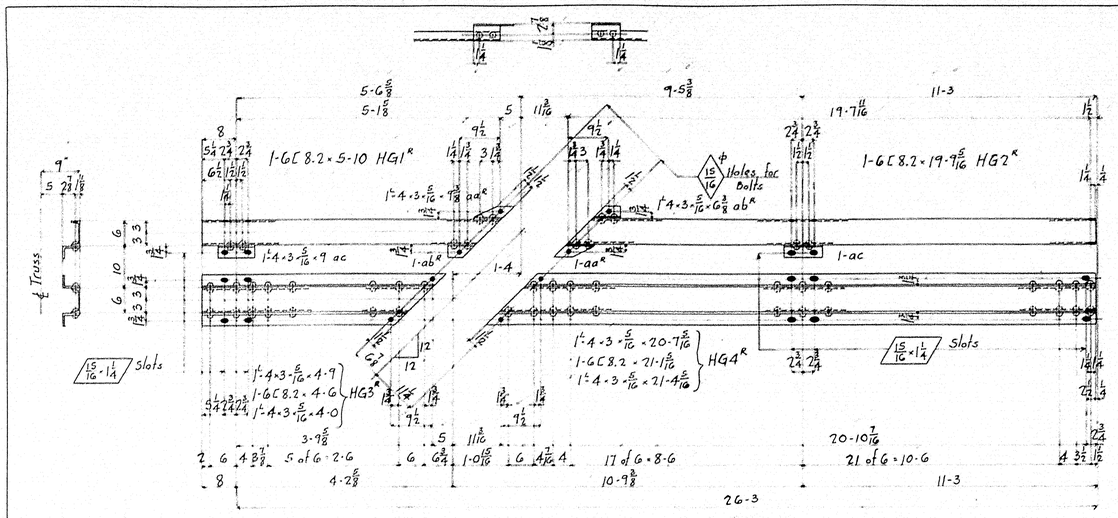
STATE OF MAINE
SECOND OTTER STREAM BRIDGE
OVER
OTTER STREAM
TOWN OF MILFORD
PENOBSCOT COUNTY
Erection Diagram

DRAWING MADE Elmira
WORK FABRICATED Elmira
IN CHARGE OF Mahoney
DRAW. MADE BY DER 12-21-36
DRAW. CHECKED S.K. 1-8-37

ORDER H383-H384 E1

Rev. 3-26-37.

26-188



REQUIRED		
2	HUB GUARDS	HG1R
2	" "	HG1L
2	" "	HG2R
2	" "	HG2L
2	" "	HG3R
2	" "	HG3L
2	" "	HG4R
2	" "	HG4L
2	" "	HG5R
2	" "	HG5L
2	" "	HG6R
2	" "	HGGL
4	" "	HG7R
4	" "	HG7L
4	" "	HG8R
4	" "	HG8L
4	RAILING POSTS	RP1
8	" "	RP2R
8	" "	RP2L
28	ANGLES	M3

Rivets 5/8 ϕ unless noted
Holes 15/16 ϕ " "
Paint: Yes.
Surfaces to be riveted in contact in shop or field shall not be painted.

Shop Bill Page S1 a+b

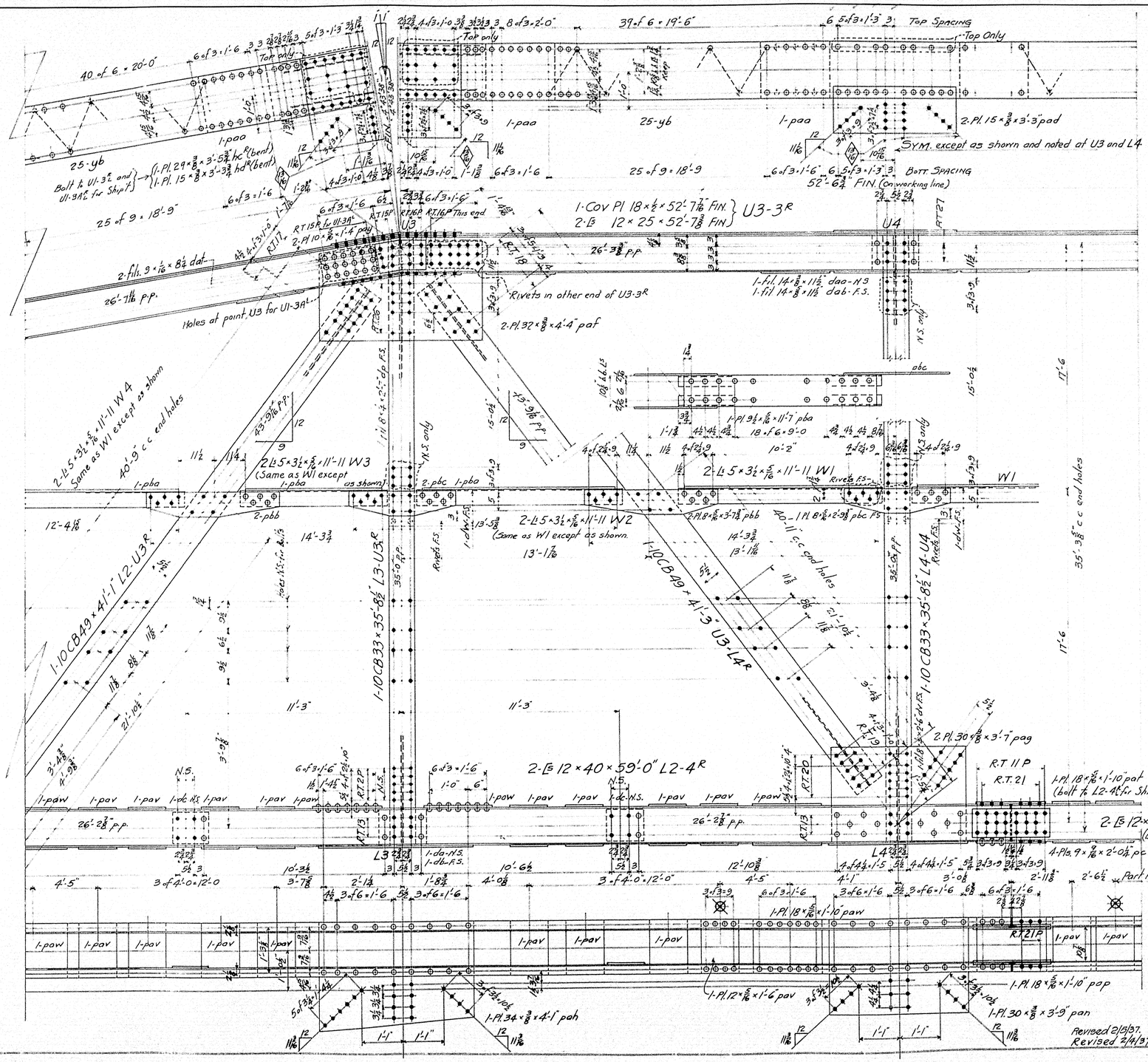
STATE OF MAINE
SECOND OTTER STREAM BRIDGE
OVER
OTTER STREAM
TOWN OF MILFORD
PENOBSCOT COUNTY

HUB GUARDS & RAILING POSTS

AMERICAN BRIDGE COMPANY.

DRAWINGS MADE AT Elmira PLANT
WORK FABRICATED AT Elmira PLANT.
IN CHARGE OF E. B. Maloney
DRAW. MADE BY G.D.W. DATE 12-24-36
DRAW. CHECKED BY C.K. DATE 1-8-37.
ORDER NO. H384 . SHEET NO. 1

26-189



REQUIRED		
2	END POSTS	EP1R
2	" "	EP1L
1	TOP CHORDS	U1-3R
1	" "	U1-3L
1	" "	U3-3R
1	" "	U3-3L
1	" "	U1-3AR
1	" "	U1-3AL
2	BOTT. "	L0-2R
2	" "	L0-2L
1	" "	L2-4R
1	" "	L2-4L
1	" "	L2-4AR
1	" "	L2-4AL
2	DIAGONALS	U1-L2R
2	"	U1-L2L
2	"	L2-U3R
2	"	L2-U3L
2	"	U3-L4R
2	"	U3-L4L
2	VERTICALS	L1-U1R
2	"	L1-U1L
2	"	L2-U2R
2	"	L2-U2L
2	"	L3-U3R
2	"	L3-U3L
2	"	L4-U4
4	LONG. STRUTS	W1
4	" "	W2
4	" "	W3
4	" "	W4
2	PIECES	M4R
2	"	M4L

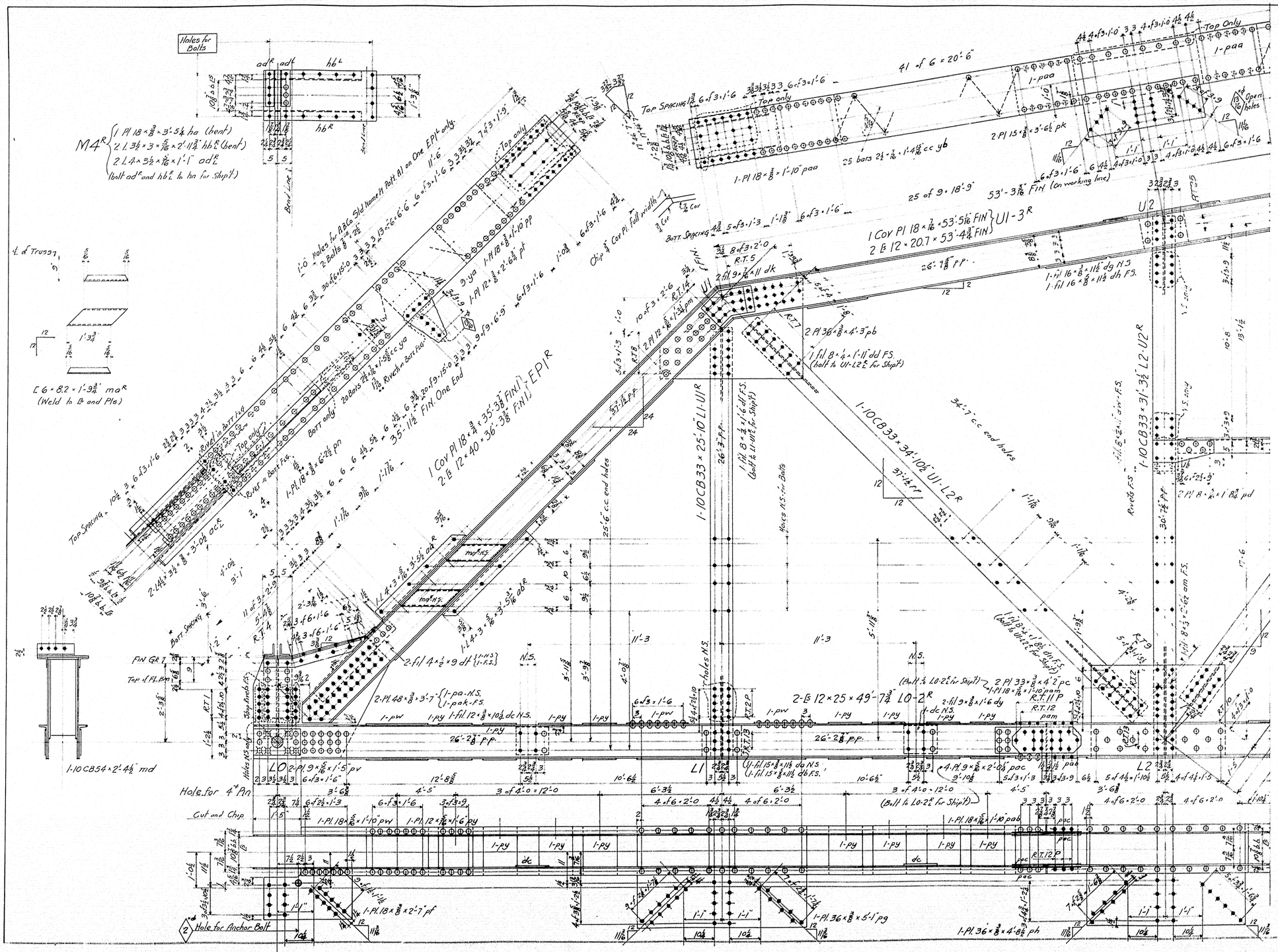
STATE OF MAINE
SECOND OTTER STREAM BRIDGE
OVER
OTTER STREAM
TOWN OF MILFORD
PENOBSCOT COUNTY
TRUSSES

NOTES.-
Rivets ⅞" ϕ
Holes 15/16" ϕ unless noted
Paint - Yes.
Surfaces to be riveted in contact either in shop or field shall not be painted.
Holes marked R.T. to be punched 11/16" and reamed to 13/16" to a metal templet or white assembled. If reamed assembled parts are to be match marked.

WORK FROM	Elmira	
DESIGNED	F.B. Maloney	
DETAILED	GMN	1-7-36
CHECKED	S.K.	1-8-36
ORDER	H383 B	SHEET NO. 1 A

SHOP BILL 5 lbs cd.

26-190



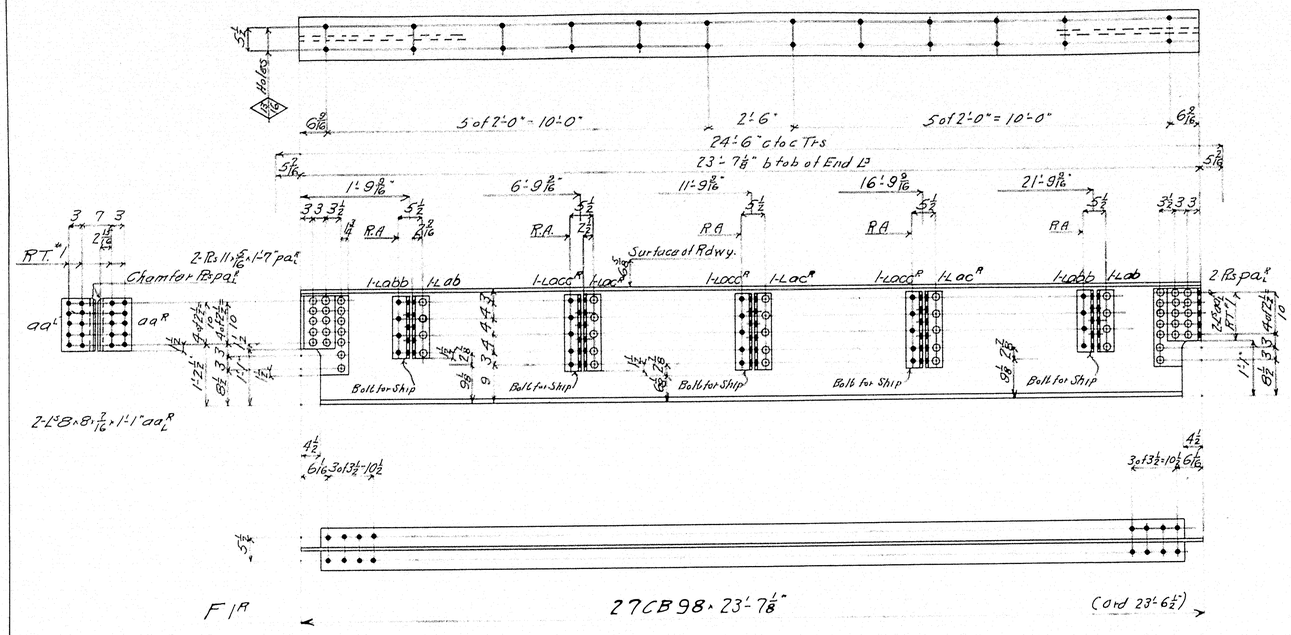
STATE OF MAINE
SECOND OTTER STREAM BRIDGE
OVER
OTTER STREAM
TOWN OF MILFORD
PENOBSCOT COUNTY
TRUSSES

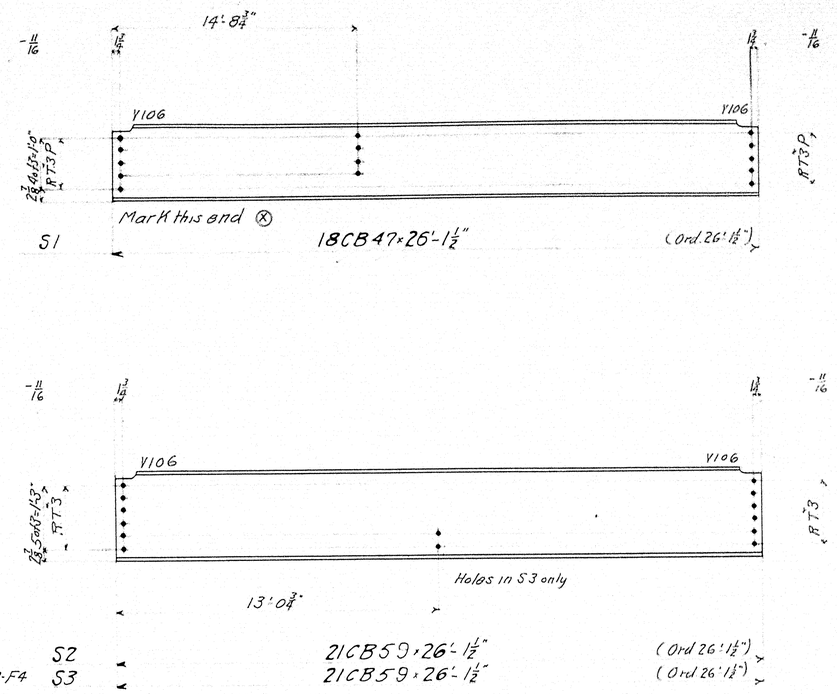
AMERICAN BRIDGE COMPANY
DRAWINGS MADE AT Elmira PLANT
WORK PROPRIETARY Elmira PLANT
IN CHARGE OF Maloney
DRAW. MADE BY GMN DATE 1-4-36
DRAW. CHECKED BY S.K. DATE 1-8-36

Revised 2/5/37
Revised 2/9/37

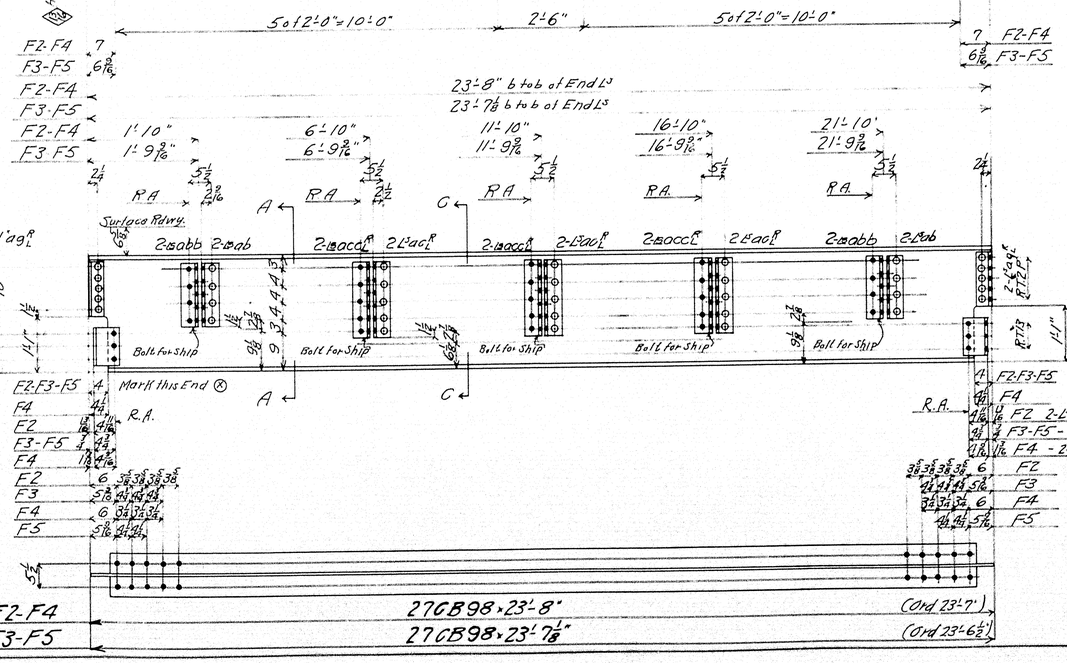
ORDER No. H383B
SHEET NO. 1B

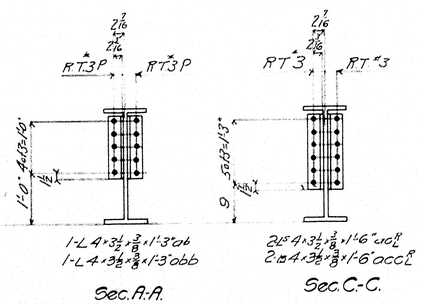
26-191





-5 For F2-F4
-5 1/16 For F3-F5





REQUIRED		
One	Floor Beam	F1^R
One	" "	F1^L
2	" "	F2
2	" "	F3
2	" "	F4
One	" "	F5
16	Stringers	S1
16	"	S2
8	"	S3

Notes:
- Rivets ⅞" diam
- Holes 15/16" diam unless noted
- Paint - yes
- Surfaces to be riveted in contact either in Shop or Field shall not be painted.
- Holes marked R.A to be punched 11/16 and reamed to 15/16 with parts assembled.
- Holes marked RT to be punched 11/16 and reamed to 15/16 to a metal template.
- Holes in metal over ¾" thick to be subpunched and reamed or drilled.

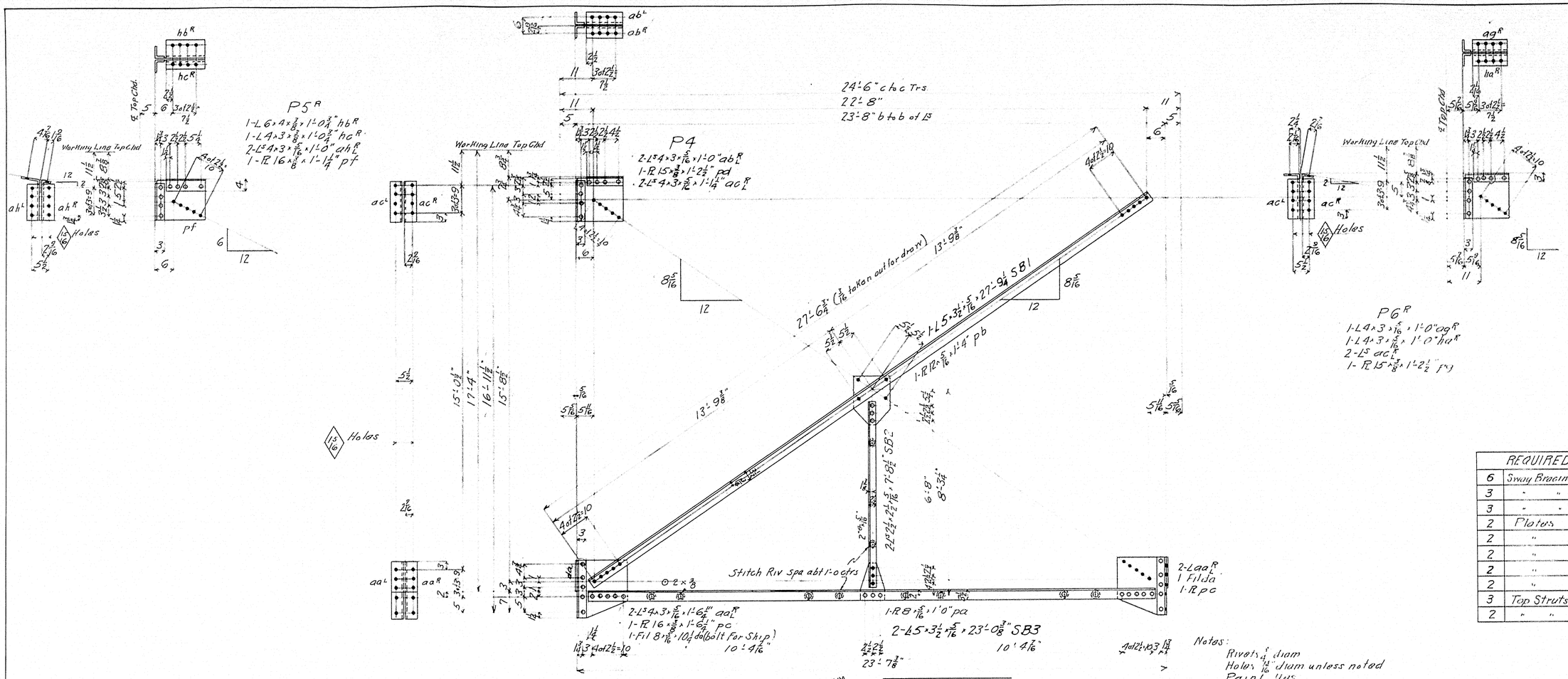
Revised 2/15/37
Revised 2/4/37

SHOP BILL S2

STATE OF MAINE
SECOND OTTER STREAM BRIDGE
OVER
OTTER STREAM
TOWN OF MILFORD
PENOBSCOT CO.
FLOOR BEAMS - STRINGERS
AMERICAN BRIDGE COMPANY.

DRAWINGS MADE AT ELMIRA PLANT.
WORK FABRICATED AT ELMIRA PLANT.
IN CHARGE OF MALONEY
DRAW. MADE BY R.B.G. DATE 12-21-36
DRAW. CHECKED BY S.K. DATE 1-8-37
ORDER No. H383B
SHEET NO. 2

26-192



REQUIRED		
6	Sway Bracing	SB1
3	" "	SB2
3	" "	SB3
2	Plates	P4
2	"	P5R
2	"	P5L
2	"	P6R
2	"	P6L
3	Top Struts	TS1
2	" "	TS2

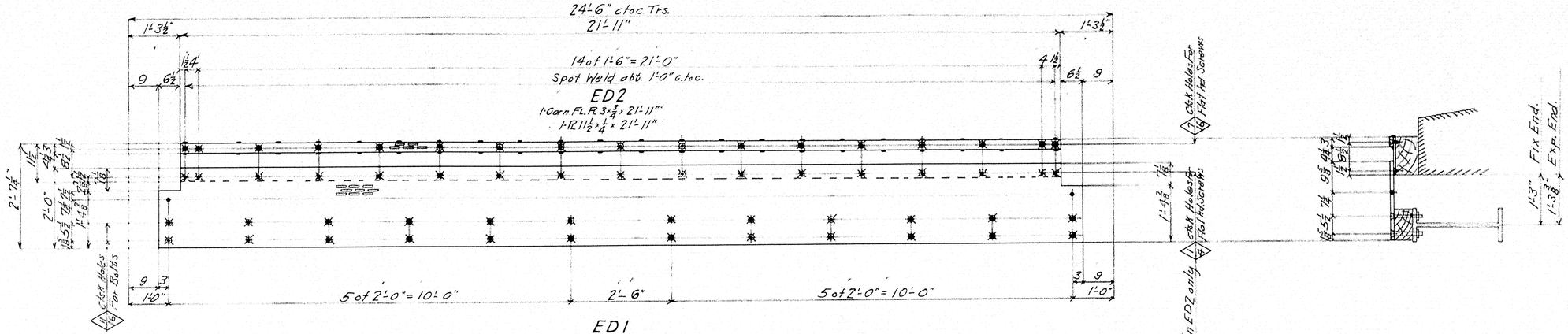
Notes:
Rivets ⅞" diam
Holes 15/16" diam unless noted
Paint 1 hrs.
Surfaces to be riveted in contact either the shop or field shall not be painted

STATE OF MAINE
SECOND OTTER STREAM BRIDGE
OVER
OTTER STREAM
TOWN OF MILFORD
PENOBSCOT CO.
SWAY BRACING · STRUTS

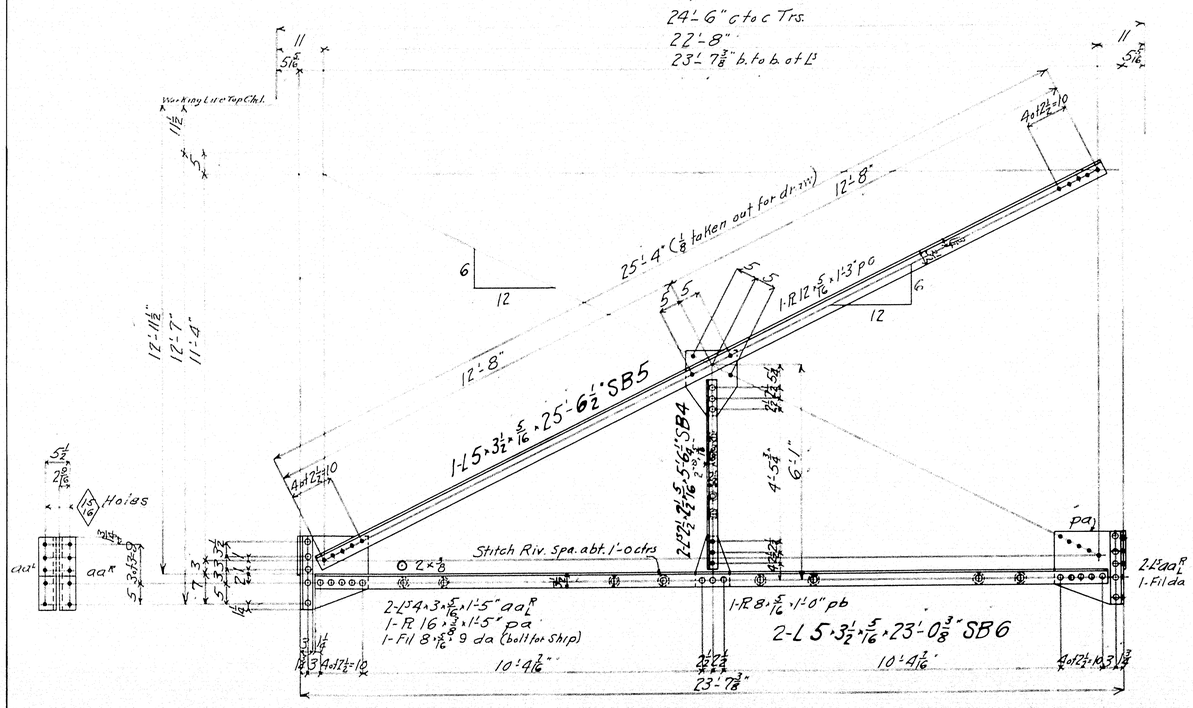
AMERICAN BRIDGE COMPANY.
DRAWINGS MADE AT ELMIRA PLANT.
WORK FABRICATED AT ELMIRA PLANT.
IN CHARGE OF MALONEY
DRAW. MADE BY R.B.G. DATE 12-29-36
DRAW. CHECKED BY S.K. DATE 1-8-37
ORDER NO. H383 B
SHEET NO. 3

SHOP BILL 53 ab

26-193



ED1
1-Carn. FL. R. 24 x 3/4 x 23'-0"



REQUIRED		
2	End Dams	ED1
2	" "	ED2
2	Sway Bracing	SB4
4	" "	SB5
2	" "	SB6

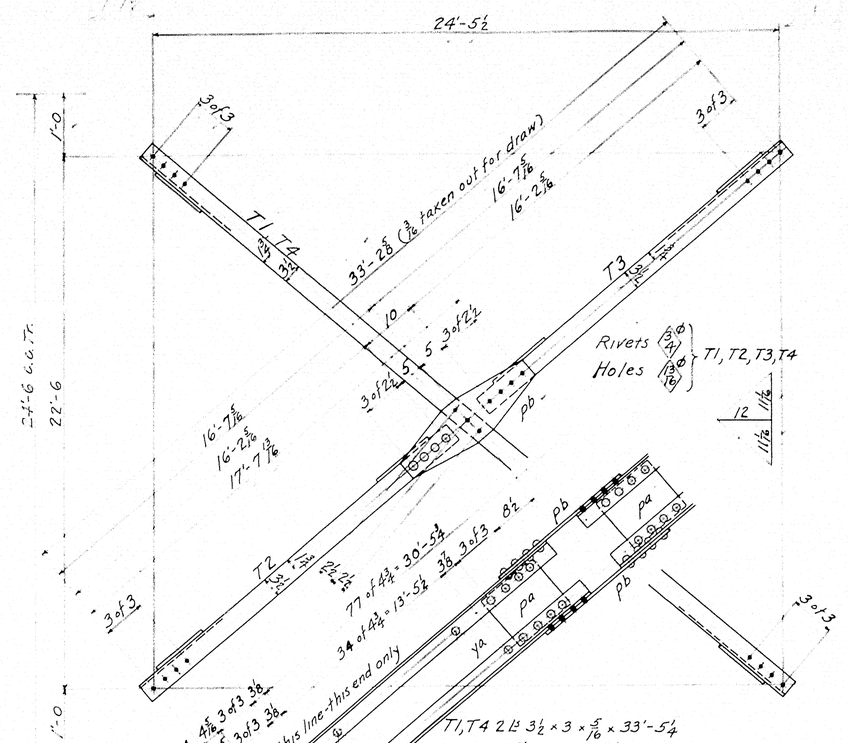
Notes:
Rivets 3/4" diam.
Holes 13/16" diam. unless noted.
Paint - yes
Surfaces to be riveted in contact either in the shop or field shall not be painted

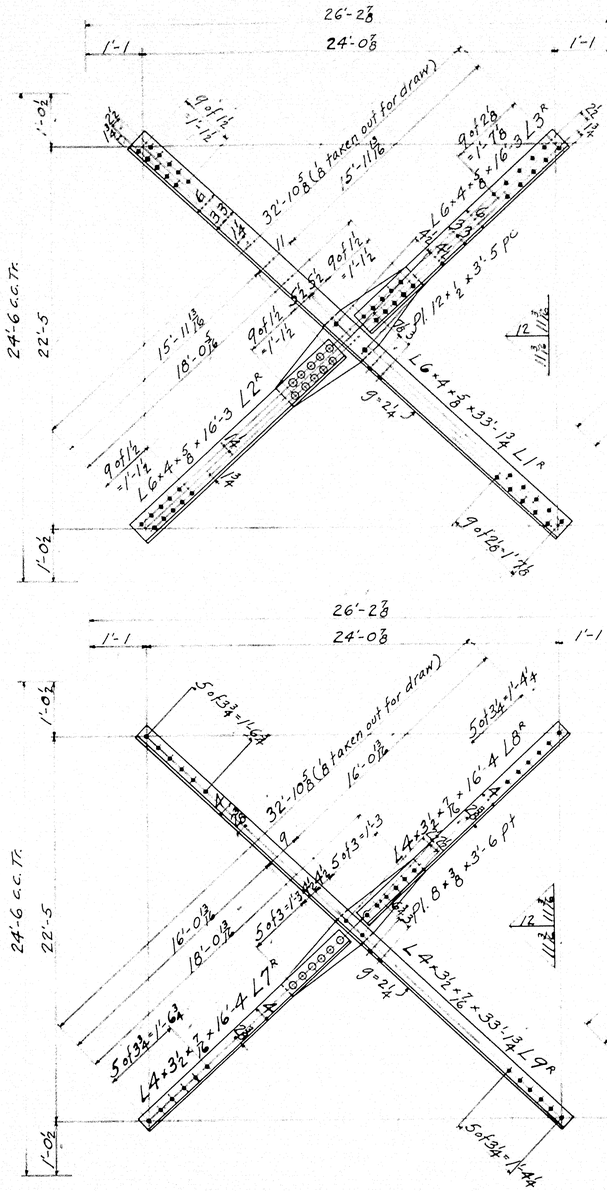
STATE OF MAINE
SECOND OTTER STREAM BRIDGE
OVER
OTTER STREAM
TOWN OF MILFORD
PENOBSCOT CO.
END DAMS AND SWAY BRACING

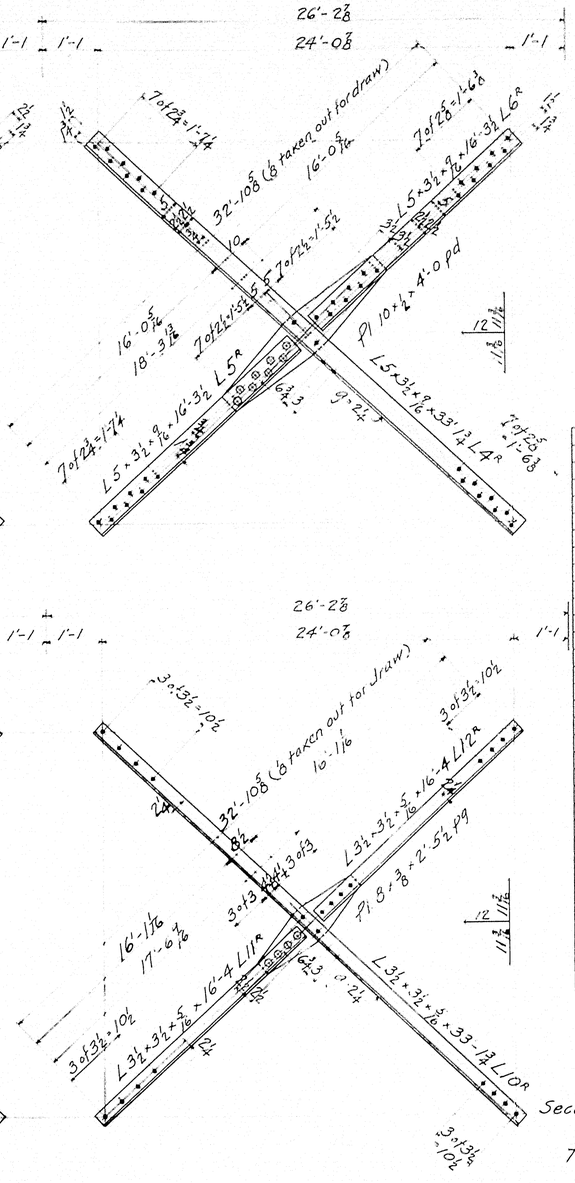
AMERICAN ROLLING MILL CO.
DRAWING MADE AT ELMIRA PLANT.
WORK FABRICATED AT ELMIRA PLANT.
IN CHARGE OF MALONEY
DRAW. MADE BY R.B.G. DATE 12-22-36
DRAW. CHECKED BY S.K. DATE 1-8-37
ORDER No. H383 B
SHEET NO. 4.

STRUCTURE BILL 54

26-194







REQUIRED		
+	TOP LATERALS	T1
6	" "	T2
6	" "	T3
ONE	BOTT LATERAL	L1R
ONE	" "	L1L
ONE	" "	L2R
ONE	" "	L2L
ONE	" "	L3R
ONE	" "	L3L
ONE	" "	L4R
ONE	" "	L4L
ONE	" "	L5R
ONE	" "	L5L
ONE	" "	L6R
ONE	" "	L6L
ONE	" "	L7R
ONE	" "	L7L
ONE	" "	L8R
ONE	" "	L8L
ONE	" "	L9R
ONE	" "	L9L
ONE	" "	L10R
ONE	" "	L10L
ONE	" "	L11R
ONE	" "	L11L
ONE	" "	L12R
ONE	" "	L12L
ONE	PIECE	M1R
ONE	"	M1L
3	"	M2R
3	"	M2L
2	TOP LATERALS	T4

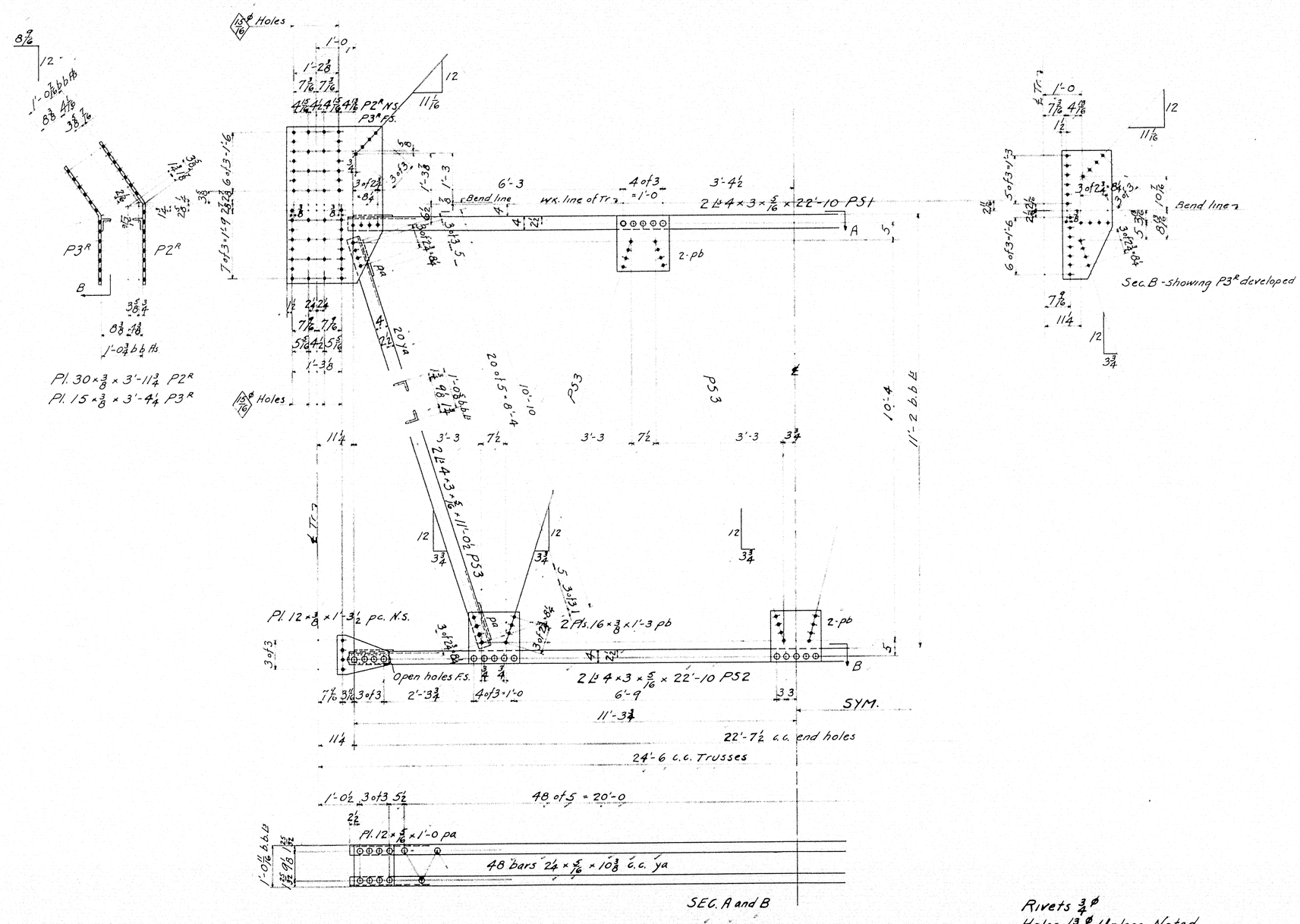
Rivets 7/8φ Unless Noted
Holes 15/16φ " "
Paint - yes
Surfaces to be riveted in contact either in Shop or field are not to be painted

STATE OF MAINE
Second Otter Stream Bridge
over
Otter Stream
TOWN OF MILFORD
Penobscot County
TOP AND BOTTOM LATERALS

DESIGNED BY	Elmira	PLANS
WORK PERFORMED BY	Elmira	PRINT
CHECKED	Maloney	
DRAWN	W.C.	DATE 12-22-36
DRAW. CHECKED BY	S.K.	DATE 1-8-36
ORDER NO.	H383 B	SHEET NO. 5

55ab

26-195



REQUIRED		
2	PORTAL STRUTS	PS1
2	" "	PS2
12	" "	PS3
2	PLATES	P2R
2	"	P2L
2	"	P3R
2	"	P3L

Rivets 3/4 ϕ
Holes 13/16 ϕ Unless Noted
Paint - yes
Surfaces to be riveted in contact either in the shop or field are not to be painted.

STATE OF MAINE
Second Otter Stream Bridge
over
Otter Stream
TOWN OF MILFORD
Penobscott County
PORTAL

DRAWING MADE BY Elmira
WORK MADE BY Elmira
IN CHARGE BY Maloney
DRAW. MADE BY W.C. DATE 12-28-36
DRAW. CHECKED BY S.K. DATE 1-8-37
ORDER No. H383b SHEET No. 6

SHOP BILL 56

26-196