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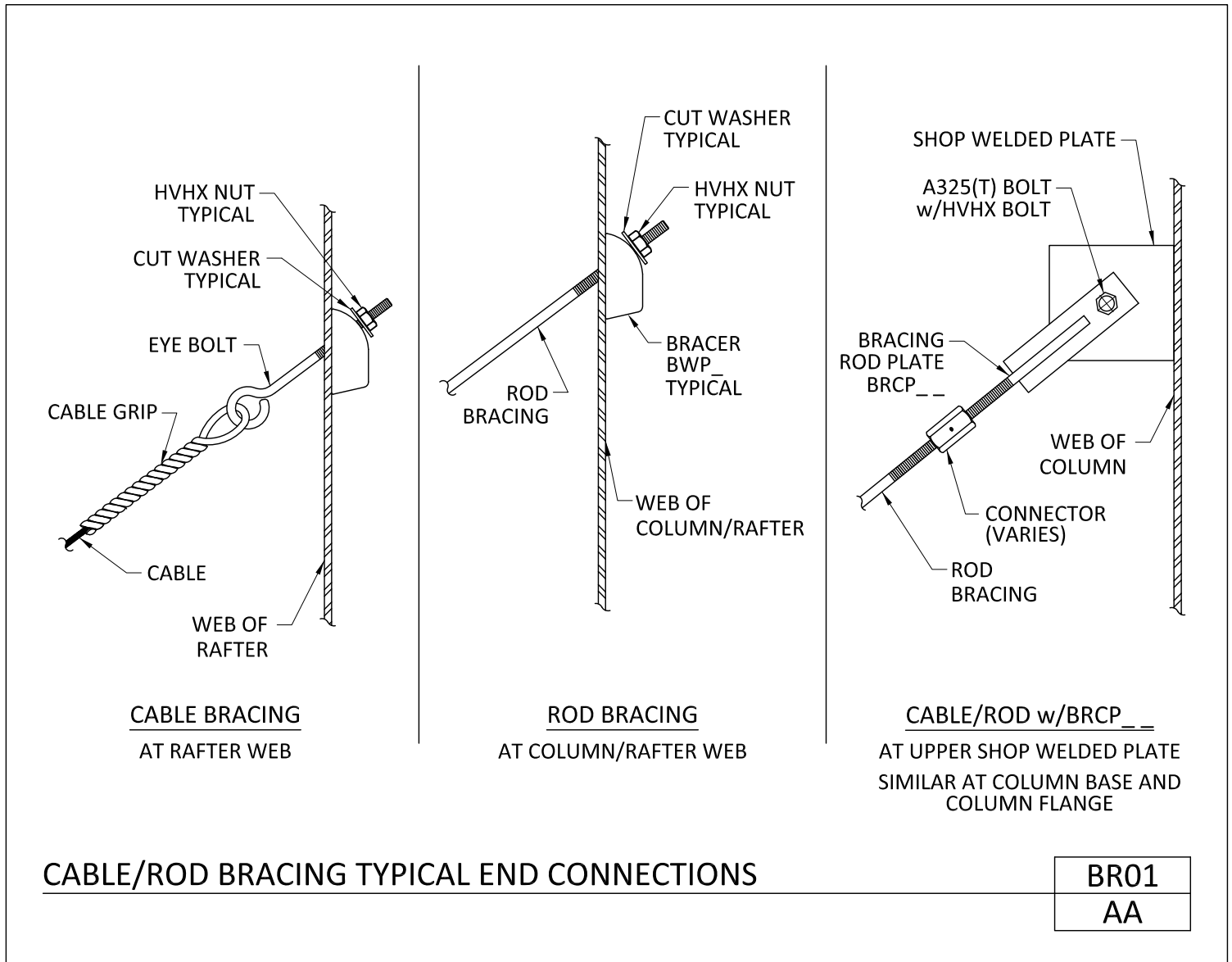
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[RF05/AA, Ridge Bridging Clip Connection Detail](#)

Cable/Rod Bracing Typical End Connections

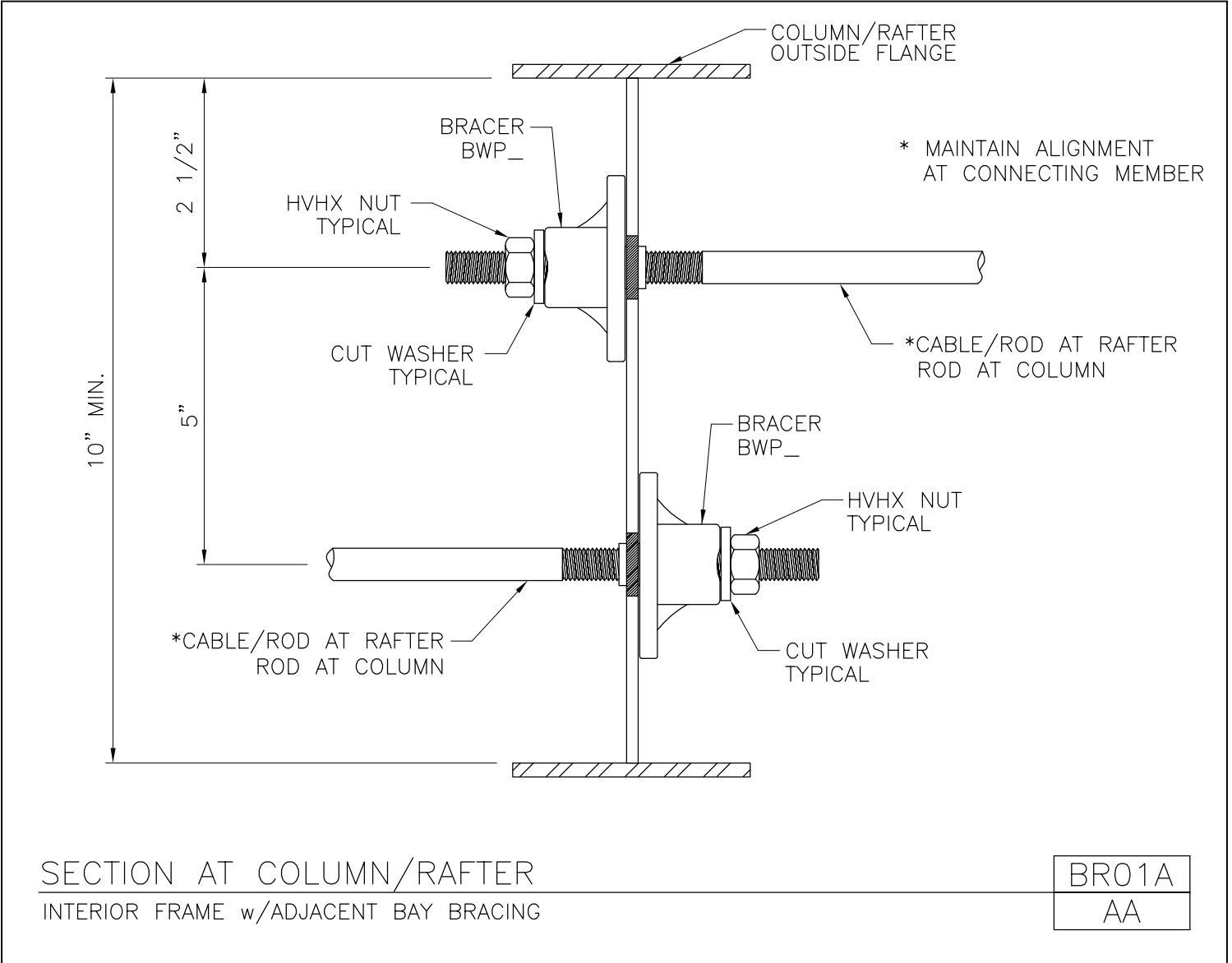
BR01/AA



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Section at Column/Rafter
Interior Frame w/ Adjacent Bay Bracing
BR01A/AA

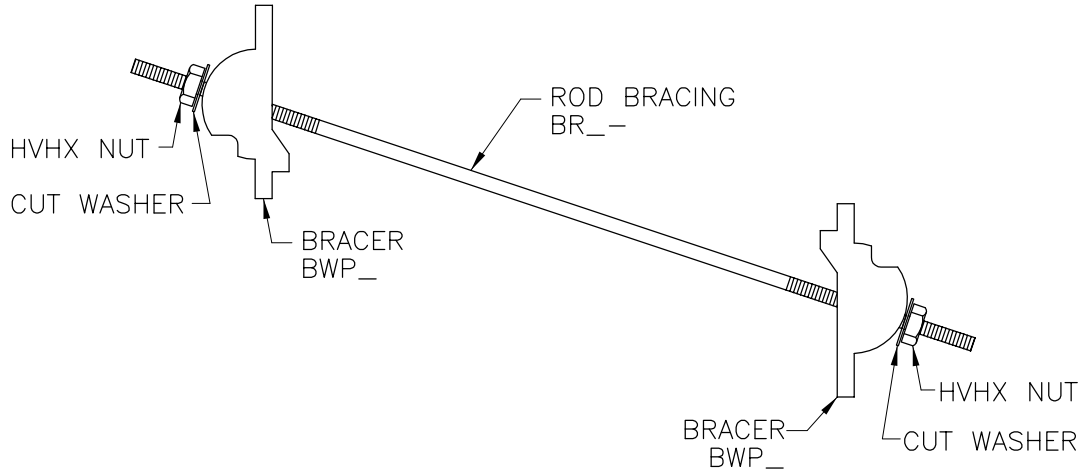


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Rod Bracing Assembly

BR01W/AA



ROD ϕ	REQUIRED FOR ROD ASSEMBLY			
	ROD BRACING	BRACER	CUT WASHER	HVHX NUT
5/8"	BR5-	BWP1	5/8 CUT WASHER	5/8 HVHX NUT
3/4"	BR6-	BWP2	3/4 CUT WASHER	3/4 HVHX NUT
7/8"	BR7-	BWP2	7/8 CUT WASHER	7/8 HVHX NUT
1"	BR8-	BWP3	1 CUT WASHER	1 HVHX NUT
1 1/8"	BR9-	BWP3	1 1/8 CUT WASHER	1 1/8 HVHX NUT
1 1/4"	BR10-	BWP3	1 1/4 CUT WASHER	1 1/4 HVHX NUT
1 3/8"	BR11-	BWP4	1 3/8 CUT WASHER	1 3/8 HVHX NUT
1 1/2"	BR12-	BWP4	1 1/2 CUT WASHER	1 1/2 HVHX NUT

ROD BRACING ASSEMBLY

BR01W
AA

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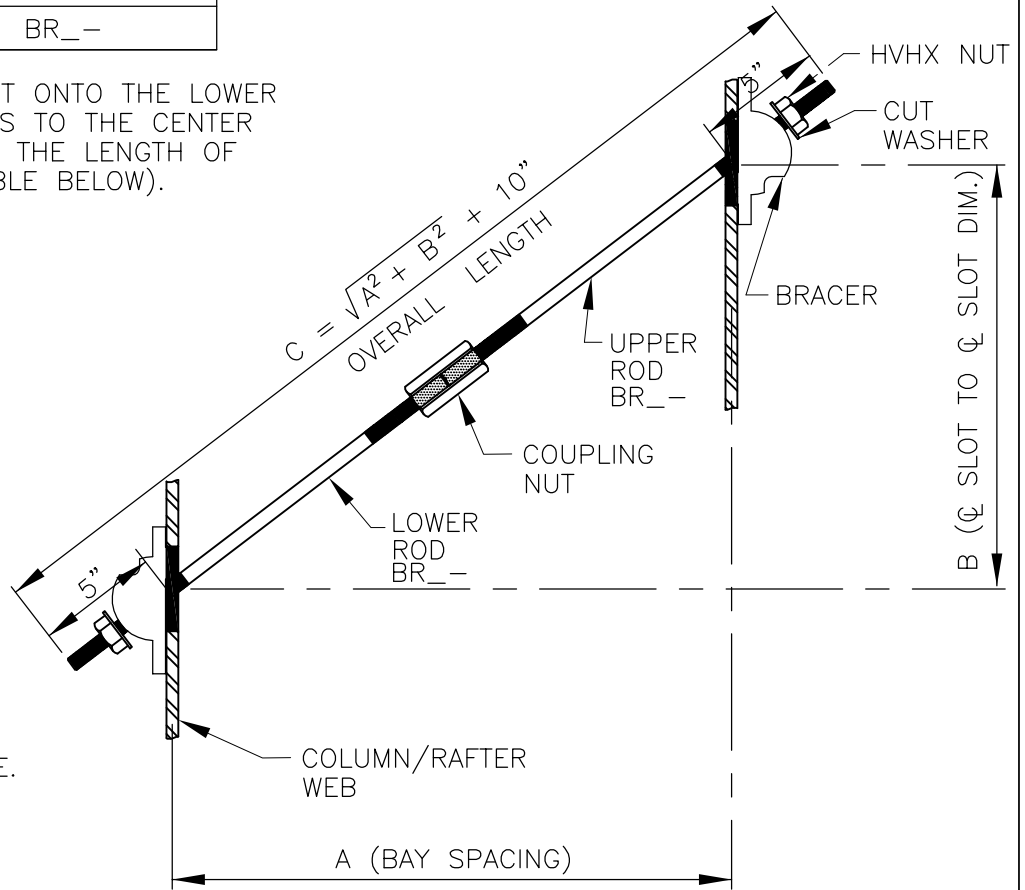
40' or Greater Rod Assembly Detail w/ Coupling Nut
 Web to Web Rod Assembly
 BR02/AA

ROD ASSEMBLY	
UPPER ROD	BR_ _
LOWER ROD	BR_ _

- ASSEMBLE THE COUPLING NUT ONTO THE LOWER ROD UNTIL THE ROD EXTENDS TO THE CENTER OF THE COUPLING NUT (1/2 THE LENGTH OF THE COUPLING NUT, PER TABLE BELOW).

ROD DIAMETER	COUPLING NUT
5/8" (BR5)	CPN5
3/4" (BR6)	CPN6
7/8" (BR7)	CPN7
1" (BR8)	CPN8
1 1/8" (BR9)	CPN9
1 1/4" (BR10)	CPN10
1 3/8" (BR11)	CPN11
1 1/2" (BR12)	CPN12

- ATTACH THE UPPER ROD TO THE LOWER ROD ASSEMBLY, UNTIL THE ROD IS FULLY SEATED IN THE REMAINING 1/2 OF THE COUPLING NUT. REFER TO DIMENSIONS ABOVE.
- INSTALL THE ROD ASSEMBLY AT COLUMN/RAFTER WEB.



40' OR GREATER ROD ASSEMBLY DETAIL W/COUPLING NUT
 WEB TO WEB ROD ASSEMBLY

BR02
AA

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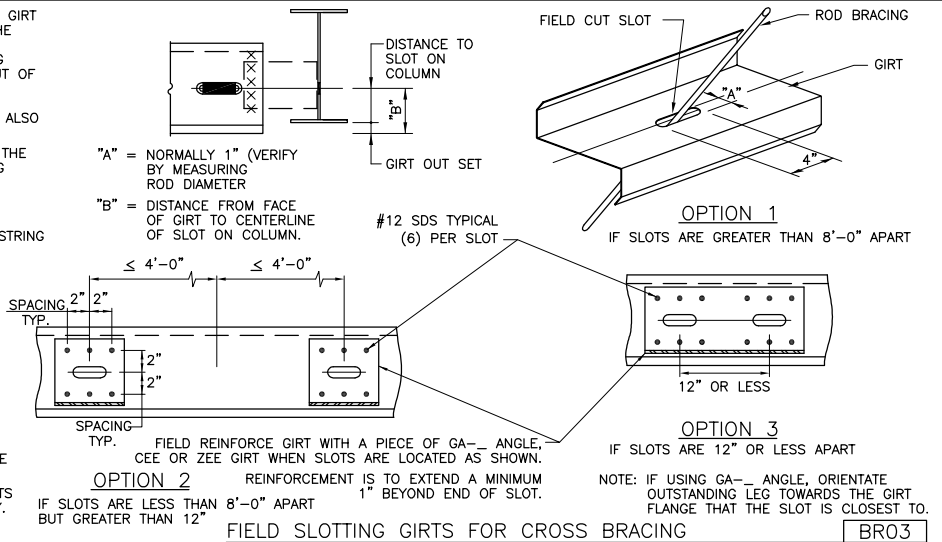
Field Slotting Girts For Cross Bracing

BR03/AA

ON BUILDINGS WITH INSET OR FLUSH GIRTS, THE HORIZONTAL WEB OF THE GIRT OR GIRTS IN A BRACED BAY, WILL HAVE TO BE SLOTTED IN ORDER FOR THE ROD BRACE TO PULL IN A STRAIGHT LINE FROM THE TOP OF ONE COLUMN TO THE BOTTOM OF THE NEXT COLUMN. INSTALLING THE BRACING EITHER TO THE INSIDE OR OUTSIDE OF THE GIRTS, TAKES THE BRACING OUT OF A STRAIGHT LINE PULL. THIS DOES NOT ALLOW THE BRACING TO FUNCTION PROPERLY AND IS AN UNACCEPTABLE ERECTION PROCEDURE. MOVING THE HOLES IN OR OUT ON THE COLUMN TO ACHIEVE A STRAIGHT LINE PULL IS ALSO UNACCEPTABLE.

SLOTTING THE WEB OF THE GIRT TO ACHIEVE THIS STRAIGHT LINE PULL IS THE ONLY ACCEPTABLE METHOD. TO MARK THE HOLE LOCATION THE FOLLOWING METHOD MAY BE USED.

1. INSTALL A NYLON STRING IN THE PROPER HOLES AT THE TOP OF ONE COLUMN TO THE BOTTOM OF THE NEXT COLUMN, RUNNING THE NYLON STRING TO THE INSIDE OR OUTSIDE OF THE GIRTS.
2. TIGHTEN THE NYLON STRING LINE SO THERE IS NO SLACK.
3. WHERE THE NYLON STRING LINE CROSSES THE WEB OF THE GIRTS, MARK TWO INCHES ON EITHER SIDE OF THIS POINT.
4. USING A SQUARE, MAKE TWO PARALLEL LINES FROM THESE TWO MARKS ON THE WEB OF THE GIRTS.
5. AT THE COLUMN, DETERMINE THE MEASUREMENT FROM OUTSIDE GIRT LINE TO CENTERLINE OF ROD BRACE HOLE. UTILIZE THIS MEASUREMENT AS THE CENTERLINE OF A 1" X 4" SLOT TO BE MADE BETWEEN THE TWO PARALLEL LINES MARKED ON THE WEB OF THE GIRTS.
6. AFTER ALL GIRTS HAVE BEEN MARKED AND SLOTTED, INSTALL CABLE OR ROD BRACING THROUGH THE SLOTS, THROUGH THE BRACE HOLES IN THE COLUMNS, AND TIGHTEN.
7. VISUALLY CHECK TO SEE THAT THE BRACING IS NOT TOUCHING THE GIRTS AT THE SLOTS. IF IT IS TOUCHING, TRIM OUT THE SLOT AS NECESSARY.
8. TIGHTEN BRACING AS NECESSARY TO PLUMB COLUMNS.

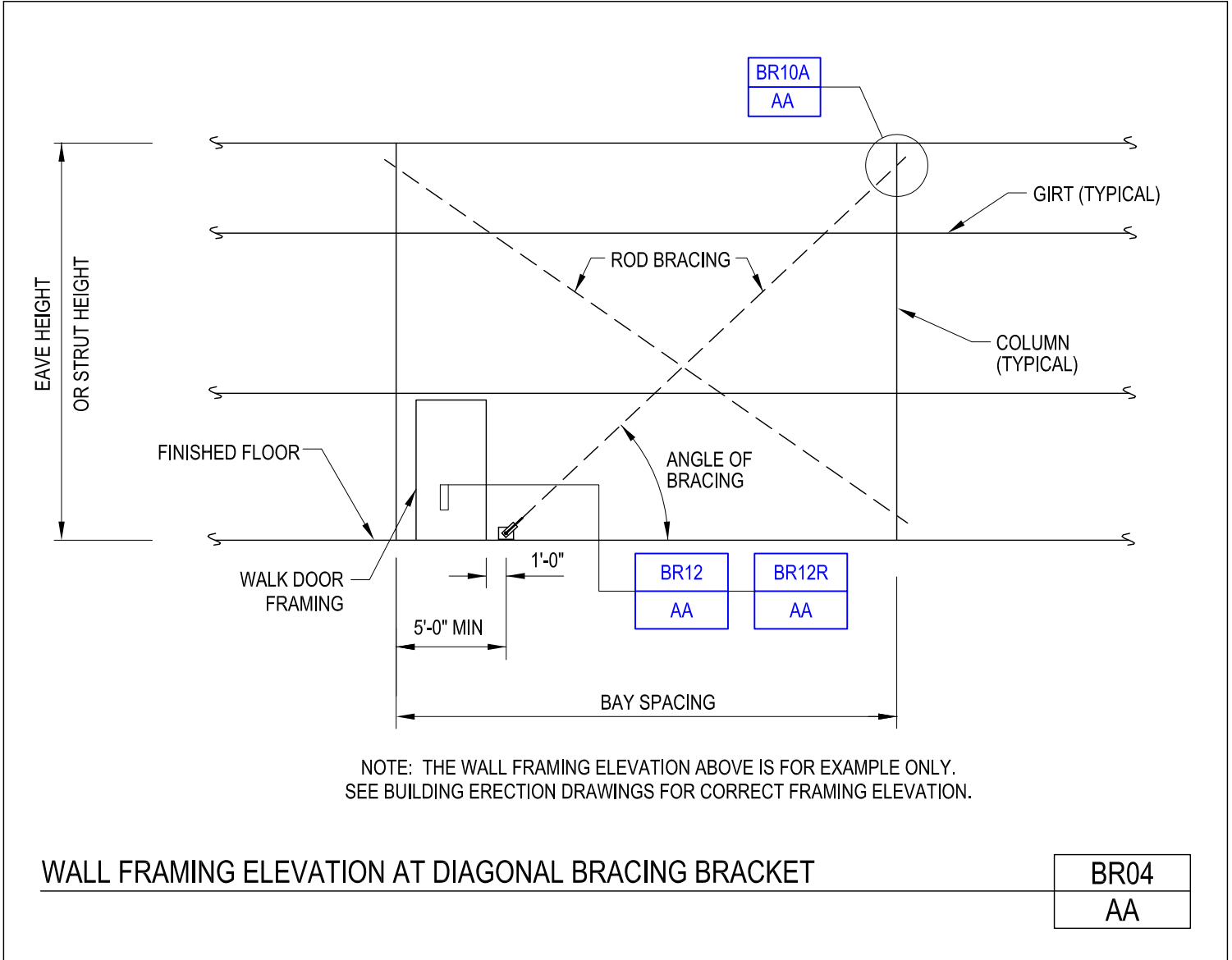


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Wall Framing Elevation at Diagonal Bracing Bracket

BR04/AA

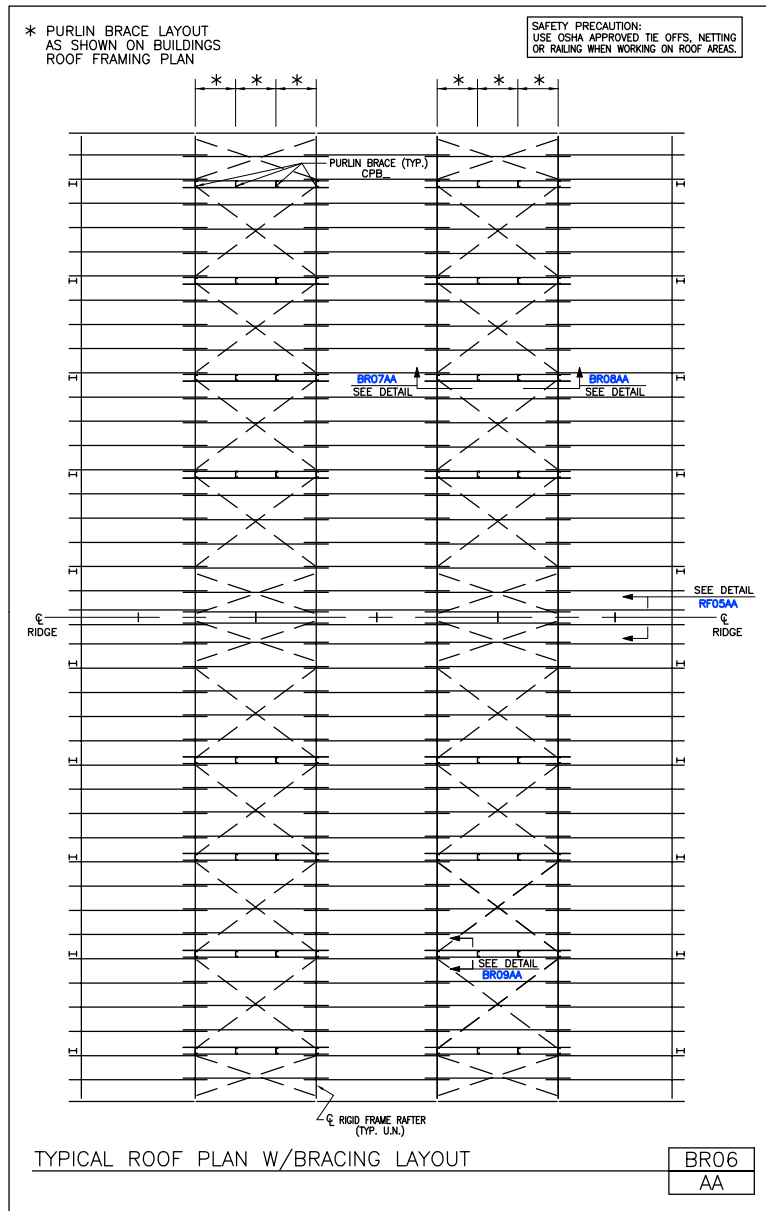


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Typical Roof Plan w/ Bracing Layout

BR06/AA



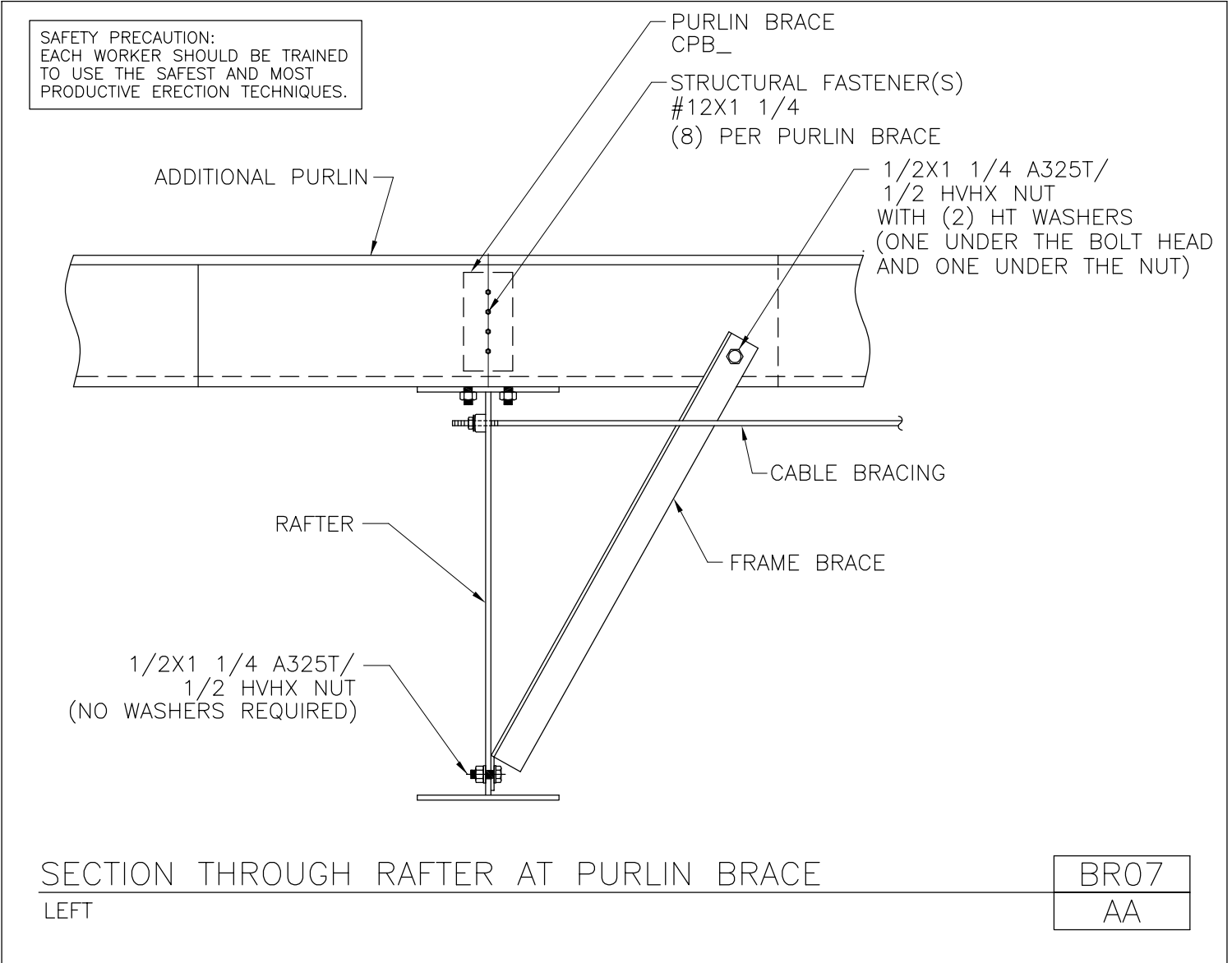
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Section Through Rafter at Purlin Brace

Left

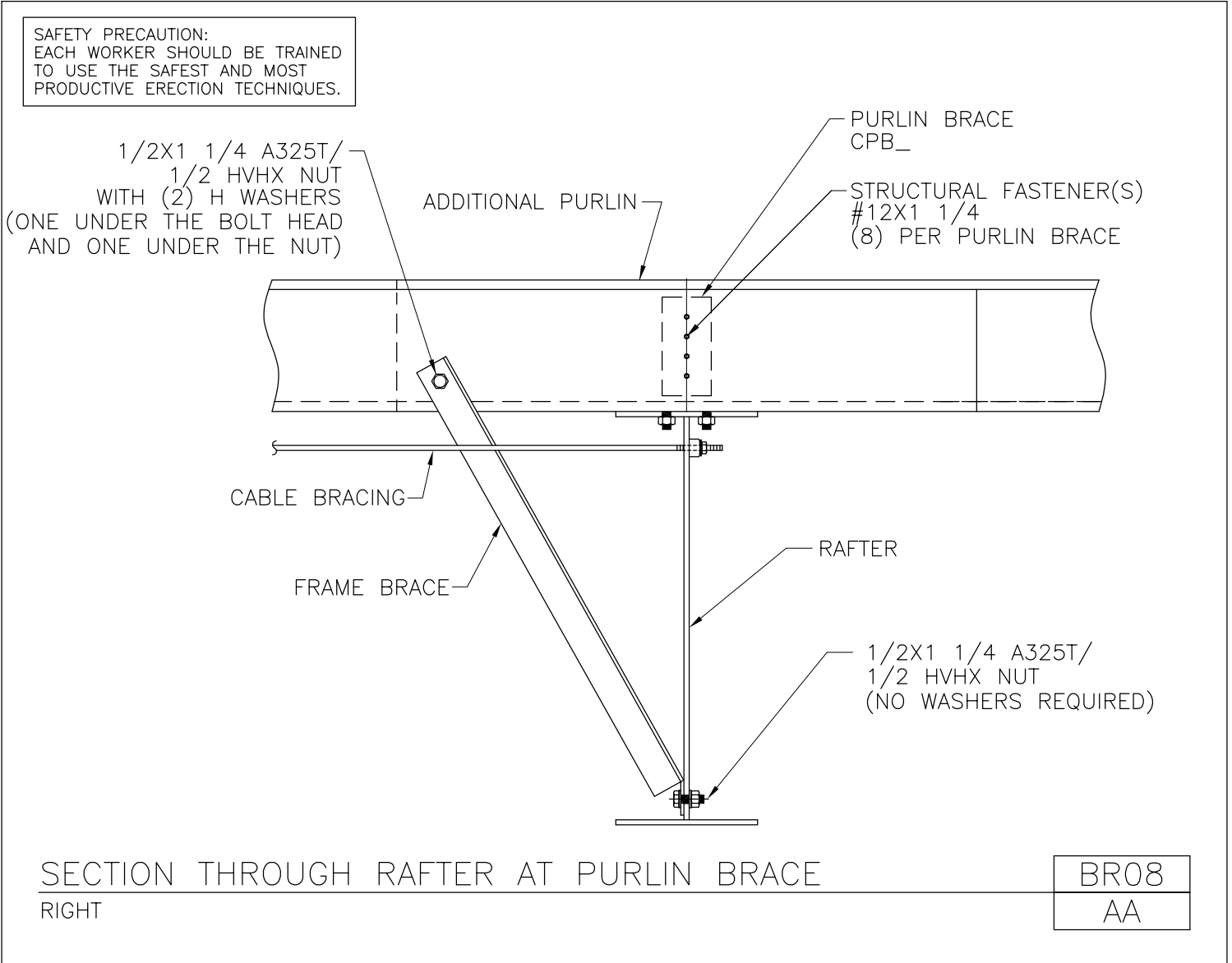
BR07/AA



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Section Through Rafter at Purlin Brace
Right
BR08/AA

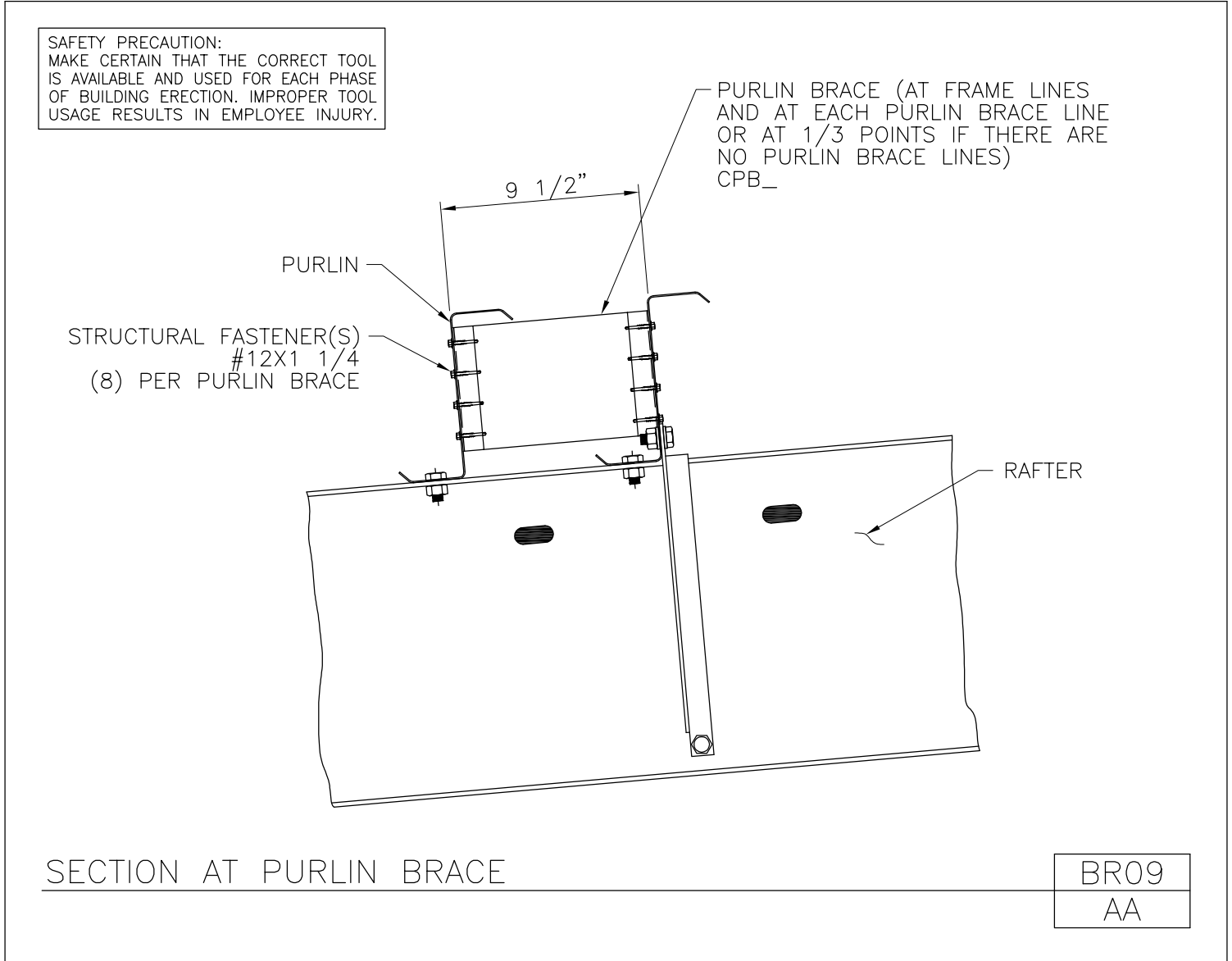


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Section at Purlin Brace

BR09/AA

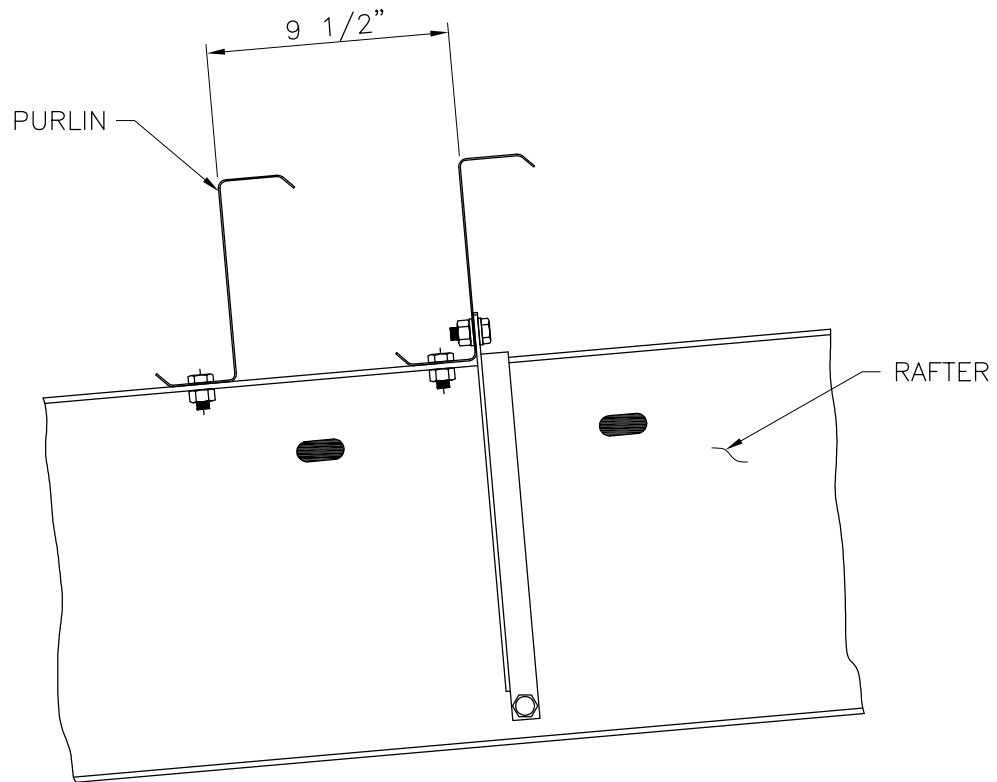


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Section at Purlin Brace
Through-Fastened Roofs
BR09/BA

SAFETY PRECAUTION:
MAKE CERTAIN THAT THE CORRECT TOOL
IS AVAILABLE AND USED FOR EACH PHASE
OF BUILDING ERECTION. IMPROPER TOOL
USAGE RESULTS IN EMPLOYEE INJURY.



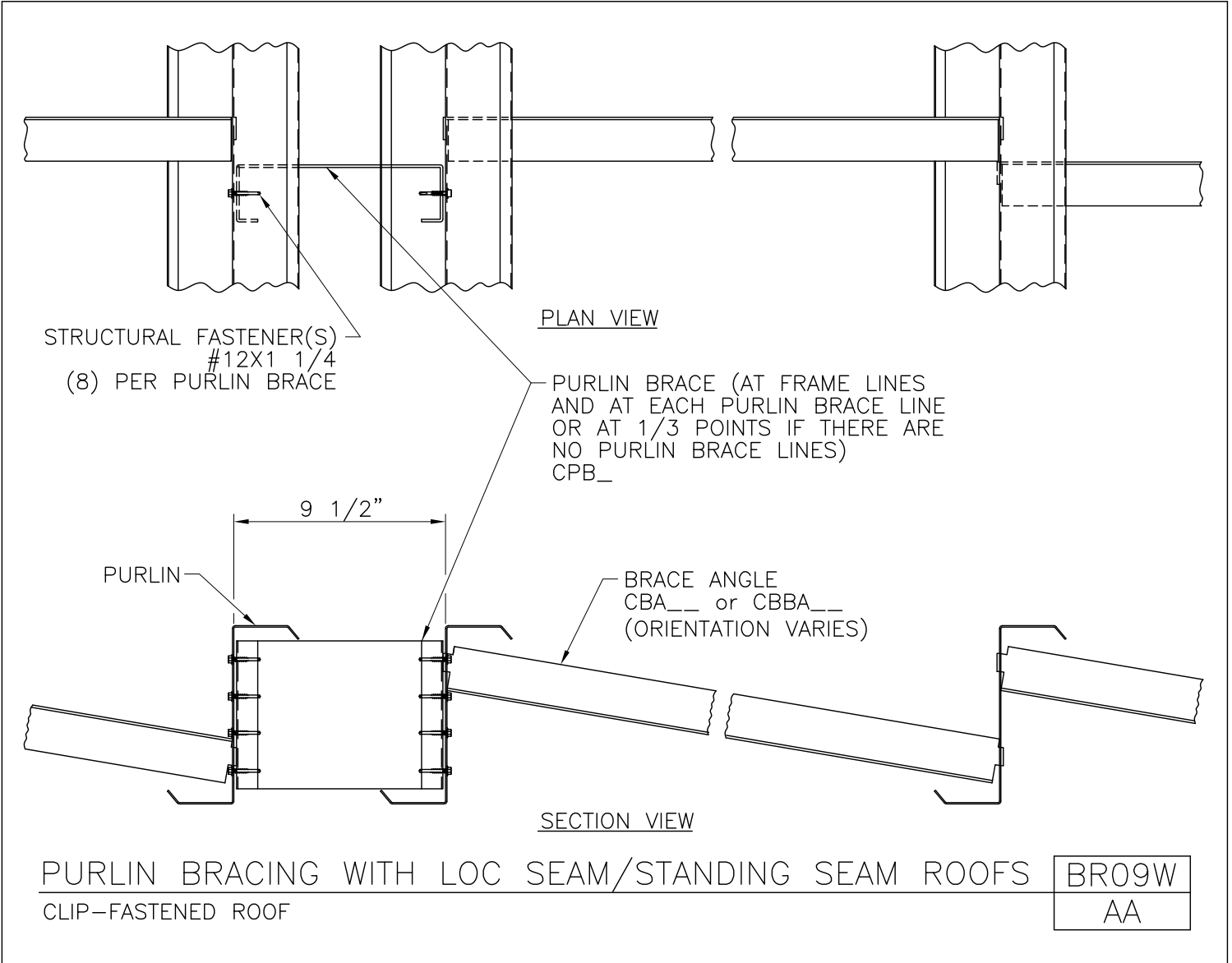
SECTION AT PURLIN BRACE
THROUGH-FASTENED ROOFS

BR09
BA

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Purlin Bracing with Loc Seam/Standing Seam Roofs
Clip-Fastened Roof
BR09W/AA

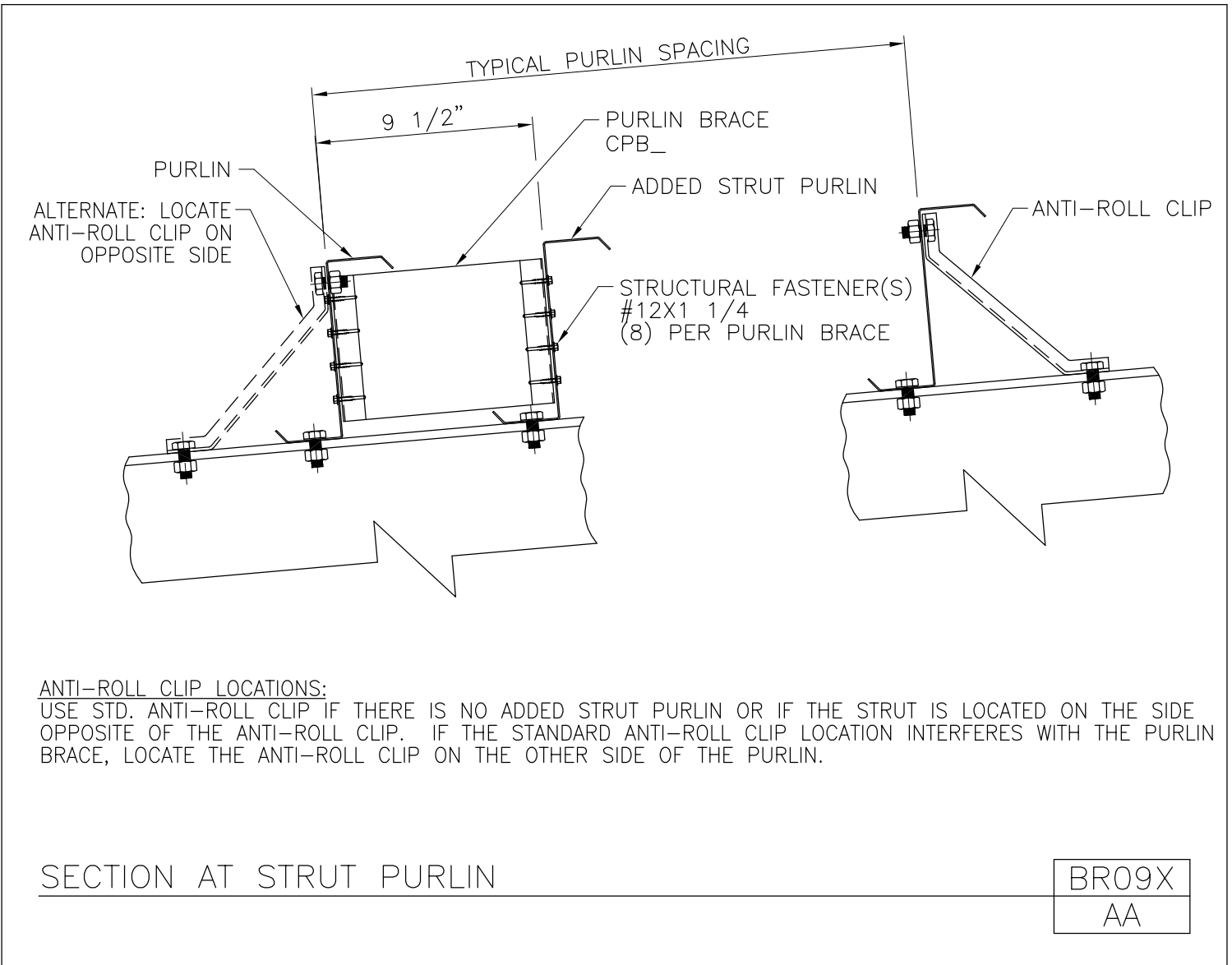


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Section at Strut Purlin

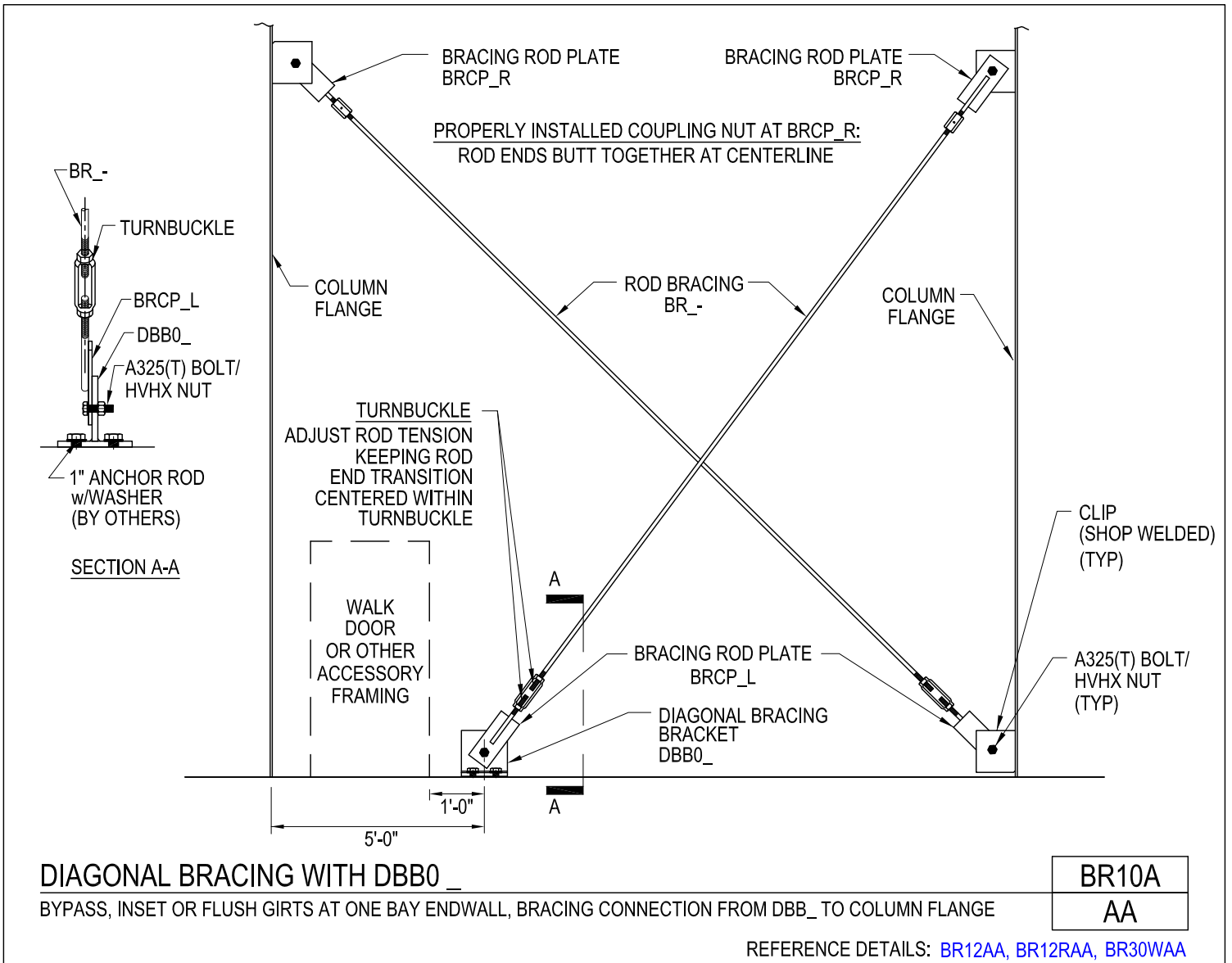
BR09X/AA



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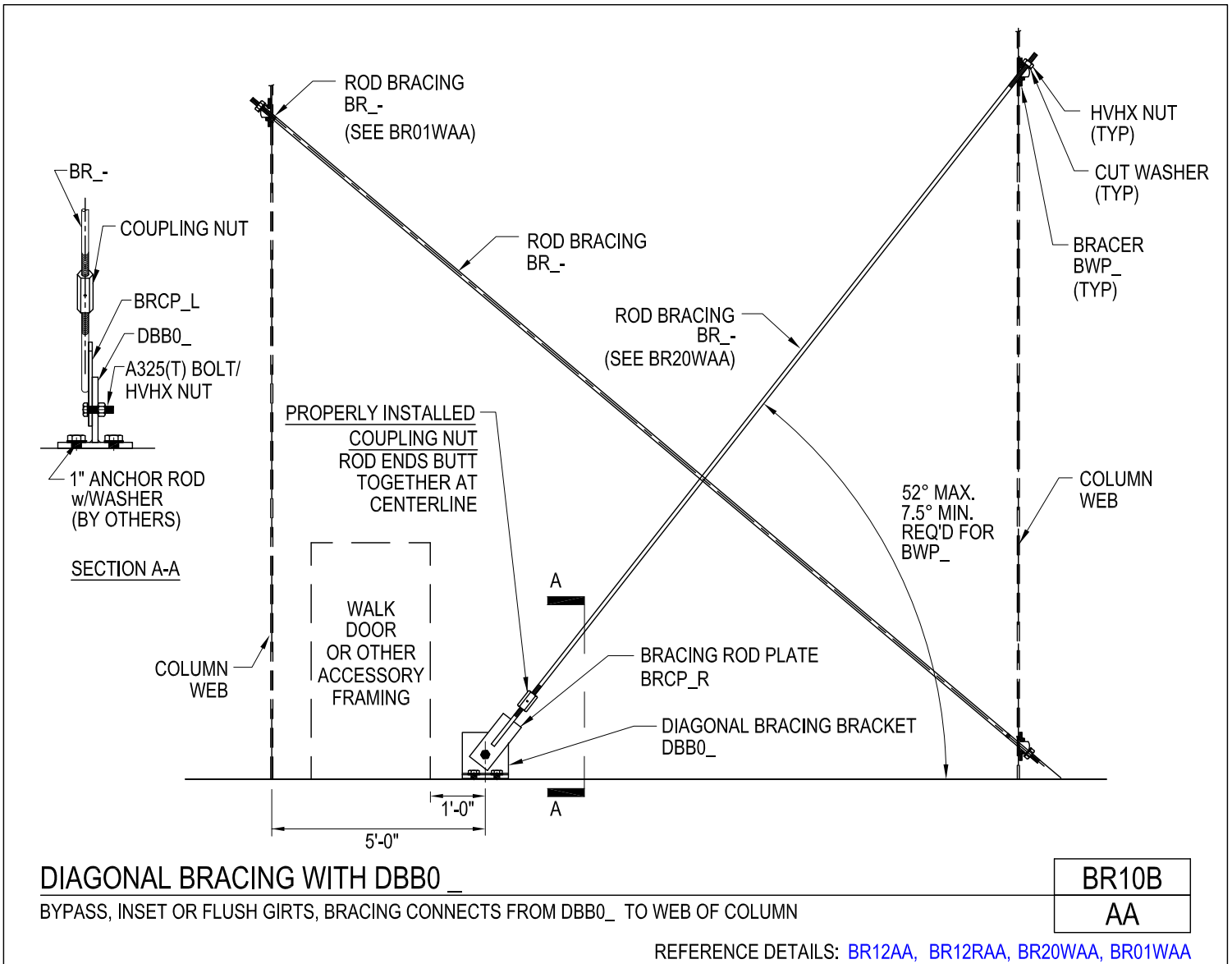
Diagonal Bracing with DBB0_
By-Pass, Inset or Flush Girts at One Bay Endwall, Bracing Conn. from DBB0_ to Column Flange
BR10A/AA



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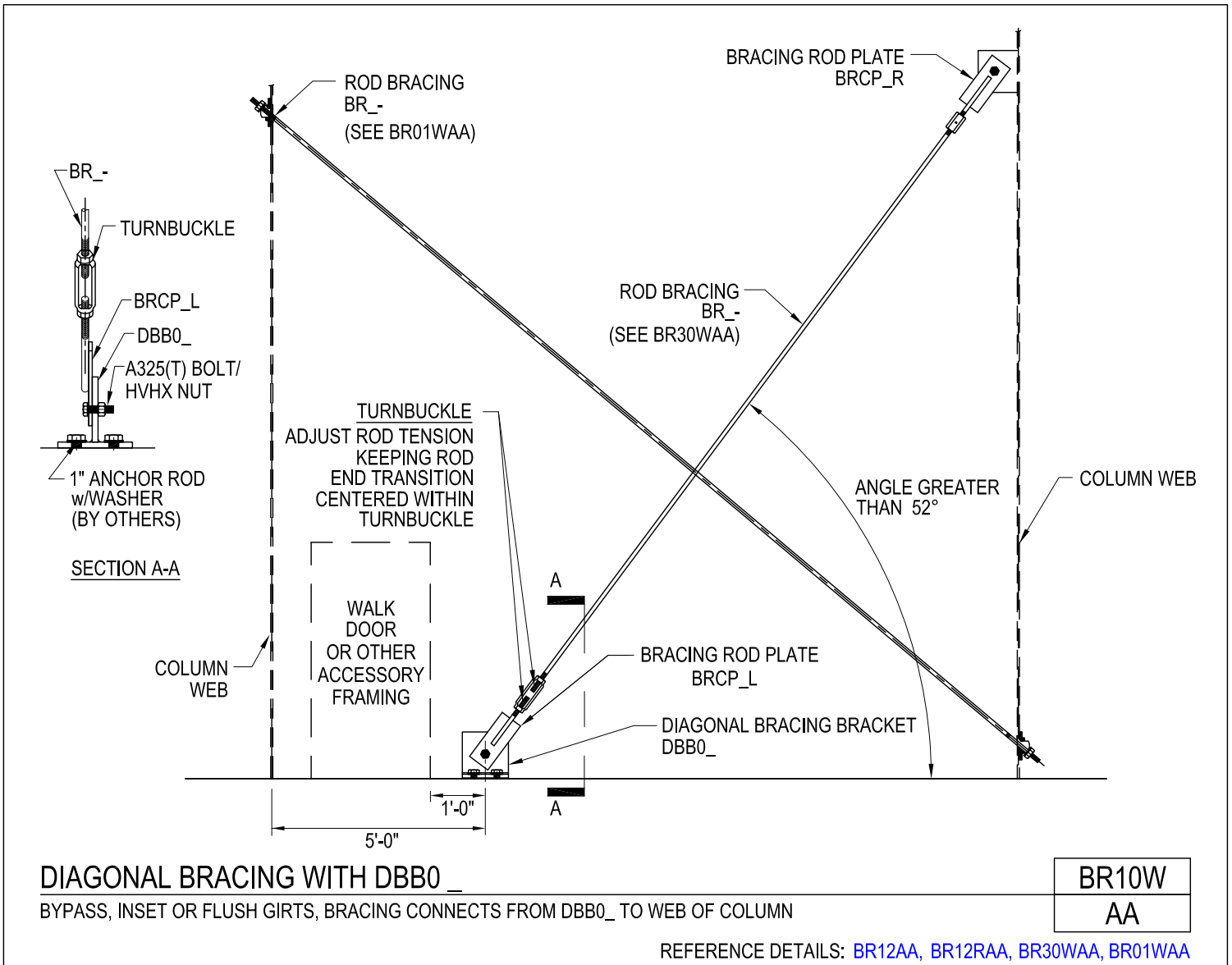
Diagonal Bracing with DBB0_
 By-Pass, Inset or Flush Girts, Bracing Conn. from DBB0_ to Web of Column
 BR10B/AA



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Diagonal Bracing with DBB0_
 By-Pass, Inset or Flush Girts, Bracing Conn. from DBB0_ to Web of Column
 BR10W/AA

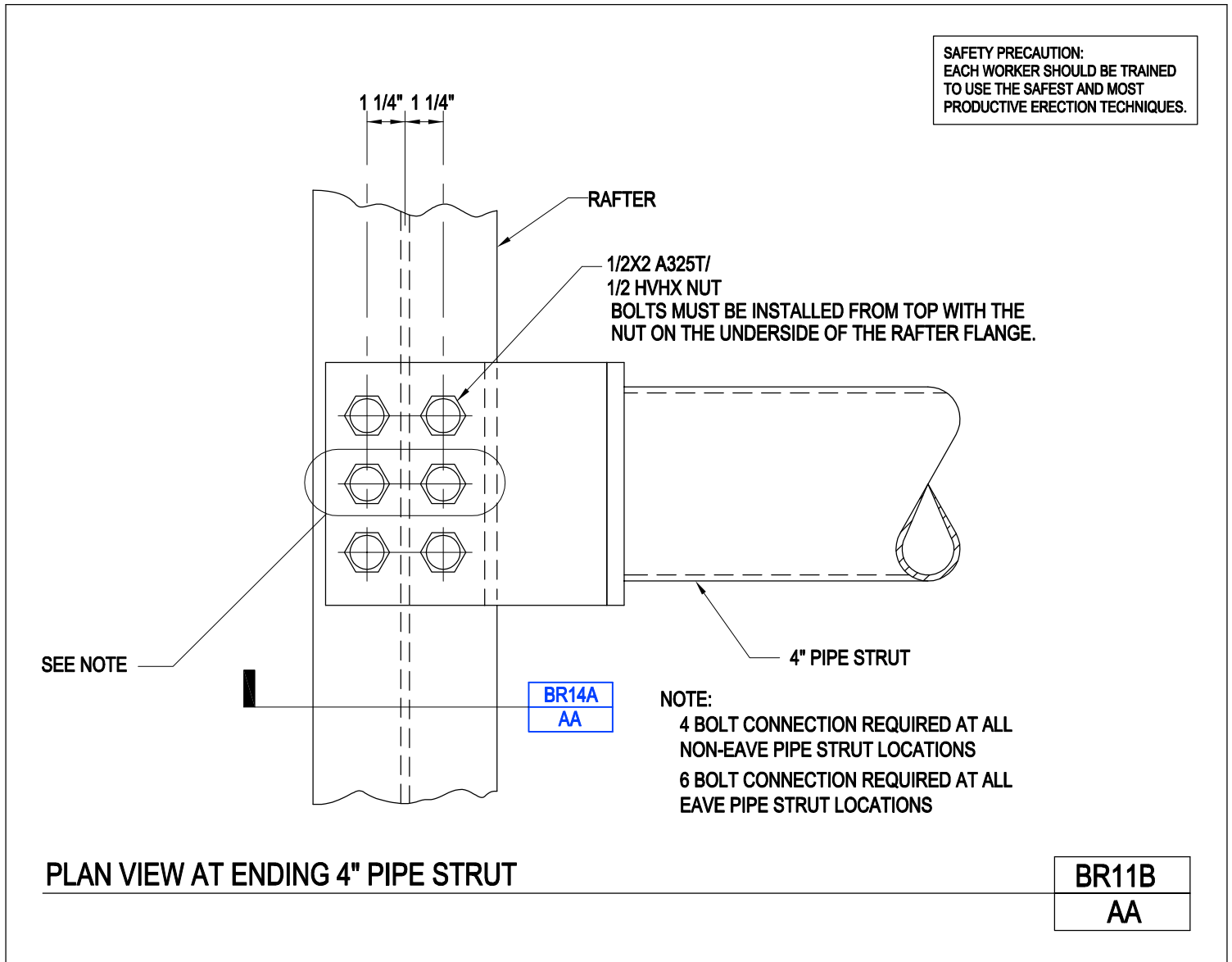


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Plan View at Ending 4" Pipe Strut

BR11B/AA

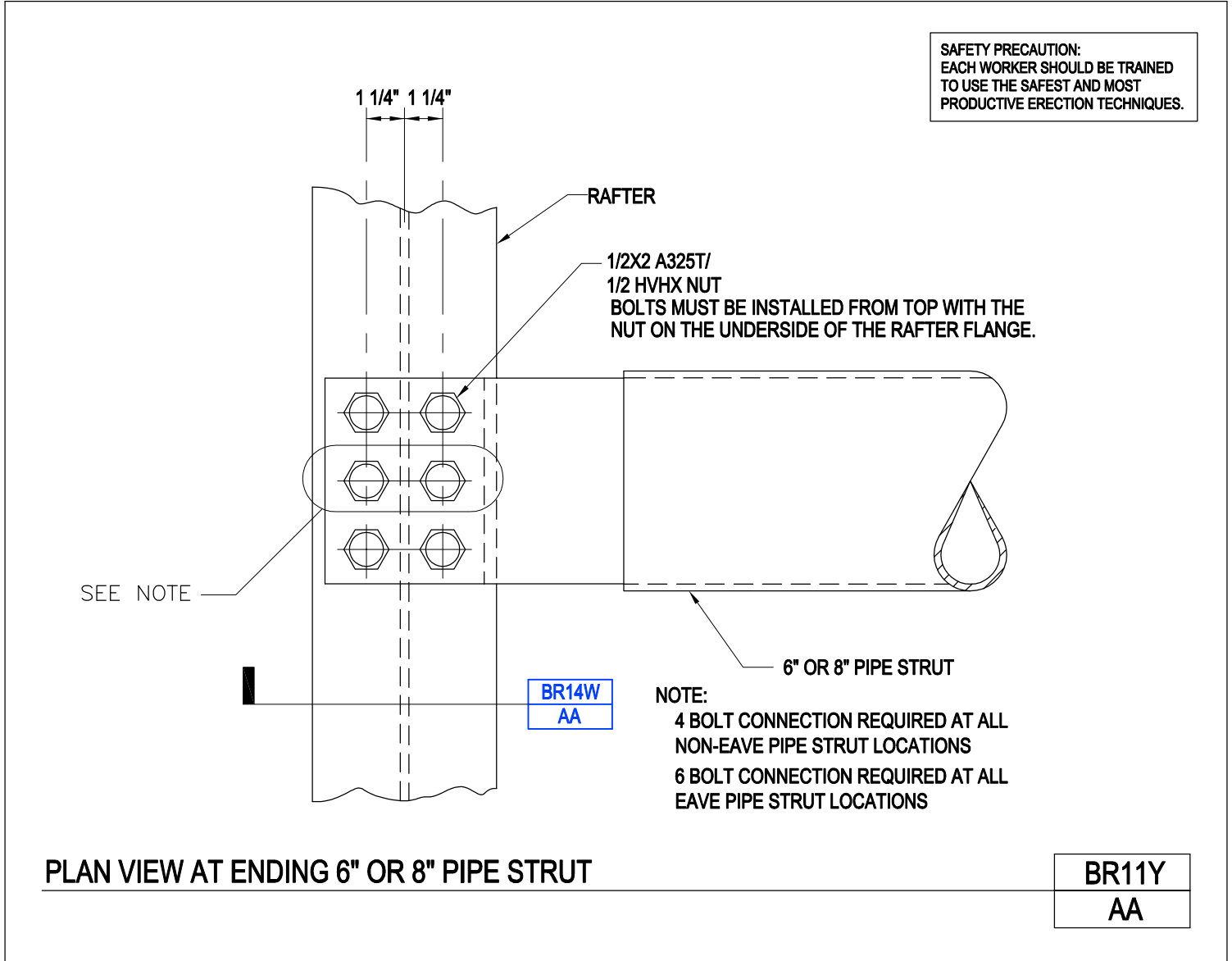


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Plan View at Ending 6" or 8" Pipe Strut

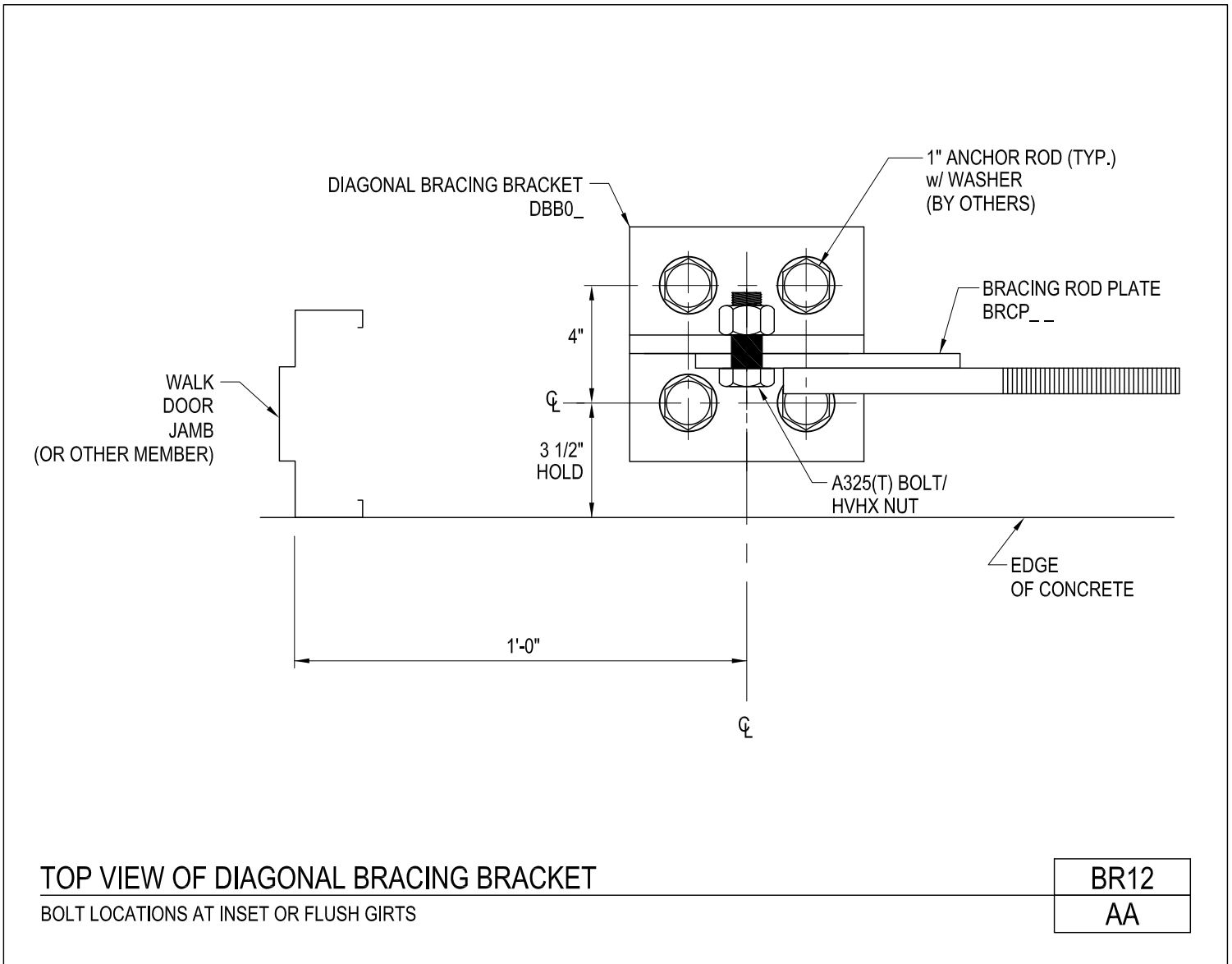
BR11Y/AA



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Top View of Diagonal Bracing Bracket
Bolt Locations at Inset or Flush Girts
BR12/AA

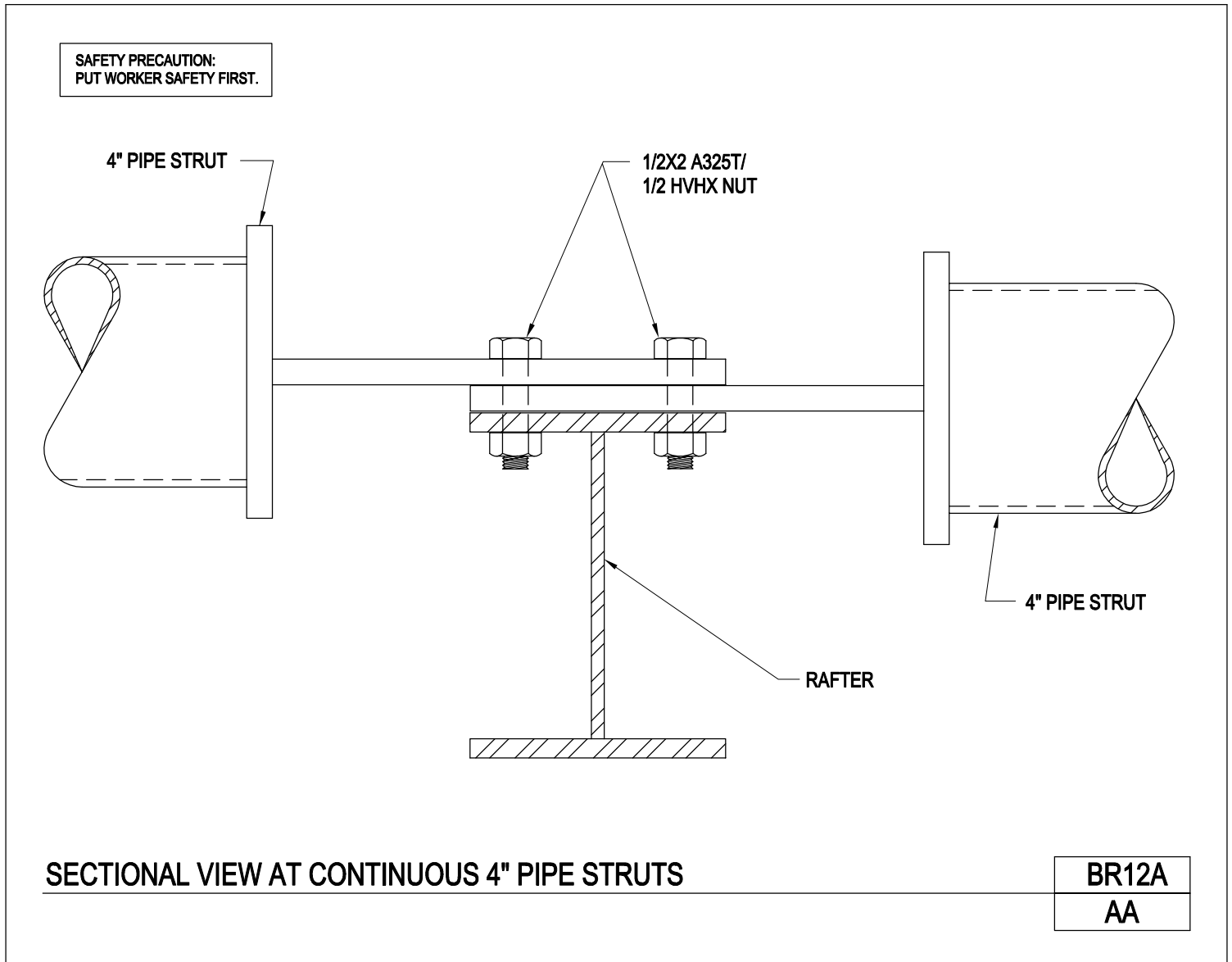


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Sectional View at Continuous 4" Pipe Struts

BR12A/AA

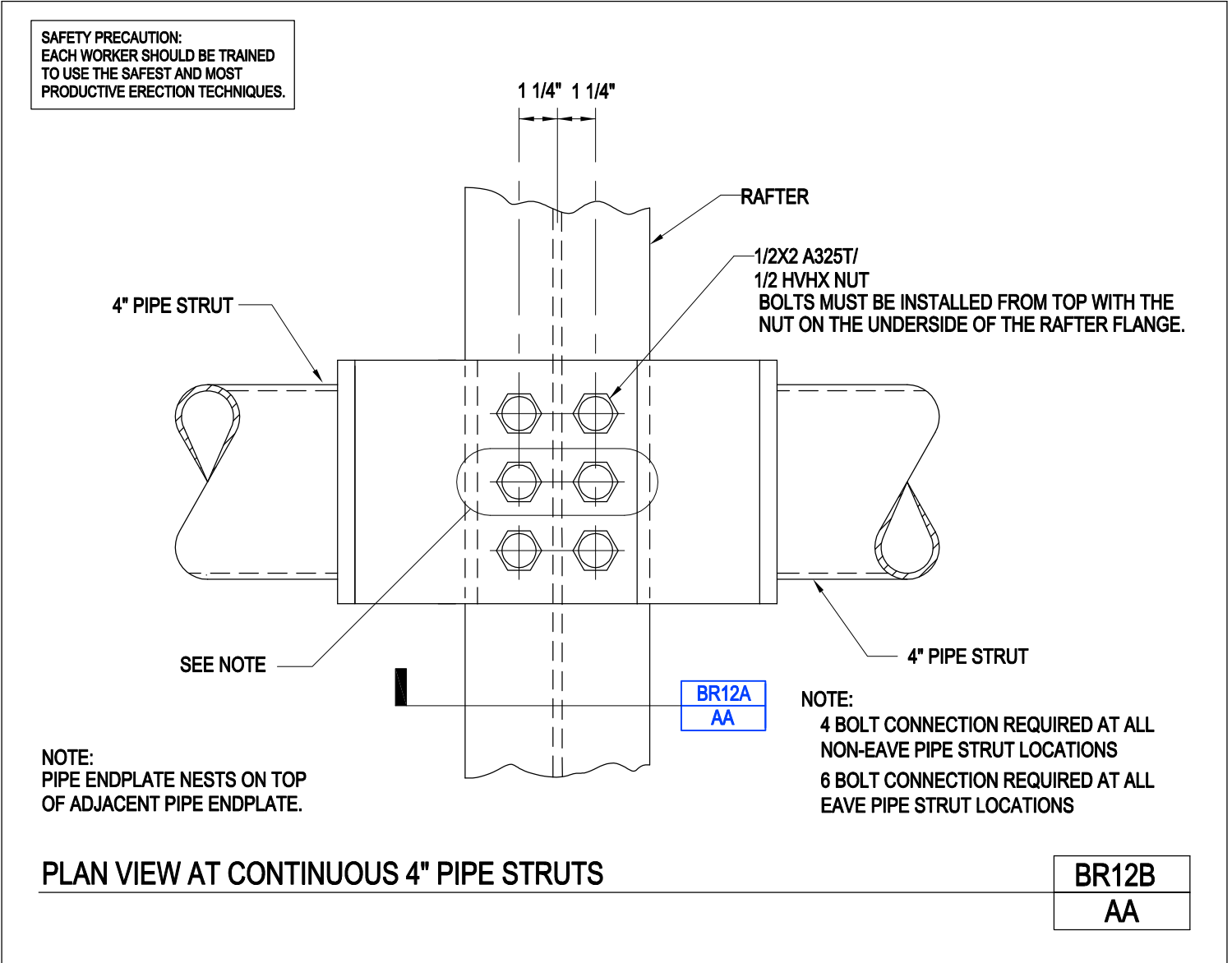


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Plan View at Continuous 4" Pipe Struts

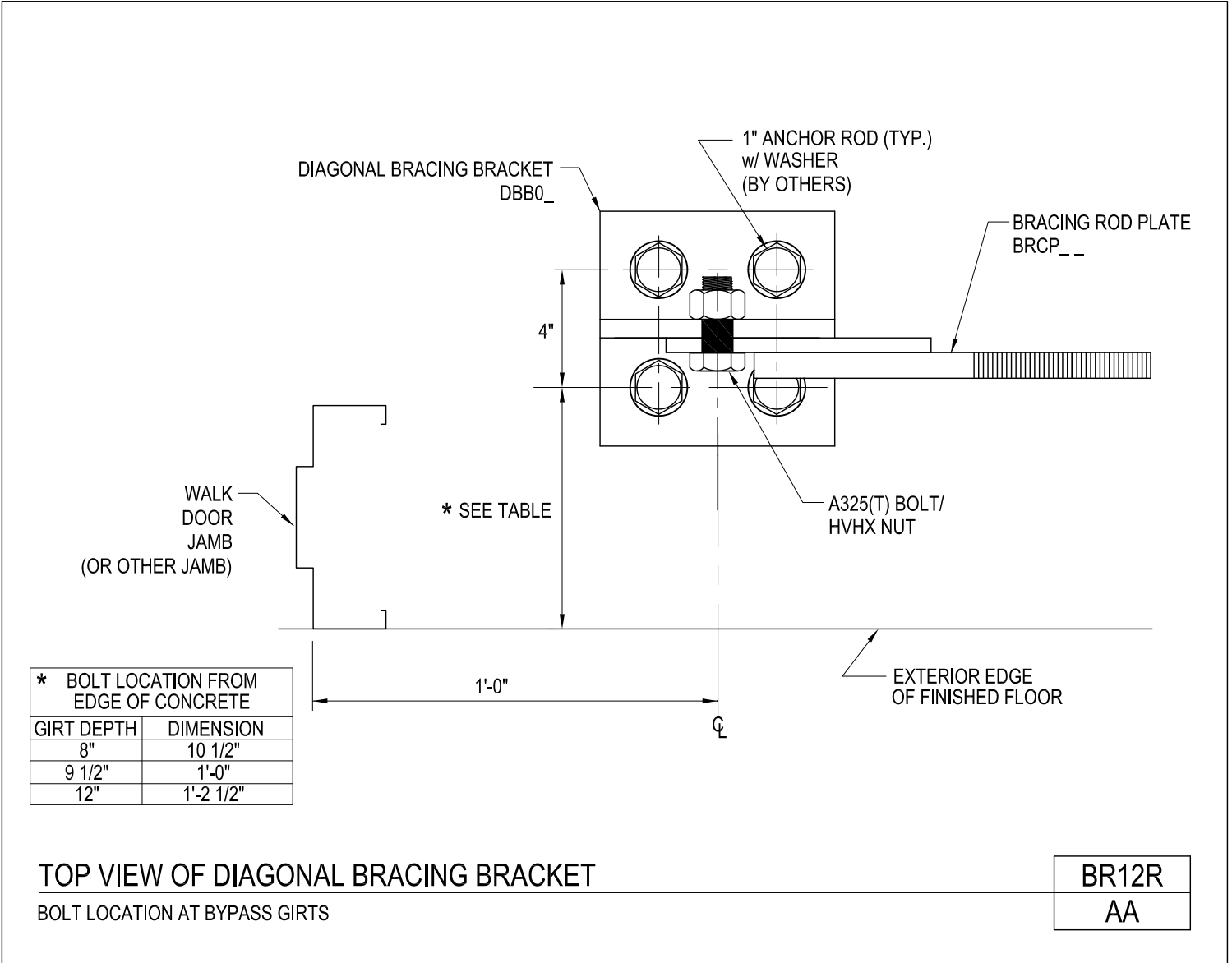
BR12B/AA



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Top View of Diagonal Bracing Bracket
 Bolt Location at By-Pass Girts
 BR12R/AA

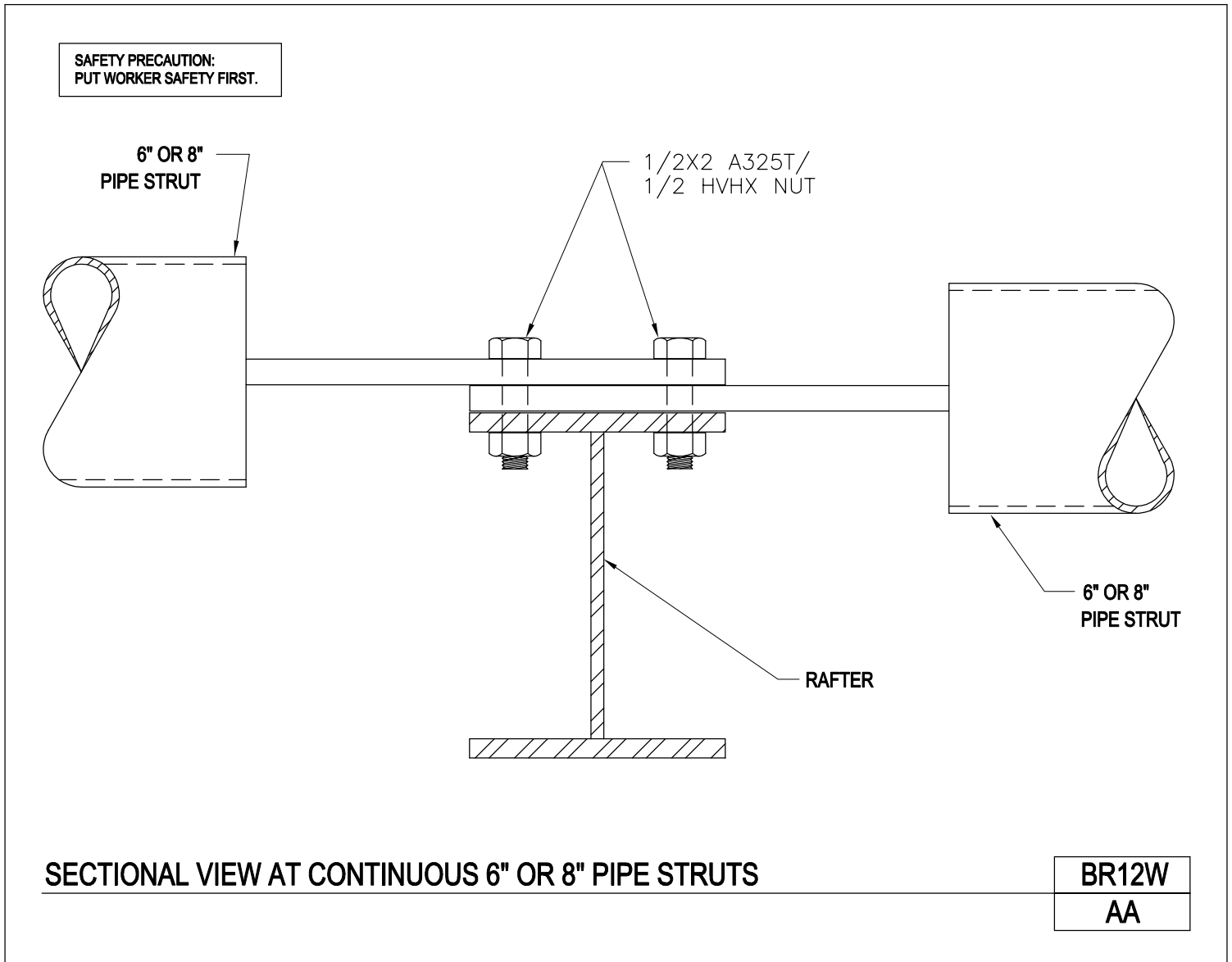


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Sectional View at Continuous 6" or 8" Pipe Struts

BR12W/AA

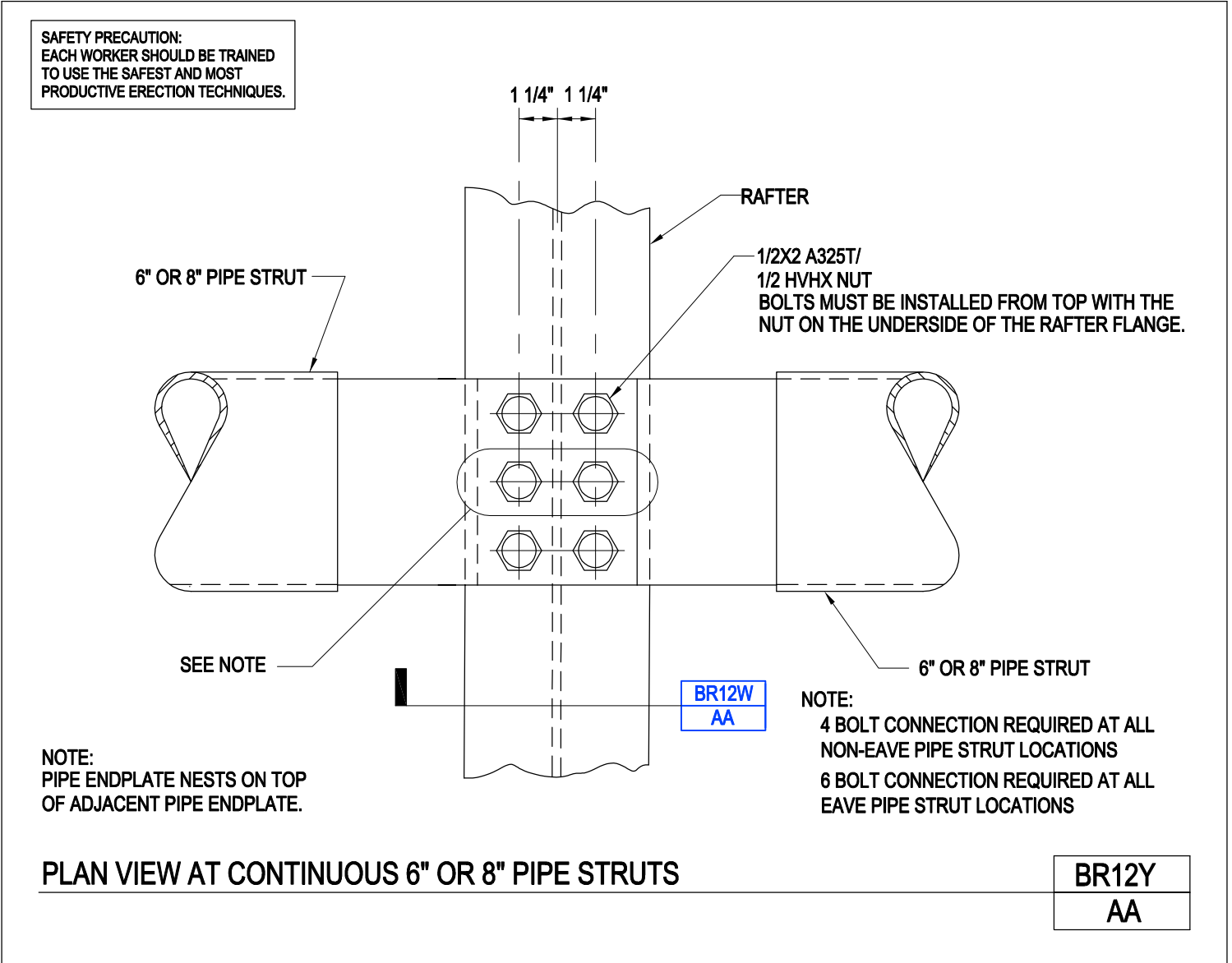


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Plan View at Continuous 6" or 8" Pipe Struts

BR12Y/AA

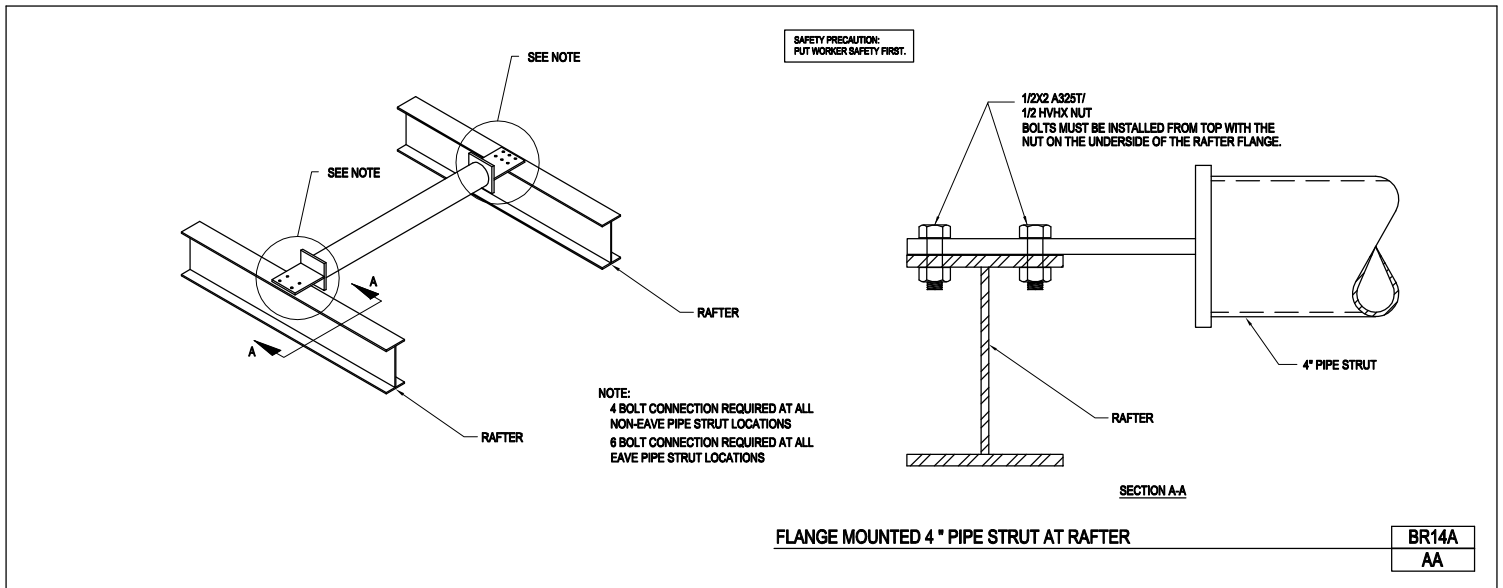


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Flange Mounted 4" Pipe Strut at Rafter

BR14A/AA

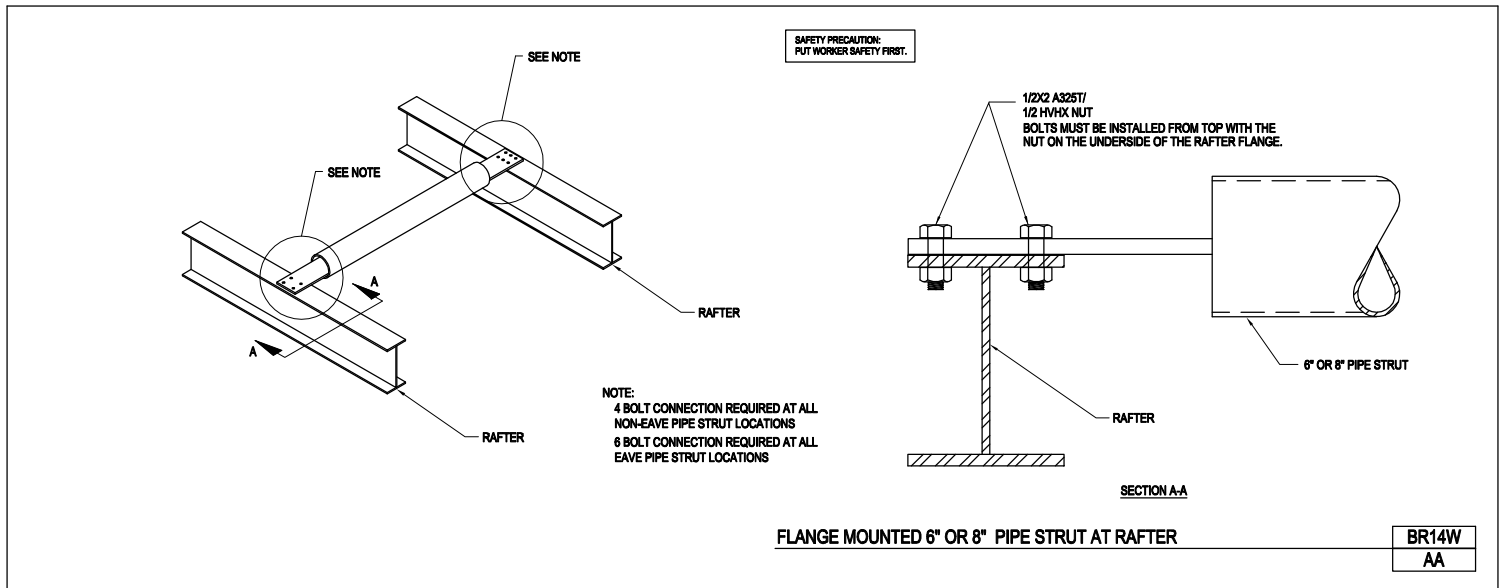


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Flange Mounted 6" or 8" Pipe Strut at Rafter

BR14W/AA

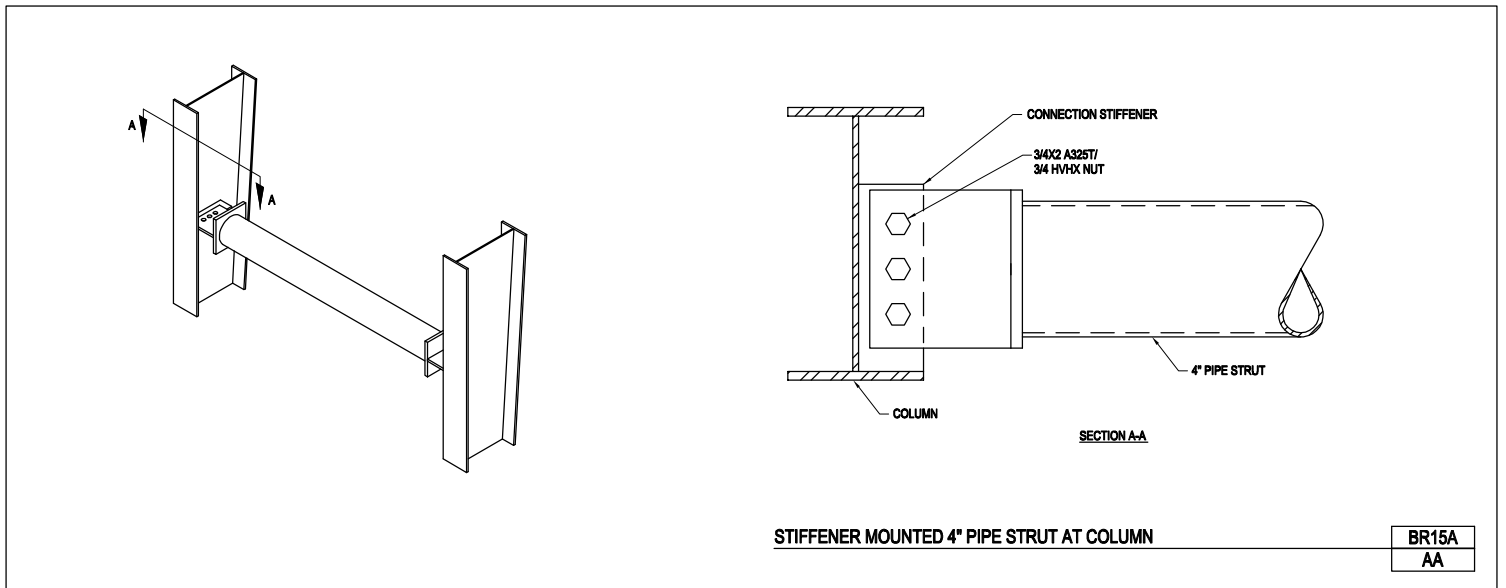


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Stiffener Mounted 4" Pipe Strut at Column

BR15A/AA

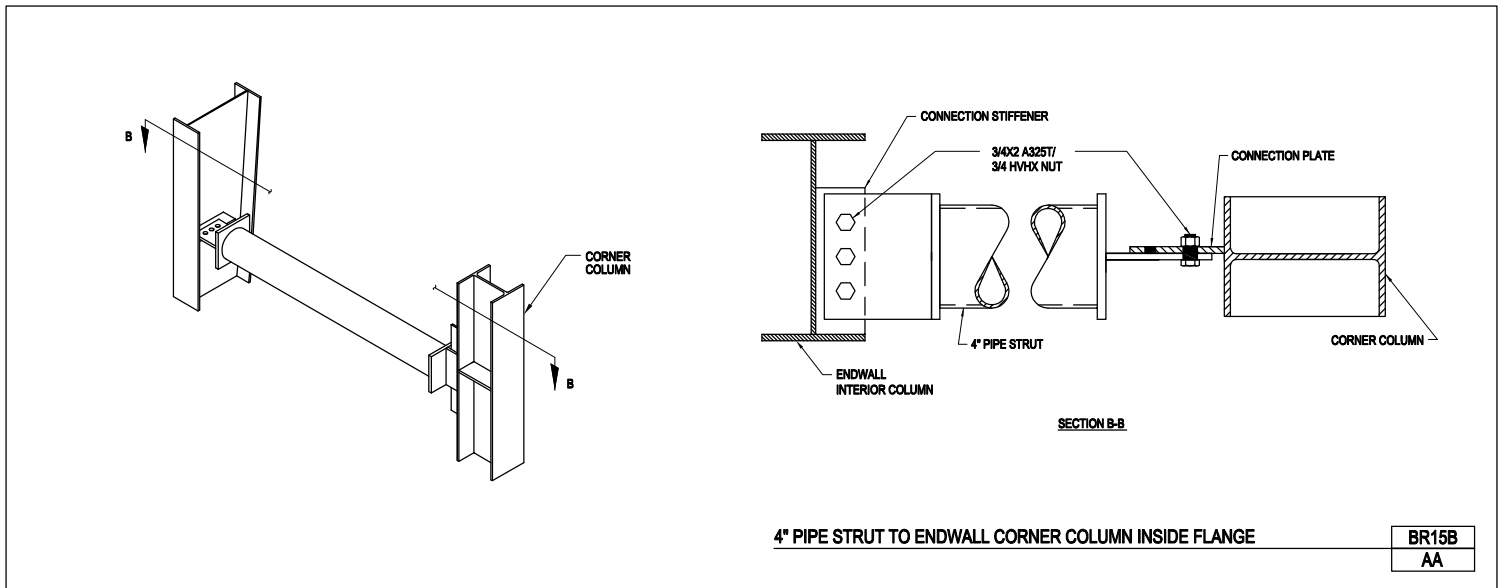


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4" Pipe Strut to Endwall Corner Column Inside Flange

BR15B/AA

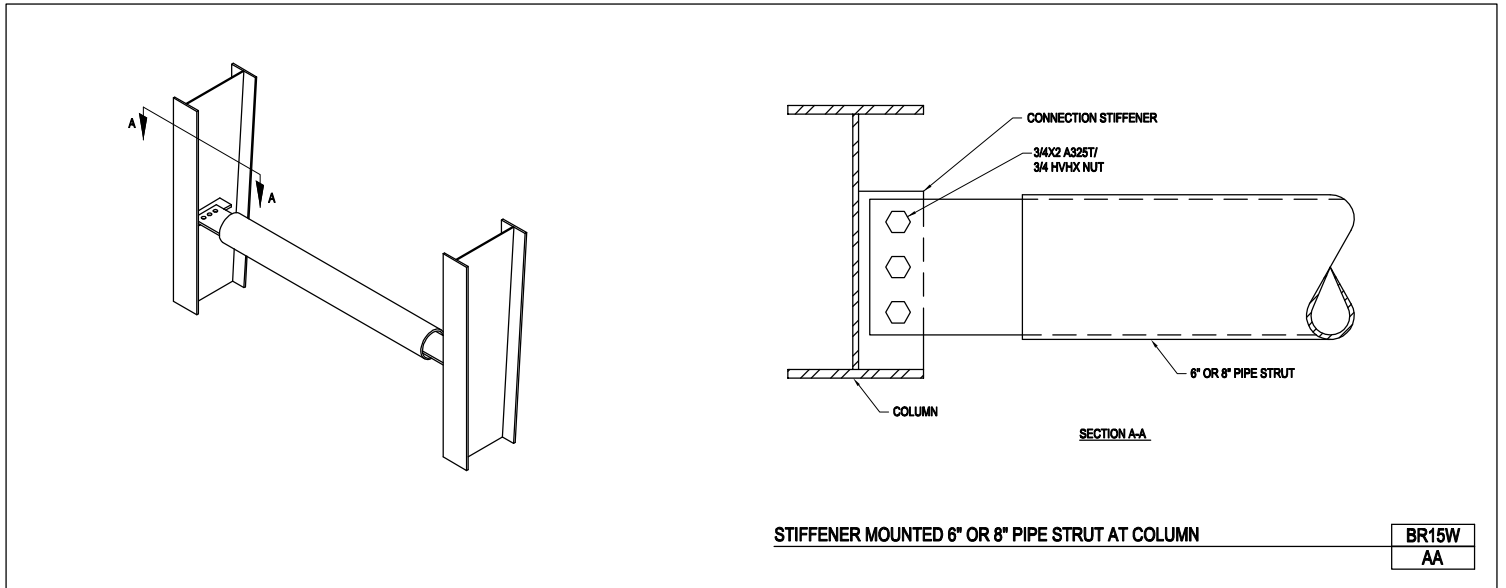


[Download the DWG file by clicking here.](#)

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Stiffener Mounted 6" or 8" Pipe Strut at Column

BR15W/AA

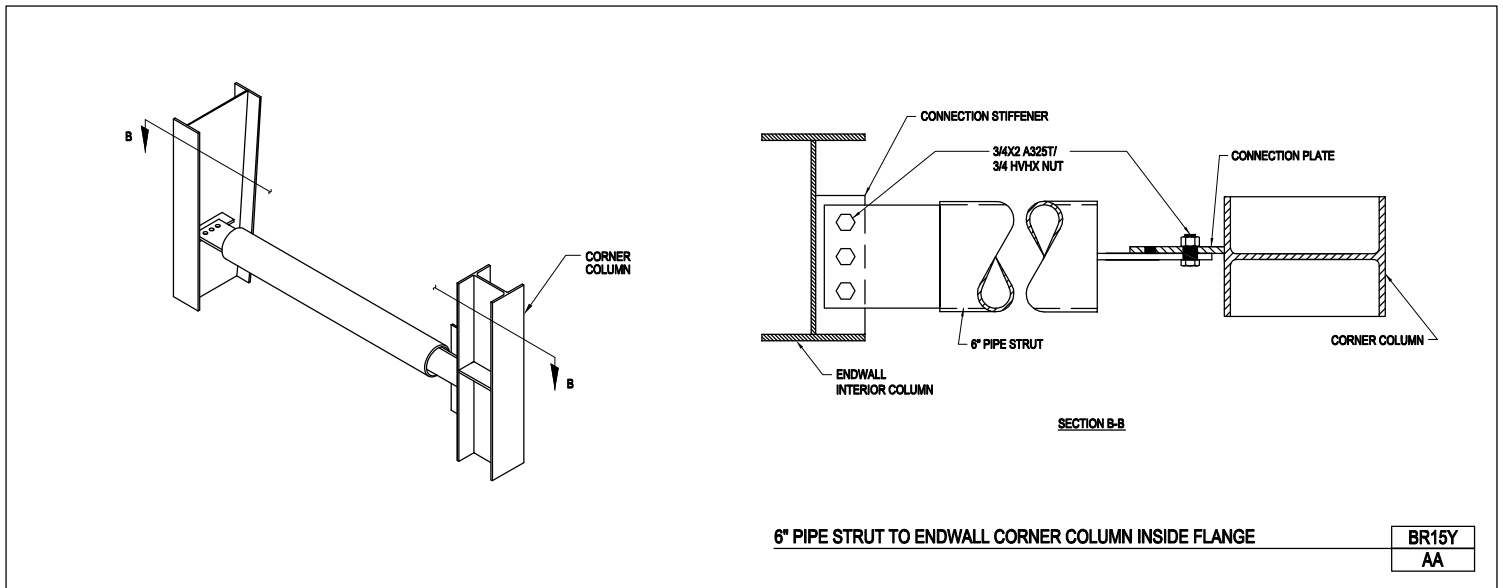


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6" Pipe Strut to Endwall Corner Column Inside Flange

BR15Y/AA

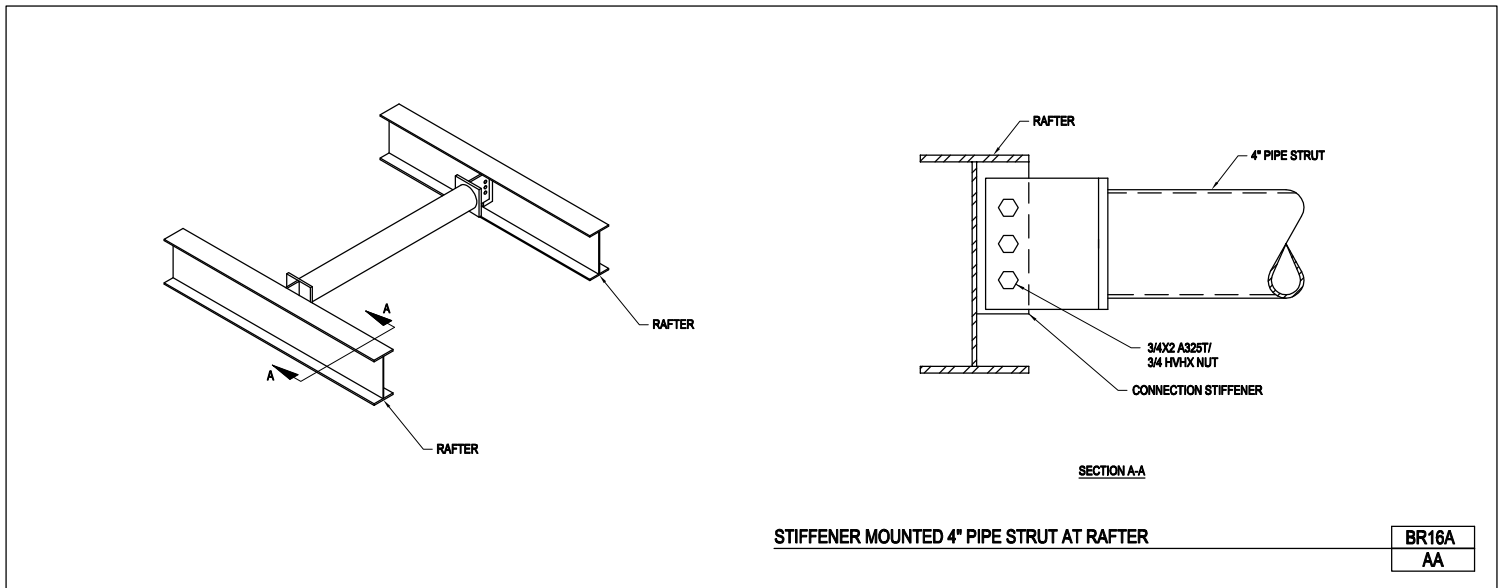


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Stiffener Mounted 4" Pipe Strut at Rafter

BR16A/AA

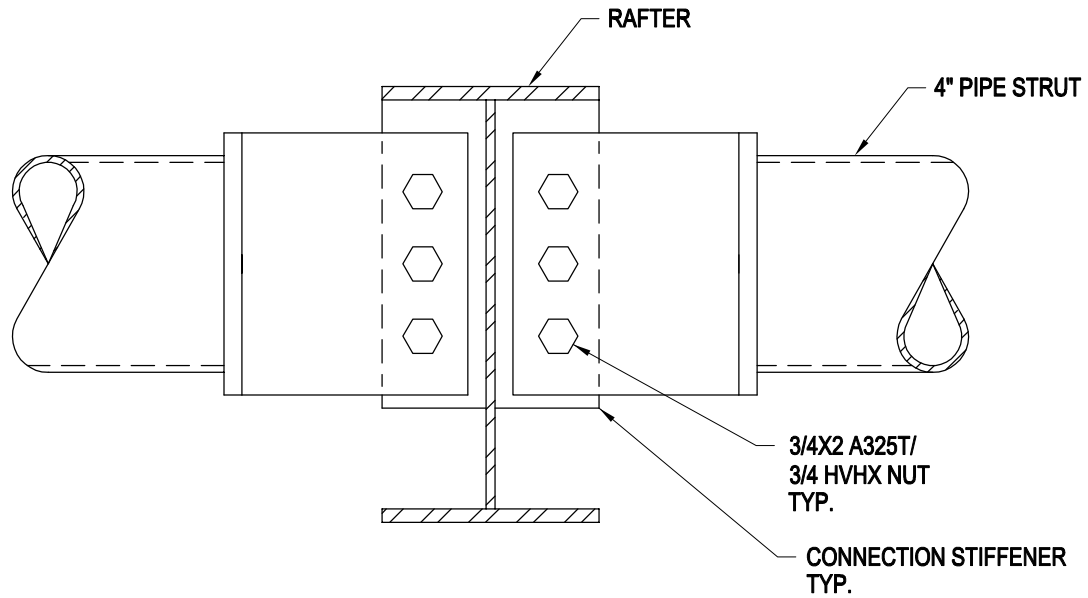


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Section View at Continuous 4" Pipe Strut

BR16B/AA



SECTION VIEW AT CONTINUOUS 4" PIPE STRUT

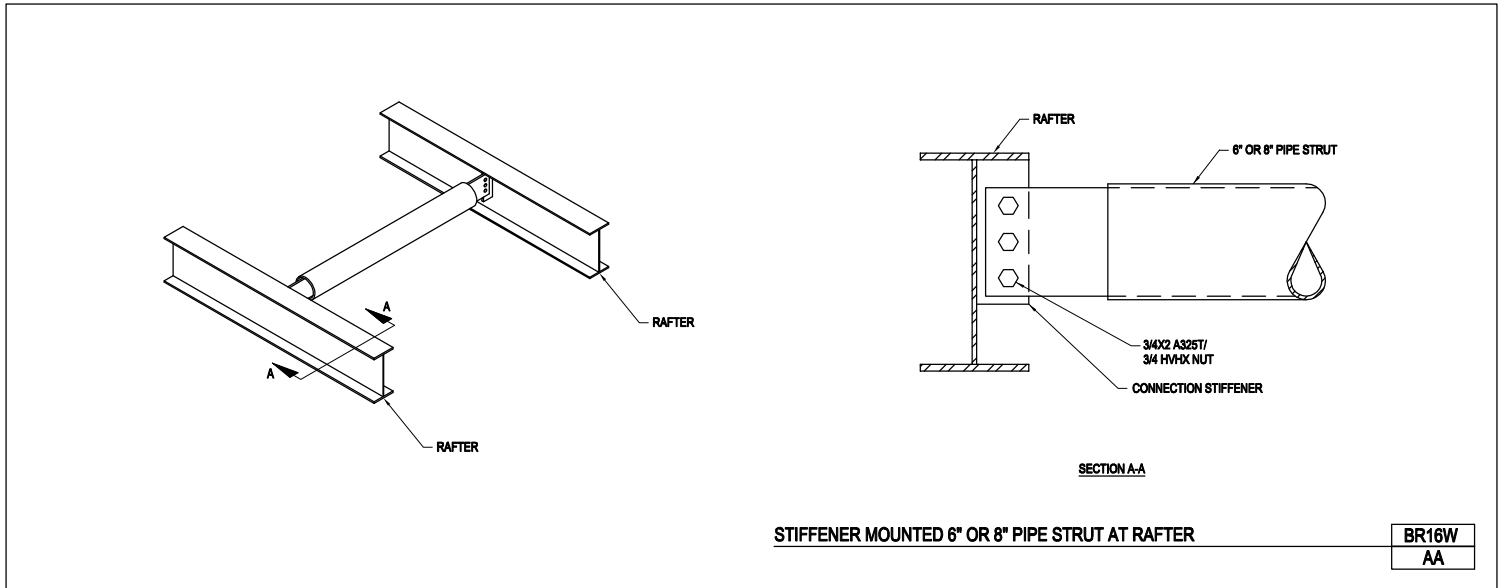
BR16B
AA

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Stiffener Mounted 6" or 8" Pipe Strut at Rafter

BR16W/AA

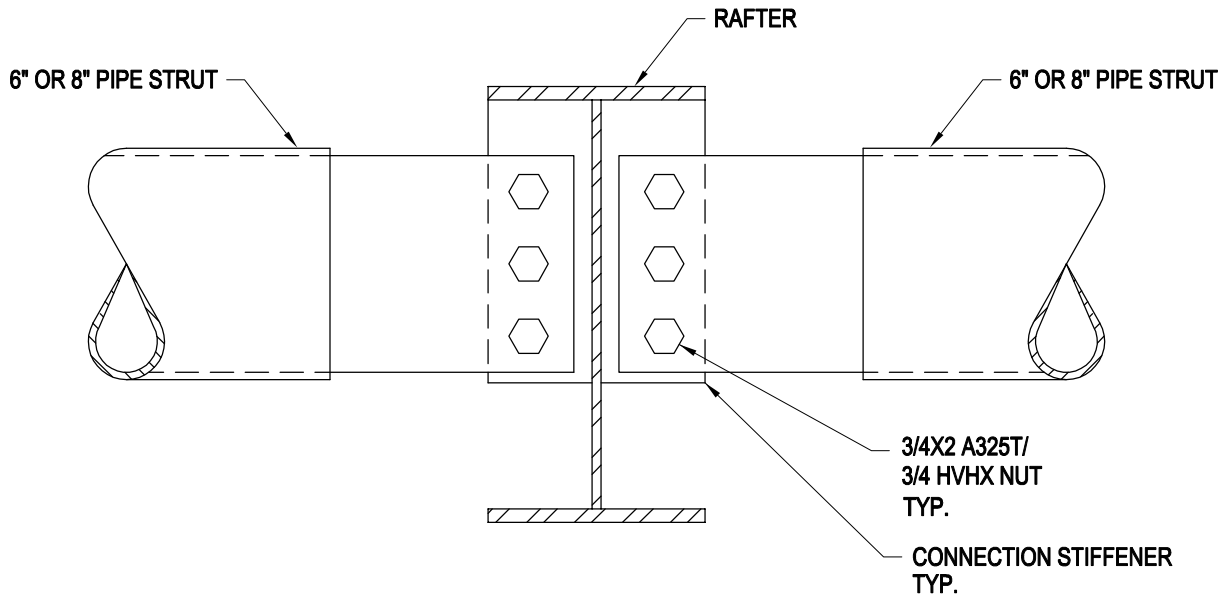


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Section View at Continuous 6" or 8" Pipe Strut

BR16Y/AA



SECTION VIEW AT CONTINUOUS 6" OR 8" PIPE STRUT

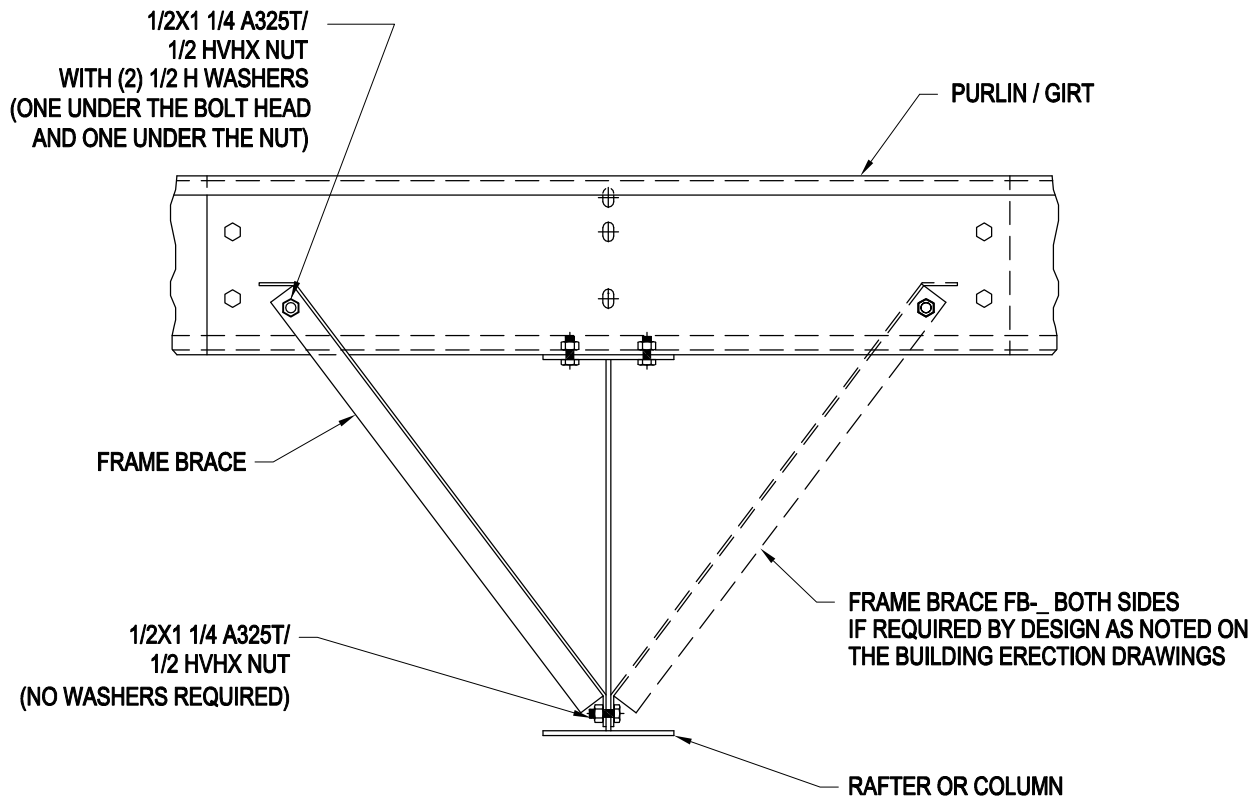
BR16Y
AA

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Frame Brace
For Bypass Purlins/Girts
BR17/AA

SAFETY PRECAUTION:
WORKERS SHOULD BE TRAINED IN
THE PROPER ERECTION PROCEDURES
FOR ALL JOBS.



FRAME BRACE
FOR BYPASS PURLINS / GIRTS

BR17
AA

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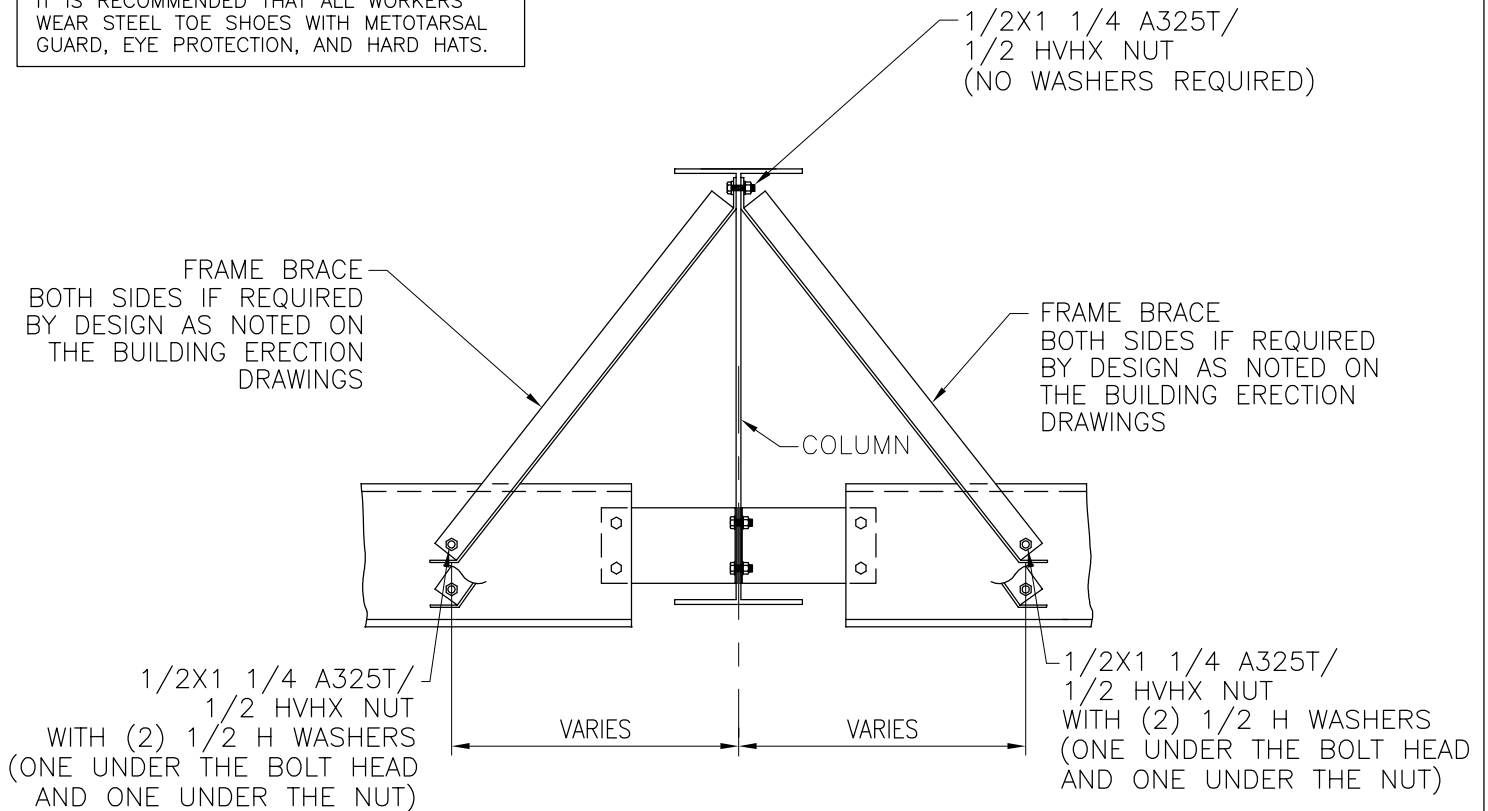
[To Section Index](#)

Frame Brace

Inset

BR17A/AA

SAFETY PRECAUTION:
IT IS RECOMMENDED THAT ALL WORKERS
WEAR STEEL TOE SHOES WITH METOTARSAL
GUARD, EYE PROTECTION, AND HARD HATS.



FRAME BRACE

INSET

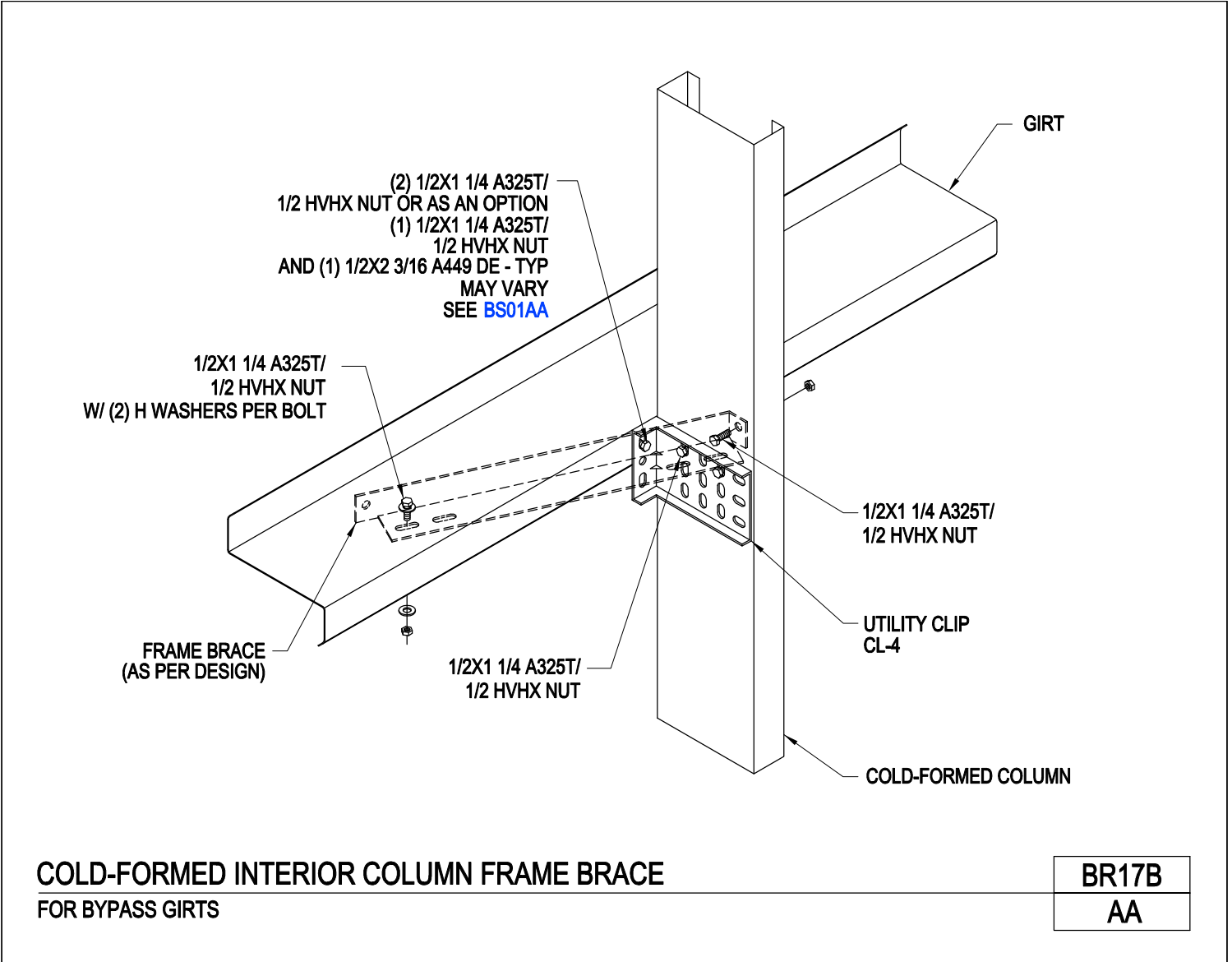
BR17A

AA

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Cold-Formed Interior Column Frame Brace
For Bypass Girts
BR17B/AA

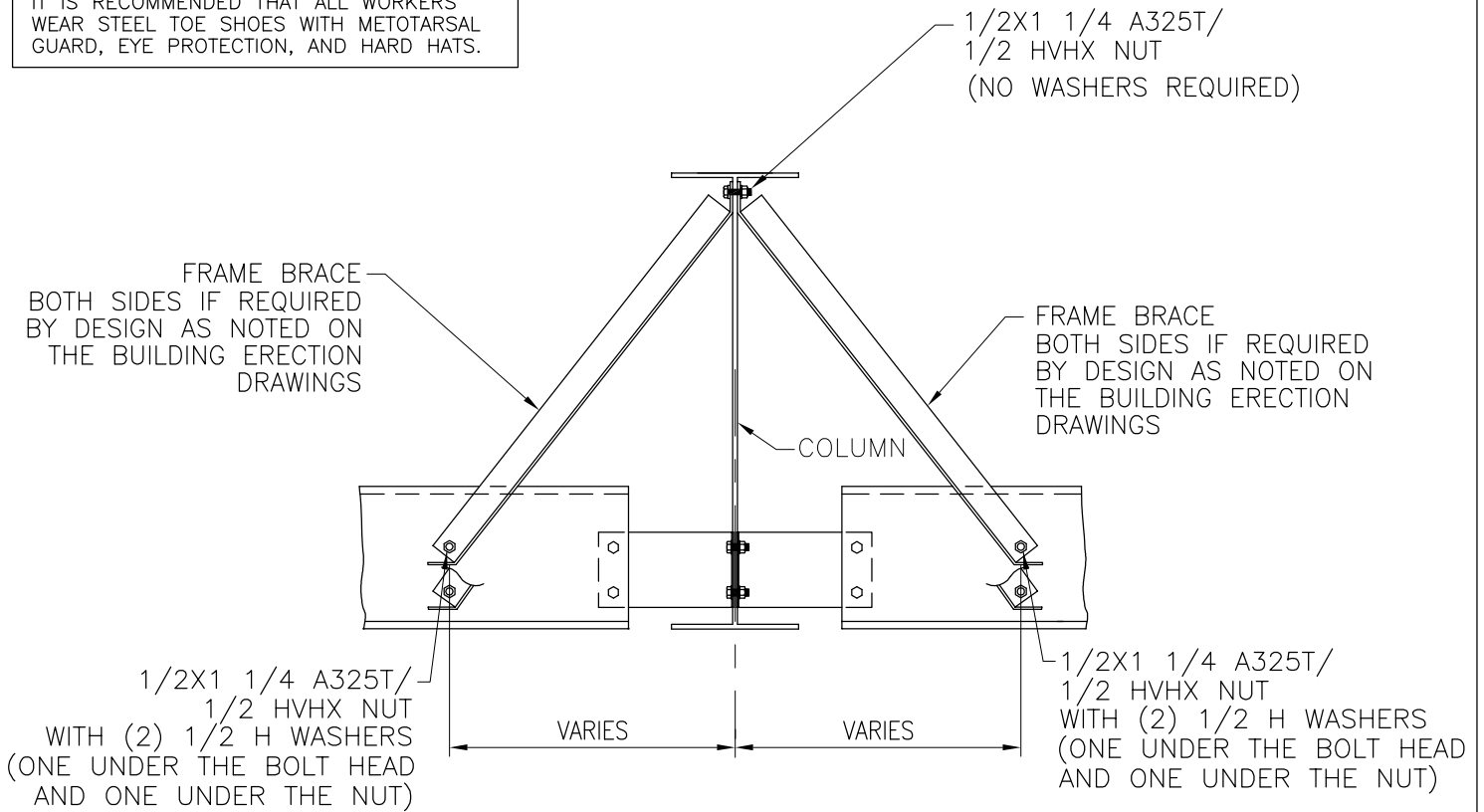


[Download the DWG file by clicking here.](#)

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Frame Brace
Flush
BR17P/AA

SAFETY PRECAUTION:
IT IS RECOMMENDED THAT ALL WORKERS
WEAR STEEL TOE SHOES WITH METOTARSAL
GUARD, EYE PROTECTION, AND HARD HATS.



FRAME BRACE
FLUSH

BR17P
AA

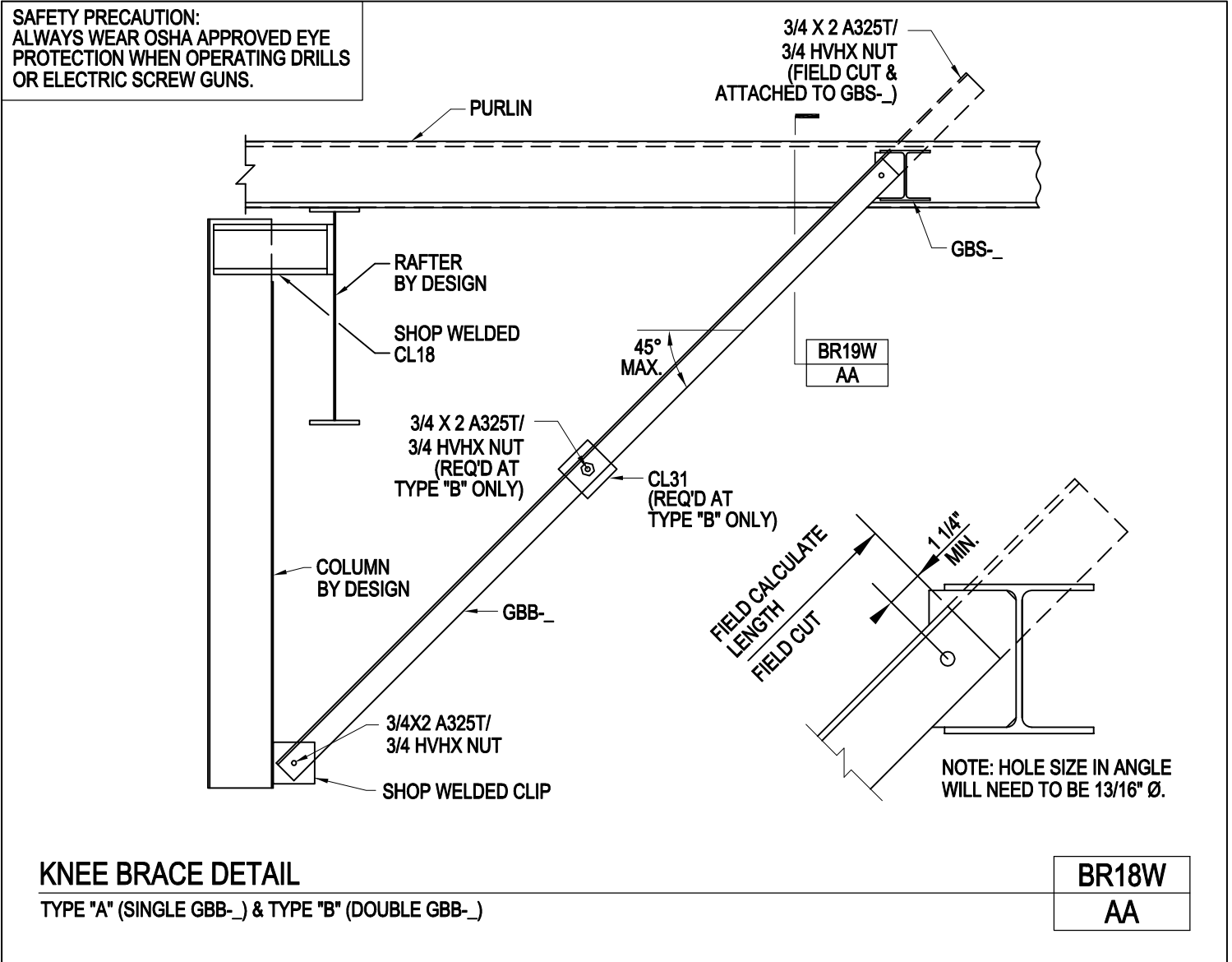
[Download the DWG file by clicking here.](#)

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Knee Brace Detail

Type "A" (Single GBB-) & "B" (Double GBB-)

BR18W/AA

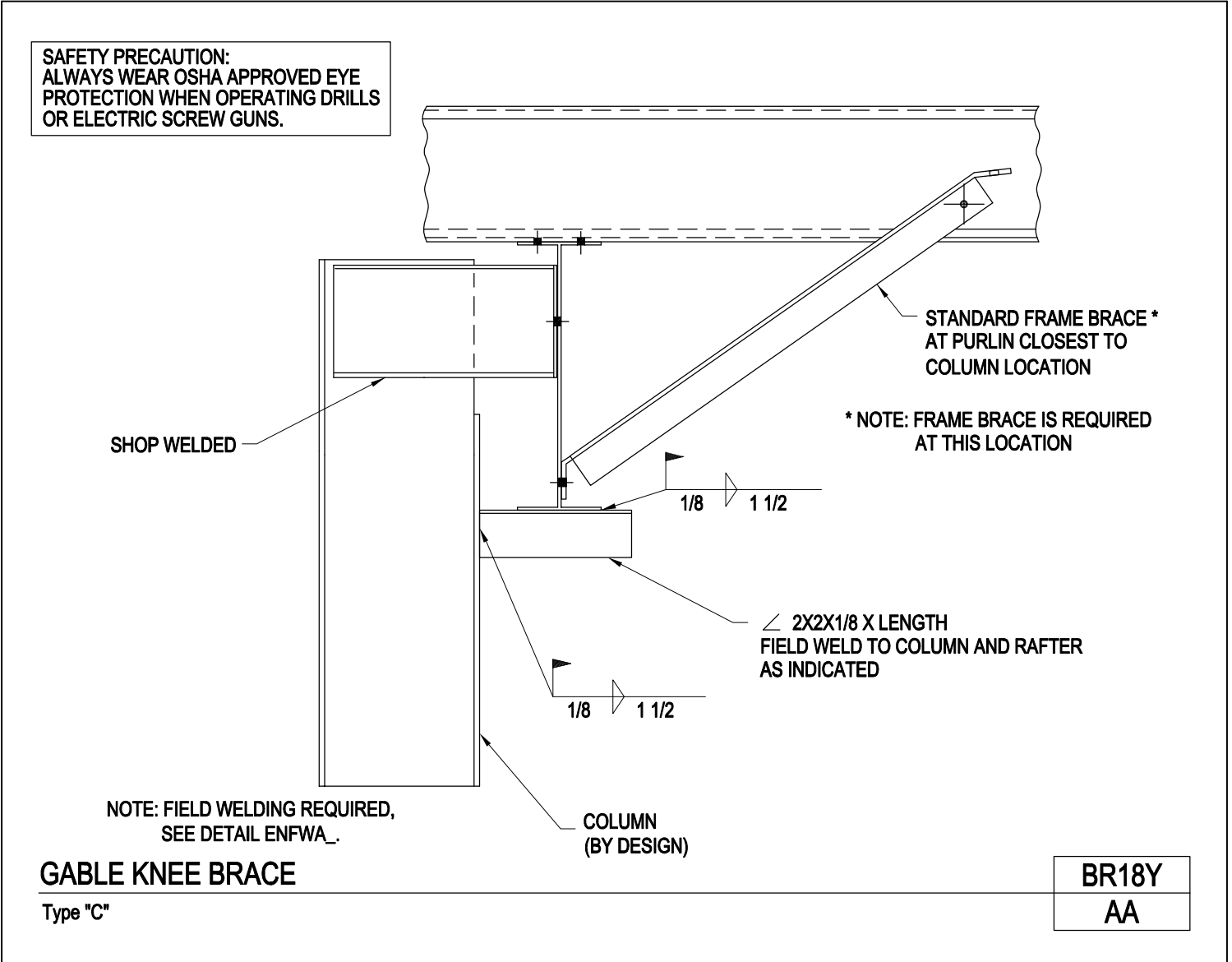


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Gable Knee Brace

Type "C"

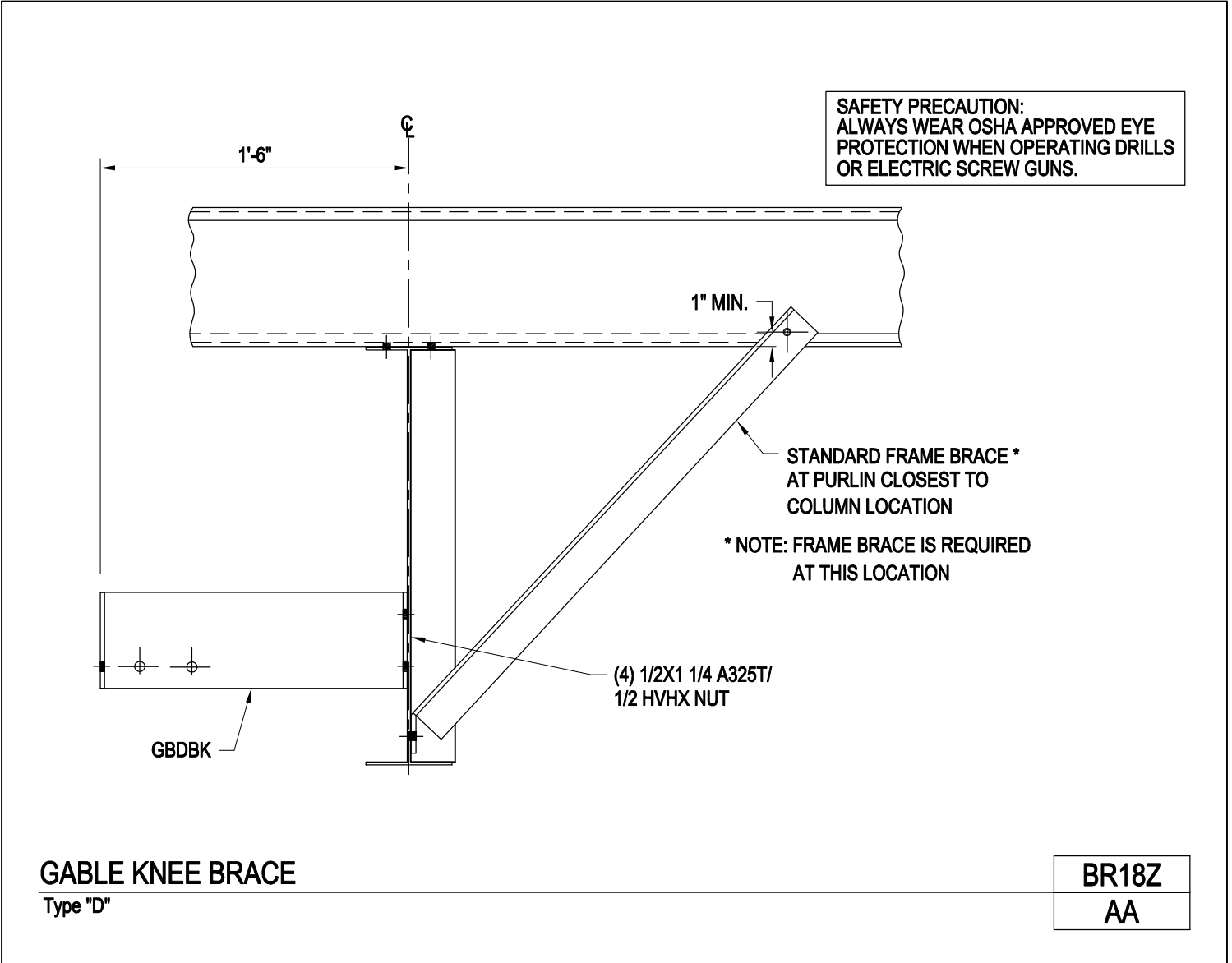
BR18Y/AA



[Download the DWG file by clicking here.](#)

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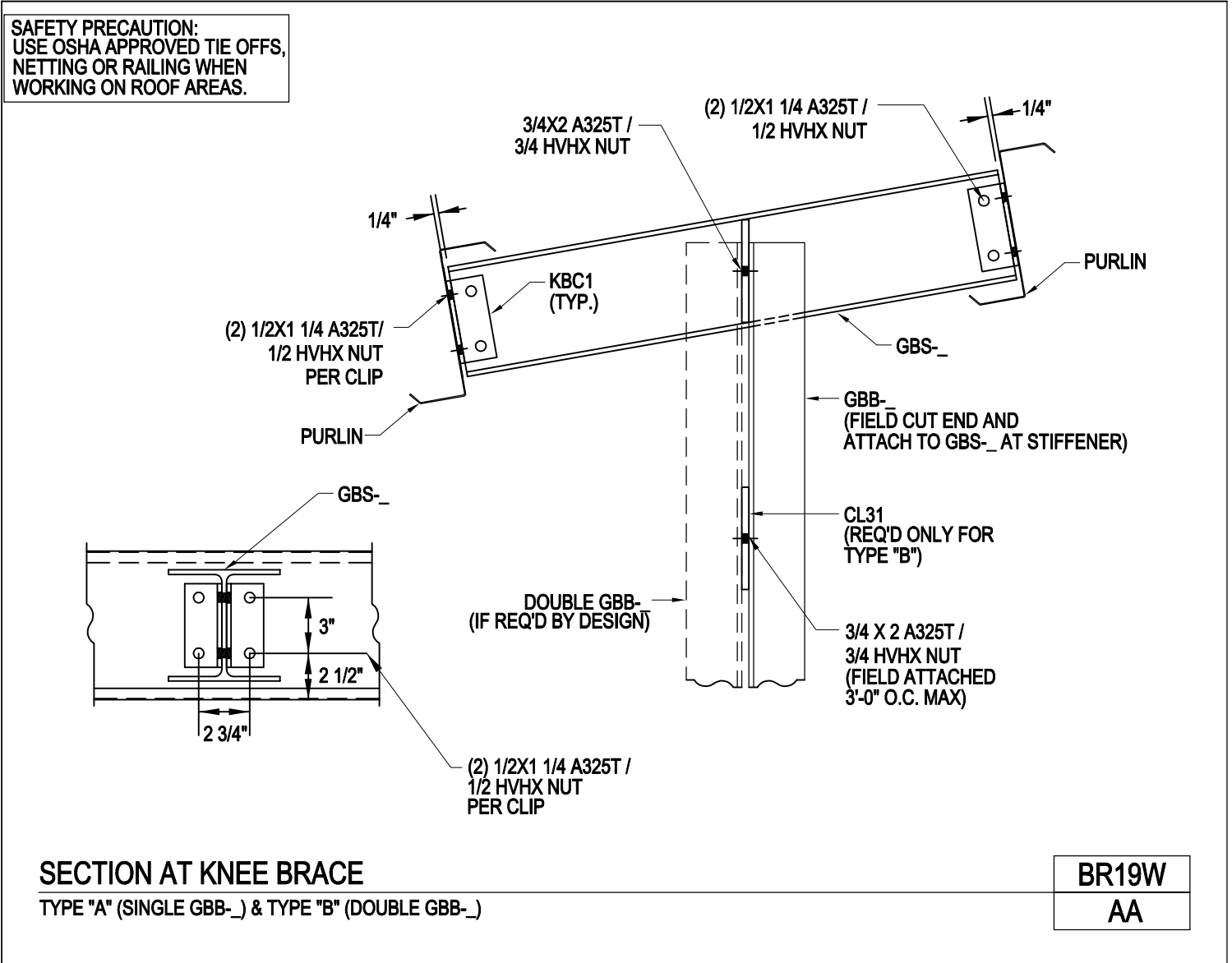
Gable Knee Brace
Type "D"
BR18Z/AA



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Section at Knee Brace
 Type "A" (Single GBB-_) & "B" (Double GBB-_)
 BR19W/AA

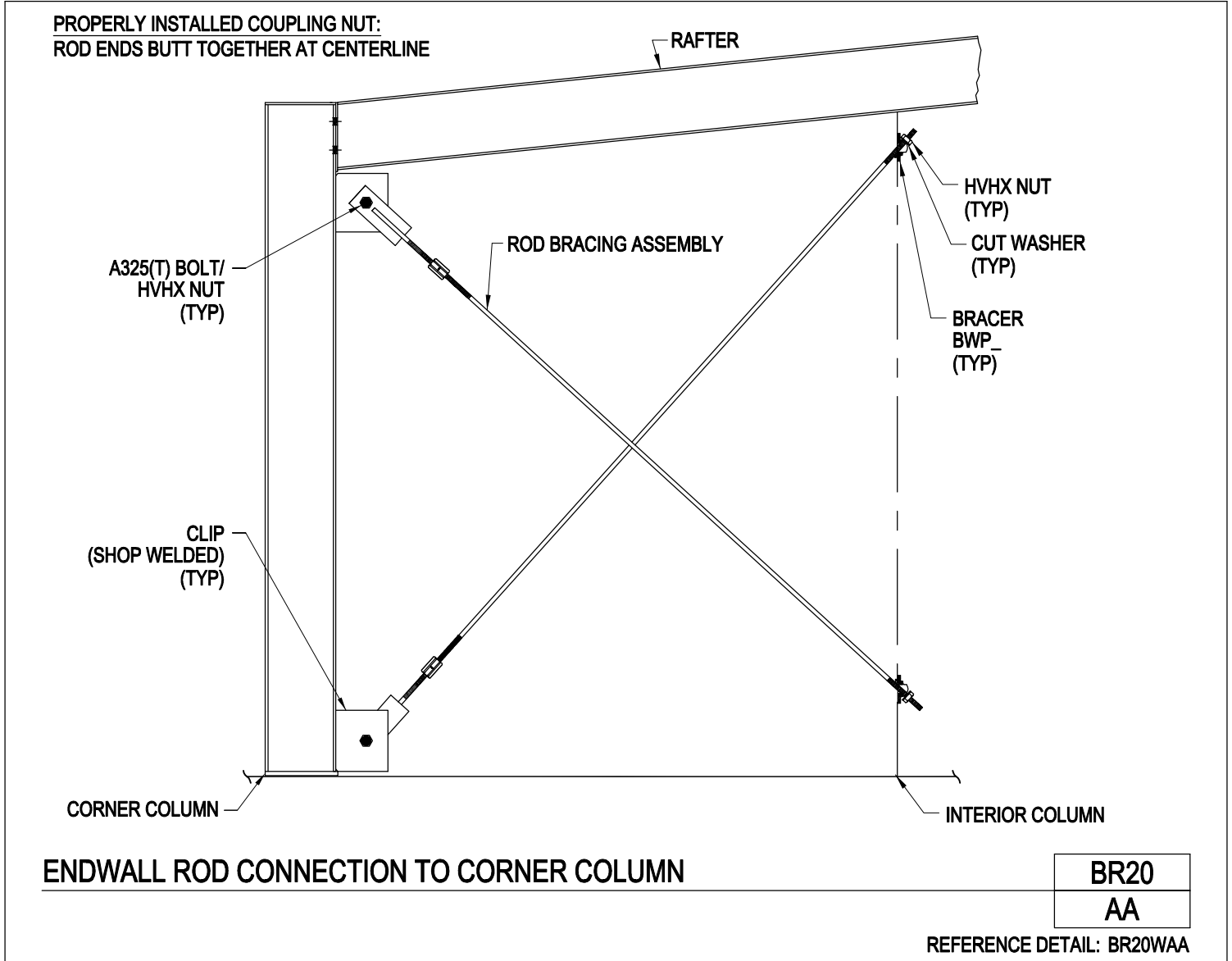


[Download the DWG file by clicking here.](#)

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Endwall Rod Connection to Corner Column

BR20/AA

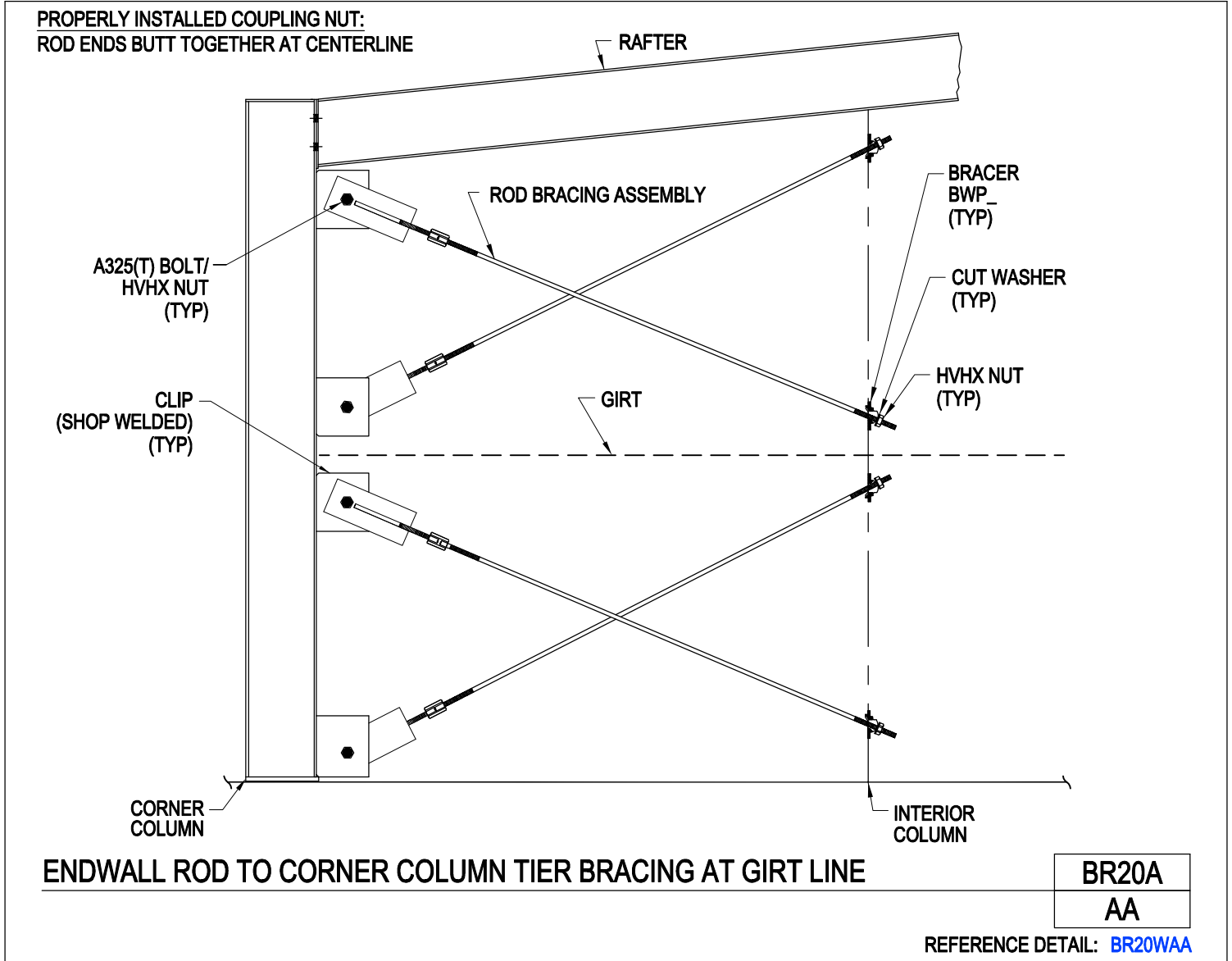


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Endwall Rod to Corner Column Tier Bracing at Girt Line

BR20A/AA

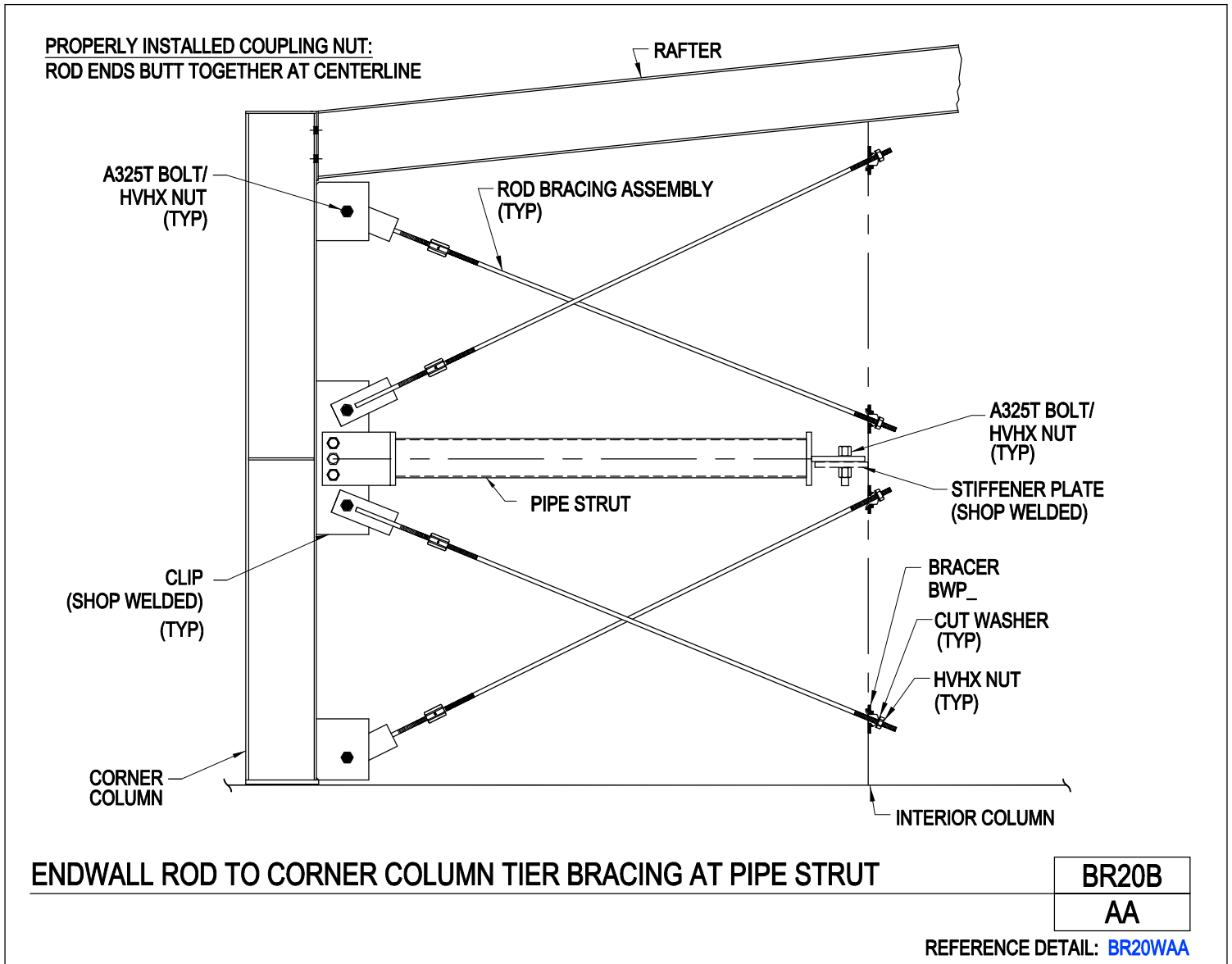


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Endwall Rod to Corner Column Tier Bracing at Pipe Strut

BR20B/AA

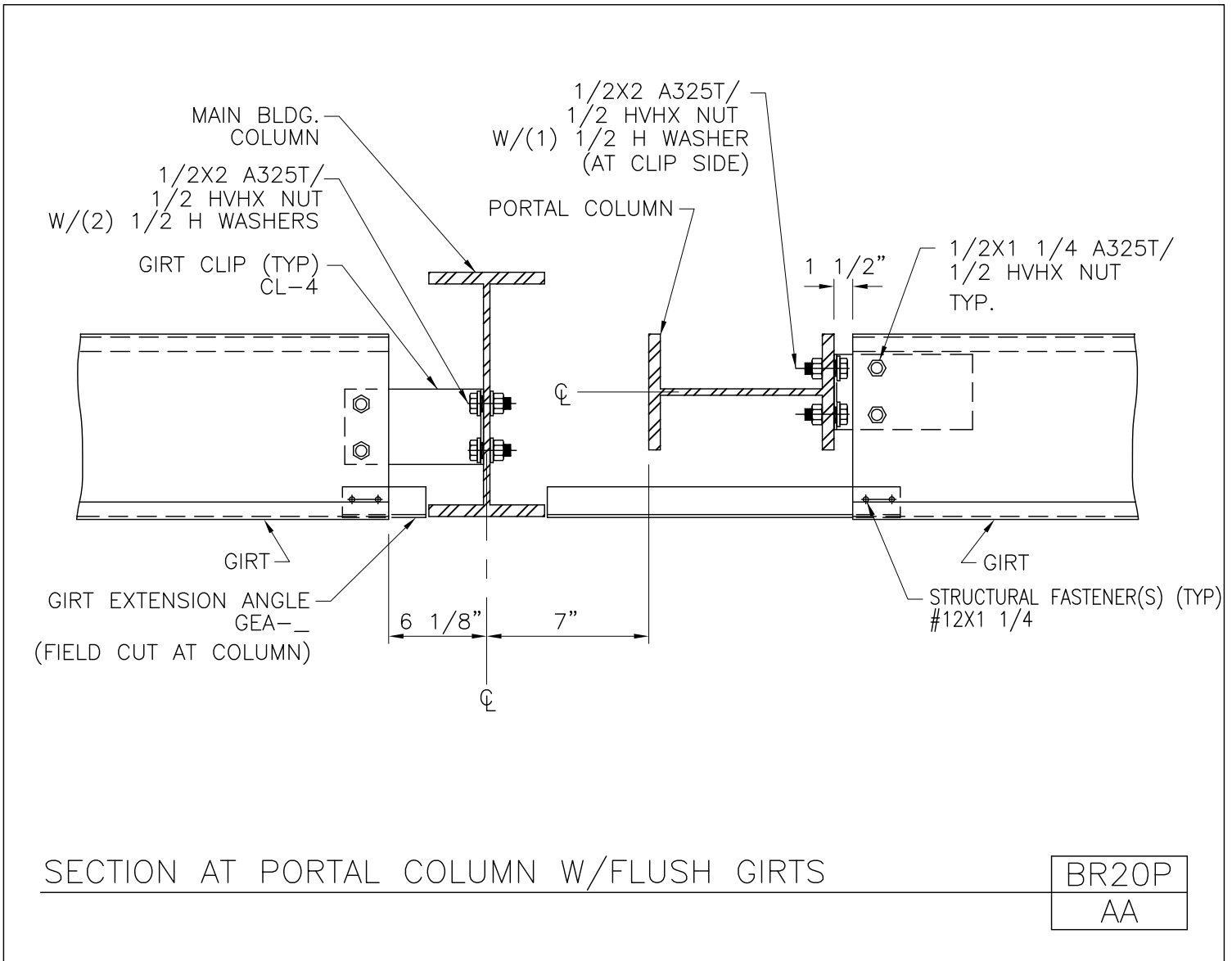


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Section at Portal Column w/ Flush Girts

BR20P/AA

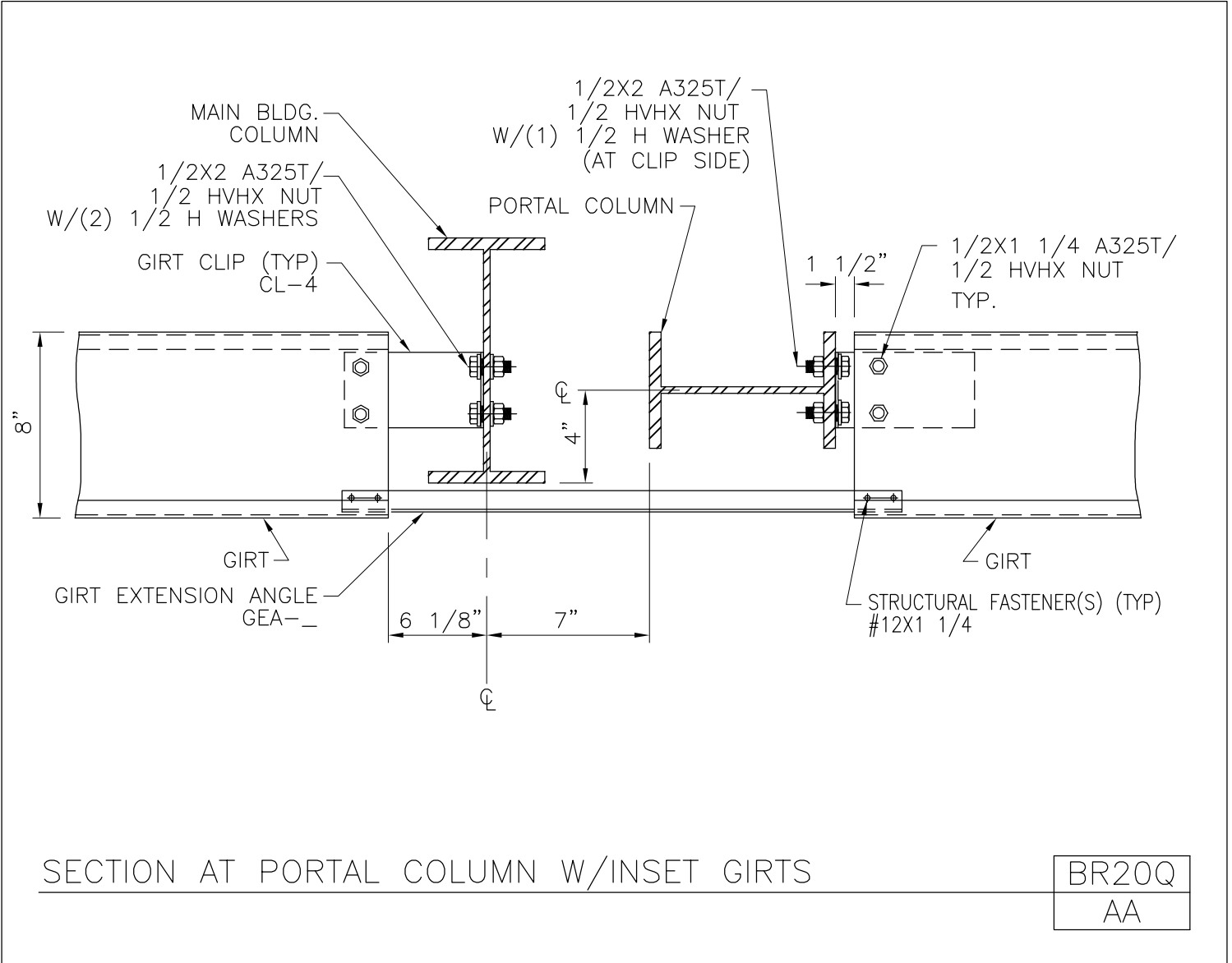


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Section at Portal Column w/ Inset Girts

BR20Q/AA

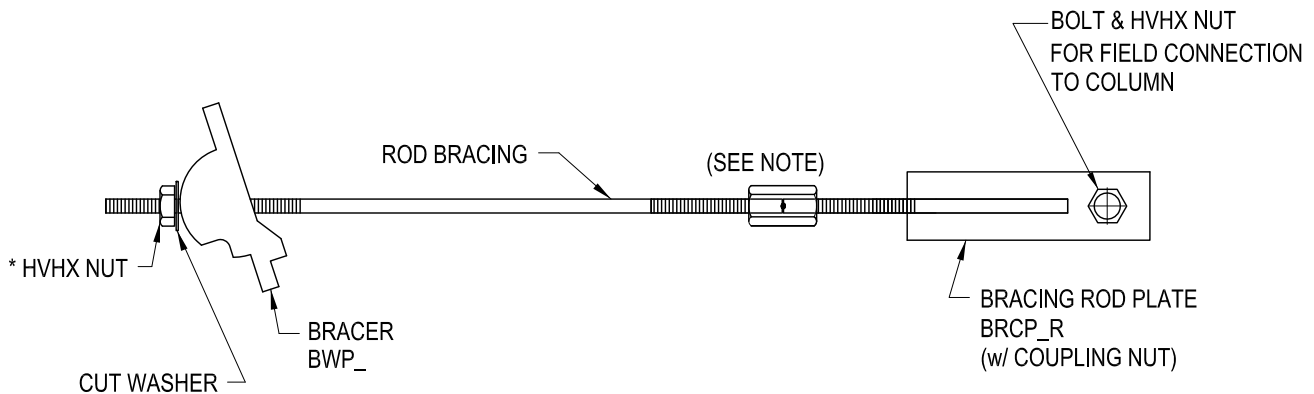


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Single Paddle, Rod Bracing Assembly

BR20W/AA



ROD Ø	REQUIRED FOR ROD ASSEMBLY					BRACING ROD PLATE CONNECTION	
	ROD BRACING	BRACER	CUT WASHER	* HVHX NUT	BRACING ROD PLATE (w/ COUPLING NUT)	A325(T) BOLT AT BRCP_(L/R)	HVHX NUT AT BRCP_(L/R)
5/8"	BR5-	BWP1	5/8 CUT WASHER	5/8 HVHX NUT	BRCP5R (w/ CPN5)	(1) 1X3 1/4 A325T	(1) 1 HVHX NUT
3/4"	BR6-	BWP2	3/4 CUT WASHER	3/4 HVHX NUT	BRCP6R (w/ CPN6)		
7/8"	BR7-		7/8 CUT WASHER	7/8 HVHX NUT	BRCP7R (w/ CPN7)		
1"	BR8-	BWP3	1 CUT WASHER	1 HVHX NUT	BRCP8R (w/ CPN8)	(1) 1 1/4X3 A325 w/1 1/4 HVHX NUT	
1 1/8"	BR9-		1 1/8 CUT WASHER	1 1/8 HVHX NUT	BRCP9R (w/ CPN9)		
1 1/4"	BR10-		1 1/4 CUT WASHER	1 1/4 HVHX NUT	BRCP10R (w/ CPN10)		

NOTE:

PROPERLY INSTALLED COUPLING NUT:

ROD AT BRACING ROD PLATE (BRCP_R) AND ROD BRACING (BR_-) ENDS BUTT TOGETHER AT THE CENTERLINE OF COUPLING NUT.

SINGLE PADDLE, ROD BRACING ASSEMBLY

BR20W

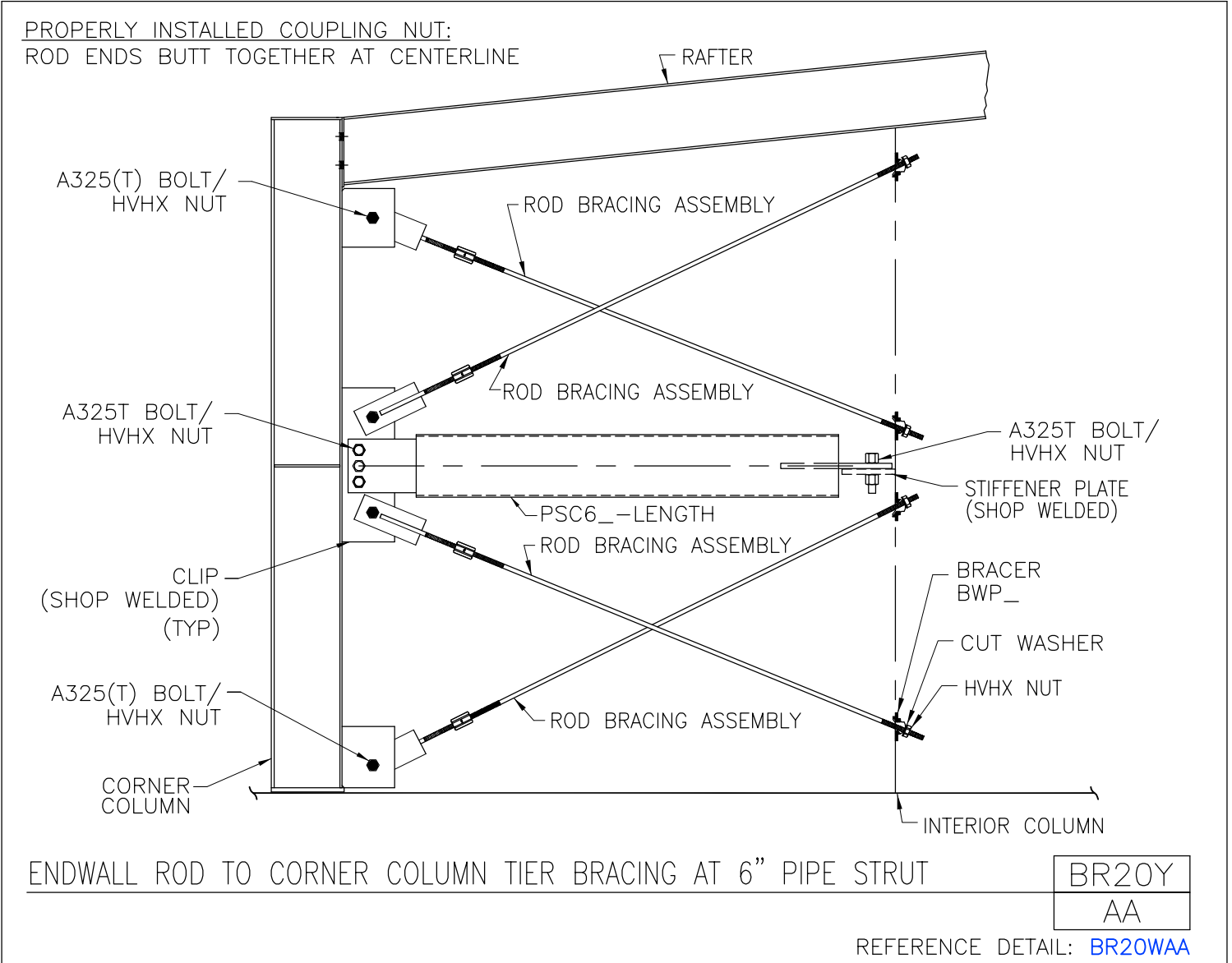
AA

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Endwall Rod to Corner Column Tier Bracing at 6" Pipe Strut

BR20Y/AA



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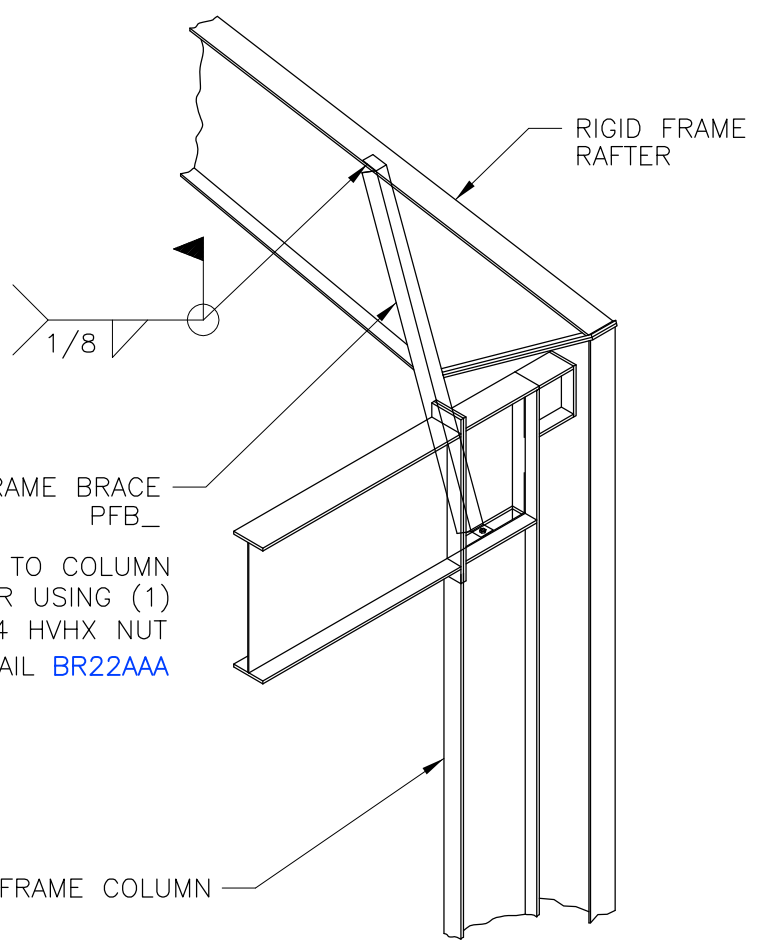
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Portal Frame Knee Frame Brace

BR22/AA

NOTE: FIELD WELDING REQUIRED,
SEE DETAIL ENFWA_.

WELD ANGLE BRACE TO THE TOP FLANGE OF
THE RAFTER OR FIELD DRILL $9/16"$ ϕ
HOLE $1\ 1/4"$ FROM WEB AND CONNECT WITH
 $1/2"$ ϕ A325T BOLT with $1/2$ HVHX NUT



PORTAL FRAME BRACE
PFB_
ATTACH PFB TO COLUMN
STIFFENER USING (1)
 $3/4$ X2 A325T/ $3/4$ HVHX NUT
SEE DETAIL [BR22AAA](#)

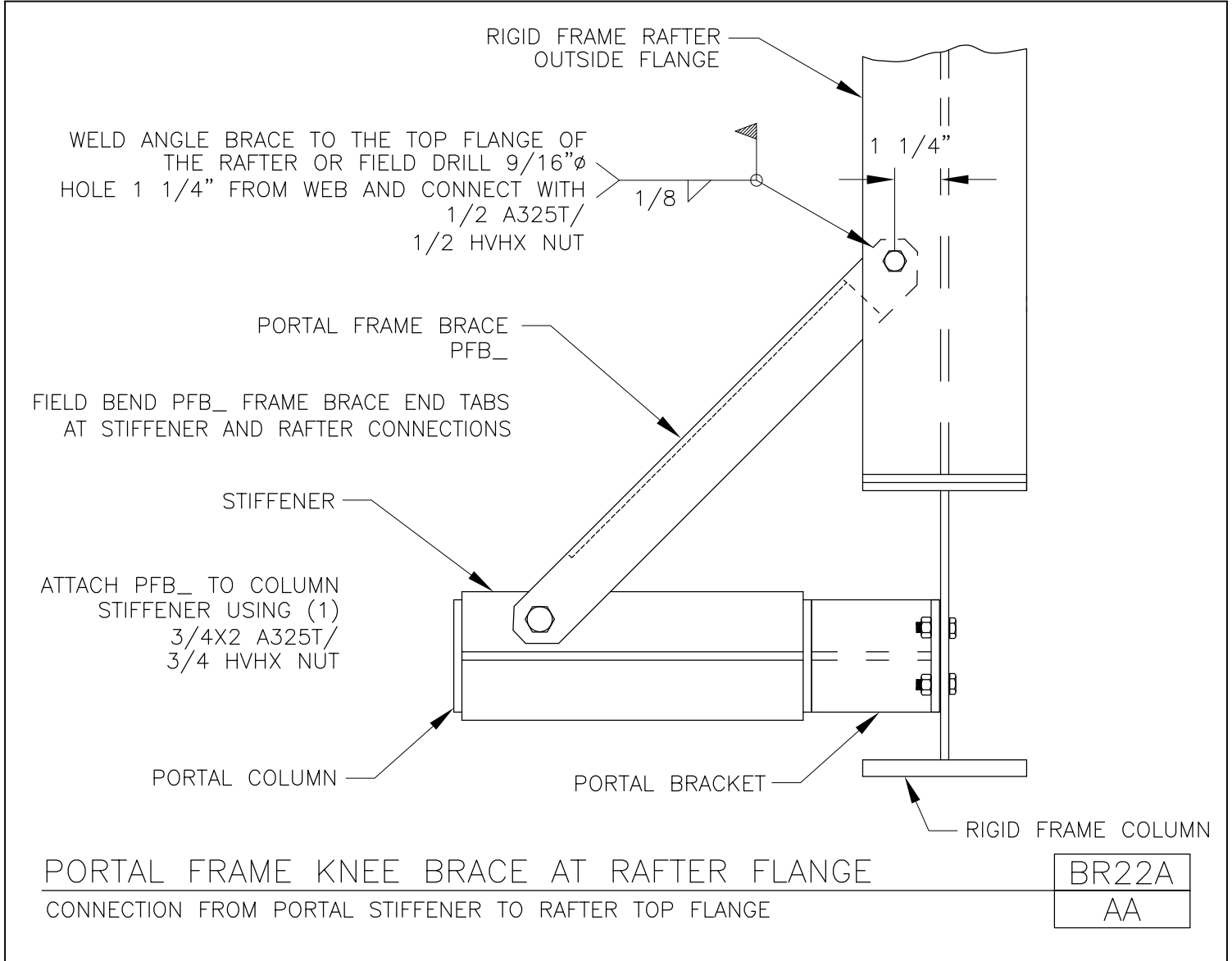
PORTAL FRAME KNEE FRAME BRACE

BR22
AA

[Download the DWG file by clicking here.](#)

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Portal Frame Knee Brace at Rafter Flange
 Connection From Portal Stiffener to Rafter Top Flange
 BR22A/AA

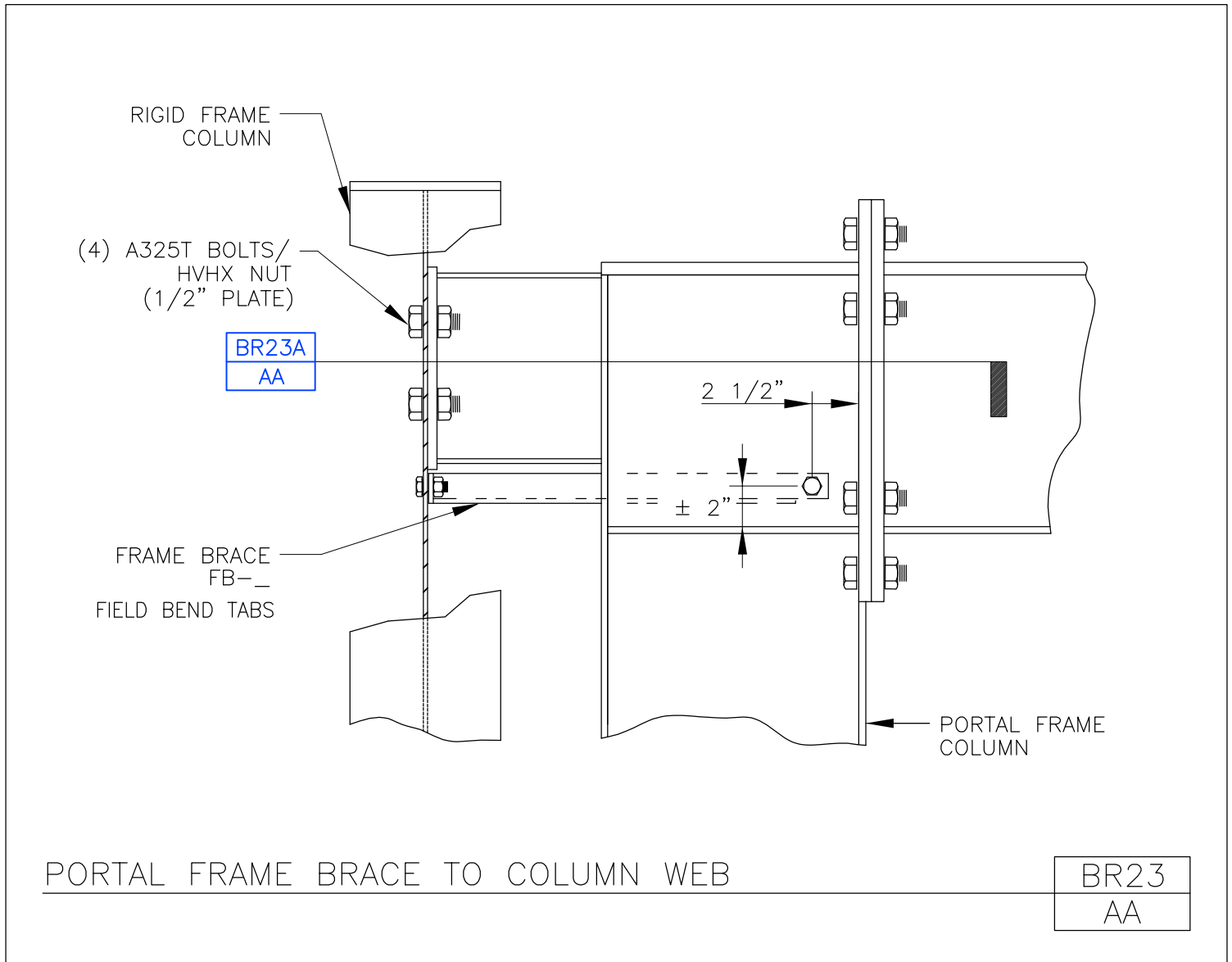


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Portal Frame Brace to Column Web

BR23/AA

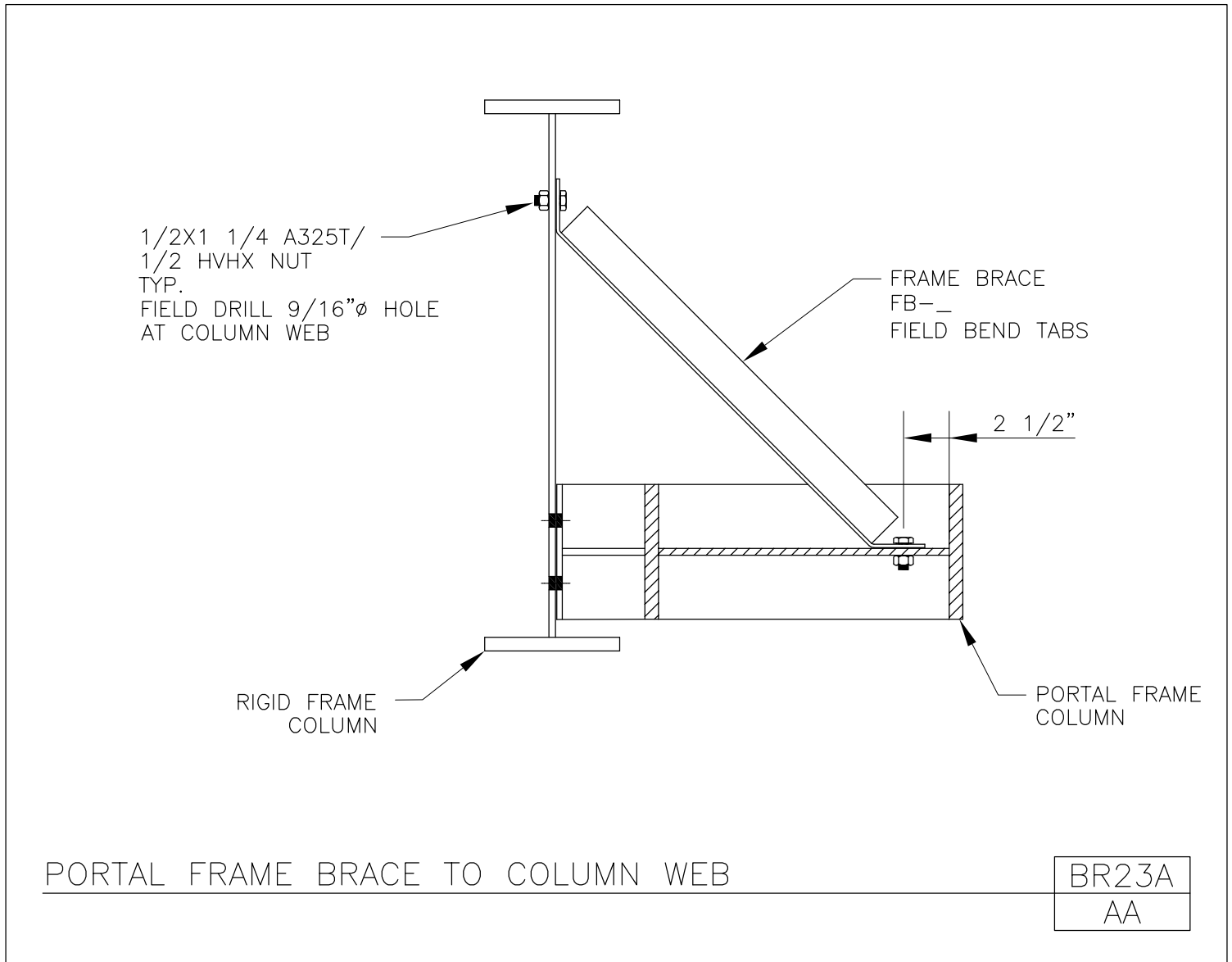


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Portal Frame Brace to Column Web

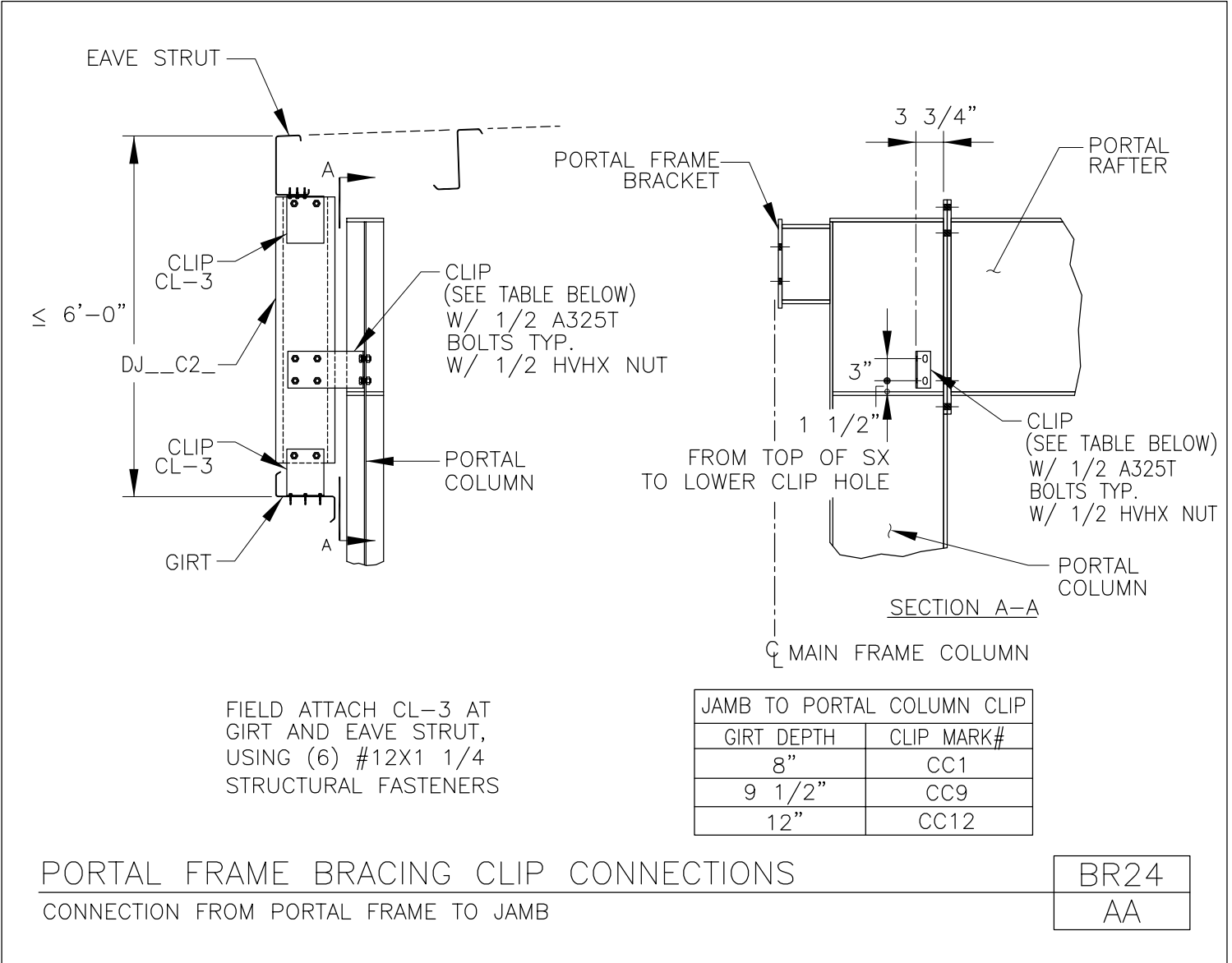
BR23A/AA



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Portal Frame Bracing Clip Connections
 Connection From Portal Frame to Jamb
 BR24/AA

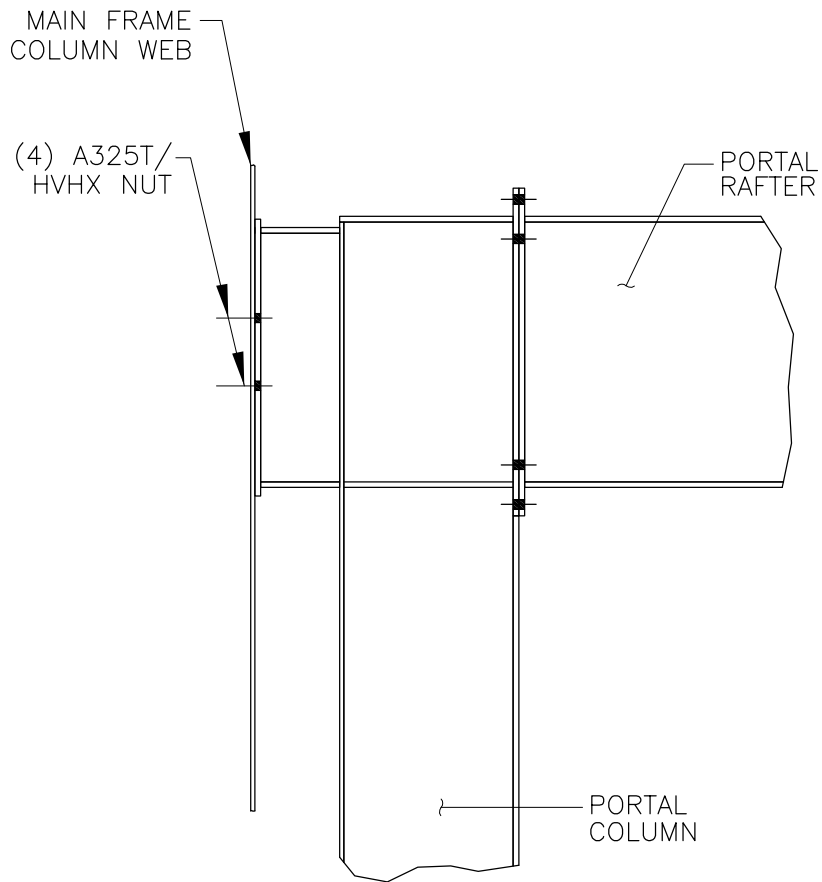


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Portal Frame Connection to Main Frame

BR25/AA



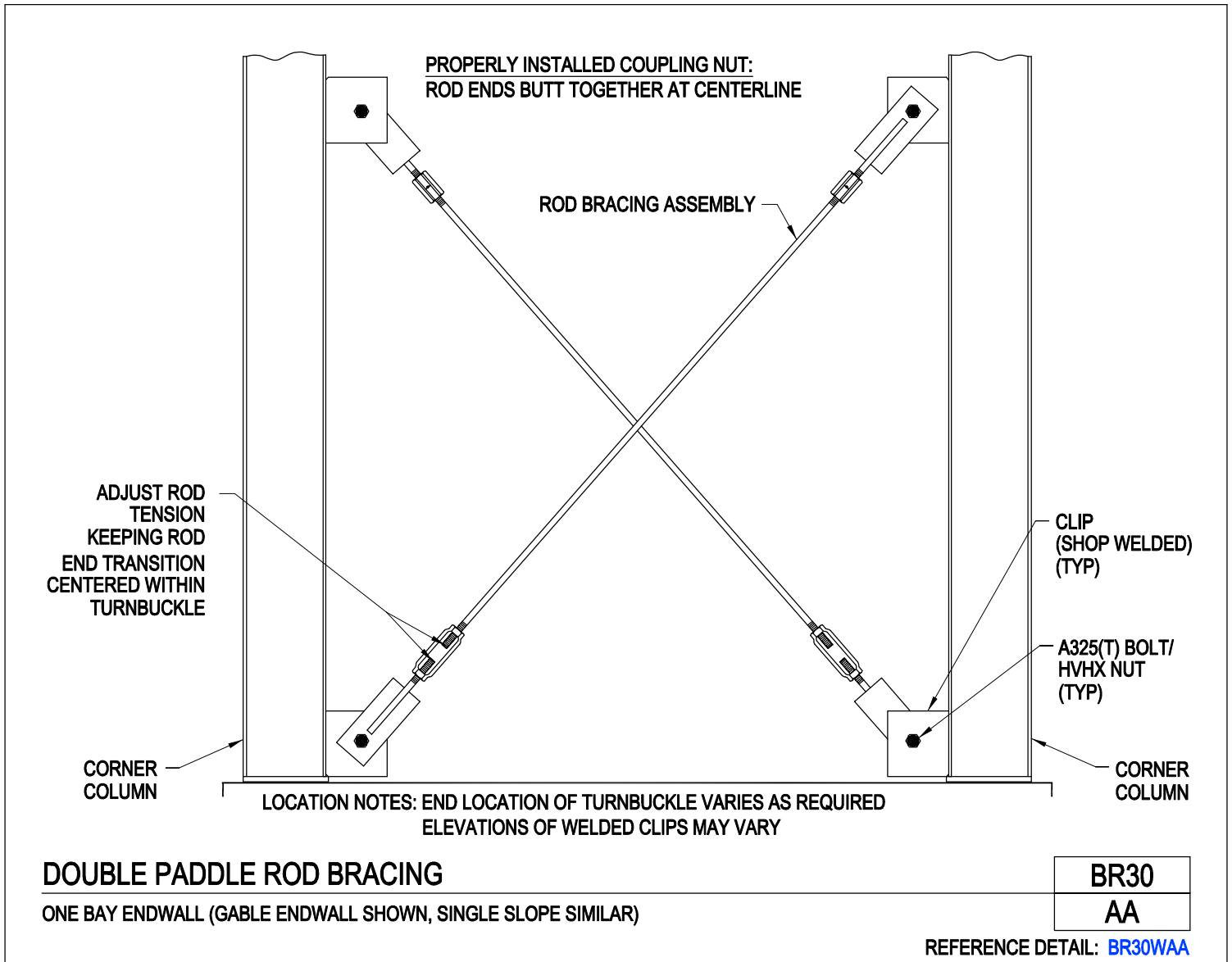
PORTAL FRAME CONNECTION TO MAIN FRAME

BR25
AA

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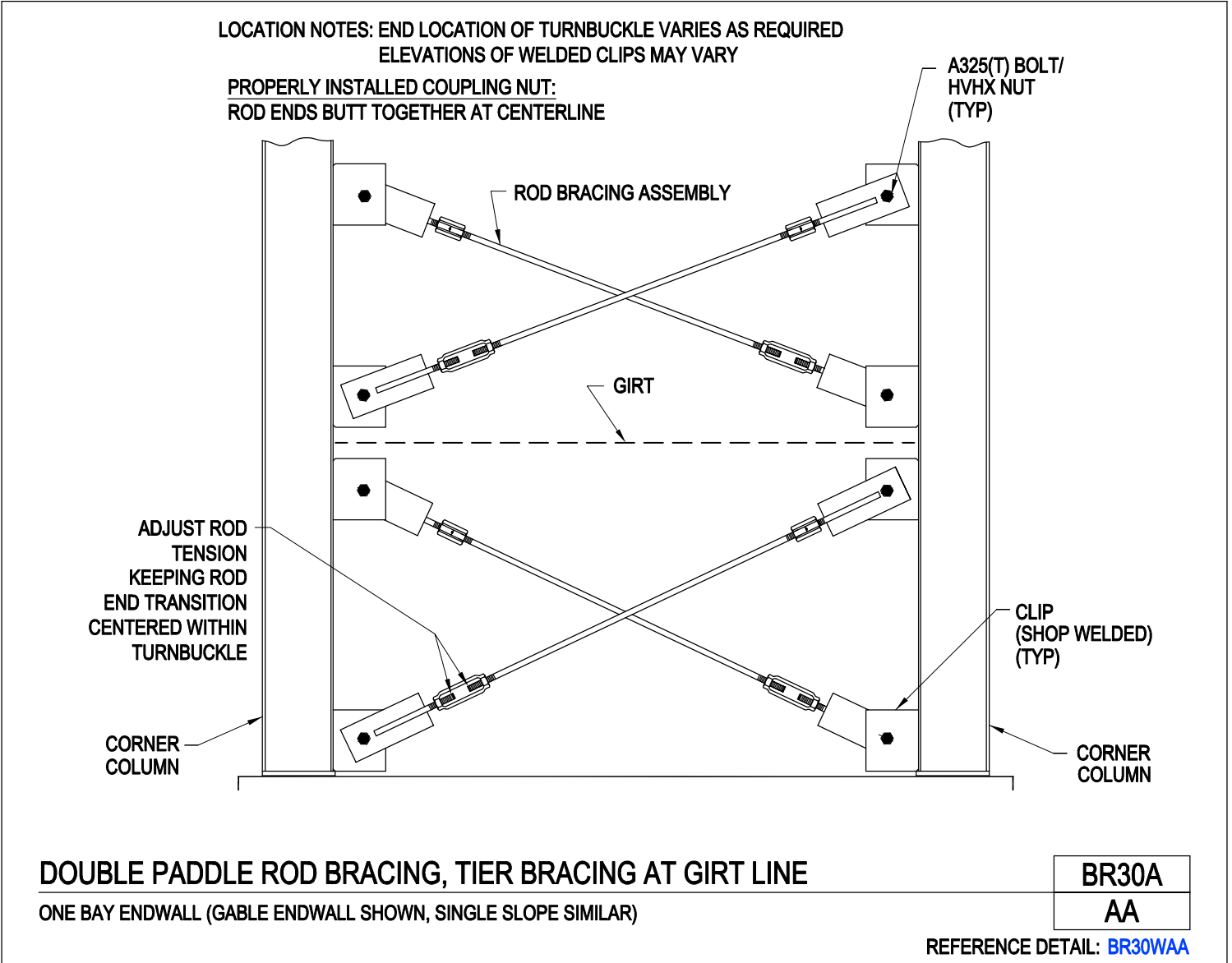
Double Paddle Rod Bracing
 One Bay Endwall (Gable Endwall Shown, Single Slope Similar)
 BR30/AA



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[To Section Index](#)

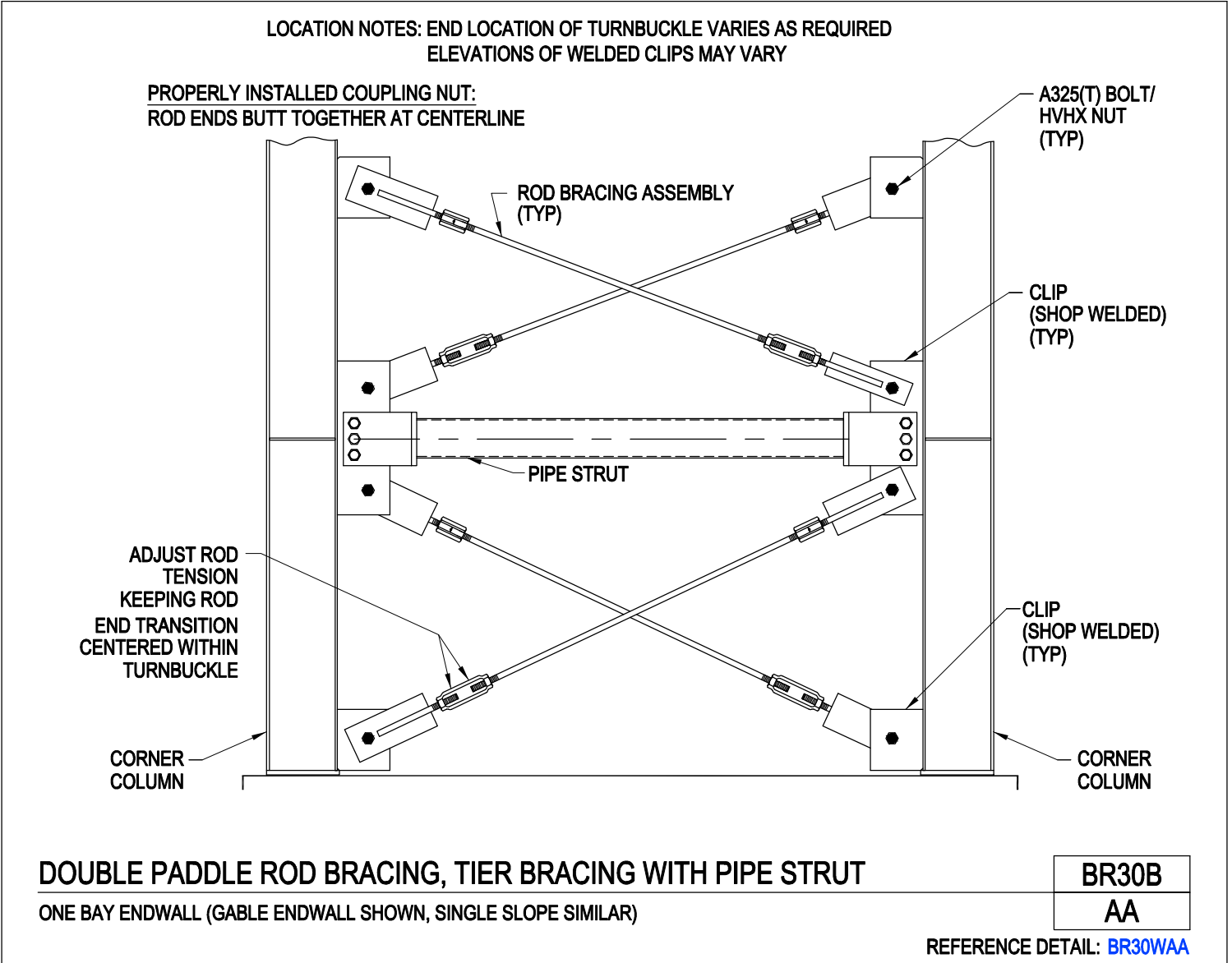
Double Paddle Rod Bracing, Tier Bracing at Girt Line
 One Bay Endwall (Gable Endwall Shown, Single Slope Similar)
 BR30A/AA



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Double Paddle Rod Bracing, Tier Bracing With Pipe Strut
 One Bay Endwall (Gable Endwall Shown, Single Slope Similar)
 BR30B/AA



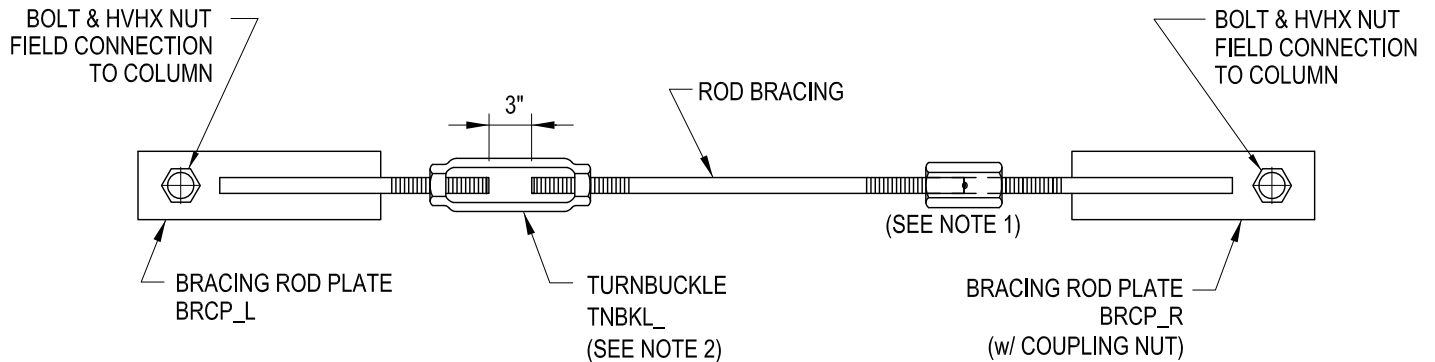
[Download the DWG file by clicking here.](#)

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Double Paddle, Rod Bracing Assembly

Double Paddle-Single Rod Bracing Assemblies, Attach Only (1) Paddle to Each Gusset Plate

BR30W/AA



ROD Ø	"D"	REQUIRED FOR ROD ASSEMBLY				BRACING ROD PLATE CONNECTION	
		ROD BRACING	LEFT HAND BRACING ROD PLATE	TURNBUCKLE	RIGHT HAND BRACING ROD PLATE (w/ COUPLING NUT)	A325(T) BOLT AT BRCP_(L/R)	HVHX NUT AT BRCP_(L/R)
5/8"	1'-2 1/4"	BR5-	BRCP5L	TNBKL5	BRCP5R (w/ CPN5)	(2) 1X3 1/4 A325T	(2) 1 HVHX NUT
3/4"	1'-2 1/4"	BR6-	BRCP6L	TNBKL6	BRCP6R (w/ CPN6)		
7/8"	1'-2 1/4"	BR7-	BRCP7L	TNBKL7	BRCP7R (w/ CPN7)		
1"	1'-2 1/4"	BR8-	BRCP8L	TNBKL8	BRCP8R (w/ CPN8)	(2) 1 1/4X3 1/4 A325 w/1 1/4 HVHX NUT	
1 1/8"	1'-2 3/4"	BR9-	BRCP9L	TNBKL9	BRCP9R (w/ CPN9)		
1 1/4"	1'-2 3/4"	BR10-	BRCP10L	TNBKL10	BRCP10R (w/ CPN10)		

NOTES:

1.) PROPERLY INSTALLED COUPLING NUT:

ROD AT BRACING ROD PLATE (BRCP_R) AND ROD BRACING (BR_) ENDS BUTT TOGETHER AT CENTERLINE OF COUPLING NUT.

2.) TURNBUCKLES REQUIRED FOR ROD ADJUSTMENT FOR THIS FIXED END PLATE CONNECTION.

ONLY (1) TURNBUCKLE ALLOWED PER ROD ASSEMBLY.

DOUBLE PADDLE, ROD BRACING ASSEMBLY

DOUBLE PADDLE - SINGLE ROD BRACING ASSEMBLIES, ATTACH ONLY (1) PADDLE TO EACH GUSSET PLATE

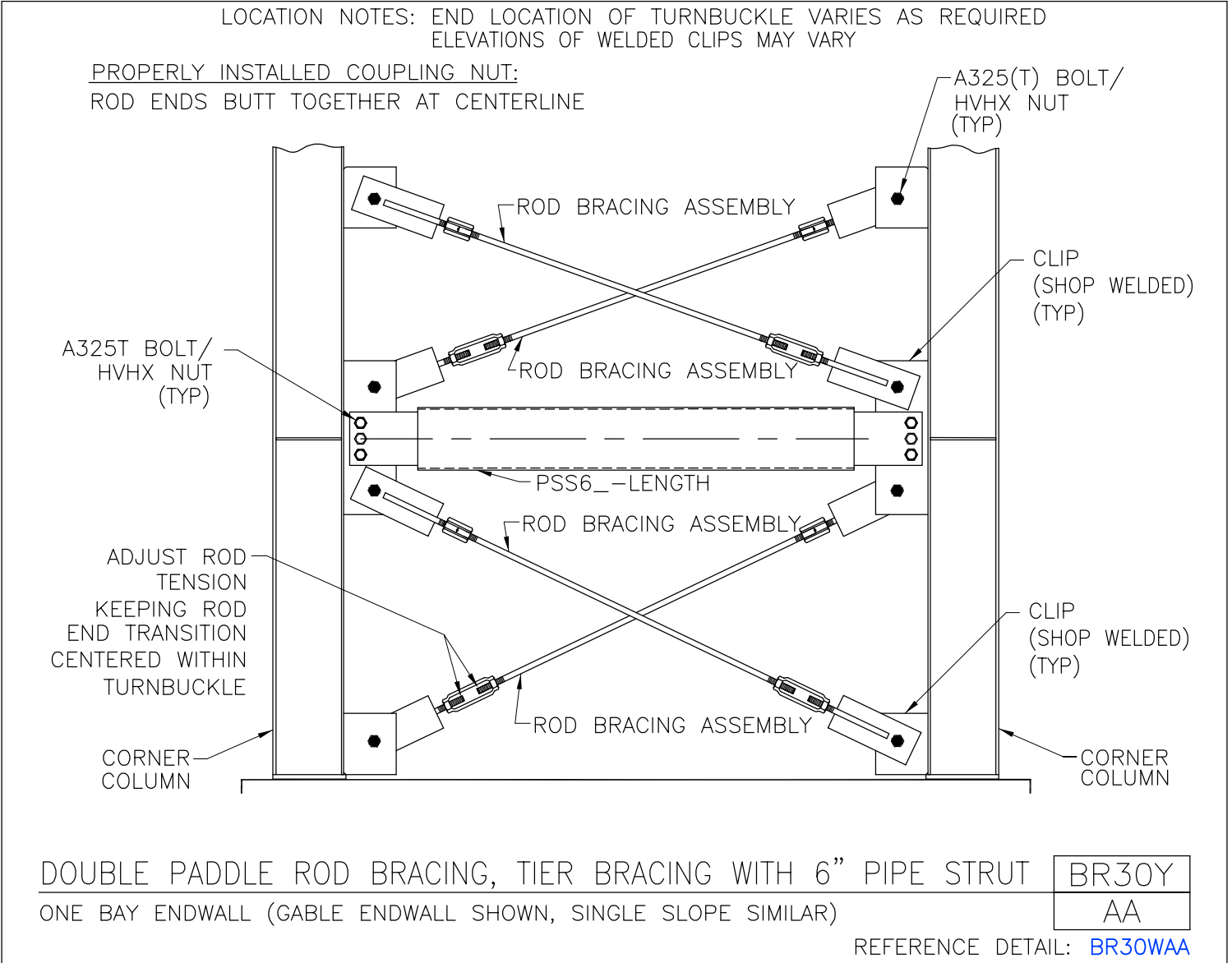
BR30W

AA

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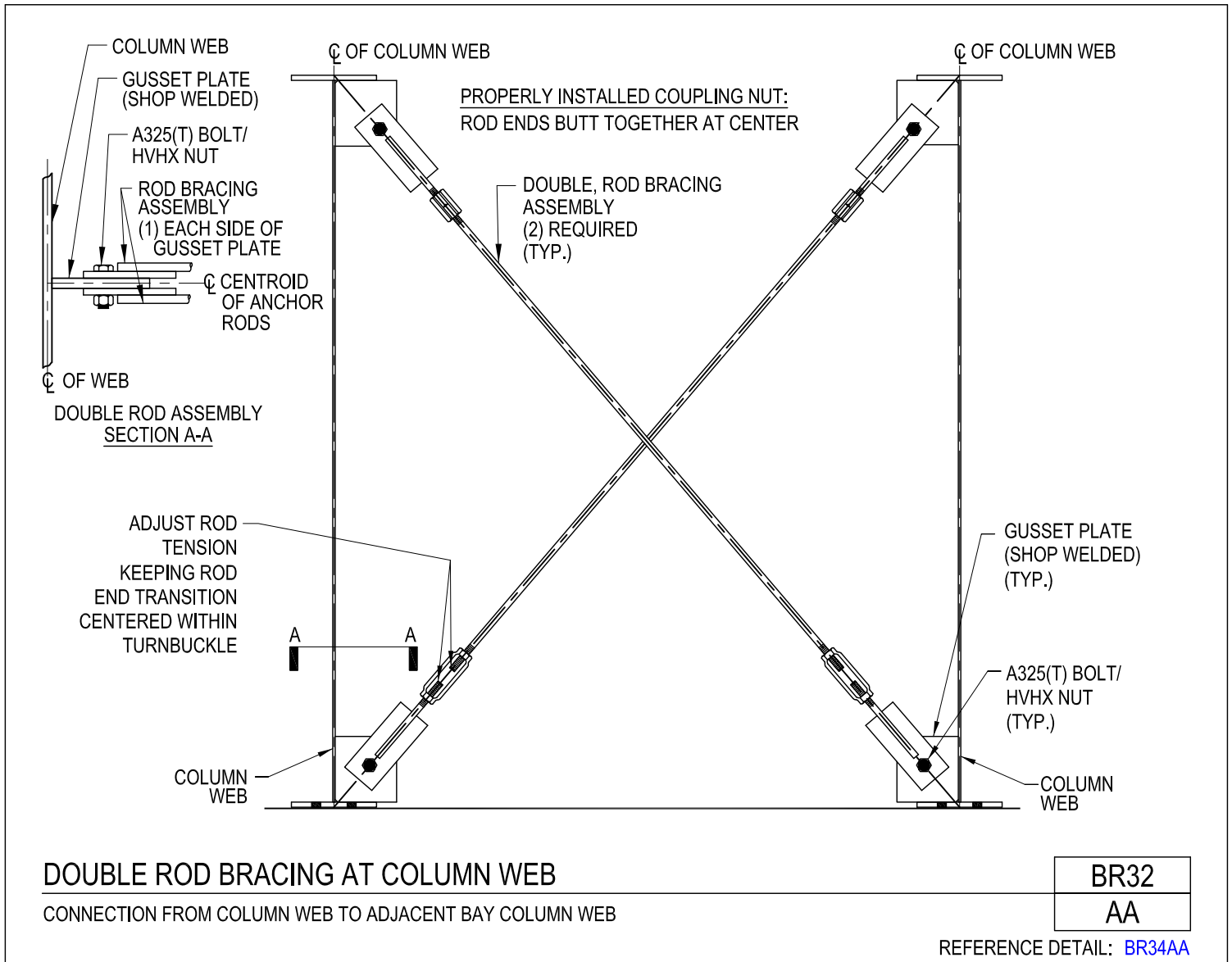
Double Paddle Rod Bracing, Tier Bracing With 6" Pipe Strut
 One Bay Endwall (Gable Endwall Shown, Single Slope Similar)
 BR30Y/AA



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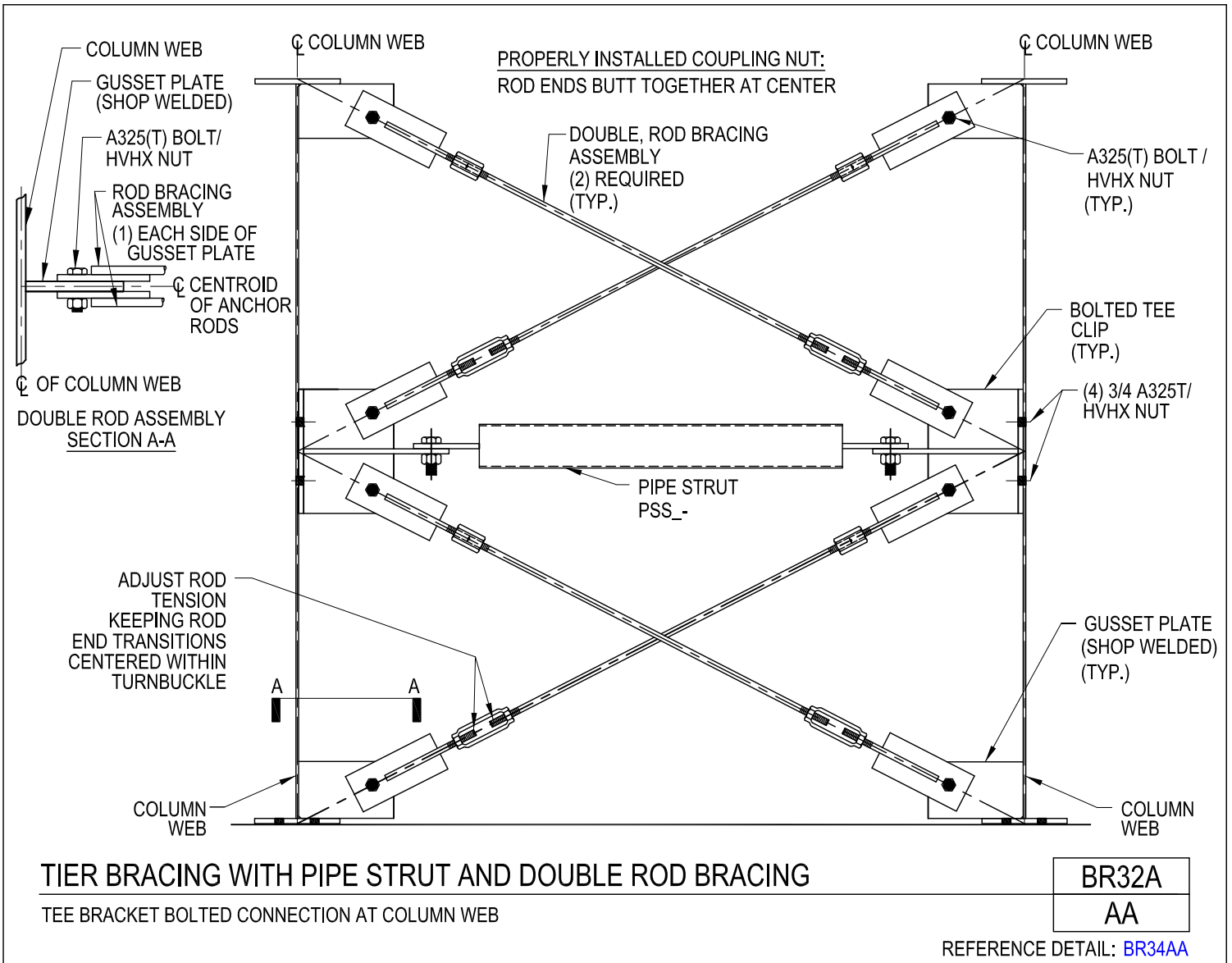
Double Rod Bracing at Column Web
Connection From Column Web to Adjacent Bay Column Web
BR32/AA



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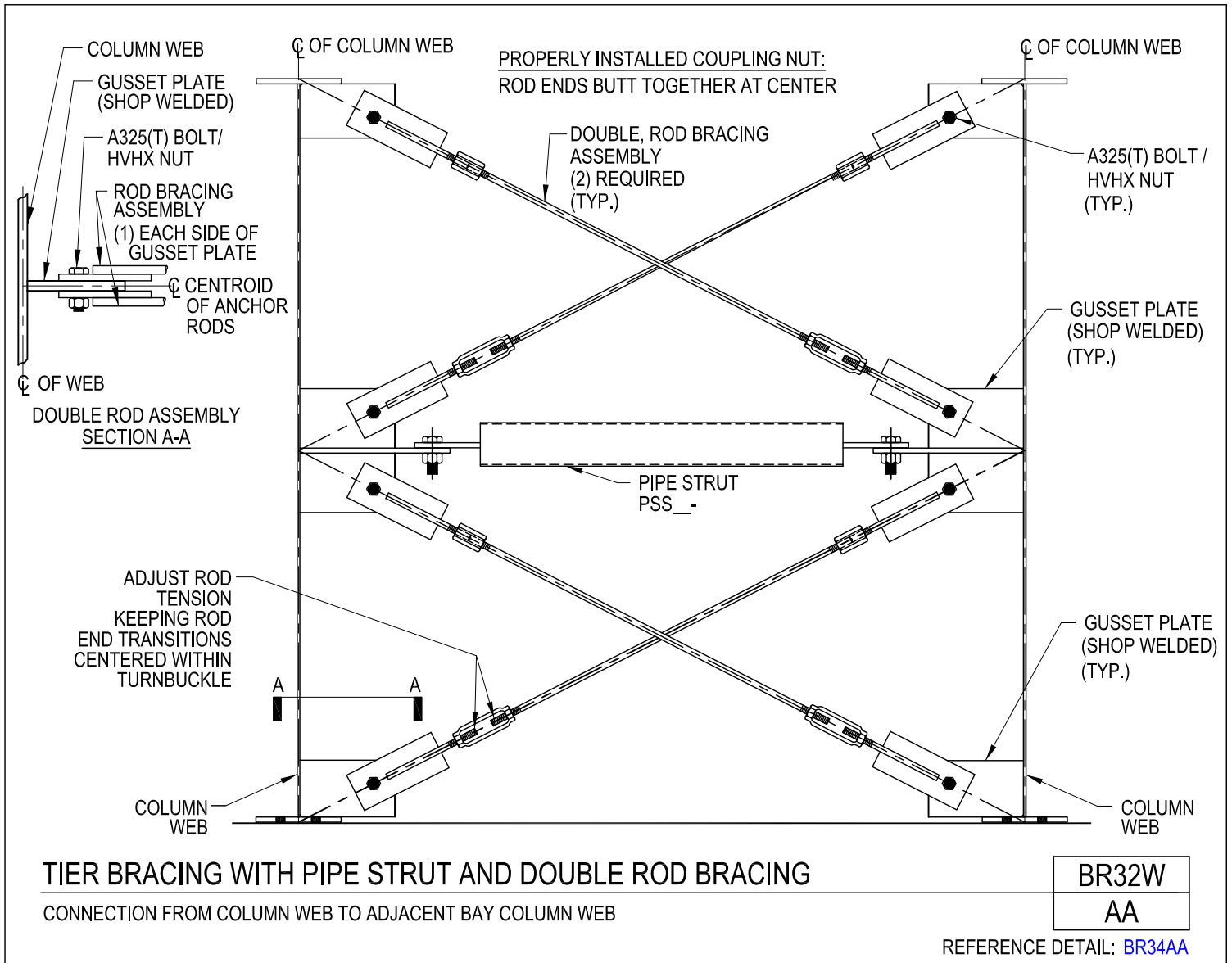
Tier Bracing With Pipe Strut And Double Rod Bracing
Tee Bracket Bolted Connection at Column Web
BR32A/AA



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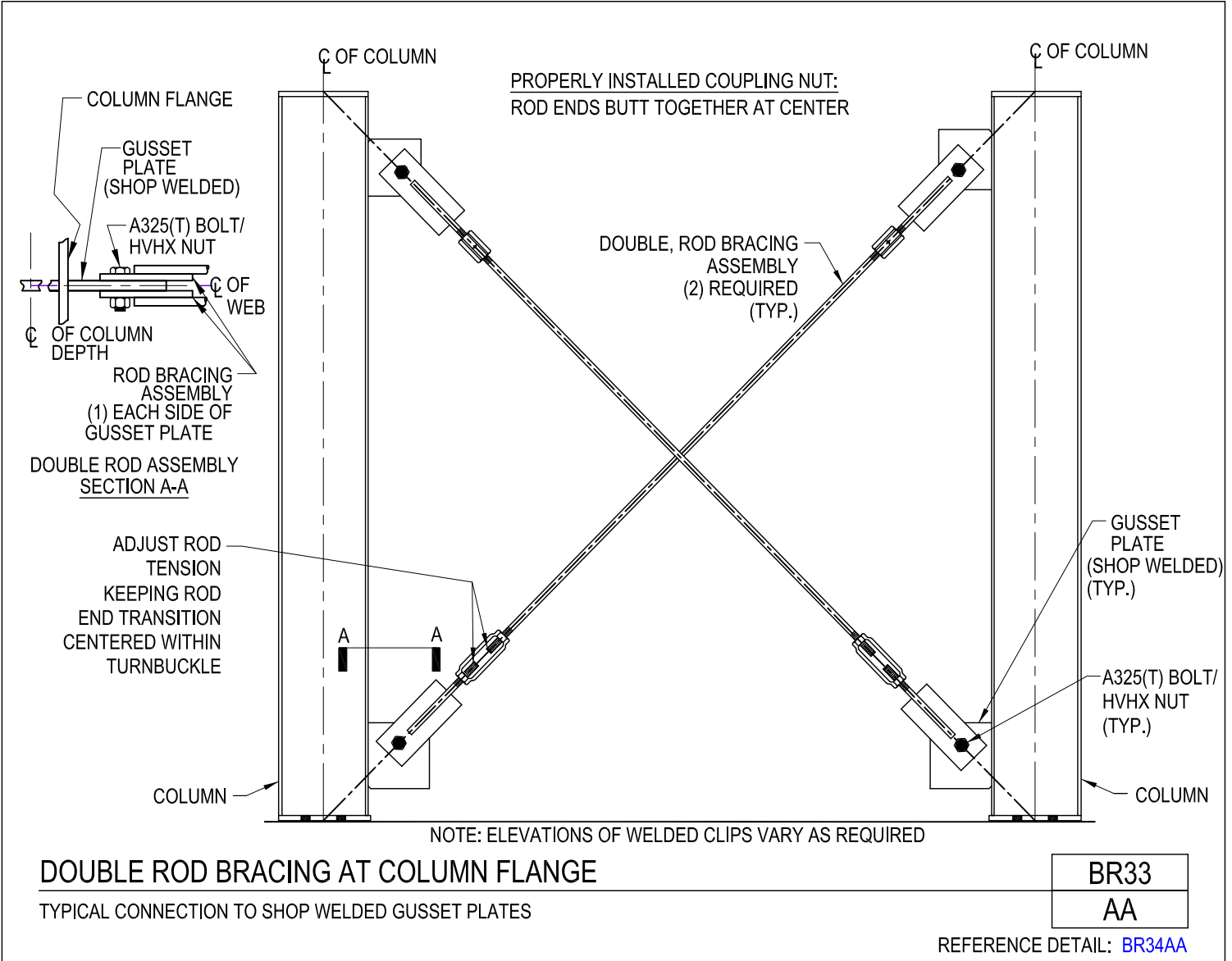
Tier Bracing With Pipe Strut And Double Rod Bracing
Connection From Column Web to Adjacent Bay Column Web
BR32W/AA



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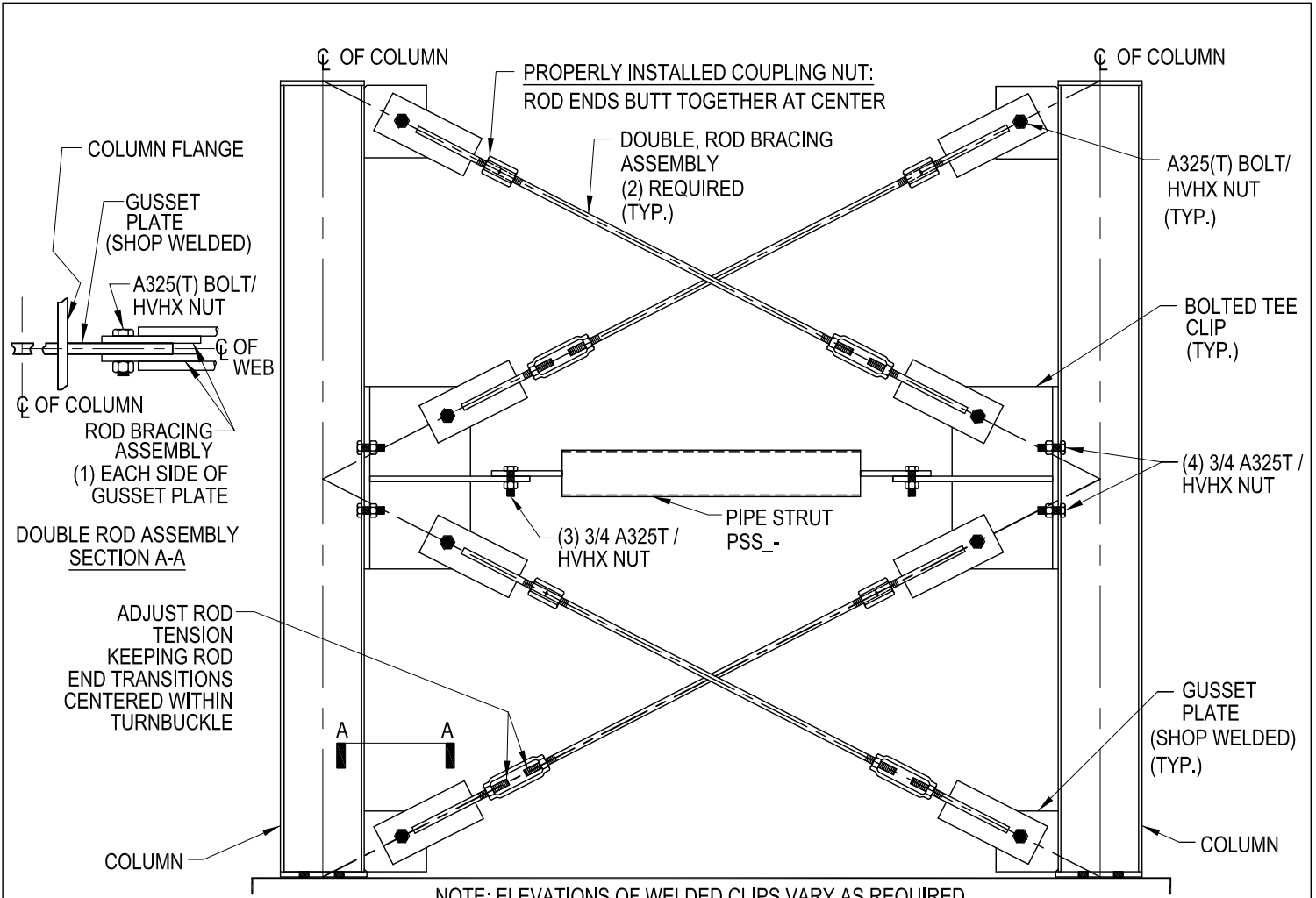
Double Rod Bracing at Column Flange
Typical Connection to Shop Welded Gusset Plates
BR33/AA



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Tier Bracing With Pipe Strut And Double Rod Bracing
Tee Bracket Bolted Connection at Column Flange
BR33A/AA



NOTE: ELEVATIONS OF WELDED CLIPS VARY AS REQUIRED

TIER BRACING WITH PIPE STRUT AND DOUBLE ROD BRACING
TEE BRACKET BOLTED CONNECTION AT COLUMN FLANGE

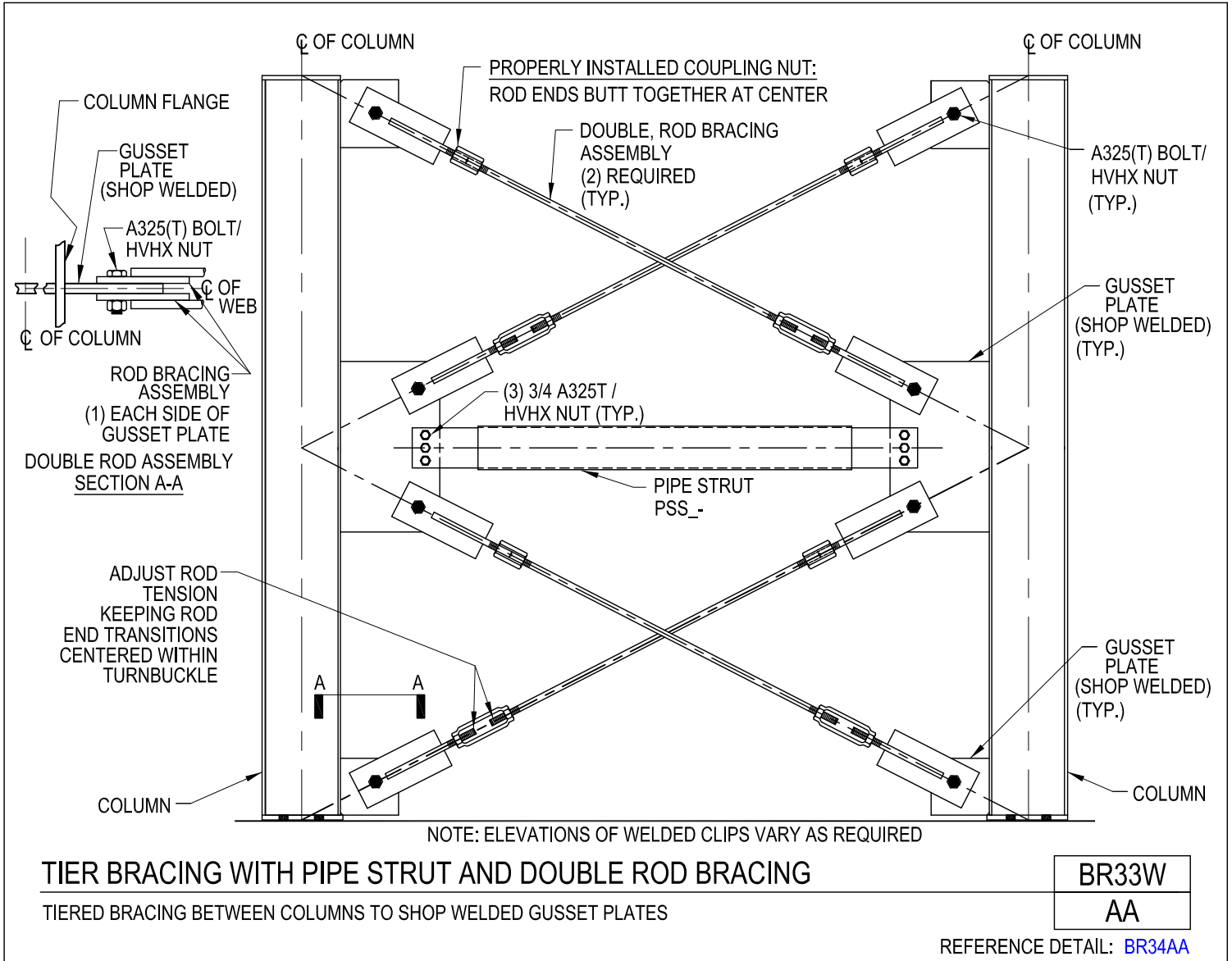
BR33A
AA

REFERENCE DETAIL: [BR34AA](#)

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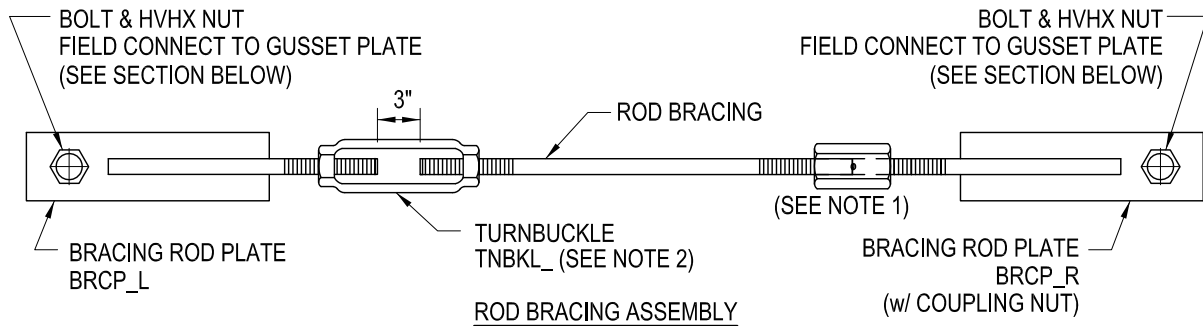
Tier Bracing With Pipe Strut And Double Rod Bracing
Tiered Bracing Between Columns to Shop Welded Gusset Plates
BR33W/AA



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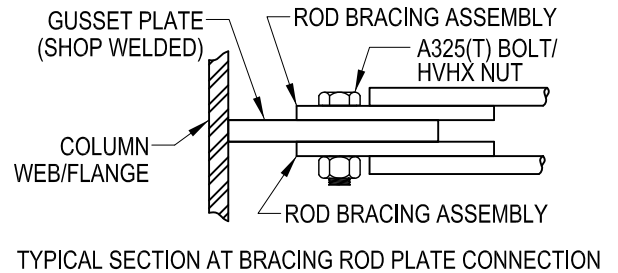
Double Rod Bracing Assembly
Double Rod Bracing Assemblies at Each Side of Gusset Plate
BR34/AA



ROD Ø	ROD BRACING ASSEMBLY MEMBERS				BRACING ROD PLATE CONNECTION	
	ROD BRACING	LEFT HAND BRACING ROD PLATE (REQ'D FOR TURNBUCKLE)	TURNBUCKLE	RIGHT HAND BRACING ROD PLATE (w/ COUPLING NUT)	A325(T) BOLT AT BRCP_(L/R)	HVHX NUT AT BRCP_(L/R)
5/8"	BR5-	BRCP5L	TNBKL5	BRCP5R (w/ CPN5)	(2) 1X3 1/4 A325T	(2) 1 HVHX NUT
3/4"	BR6-	BRCP6L	TNBKL6	BRCP6R (w/ CPN6)		
7/8"	BR7-	BRCP7L	TNBKL7	BRCP7R (w/ CPN7)		
1"	BR8-	BRCP8L	TNBKL8	BRCP8R (w/ CPN8)	(2) 1 1/4X3 1/4 A325 w/1 1/4 HVHX NUT	
1 1/8"	BR9-	BRCP9L	TNBKL9	BRCP9R (w/ CPN9)		
1 1/4"	BR10-	BRCP10L	TNBKL10	BRCP10R (w/ CPN10)		

NOTES:

- 1.) PROPERLY INSTALLED COUPLING NUT:
ROD AT BRACING ROD PLATE (BRCP_R) AND ROD BRACING (BR_-) ENDS BUTT TOGETHER AT CENTERLINE OF COUPLING NUT.
- 2.) TURNBUCKLES ARE REQUIRED FOR ROD ADJUSTMENT FOR THIS FIXED END PLATE CONNECTION.
ONLY (1) TURNBUCKLE ALLOWED PER ROD ASSEMBLY.



DOUBLE ROD BRACING ASSEMBLY

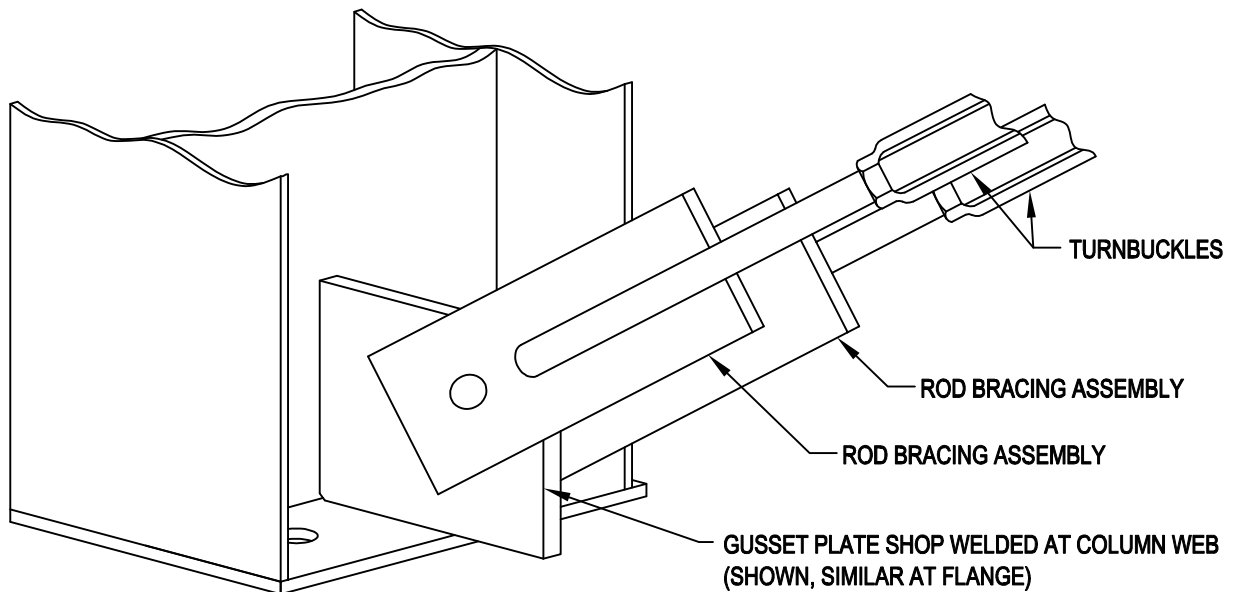
DOUBLE ROD BRACING ASSEMBLIES AT EACH SIDE OF GUSSET PLATE

BR34
AA

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Double Rod Bracing Isometric View of Base Connection at Web
 Double Rod Bracing With Rod Bracing Assemblies at Each Side of Gusset Plate
 BR35/AA



NOTE ORIENTATION:

ROD FACES OUTWARD, AWAY FROM
 SHOP WELDED GUSSET PLATE

DOUBLE ROD BRACING ISOMETRIC VIEW OF BASE CONNECTION AT WEB

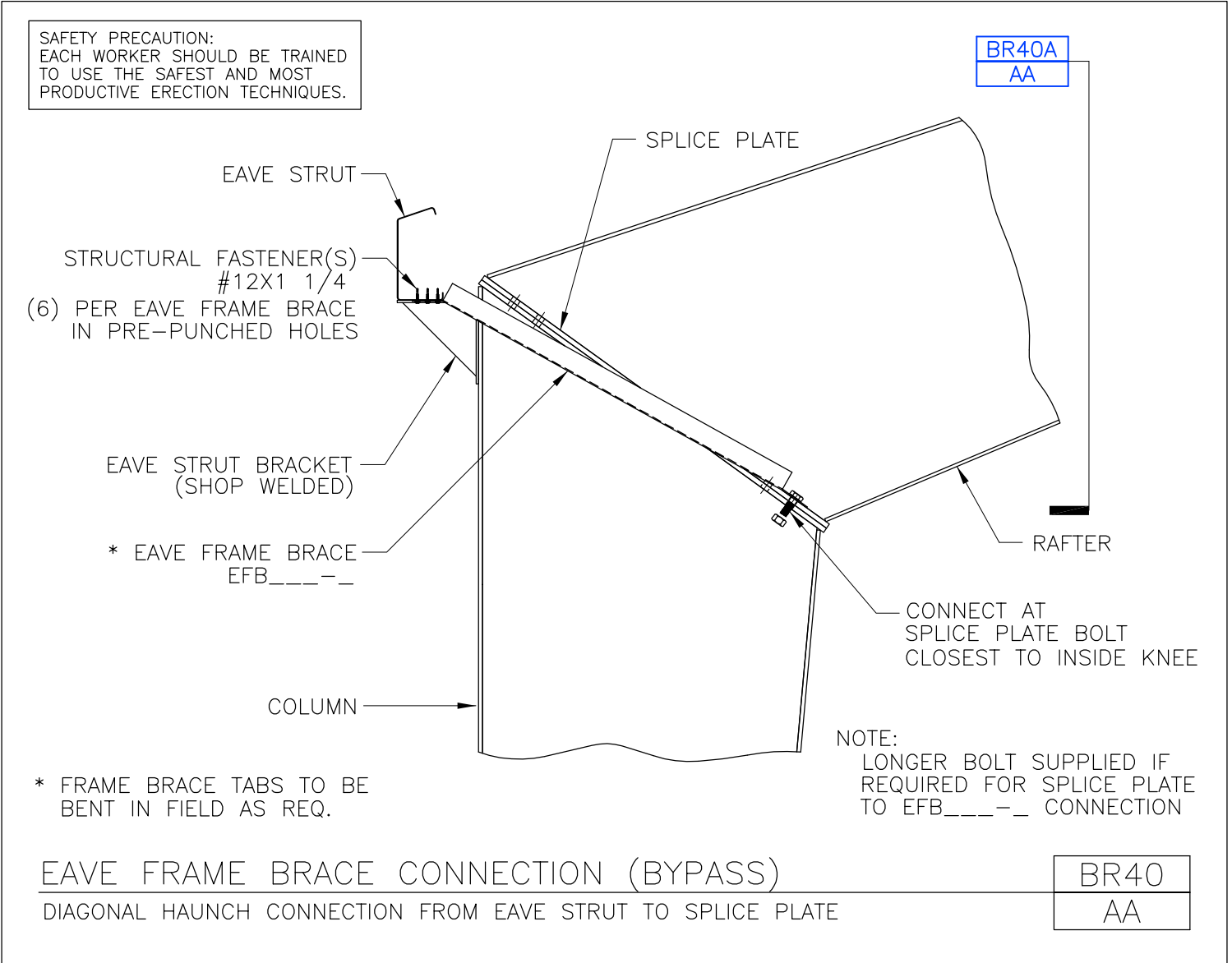
DOUBLE ROD BRACING WITH ROD BRACING ASSEMBLIES AT EACH SIDE OF GUSSET PLATE

BR35
AA

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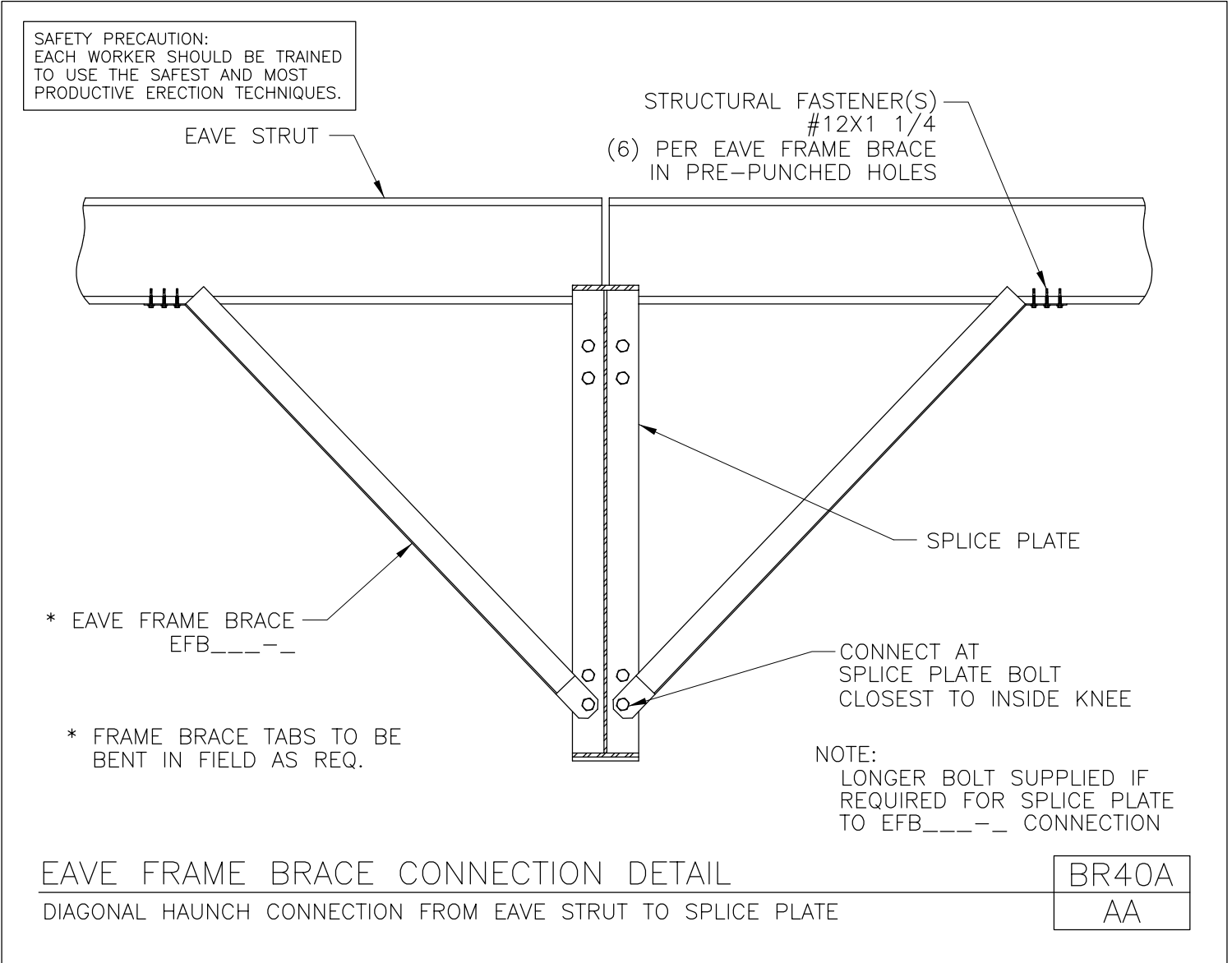
Eave Frame Brace Connection (Bypass)
 Diagonal Haunch Connection From Eave Strut to Splice Plate
 BR40/AA



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Eave Frame Brace Connection Detail
 Diagonal Haunch Connection From Eave Strut to Splice Plate
 BR40A/AA



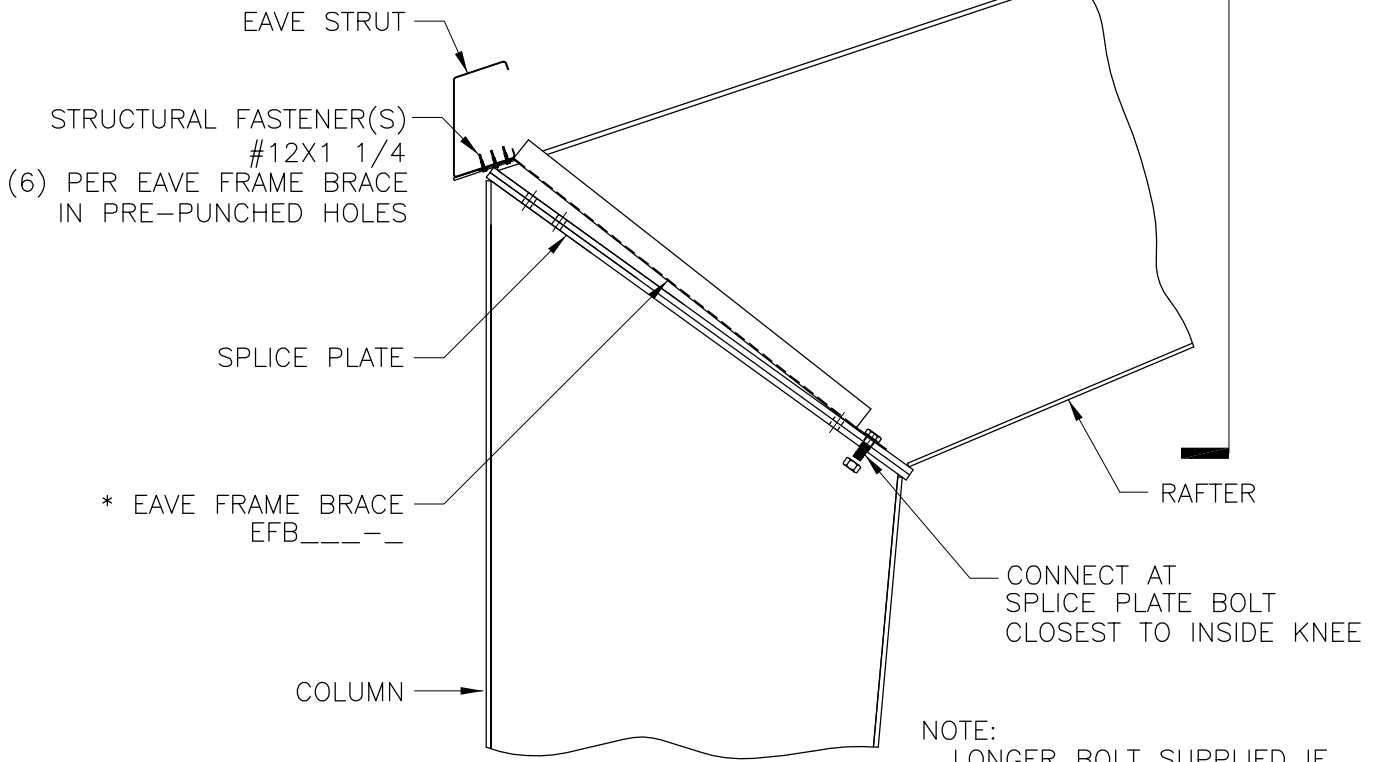
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Eave Frame Brace Connection (Inset)
 Diagonal Haunch Connection From Eave Strut to Splice Plate
 BR40W/AA

SAFETY PRECAUTION:
 EACH WORKER SHOULD BE TRAINED
 TO USE THE SAFEST AND MOST
 PRODUCTIVE ERECTION TECHNIQUES.

SIMILAR TO BR40A
AA



* FRAME BRACE TABS TO BE BENT IN FIELD AS REQ.

NOTE:
 LONGER BOLT SUPPLIED IF
 REQUIRED FOR SPLICE PLATE
 TO EFB____- CONNECTION

EAVE FRAME BRACE CONNECTION (INSET)
 DIAGONAL HAUNCH CONNECTION FROM EAVE STRUT TO SPLICE PLATE

BR40W
AA

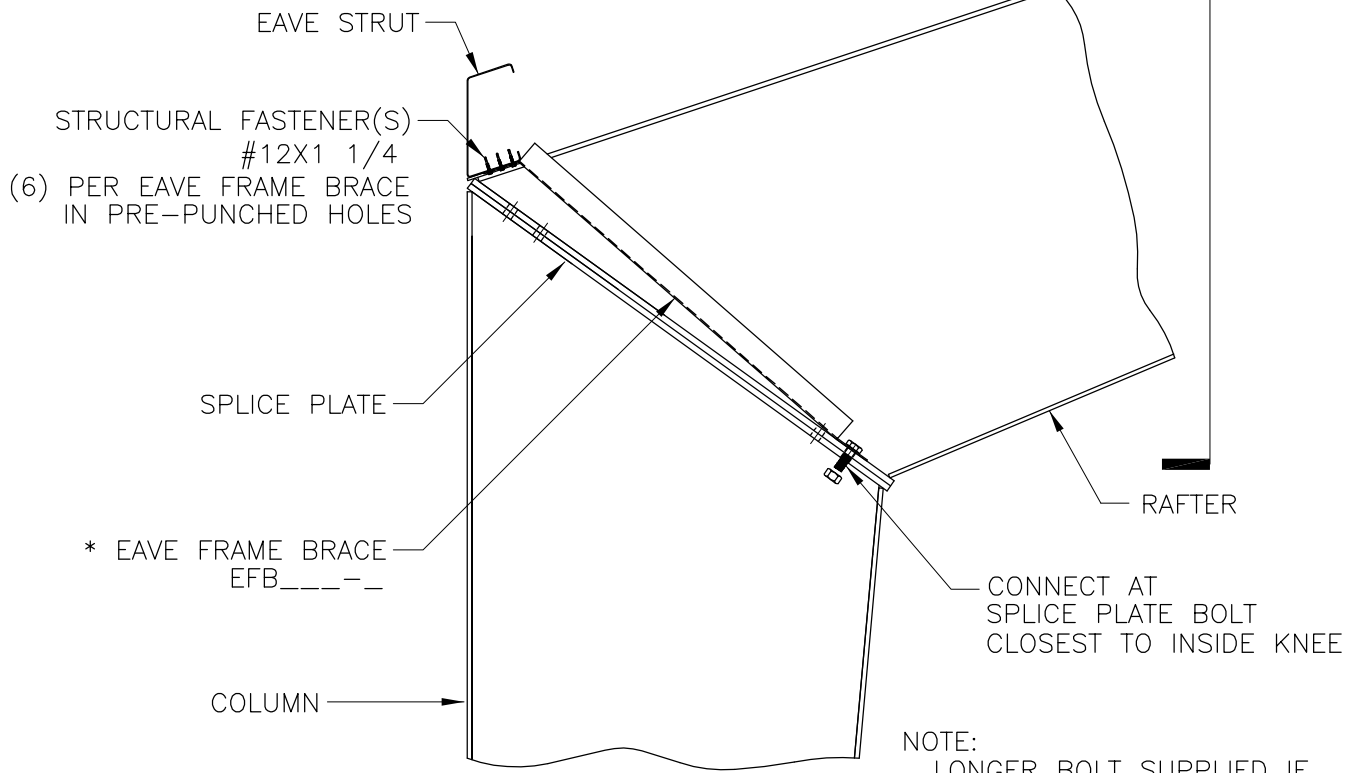
[Download the DWG file by clicking here.](#)

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Eave Frame Brace Connection (Flush)
 Diagonal Haunch Connection From Eave Strut to Splice Plate
 BR40Y/AA

SAFETY PRECAUTION:
 EACH WORKER SHOULD BE TRAINED
 TO USE THE SAFEST AND MOST
 PRODUCTIVE ERECTION TECHNIQUES.

SIMILAR TO BR40A
AA



* FRAME BRACE TABS TO BE BENT IN FIELD AS REQ.

NOTE:
 LONGER BOLT SUPPLIED IF
 REQUIRED FOR SPLICE PLATE
 TO EFB____-__ CONNECTION

EAVE FRAME BRACE CONNECTION (FLUSH)
DIAGONAL HAUNCH CONNECTION FROM EAVE STRUT TO SPLICE PLATE

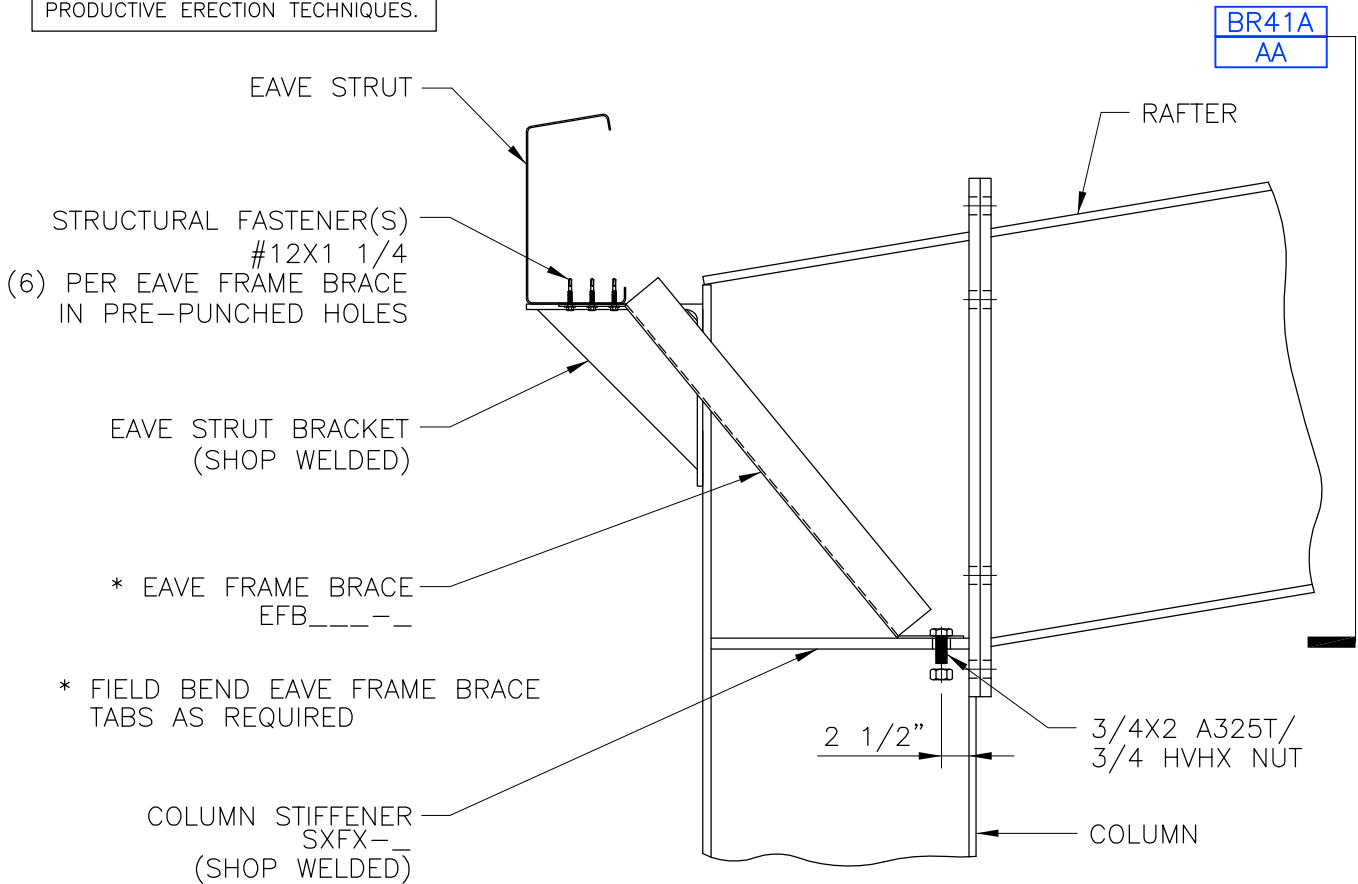
BR40Y
AA

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Eave Frame Brace Connection (Bypass)
 Straight Column Connection From Eave Strut to Column Stiffener
 BR41/AA

SAFETY PRECAUTION:
 EACH WORKER SHOULD BE TRAINED
 TO USE THE SAFEST AND MOST
 PRODUCTIVE ERECTION TECHNIQUES.



EAVE FRAME BRACE CONNECTION (BYPASS)
 STRAIGHT COLUMN CONNECTION FROM EAVE STRUT TO COLUMN STIFFENER

BR41
AA

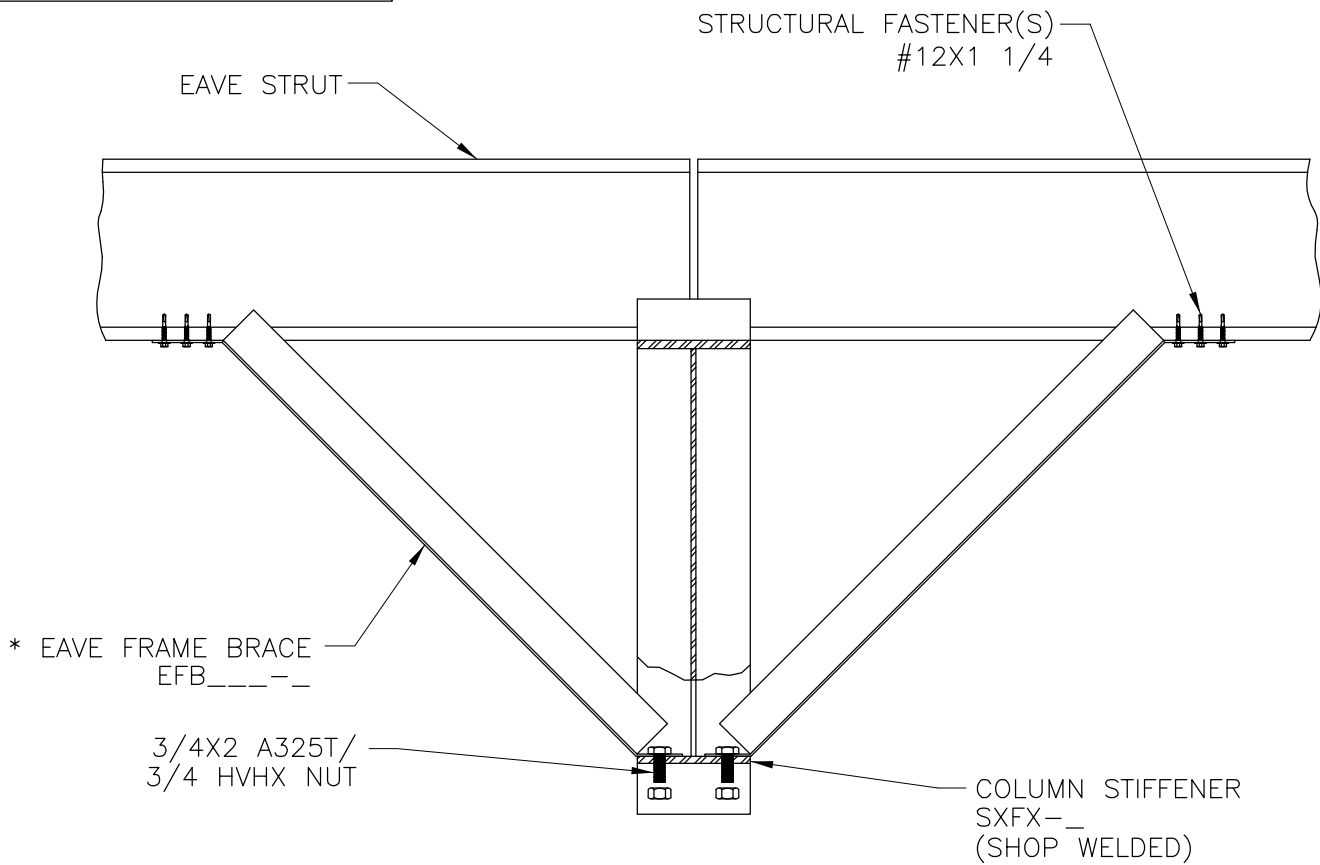
[Download the DWG file by clicking here.](#)

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Eave Frame Brace Connection Detail
 Straight Column Connection From Eave Strut to Column Stiffener
 BR41A/AA

SAFETY PRECAUTION:
 EACH WORKER SHOULD BE TRAINED
 TO USE THE SAFEST AND MOST
 PRODUCTIVE ERECTION TECHNIQUES.

* FRAME BRACE TABS TO BE
 BENT IN FIELD AS REQ.



EAVE FRAME BRACE CONNECTION DETAIL
 STRAIGHT COLUMN CONNECTION FROM EAVE STRUT TO COLUMN STIFFENER

BR41A
AA

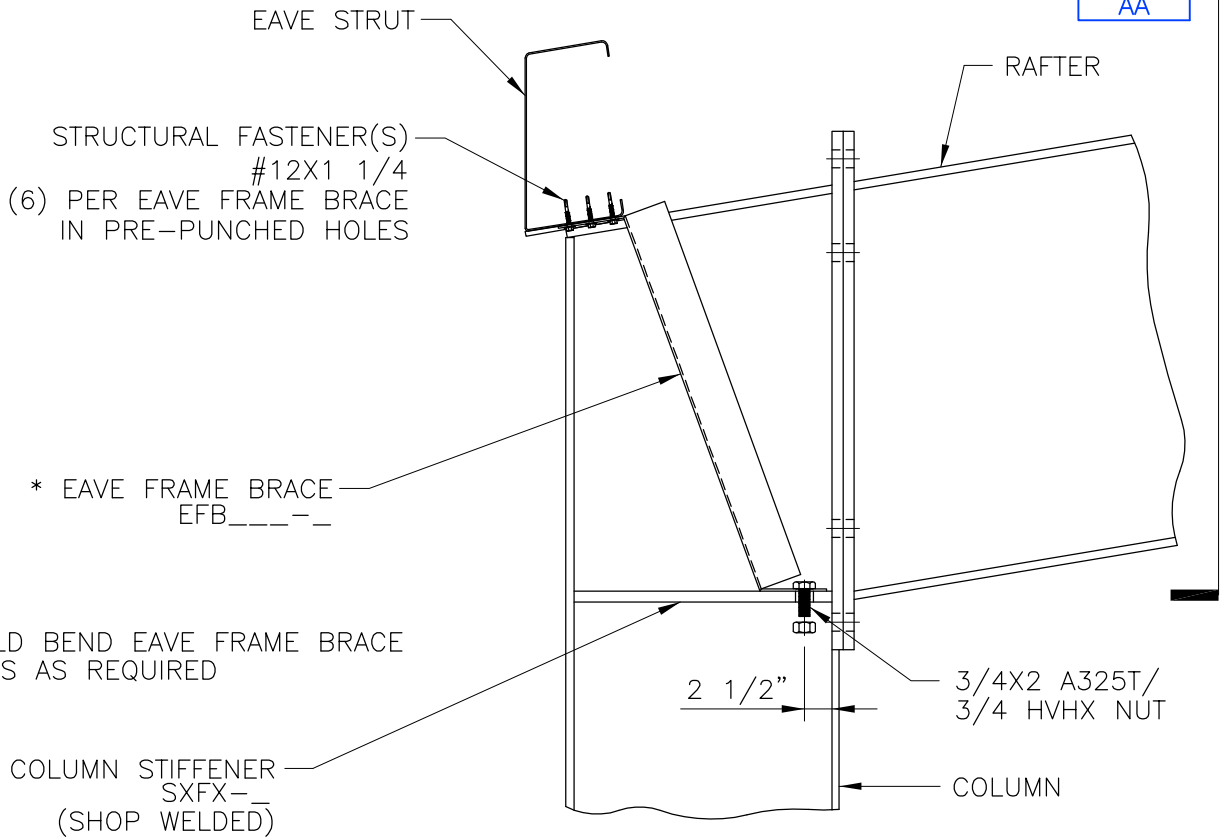
[Download the DWG file by clicking here.](#)

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Eave Frame Brace Connection (Inset)
 Straight Column Connection From Eave Strut to Column Stiffener
 BR41W/AA

SAFETY PRECAUTION:
 EACH WORKER SHOULD BE TRAINED
 TO USE THE SAFEST AND MOST
 PRODUCTIVE ERECTION TECHNIQUES.

SIMILAR TO BR41A
AA



EAVE FRAME BRACE CONNECTION (INSET)
 STRAIGHT COLUMN CONNECTION FROM EAVE STRUT TO COLUMN STIFFENER

BR41W
AA

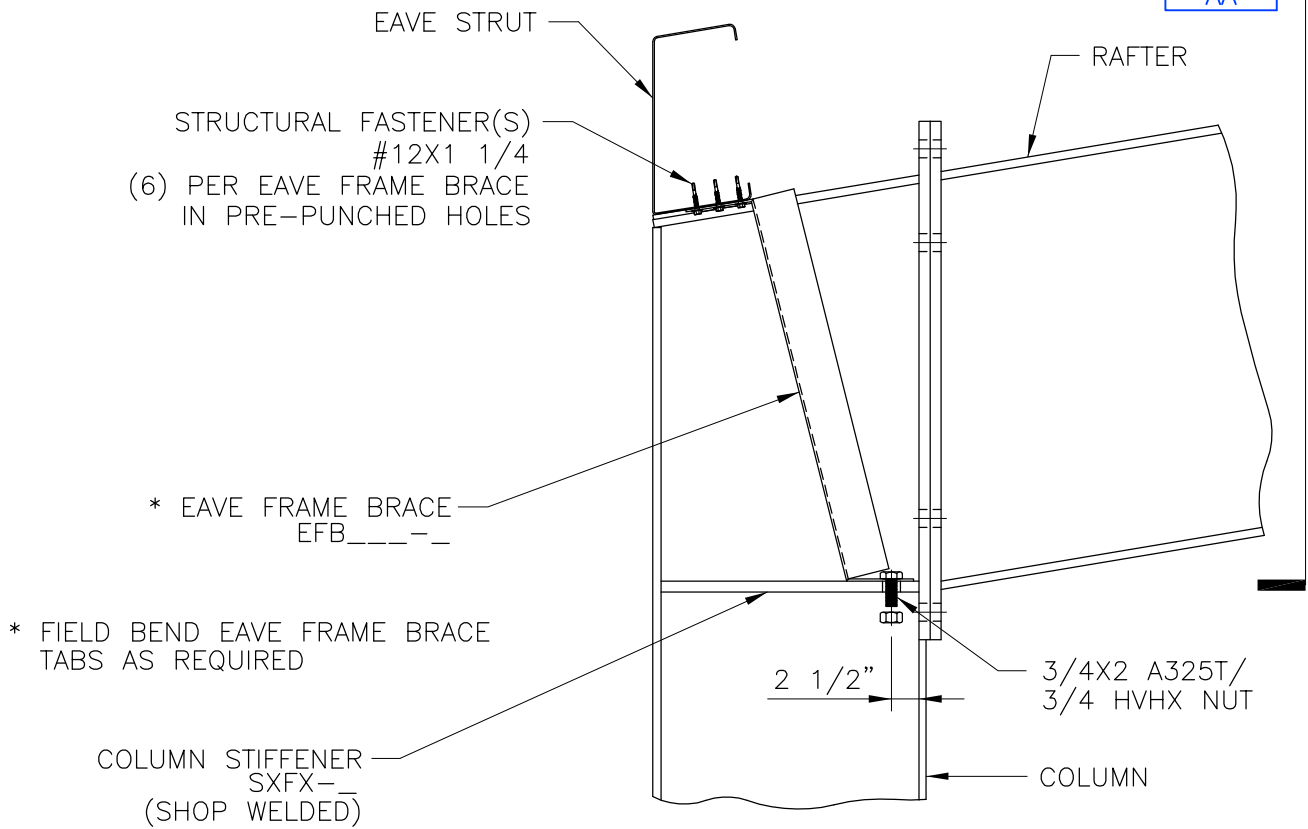
[Download the DWG file by clicking here.](#)

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Eave Frame Brace Connection (Flush)
 Straight Column Connection From Eave Strut to Column Stiffener
 BR41Y/AA

SAFETY PRECAUTION:
 EACH WORKER SHOULD BE TRAINED
 TO USE THE SAFEST AND MOST
 PRODUCTIVE ERECTION TECHNIQUES.

SIMILAR TO BR41A
AA

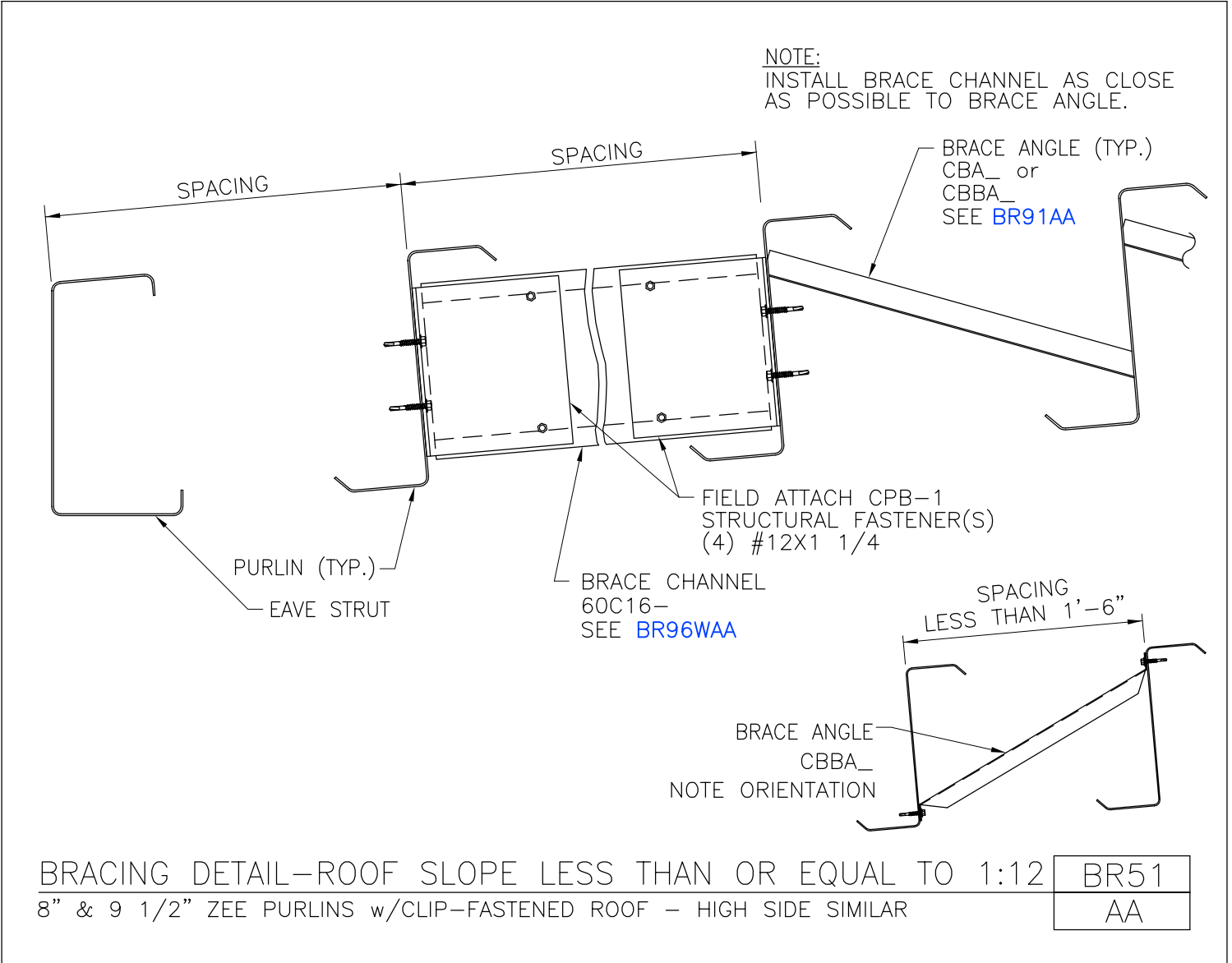


EAVE FRAME BRACE CONNECTION (FLUSH)
 STRAIGHT COLUMN CONNECTION FROM EAVE STRUT TO COLUMN STIFFENER

BR41Y
AA

[Download the DWG file by clicking here.](#)

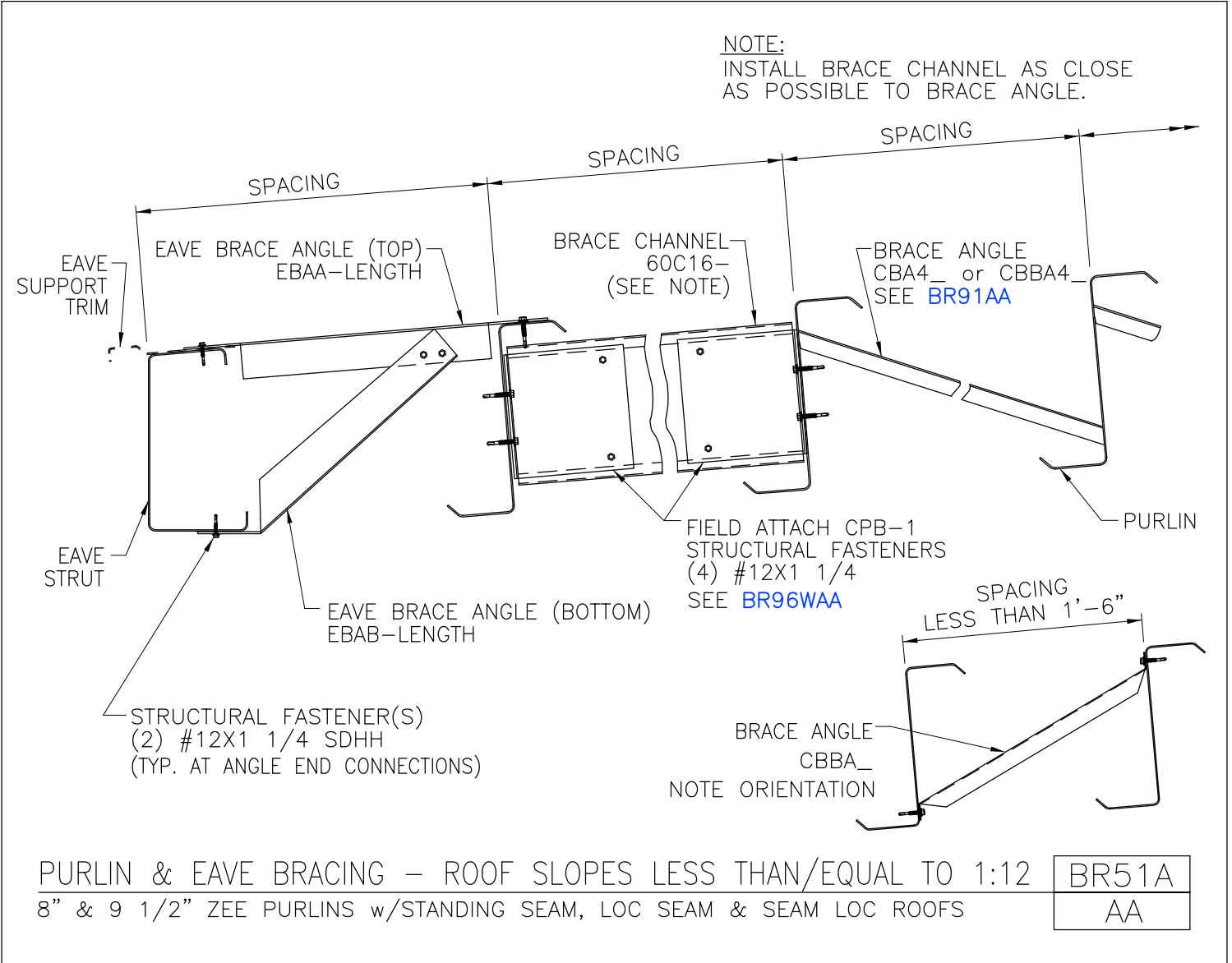
Bracing Detail - Roof Slope Less Than or Equal to 1:12
 8" & 9 1/2" Zee Purlins w/ Clip-Fastened Roof - High Side Similar
 BR51/AA



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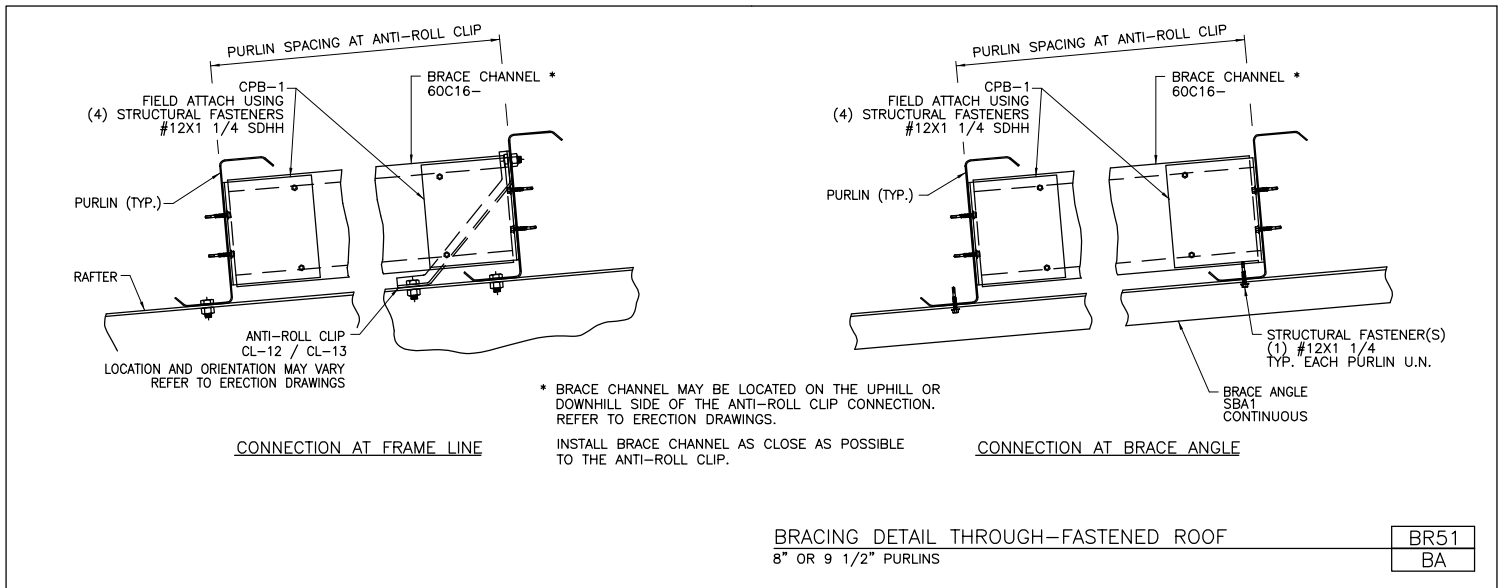
Purlin & Eave Bracing - Roof Slopes Less Than/Equal To 1:12
 8" & 9 1/2" Zee Purlins w/ Standing Seam, Loc Seam Roofs
 BR51A/AA



[Download the DWG file by clicking here.](#)

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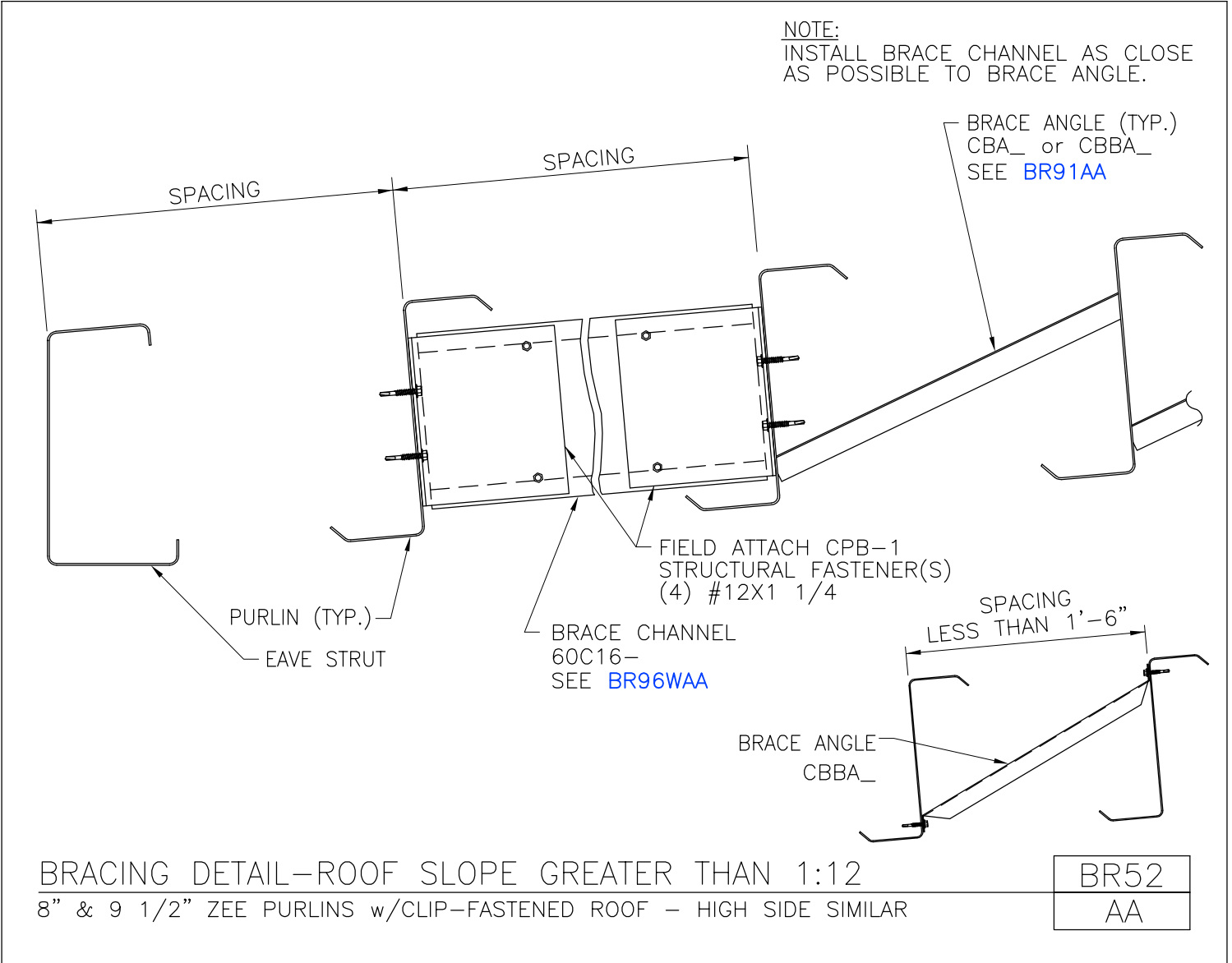
Bracing Detail Through-Fastened Roof
 8" or 9 1/2" Purlins
 BR51/BA



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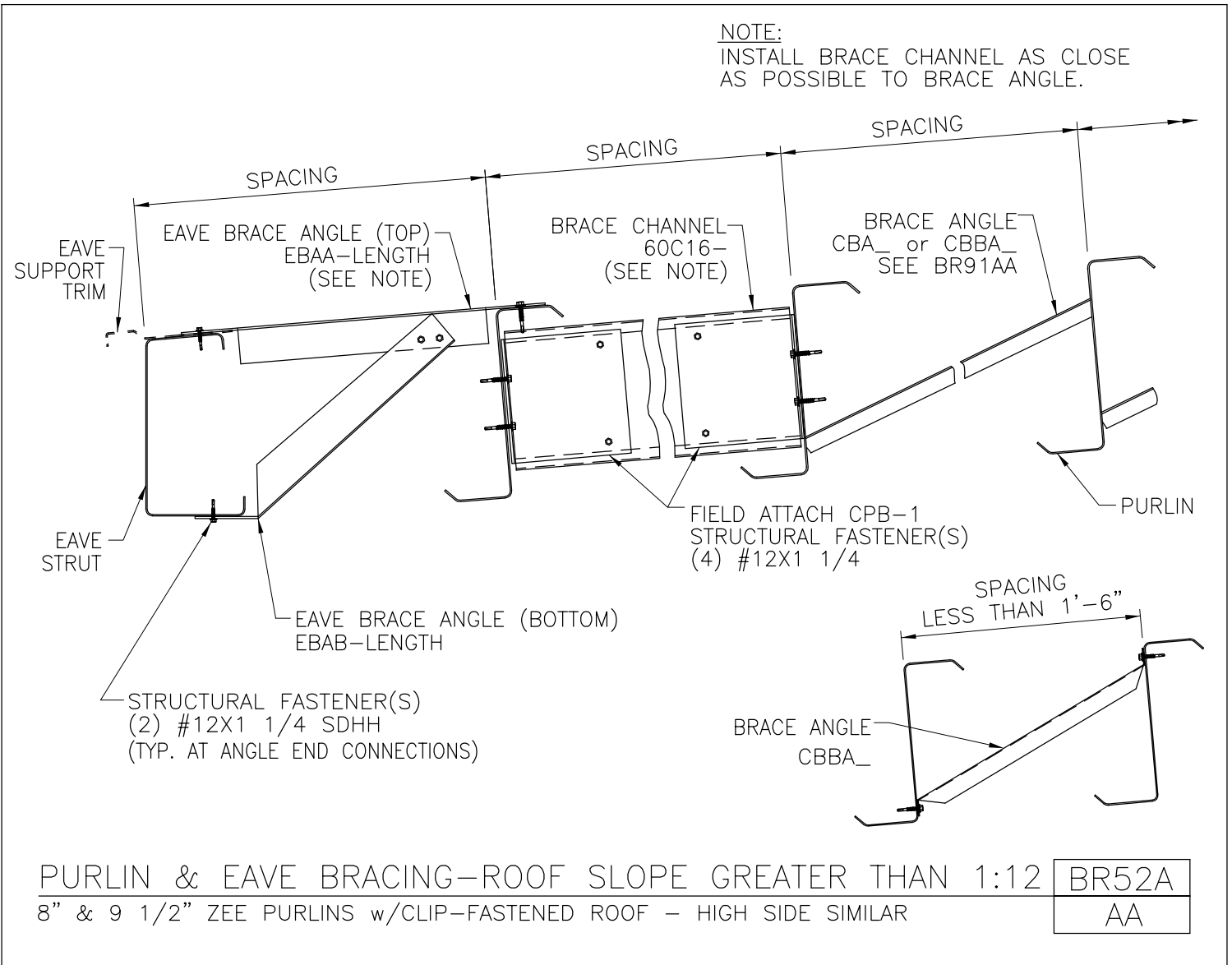
Bracing Detail-Roof Slope Greater Than 1:12
 8" & 9 1/2" Zee Purlins w/ Clip-Fastened Roof - High Side Similar
 BR52/AA



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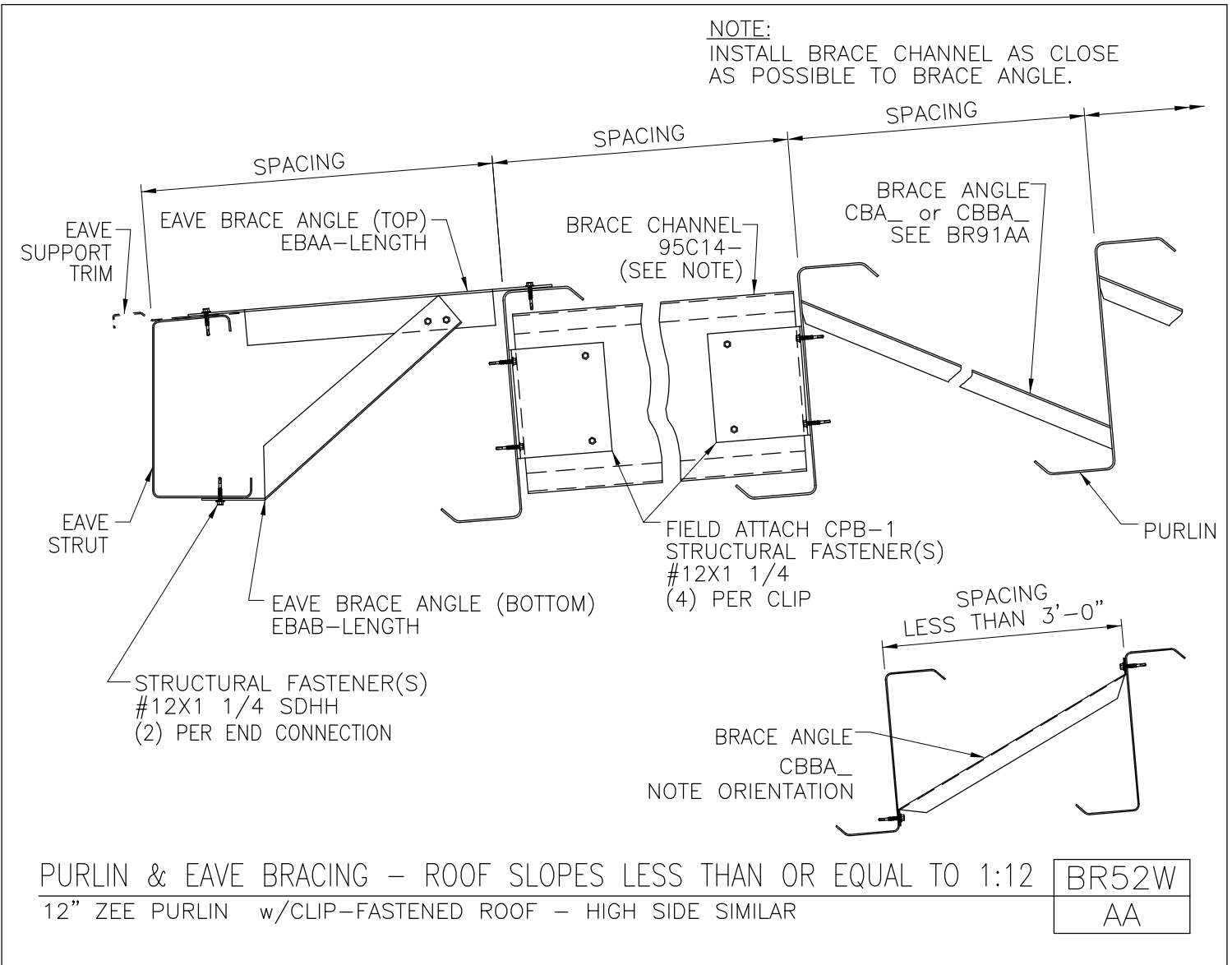
Purlin & Eave Bracing - Roof Slope Greater Than 1:12
 8" & 9 1/2" Zee Purlins w/ Clip-Fastened Roof - High Side Similar
 BR52A/AA



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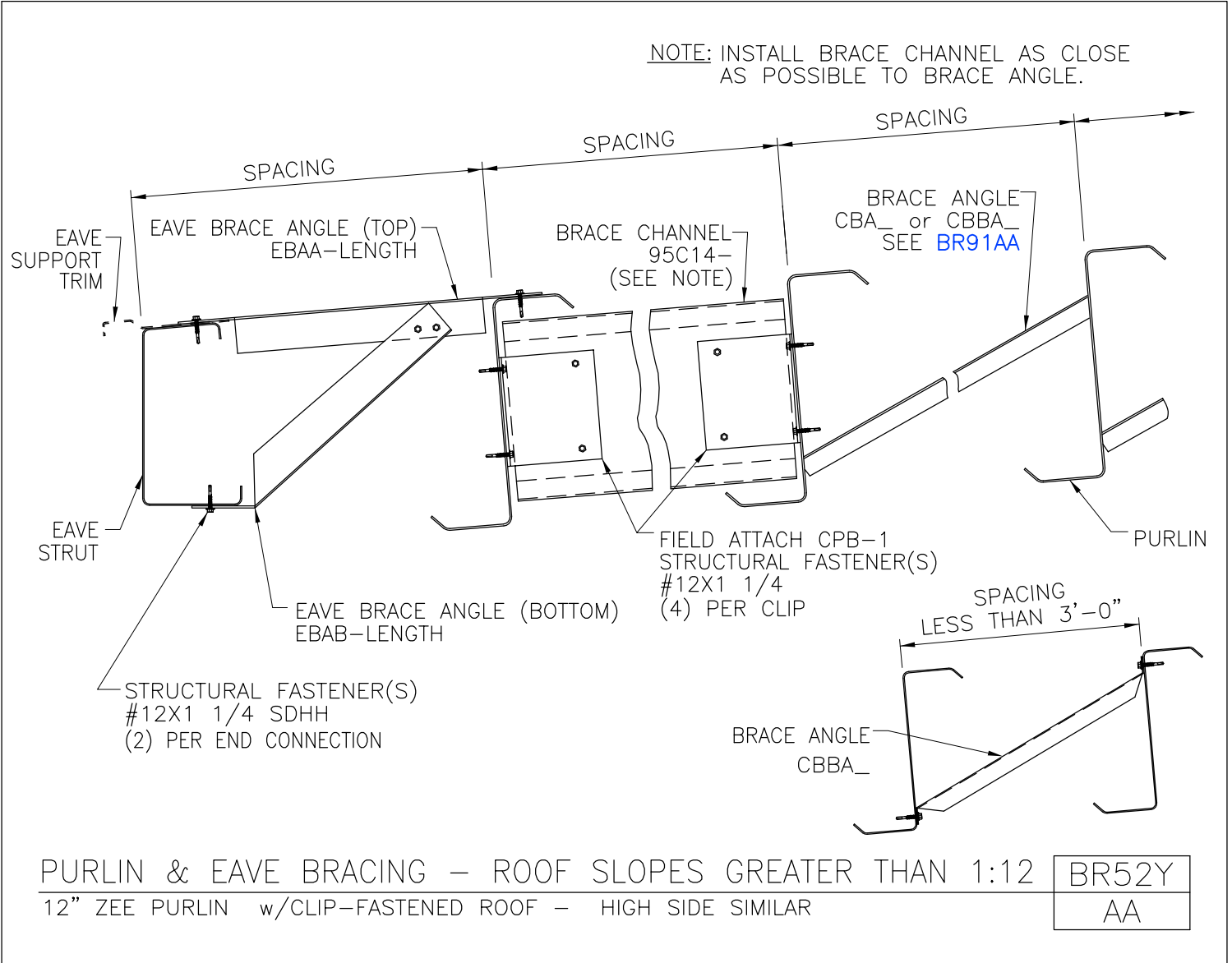
Purlin & Eave Bracing - Roof Slopes Less Than or Equal to 1:12
 12" Zee Purlin w/ Clip-Fastened Roof - High Side Similar
 BR52W/AA



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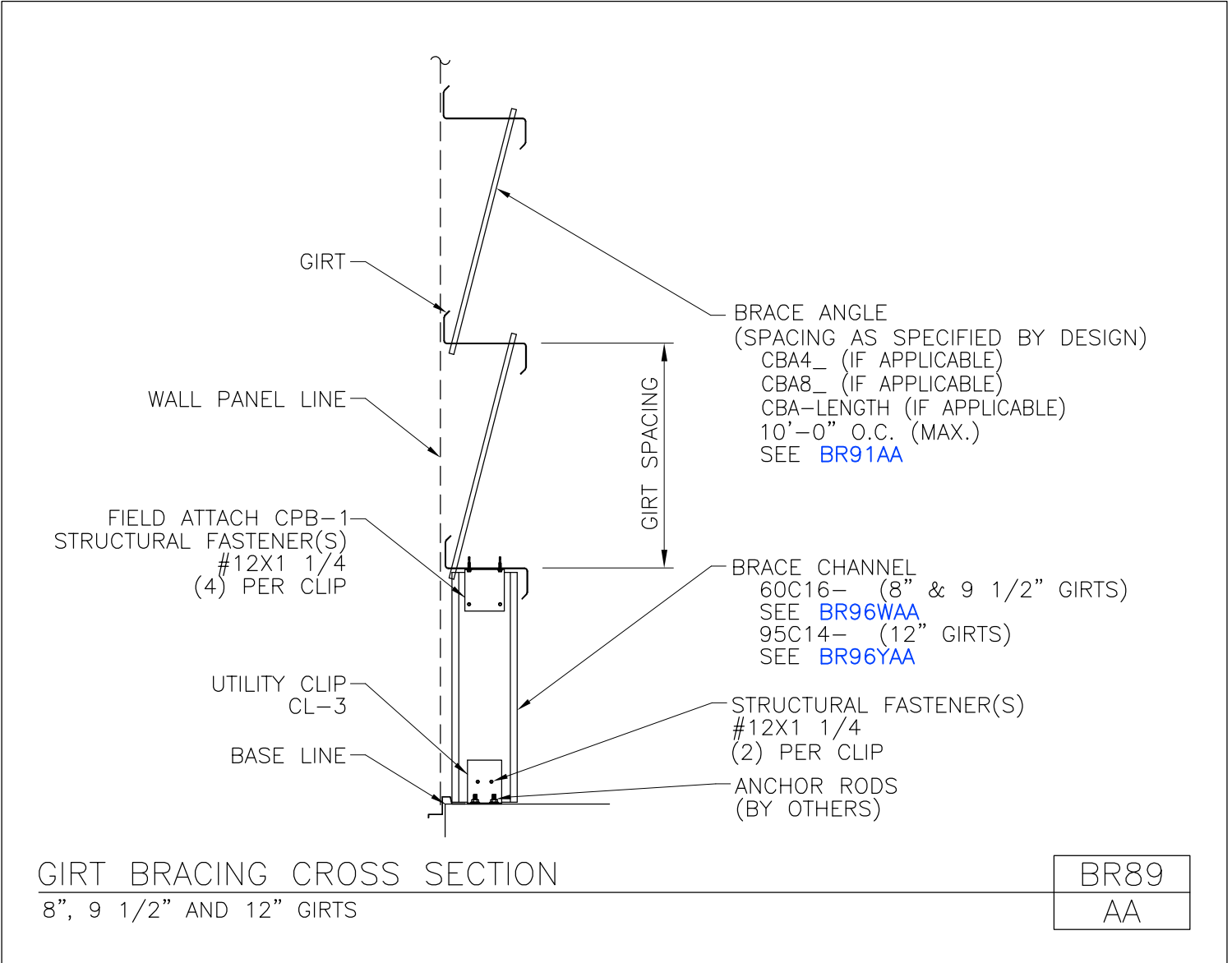
Purlin & Eave Bracing - Roof Slopes Greater Than 1:12
 12" Zee Purlin w/ Clip Fastened Roof - High Side Similar
 BR52Y/AA



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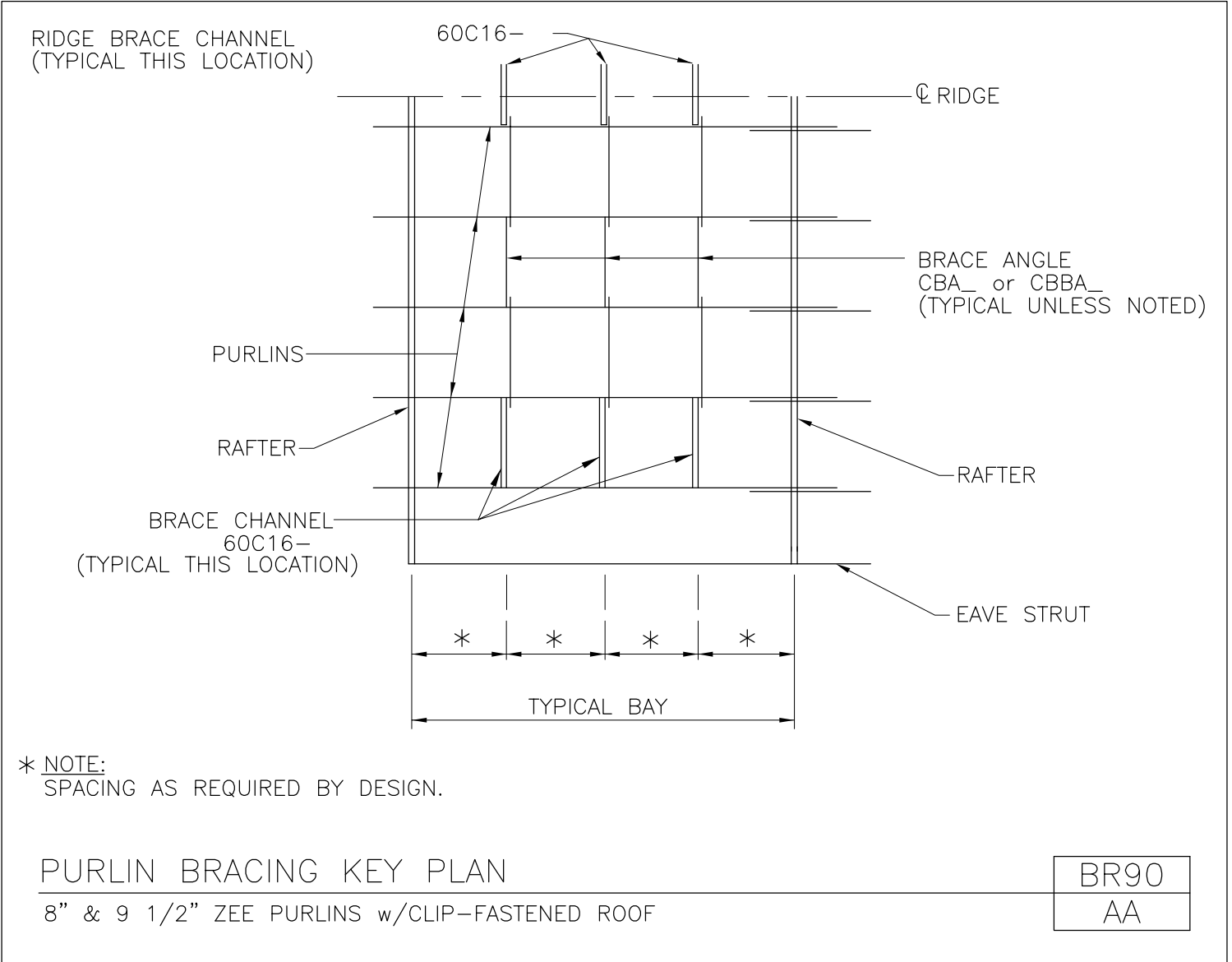
Girt Bracing Cross Section
8", 9 1/2" or 12" Girts
BR89/AA



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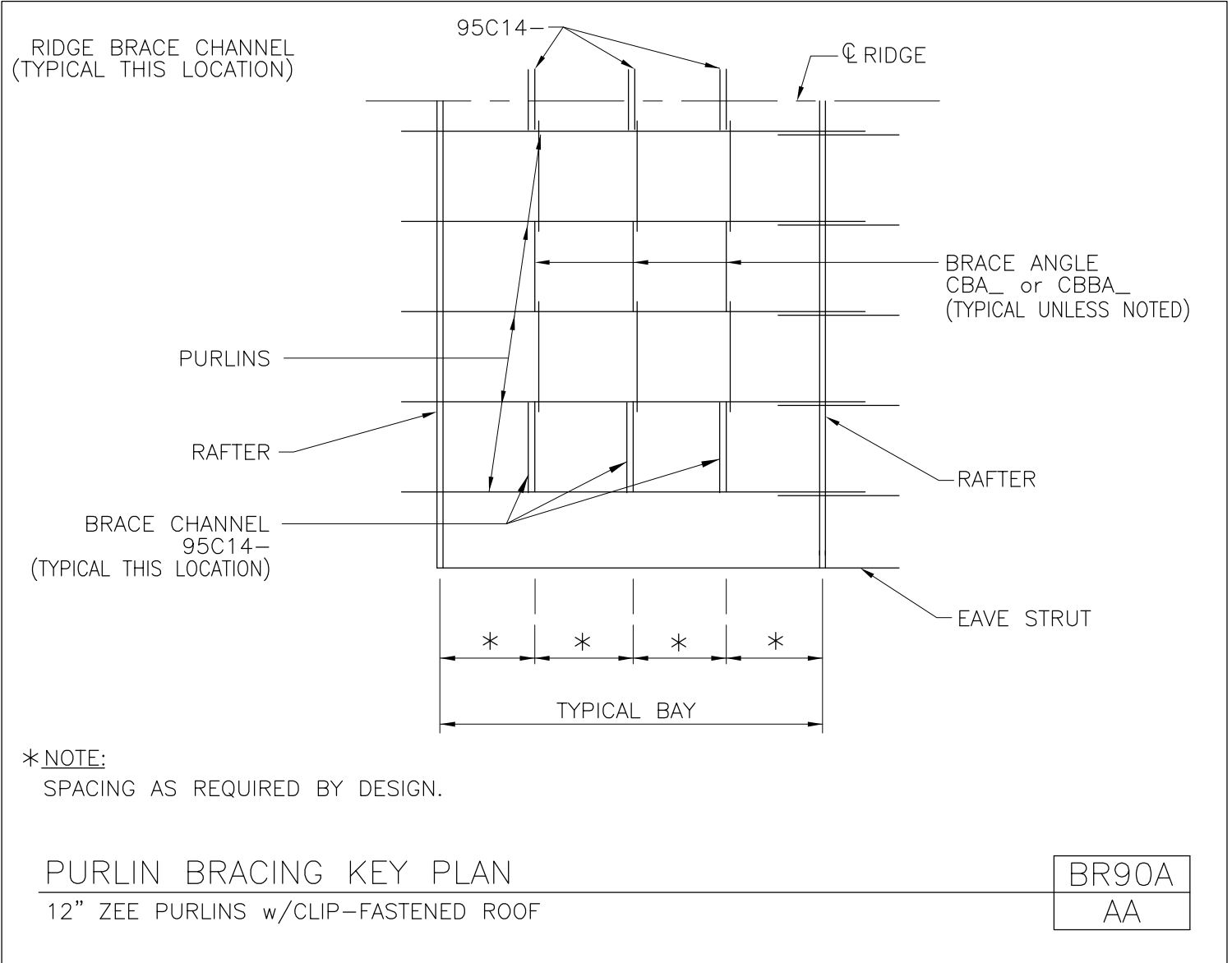
Purlin Bracing Key Plan
8" & 9 1/2" Zee Purlins w/ Clip-Fastened Roof
BR90/AA



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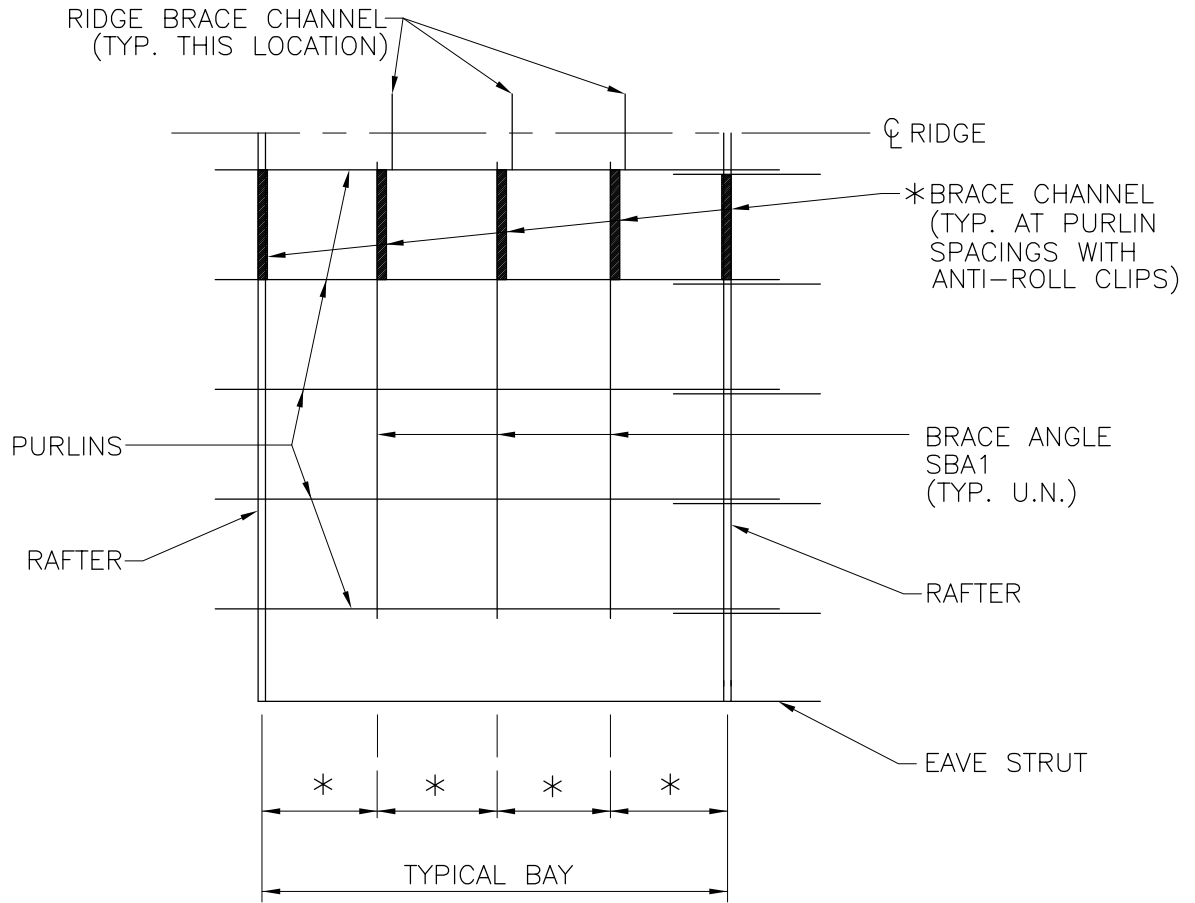
Purlin Bracing Key Plan
 12" Zee Purlins w/ Clip-Fastened Roof
 BR90A/AA



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Bracing Key Plan
8", 9 1/2" & 12" Purlins w/ Through-Fastened Roof
BR90/BA



*NOTE:
SPACING AND LOCATION AS REQUIRED BY DESIGN.

BRACING KEY PLAN

8", 9 1/2" & 12" PURLINS W/THROUGH-FASTENED ROOF

BR90
BA

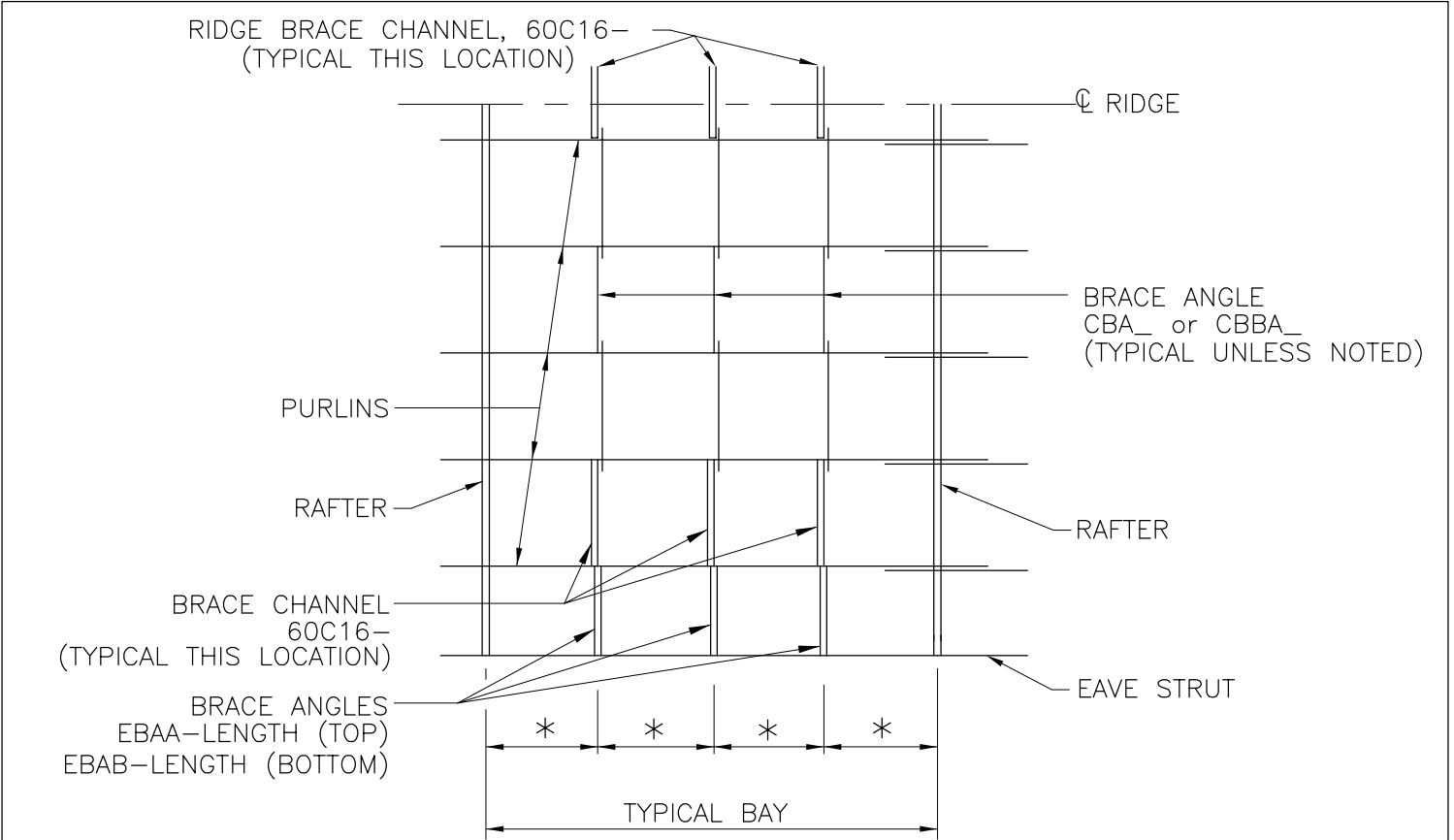
[Download the DWG file by clicking here.](#)

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Purlin & Eave Bracing - Key Plan

8" & 9 1/2" Zee Purlins w/ Clip-Fastened Roof (Ridge Building Shown, Single Slope Similar)

BR90B/AA



* NOTE:
SPACING AS REQUIRED BY DESIGN.

PURLIN & EAVE BRACING – KEY PLAN

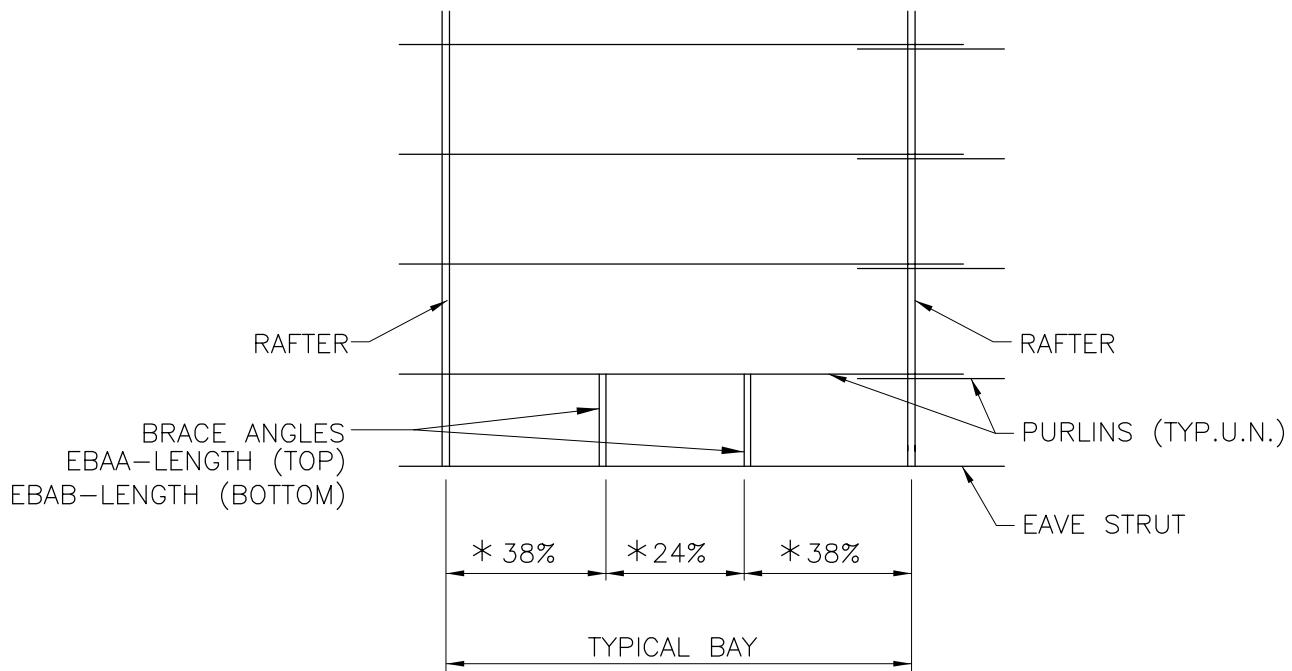
8" & 9 1/2" ZEE PURLINS w/CLIP-FASTENED ROOF (RIDGE BUILDING SHOWN, SINGLE SLOPE SIMILAR)

BR90B
AA

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Eave Bracing - Key Plan
Clip-Fastened Roof
BR90Z/AA



* EAVE BRACE ANGLE SPACING:

AS SHOWN IN BAYS WITHOUT PURLIN BRACING,
IN BAYS WITH PURLIN BRACING INSTALL IN LINE
WITH EACH ROW OF PURLIN BRACING.

EAVE BRACING – KEY PLAN
CLIP-FASTENED ROOF

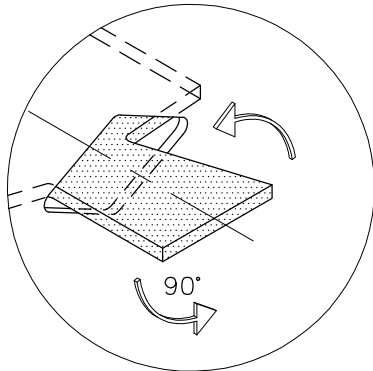
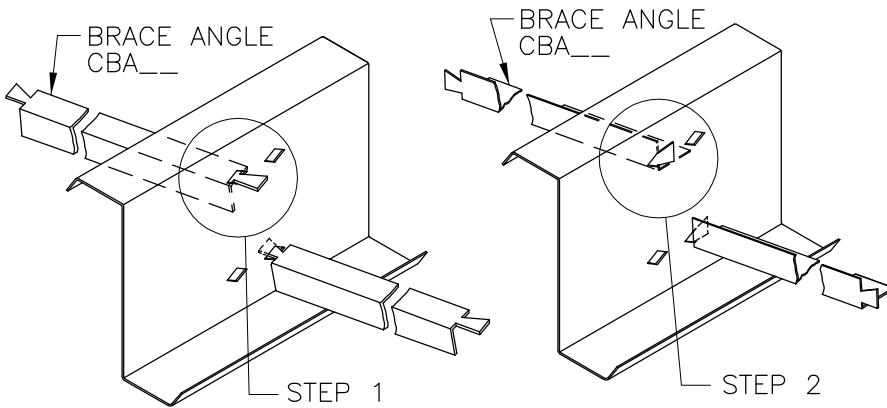
BR90Z
AA

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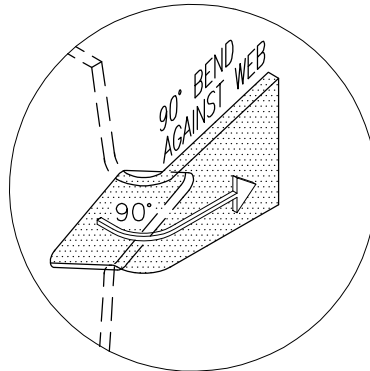
Brace Angle Installation
Clip-Fastened Roof
BR91/AA

BRACE ANGLES ARE INSTALLED DIAGONALLY
ALTERNATING END POSITIONS



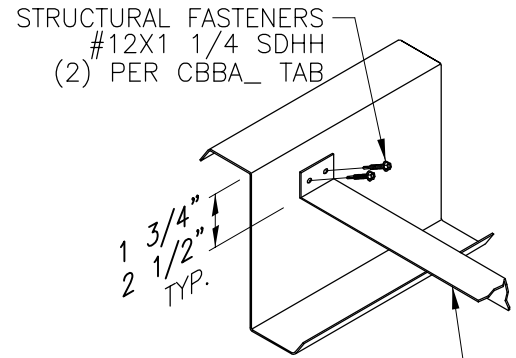
STEP 1:

INSERT BRACE ANGLE TABS INTO DIAMOND HOLES AND ROTATE BRACE ANGLE 90° UNTIL TABS ARE VERTICAL.



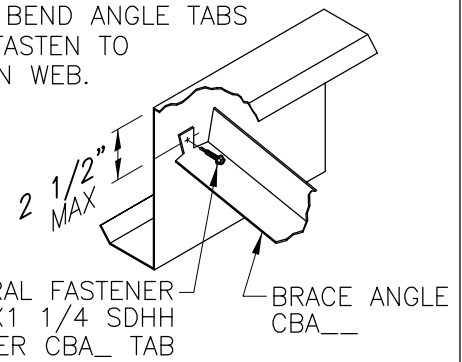
STEP 2:

BEND BRACE ANGLE TABS 90° FLAT AGAINST PURLIN WEB TO LOCK IN PLACE.



CBBA_ BENT BRACE ANGLE
PURLIN SPACING LESS THAN 1'-6"
(AT 8" & 9 1/2" PURLINS)
PURLIN SPACING LESS THAN 3'-0"
(AT 12" PURLINS)

EXISTING STRUCTURES WITH CBA_ :
AT PURLINS WITHOUT PUNCHING
FIELD BEND ANGLE TABS
AND FASTEN TO
PURLIN WEB.

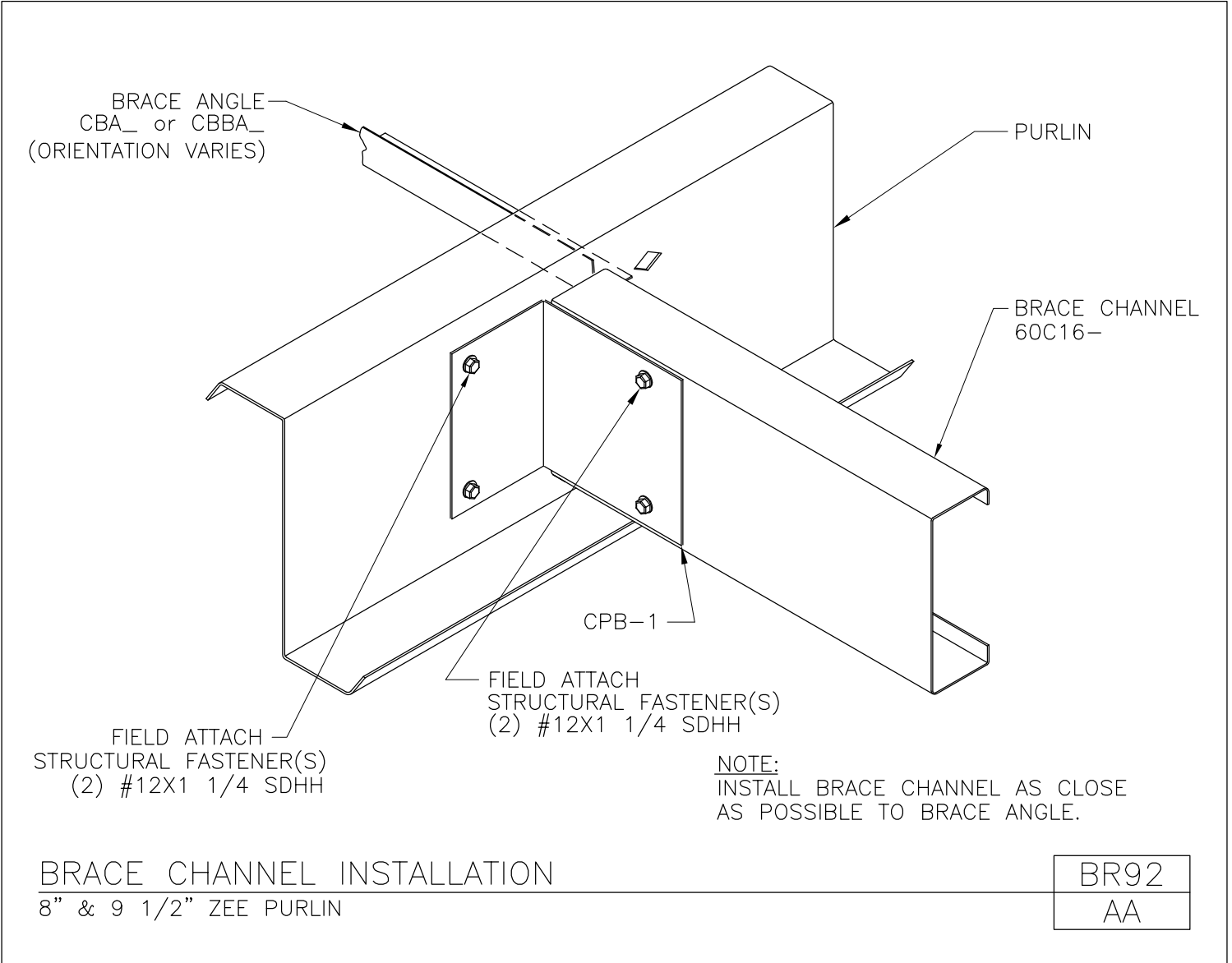


BRACE ANGLE INSTALLATION
CLIP-FASTENED ROOF

BR91
AA

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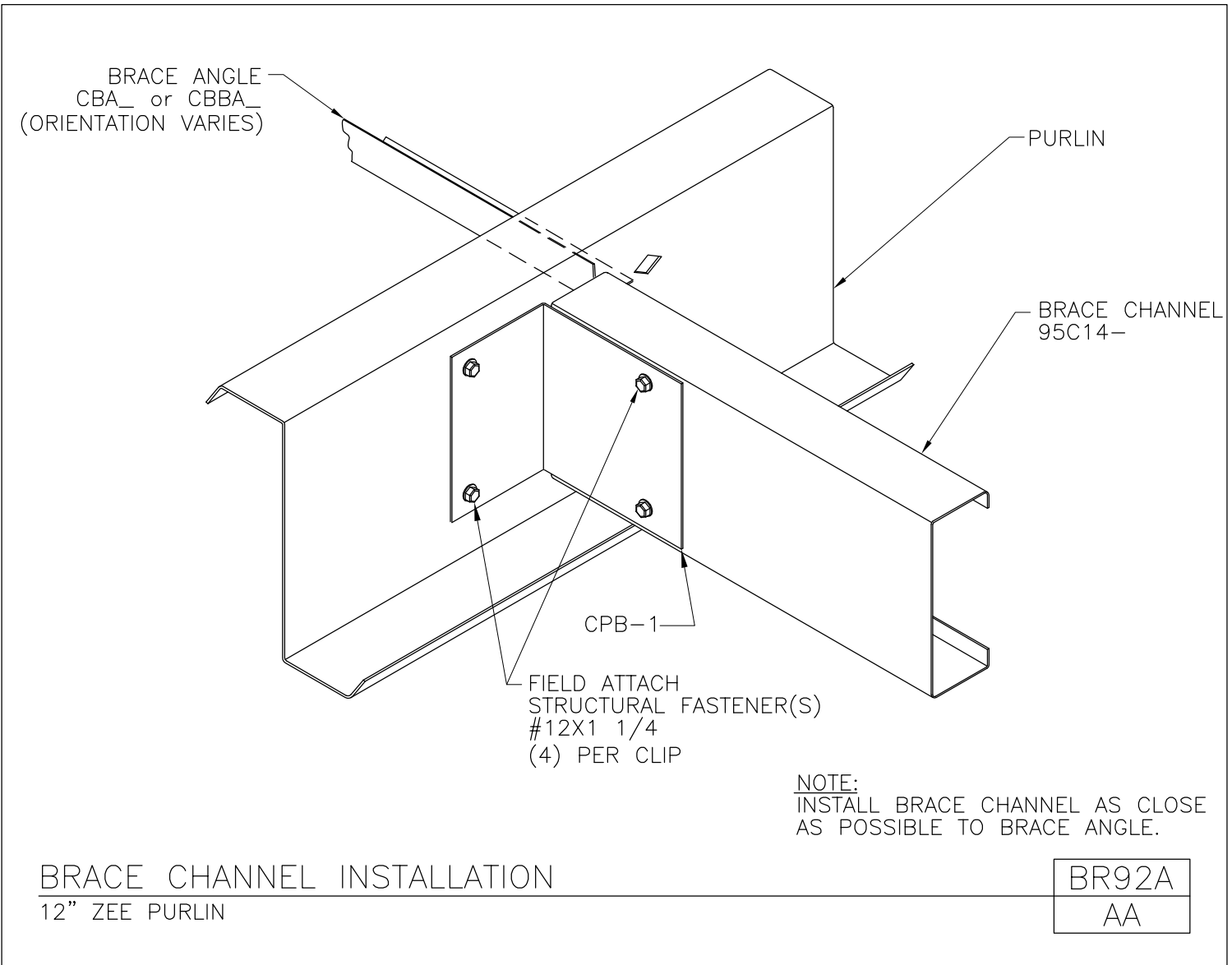
Brace Channel Installation
8" & 9 1/2" Zee Purlin
BR92/AA



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Brace Channel Installation
12" Zee Purlin
BR92A/AA

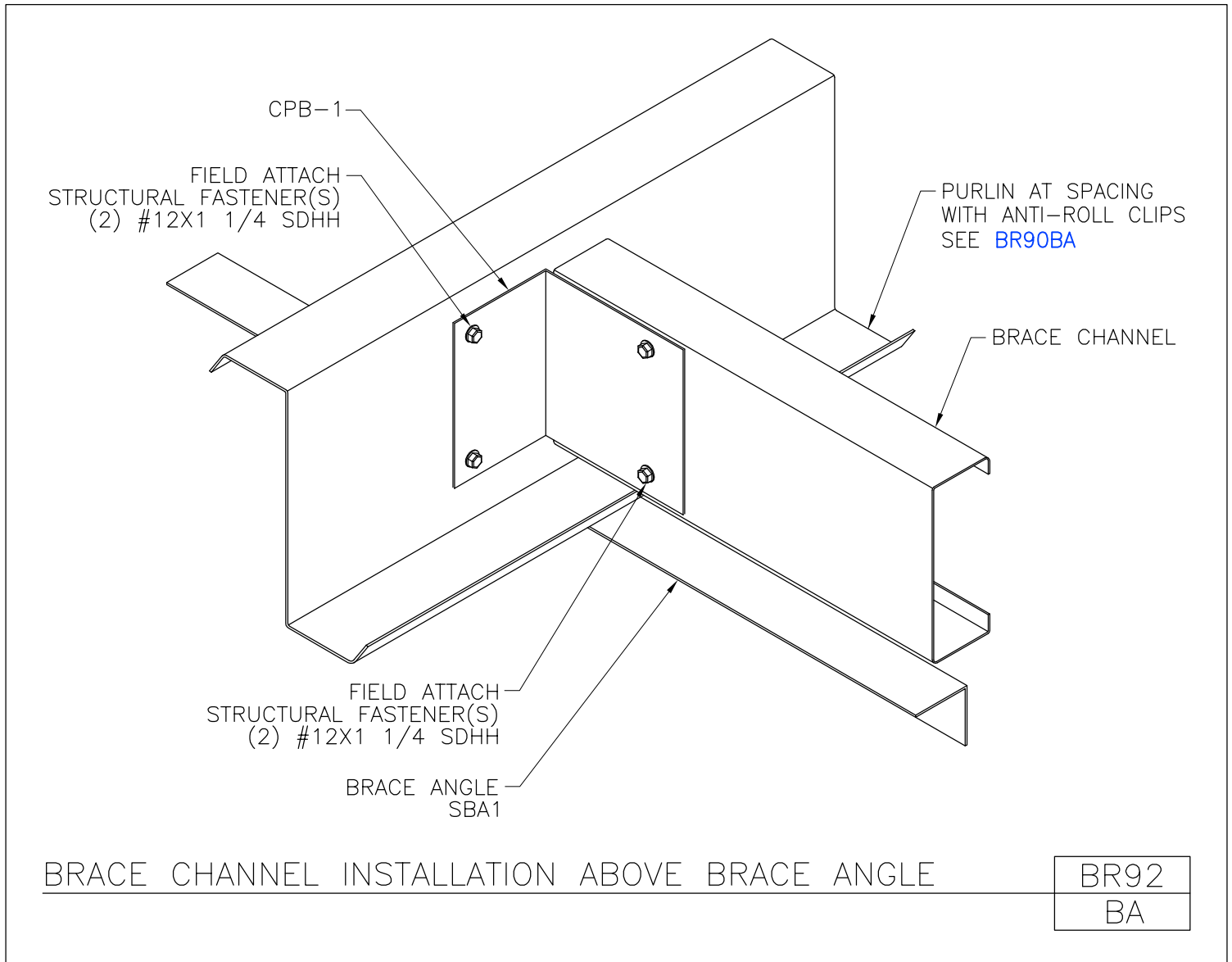


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Brace Channel Installation Above Brace Angle

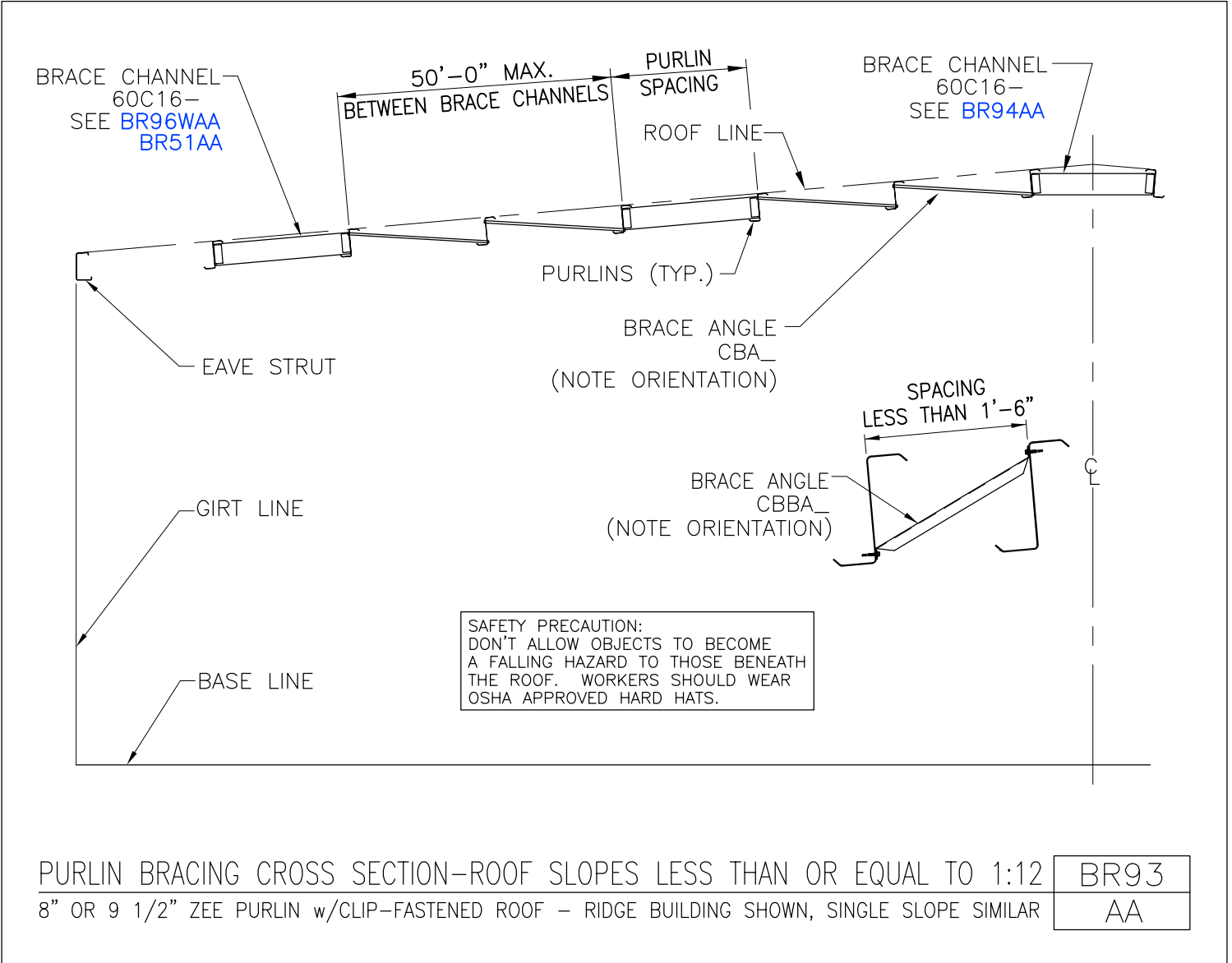
BR92/BA



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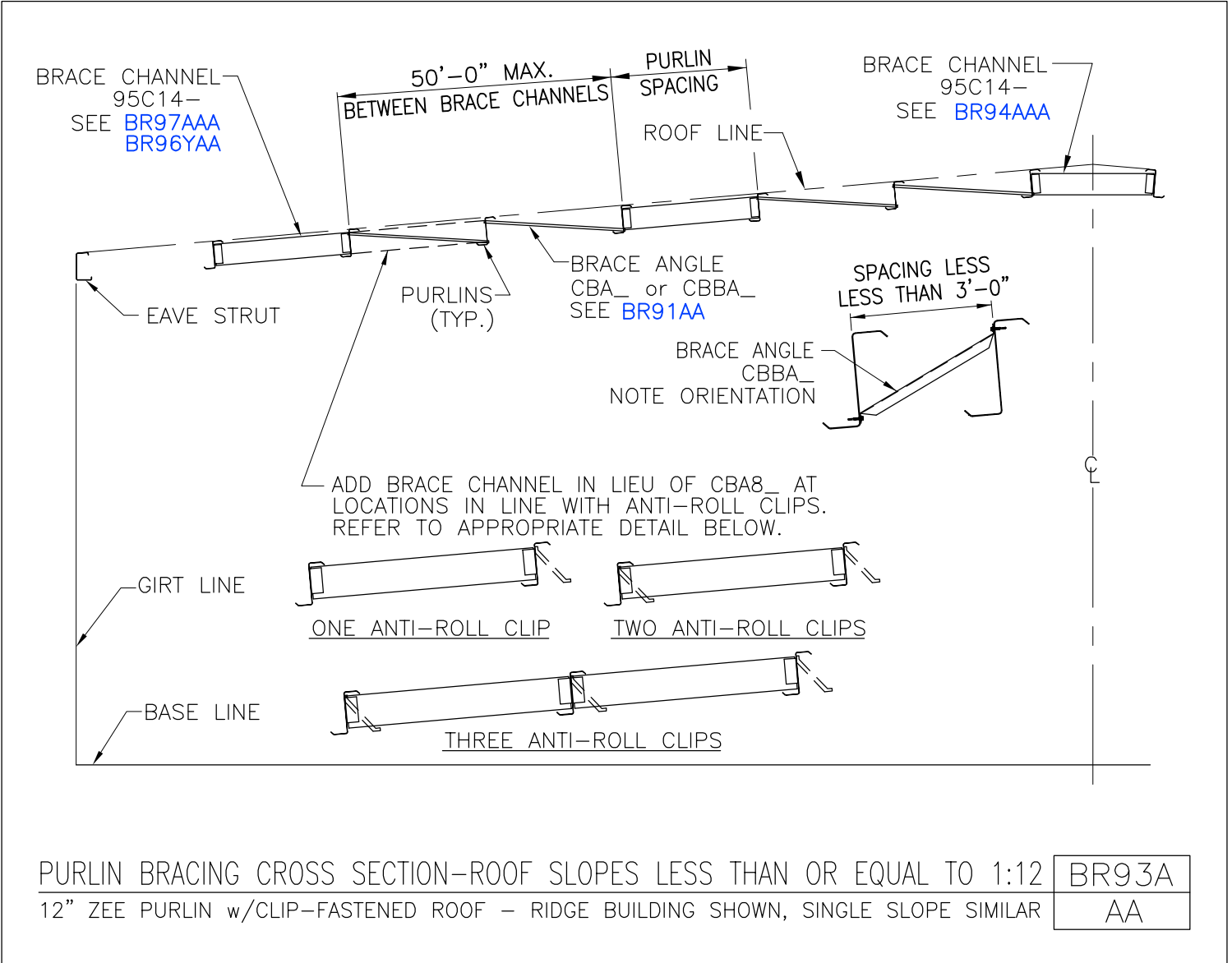
Purlin Bracing Cross Section-Roof Slopes Less Than or Equal to 1:12
 8" or 9 1/2" Zee Purlin w/ Clip-Fastened Roof - Ridge Building Shown, Single Slope Similar
 BR93/AA



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Purlin Bracing Cross Section - Roof Slopes Less Than or Equal to 1:12
 12" Zee Purlin w/ Clip-Fastened Roof - Ridge Building Shown, Single Slope Similar
 BR93A/AA



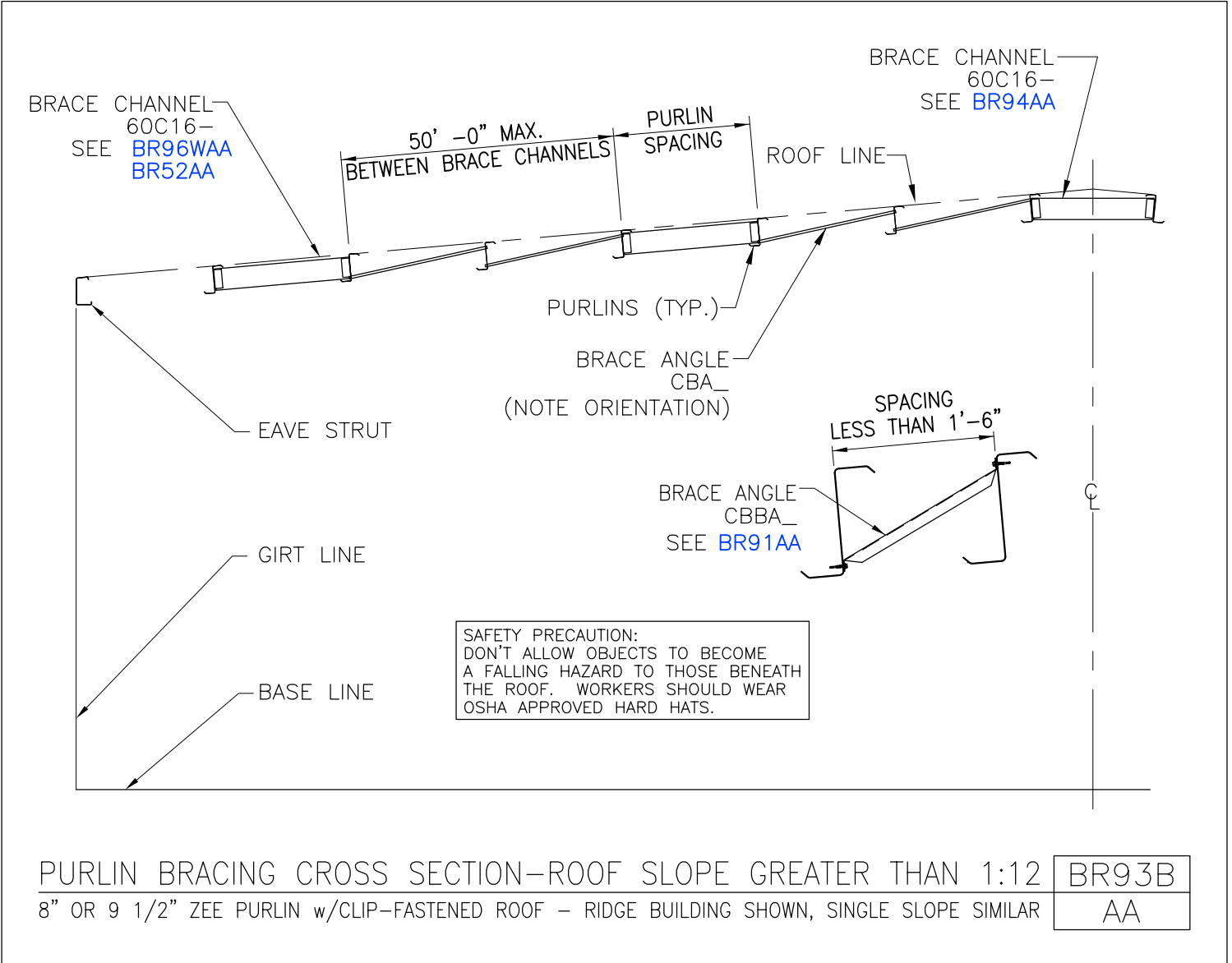
[Download the DWG file by clicking here.](#)

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Purlin Bracing Cross Section-Roof Slope Greater Than 1:12

8" or 9 1/2" Zee Purlin w/ Clip-Fastened Roof-Ridge Building Shown, Single Slope Similar

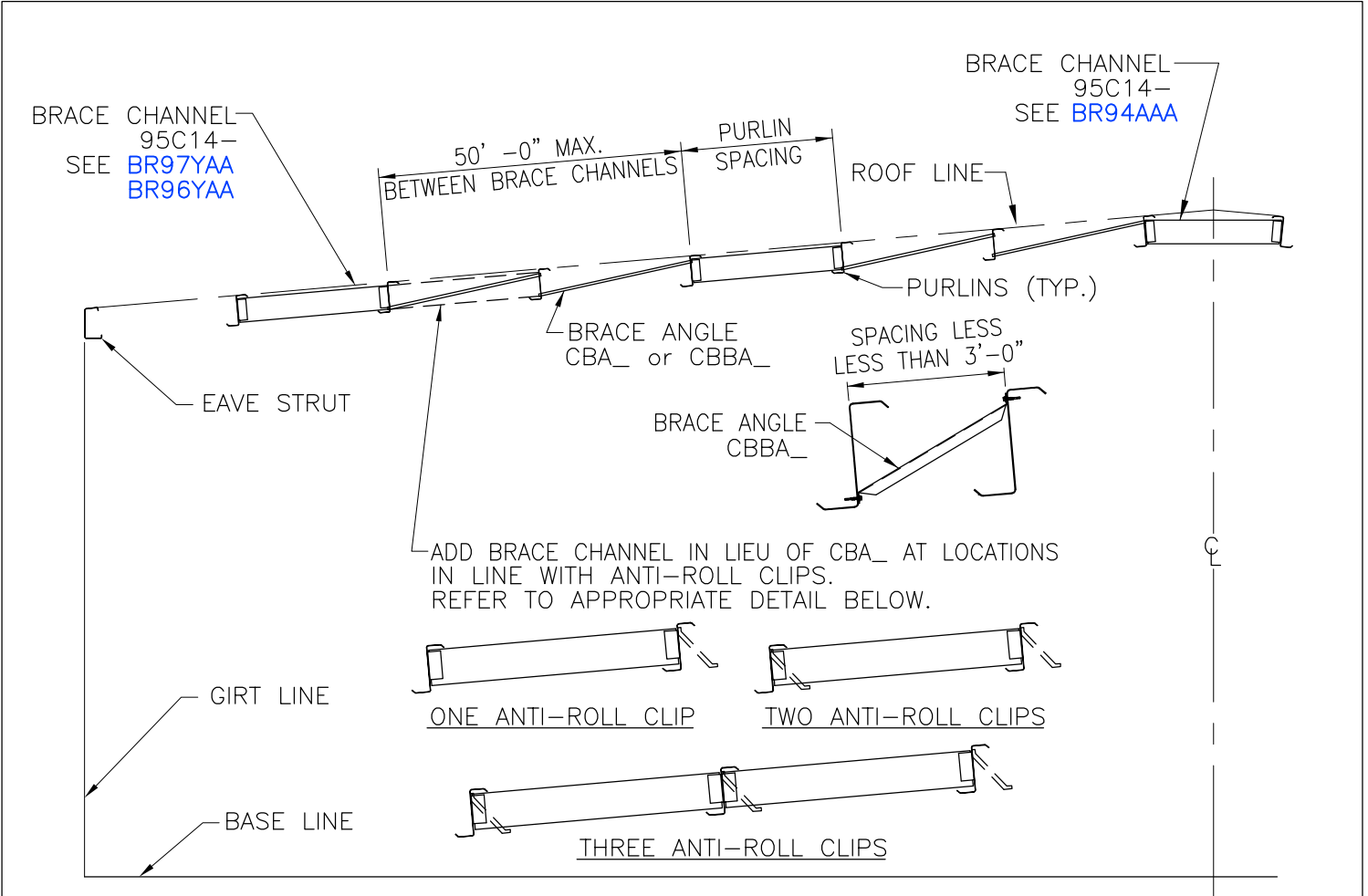
BR93B/AA



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Purlin Bracing Cross Section - Roof Slope Greater Than 1:12
 12" Zee Purlin w/ Clip-Fastened Roof - Ridge Shown, Single Slope Similar
 BR93Y/AA

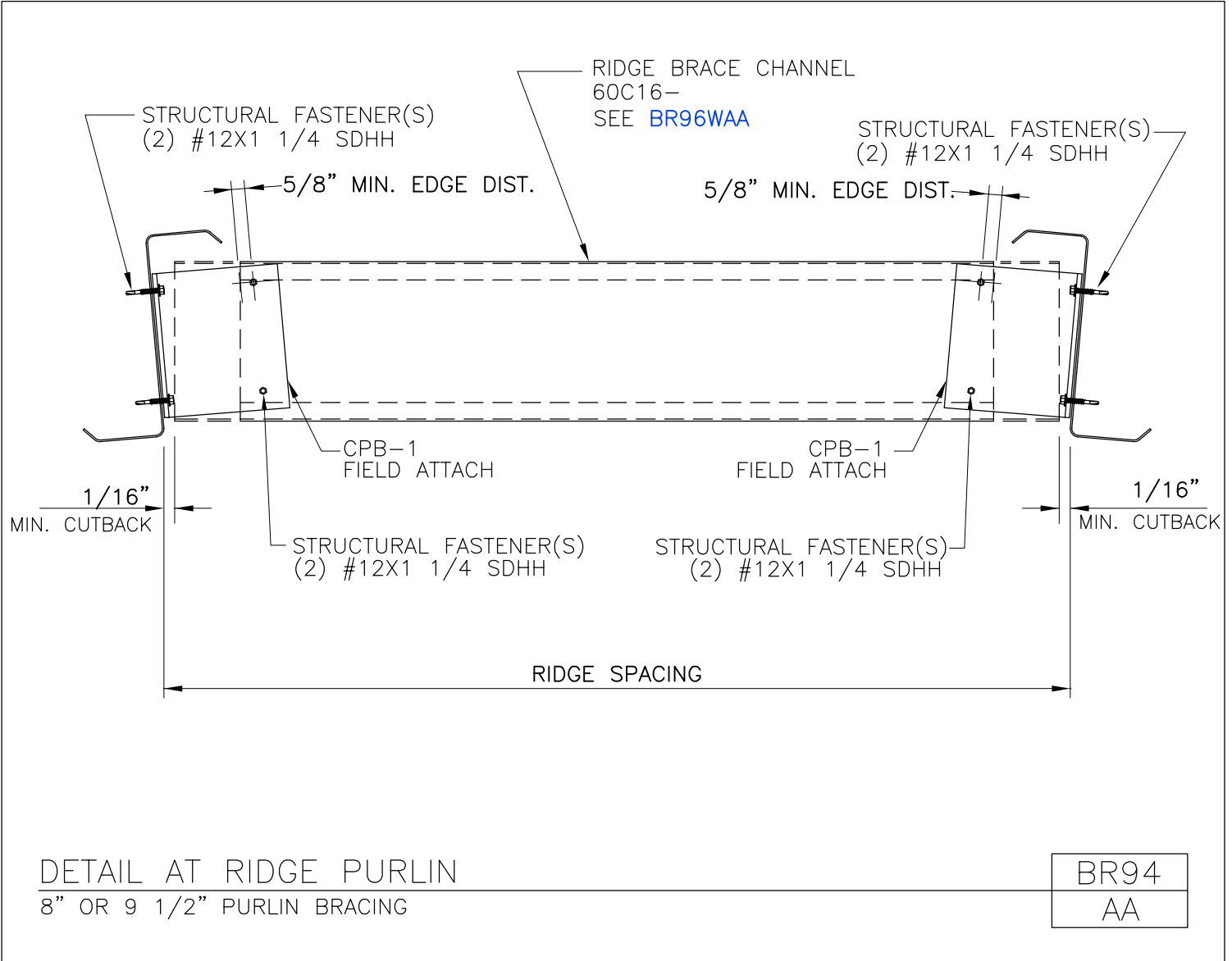


PURLIN BRACING CROSS SECTION—ROOF SLOPE GREATER THAN 1:12 BR93Y
 12" ZEE PURLIN w/CLIP-FASTENED ROOF - RIDGE BUILDING SHOWN, SINGLE SLOPE SIMILAR AA

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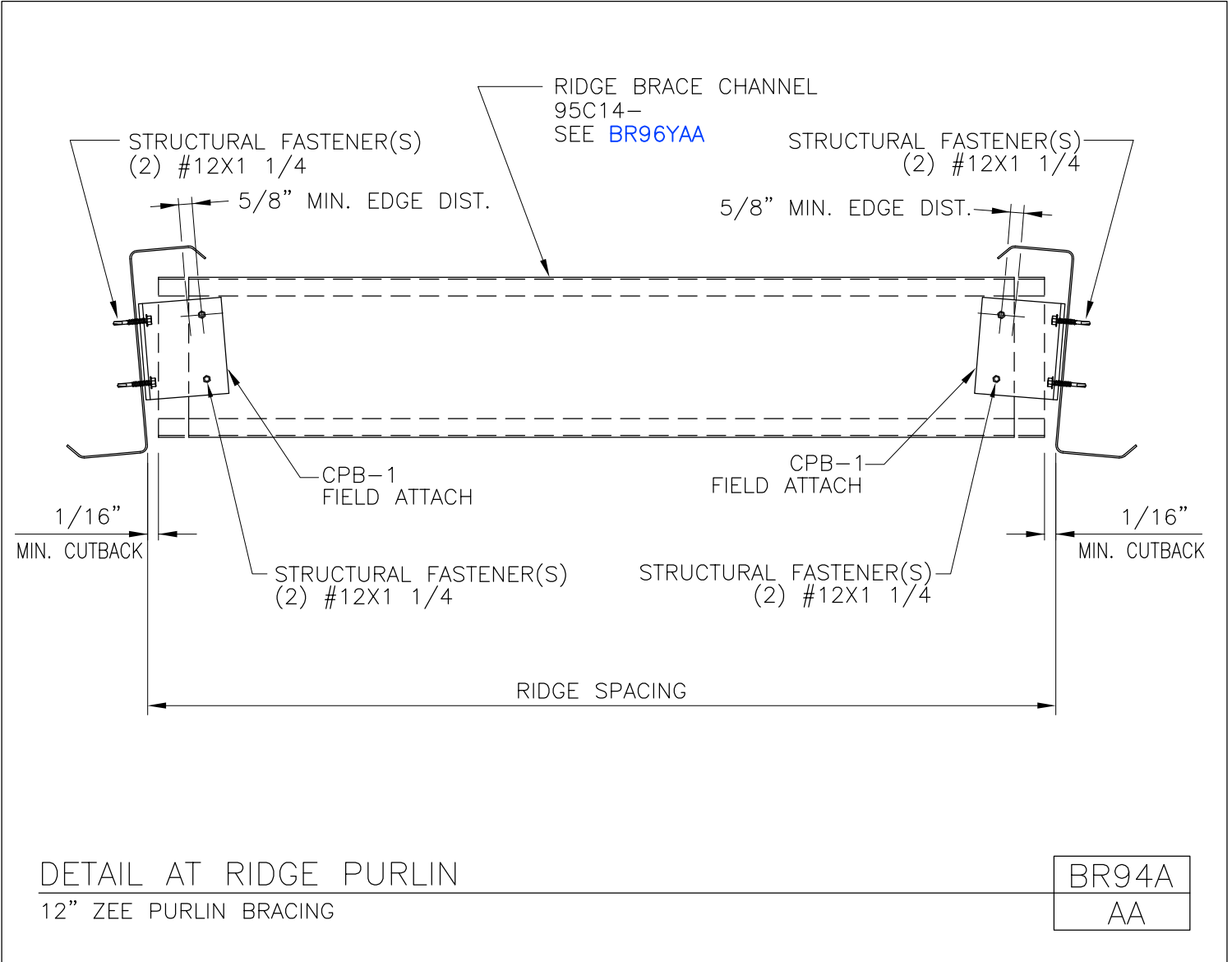
Detail at Ridge Purlin
8" or 9 1/2" Purlin Bracing
BR94/AA



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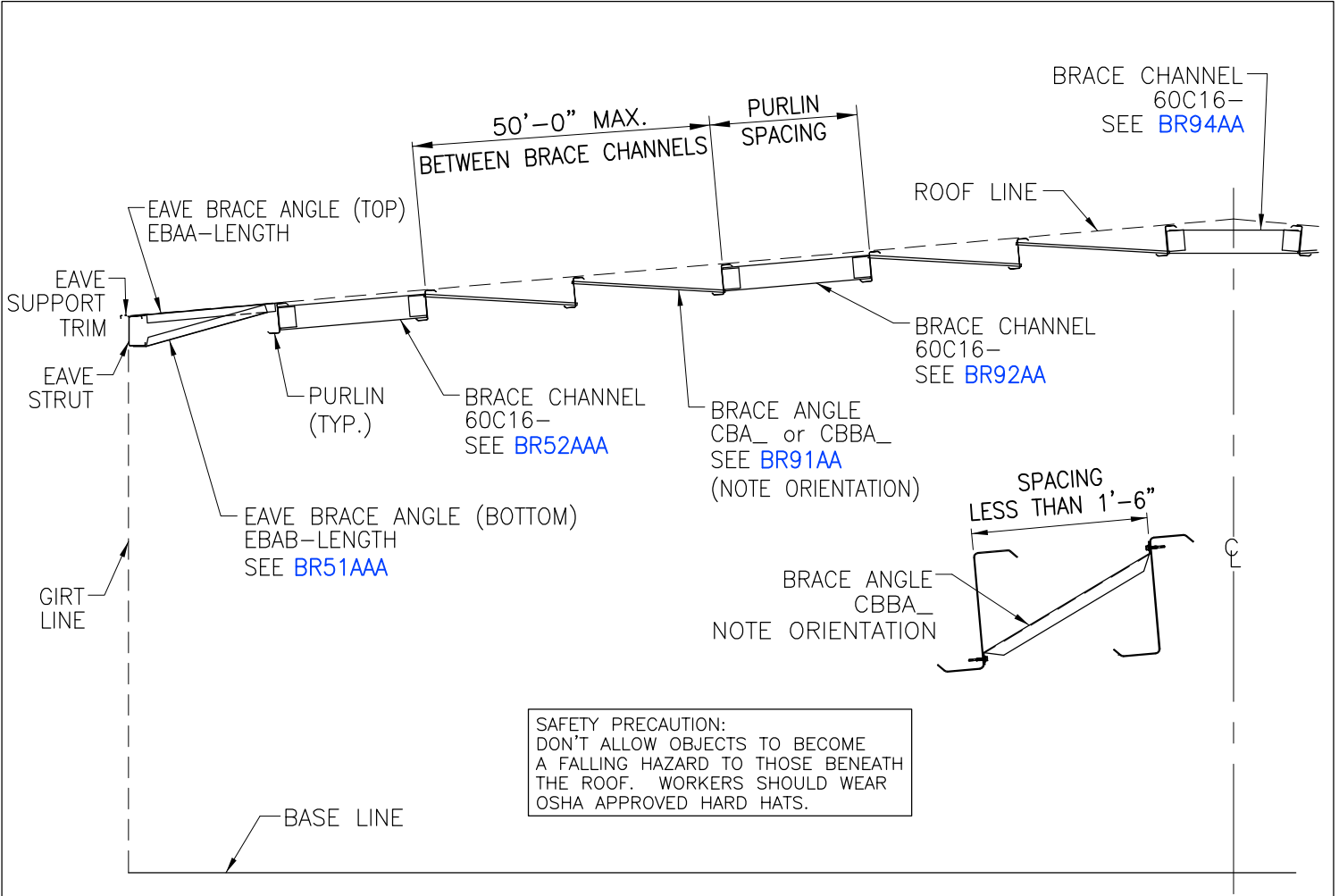
Detail at Ridge Purlin
 12" Zee Purlin Bracing
 BR94A/AA



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Purlin & Eave Bracing - Roof Slopes Less Than or Equal to 1:12
 8" & 9 1/2" Zee Purlins w/ Clip-Fastened Roof - Ridge Building Shown, Single Slope Similar
 BR95A/AA



SAFETY PRECAUTION:
 DON'T ALLOW OBJECTS TO BECOME
 A FALLING HAZARD TO THOSE BENEATH
 THE ROOF. WORKERS SHOULD WEAR
 OSHA APPROVED HARD HATS.

PURLIN & EAVE BRACING—ROOF SLOPES LESS THAN OR EQUAL TO 1:12 8" OR 9 1/2" ZEE PURLIN w/CLIP-FASTENED ROOF – RIDGE BUILDING SHOWN, SINGLE SLOPE SIMILAR	BR95A AA
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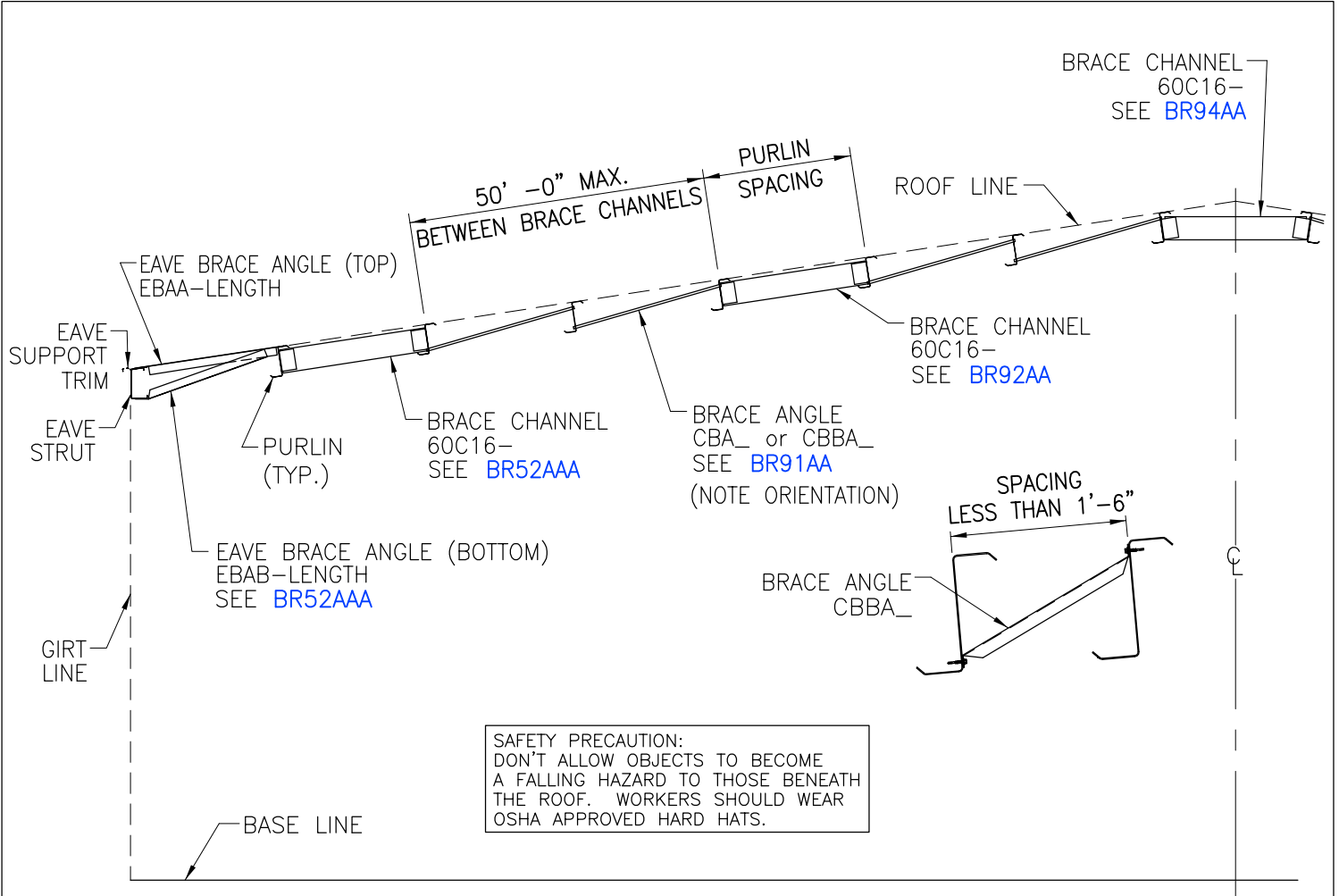
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Purlin & Eave Bracing - Roof Slope Greater Than 1:12

8" & 9 1/2" Zee Purlins w/ Standing Seam Roof - Ridge Building Shown, Single Slope Similar

BR95B/AA

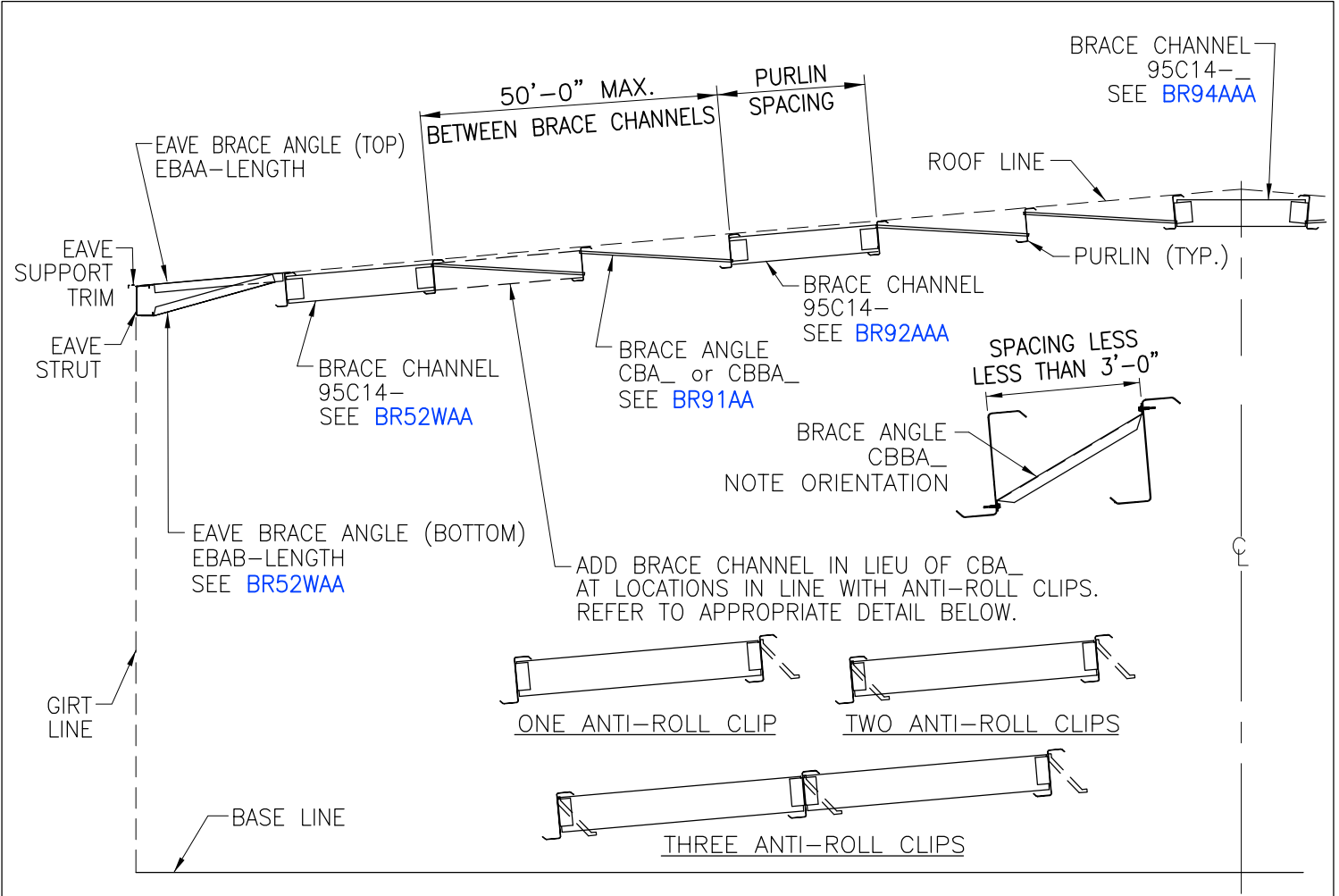


PURLIN & EAVE BRACING—ROOF SLOPE GREATER THAN 1:12	BR95B
8" OR 9 1/2" ZEE PURLIN w/STANDING SEAM ROOF – RIDGE BUILDING SHOWN, SINGLE SLOPE SIMILAR	AA

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Purlin & Eave Bracing Section - Roof Slope Less Than or Equal to 1:12
 12" Zee Purlin w/ Clip-Fastened Roof - Ridge Building Shown, Single Slope Similar
 BR95W/AA

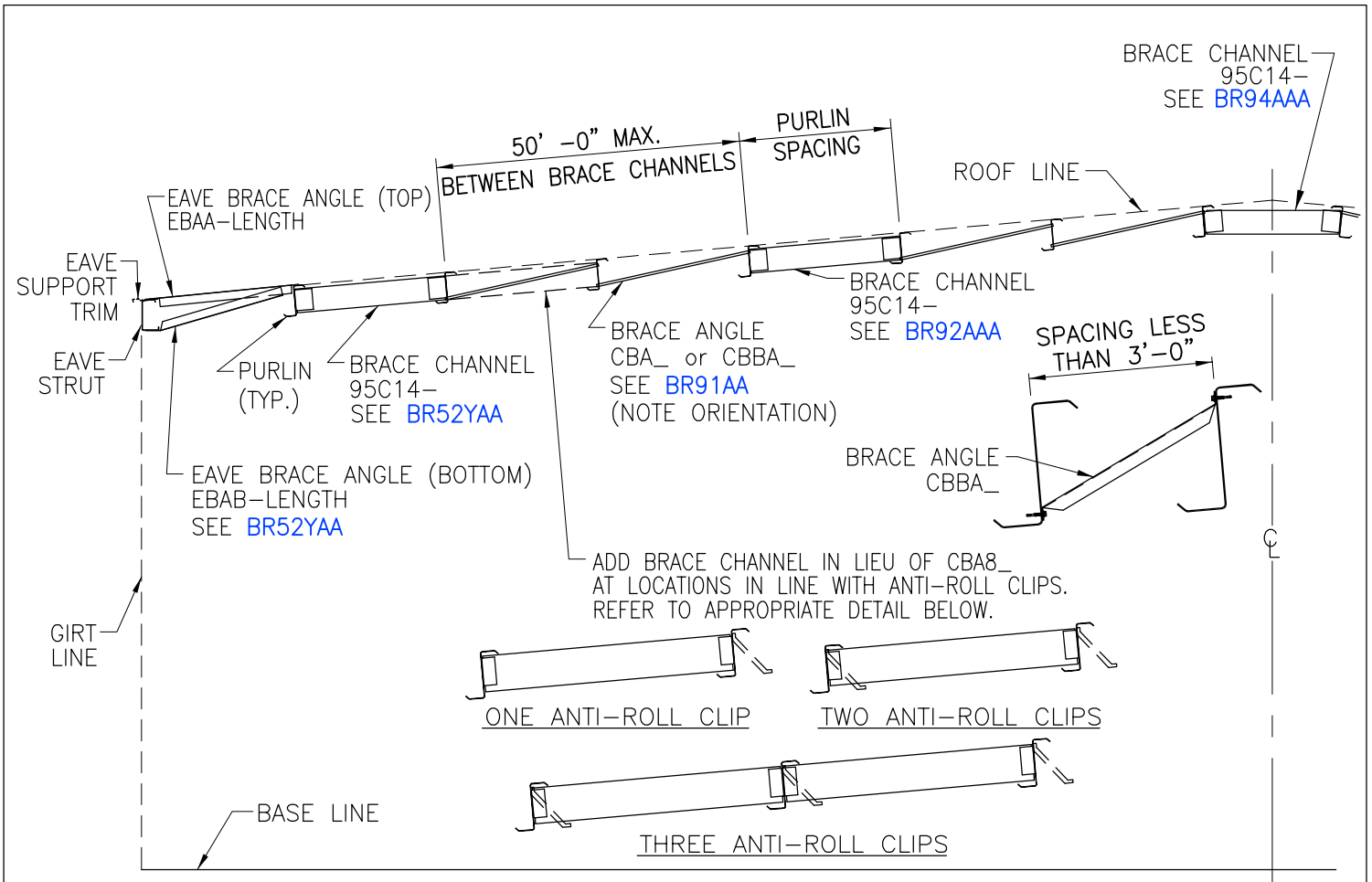


PURLIN & EAVE BRACING SECTION—ROOF SLOPE LESS THAN OR EQUAL TO 1:12	BR95W
12" ZEE PURLIN w/CLIP-FASTENED ROOF – RIDGE BUILDING SHOWN, SINGLE SLOPE SIMILAR	AA

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Purlin & Eave Bracing - Roof Slopes Greater Than 1:12
12" Zee Purlin w/ Clip Fastened Roof - Ridge Building Shown, Single Slope Similar
BR95Y/AA



PURLIN & EAVE BRACING—ROOF SLOPES GREATER THAN 1:12
 12" ZEE PURLIN w/CLIP—FASTENED ROOF — RIDGE BUILDING SHOWN, SINGLE SLOPE SIMILAR

BR95Y
AA

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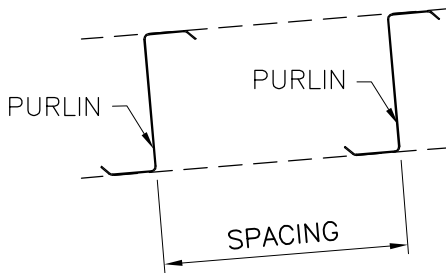
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Brace Channel Mark Numbers

8" or 9 1/2" Purlins

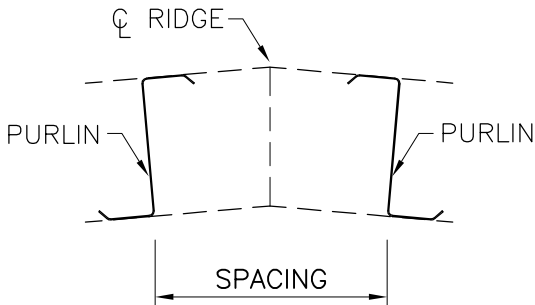
BR96W/AA

BRACE CHANNEL SPACING:



BRACE CHANNEL LENGTH	
60C16-	(LENGTH = PURLIN SPACING - 3/4")

RIDGE BRACE CHANNEL SPACING:



RIDGE BRACE CHANNEL LENGTH		
SPACING	CHANNEL LENGTH	MARK NUMBER
1'-11 3/4" TO 2'-4 7/8"	2'-2"	60C16-
2'-5" TO 2'-11 3/8"	2'-5 5/8"	60C16-
2'-11 1/2" TO 3'-0"	2'-11 7/8"	60C16-

NOTE:

CHANNEL LENGTHS ABOVE ARE FOR RETROFIT AT EXISTING BUILDINGS. VERIFY AND FIELD MEASURE ALL SPACINGS.

BRACE CHANNEL MARK NUMBERS

8" OR 9 1/2" PURLINS

BR96W
AA

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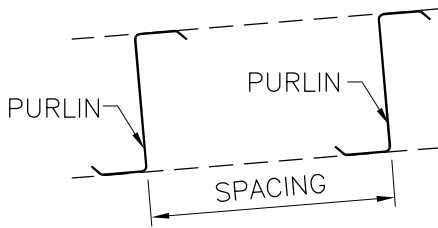
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Brace Channel Mark Numbers

12" Zee

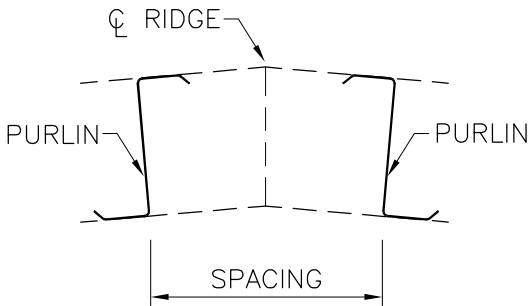
BR96Y/AA

BRACE CHANNEL SPACING:



BRACE CHANNEL LENGTH	
95C14-	(LENGTH = PURLIN SPACING - 3/4")

RIDGE BRACE CHANNEL SPACING:



RIDGE BRACE CHANNEL LENGTH		
SPACING	CHANNEL LENGTH	MARK NUMBER
1'-9 1/2" TO 2'-2 1/4"	2'-0 1/4"	95C14-
2'-2 3/8" TO 2'-11 1/4"	2'-4 3/8"	95C14-
2'-11 3/8" TO 3'-0"	2'-11 7/8"	95C14-

NOTE:

CHANNEL LENGTHS ABOVE ARE FOR RETROFIT AT EXISTING BUILDINGS.
VERIFY AND FIELD MEASURE ALL SPACINGS.

BRACE CHANNEL MARK NUMBERS

12" ZEE

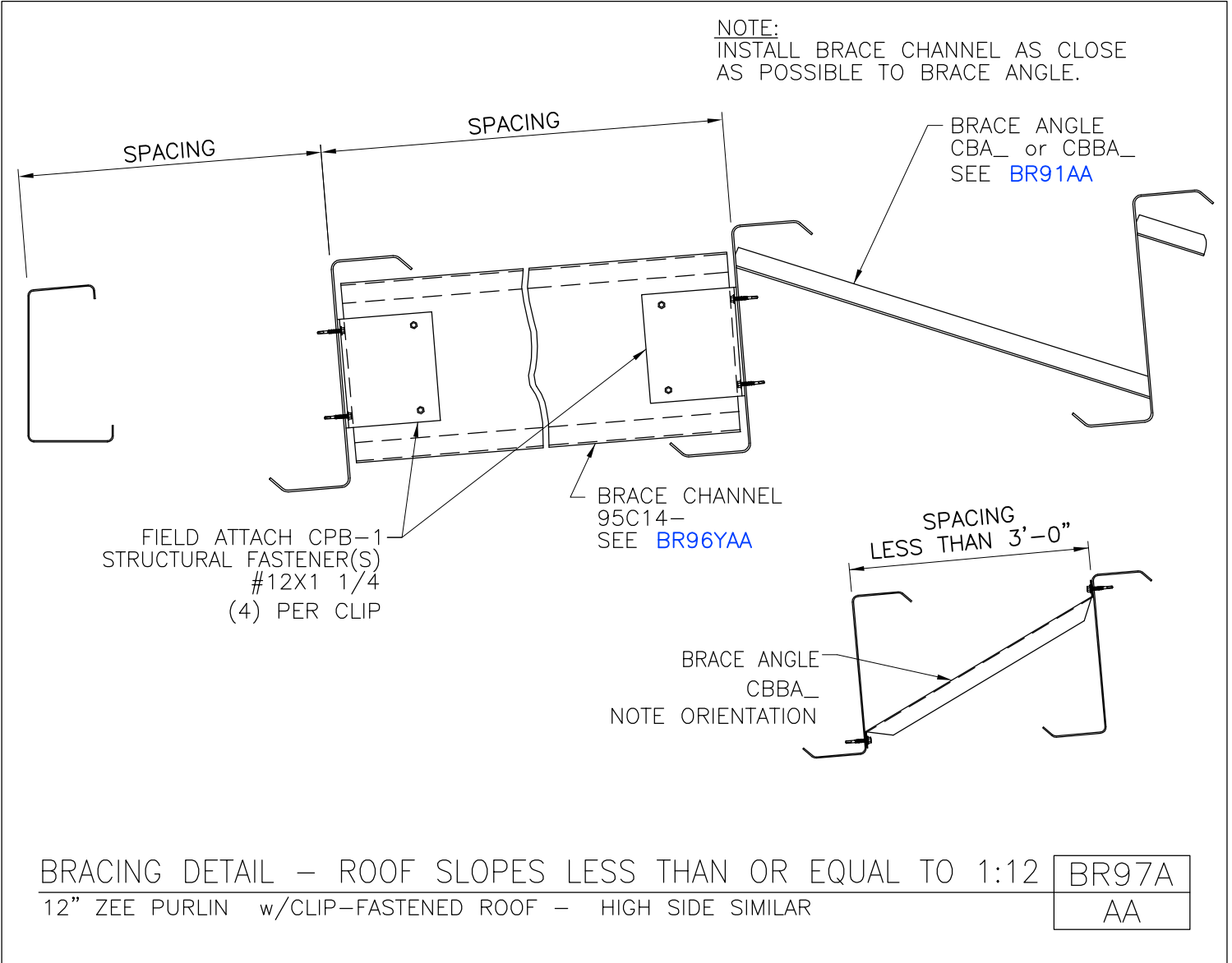
BR96Y

AA

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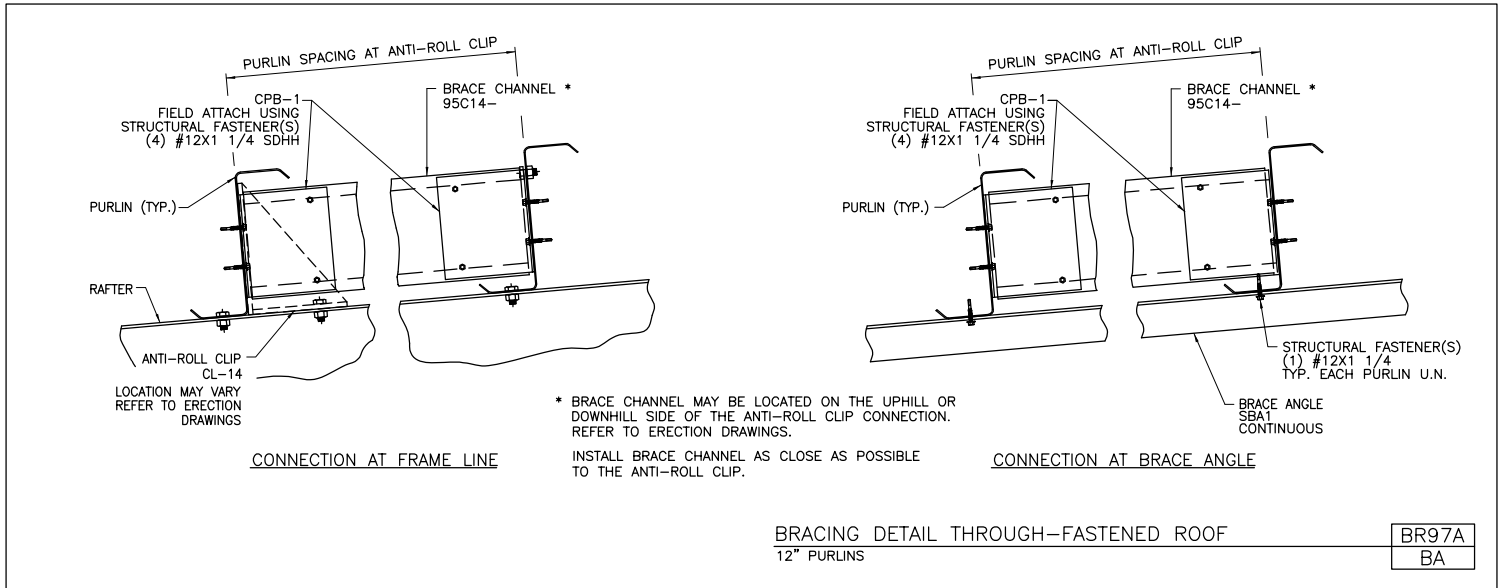
Bracing Detail - Roof Slopes Less Than or Equal to 1:12
 12" Zee Purlin w/ Clip-Fastened Roof - High Side Similar
 BR97A/AA



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Bracing Detail Through-Fastened Roof
12" Purlins
BR97A/BA

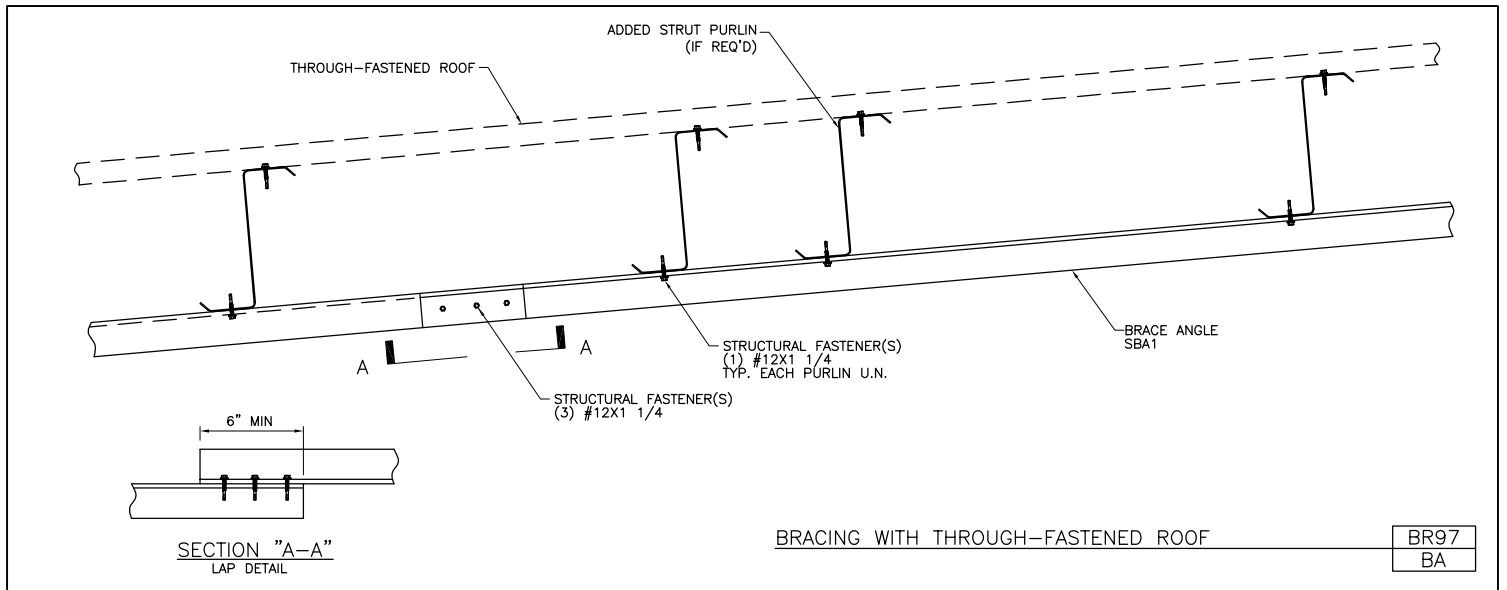


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Bracing w/ Through-Fastened Roof

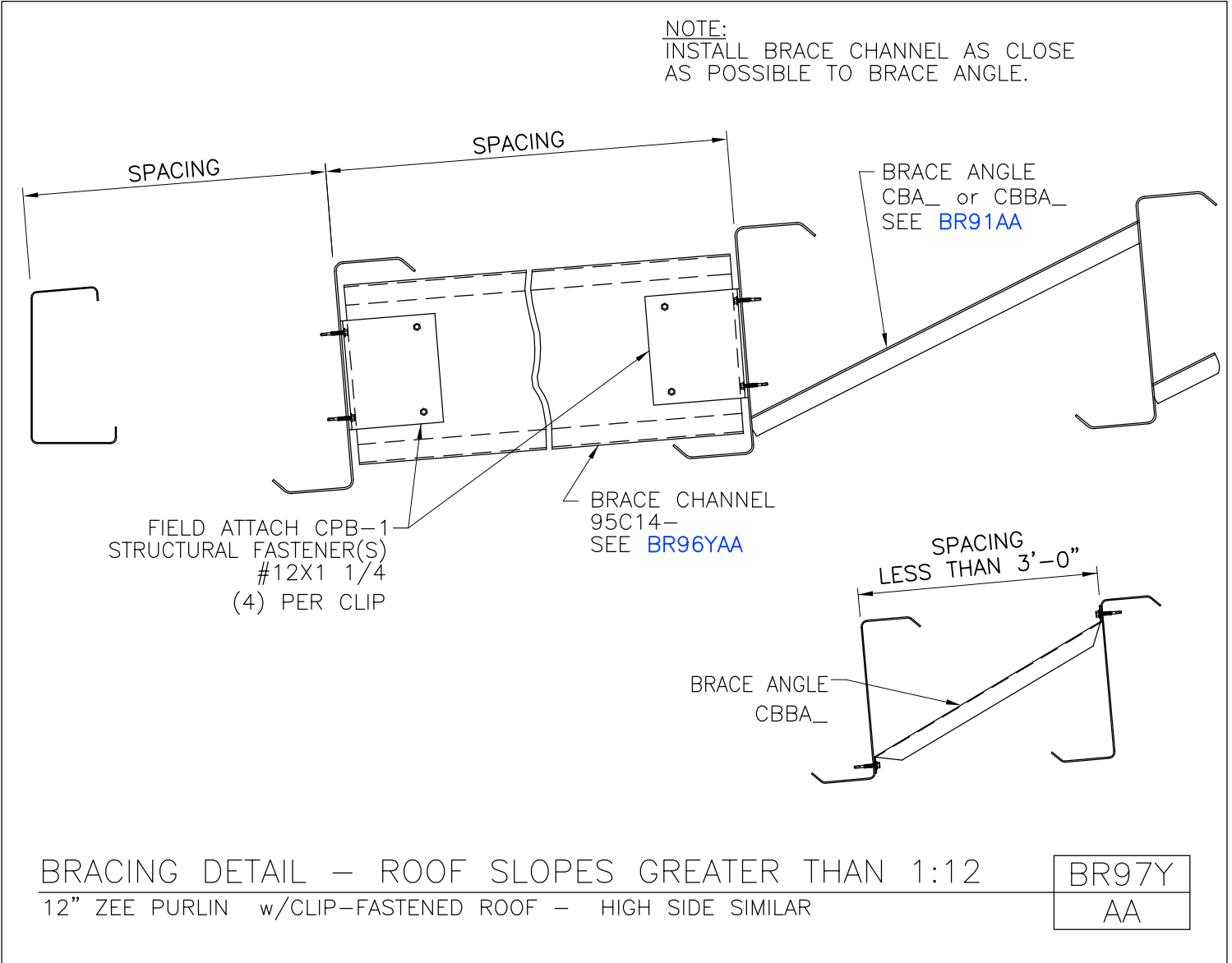
BR97/BA



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Bracing Detail - Roof Slopes Greater Than 1:12
 12" Zee Purlin w/ Clip-Fastened Roof - High Side Similar
 BR97Y/AA

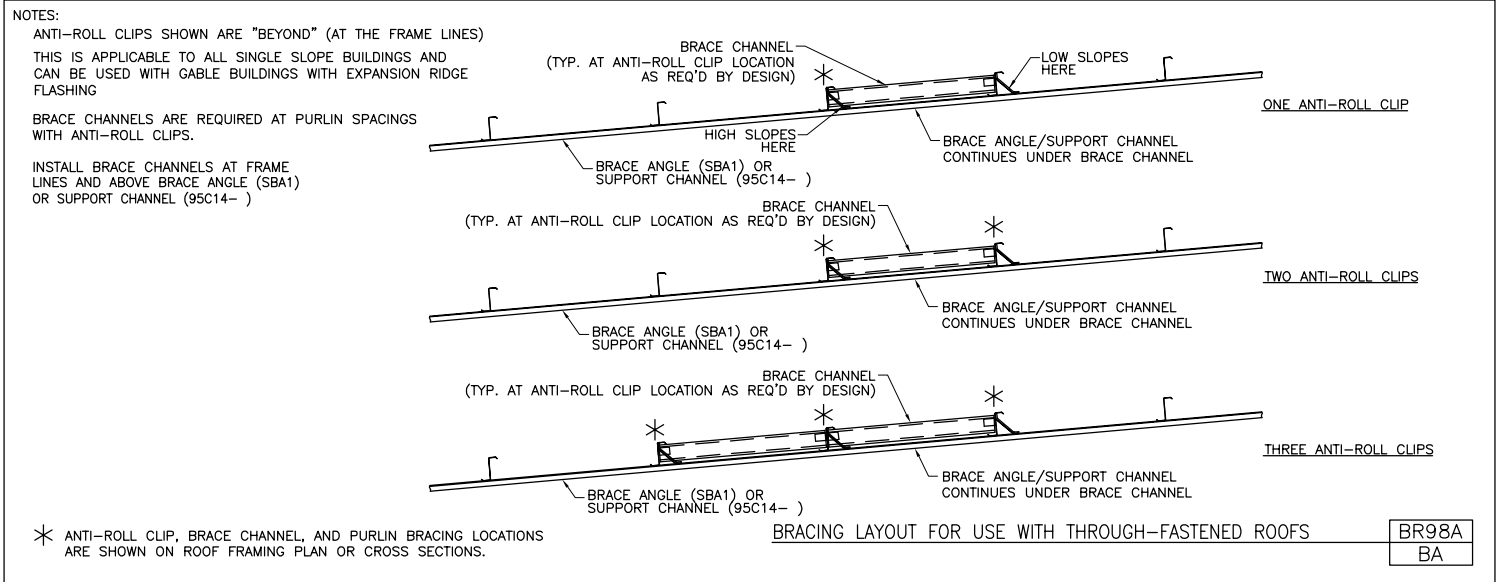


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Bracing Layout For Use With Through-Fastened Roofs

BR98A/BA

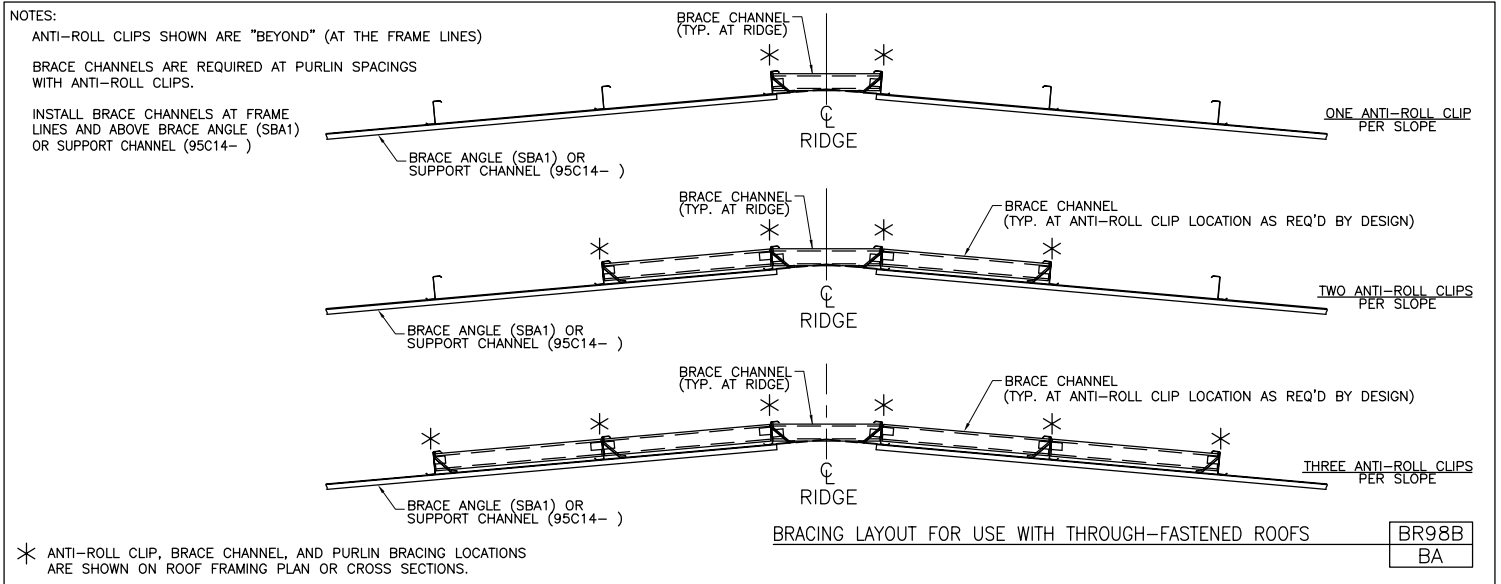


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Bracing Layout For Use With Through-Fastened Roofs

BR98B/BA



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Purlin Bracing Notes

BROA/AA

1. APPLICABLE TO ROOFS WITH STANDING SEAM II, STANDING SEAM 360, LOC-SEAM, LOC-SEAM 360 AND SEAM-LOC PANELS.
2. PURLINS ARE TO BE INSTALLED WITH PURLIN WEBS 90° TO RAFTERS.
3. PURLIN BRACING IS NOT TO DISTORT OR ALTER PURLINS FROM THEIR INTENDED SHAPE AND LOCATION.
4. SPACING AS REQUIRED BY DESIGN.
5. FOR FACTORY MUTUAL REQUIREMENTS, PURLIN BRACING IS NOT TO EXCEED 80" O.C. AND IS REQUIRED ONLY IN THE END BAYS OF THE BUILDING.

(BRACING NOT APPLICABLE WITH SCREW DOWN ROOF SYSTEMS)

PURLIN BRACING NOTES

BROA
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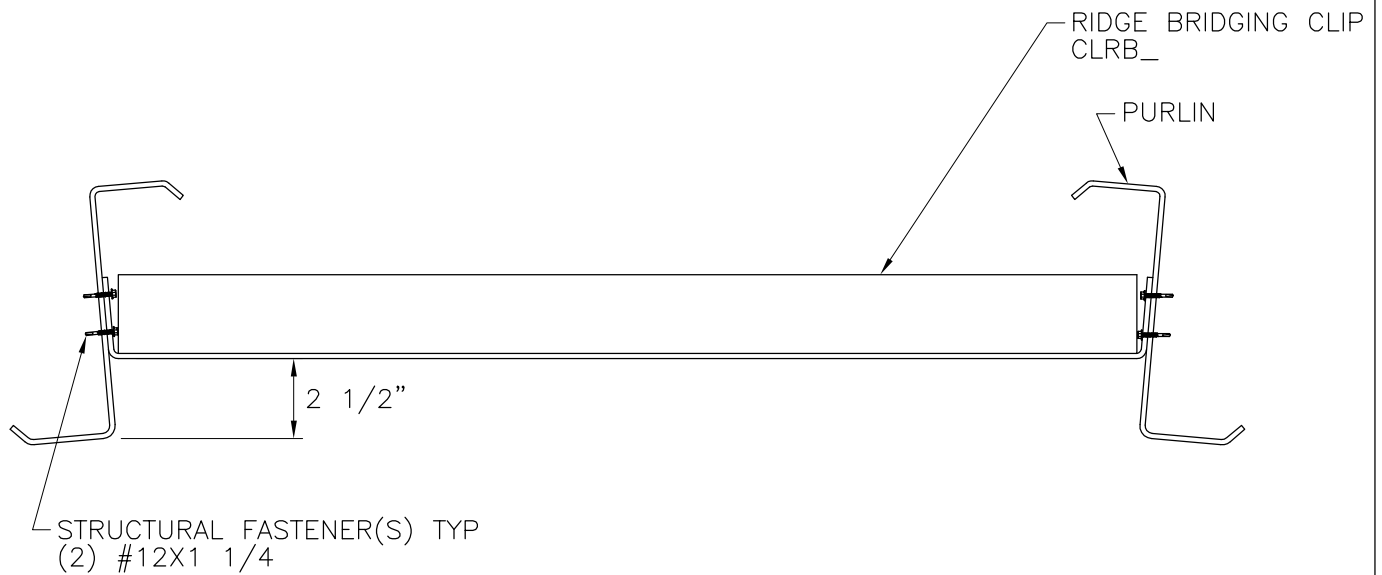
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Ridge Bridging Clip Connection Detail

RF05/AA

SAFETY PRECAUTION:
WORKER PERSONAL PROTECTION EQUIPMENT
SHOULD ALWAYS MEET OSHA STANDARDS.



RIDGE BRIDGING CLIP CONNECTION DETAIL

RF05
AA

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