

NORTHERN ARIZONA UNIVERSITY

ASCE 2016 STEEL BRIDGE

ASCE 2016
STEEL BRIDGE



PROJECT NAME:

STEEL BRIDGE
DESIGN

DRAWING NUMBER:

SB2015-001

GROUP MEMBERS:

LOGAN COUCH
MATT RODGERS
BRIAN JOUFLAS
KAITLIN VANDAVEER

FABRICATION NOTES:

NOTE 1: WELD BOTH SIDES
NOTE 2: PLATE BOTH SIDES OF MEMBER
NOTE 3: GRIND CORNER TO FIT
NOTE 4: CUT TO FIT, HOLD HOLE DIM.
NOTE 5: GRIND MAIN MEMBER FOR WELD AREA. USE TWO KNIFE PLATES
NOTE 6: WELD TO FIT

GENERAL NOTES:

NOTE 1: ALL BOLT HOLES PLACED AT CENTERLINE OF MEMBER
NOTE 2: $\frac{1}{2}$ " TUBE TO $\frac{1}{2}$ " TUBE REQUIRES WELDED SPACER PLATE

MATERIAL SECTION SET

$\frac{3}{4}$ "X $\frac{3}{4}$ "X11ga 33KSI TUBE
 $\frac{1}{2}$ "X $\frac{1}{2}$ "X16ga 33KSI TUBE
 $\frac{1}{4}$ " 36KSI ROUND ROD
10ga 33KSI PLATE

MATERIAL LENGTHS

$\frac{3}{4}$ "X $\frac{3}{4}$ "X11ga-200 LF
 $\frac{1}{2}$ "X $\frac{1}{2}$ "X16ga-180 LF
 $\frac{1}{4}$ " ROUND ROD-200 LF
10ga 33KSI PLATE-20 SF

PROJECTED DEFLECTIONS

VERTICAL: 0.70"
LATERAL: 0.20"

BRIDGE LOADING

VERTICAL TEST: 1400 LBS AT CENTER WITH 1000 LBS AT SELECTED LOCATION
LATERAL TEST: 75 LBS AT CENTER OF BOTTOM TRUSS CHORD

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DATE: 02/27/16

MEMBER & PLATE SCHEDULE

Steel Bridge - Material Schedule				
Label	Material Description	Length		Amount Req'd
		FT	IN	
C1	HSS 3/4"x3/4"x11ga	1	7 7/8	4
C2	HSS 3/4"x3/4"x11ga	1	8 3/16	4
D1	HSS 3/4"x3/4"x11ga			4
D2	(2) HSS 3/4"x3/4"x11ga	2	6 3/4	2
D3	(2) HSS 3/4"x3/4"x11ga	2	7	8
D4	(2) HSS 3/4"x3/4"x11ga			2
B1	HSS 3/4"x3/4"x11ga	2	7 3/8	4
B2	HSS 3/4"x3/4"x11ga			10
B3	HSS 3/4"x3/4"x11ga			2
B4	HSS 3/4"x3/4"x11ga	2	6 1/2	4
B5	HSS 3/4"x3/4"x11ga			2
B6	HSS 3/4"x3/4"x11ga	2	7	10
B7	HSS 1/2"x1/2"x16ga			14
B8	HSS 1/2"x1/2"x16ga			12
B9	HSS 1/2"x1/2"x16ga	2	6 3/4	7
B10	HSS 1/2"x1/2"x16ga	2	6 1/2	7
B11	HSS 3/4"x3/4"x11ga			4
R1	1/4" Round Rod	0	4 1/4	14
R2	1/4" Round Rod	0	5 3/8	~195
R3	1/4" Round Rod			70
P1	10ga Plate	See Details		8
P2	10ga Plate	See Details		8
P3	10ga Plate	See Details		24
P4	10ga Plate	See Details		4
P5	10ga Plate	See Details		8
P6	10ga Plate	See Details		8
P7	10ga Plate	See Details		8
P8	10ga Plate	See Details		4
P9	10ga Plate	See Details		16
P10	10ga Plate	See Details		4
P11a	10ga Plate	See Details		28
P11b	10ga Plate	See Details		14
P12	10ga Plate	See Details		14
P13	10ga Plate	See Details		4
P14	10ga Plate	See Details		4
P15	10ga Plate	See Details		

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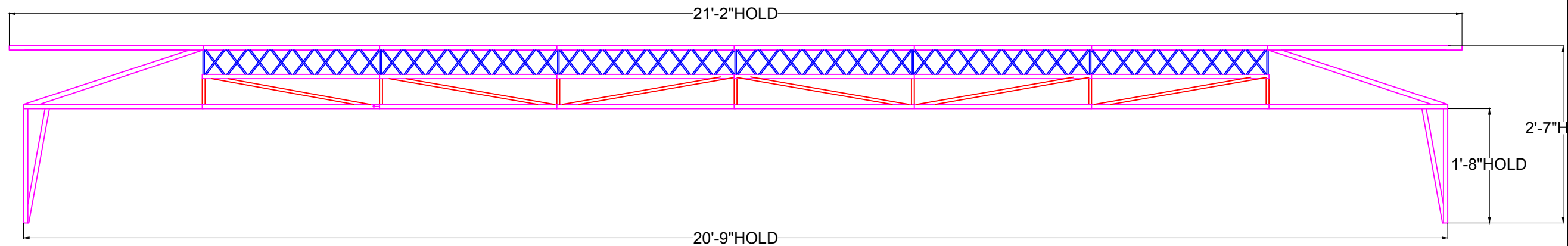
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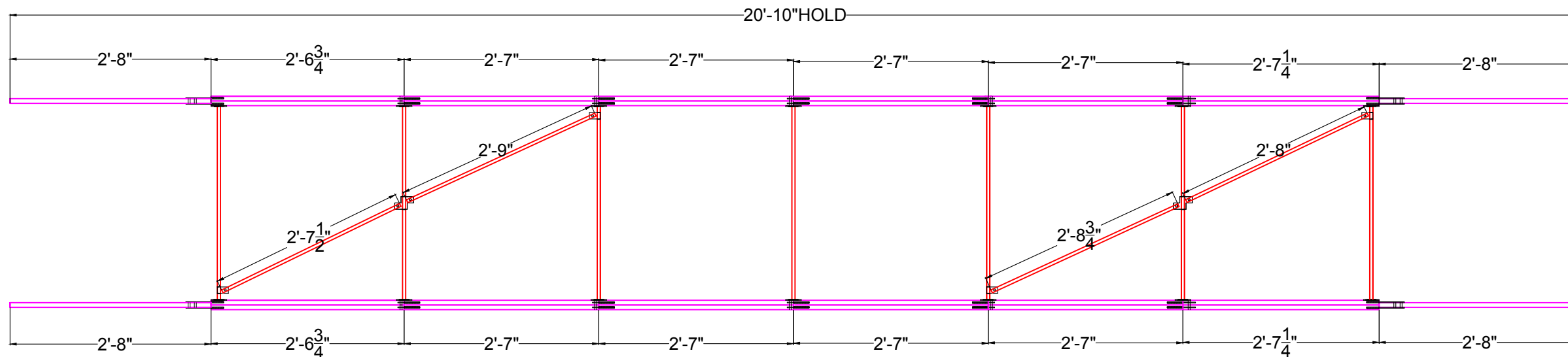
OVERALL DIMENSIONS

+/- 1/8" HORIZONTAL

+/- 1/16" VERTICAL



ELEVATION VIEW 1



PLAN VIEW 1

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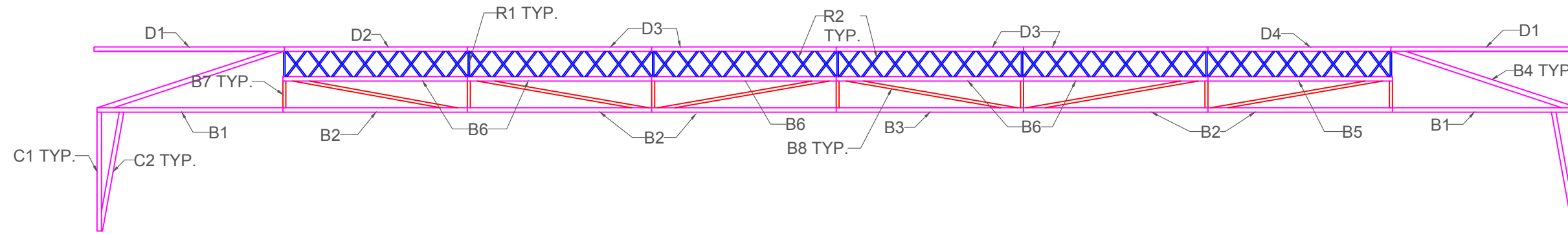
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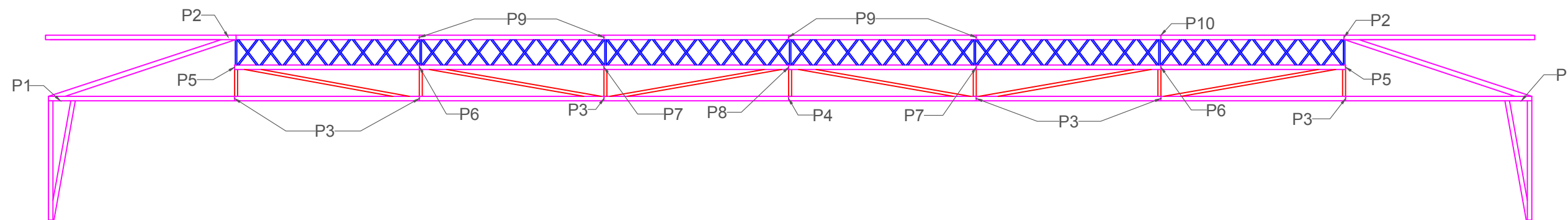
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MEMBER CALL-OUTS



ELEVATION VIEW 1

PLATE CALL-OUTS



ELEVATION VIEW 1

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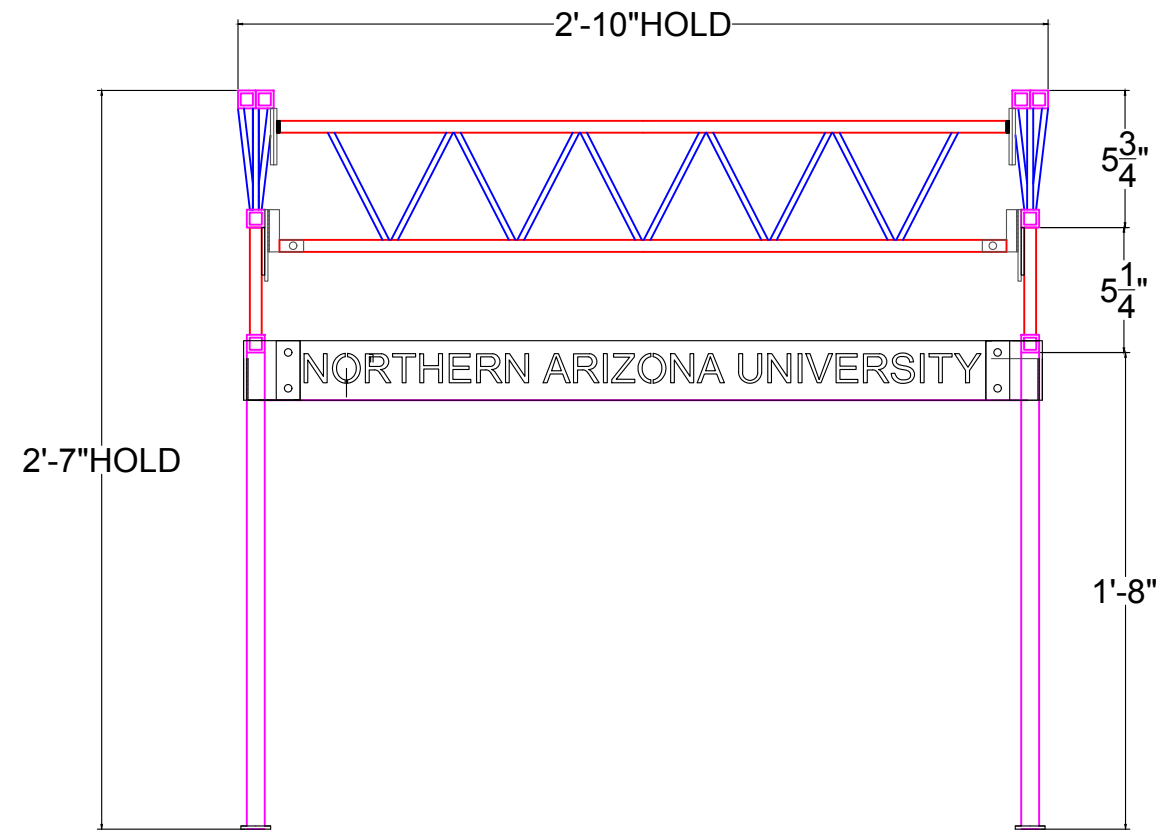
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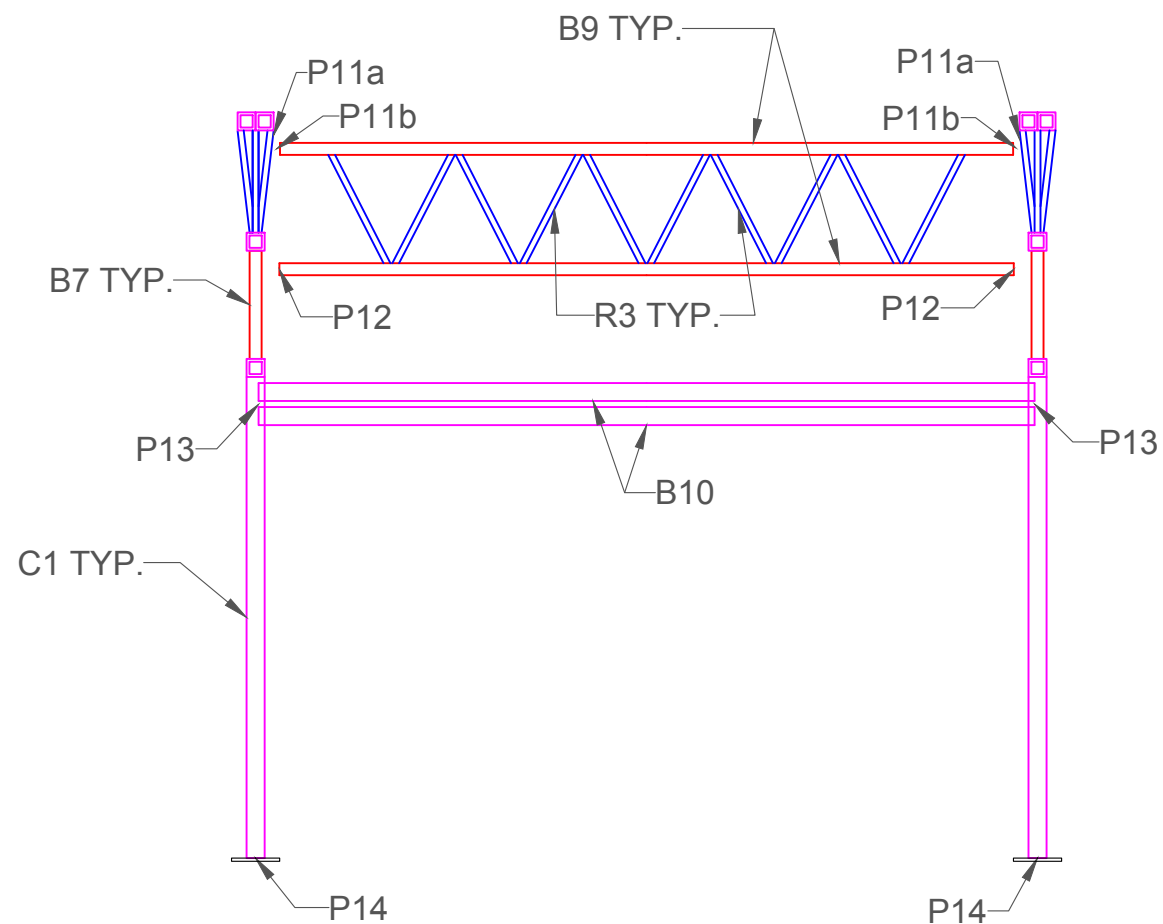
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MEMBER & PLATE CALL-OUTS



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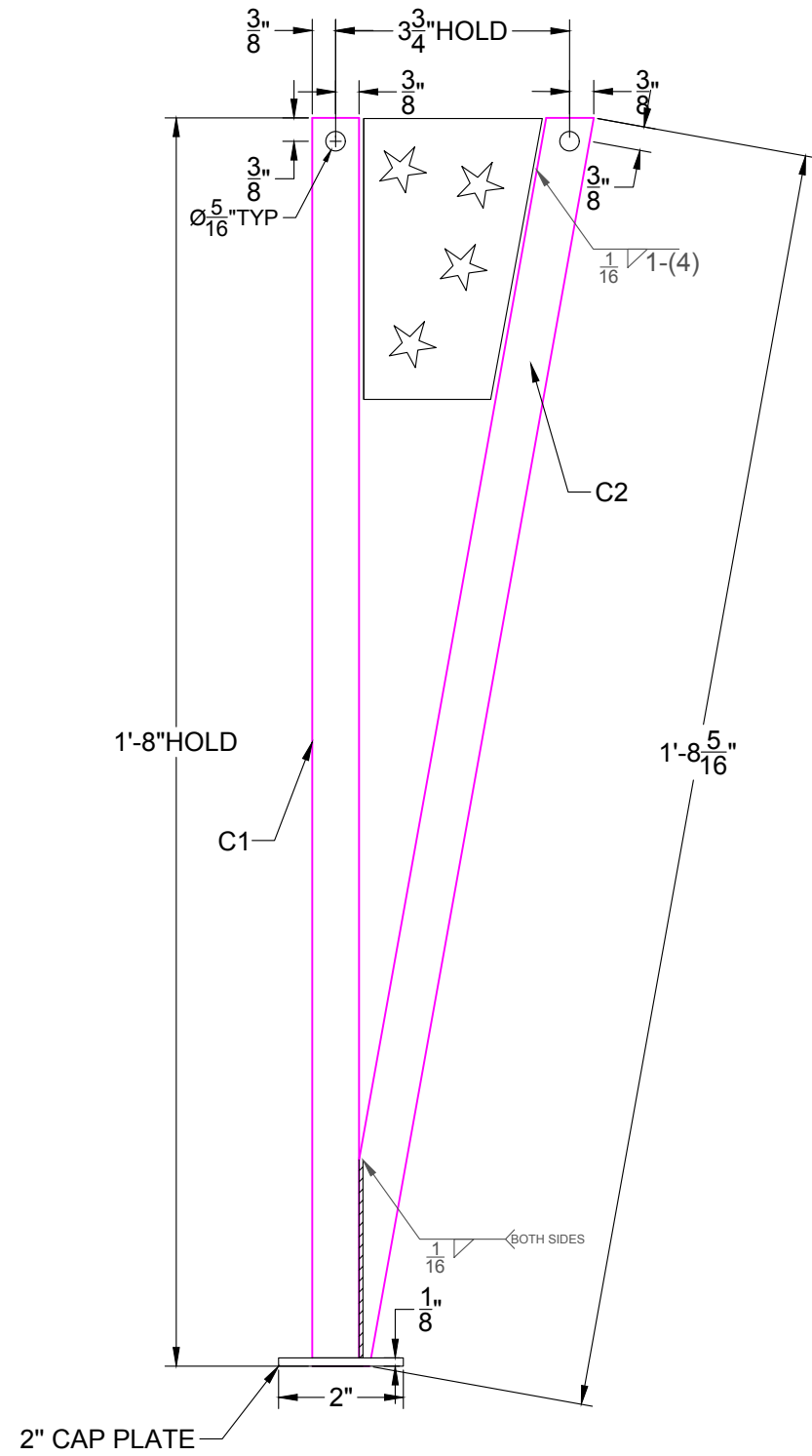
COLUMN 1-1 WELDED ASSEMBLY (2)

C1-(1)-1' 7 ⁷/₈"

C2-(1)-1' 8 ⁵/₁₆"

PLATE-(1)

SCALE 1:3



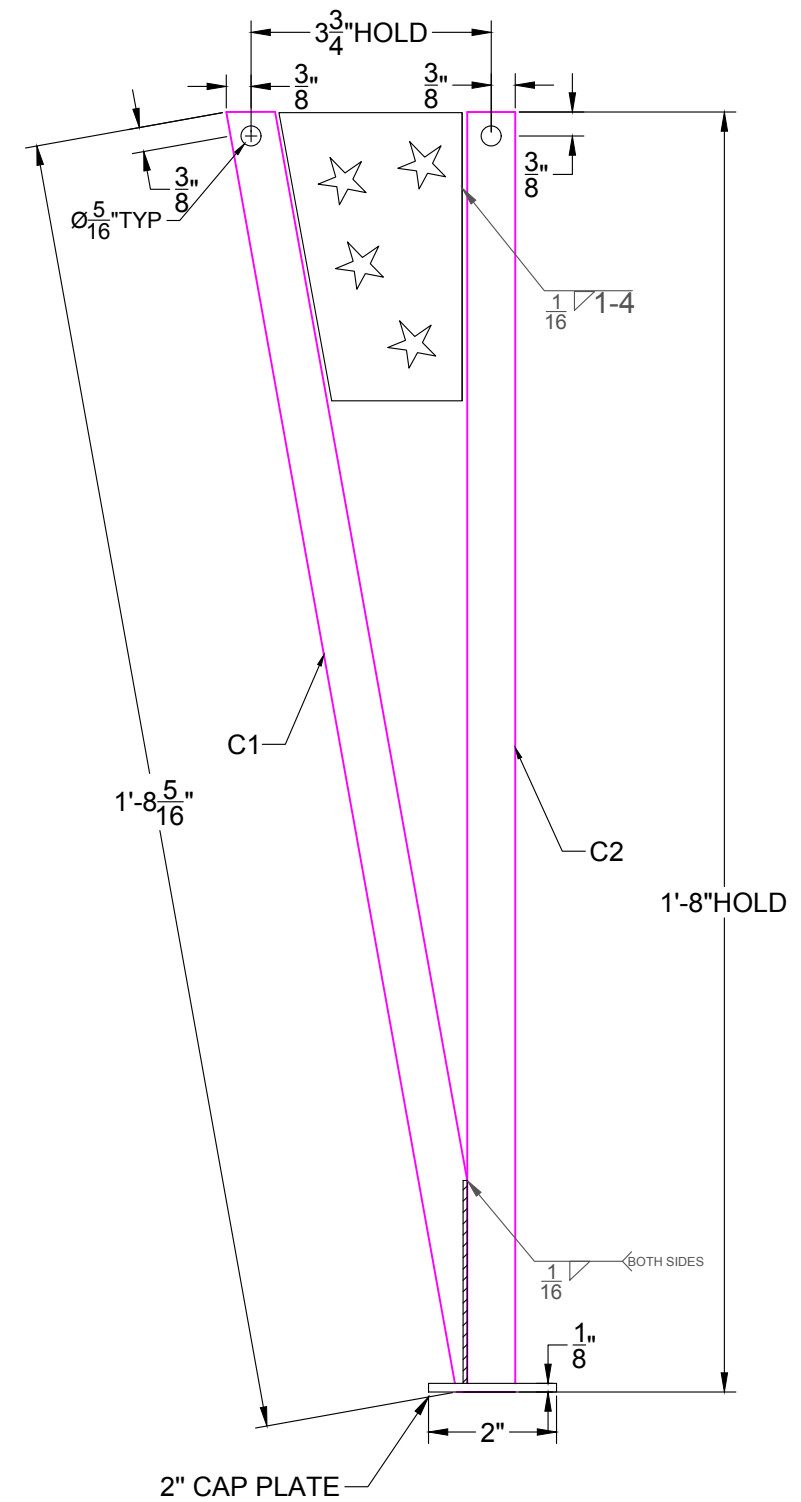
COLUMN 1-2 WELDED ASSEMBLY (2)

C1-(1)-1' 7 ⁷/₈"

C2-(1)-1' 8 ⁵/₁₆"

PLATE-(1)

SCALE 1:3



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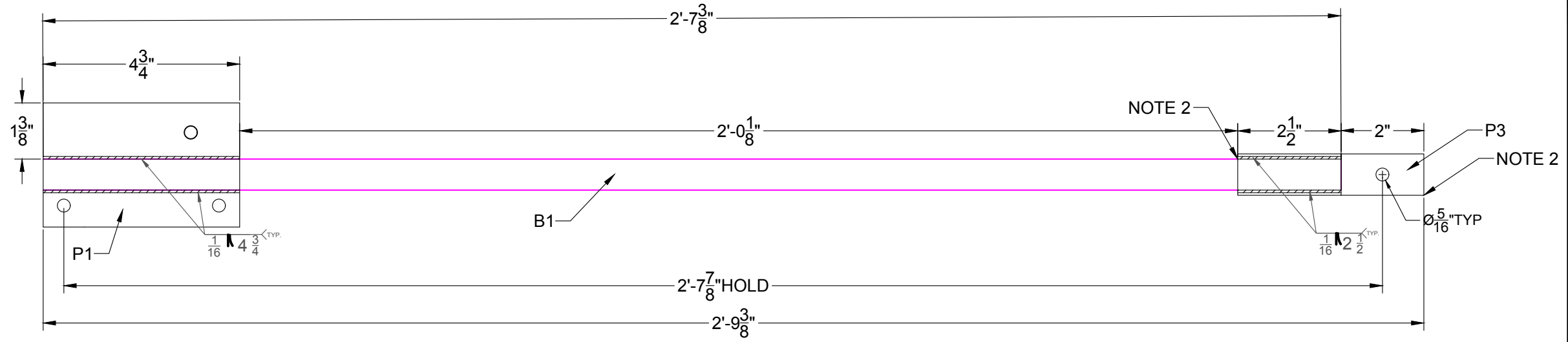
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BEAM 1-1 ASSEMBLY (2)

B1-(1)-2' 7³/₈'
 PLATE 1-(1)
 PLATE 3-(2)
 SCALE 1:3



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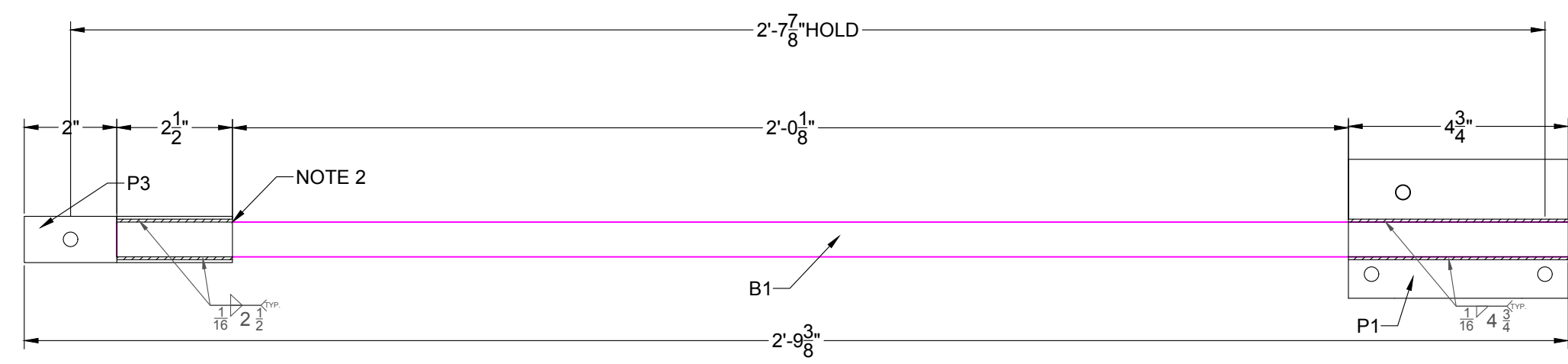
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 NOTE 2: 1/2\"/>

BEAM 1-2 ASSEMBLY (2)

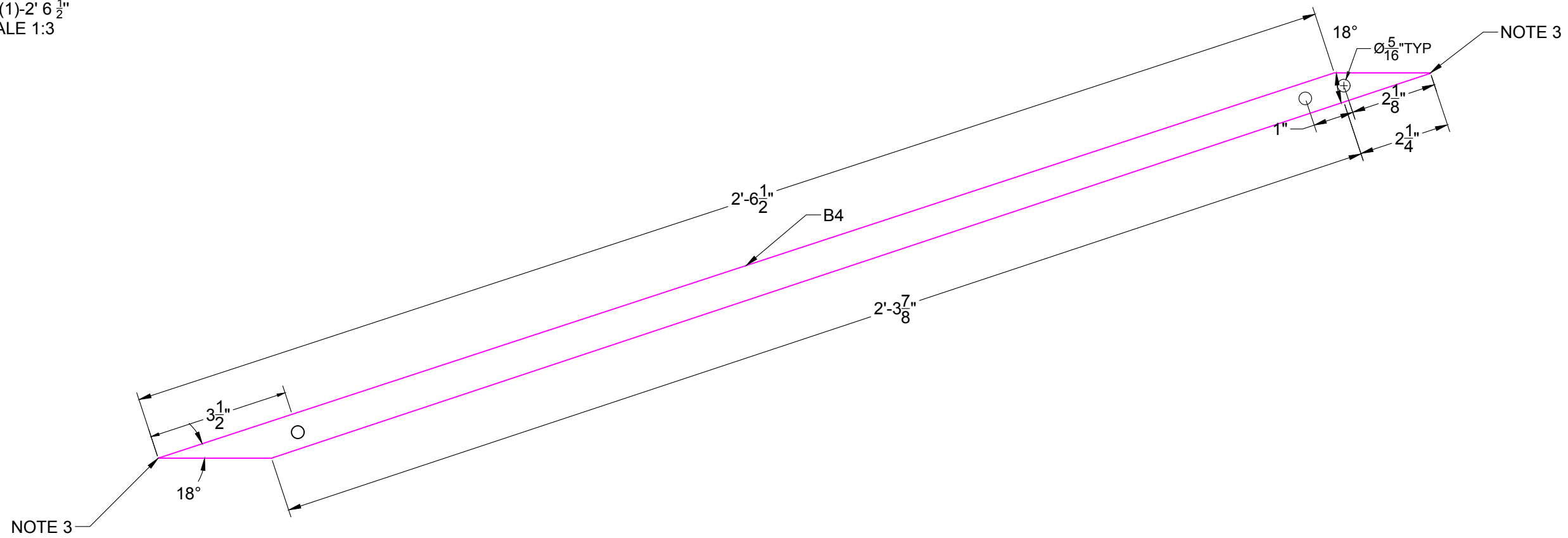
B1-(1)-2' 7³/₈'
 PLATE 1-(1)
 PLATE 3-(2)
 SCALE 1:3



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BEAM 4-1 WELDED ASSEMBLY (2)

B4-(1)-2' 6 1/2"
SCALE 1:3



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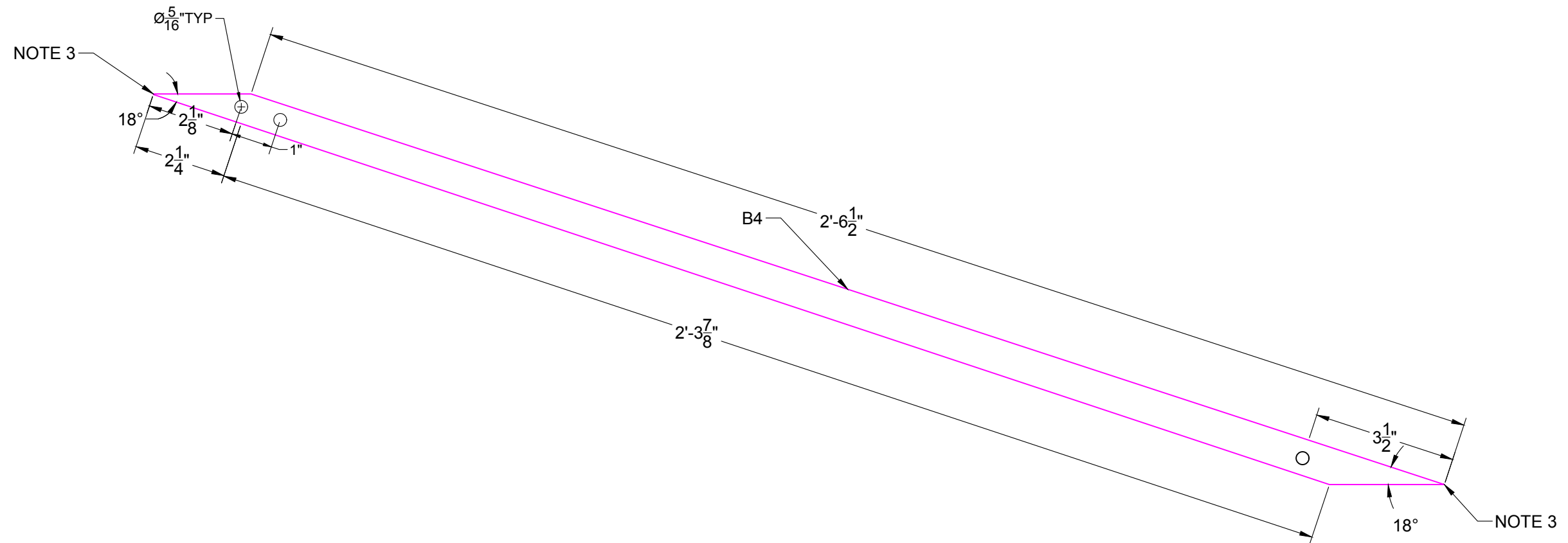
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BEAM 4-2 WELDED ASSEMBLY (2)

B4-(1)-2' 6 1/2"
SCALE 1:3

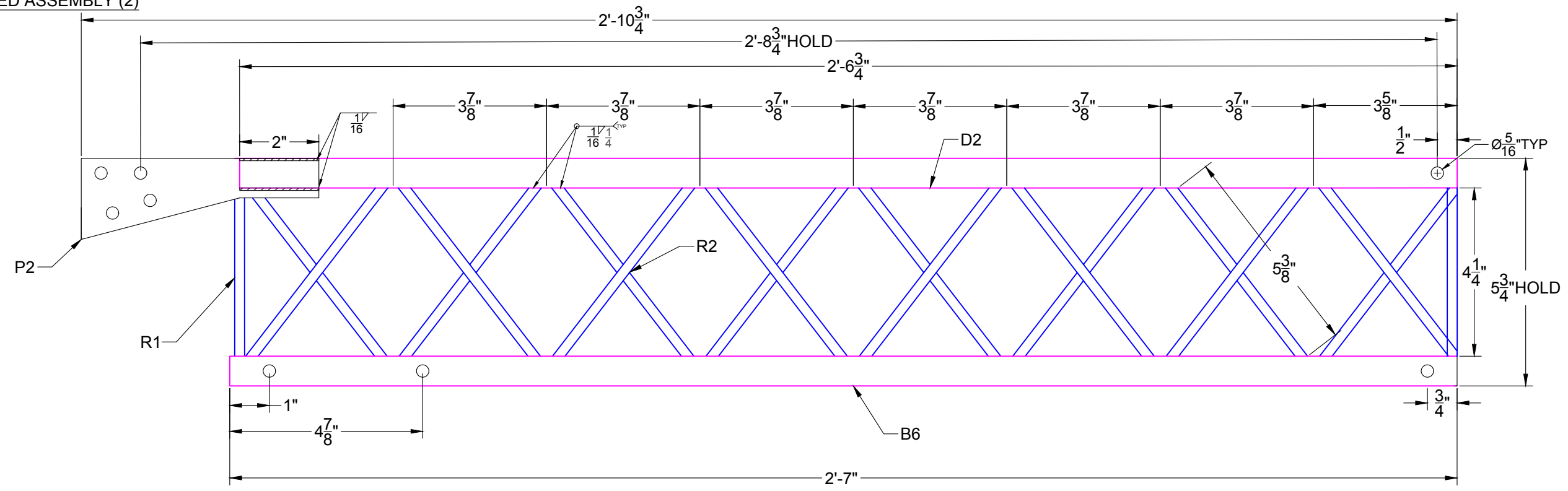


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TRUSS 1-1 WELDED ASSEMBLY (2)

- D2-(1)-2' 6 3/4"
- B6-(1)-2' 7"
- R1-(2)-4 1/4"
- R2-(16)-5 3/8"
- PLATE 2-(2)
- SCALE 1:3



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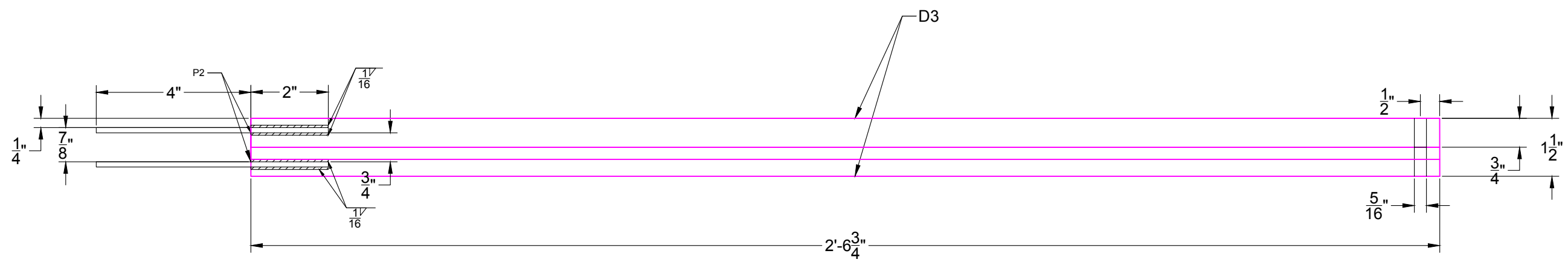
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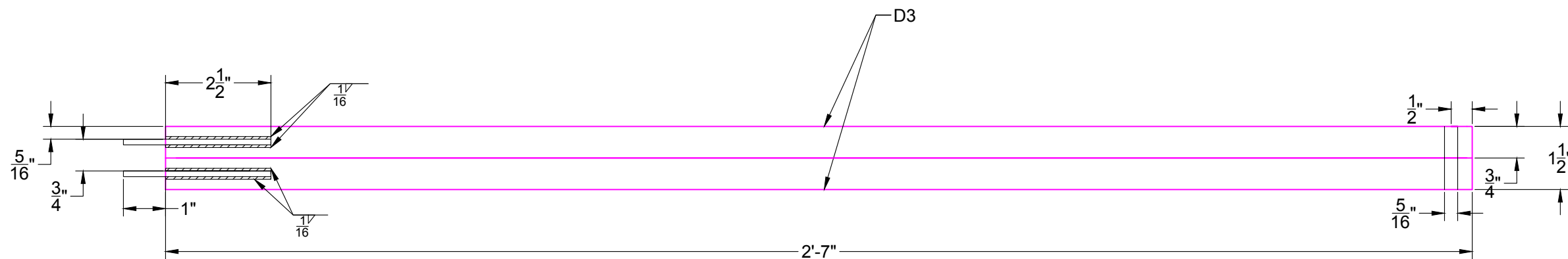
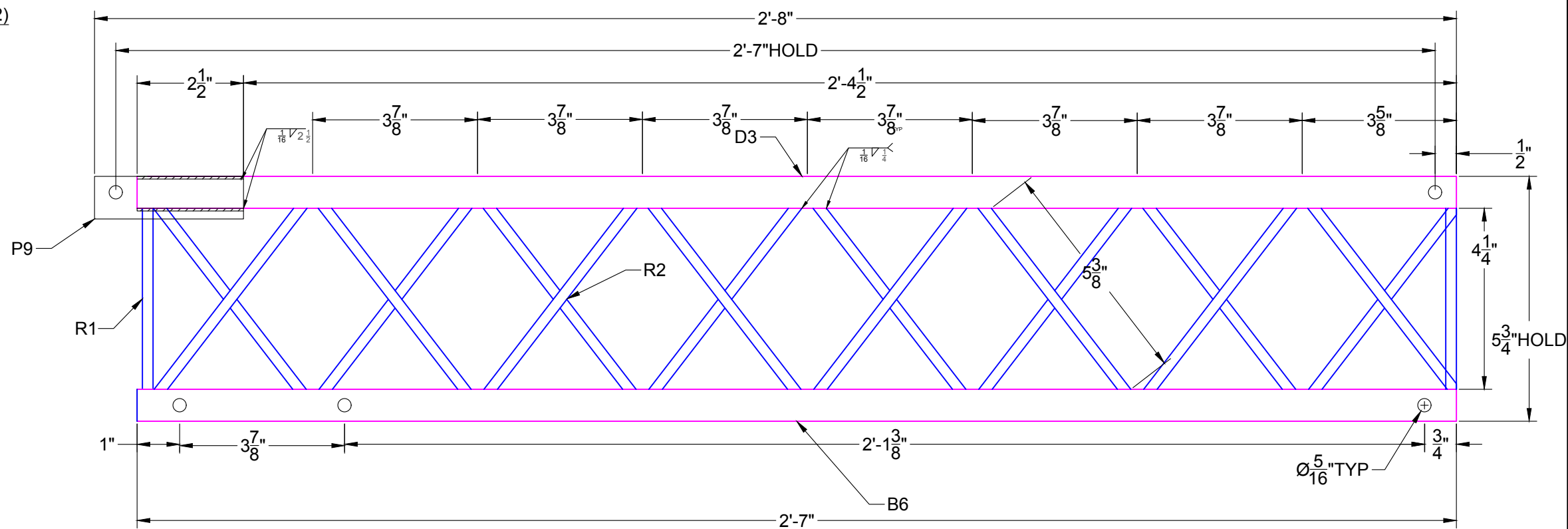
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TRUSS 1-2 WELDED ASSEMBLY (2)

- D3-(1)-2' 7"
- B6-(1)-2' 7"
- R1-(2)-4 1/4"
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- SCALE 1:3



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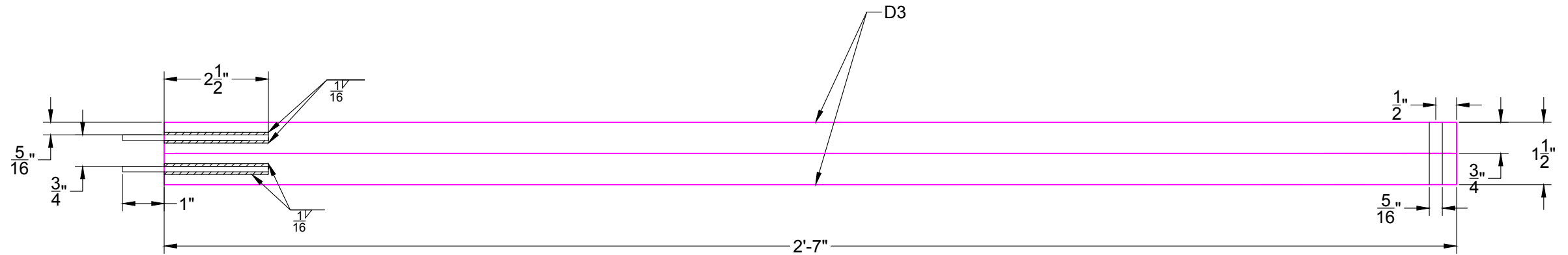
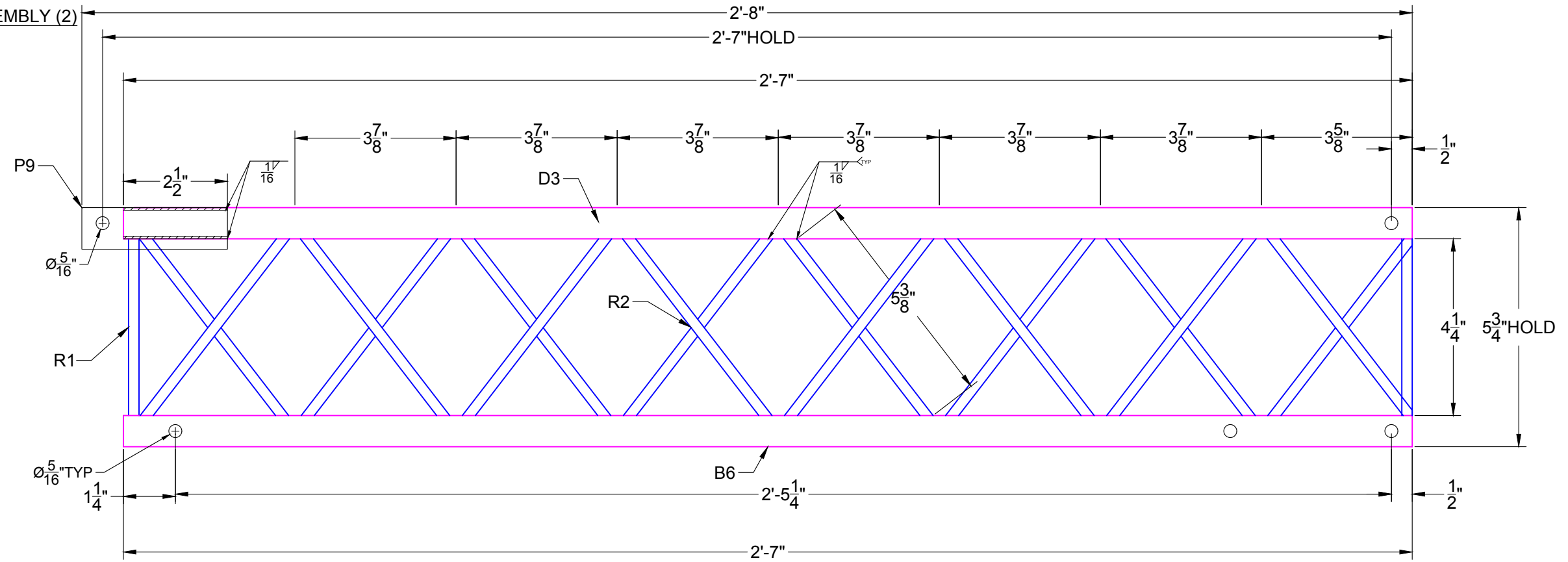
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TRUSS 1-3 WELDED ASSEMBLY (2)

- D3-(1)-2' 7"
- B6-(1)-2' 7"
- R1-(2)-4 1/4"
- R2-(16)-5 3/8"
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- SCALE 1:3



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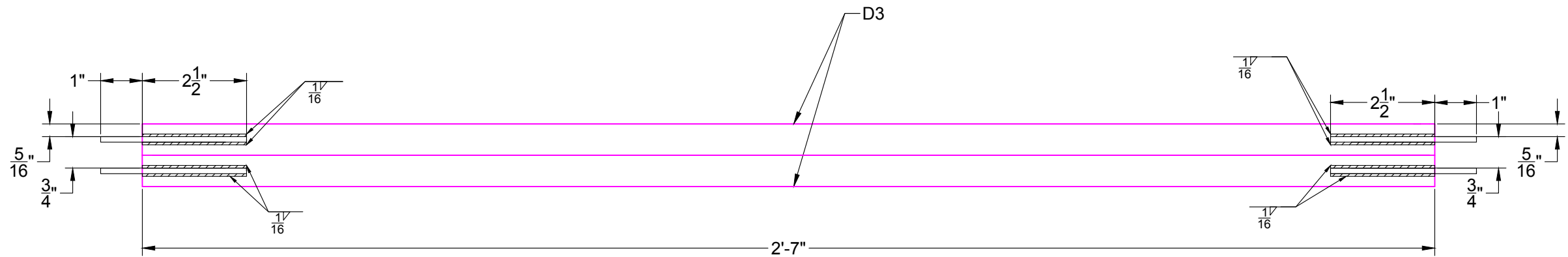
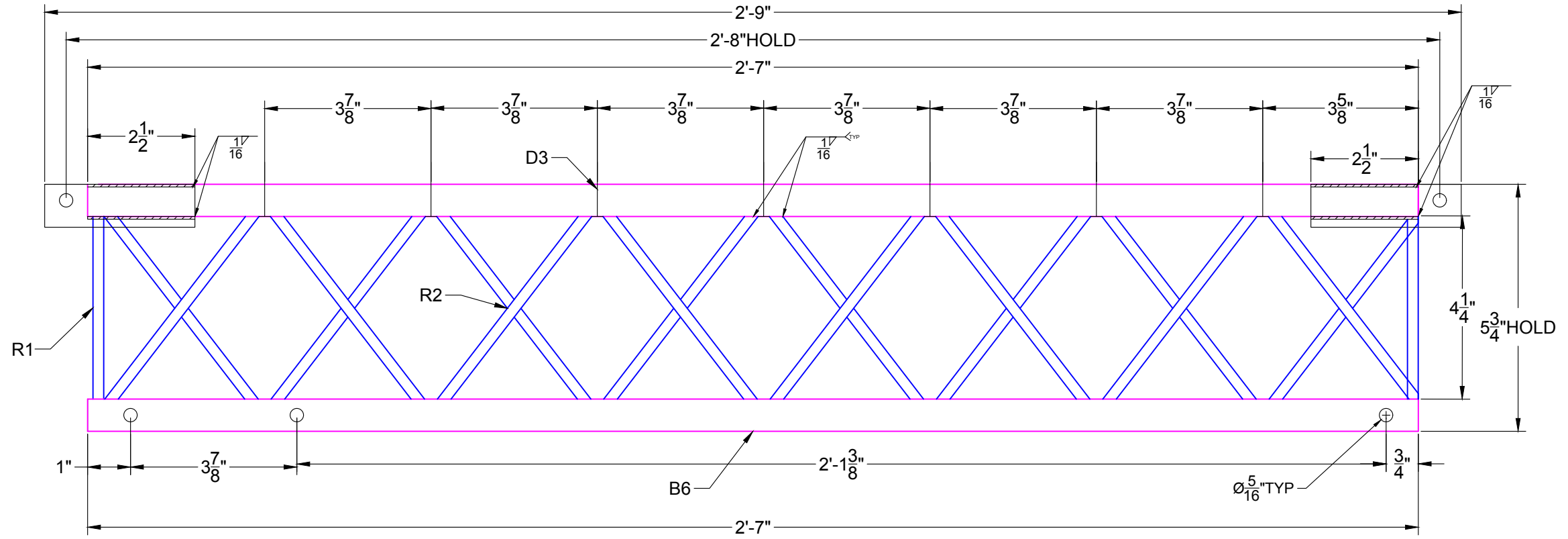
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TRUSS 1-4 WELDED ASSEMBLY (2)

D3-(1)-2' 7"
 B6-(1)-2' 7"
 R1-(2)-4 1/4"
 R2-(16)-5 3/8"
 PLATE 9-(2)
 SCALE 1:3



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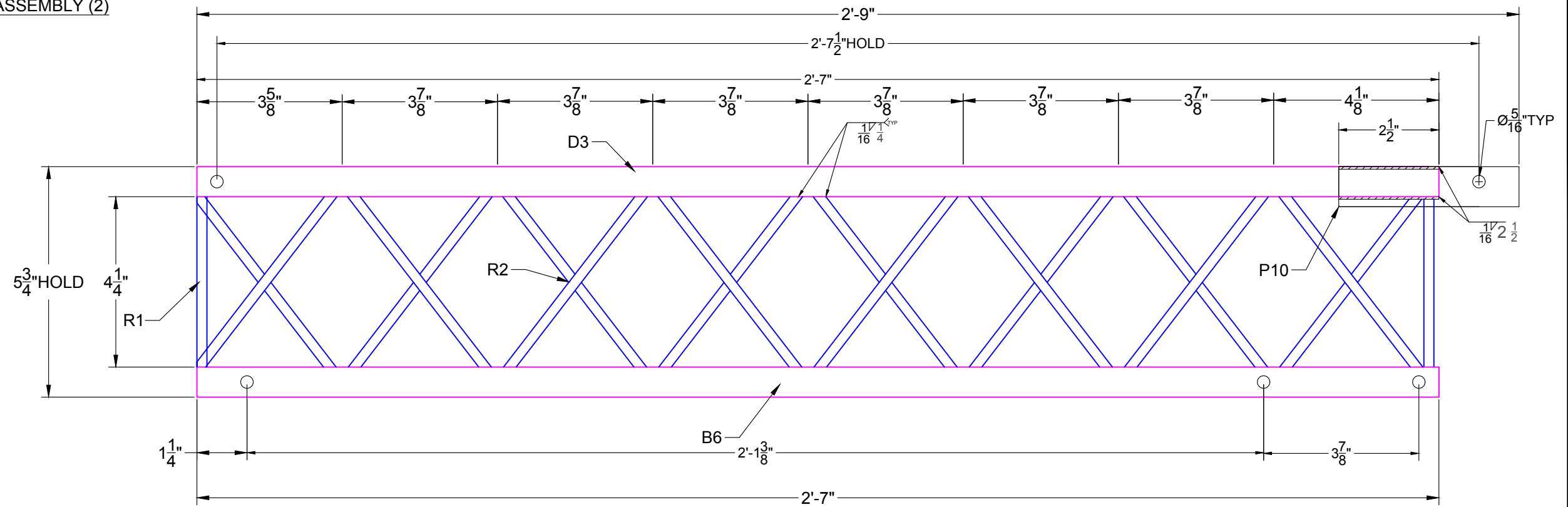
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TRUSS 1-5 WELDED ASSEMBLY (2)

D3-(1)-2' 7"
 B6-(1)-2' 7"
 R1-(2)-4 1/4"
 R2-(16)-5 3/8"
 PLATE 10-(2)
 SCALE 1:3



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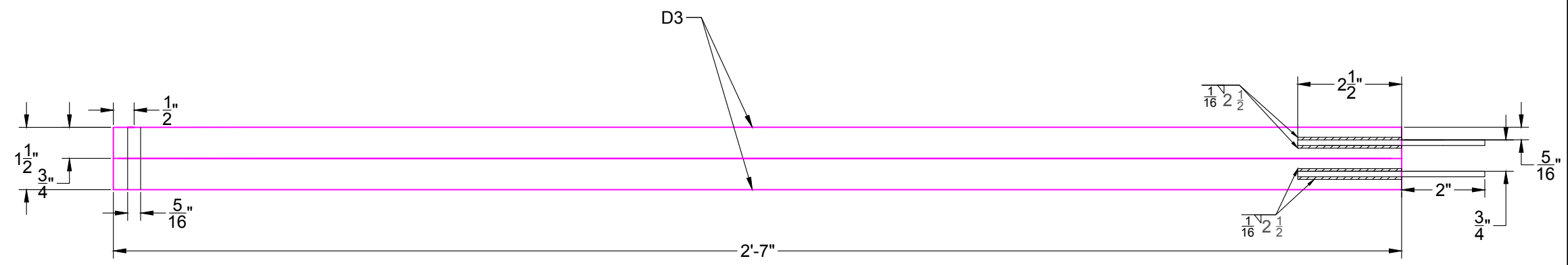
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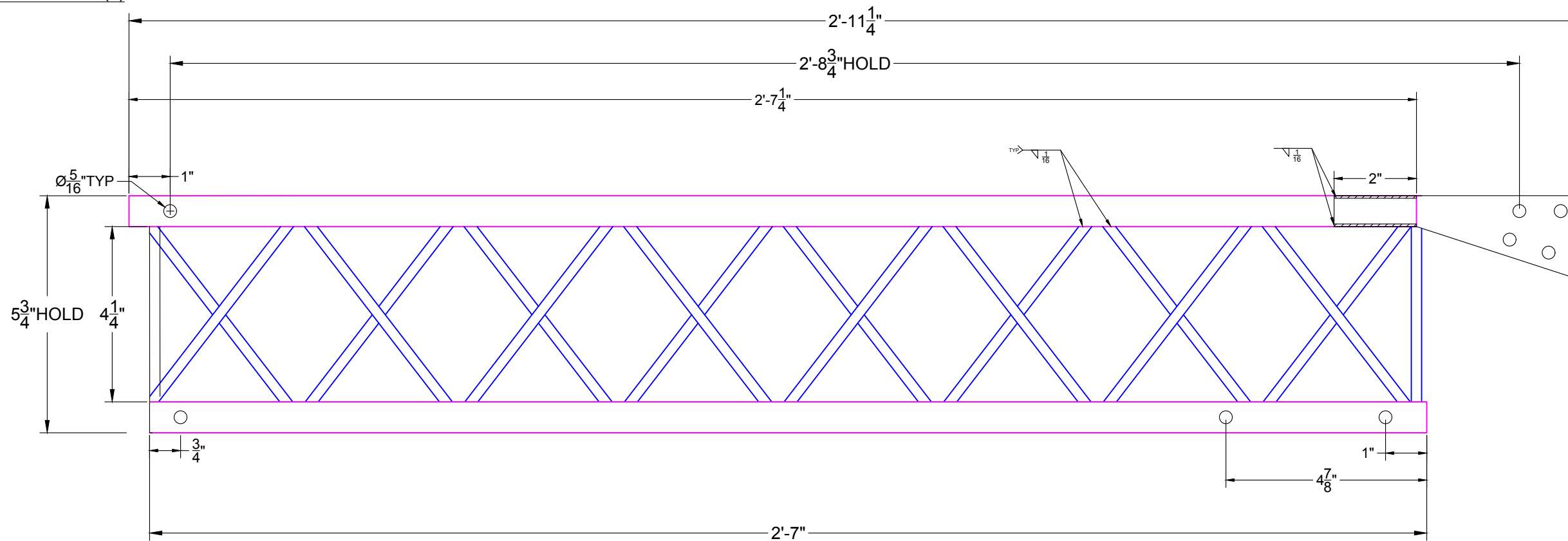
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TRUSS 1-1 WELDED ASSEMBLY (2)

D2-(1)-2' 6 ³/₄"
B6-(1)-2' 7"
R1-(2)-4 ¹/₄"
R2-(16)-5 ³/₈"
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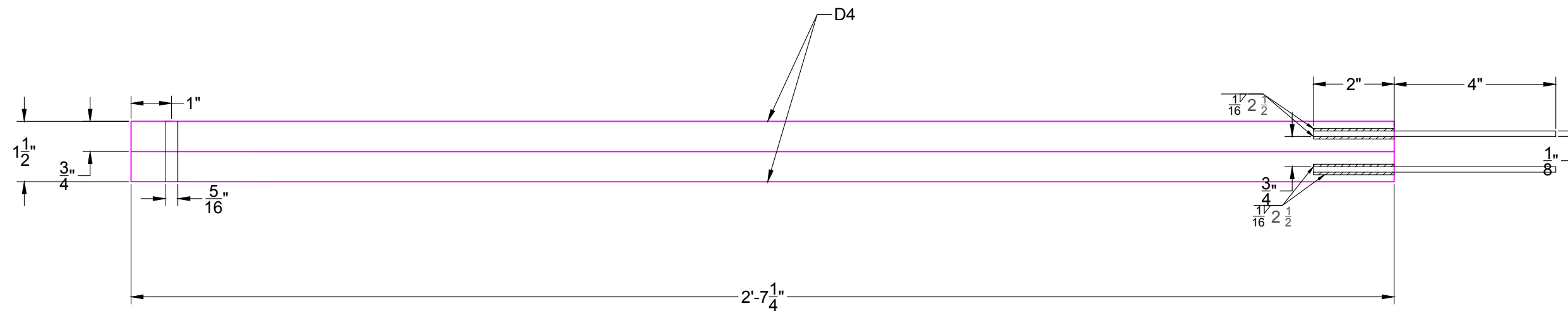
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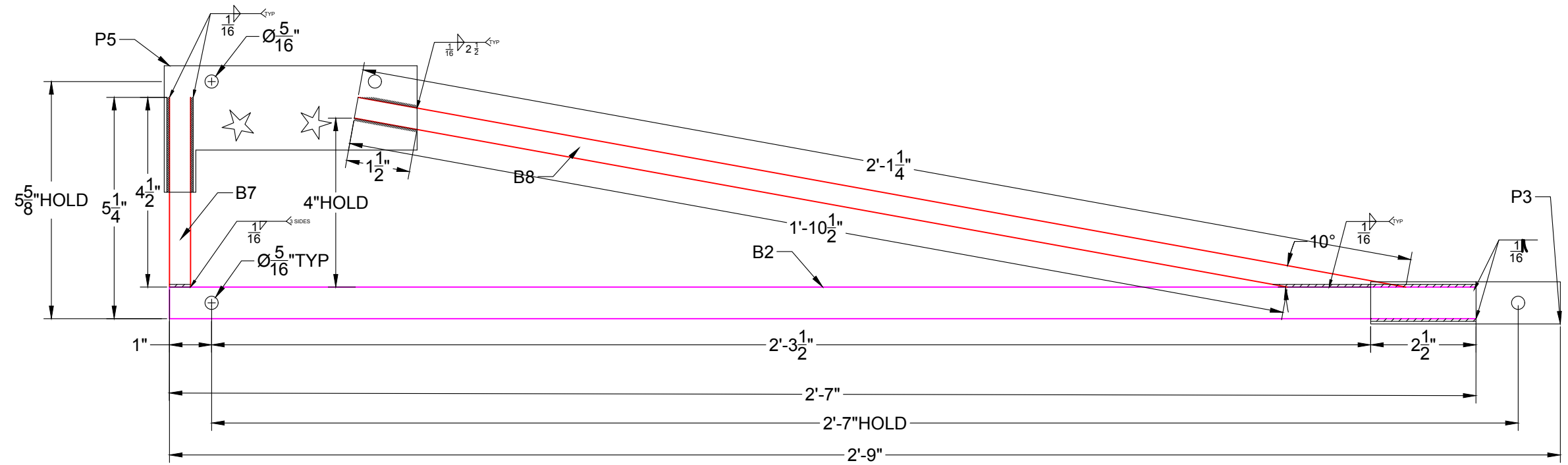
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TRUSS 2-1 WELDED ASSEMBLY (2)

B2-(1)-2' 7"
 B7-(1)-4 1/2"
 B8-(1)-2' 1 1/4"
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 PLATE 3-(2)
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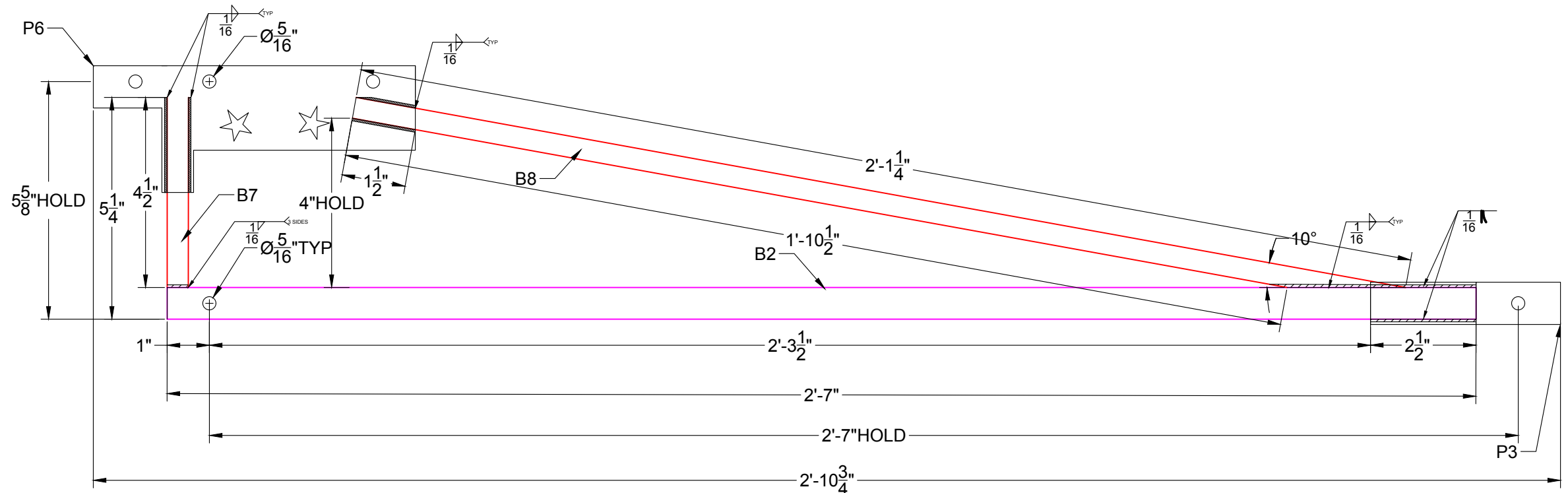
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 NOTE 6: WELD TO FIT

TRUSS 2-2 WELDED ASSEMBLY (2)

B2-(1)-2' 7"
 B7-(1)-4 1/2"
 B8-(1)-2' 1 1/4"
 PLATE 6-(2)
 PLATE 3-(2)
 SCALE 1:3



GENERAL NOTES:

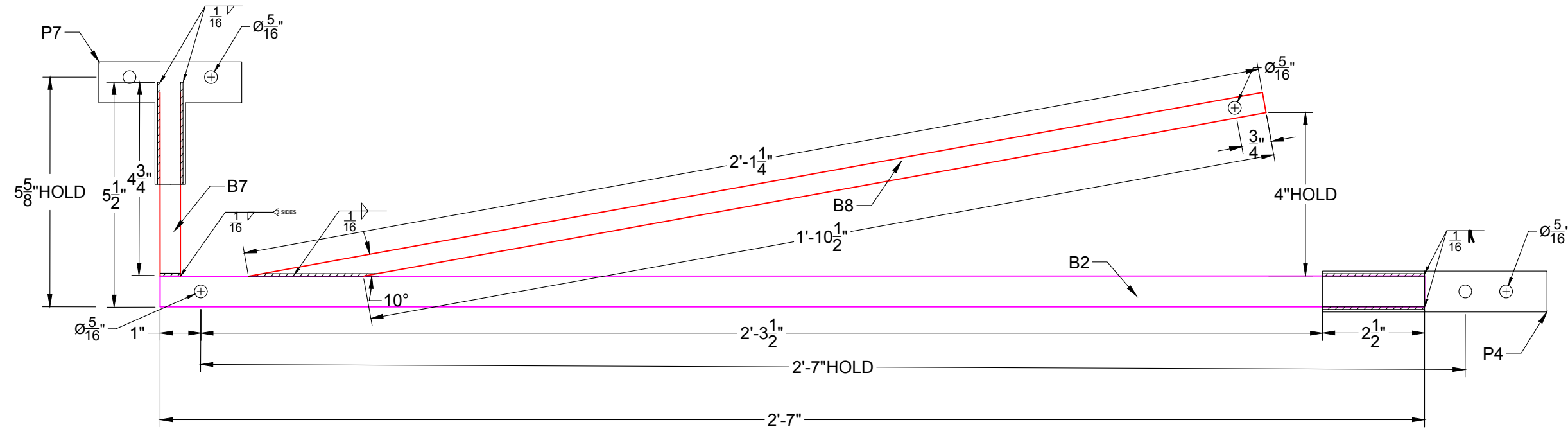
NOTE 1: ALL BOLT HOLES PLACED AT
 CENTERLINE OF MEMBER
 NOTE 2: 1/2" TUBE TO 1/2" TUBE REQUIRES
 WELDED SPACER PLATE

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TRUSS 2-3 WELDED ASSEMBLY (2)

D3-(1)-2' 7"
 B6-(1)-2' 7"
 R1-(2)-4 1/4"
 R2-(16)-5 3/8"
 PLATE 7-(2)
 PLATE 4-(2)
 SCALE 1:3



ASCE 2016
 STEEL BRIDGE



PROJECT NAME:

STEEL BRIDGE
 DESIGN

DRAWING NUMBER:

SB2015-001

GROUP MEMBERS:

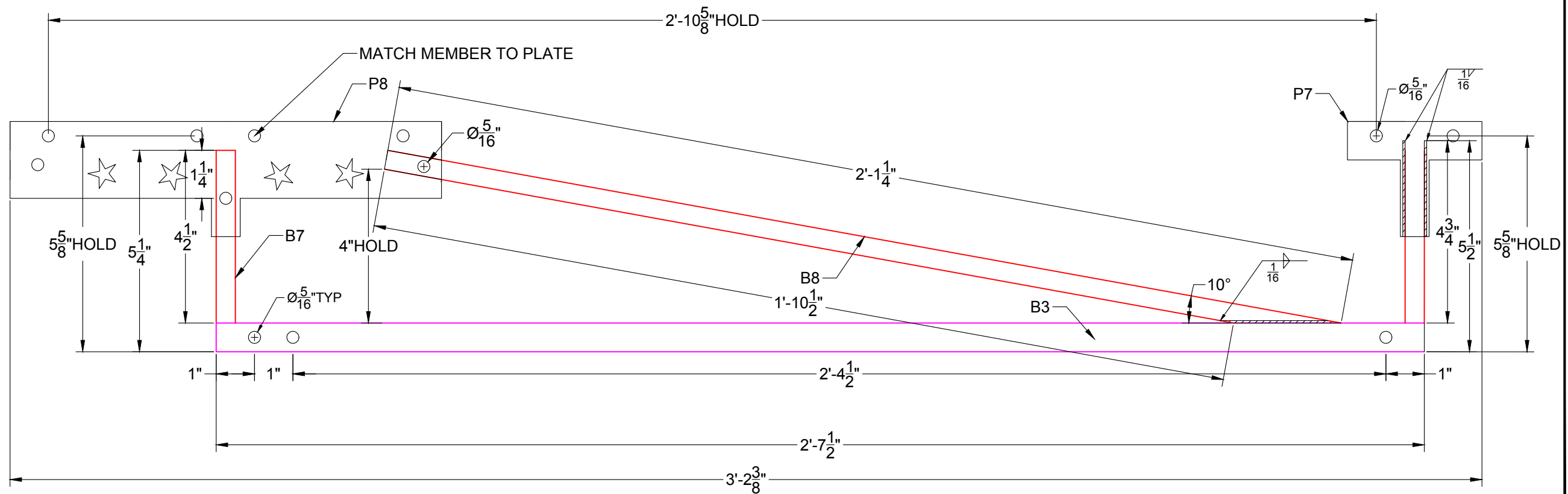
LOGAN COUCH
 MATT RODGERS
 BRIAN JOUFLAS
 KAITLIN VANDAVEER

FABRICATION NOTES:

NOTE 1: WELD BOTH SIDES
 NOTE 2: PLATE BOTH SIDES OF MEMBER
 NOTE 3: GRIND CORNER TO FIT
 NOTE 4: CUT TO FIT, HOLD HOLE DIM.
 NOTE 5: GRIND MAIN MEMBER FOR WELD AREA, USE TWO KNIFE PLATES
 NOTE 6: WELD TO FIT

TRUSS 2-4 WELDED ASSEMBLY (2)

B3-(1)-2' 7 1/2"
 B7-(1)-4 1/2"
 B8-(1)-2' 7/16"
 PLATE 8-(2)
 PLATE 7-(2)
 SCALE 1:3



GENERAL NOTES:

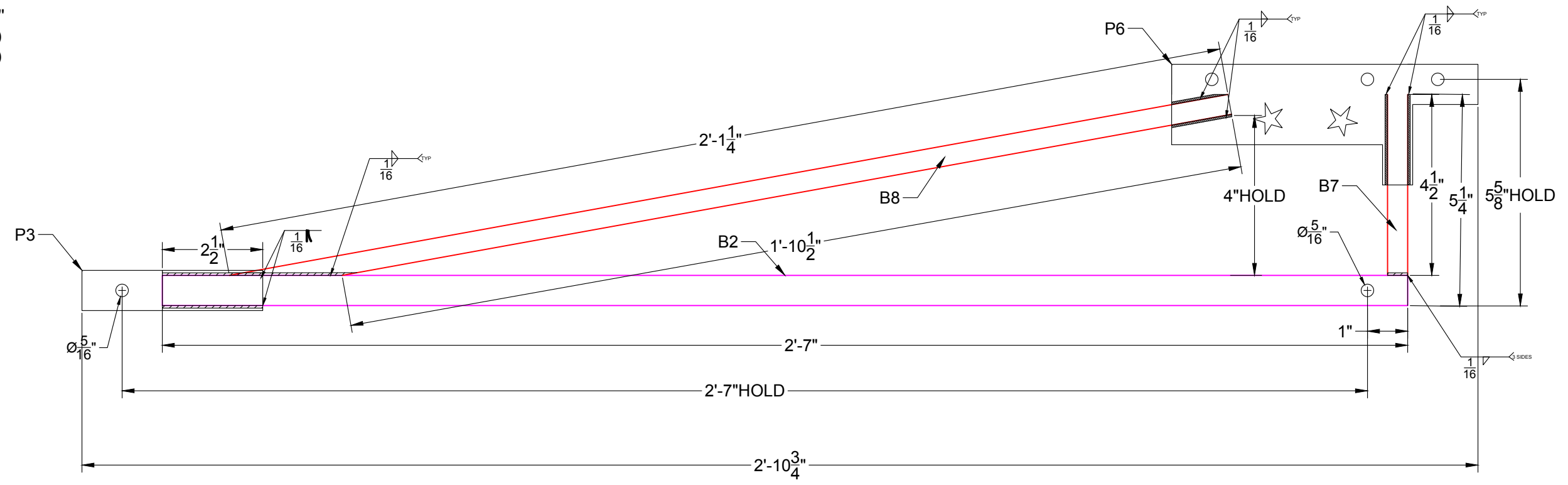
NOTE 1: ALL BOLT HOLES PLACED AT CENTERLINE OF MEMBER
 NOTE 2: 1/2" TUBE TO 1/2" TUBE REQUIRES WELDED SPACER PLATE

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DATE: 02/27/16

TRUSS 2-5 WELDED ASSEMBLY (2)

B2-(1)-2' 7"
B7-(1)-4 1/2"
B8-(1)-2' 1 1/4"
PLATE 6-(2)
PLATE 3-(2)
SCALE 1:3



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STEEL BRIDGE



PROJECT NAME:
STEEL BRIDGE
DESIGN

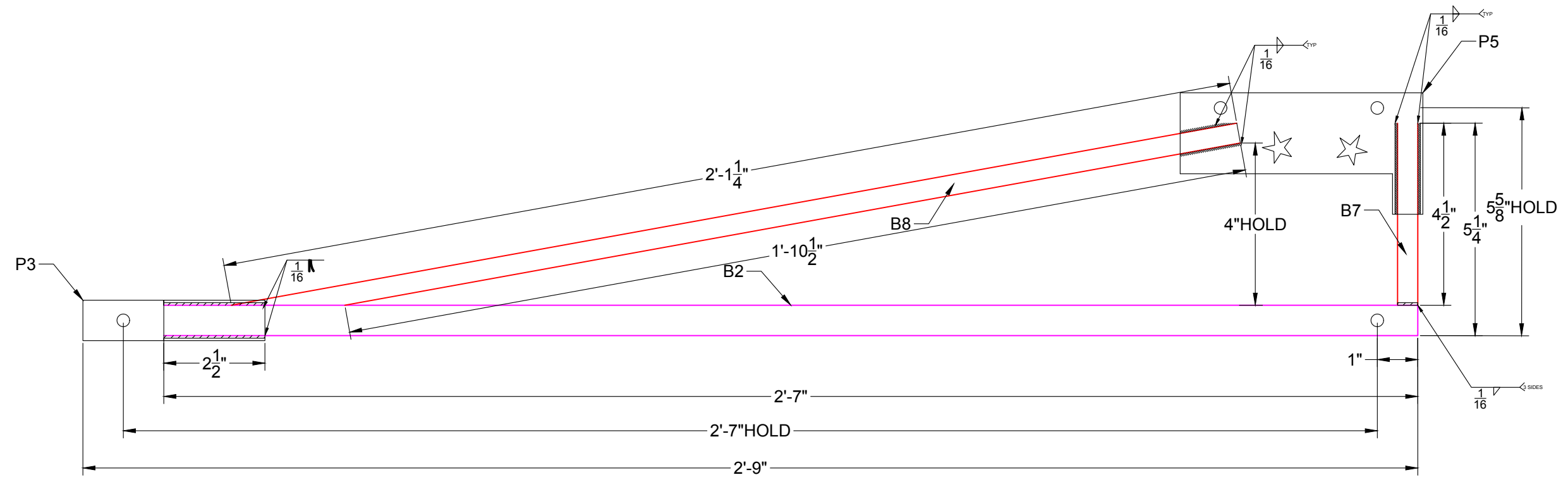
DRAWING NUMBER:
SB2015-001

GROUP MEMBERS:
LOGAN COUCH
MATT RODGERS
BRIAN JOUFLAS
KAITLIN VANDAEVER

FABRICATION NOTES:
NOTE 1: WELD BOTH SIDES
NOTE 2: PLATE BOTH SIDES OF MEMBER
NOTE 3: GRIND CORNER TO FIT
NOTE 4: CUT TO FIT, HOLD HOLE DIM.
NOTE 5: GRIND MAIN MEMBER FOR WELD
AREA, USE TWO KNIFE PLATES
NOTE 6: WELD TO FIT

TRUSS 2-6 WELDED ASSEMBLY (2)

B2-(1)-2' 7"
B7-(1)-4 1/2"
B8-(1)-2' 1 1/4"
PLATE 5-(2)
PLATE 3-(2)
SCALE 1:3



GENERAL NOTES:
NOTE 1: ALL BOLT HOLES PLACED AT
CENTERLINE OF MEMBER
NOTE 2: 1/2" TUBE TO 1/2" TUBE REQUIRES
WELDED SPACER PLATE

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CANTILEVER ASSEMBLY (2)

D1-(1)-2' 8"

SCALE 1:3

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PROJECT NAME:

STEEL BRIDGE
DESIGN

DRAWING NUMBER:

SB2015-001

GROUP MEMBERS:

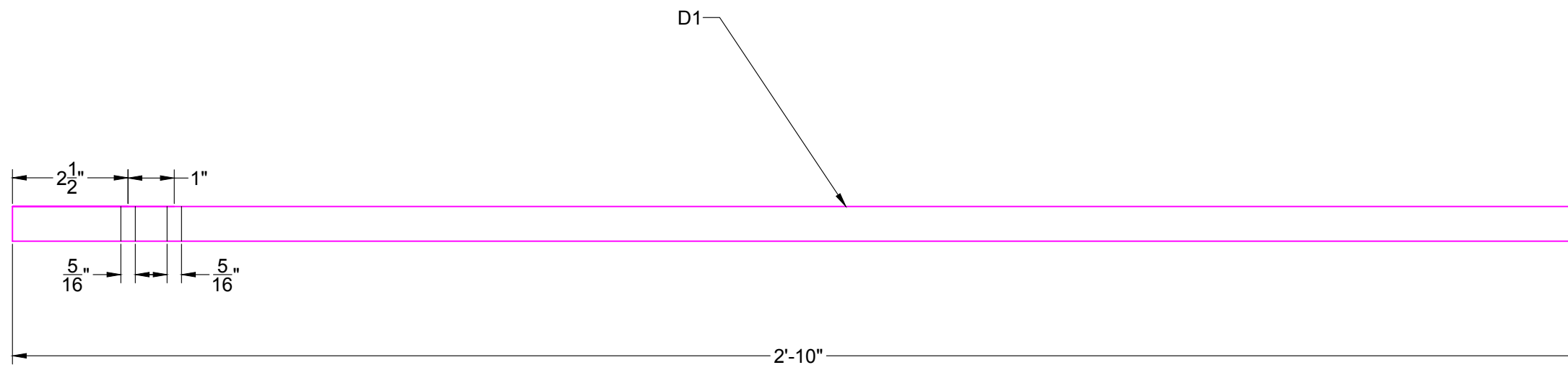
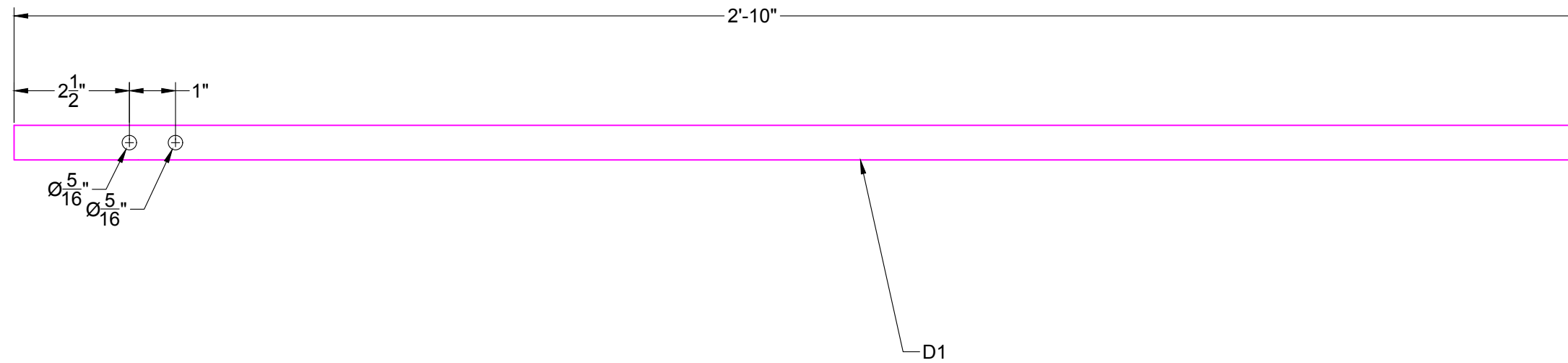
LOGAN COUCH
MATT RODGERS
BRIAN JOUFLAS
KAITLIN VANDAVEER

FABRICATION NOTES:

NOTE 1: WELD BOTH SIDES
NOTE 2: PLATE BOTH SIDES OF MEMBER
NOTE 3: GRIND CORNER TO FIT
NOTE 4: CUT TO FIT, HOLD HOLE DIM.
NOTE 5: GRIND MAIN MEMBER FOR WELD
AREA, USE TWO KNIFE PLATES
NOTE 6: WELD TO FIT

GENERAL NOTES:

NOTE 1: ALL BOLT HOLES PLACED AT
CENTERLINE OF MEMBER
NOTE 2: $\frac{1}{2}$ " TUBE TO $\frac{1}{2}$ " TUBE REQUIRES
WELDED SPACER PLATE

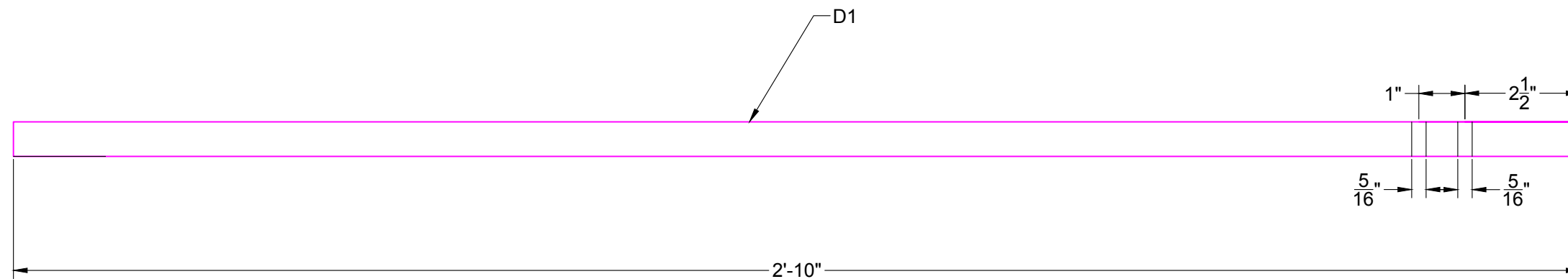
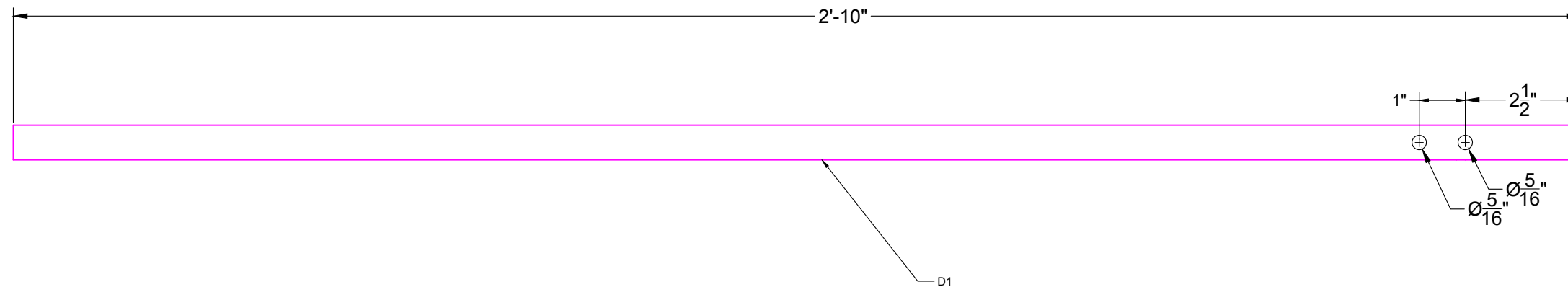


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CANTILEVER 1-2 ASSEMBLY (2)

D1-(1)-2' 8"
SCALE 1:3



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PROJECT NAME:

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DESIGN

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GROUP MEMBERS:

LOGAN COUCH
MATT RODGERS
BRIAN JOUFLAS
KAITLIN VANDAVEER

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NOTE 4: CUT TO FIT, HOLD HOLE DIM.
NOTE 5: GRIND MAIN MEMBER FOR WELD
AREA, USE TWO KNIFE PLATES
NOTE 6: WELD TO FIT

GENERAL NOTES:

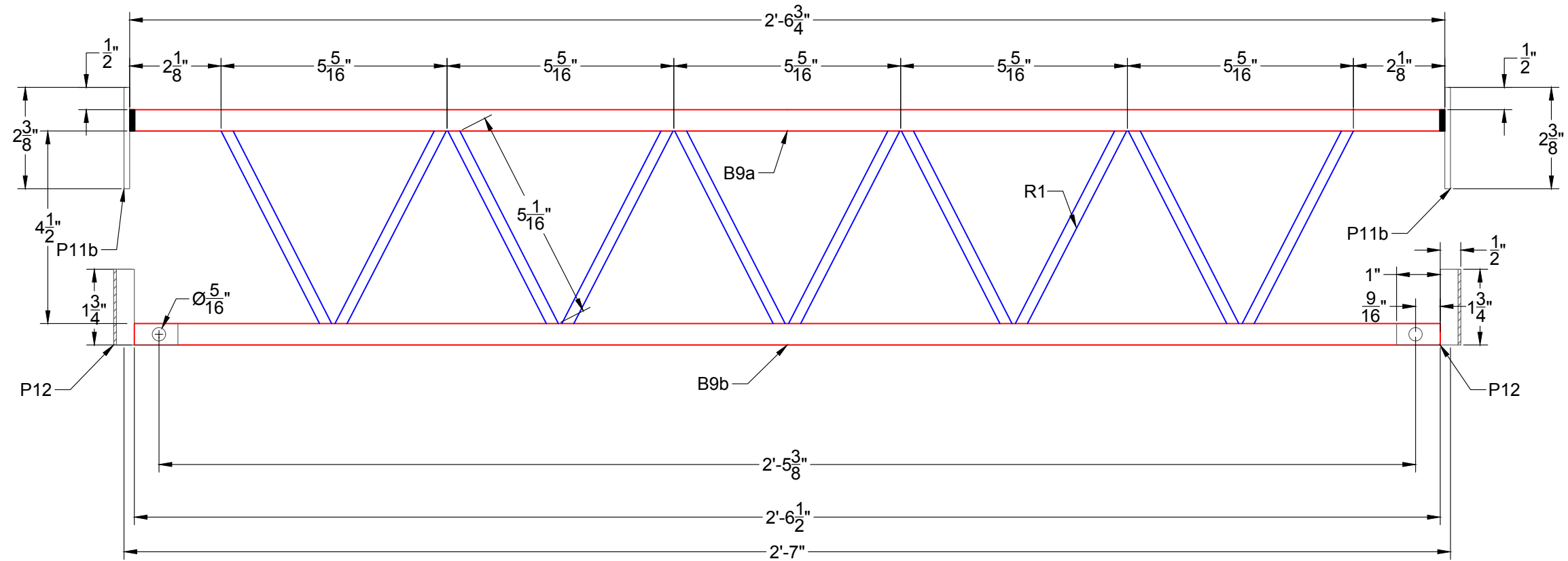
NOTE 1: ALL BOLT HOLES PLACED AT
CENTERLINE OF MEMBER
NOTE 2: 1/2" TUBE TO 1/2" TUBE REQUIRES
WELDED SPACER PLATE

DRAWN BY: KMV, MR, BJ, LC PAGE:

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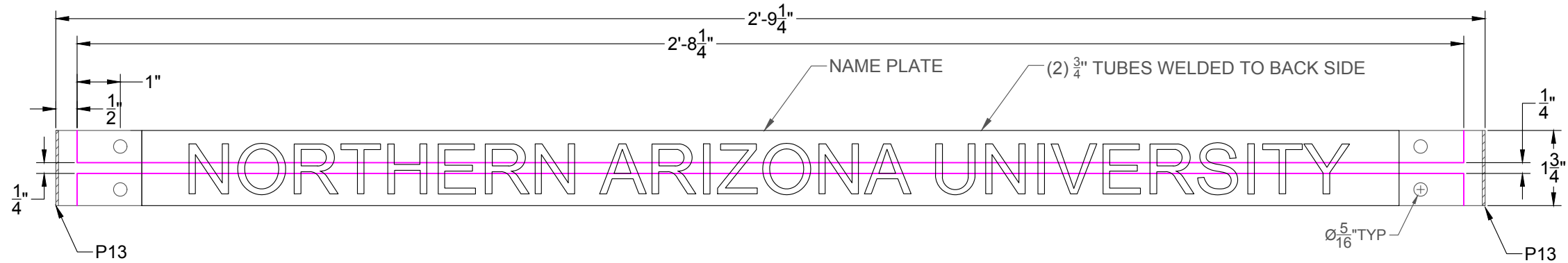
LATERAL 1-1 WELDED ASSEMBLY (2)

B9a-(1)-2' 6 3/4"
 B9b-(1)-2' 6 1/2"
 R1-(12)-5 1/16"
 PLATE 11b-(2)
 PLATE 12-(2)



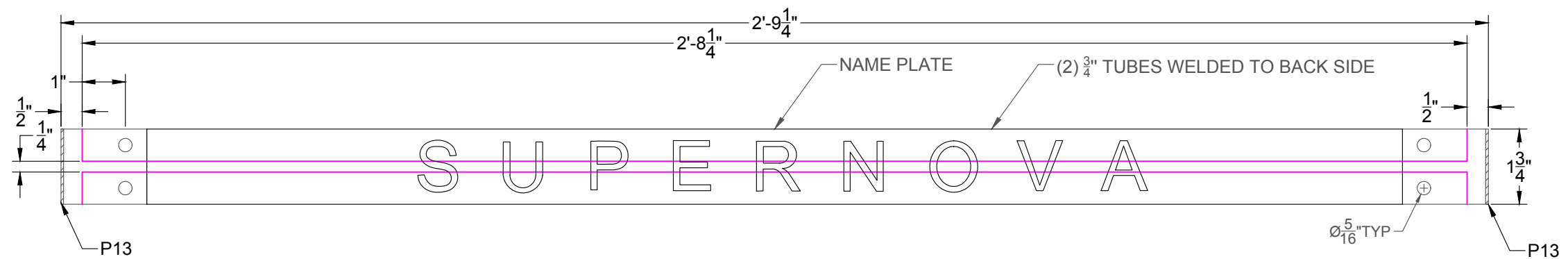
LATERAL 1-2 WELDED ASSEMBLY (2)

B10-(2)-2' 8 1/4"
 PLATE 13-(2)



LATERAL 1-2 SIM WELDED ASSEMBLY (2)

B10-(2)-2' 8 1/4"
 PLATE 13-(2)



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 STEEL BRIDGE



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STEEL BRIDGE
 DESIGN

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SB2015-001

GROUP MEMBERS:

LOGAN COUCH
 MATT RODGERS
 BRIAN JOUFLAS
 KAITLIN VANDAVEER

FABRICATION NOTES:

NOTE 1: WELD BOTH SIDES
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 NOTE 5: GRIND MAIN MEMBER FOR WELD AREA, USE TWO KNIFE PLATES
 NOTE 6: WELD TO FIT

GENERAL NOTES:

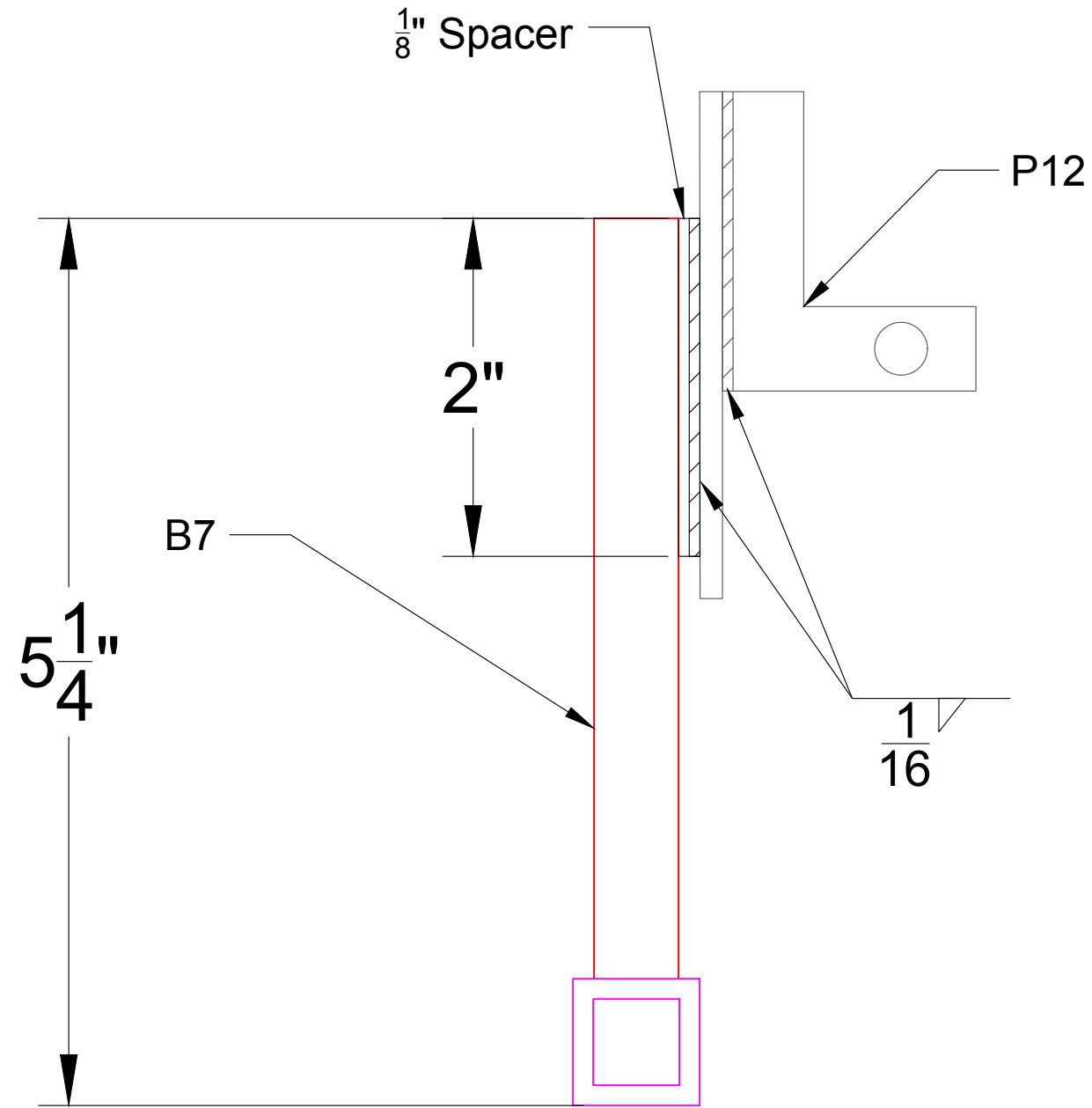
NOTE 1: ALL BOLT HOLES PLACED AT CENTERLINE OF MEMBER
 NOTE 2: 3/4" TUBE TO 3/4" TUBE REQUIRES WELDED SPACER PLATE

DRAWN BY: KMV, MR, BJ, LC PAGE:

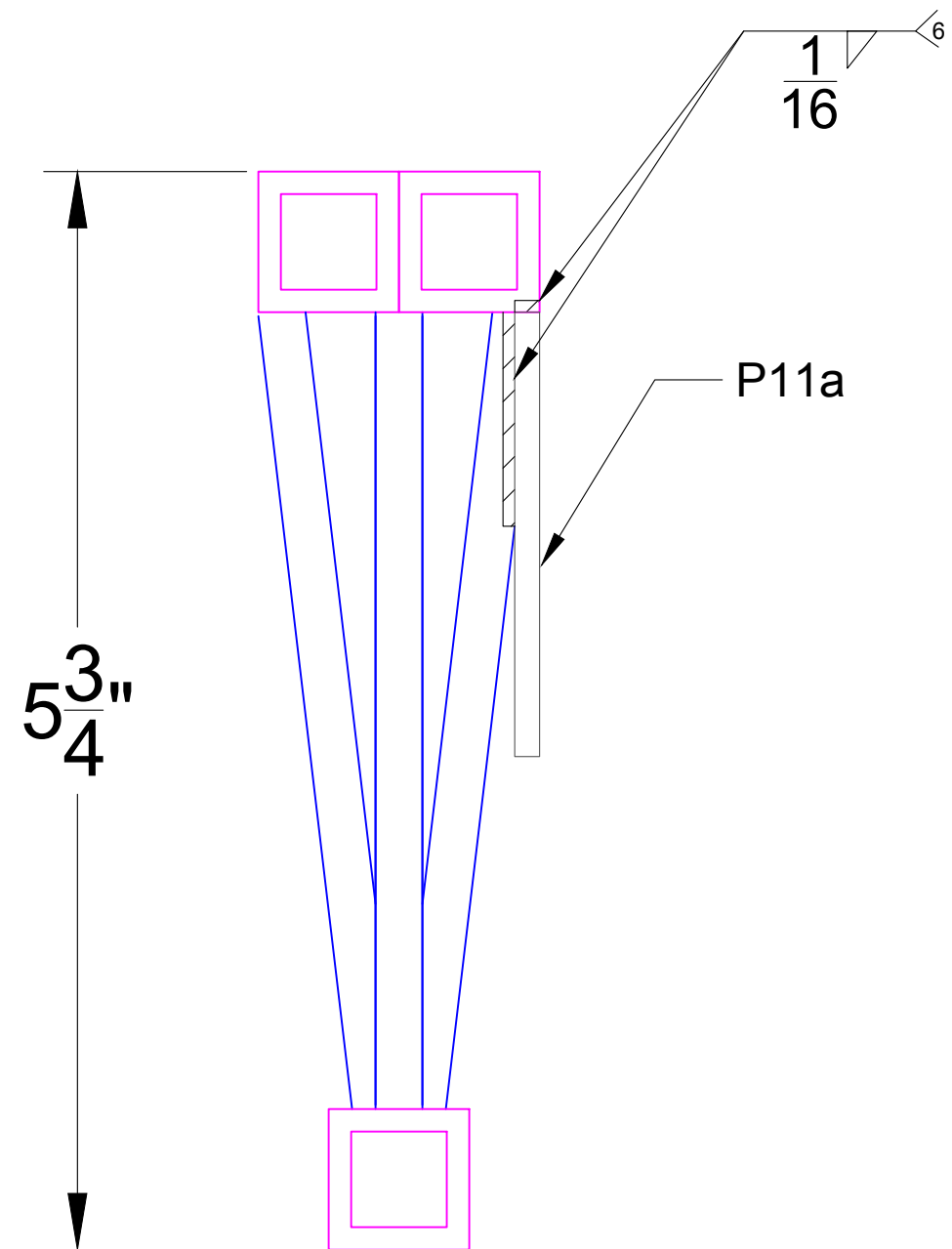
DATE: 02/27/16

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TRUSS 1-1 CROSS SECTION
SCALE 1:1



TRUSS 1-2 CROSS SECTION
SCALE 1:1



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STEEL BRIDGE



PROJECT NAME:
STEEL BRIDGE
DESIGN

DRAWING NUMBER:
SB2015-001

GROUP MEMBERS:
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BRIAN JOUFLAS
KAITLIN VANDAVEER

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AREA, USE TWO KNIFE PLATES
NOTE 6: WELD TO FIT

GENERAL NOTES:
NOTE 1: ALL BOLT HOLES PLACED AT
CENTERLINE OF MEMBER
NOTE 2: 1/2" TUBE TO 1/2" TUBE REQUIRES
WELDED SPACER PLATE

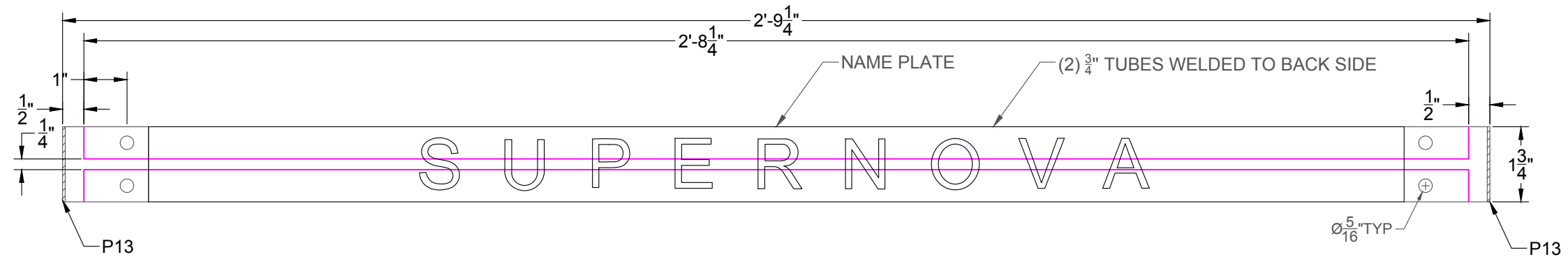
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LATERAL 1-3 WELDED ASSEMBLY (2)

B10-(2)-2' 8 1/4"
PLATE 13-(2)

LATERAL 1-2 SIM WELDED ASSEMBLY (2)

B10-(2)-2' 8 1/4"
PLATE 13-(2)



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STEEL BRIDGE



PROJECT NAME:

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DESIGN

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SB2015-001

GROUP MEMBERS:

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KAITLIN VANDAVEER

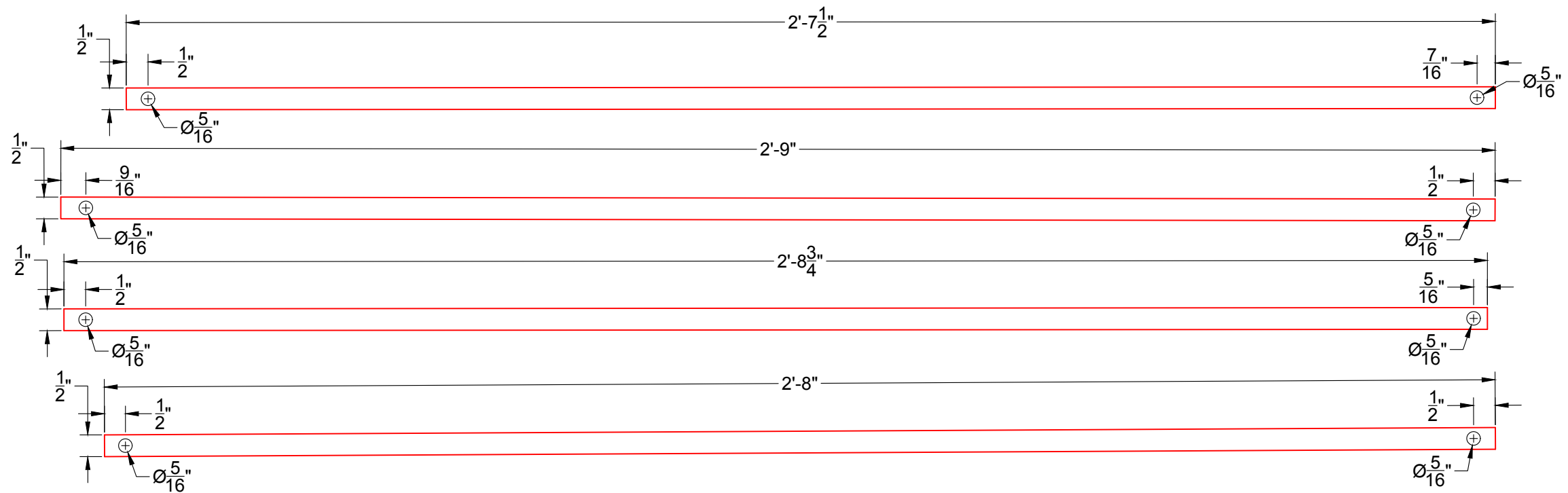
FABRICATION NOTES:

NOTE 1: WELD BOTH SIDES
NOTE 2: PLATE BOTH SIDES OF MEMBER
NOTE 3: GRIND CORNER TO FIT
NOTE 4: CUT TO FIT, HOLD HOLE DIM.
NOTE 5: GRIND MAIN MEMBER FOR WELD AREA, USE TWO KNIFE PLATES
NOTE 6: WELD TO FIT

GENERAL NOTES:

NOTE 1: ALL BOLT HOLES PLACED AT CENTERLINE OF MEMBER
NOTE 2: 3/4" TUBE TO 3/4" TUBE REQUIRES WELDED SPACER PLATE

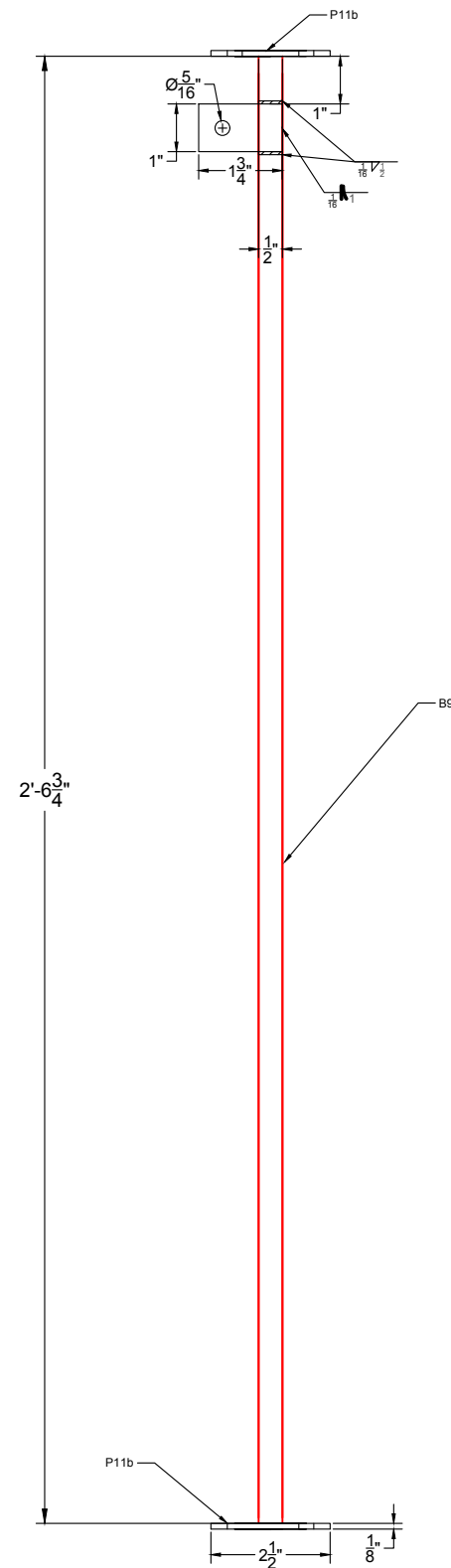
LATERAL 1-4 ASSEMBLY (2)



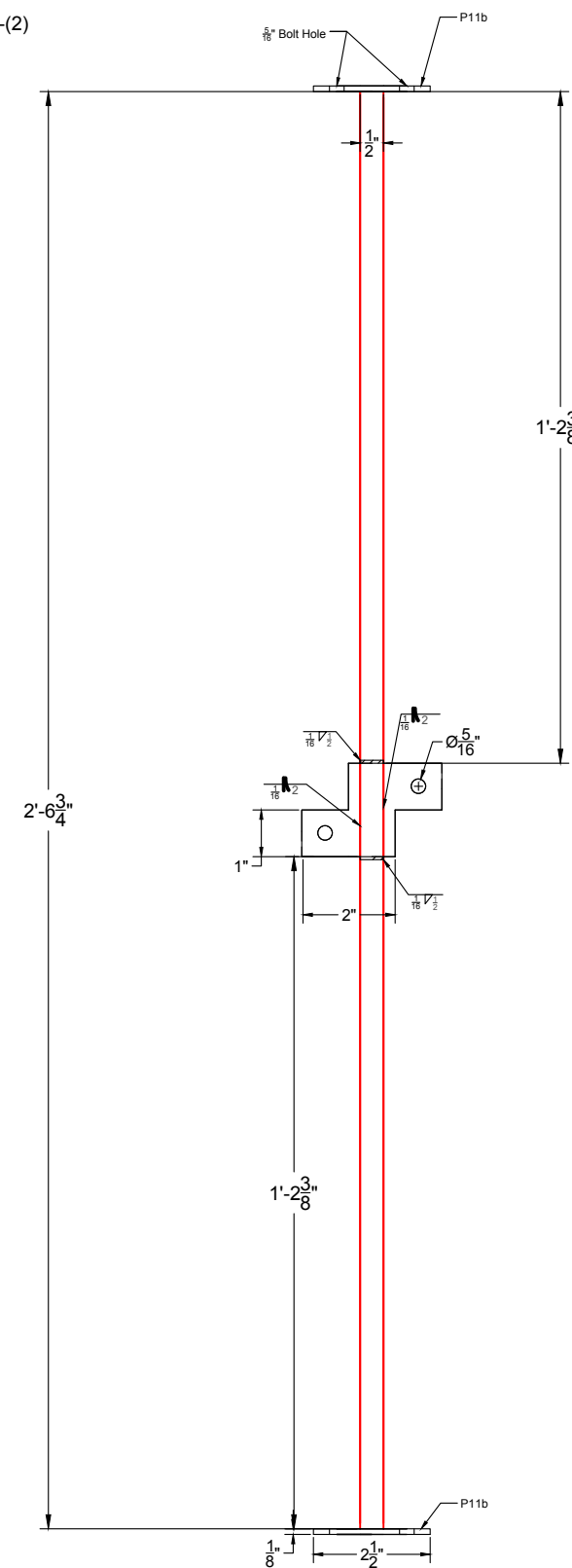
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LATERAL 1-3 WELDED ASSEMBLY (4)
 B9-2' 6³/₄"
 PLATE 11b-(2)



LATERAL 1-4 WELDED ASSEMBLY (2)
 B9-2' 6³/₄"
 PLATE 11b-(2)



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 STEEL BRIDGE



PROJECT NAME:

STEEL BRIDGE
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DRAWING NUMBER:

SB2015-001

GROUP MEMBERS:

LOGAN COUCH
 MATT RODGERS
 BRIAN JOUFLAS
 KAITLIN VANDAVEER

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 NOTE 5: GRIND MAIN MEMBER FOR WELD
 AREA, USE TWO KNIFE PLATES
 NOTE 6: WELD TO FIT

GENERAL NOTES:

NOTE 1: ALL BOLT HOLES PLACED AT
 CENTERLINE OF MEMBER
 NOTE 2: 1/2" TUBE TO 1/2" TUBE REQUIRES
 WELDED SPACER PLATE

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STEEL BRIDGE



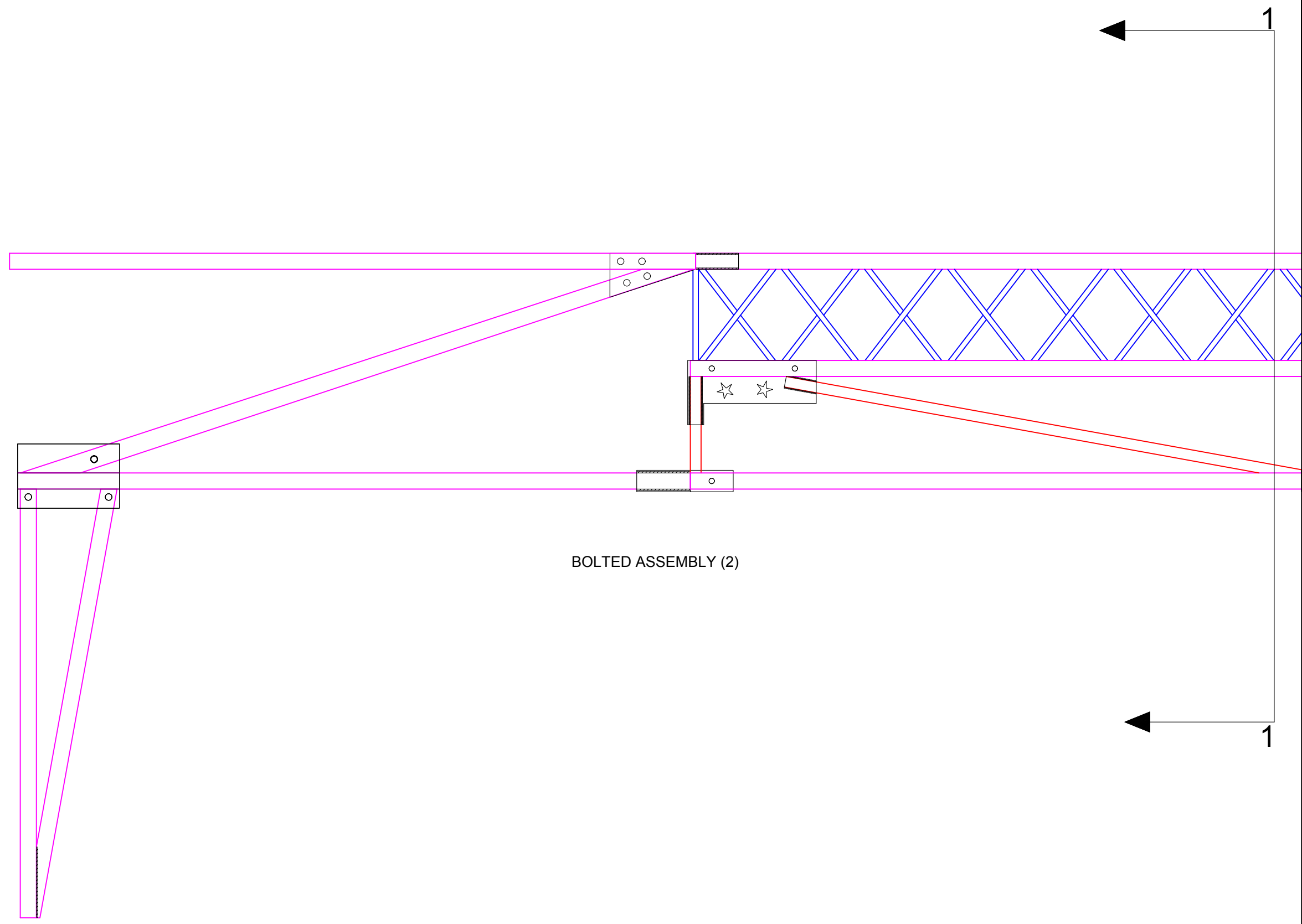
PROJECT NAME:
STEEL BRIDGE
DESIGN

DRAWING NUMBER:
SB2015-001

GROUP MEMBERS:
LOGAN COUCH
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NOTE 5: GRIND MAIN MEMBER FOR WELD
AREA, USE TWO KNIFE PLATES
NOTE 6: WELD TO FIT

GENERAL NOTES:
NOTE 1: ALL BOLT HOLES PLACED AT
CENTERLINE OF MEMBER
NOTE 2: $\frac{1}{2}$ " TUBE TO $\frac{1}{2}$ " TUBE REQUIRES
WELDED SPACER PLATE



BOLTED ASSEMBLY (2)

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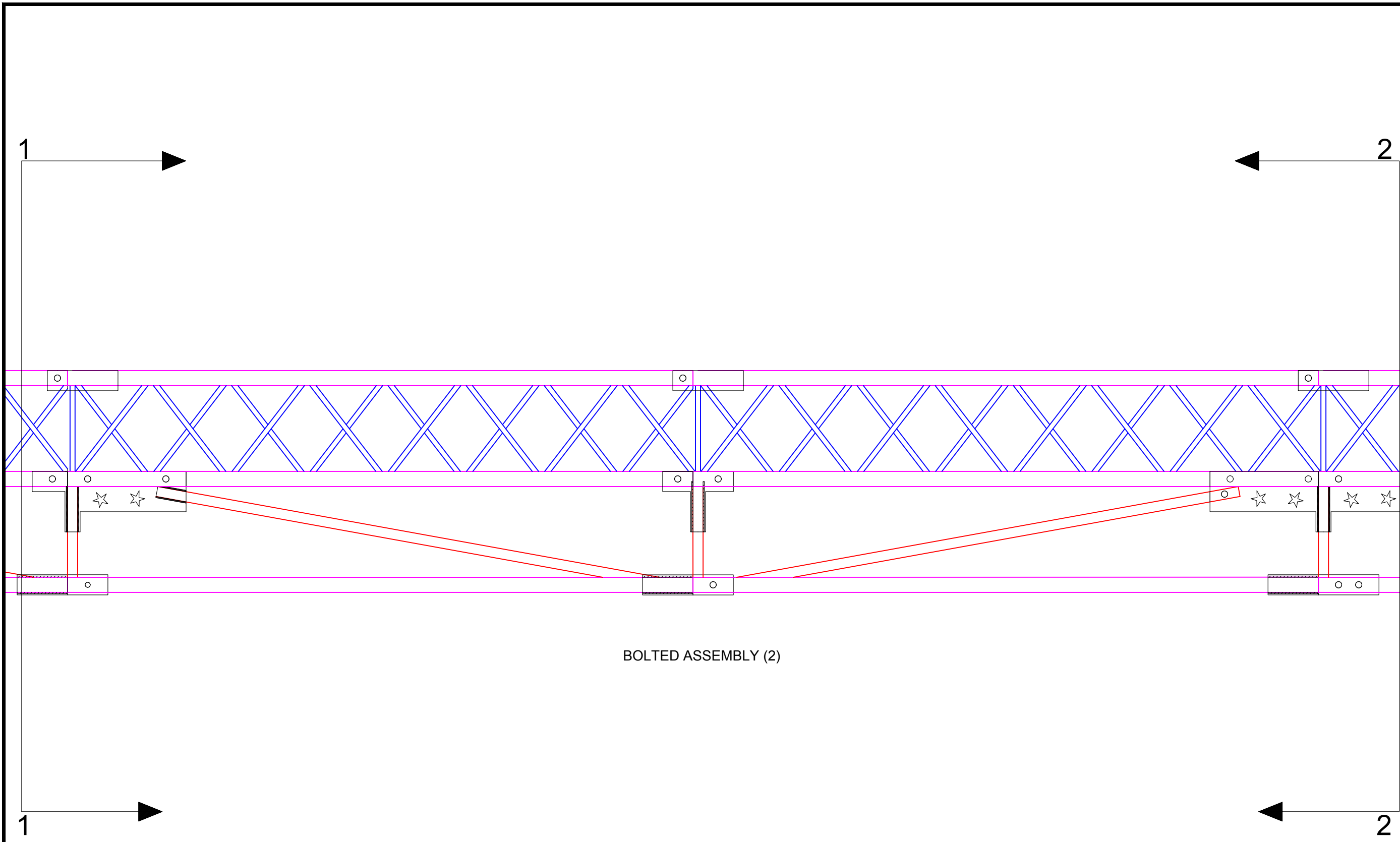
PROJECT NAME:
STEEL BRIDGE
DESIGN

DRAWING NUMBER:
SB2015-001

GROUP MEMBERS:
LOGAN COUCH
MATT RODGERS
BRIAN JOUFLAS
KAITLIN VANDAVEER

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NOTE 4: CUT TO FIT, HOLD HOLE DIM.
NOTE 5: GRIND MAIN MEMBER FOR WELD
AREA, USE TWO KNIFE PLATES
NOTE 6: WELD TO FIT

GENERAL NOTES:
NOTE 1: ALL BOLT HOLES PLACED AT
CENTERLINE OF MEMBER
NOTE 2: $\frac{1}{2}$ " TUBE TO $\frac{1}{2}$ " TUBE REQUIRES
WELDED SPACER PLATE



BOLTED ASSEMBLY (2)



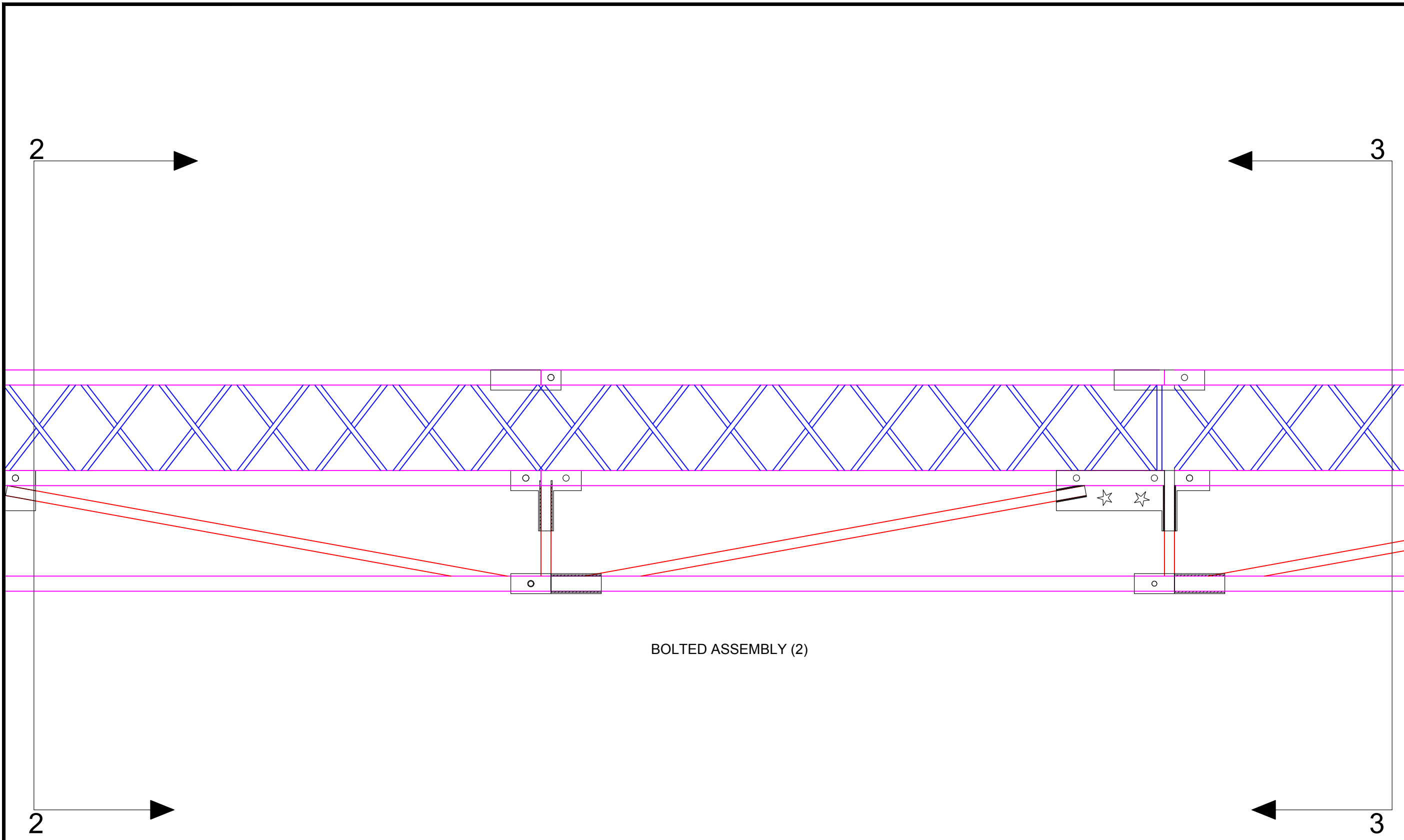
PROJECT NAME:
STEEL BRIDGE
DESIGN

DRAWING NUMBER:
SB2015-001

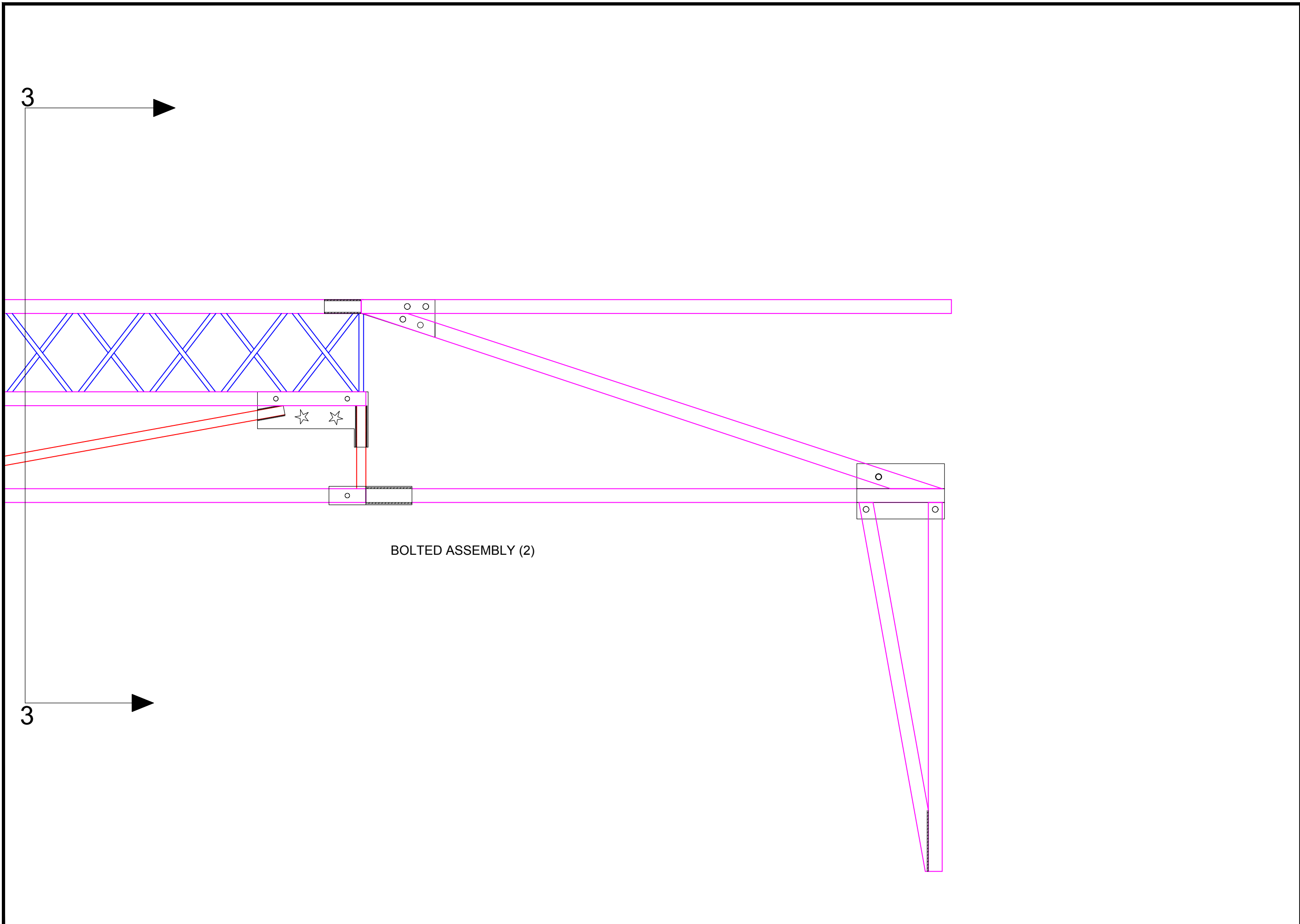
GROUP MEMBERS:
LOGAN COUCH
MATT RODGERS
BRIAN JOUFLAS
KAITLIN VANDAVEER

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AREA, USE TWO KNIFE PLATES
NOTE 6: WELD TO FIT

GENERAL NOTES:
NOTE 1: ALL BOLT HOLES PLACED AT
CENTERLINE OF MEMBER
NOTE 2: 1/2" TUBE TO 3/4" TUBE REQUIRES
WELDED SPACER PLATE



BOLTED ASSEMBLY (2)



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STEEL BRIDGE



PROJECT NAME:
STEEL BRIDGE
DESIGN

DRAWING NUMBER:
SB2015-001

GROUP MEMBERS:
LOGAN COUCH
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BRIAN JOUFLAS
KAITLIN VANDAVEER

FABRICATION NOTES:
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AREA, USE TWO KNIFE PLATES
NOTE 6: WELD TO FIT

GENERAL NOTES:
NOTE 1: ALL BOLT HOLES PLACED AT
CENTERLINE OF MEMBER
NOTE 2: $\frac{1}{2}$ " TUBE TO $\frac{1}{2}$ " TUBE REQUIRES
WELDED SPACER PLATE

BOLTED ASSEMBLY (2)

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STEEL BRIDGE



PROJECT NAME:

STEEL BRIDGE
DESIGN

DRAWING NUMBER:

SB2015-001

GROUP MEMBERS:

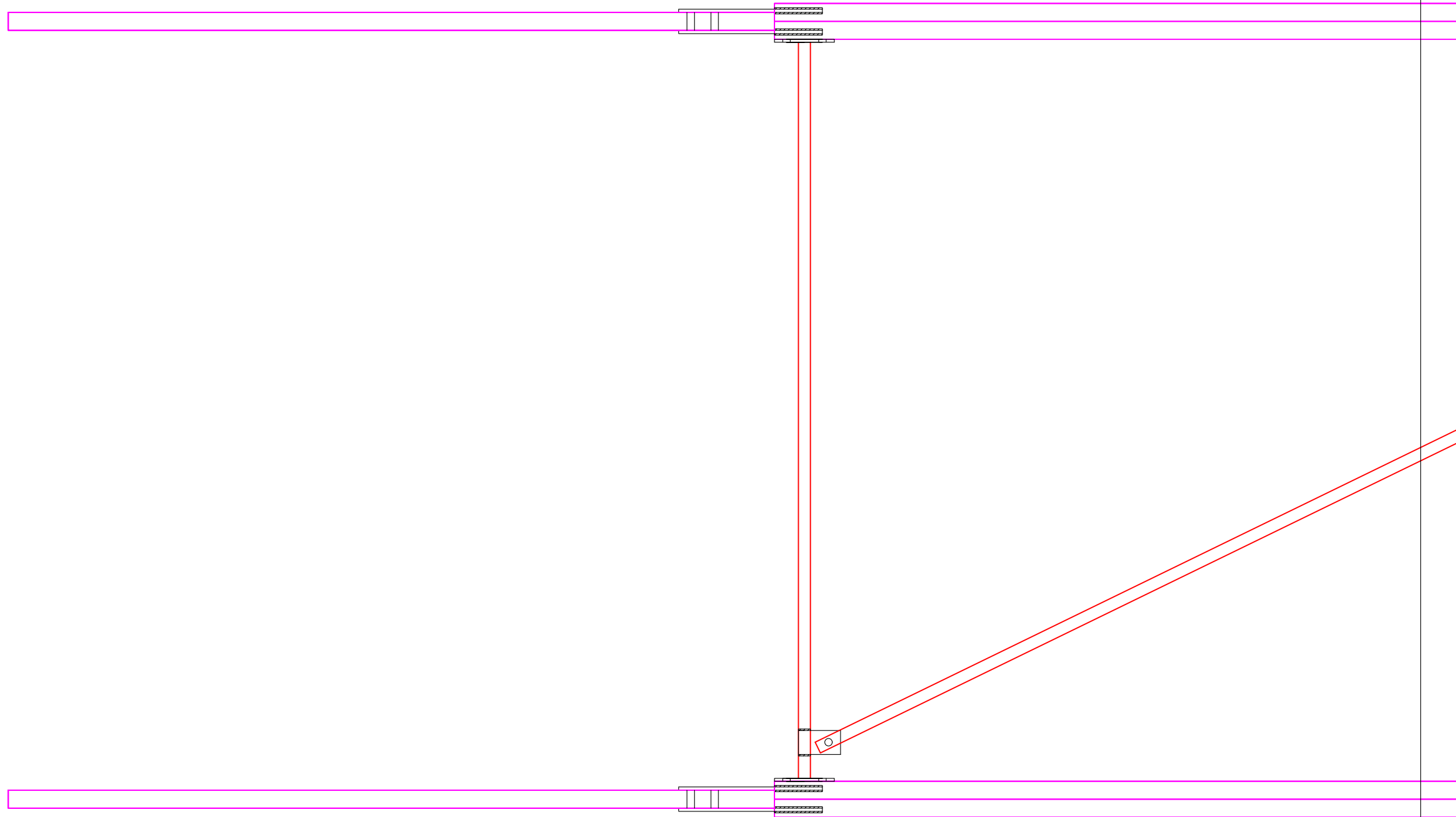
LOGAN COUCH
MATT RODGERS
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GENERAL NOTES:

NOTE 1: ALL BOLT HOLES PLACED AT
CENTERLINE OF MEMBER
NOTE 2: $\frac{1}{2}$ " TUBE TO $\frac{1}{2}$ " TUBE REQUIRES
WELDED SPACER PLATE



1

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STEEL BRIDGE



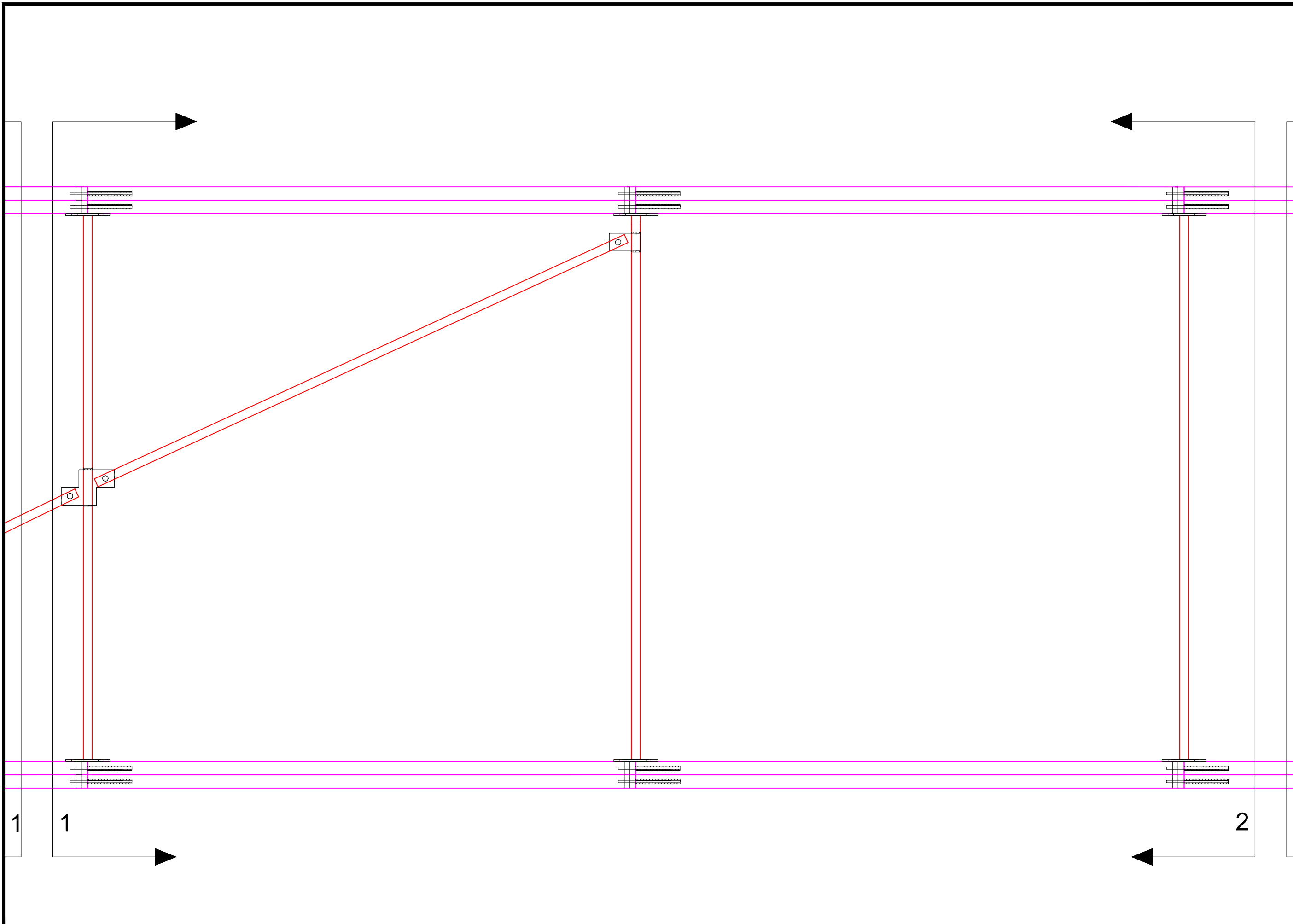
PROJECT NAME:
STEEL BRIDGE
DESIGN

DRAWING NUMBER:
SB2015-001

GROUP MEMBERS:
LOGAN COUCH
MATT RODGERS
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KAITLIN VANDAVEER

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NOTE 6: WELD TO FIT

GENERAL NOTES:
NOTE 1: ALL BOLT HOLES PLACED AT
CENTERLINE OF MEMBER
NOTE 2: 1/2" TUBE TO 1/2" TUBE REQUIRES
WELDED SPACER PLATE



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STEEL BRIDGE



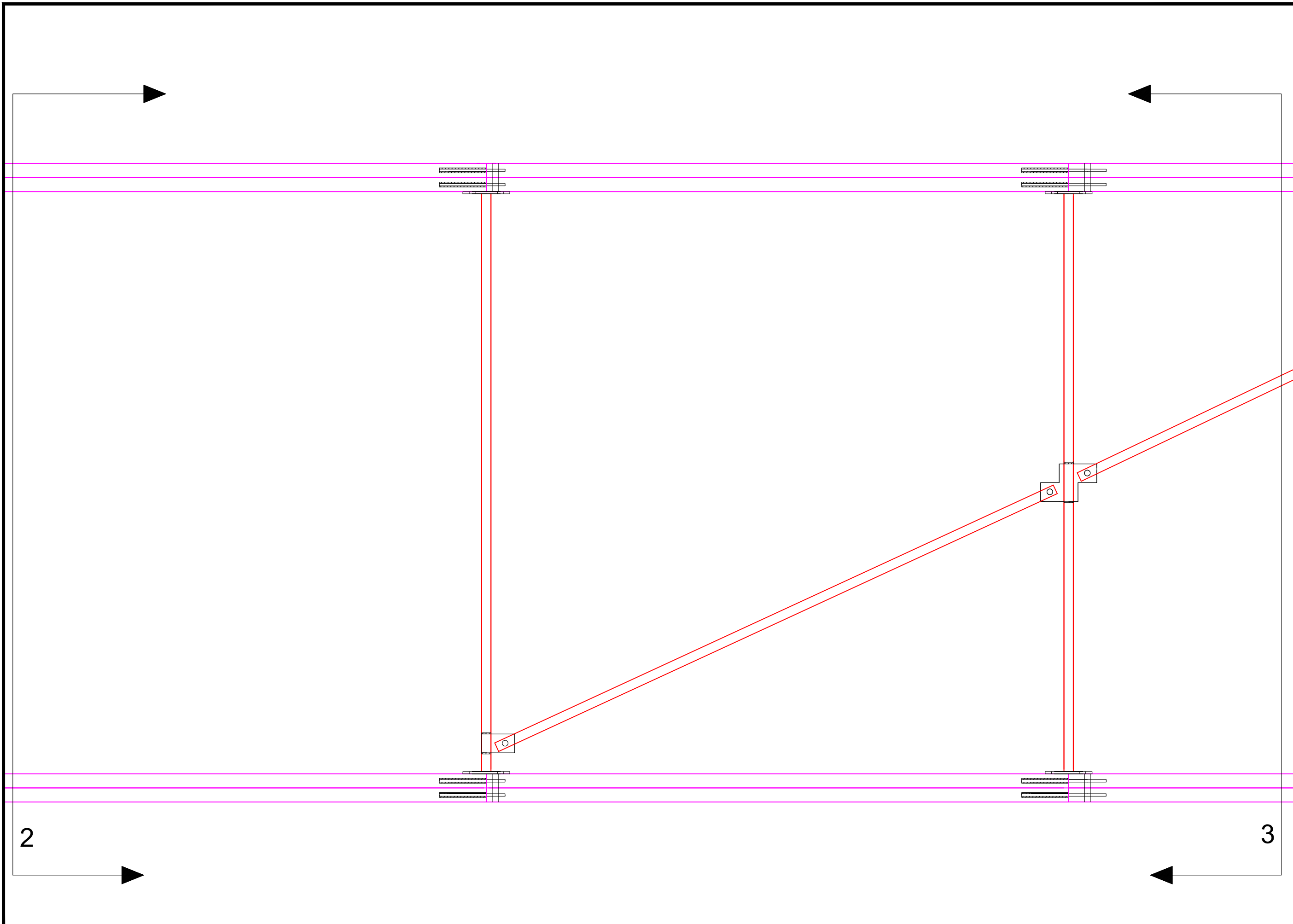
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STEEL BRIDGE
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DRAWING NUMBER:
SB2015-001

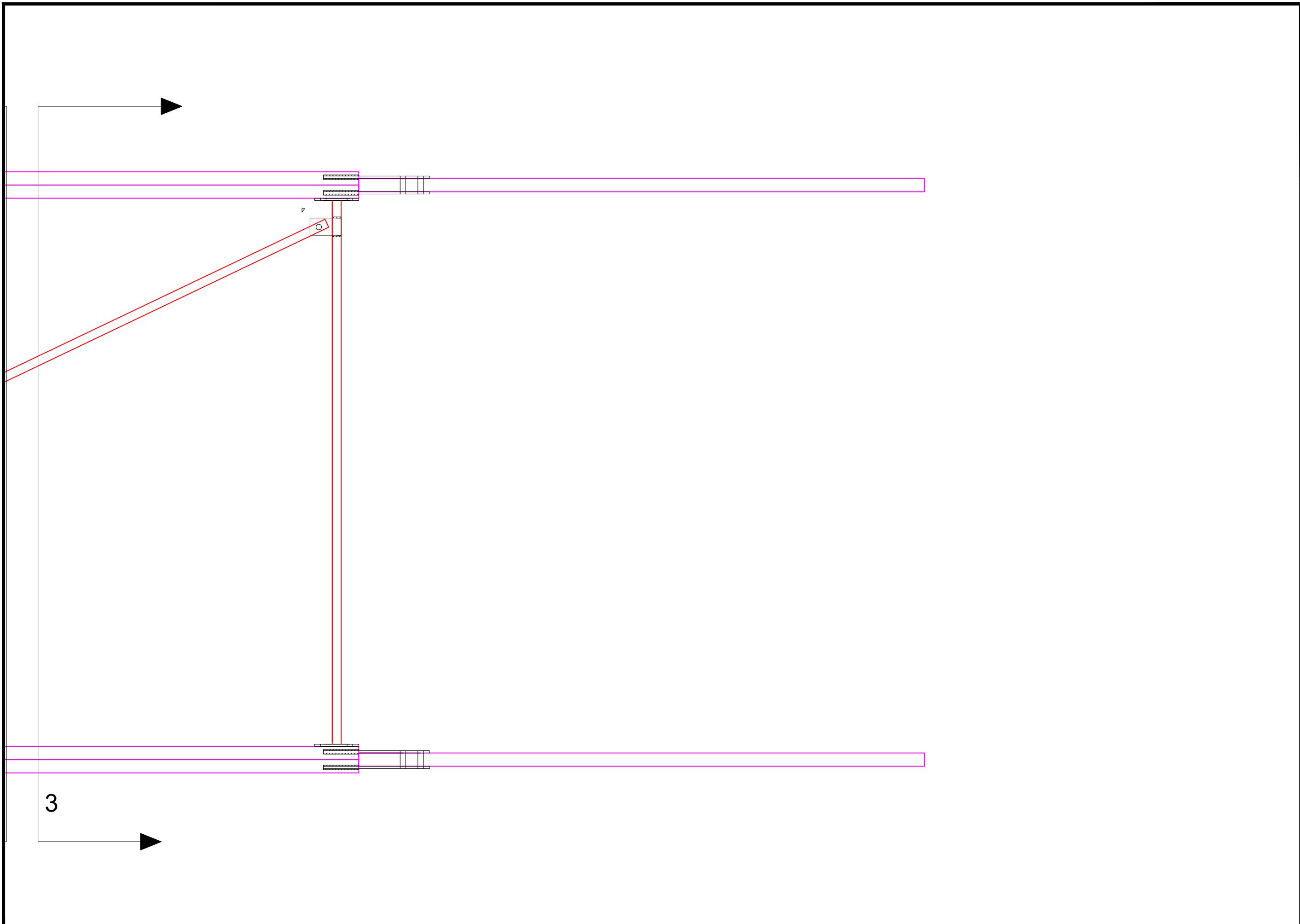
GROUP MEMBERS:
LOGAN COUCH
MATT RODGERS
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KAITLIN VANDAVEER

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NOTE 6: WELD TO FIT

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NOTE 2: 1/2" TUBE TO 1/2" TUBE REQUIRES
WELDED SPACER PLATE



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STEEL BRIDGE

PROJECT NAME:
STEEL BRIDGE
DESIGN

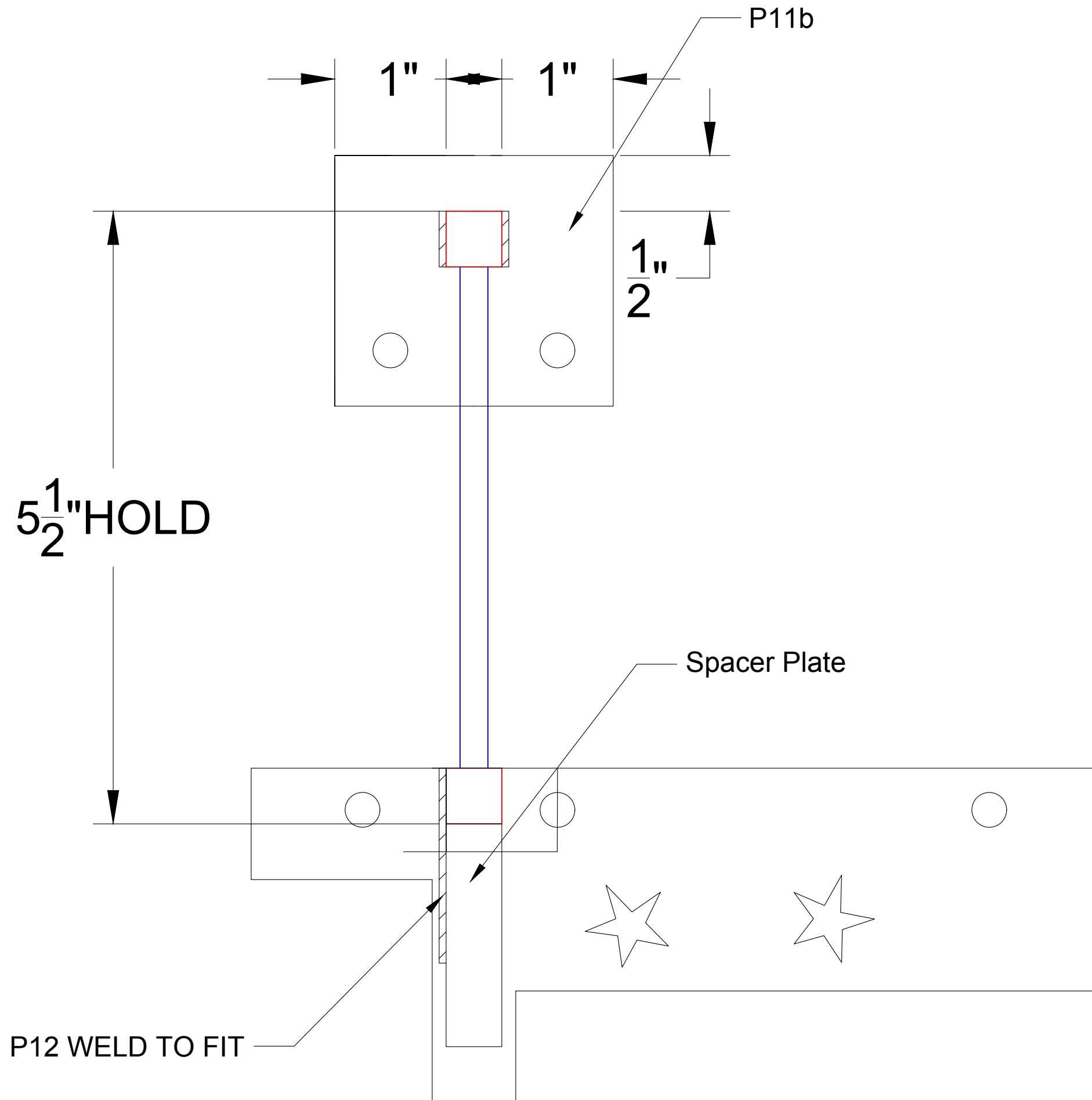
DRAWING NUMBER:
SB2015-001

GROUP MEMBERS:
LOGAN COUCH
MATT RODGERS
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KAITLIN VANDAVEER

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NOTE 6: WELD TO FIT

GENERAL NOTES:
NOTE 1: ALL BOLT HOLES PLACED AT CENTERLINE OF MEMBER
NOTE 2: 1/2" TUBE TO 1/2" TUBE REQUIRES WELDED SPACER PLATE

TRUSS Lateral CROSS SECTION
SCALE 1:1



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STEEL BRIDGE



PROJECT NAME:
STEEL BRIDGE
DESIGN

DRAWING NUMBER:
SB2015-001

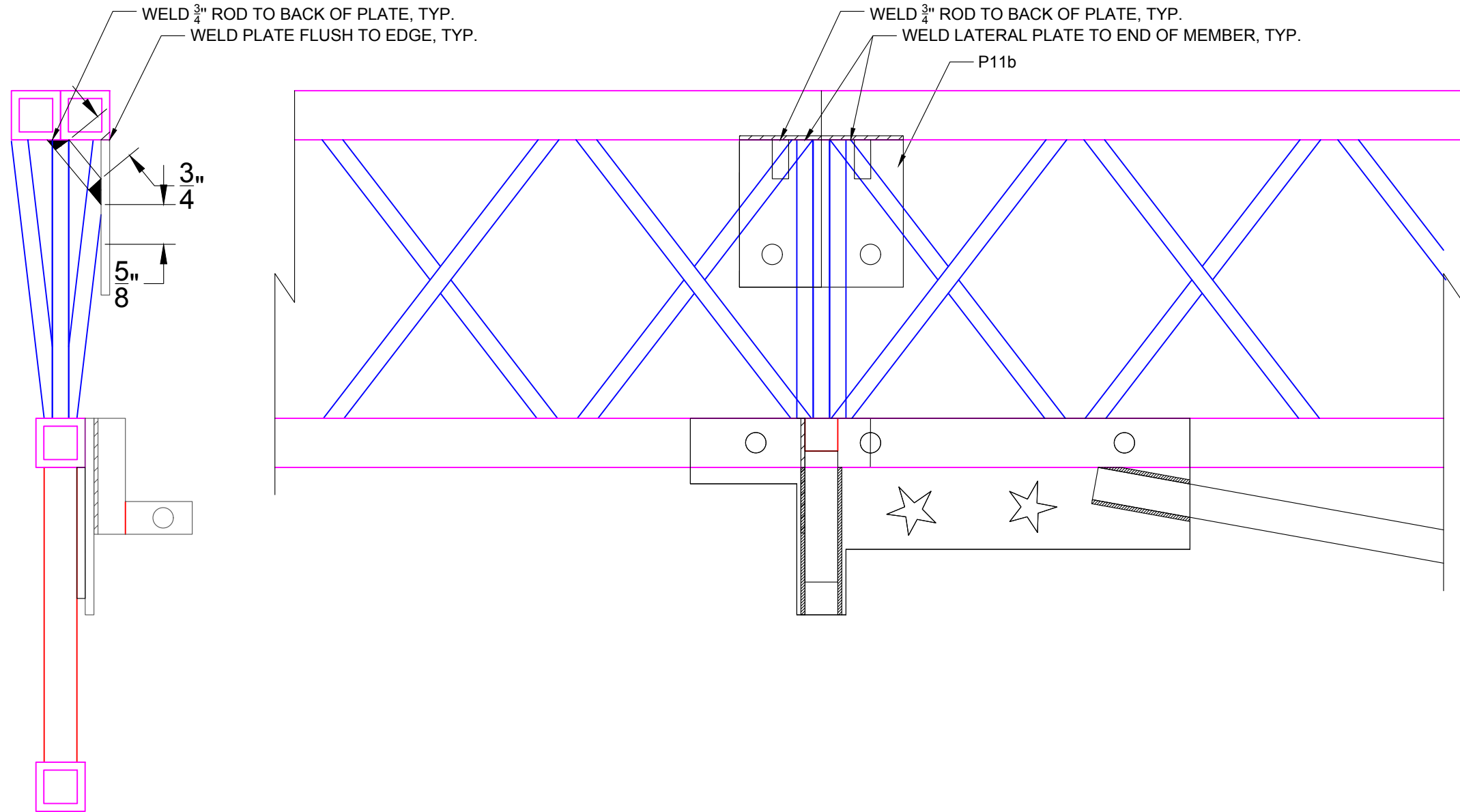
GROUP MEMBERS:
LOGAN COUCH
MATT RODGERS
BRIAN JOUFLAS
KAITLIN VANDAVEER

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CENTERLINE OF MEMBER
NOTE 2: TUBE TO TUBE REQUIRES
WELDED SPACER PLATE

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TRUSS Lateral CROSS SECTION
SCALE 1:2



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STEEL BRIDGE



PROJECT NAME:

STEEL BRIDGE
DESIGN

DRAWING NUMBER:

SB2015-001

GROUP MEMBERS:

LOGAN COUCH
MATT RODGERS
BRIAN JOUFLAS
KAITLIN VANDAVEER

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NOTE 2: 1/2" TUBE TO 1/2" TUBE REQUIRES WELDED SPACER PLATE

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NAME PLATE
SCALE 1:3



ASCE 2016
STEEL BRIDGE



PROJECT NAME:
STEEL BRIDGE
DESIGN

DRAWING NUMBER:
SB2015-001

GROUP MEMBERS:
LOGAN COUCH
MATT RODGERS
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FABRICATION NOTES:
NOTE 1: WELD BOTH SIDES
NOTE 2: PLATE BOTH SIDES OF MEMBER
NOTE 3: GRIND CORNER TO FIT
NOTE 4: CUT TO FIT, HOLD HOLE DIM.
NOTE 5: GRIND MAIN MEMBER FOR WELD
AREA. USE TWO KNIFE PLATES
NOTE 6: WELD TO FIT

GENERAL NOTES:
NOTE 1: ALL BOLT HOLES PLACED AT
CENTERLINE OF MEMBER
NOTE 2: 1/2" TUBE TO 1/2" TUBE REQUIRES
WELDED SPACER PLATE

DRAWN BY: KMV, MR, BJ, LC | PAGE:
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