

CO-RTE-LOG

BRIDGE OVER CREEK
 SECTIONS XX & XX, XXXXXX TOWNSHIP
 XXXXXX COUNTY, OHIO

Project Description:
 Replacement and Widening of Existing
 Continuous Steel Beam
 Existing Concrete Abutments

SITE DATA

Latitude: N41°06'36.1"
 Longitude: W83°01'46.7"
 Township: Scipio Secs. 21 & 28
 Road ROW: 60.0'
 Volume: 1 Page: 75
 Current ADT (2010): 290 (1-Tractor Trailers)

Rock Creek
 Flow Direction: North to South
 Ditch Maintenance: No
 Drainage Area = 8,320 Ac.(13 Sq. Miles)
 Drainage(cfs)
 Q2 = 450 cfs
 Q10 = 864 cfs
 Q100 = 1460 cfs

Bedrock Impact: No

EXISTING STRUCTURE

Type: 38' o/o x 22' Wide Steel Beams
 Span: 33.5± Clear Span
 Roadway: 18±
 Skew: 35° Left Forward
 Date Built: 1956
 Condition: Fair
 SFN: 7446888

PROPOSED STRUCTURE

Type: 24'6" O/O STEEL BEAM 28' WIDE
 Existing abutments.
 Span: 22'-6" Clear Span
 Dim: (7) W16X45 24'6" LONG STEEL BEAM
 Roadway: 18±
 Skew: 20° Left Forward

MAINTENANCE OF TRAFFIC (MOT)

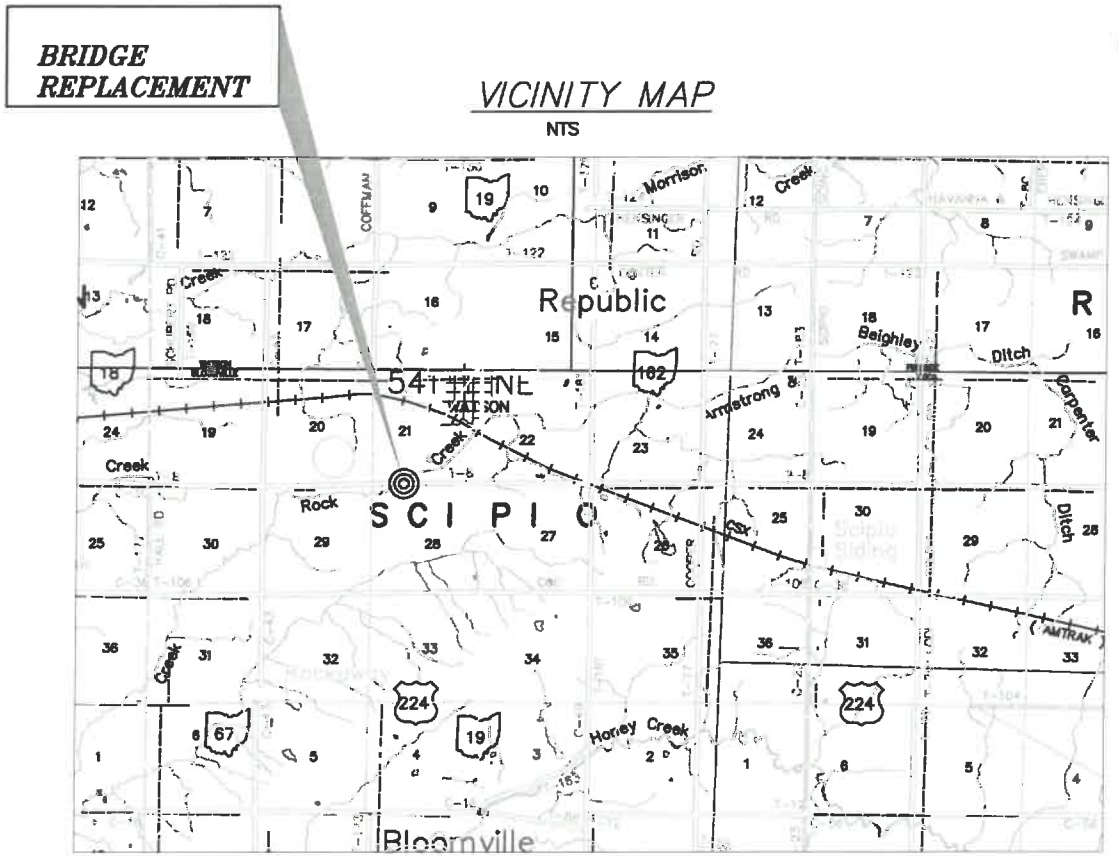
Type: Full Closure
 Closure Between: SR67 and SR 19
 Detour Length: 3 miles

PUBLIC NOTIFICATION

Contacts: County EMA/EMS, Sheriff, School, Post Office
 Advance Closure Notice: One Week

LEGEND

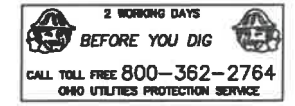
○	MANHOLE	⚡	RAILROAD SIGNAL
○ ^{ca}	CLEAN OUT	⚡	RAILROAD SIGNAL W/LIGHT
○	SANITARY LIFT STATION	■	MAIL BOX
—SAN—	SANITARY SEWER	—	SIGN
■	CATCH BASIN	⚡	POWER POLE
■	CURB INLET	■	POWER TRANSFORMER
⊙	YARD DRAIN	⚡	TELEPHONE POLE
—STM—	STORM SEWER	⚡	LIGHT POLE
⚡ ^{FH}	FIRE HYDRANT	⚡	TELEPHONE PEDESTAL
⚡ ^{YH}	YARD HYDRANT	—E—	OVERHEAD ELECTRIC LINE
⊙ ^{WV}	WATER VALVE	—UE—	UNDERGROUND ELECTRIC LINE
■	WATER METER	—T—	OVERHEAD TELEPHONE LINE
■ ^{WCV}	WATER CURB VALVE	—UT—	UNDERGROUND TELEPHONE LINE
—W—	WATER LINE	—CTV—	OVERHEAD CABLE TV LINE
⊙ ^{GV}	GAS VALVE	—UCTV—	UNDERGROUND CABLE TV LINE
■	GAS MARKER	—FO—	FIBER OPTIC
■	GAS METER	—UFO—	UNDERGROUND FIBER OPTIC
—GAS—	GAS LINE	—X—	FENCE LINE
⊙	DECIDUOUS TREE	—	GUARDRAIL
⊙	PINE TREE	—	EASEMENT LINE
		—	PROPERTY LINE
		—	EDGE OF PAVEMENT
		—	LOW WATER MARK
		—	C/L OF DITCH
		—	DITCH SLOPE
		▨	BUILDING
		→	FLOW ARROW



*Steel Beam
 Template*

SURVEY MONUMENTS

SET	FOUND	DESCRIPTION
⊙	⊙	CONC. MONUMENT
⊕	⊕	RAILROAD SPIKE
○	○	NAIL
○	○	IRON ROD
○	○	DRILL HOLE
○	○	STONE
○	○	MONUMENT BOX
○	○	IRON PIPE
○	○	WOOD POST
(D)		DEED
(P)		PLAT
(M)		MEASURED
(S)		SURVEYED
(C)		CALCULATED



1
2

Project: XXXXXX TWP.
 CO-RTE-LOG
 TITLE SHEET

Revisions:

XXXXXX County
 Engineer's Dept.
 XXXXXXX - County Engineer

Drawn By:
 Date:
 Approved By:
 DWG File:

GENERAL NOTES-

1. THIS PROJECT DOES NOT INVOLVE THE ACQUISITION OF TEMPORARY OR PERMANENT RIGHT OF WAY
2. NO WORK IS PLANNED IN THE WATERWAY
3. THIS PROJECT DOES NOT INVOLVE ROADWAY REALIGNMENT

UTILITY INVOLVEMENT- Coordination by County

UTILITY	RELOCATION REQUIRED
NORTH CENTRAL ELECTRIC	NO
AT&T	COORDINATION REQUIRED

RAILROAD INVOLVEMENT

NO RAILROADS ARE AFFECTED IN THIS PROJECT

WORK PERFORMED BY COUNTY FORCES

1. SITE WORK
2. GUARDRAIL REMOVED
3. WEARING SURFACE REMOVED
4. STRUCTURE REMOVED * SEE ITEM 202
5. PATCHING OF CONCRETE SURFACES
6. BEARING SEAT/BACKWALL
7. CONSTRUCTION LAYOUT
8. FILLING OF CURROGATIONS
9. WATERPROOFING (TYPE 3)
10. WEARING SURFACE PLACED
11. BRIDGE TERMINAL ASSY AND GUARDRAIL

ITEM 202- STRUCTURE REMOVED OVER 20' SPAN, AS PER PLAN
IT IS NOTED THAT NO WHEELED OR TRACKED EQUIPMENT WILL BE PERMITTED INTO THE STREAM. CARE SHALL BE TAKEN TO PREVENT DEBRIS FROM ENTERING THE STREAM. ANY MATERIAL THAT ENTERS THE STREAM SHALL BE IMMEDIATELY REMOVED BY HAND OR BY MECHANICAL EQUIPMENT LOCATED OUTSIDE THE WATERWAY.

ITEM 519-PATCHING CONCRETE STRUCTURES

IT IS NOTED THAT CARE SHALL BE TAKEN TO ENSURE PATCHING OF CONCRETE SURFACES DOES NOT RESULT IN MATERIAL ENTERING THE WATERWAY.

WORK PERFORMED BY LPA CONTRACT

1. FABRICATE, DELIVER & ERECT STEEL SUPERSTRUCTURE AND DECK
2. FABRICATE & INSTALL BRIDGE RAILING *SEE ITEM 517

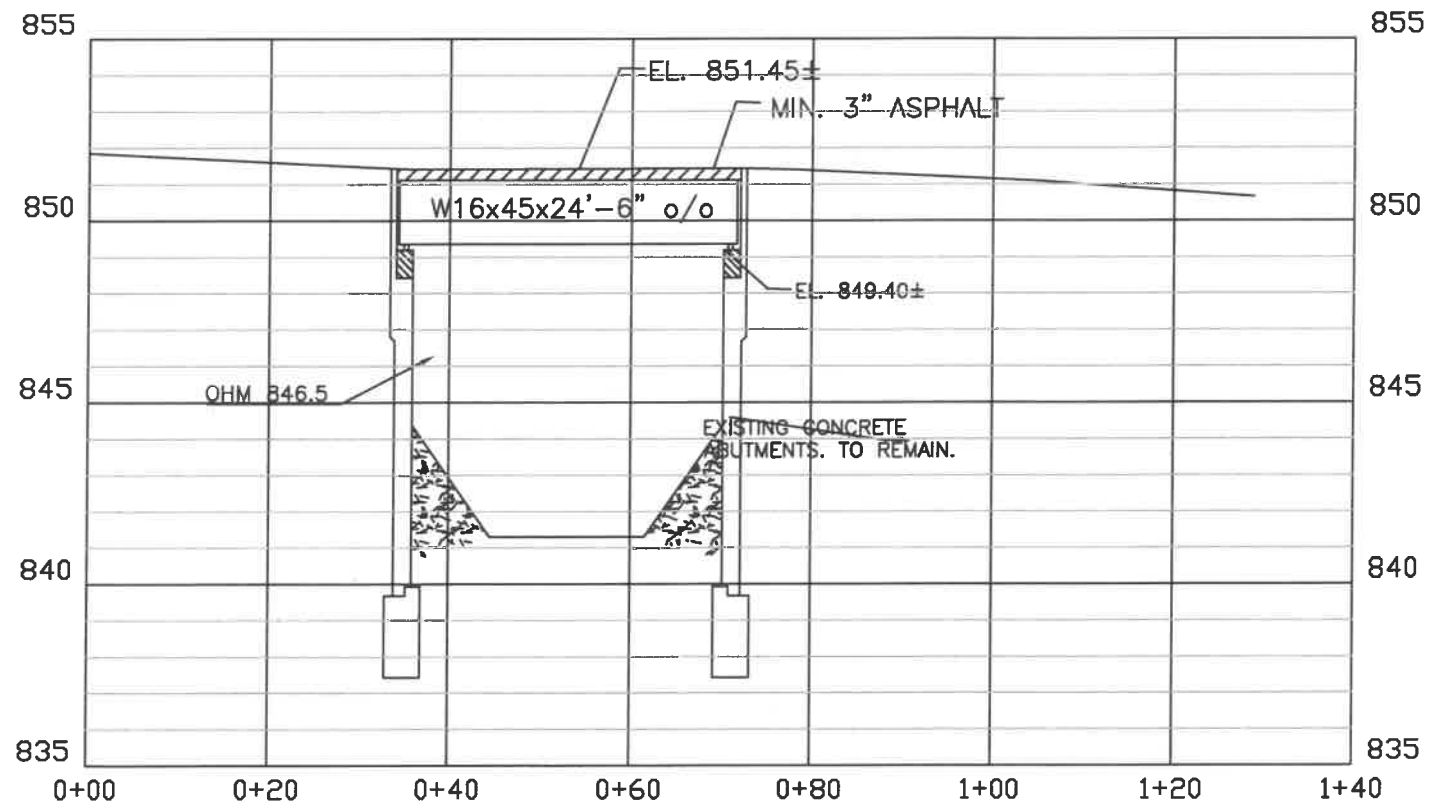
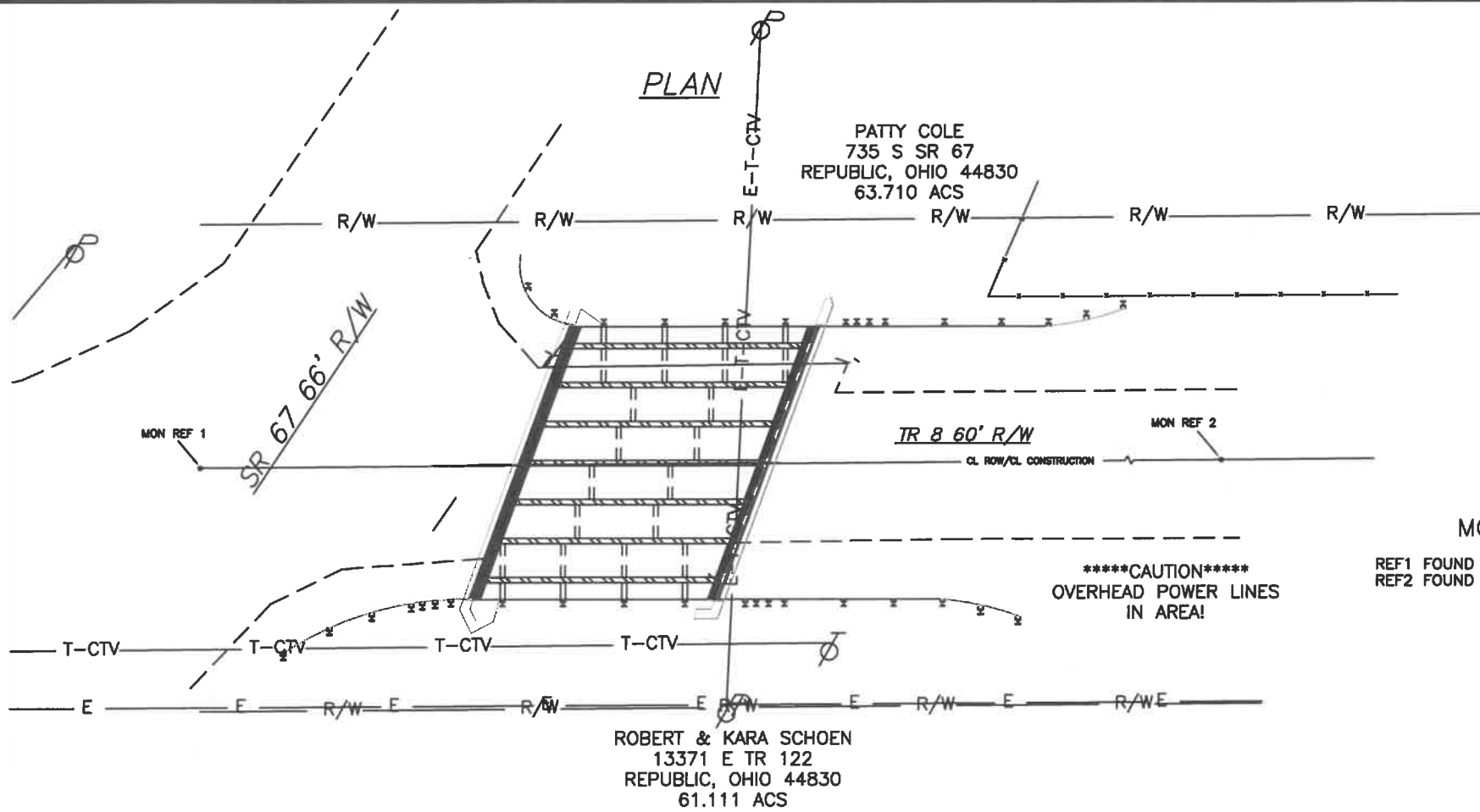
SPECIAL-STRUCTURAL STEEL -50KSI

1. STEEL SHALL BE GALVANIZED
2. BOLTED CONNECTIONS SHALL USE A325 BOLTS (ODOT SUPPLIMENT 1080)

ITEM 517 - BRIDGE RAILING (DEEP BEAM WITH TUBULAR BACKUP AND TYPE 2 STEEL POSTS)

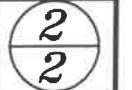
AS PER PLAN (75 LF)

SPECIAL- SS DRIP STRIP (75 LF)



MONUMENT REFERENCES

- REF1 FOUND RR SPIKE @ INTERSECTION OF SR67 AND TR8
- REF2 FOUND 3/4" IP @ N1/4 POST OF SEC 28, T2N-R16E



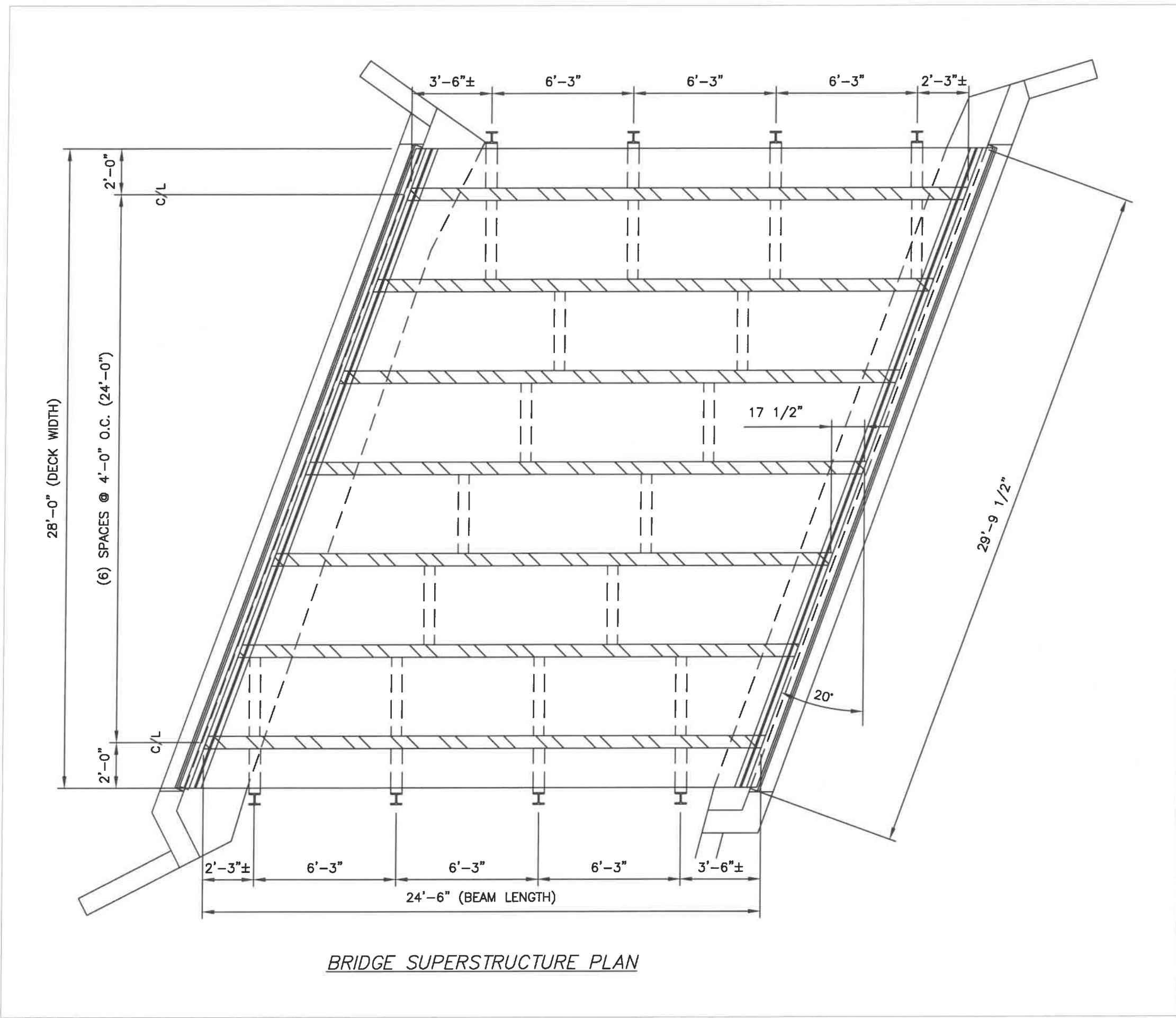
XXXXX TWP.
TWP-RTE-LOG
PLAN/PROFILE

Project:

Revisions:

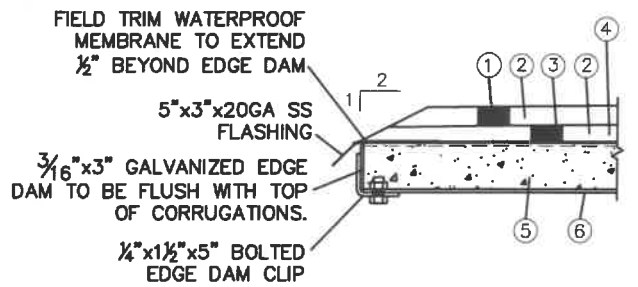
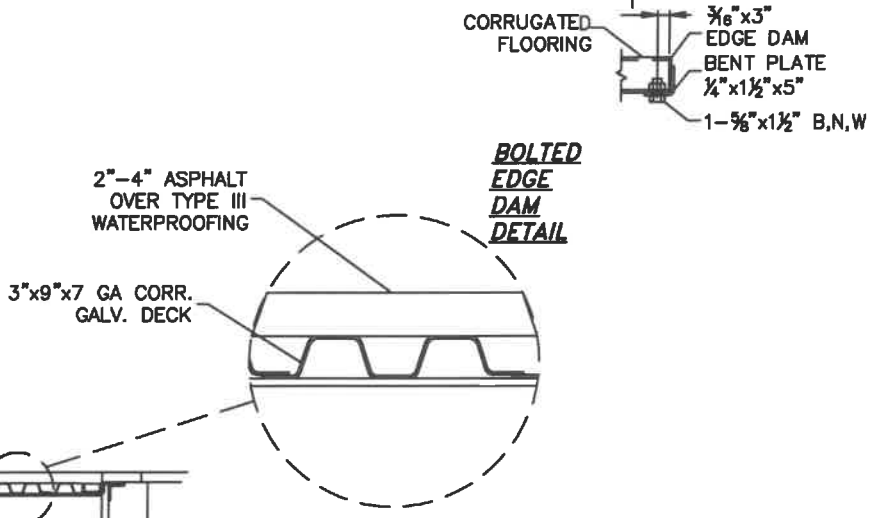
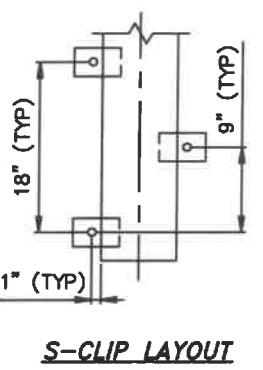
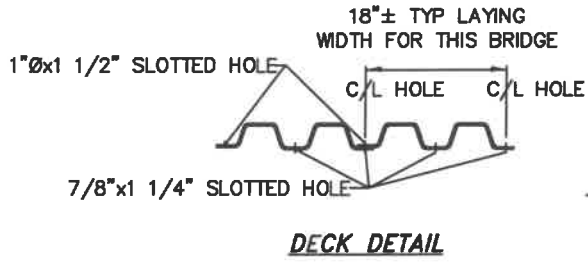
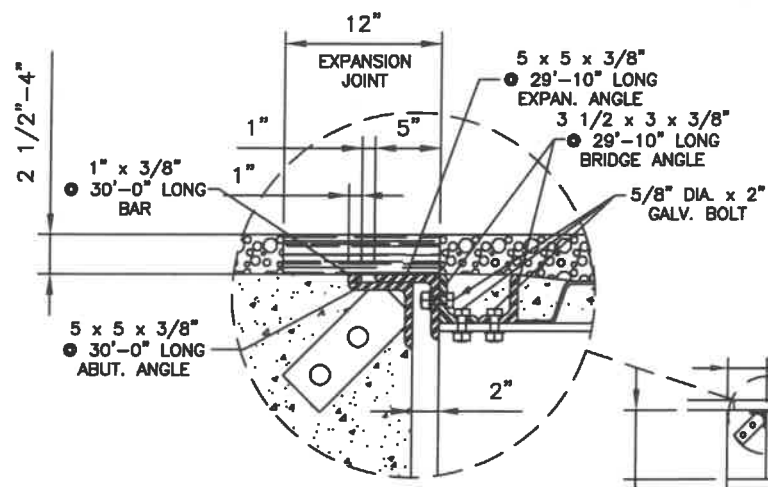
XXXXX County
Engineer's Dept.
XXXXX - County Engineer





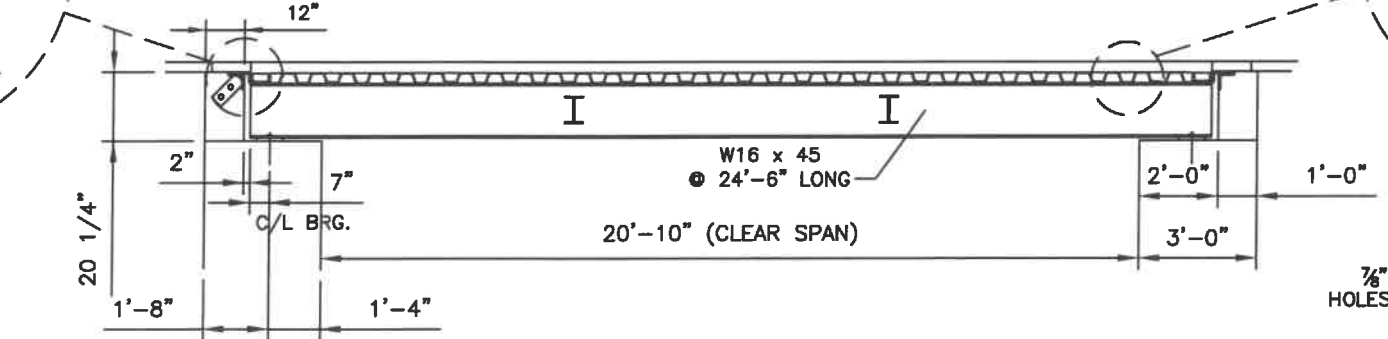
BRIDGE SUPERSTRUCTURE PLAN

Drawn By: _____ Date: _____ Approved By: MRZ DWG File: TR18-0.11\STEEL_BEAMS	Revisions: _____ _____ _____ _____	Project: XXXXXX TOWNSHIP RTE--LOG SUPERSTRUCTURE DETAILS	XXXXXX County Engineer's Dept. Mark R. Zimmerman - County Engineer	<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> X </div>
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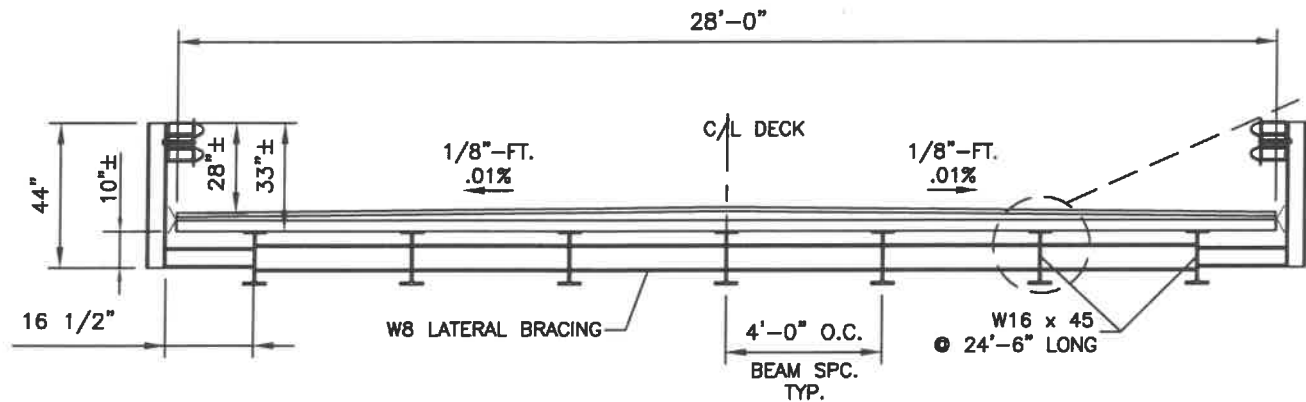


DECK EDGE DETAIL BETWEEN SPLASH GUARDS

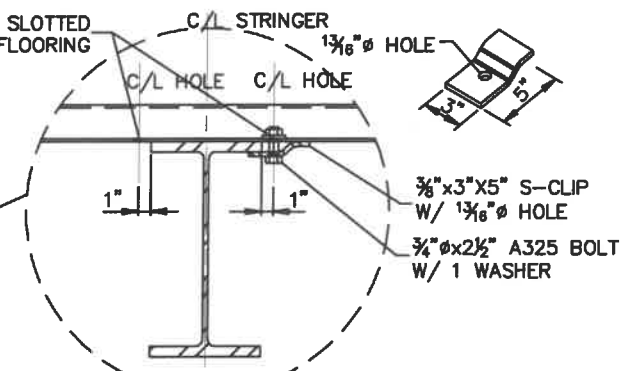
- SURFACING LEGEND:
- 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22.
 - TACK COAT
 - VARIABLE (1 1/8" AT EDGE) ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22.
 - TYPE 3 WATERPROOFING.
 - CLASS C CONCRETE, FILLED DECK CORRUGATIONS.
 - 3"x9" 5GA. GALVANIZED BRIDGE FLOORING.



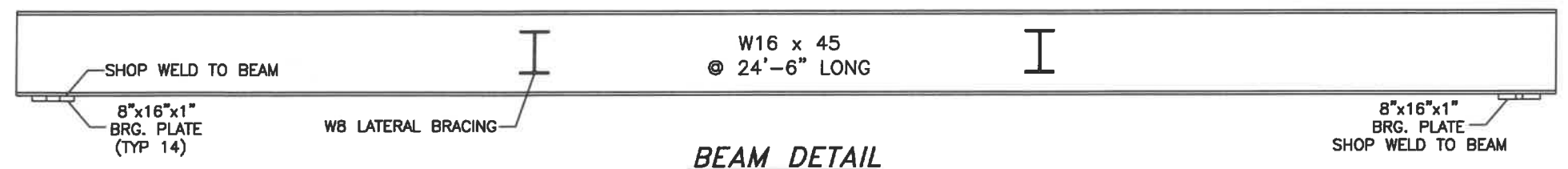
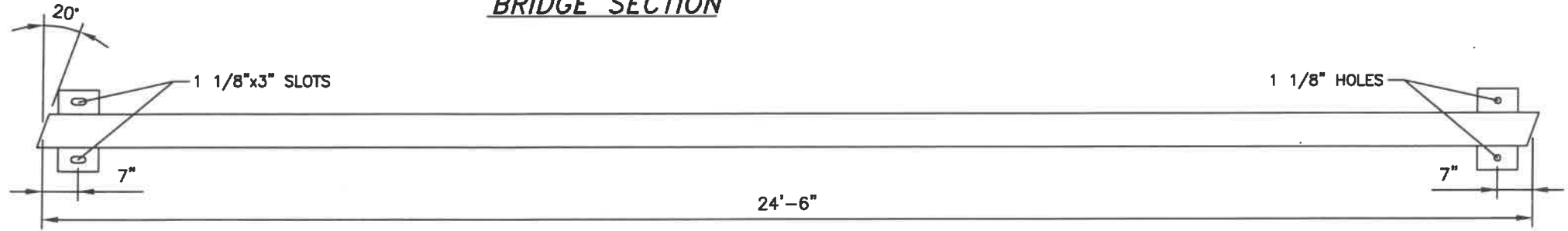
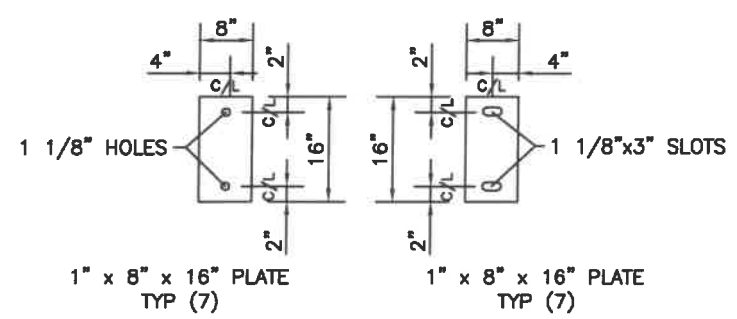
BRIDGE PROFILE



BRIDGE SECTION



NOTE:
S-CLIPS SHALL BE INSTALLED
ON OPPOSITE SIDES OF THE
STRINGER FLANGES IN A
STAGGERED 9" PATTERN.
BOLTING ATTACHMENT OF FLOORING



BEAM DETAIL

Bolt Chart

Part No.	Description	BOLTS				NUTS		FLAT WASHERS	
		Diameter	Length	Class	Bolts / connection	Type	Type	QTY / bolt	
B0	Slotted round head bolts for tube rail	3/4"	6"		4	ASTM A563-DH Lock Nut	ASTM F436-1	1	
B1	Top bolts for PL2 to PL3 and PL5 to PL6	1"	3-1/4"	ASTM A325-1	2	ASTM A563-DH	ASTM F436-1	2	
B2	Bottom bolts for PL2 to PL3 and PL5 to PL6	5/8"	3-1/4"	ASTM A325-1	2	ASTM A563-DH	ASTM F436-1	2	
B3	Bolts for PL4 to fascia beam and PL7 to fascia beam	7/8"	2-11/16"	ASTM A325-1	6	ASTM A563-DH	ASTM F436-1	2	
B4	Bolts for BSS2 (structural Tee) to BSS3 (diaphragm) and BSS5 (structural Tee) to BSS3 (diaphragm)	7/8"	2-11/16"	ASTM A325-1	3	ASTM A563-DH	ASTM F436-1	2	
TC-B0	Bolts for terminal connector to connection plate (TC-5)	7/8"	6"	ASTM A325-1	8	ASTM A563-DH	ASTM F436-1	1	
TC-B1	Bolts for thrie beam to connection angle (TC-4)	5/8"	7"	ASTM A325-1	2	ASTM A563-DH	ASTM F436-1	2	
TC-B2	Bolts for terminal connector to thrie beam	5/8"		ASTM A325-1	12	ASTM A563-DH	ASTM F436-1	2	

- All hardware is to be hot dip galvanize per ASTM A153 or ASTM F2329.
- All bolts shall be tightened in accordance with ODOT C&MS 513. Lock washers are not required for bolts tightened per C&M 513
- All bolts are UNC threads unless otherwise noted.
- All bolts in standard holes shall have a standard galvanised ASTM F-436 hardened washer under the element (nut / bolt head) turned in tightening.

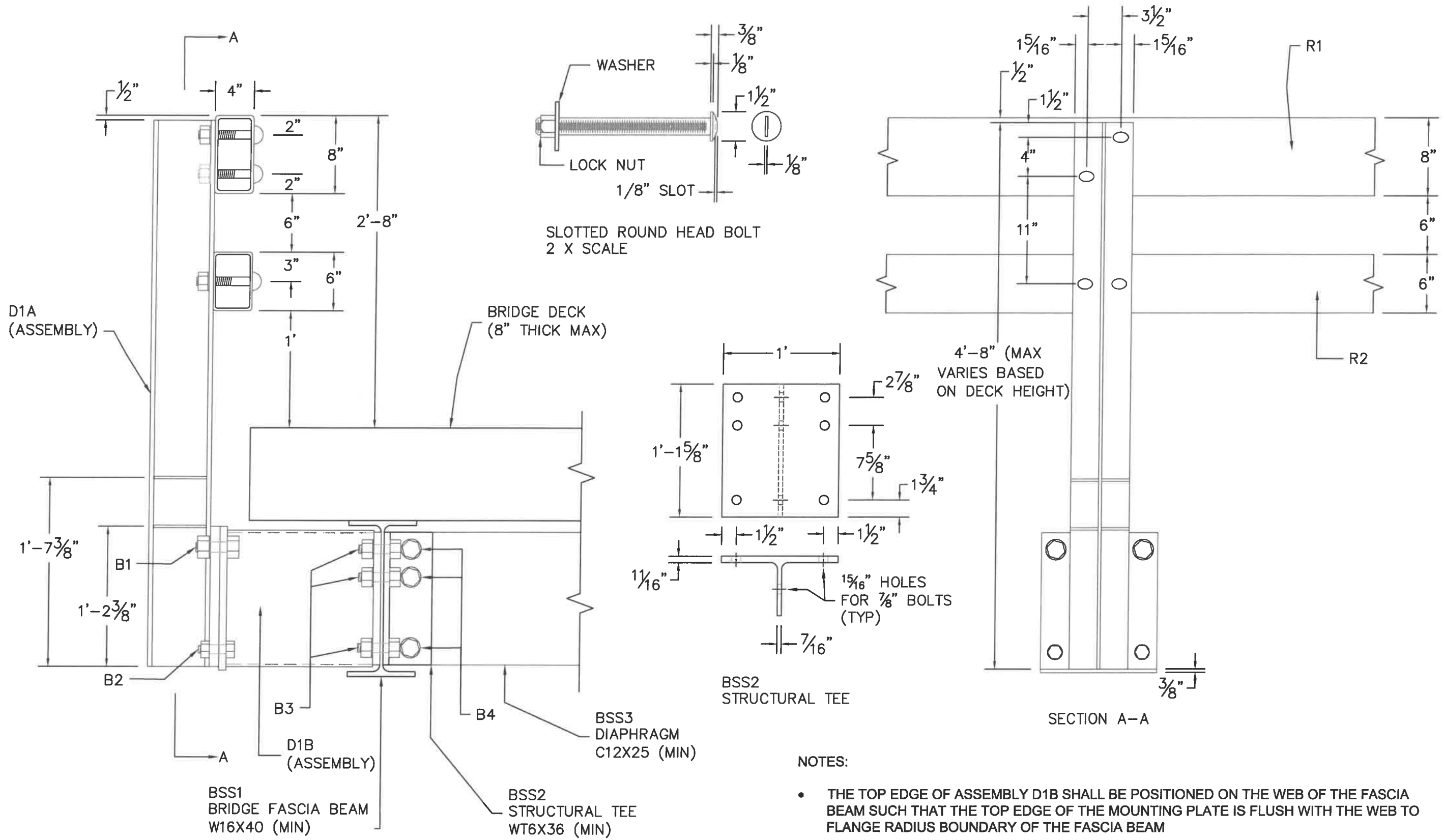
Materials Chart

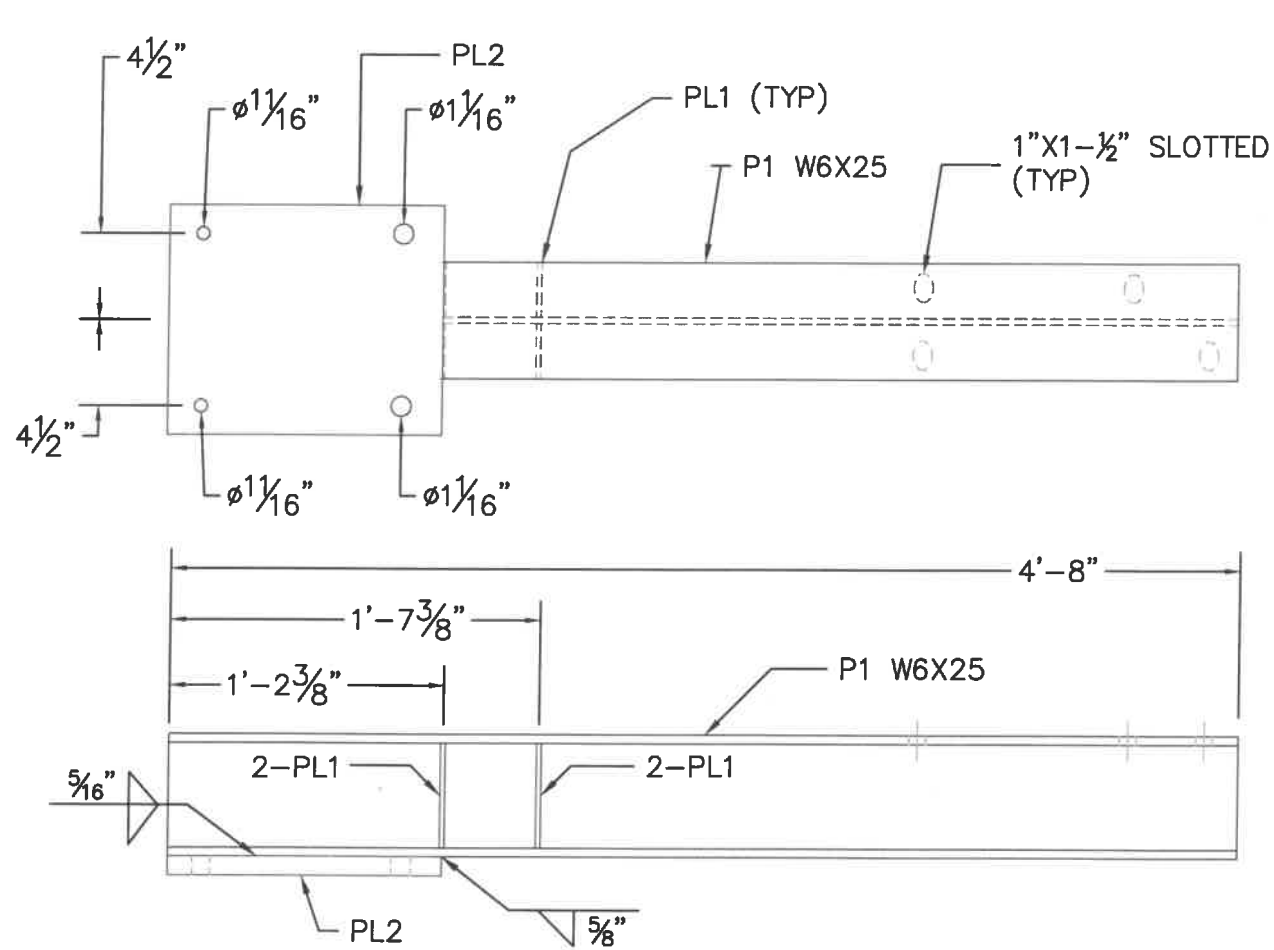
Part No.	Description	Section	Length	Grade	Min. Yield
P1	Post	W6x25	56" (max)	ASTM A992	50 ksi
P2	Post	W6x25	54" (max)	ASTM A992	50 ksi
R1	Top Tubular Rail	HSS 8 x 4 x 5/16	varies	ASTM A500-B	46 ksi
R2	Lower Tubular Rail	HSS 6 x 4 x 1/4	varies	ASTM A500-B	46 ksi
PL1	Post Stiffener Plate	1/4" x 2-7/8"	5-1/2"	ASTM A709 GR 50	50 ksi
PL2	Post Support Plate	1" x 1'	14-3/8"	ASTM A709 GR 50	50 ksi
PL3	Front Tube Support Plate	3/4" x 1'	14-3/4"	ASTM A709 GR 50	50 ksi
PL4	Back Tube Support Plate	3/4" x 1'	13-5/8"	ASTM A709 GR 50	50 ksi
PL5	Post Support Plate	1" x 1'	12-3/8"	ASTM A709 GR 50	50 ksi
PL6	Front Tube Support Plate	3/4" x 1'	12-3/4"	ASTM A709 GR 50	50 ksi
PL7	Back Tube Support Plate	3/4" x 1'	12"	ASTM A709 GR 50	50 ksi
PS1	Tubular mount for W16X40 and larger fascia beams	HSS 14 x 6 x 1/4	15"	ASTM A500-B	46 ksi
PS2	Tubular mount for W14X30 and larger fascia beams	HSS 12 x 6 x 1/4	15"	ASTM A500-B	46 ksi
BSS1	W16X40 or larger bridge fascia beam	W16X40 (min)	varies	ASTM A709 GR 50	50 ksi
BSS2	Structural Tee for connecting BSS3 to BSS1	WT6X36 (min)	13-5/8"	ASTM A709 GR 50	50 ksi
BSS3	Diaphragm between fascia beam and 1'st interior stringer	C12X25 (min)	varies	ASTM A709 GR 50	50 ksi
BSS4	W14X30 and larger bridge fascia beam	W14X30 (min)	varies	ASTM A709 GR 50	50 ksi
BSS5	Structural tee for connecting BSS3 to BSS4	WT6X36 (min)	12"	ASTM A709 GR 50	50 ksi
TC-1	Upper tubular rail end cap	3/16" x 3-3/4"	7-3/4"	ASTM A709 GR 50	50 ksi
TC-2	Lower tubular rail end cap	3/16" x 3-3/4"	5-3/4"	ASTM A709 GR 50	50 ksi
TC-3	Bearing plate at transition connection	1/2" x 3"	3"	ASTM A709 GR 50	50 ksi
TC-4	Connection angle at transition connection	1/4" x L3 x 4	22-1/4"	ASTM A709 GR 50	50 ksi
TC-P1	Horizontal angled piece of connection plate (TC-5)	1/2" x 3-1/2"	24"	ASTM A709 GR 50	50 ksi
TC-P2	Vertical angled piece of connection plate (TC-5)	1/2" x 12"	4"	ASTM A709 GR 50	50 ksi
TC-P3	Vertical flat piece of connection plate (TC-5)	1/2" x 12"	22"	ASTM A709 GR 50	50 ksi

- All steel components shall be galvanized according to ODOT C&MS 711.02.
- All tubular steel materials shall be ASTM A500-B in accordance with ODOT C&MS 707.10.
- All bolts in slotted holes shall have an ASTM A-709 Grade 36 or 50 galvanised 5/16" thick plate washer with standard hole under both the nut and the bolt head.
- Galvanize all steel components according to ODOT C&MS 711.02.

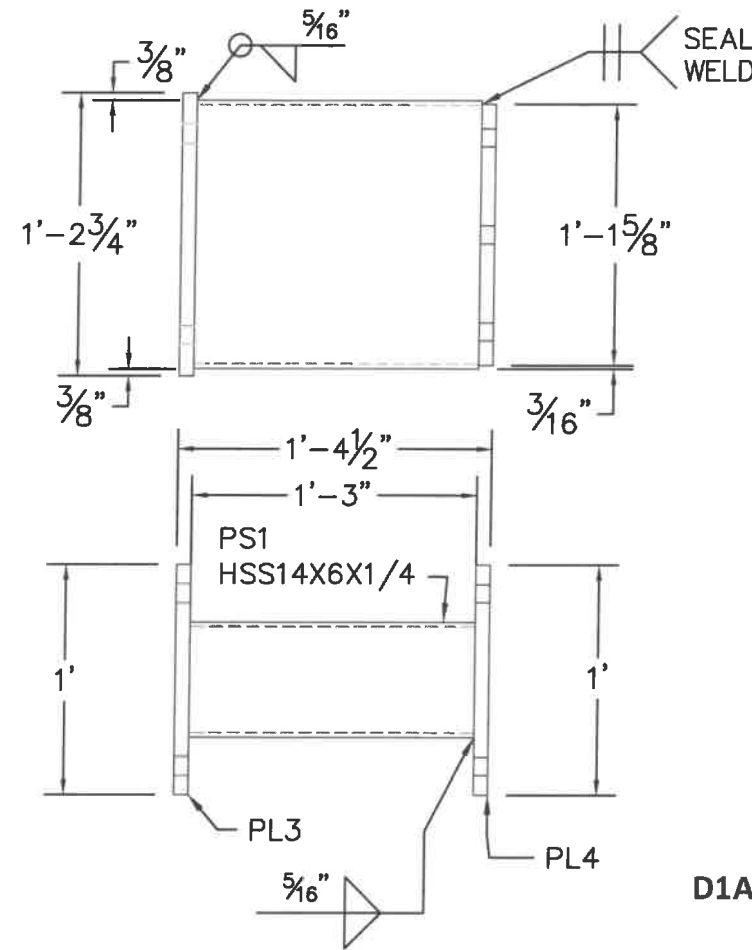
Notes

- Method of measurement
- Basis of payment
- Application (NCHRP Report 350 TL3)

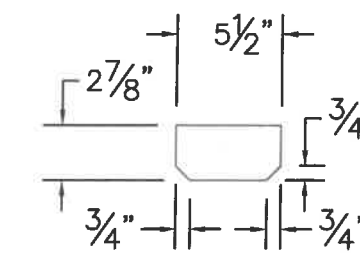




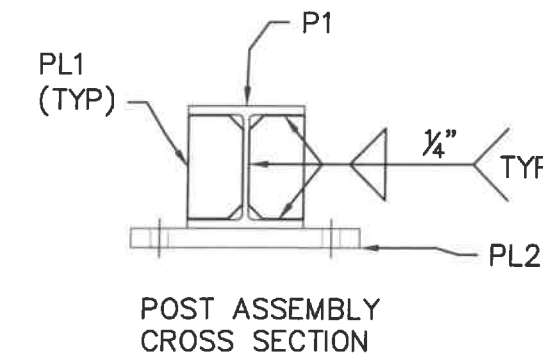
D1A (POST ASSEMBLY)



D1B
(POST SUPPORT ASSEMBLY)



PL1
(STIFFENER PLATE)
1/4"X2 7/8"X5 1/2"



POST ASSEMBLY
CROSS SECTION

D1A ASSEMBLY CHART

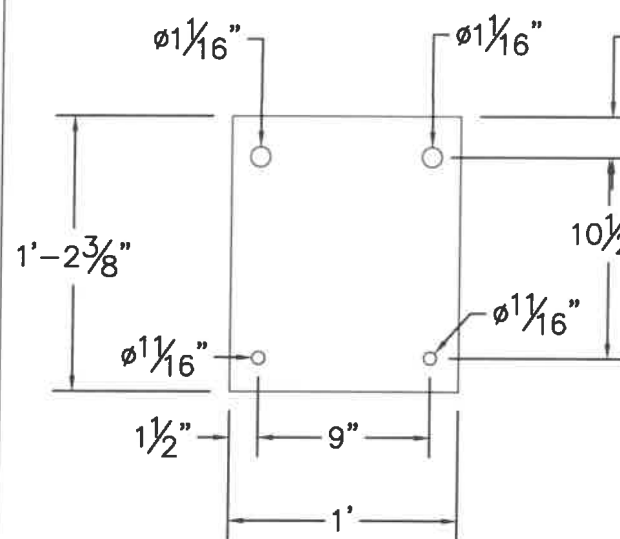
PART #	DESCRIPTION	QUANTITY
P1	POST	01
PL1	POST STIFFENER PLATE	04
PL2	POST SUPPORT PLATE	01
B1	TOP MOUNTING BOLTS FOR PL2 TO PL3	SEE BOLT CHART
B2	BOTTOM MOUNTING BOLTS FOR PL2 TO PL3	SEE BOLT CHART

D1B ASSEMBLY CHART

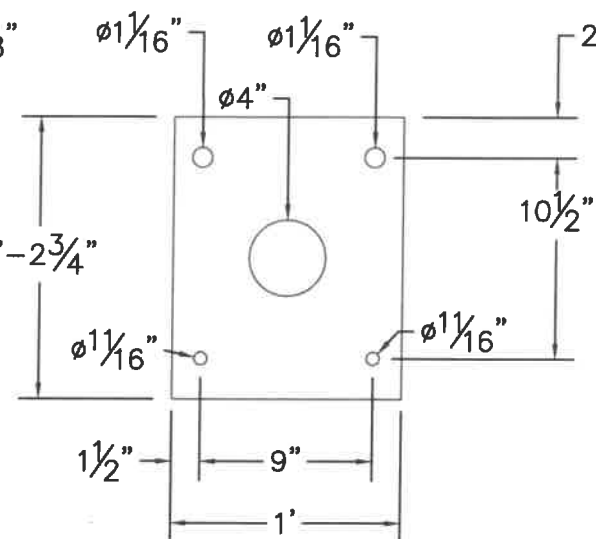
PART #	DESCRIPTION	QUANTITY
PS1	TUBULAR MOUNT	01
PL3	FRONT TUBE SUPPORT PLATE	01
PL4	BACK TUBE SUPPORT PLATE	01
B1	TOP MOUNTING BOLTS FOR PL2 TO PL3	SEE BOLT CHART
B2	BOTTOM MOUNTING BOLTS FOR PL2 TO PL3	SEE BOLT CHART
B3	MOUNTING BOLTS FOR PL4 TO FASCIA BEAM	SEE BOLT CHART

NOTES:

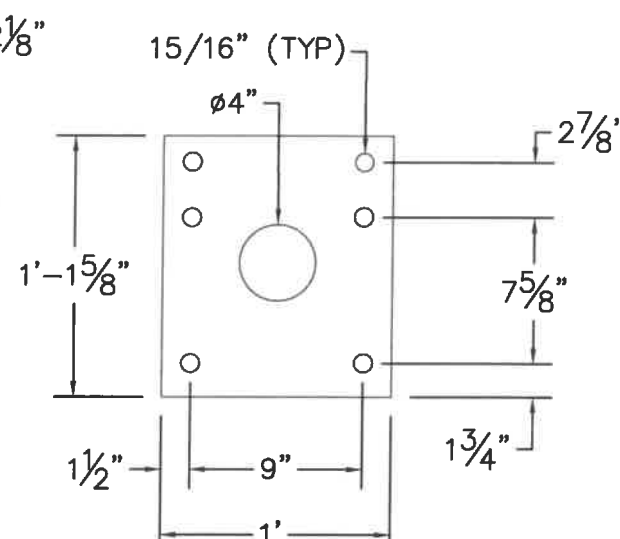
- THE 4" HOLE IN CENTER OF POST SUPPORT PLATES FOR VENTING PURPOSES DURING GALVANIZING.
- ALL WELDS SHALL BEGIN AND END 1/4" ± 1/8" FROM JOINT ENDS.



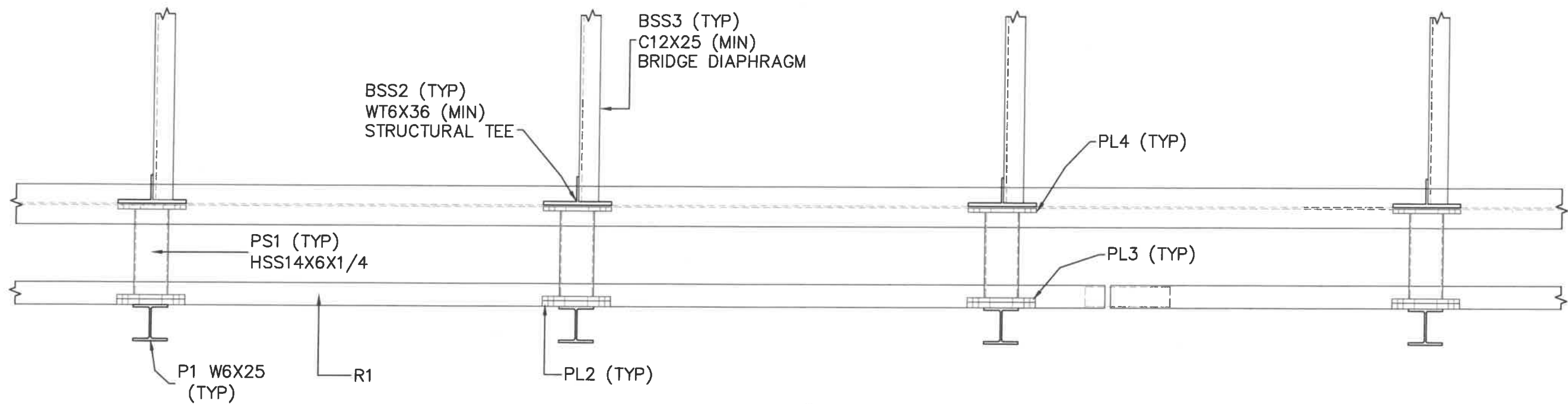
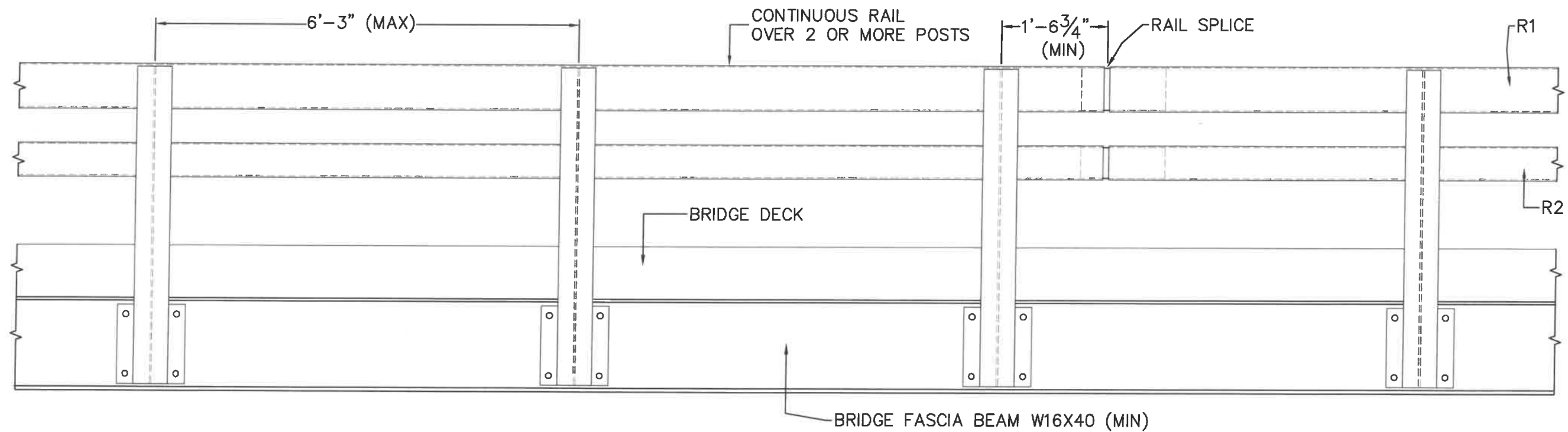
PL2 (POST SUPPORT PLATE 1)
1" THICK X 14-3/8"X12"



PL3 (FRONT TUBE SUPPORT PLATE 2)
3/4" THICK X 14-3/4"X12"

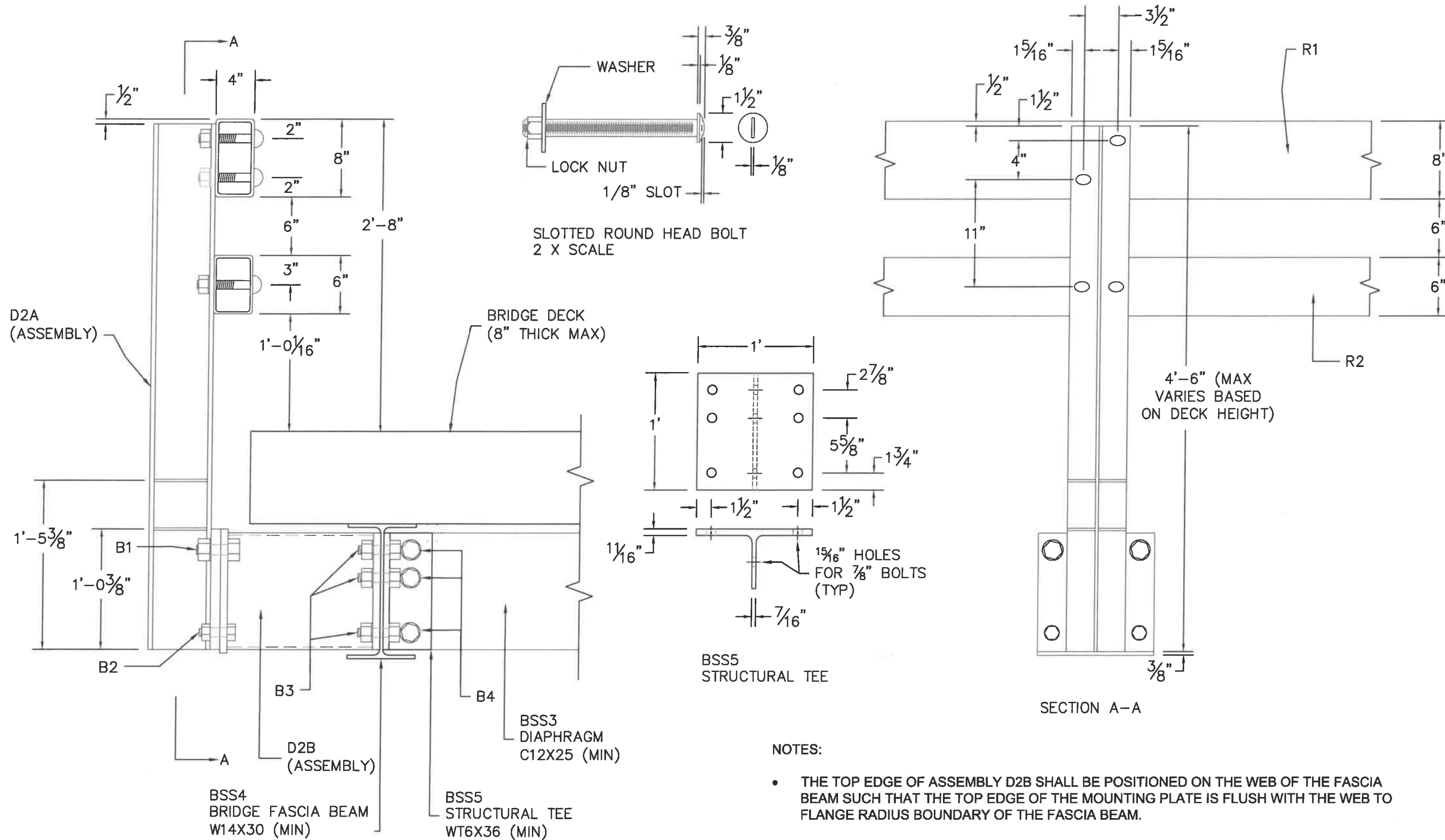


PL4 (BACK TUBE SUPPORT PLATE 3)
3/4" THICK X 13-5/8"X12"

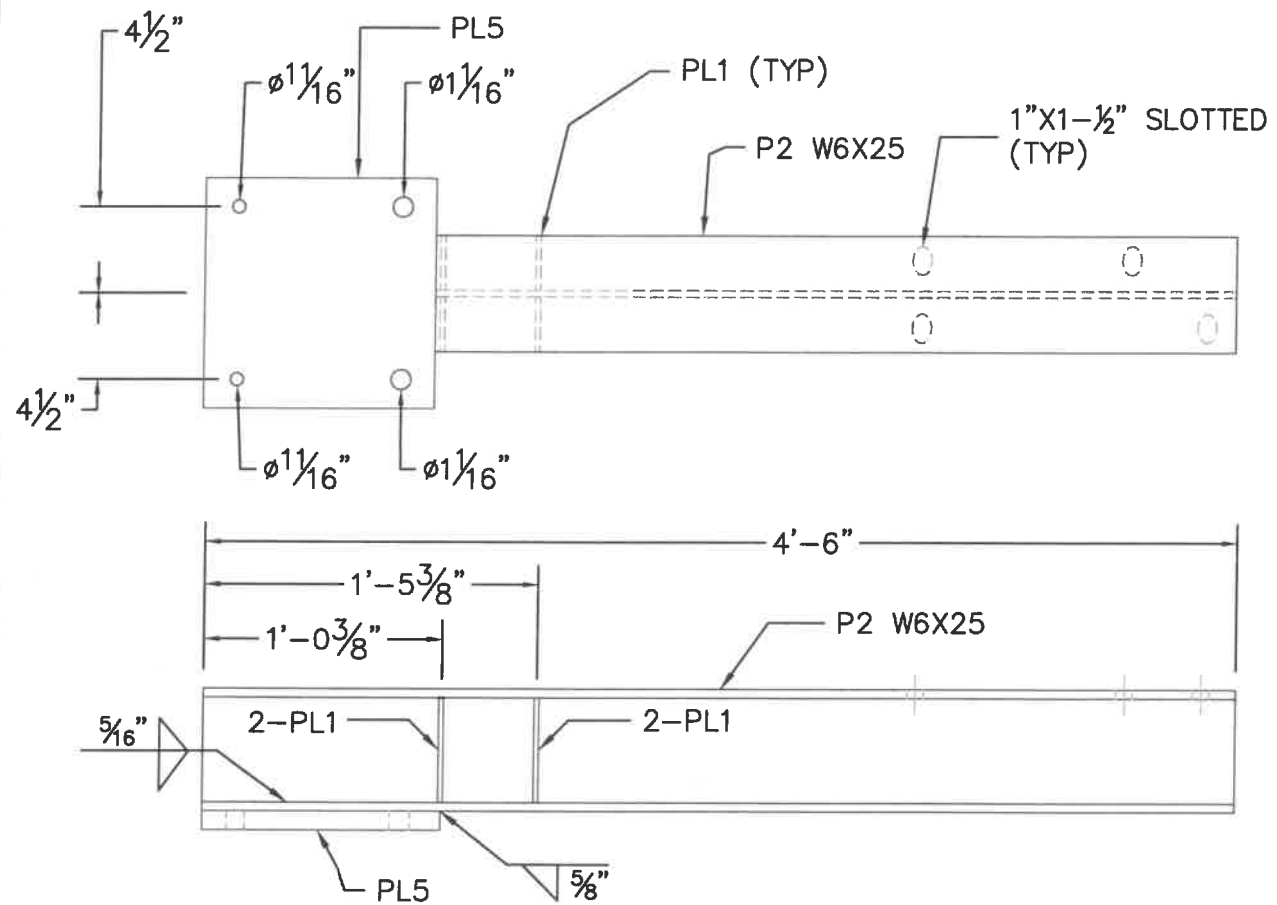


NOTES:

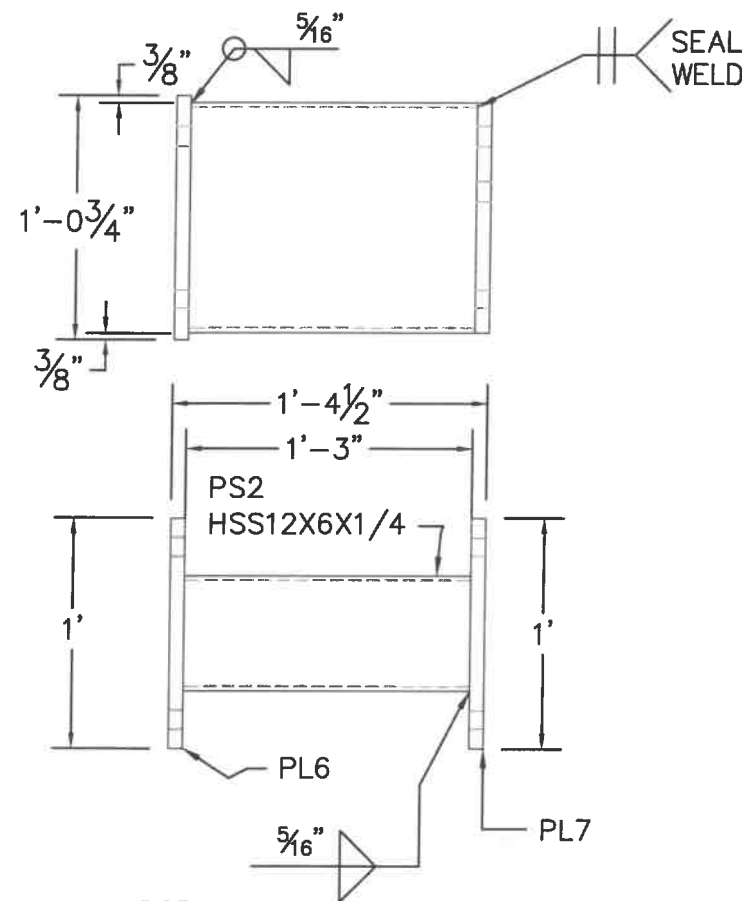
- BRIDGE DIAPHRAGM AND STRUCTURAL TEE ELEMENTS SHALL BE INSTALLED AT EACH POST-MOUNT LOCATION.
- THE BRIDGE COMPONENT SPECIFICATIONS DETAILED HERE CORRESPOND ONLY TO THE BRIDGE FASCIA BEAM AND THE STRUCTURAL COMPONENTS LOCATED BETWEEN THE FASCIA BEAM AND THE FIRST INTERIOR STRINGER BEAM.
- 1/2" DRAIN HOLE AT LOWEST POINT OF TUBE RAIL WHEN SAG VERTICAL CURVES OCCUR. SPECIFY THIS LOCATION IN PROJECT PLANS.



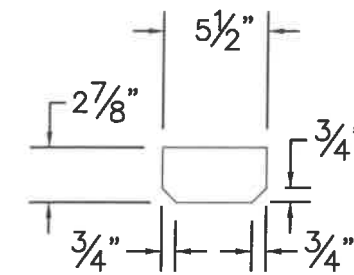
- NOTES:**
- THE TOP EDGE OF ASSEMBLY D2B SHALL BE POSITIONED ON THE WEB OF THE FASCIA BEAM SUCH THAT THE TOP EDGE OF THE MOUNTING PLATE IS FLUSH WITH THE WEB TO FLANGE RADIUS BOUNDARY OF THE FASCIA BEAM.
 - THE TOP EDGE OF THE STRUCTURAL TEE BSS2 SHALL BE POSITIONED ON THE WEB OF THE FASCIA BEAM, OPPOSITE D2B AND SUCH THAT THE TOP EDGE OF THE MOUNTING PLATE IS FLUSH WITH THE WEB TO FLANGE RADIUS BOUNDARY OF THE FASCIA BEAM.



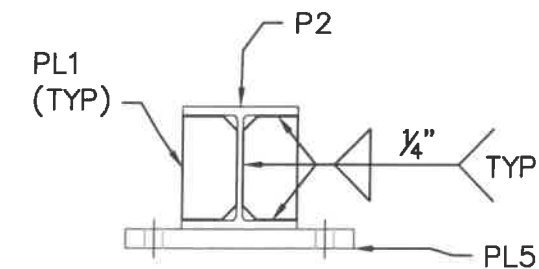
D2A (POST ASSEMBLY)



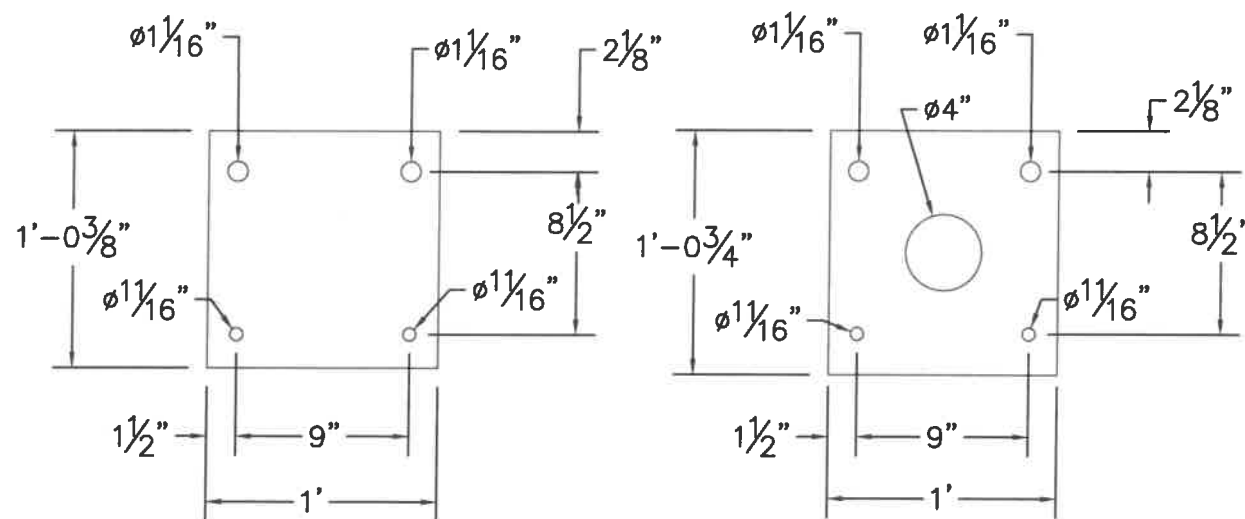
D2B (POST SUPPORT ASSEMBLY)



PL1 (STIFFENER PLATE)
1/4" X 2 7/8" X 5 1/2"



POST ASSEMBLY
CROSS SECTION



PL5 (POST SUPPORT PLATE 1)
1" THICK X 12-3/8" X 12"

PL6 (FRONT TUBE SUPPORT PLATE 2)
3/4" THICK X 12-3/4" X 12"

PL7 (BACK TUBE SUPPORT PLATE 3)
3/4" THICK X 12" X 12"

D2A ASSEMBLY CHART

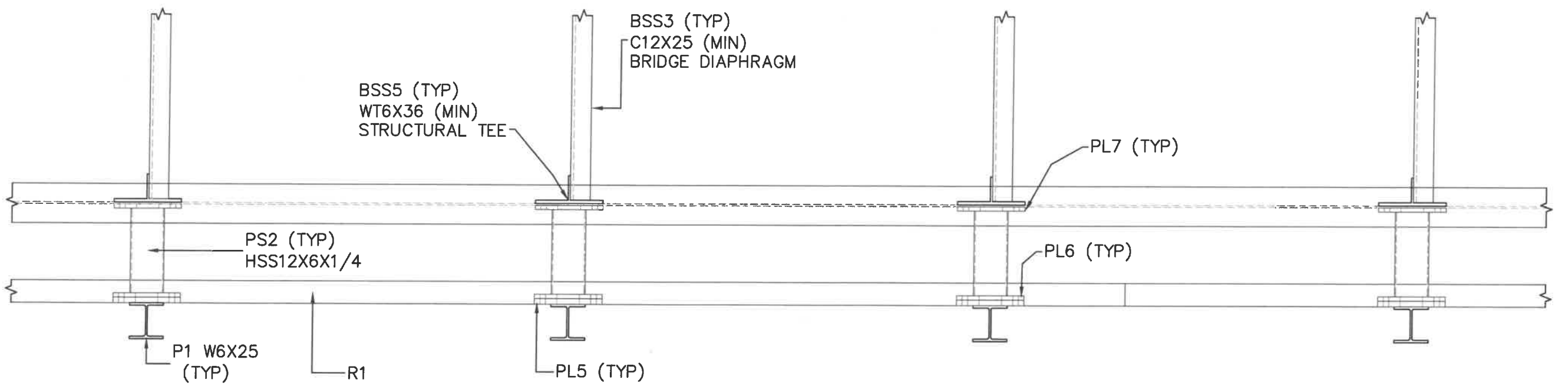
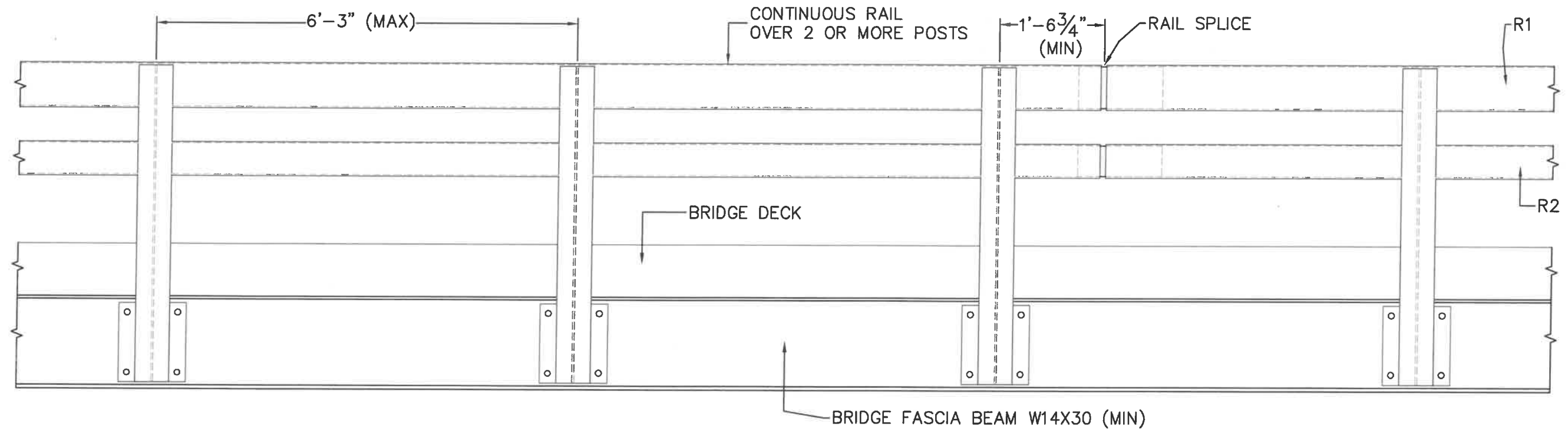
PART #	DESCRIPTION	QUANTITY
P1	POST	01
PL1	POST STIFFENER PLATE	04
PL5	POST SUPPORT PLATE	01
B1	TOP MOUNTING BOLTS FOR PL5 TO PL6	SEE BOLT CHART
B2	BOTTOM MOUNTING BOLTS FOR PL5 TO PL6	SEE BOLT CHART

D2B ASSEMBLY CHART

PART #	DESCRIPTION	QUANTITY
PS2	TUBULAR MOUNT	01
PL6	FRONT TUBE SUPPORT PLATE	01
PL7	BACK TUBE SUPPORT PLATE	01
B1	TOP MOUNTING BOLTS FOR PL5 TO PL6	SEE BOLT CHART
B2	BOTTOM MOUNTING BOLTS FOR PL5 TO PL6	SEE BOLT CHART
B3	MOUNTING BOLTS FOR PL7 TO FASCIA BEAM	SEE BOLT CHART

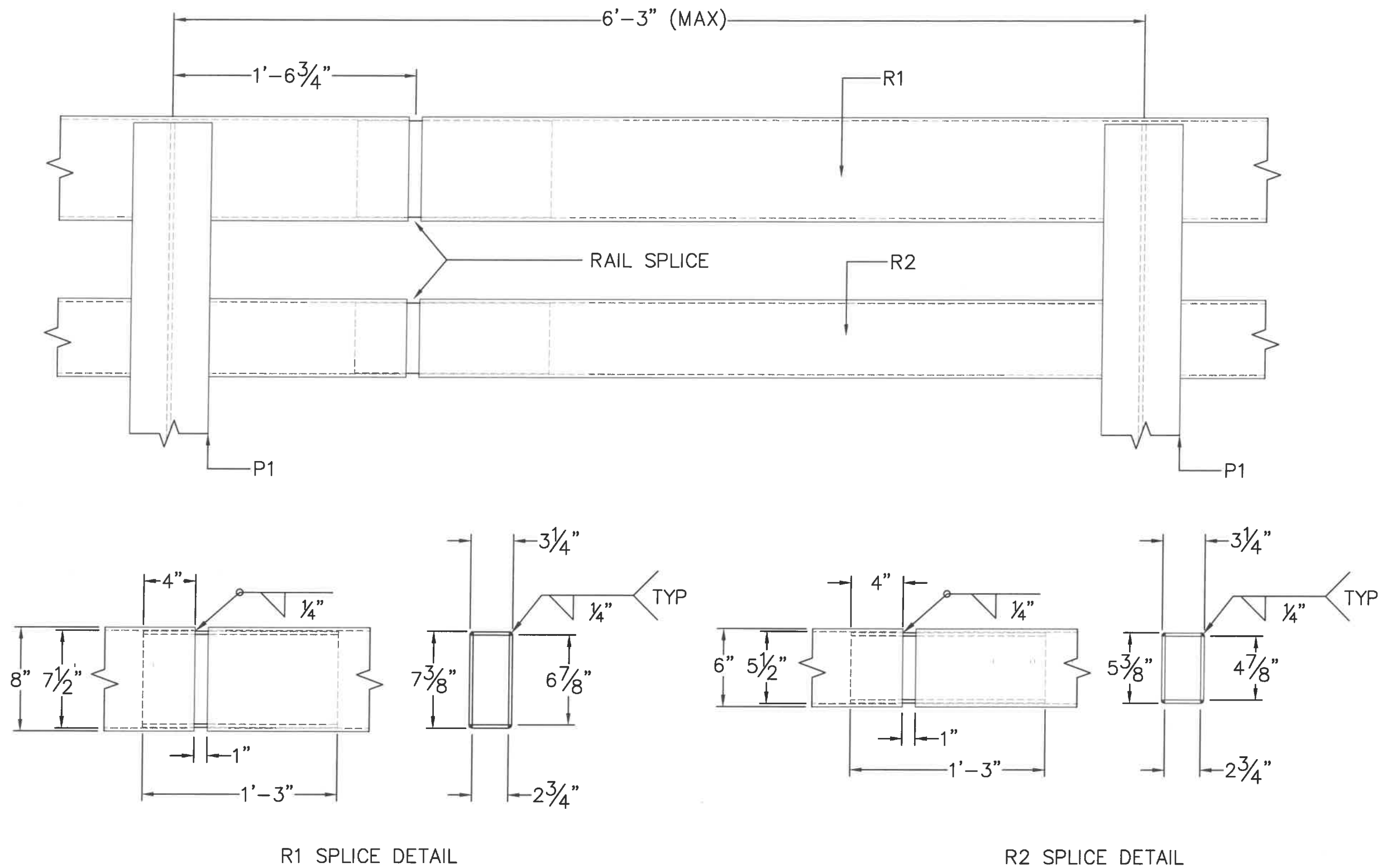
NOTES:

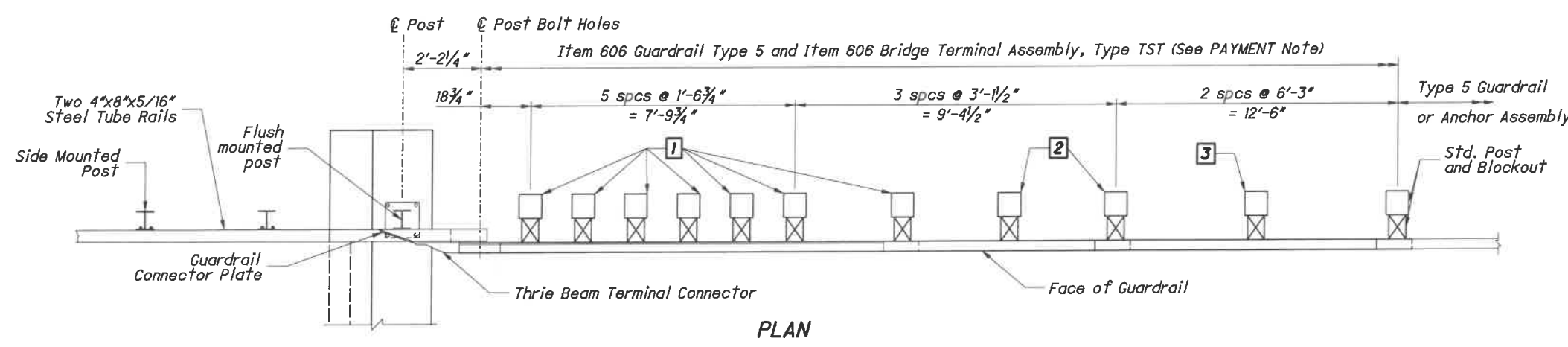
- THE 4" HOLE IN CENTER OF POST SUPPORT PLATES IS FOR VENTING PURPOSES DURING GALVANIZING
- ALL WELDS SHALL BEGIN AND END 1/4" ± 1/8" FROM JOINT ENDS.



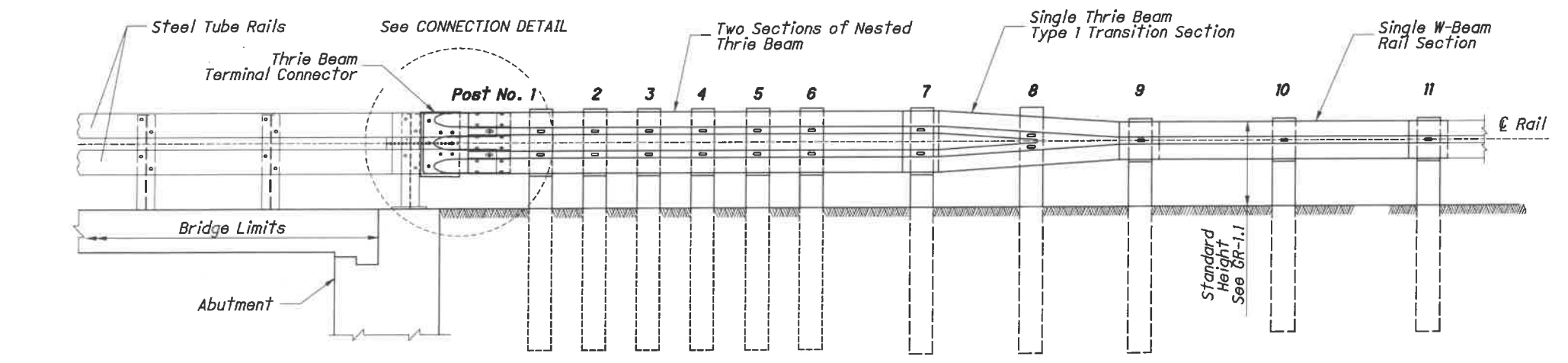
NOTES:

- BRIDGE DIAPHRAGM AND STRUCTURAL TEE ELEMENTS SHALL BE INSTALLED AT EACH POST-MOUNT LOCATION.
- THE BRIDGE COMPONENT SPECIFICATIONS DETAILED HERE CORRESPOND ONLY TO THE BRIDGE FASCIA BEAM AND THE STRUCTURAL COMPONENTS LOCATED BETWEEN THE FASCIA BEAM AND THE FIRST INTERIOR STRINGER BEAM.
- 1/2" DRAIN HOLE AT LOWEST POINT OF TUBE RAIL WHEN SAG VERTICAL CURVES OCCUR. SPECIFY THIS LOCATION IN PROJECT PLANS.

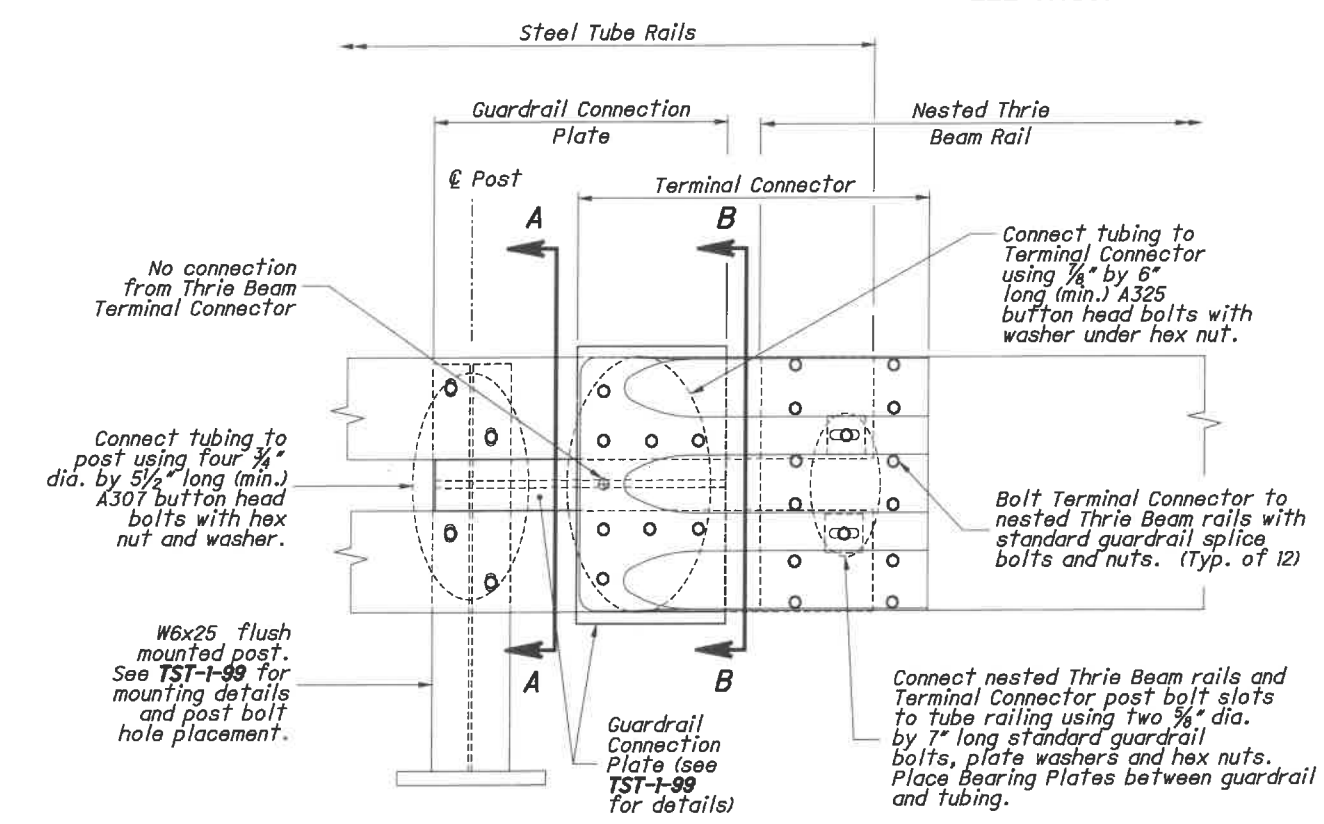




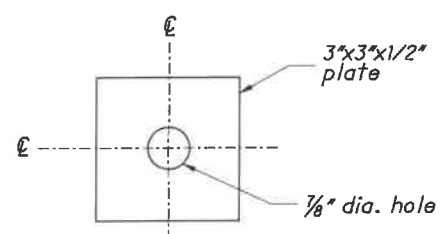
PLAN



ELEVATION

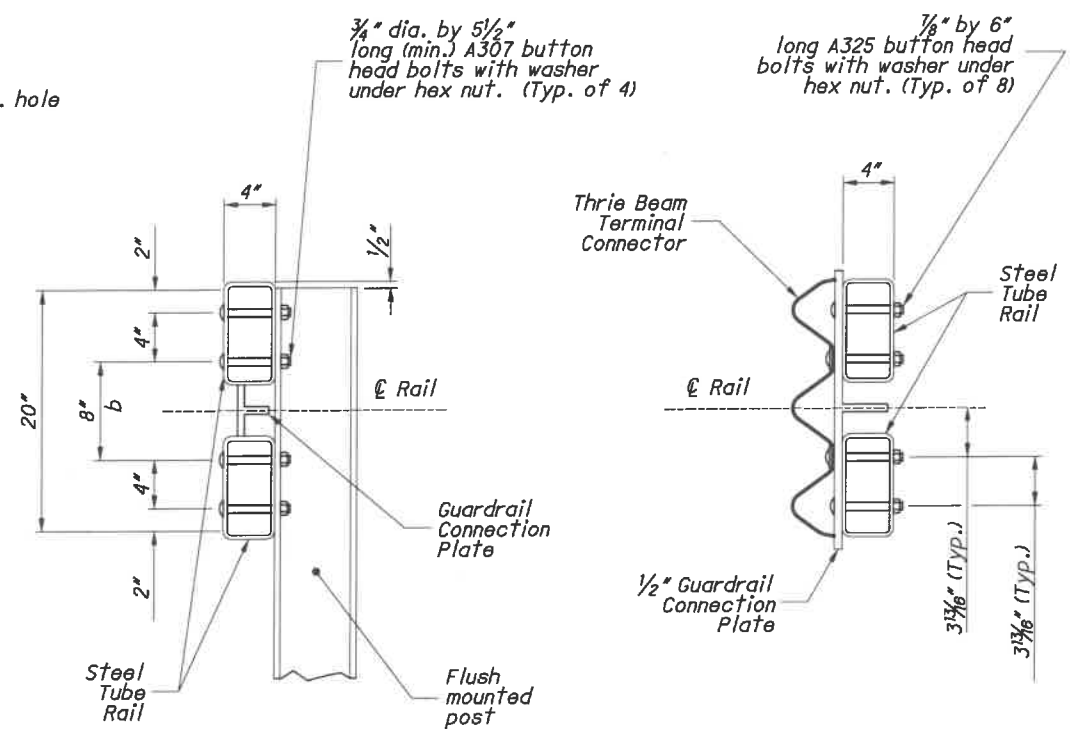


CONNECTION DETAILS



AASHTO/AGC/ARTBA
Standardized Hardware
Guide part FWRO9

BEARING PLATE



SECTION A-A
Section through Tubing at Post

SECTION B-B
Section through Tubing
at Terminal Connector

NOTES

GENERAL: For additional guardrail details, including Thrie Beam Terminal Connector, see SCD's GR-1.1.

APPLICATION: The Type TST Bridge Terminal Assembly shall be used to connect guardrail runs to both the approach and trailing ends of twin steel tube bridge railings.

See **Structural Engineering's SCD TST-1-99** for Flush Mounted post and Guardrail Connection Plate and tubing details, (including tubing bolt hole placement).

POSTS: Posts may be set in drilled holes or driven to grade.

WOOD POSTS shall be square, sawed pressure treated wood per CMS 710.14 and fabricated with square ends. Bolt holes shall be bored and taps of posts trimmed, if required, after posts are set.

STEEL POSTS: W6x9 (or W6x8.5) posts may be substituted for 6x8 wood posts. Notched wood blockouts, as shown on SCD GR-2.1 (except 22" long for posts 1 thru 7), are to be used with steel posts. Plastic blockouts are not permitted.

PAYMENT: Item 606 - Bridge Terminal Assembly, Type TST, Each, shall include the extra cost, in excess of normal guardrail costs, for additional and different type posts and blockouts, nested Thrie Beam sections, Transition sections, Terminal Connector, bearing plates, bolts, nuts, washers and other hardware.

LEGEND

- 1 Posts 1 thru 7:
6"x8"x6'-6" Wood Posts with
6"x8"x22" Wood Blockouts
- 2 Posts 8 & 9:
6"x8"x6'-6" Wood Posts with
6"x8"x14" Wood Blockouts
- 3 Post 10:
6"x8"x6'-0" Wood Post with
6"x8"x14" Wood Blockout