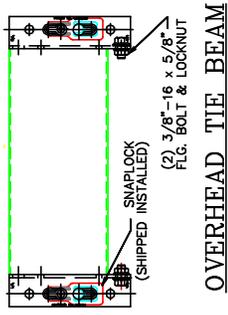




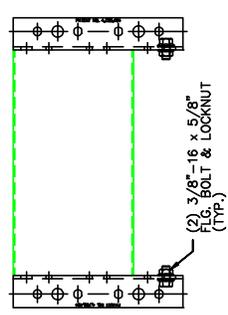
INSTALLATION MANUAL INDEX

DRIVE-IN/THRU RACK - ROLL FORMED	DRAWING NO.
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2. LIGHT & HEAVY DUTY ARMS	
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Light duty drive-in/thru arm w/DR-rail	INS-00041
Light and heavy duty drive-in/thru arm w/Z-rail splice	INS-00035
Light and heavy duty drive-in/thru arm w/DR-rail splice	INS-00038
Heavy duty drive-in/thru arm w/Z-rail	INS-00042
Heavy duty drive-in/thru arm w/DR-rail	INS-00043
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3. RAIL SUPPORT BEAMS	
Rail support beam w/Z-rail	INS-00045
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Standard overhead tie beam	INS-00048
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Z-rail drive-in pallet stop	INS-00036
6. BRACING	
Drive-in vertical X-bracing	INS-00050

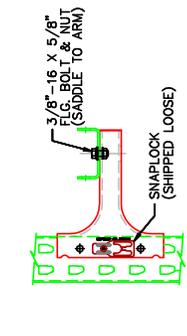
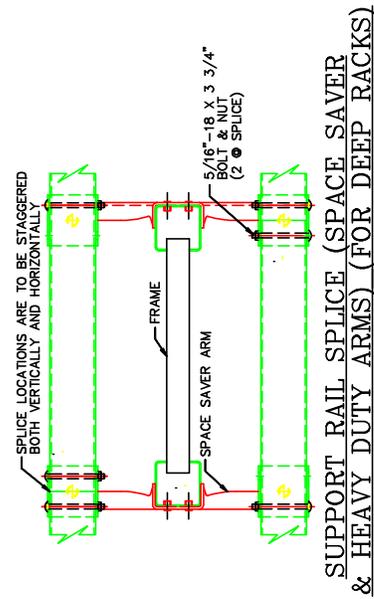
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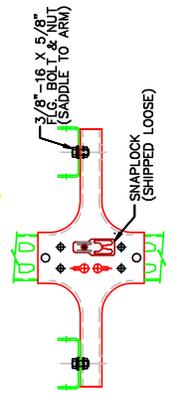
OVERHEAD TIE BEAM



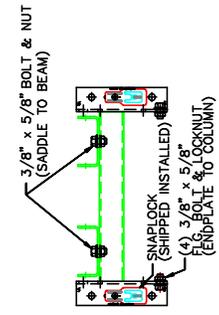
HEAVY DUTY OVERHEAD TIE BEAM



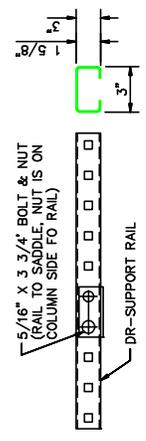
LIGHT DUTY SINGLE ARM



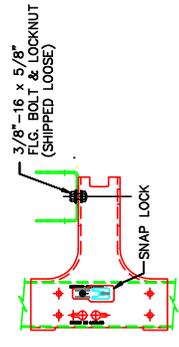
DOUBLE WRAP-AROUND ARM (LIGHT DUTY)



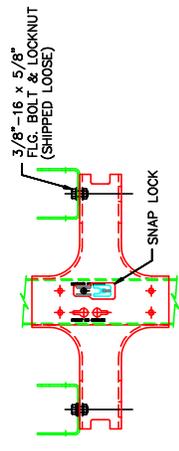
RAIL SUPPORT BEAM (SPACE SAVER)



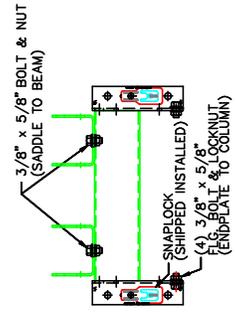
DR-RAIL / SADDLE CONN.



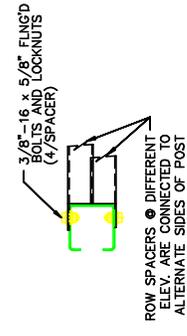
HEAVY DUTY SINGLE ARM



DOUBLE WRAP-AROUND ARM (HEAVY DUTY)



RAIL SUPPORT BEAM (HEAVY DUTY)



ROW SPACER CONNECTION

NOTES:

- WHEN X-BRACING IS SPECIFIED, THE FOLLOWING X-BRACING IS REQUIRED:
 - FOR 6 BAYS OR LESS, REGARDLESS OF THE NUMBER OF ARM LEVELS.
 - FOR 7 BAYS OR MORE, ONE BAY OF BRACING IS REQUIRED EVERY 8 BAYS.
 - THE FOLLOWING CHART INDICATES THE NUMBER OF X-BRACE SETS REQUIRED PER BAY, BASED ON THE NUMBER OF ARM LEVELS.

X-BRACE SET REQUIREMENTS			
NO. OF ARM LEVELS	1-3	4-6	7-9
NO. OF X-BRACE SETS	1	2	3

- ENSURE ALL COLUMNS ARE ANCHORED WITH 1/2" DIA. CONCRETE ANCHORS HAVING A MIN. EMBEDMENT OF 2 1/2". ALSO ALL COLUMNS ARE TO BE PLUMB AND SHIMMED LEVEL.
- ALL DRIVE-THRU RACKS AND THAT PORTION OF DRIVE-IN RACKS THAT EXTEND MORE THAN 240" PAST THE FRONT RAIL SUPPORT BEAM, ARE TO BE TIED OVERHEAD AND TO THE BUILDING STRUCTURE. REFER TO NPB-10166 FOR DETAILS.

Interlake
Material Handling Division

DATE: 9/22/86
BY: J.K. RDG
PROJECT: DRIVE-IN / DRIVE THRU ROLL FORMED

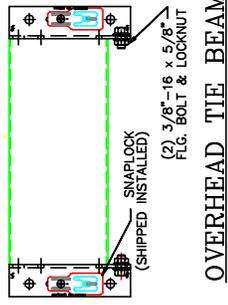
DESCRIPTION: DR-RAIL INSTALLATION DETAILS

DRAWING NO.: NPB-10166

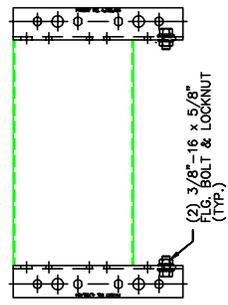
SHEET NO.:
ANGULAR TOLERANCE: X = ± 1.0°
SCALE: DO NOT

B 12/17/86 (P,H,RD,G)
A 1/30/87 (J,K)
REASON: REDRAWN TO CAD
ADDED ROW SPACER CONNECTION

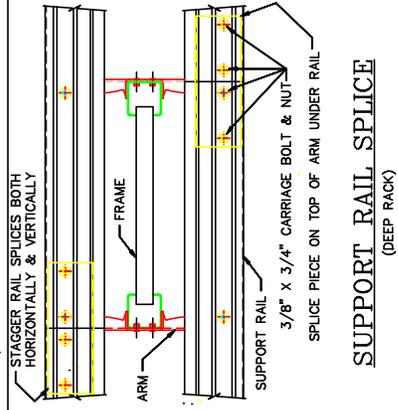
ELECTRONIC DWG. NO.: RBN10166.B
FOR ANY PURPOSE AND/OR REVISION EXCEPT BY WRITTEN PERMISSION OF THE INTERLAKES COMPANIES, INC.



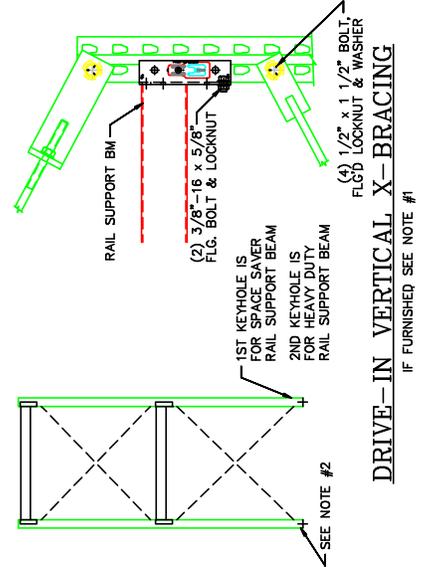
OVERHEAD TIE BEAM



HEAVY DUTY OVERHEAD TIE BEAM

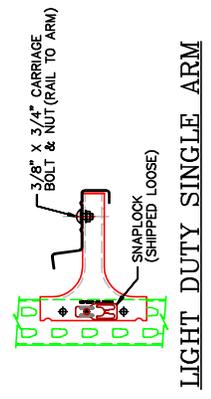


SUPPORT RAIL SPLICE (DEEP RACK)

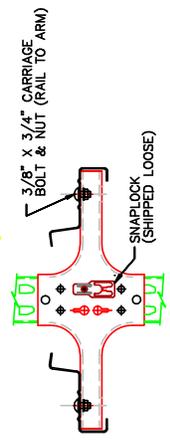


DRIVE-IN VERTICAL X-BRACING

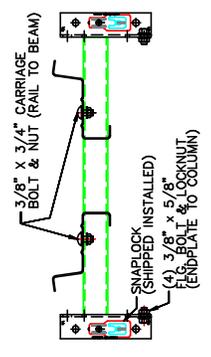
IF FURNISHED SEE NOTE #1



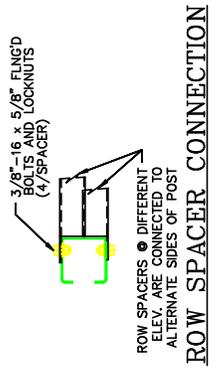
LIGHT DUTY SINGLE ARM



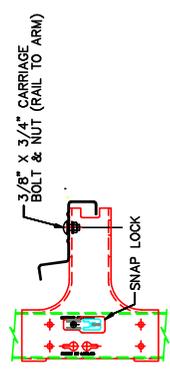
DOUBLE WRAP-AROUND ARM (LIGHT DUTY)



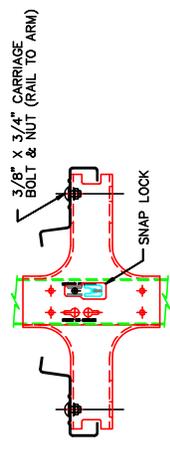
RAIL SUPPORT BEAM (SPACE SAVER)



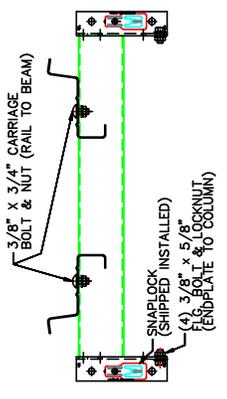
ROW SPACER CONNECTION



HEAVY DUTY SINGLE ARM



DOUBLE WRAP-AROUND ARM (HEAVY DUTY)



RAIL SUPPORT BEAM (HEAVY DUTY)

NOTES:

- WHEN X-BRACING IS SPECIFIED, THE FOLLOWING X-BRACING IS REQUIRED:
 - FOR 6 BAYS OR LESS, REGARDLESS OF THE NUMBER OF ARM LEVELS.
 - FOR 7 BAYS OR MORE, ONE BAY OF BRACING IS REQUIRED EVERY 8 BAYS.
 - THE FOLLOWING CHART INDICATES THE NUMBER OF X-BRACE SETS REQUIRED PER BAY, BASED ON THE NUMBER OF ARM LEVELS.

X-BRACE SET REQUIREMENTS			
NO. OF ARM LEVELS	1-3	4-6	7-9
NO. OF X-BRACE SETS	1	2	3

- ENSURE ALL COLUMNS ARE ANCHORED WITH 1/2" DIA. CONCRETE ANCHORS HAVING A MIN. EMBEDMENT OF 2 1/2". ALSO ALL COLUMNS ARE TO BE PLUMB AND SHIMMED LEVEL.
- ALL DRIVE-THRU RACKS AND THAT PORTION OF DRIVE-IN RACKS THAT EXTEND MORE THAN 240" PAST THE FRONT RAIL SUPPORT BEAM, ARE TO BE TIED OVERHEAD AND TO THE MAIN RAIL SUPPORT BEAM.
- REFER TO NPB-10165 FOR DETAILS.

Interlake
Material Handling Division

DATE: 9/22/86
SHEET NO.: 10167
PROJECT: DRIVE-IN / DRIVE THRU ROLL FORMED
SECTION: Z-RAIL INSTALLATION DETAILS
DRAWING NO.: NPB-10167

LINEAR TOLERANCE
X = ±0.250 XXX = ±0.063
XX = ±0.125 XXXX = ±0.031
X = ± 0.5°

DO NOT SCALE

ISSUE	DATE	BY	CHK	REASON
B	12/17/86	J.H.RDG		REDRAWN TO CAD
A	1/30/87	J.K.		ADDED ROW SPACER CONNECTION

ELECTRONIC DWG. NO. 1: RBN10167.B
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DRIVE-IN RACK ASSEMBLY INSTRUCTIONS



Step 1 - Check the Material

Check to make certain that all materials have been received. Check the material received against the Bill of Lading and packing lists. Notify the shipper immediately of any shortages or product damage.

Step 2 - Check the Area

Once the rack material is unloaded, clear the area where the rack system is to be located. Check the area for all obstructions, such as building columns, lights, heat ducts, pipes, etc., to insure a clear area for rack installation.

Step 3 - Lay Out Floor

Establish the rack layout, determining the aisle dimensions and positioning of the rack. Snap the chalk lines parallel with the main aisle and perpendicular to rack entries. Also snap chalk lines perpendicular to the main aisle to establish the depth of the rack system. (See sketch).

Step 4 – Attaching Load Arms

Determine and mark the load arm elevations on the upright frames. Attach the load arms to the frame as follows:

Roll-formed Frame - Engage the studs into the keyhole on the frame. Make sure the snap lock "clicks" into place, assuring the arm is locked to the column and cannot be accidentally disengaged.

NOTE: Some heavy duty arms utilize a bolted connection rather than the stud connection.

Structural Frame - Bolt the load arm securely to the frame, putting the bolt through the back of the frame column. The nut will show on the channel face when complete.

Step 5 – Erect the Tower Frames

The tower frames make up the back row in a drive-in bay. (See sketch). To begin, stand the frame vertically, attaching the rail support beam to the frame at the same level as the load arms in Step 3. If using a roll-formed frame, make sure the snap lock "clicks" into place, locking the beam to the frame. 2 rail support beams attach at each level, similar to the load arms in Step 4. A 3/8" x 3/4" flanged bolt and locknut is to be installed through each rail support beam endplate into the column. (See sketch). Install each level of rail support beams on the tower frames in the same manner as above to complete the tower frames.

Step 6 – Erect the Intermediate Frames

After the tower frames are erected for the first bay, stand the next group of frames in the bay by temporarily using a rail support beam to support the frames at a convenient elevation. (See sketch). Load arms should be installed prior to raising the frame.

Step 7 – Attach the Load Rails

Install the front-to-back load rails by bolting them to the load arms on the intermediate frames and to the rail support beams of the tower frame. Leave all hardware loose until plumbing, leveling, squaring, and adjusting the uprights to line up with the layout.

DRIVE-IN RACK ASSEMBLY INSTRUCTIONS



NOTE: If DR-rail is used, the load arms and rail support beams have a U-shaped saddle to which the load rail is bolted. If Z-rail is used, the rail bolts directly into the load arm and into the rail support beam.

The Z-rail will be notched at the rail support beam locations. If angle rail is used, the angle will have holes or welded tabs in place at the arm and rail support positions. (See the enclosed drawings that apply to your components.)

Step 8 – Attach the Overhead Ties (if required)

Overhead tie beams, if required, are to be installed at the top of the specified frames. The overhead ties are attached two 2 per frame and follow the same procedure as the installation of the rail support beams in Step 4. (See special layout drawing for your installation for the locations of overhead ties.)

Step 9 – Plumb, Level, and Anchor the First Bay

After all the arms, rail support beams, load rails, and overhead ties are installed in the first bay, plumb and level the frames with the shims provided. Next anchor the column footplates to the floor with the proper anchors. After you have anchored the frames, you can remove the temporary rail support beams or overhead ties that were placed near the floor of the front frames (to maintain the spacing of the frames until they were anchored).

NOTE: Check with your distributor or the manufacturer for the suggested type, size, and specification of anchor to be used, which will depend on the height and application of your drive-in/drive-through rack.

Step 10 – Check All Connections

Before proceeding to the next bay, check to insure all arm to upright, load rail to arm, rail support beam, and overhead tie connections are securely attached and locked in place. The following checklist should be followed:

- ✓ All arm snap locks are engaged (roll-formed frames).
- ✓ All bolts are secure (structural frames).
- ✓ All rail support beams and overhead ties are bolted through the side of the upright.
- ✓ All load rails are tightened to the load arms and rail support beams.
- ✓ All floor anchors are tightened down.
- ✓ If product is installed in a freezer or cooler, after the temperature is brought down to operating levels, again tighten all connections with nuts and bolts.

Step 11 – Install Remaining Bays

Follow the same procedures as implemented for the first bay.

DRIVE-IN RACK ASSEMBLY INSTRUCTIONS



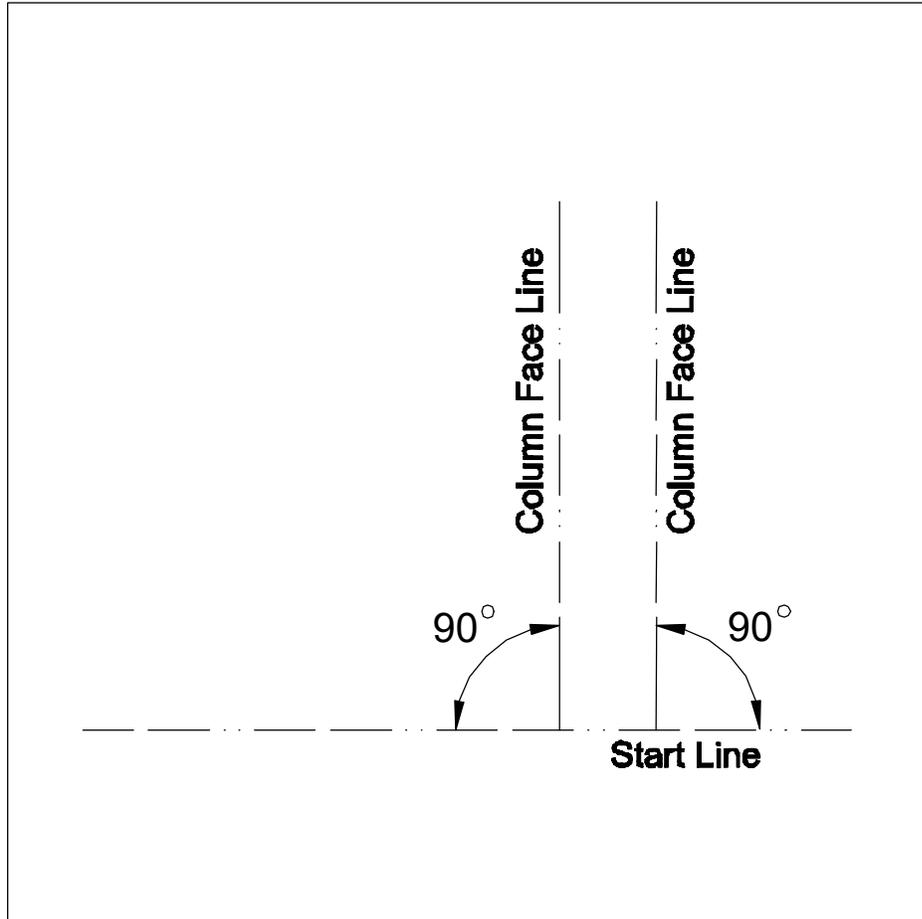
NOTE: Each drive-in order is accompanied with an elevation and side view sketch. If X-bracing is required, refer to this drawing for locations.

The rack is now ready for pallet loading (no skids permitted).

If you have any further questions, contact your local Interlake representative for customer assistance.

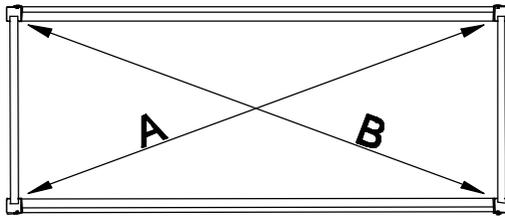
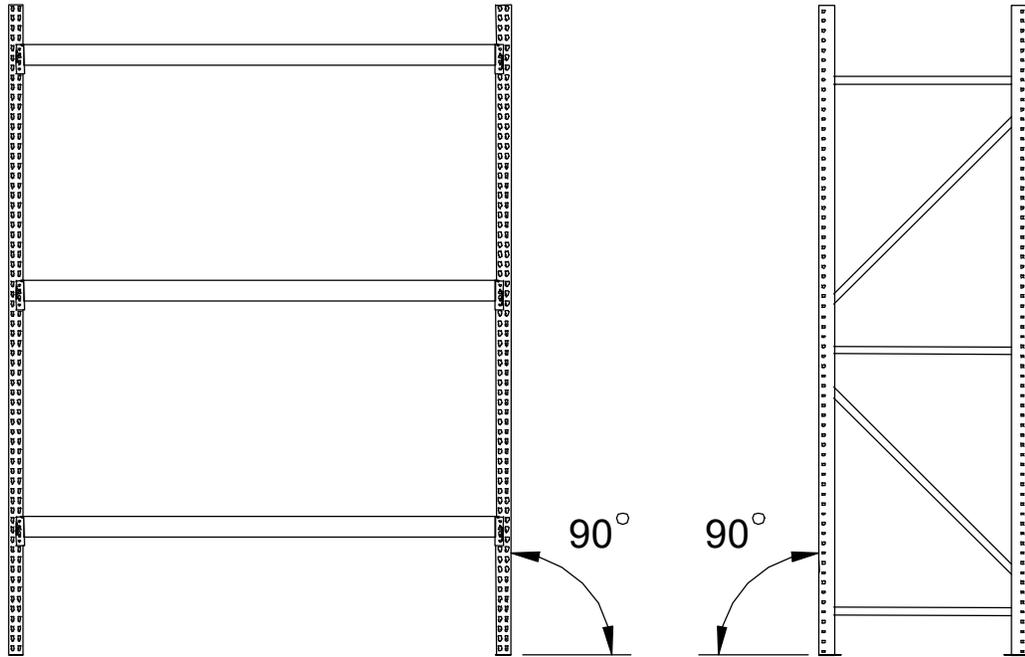
WARNING: INSTRUCTIONS FOR ASSEMBLY ARE SET FORTH ON THESE PAGES. PROPER ASSEMBLY IS THE RESPONSIBILITY OF THE PURCHASER AND IS NOT COVERED BY ANY WARRANTY OF THE SELLER. BUYER IS CAUTIONED NOT TO SUBSTITUTE PARTS OR HARDWARE. SELLER DISCLAIMS ALL LIABILITY WITH RESPECT TO ANY SUBSTITUTION OF PARTS OR HARDWARE NOT APPROVED IN WRITING BY SELLER.

THE INSTALLATION DETAIL DRAWINGS THAT FOLLOW ARE INTENDED AS BASIC GUIDES TO INSTALLATION OF STANDARD COMPONENTS. DEPENDING UPON THE SPECIFICS OF THE SYSTEM, THERE MAY BE LIMITATIONS REGARDING THE USE OF THESE STANDARD COMPONENTS AND/OR A REQUIREMENT FOR SPECIAL INSTALLATION TECHNIQUES. ADDITIONAL INFORMATION IS FOUND IN INTERLAKE PRICE BOOKS, PUBLISHED TECHNICAL DOCUMENTS, COMPREHENSIVE INSTALLATION DRAWINGS, AND OTHER MATERIALS.



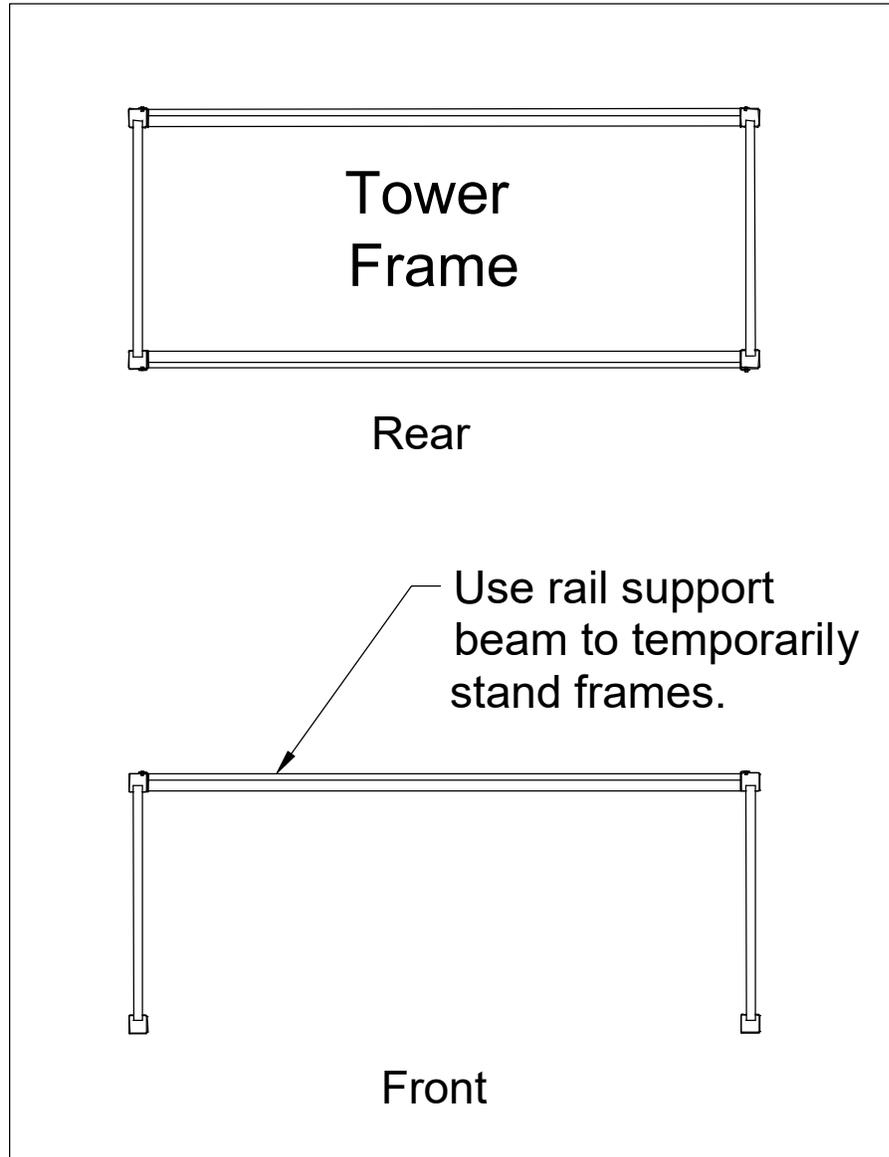
Chalk Line

Snap line defining aisle
(Column Faces) and Start Line.

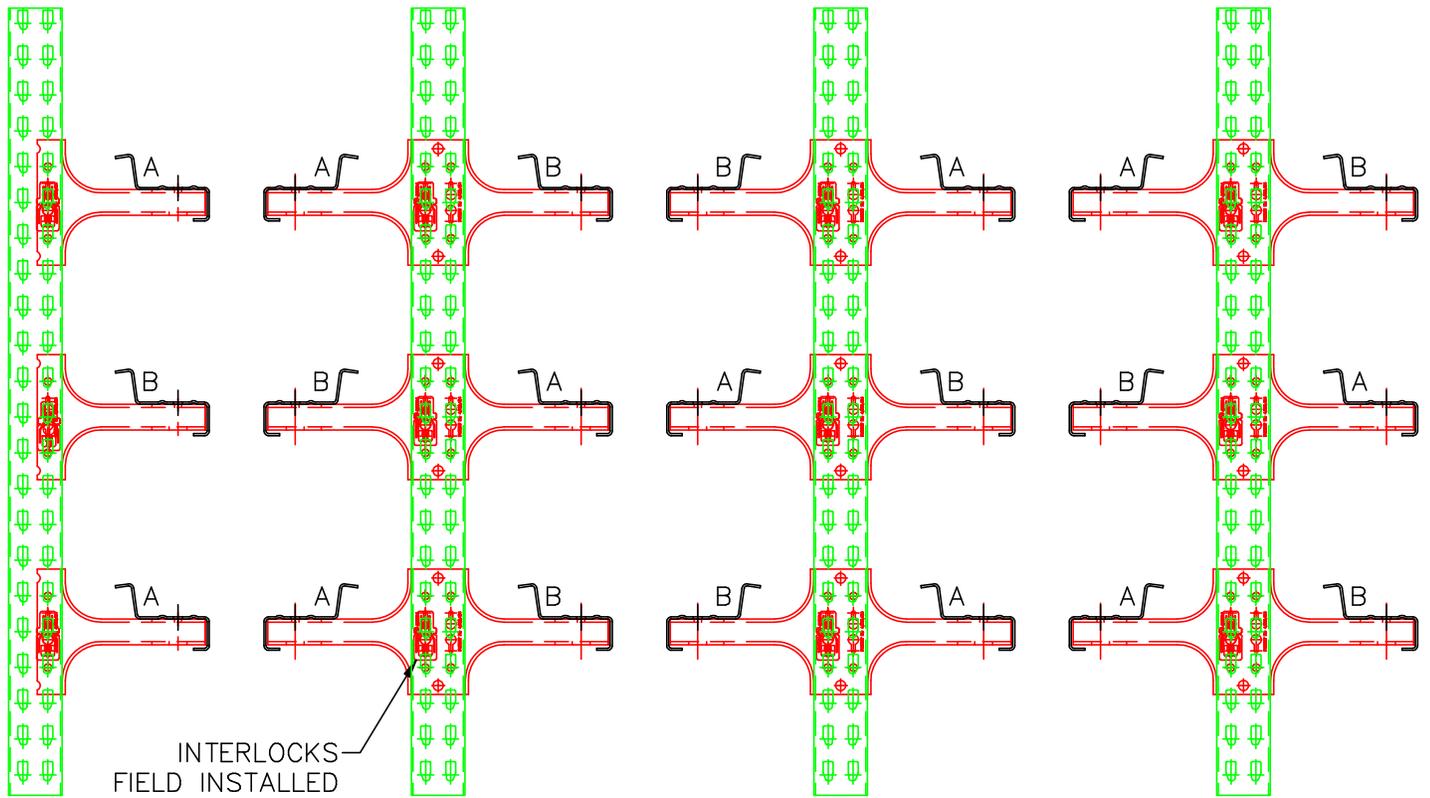


To square a bay,
make sure that
dimensions A and B
are equivalent.

Square Frames

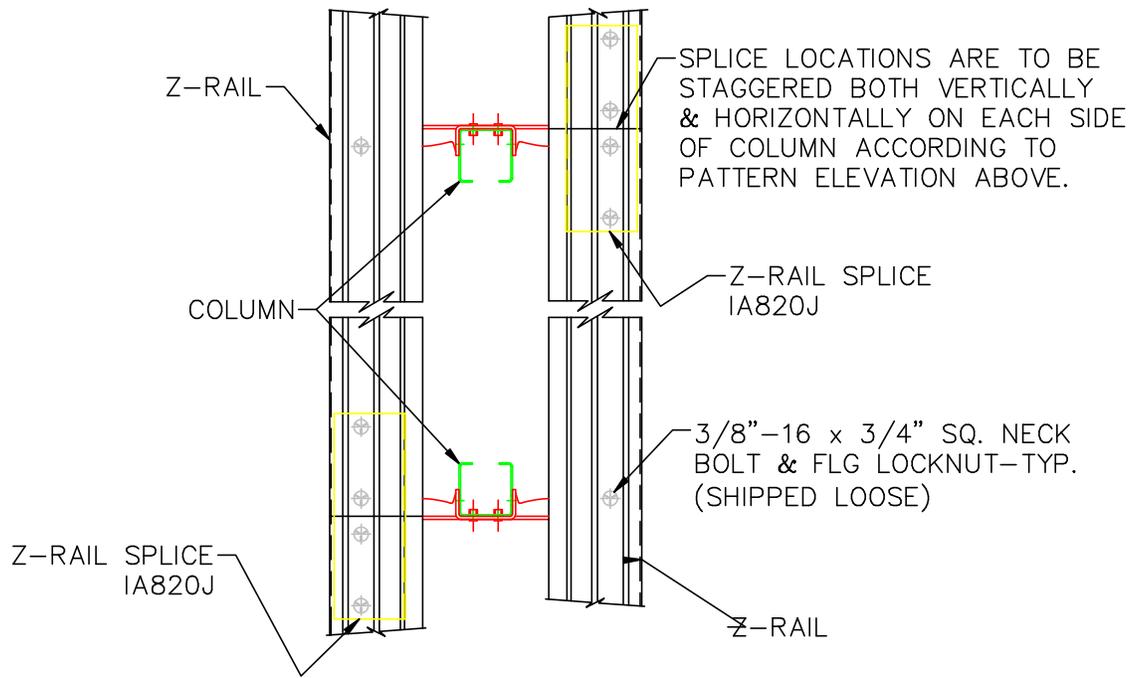


Drive-in Bay Installation

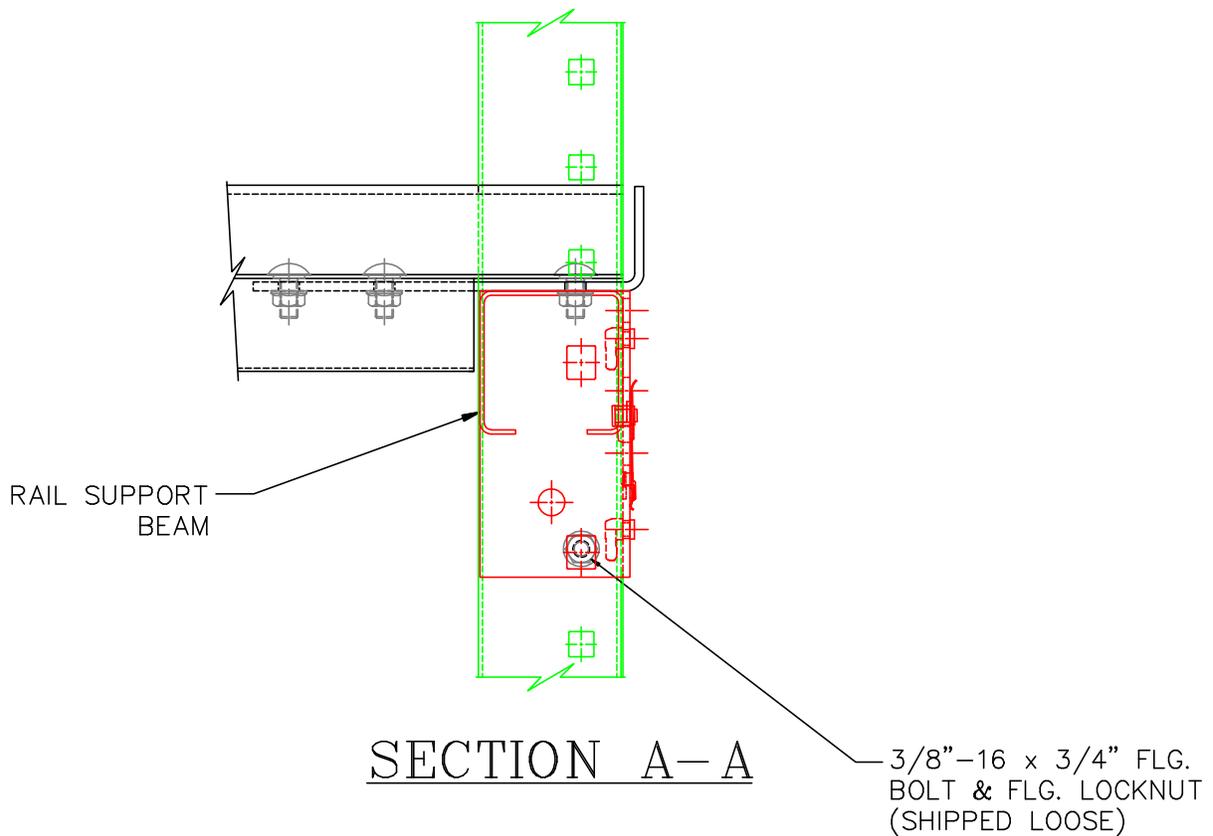
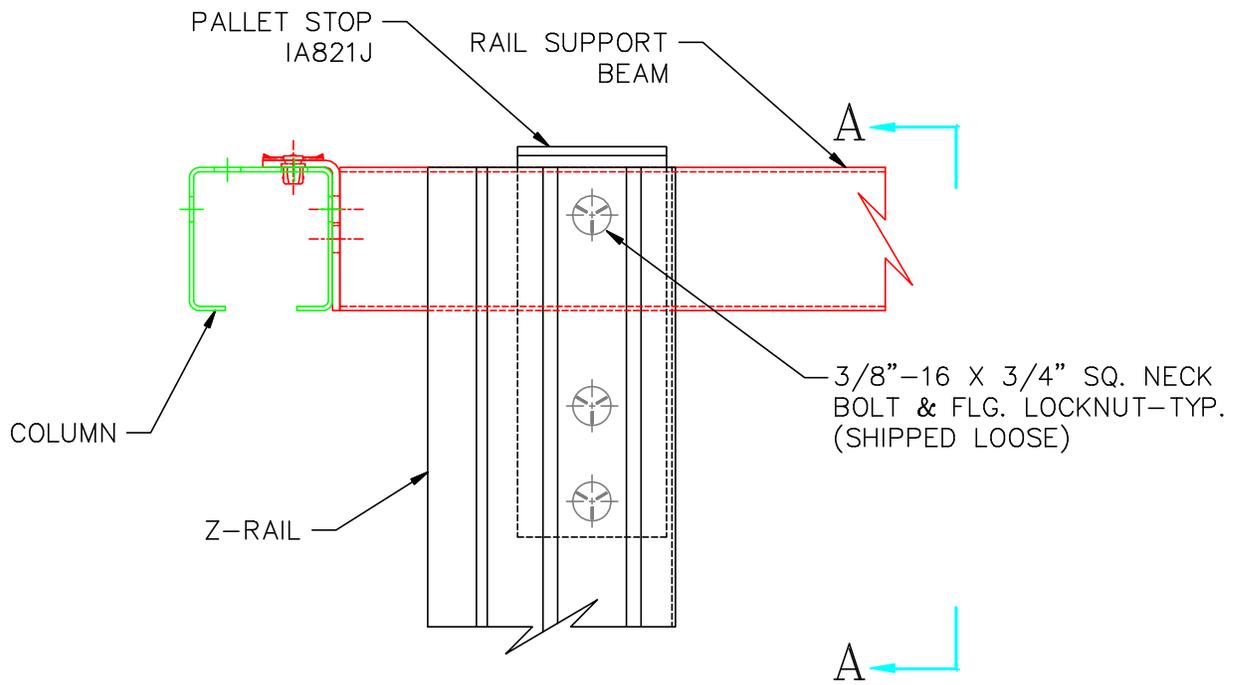


SUPPORT RAIL USING RAIL SPLICE PATTERN "A"

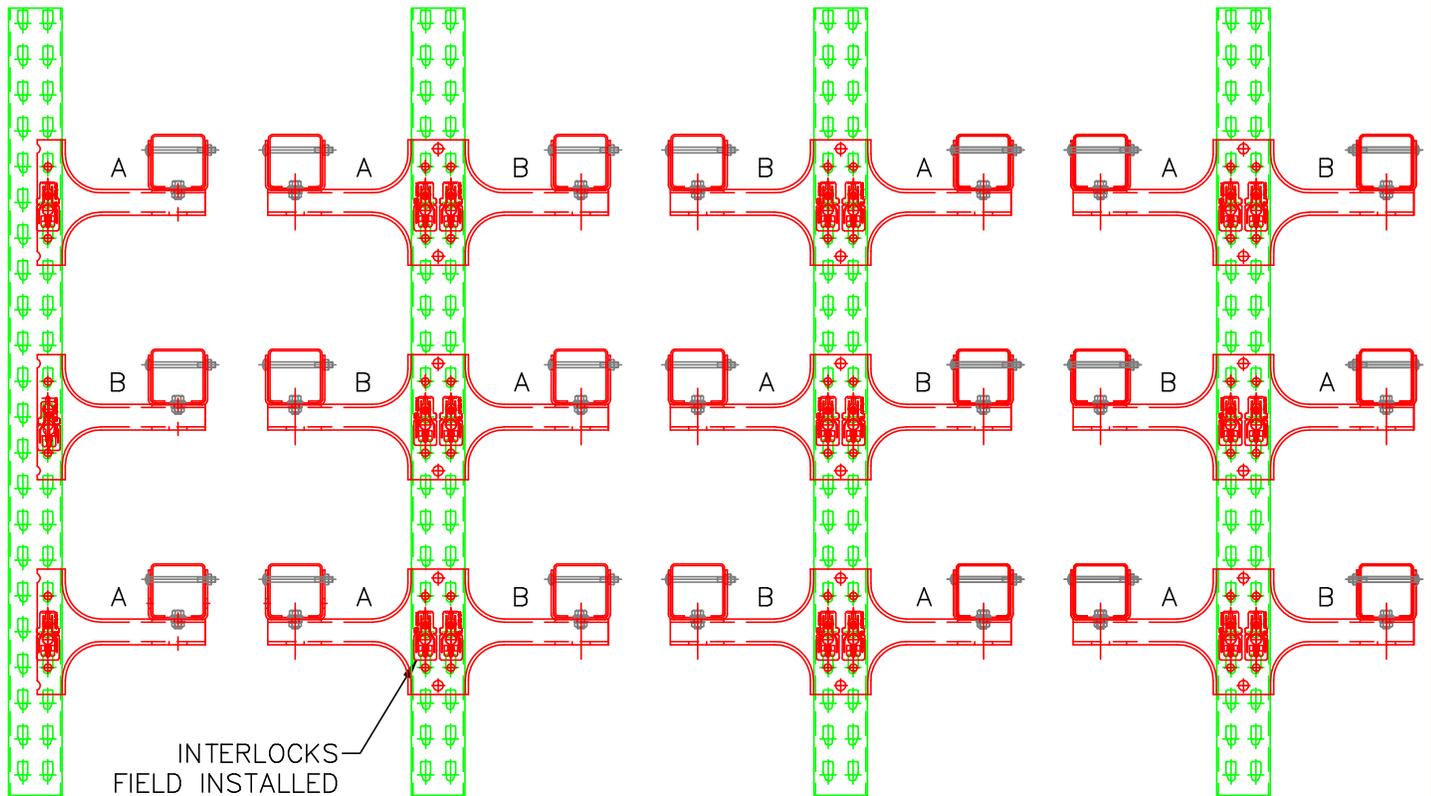
SUPPORT RAIL USING RAIL SPLICE PATTERN "B"



LIGHT AND HEAVY DUTY
DRIVE-IN/THRU ARM W/Z-RAIL SPLICE

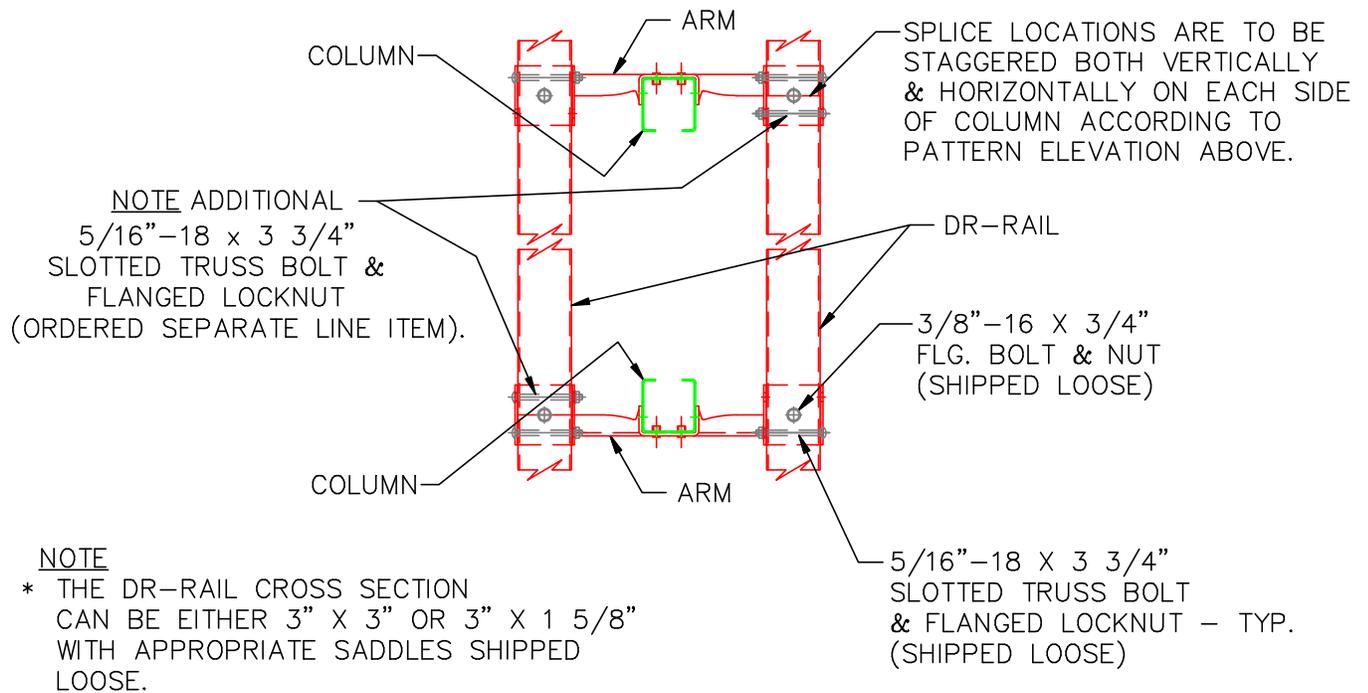


Z-RAIL DRIVE-IN PALLET STOP

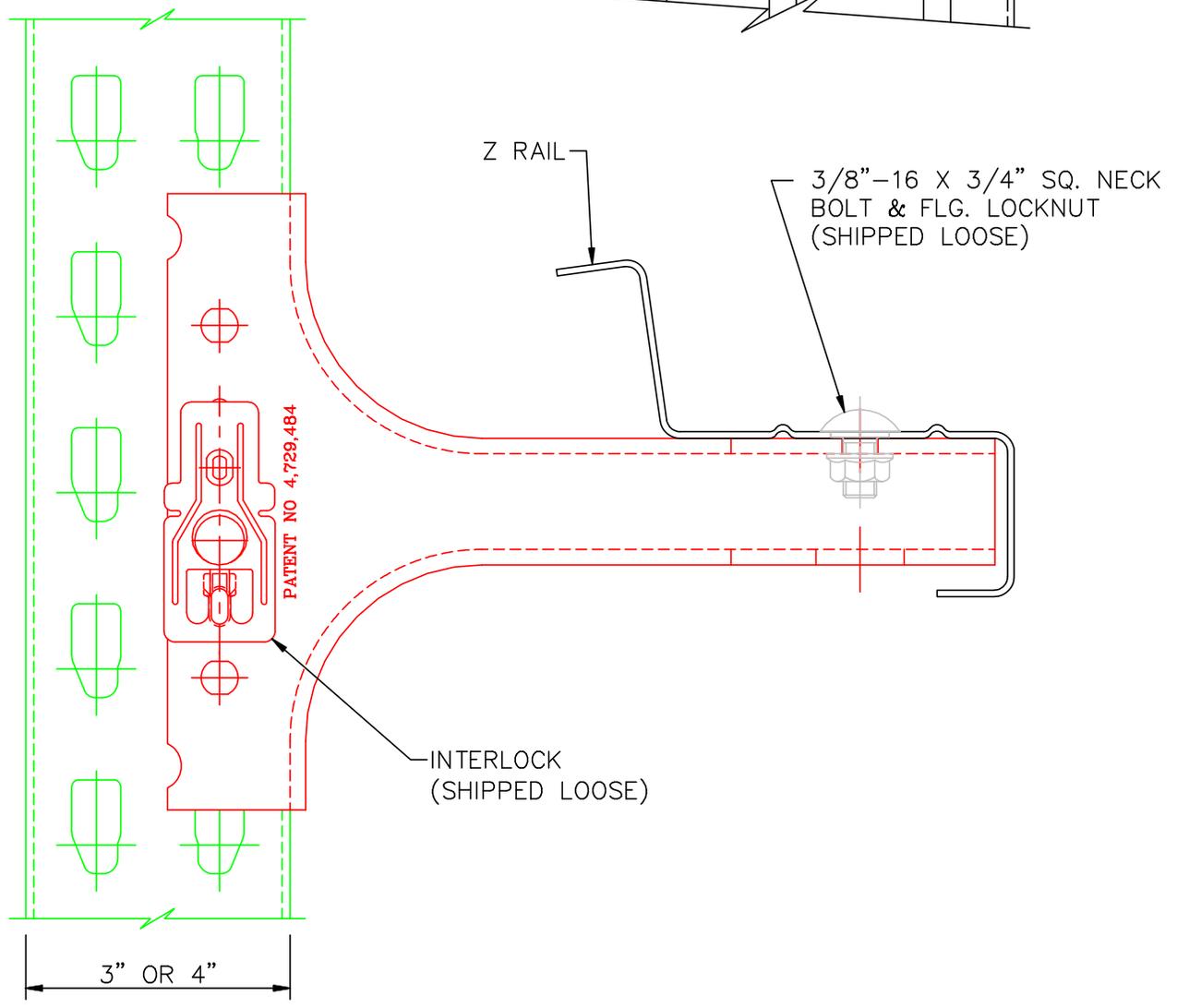
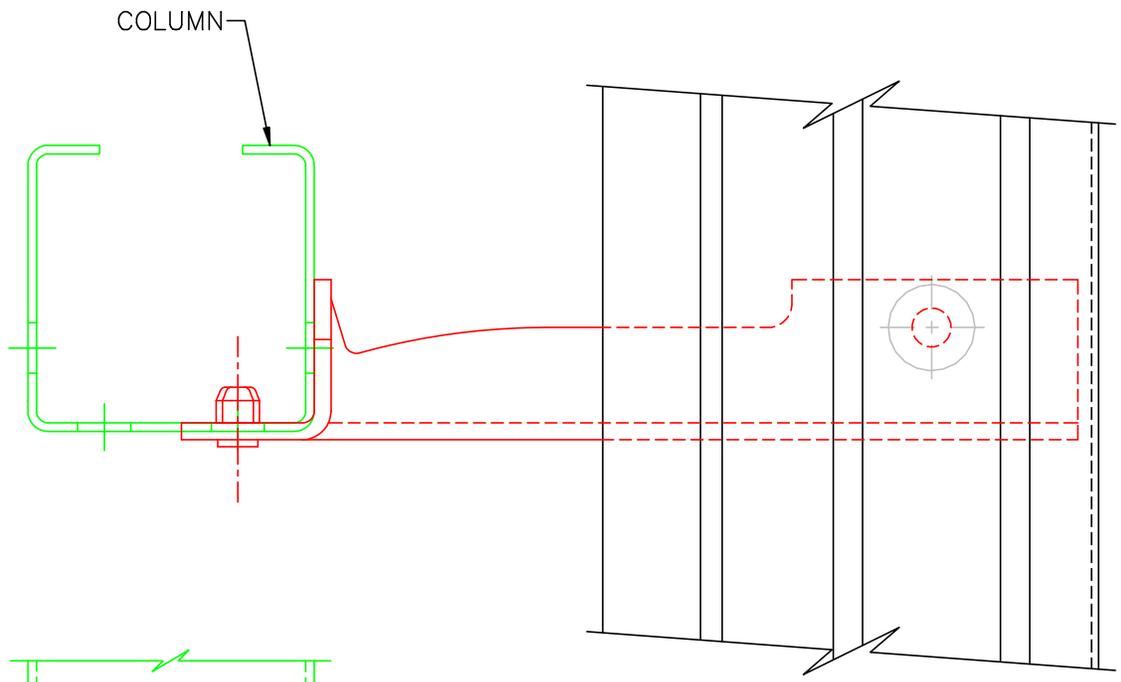


SUPPORT RAIL
USING RAIL SPLICE
PATTERN "A"

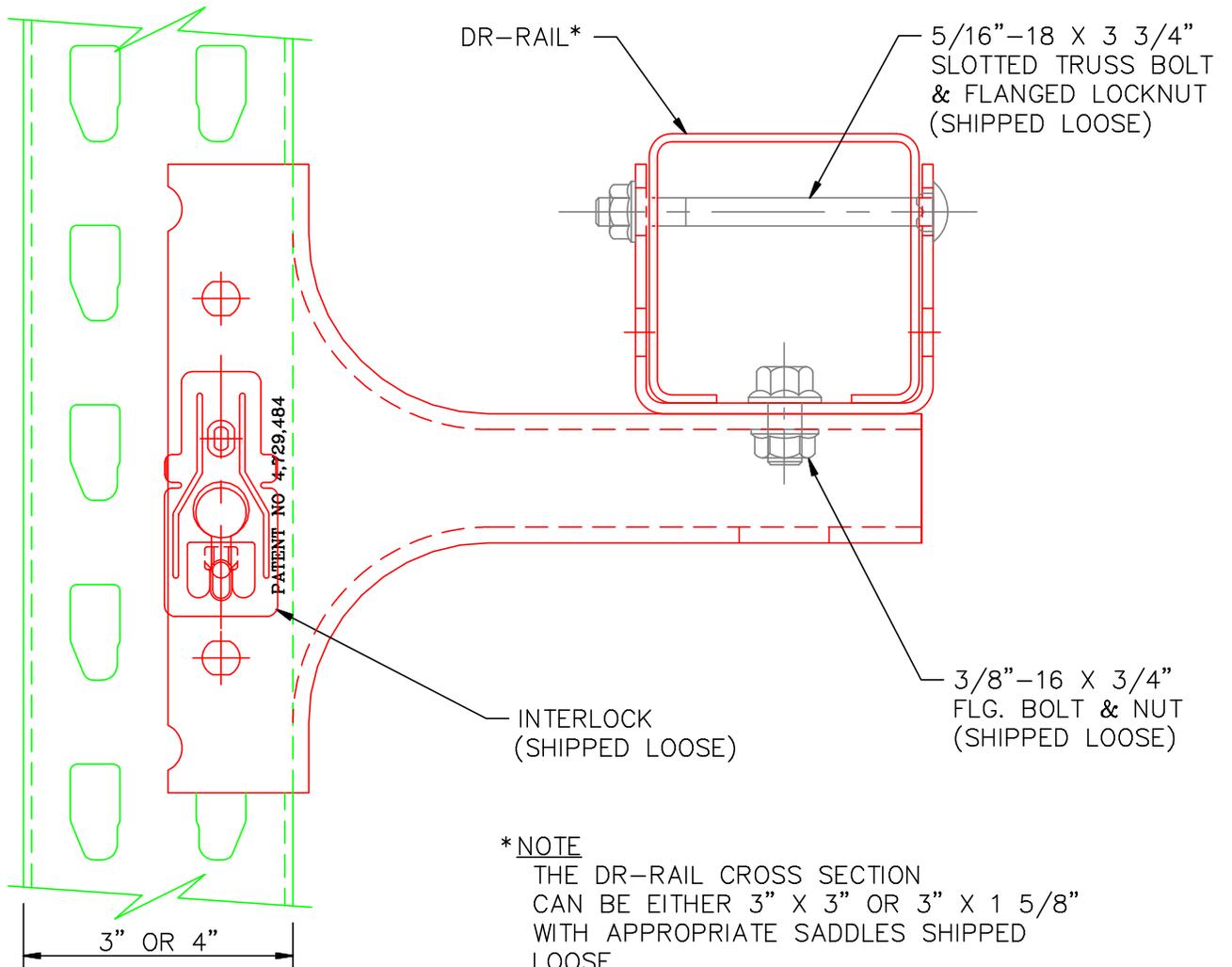
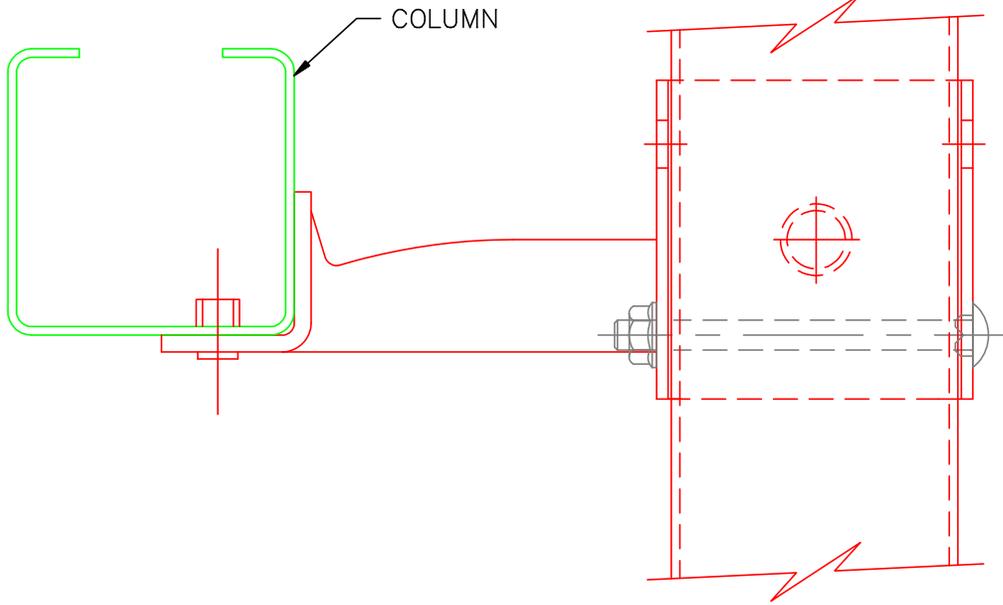
SUPPORT RAIL
USING RAIL SPLICE
PATTERN "B"



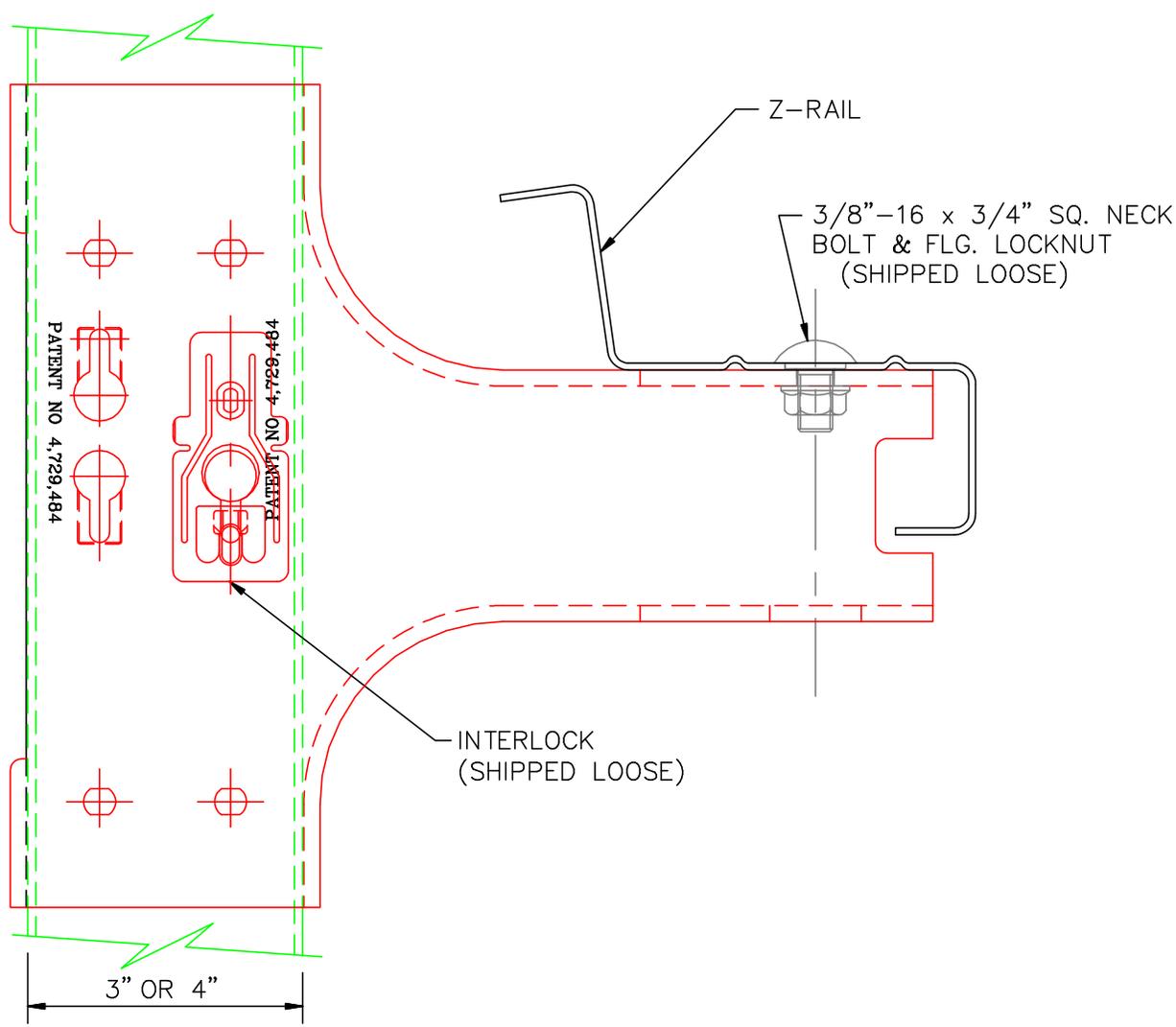
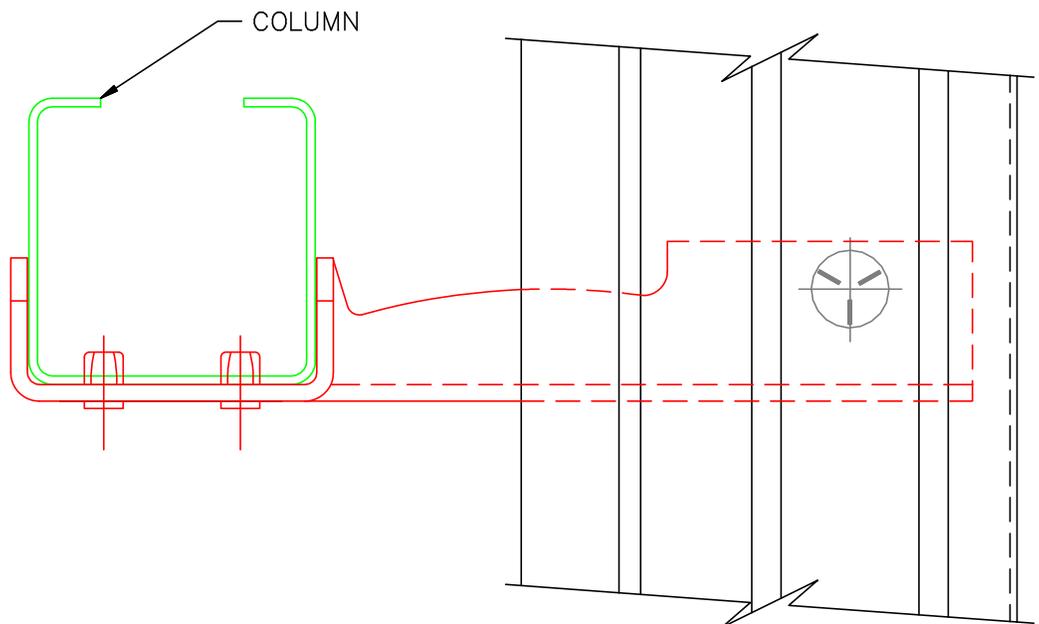
LIGHT AND HEAVY DUTY DRIVE-IN/THRU ARM W/DR-RAIL SPLICE



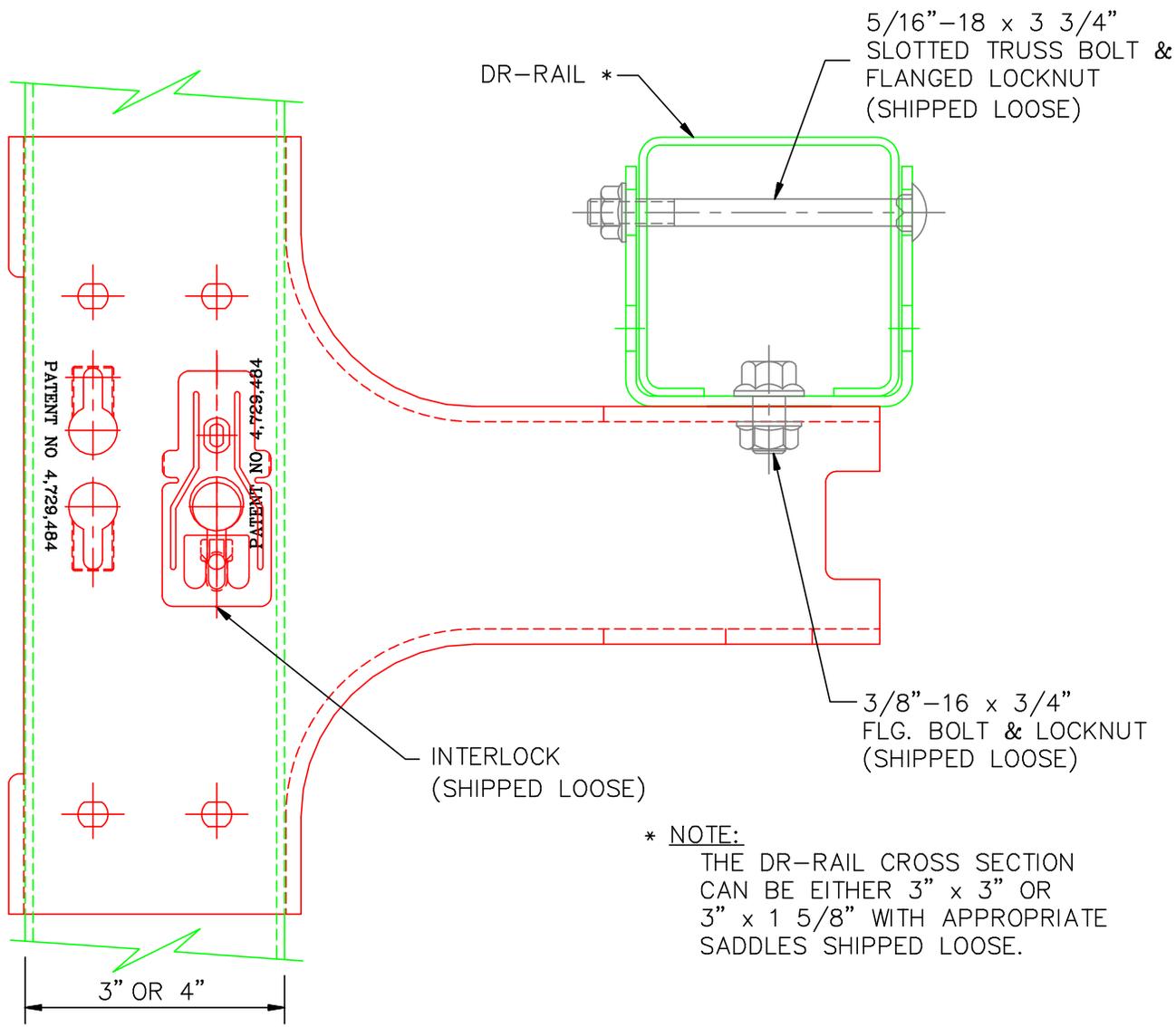
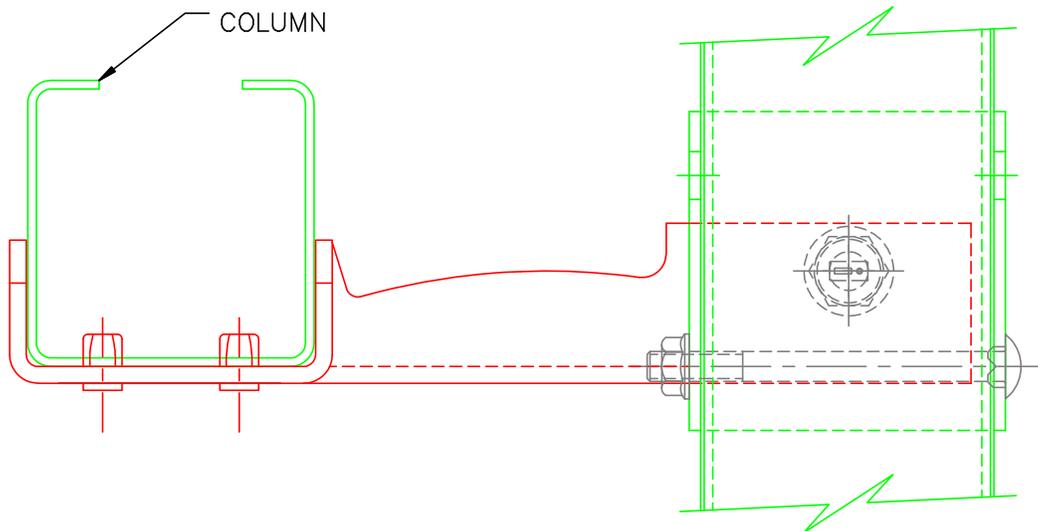
LIGHT DUTY DRIVE-IN/THRU ARM W/Z-RAIL



LIGHT DUTY DRIVE-IN/THRU ARM W/DR-RAIL

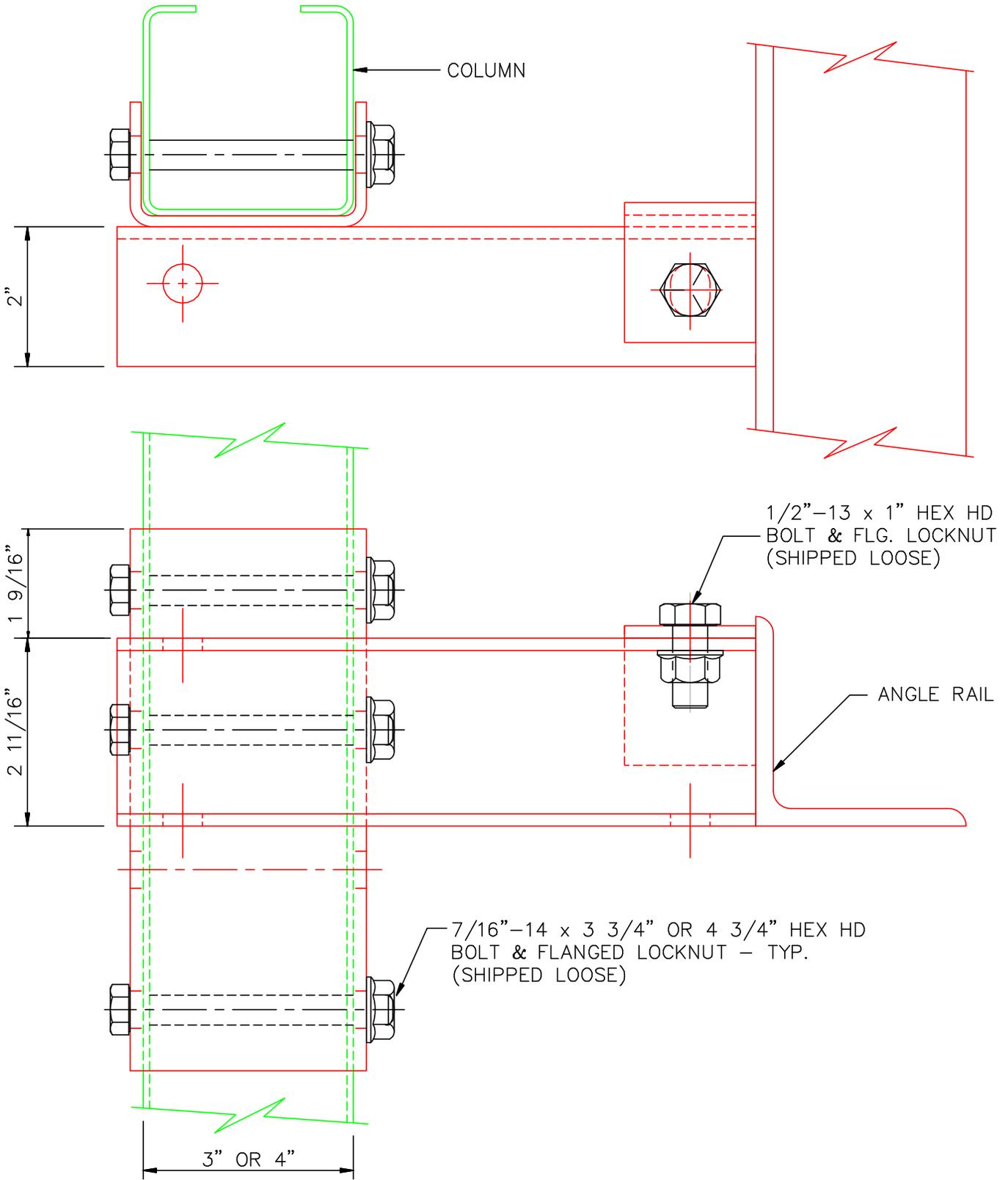


HEAVY DUTY DRIVE-IN/THRU ARM W/Z-RAIL

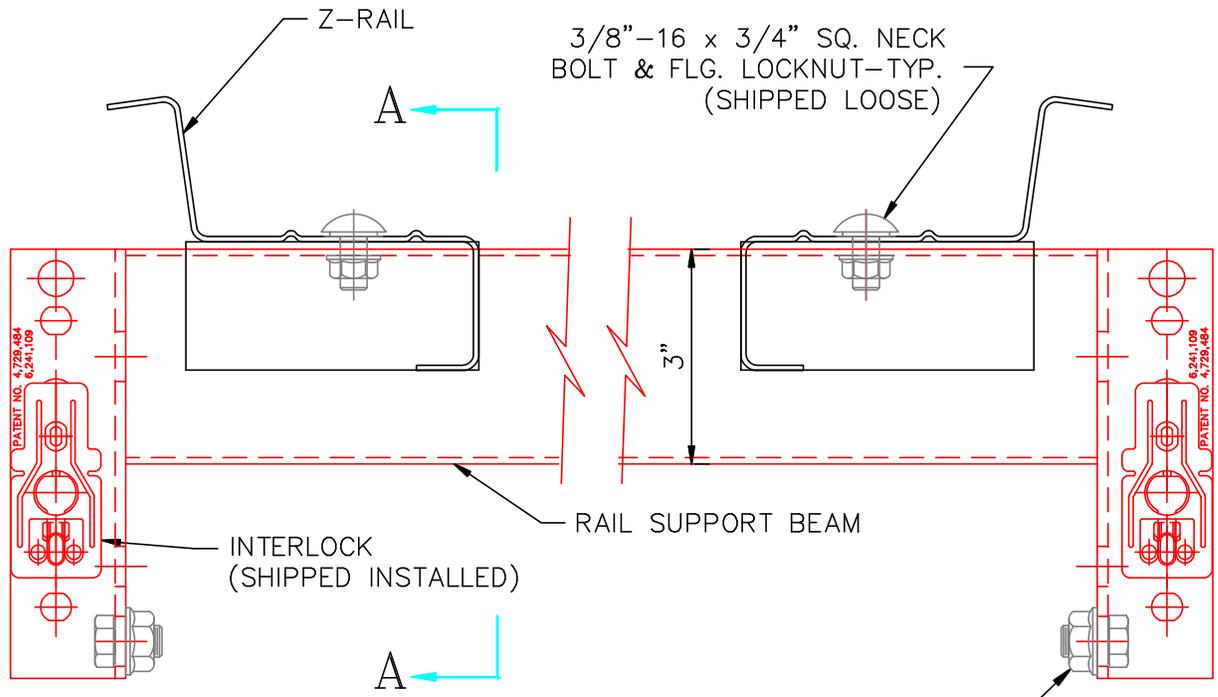


* NOTE:
 THE DR-RAIL CROSS SECTION
 CAN BE EITHER 3" x 3" OR
 3" x 1 5/8" WITH APPROPRIATE
 SADDLES SHIPPED LOOSE.

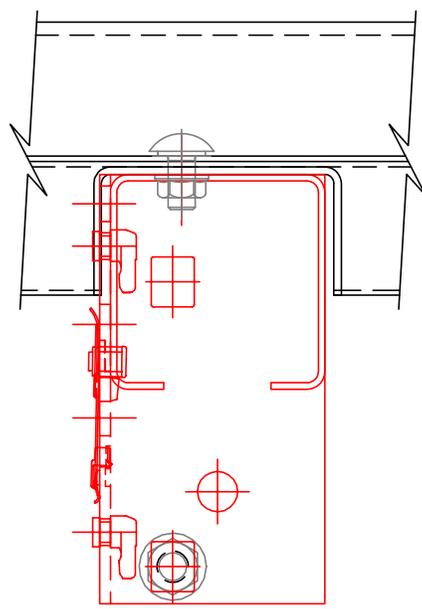
HEAVY DUTY DRIVE-IN/THRU ARM W/DR-RAIL



DRIVE-IN/THRU ARM W/END HUNG ANGLE RAIL



7/16"–14 x 3/4" HEX HEAD
BOLT AND FLANGED LOCKNUT
(SHIPPED LOOSE)



SECTION A–A

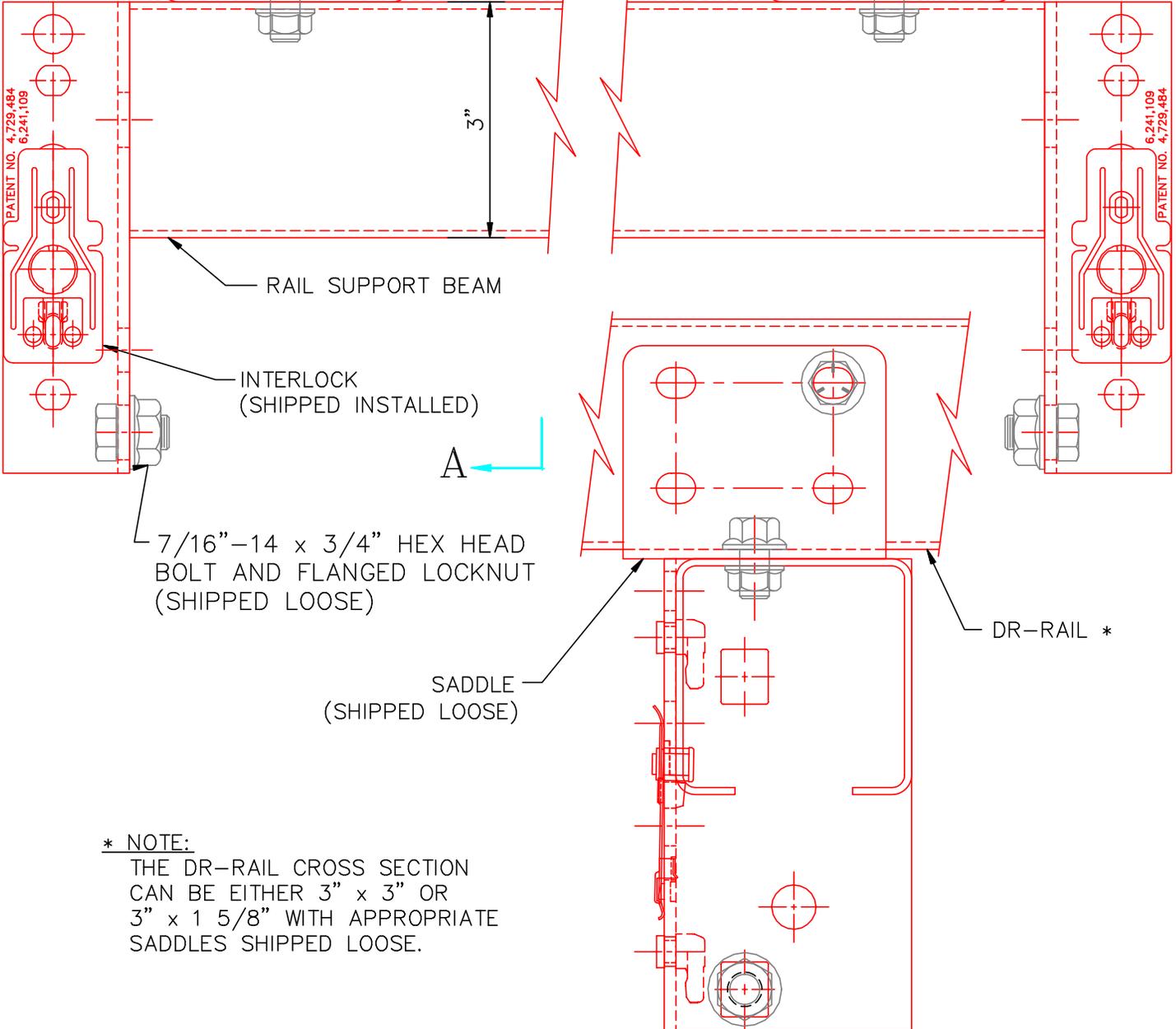
RAIL SUPPORT BEAM W/Z–RAIL
(ROLL FORMED COLUMNS)

3/8"-16 x 3/4" FLG.
BOLT & LOCKNUT
(SHIPPED LOOSE)

3/8"-16 x 3/4" FLG.
BOLT & LOCKNUT
(SHIPPED LOOSE)

A

5/16"-18 x 3 3/4" SLTD.
TRUSS BOLT & LOCKNUT
(SHIPPED LOOSE)



PATENT NO. 4,729,484
6,241,109

PATENT NO. 4,729,484
6,241,109

RAIL SUPPORT BEAM

INTERLOCK
(SHIPPED INSTALLED)

7/16"-14 x 3/4" HEX HEAD
BOLT AND FLANGED LOCKNUT
(SHIPPED LOOSE)

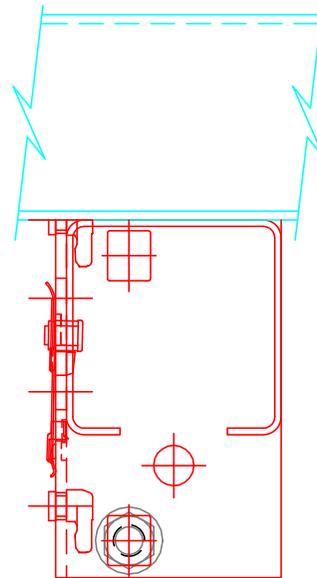
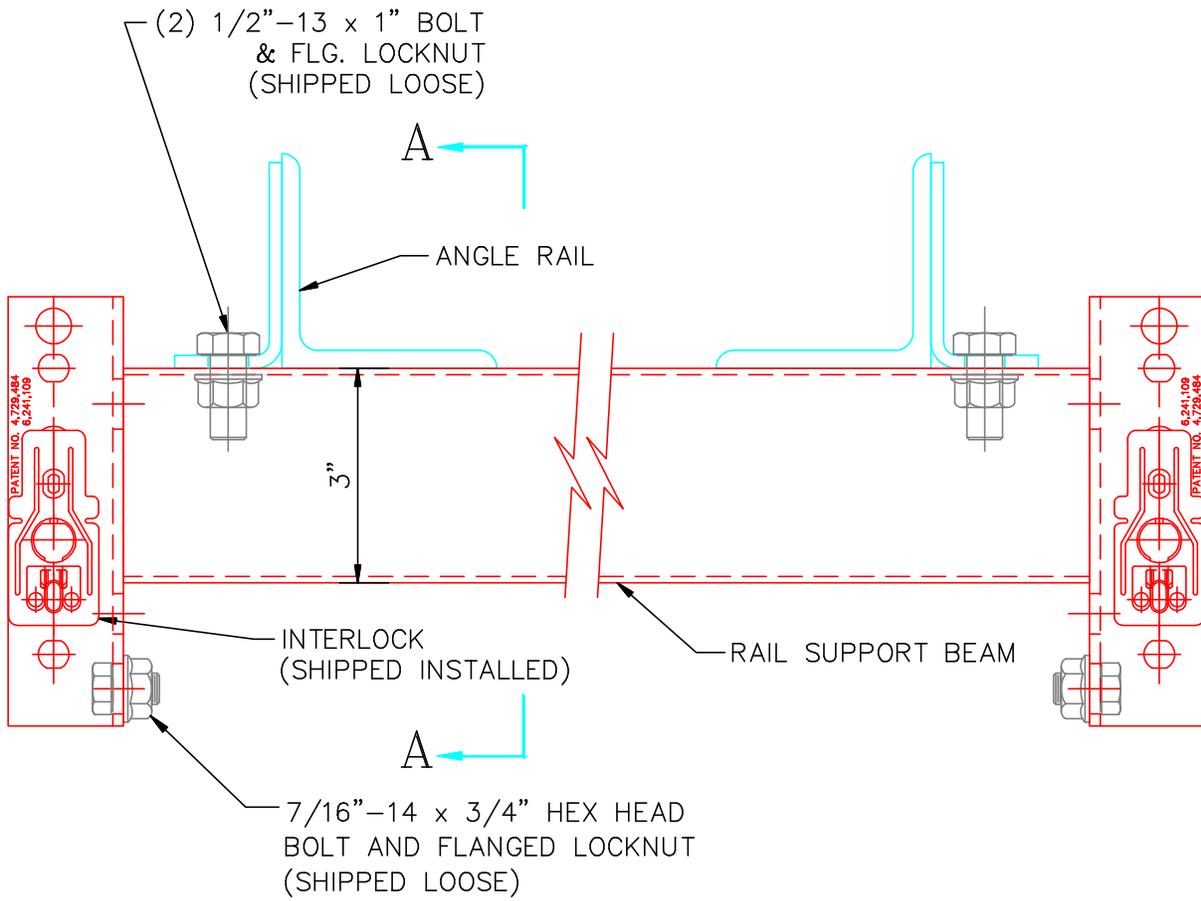
SADDLE
(SHIPPED LOOSE)

DR-RAIL *

* NOTE:
THE DR-RAIL CROSS SECTION
CAN BE EITHER 3" x 3" OR
3" x 1 5/8" WITH APPROPRIATE
SADDLES SHIPPED LOOSE.

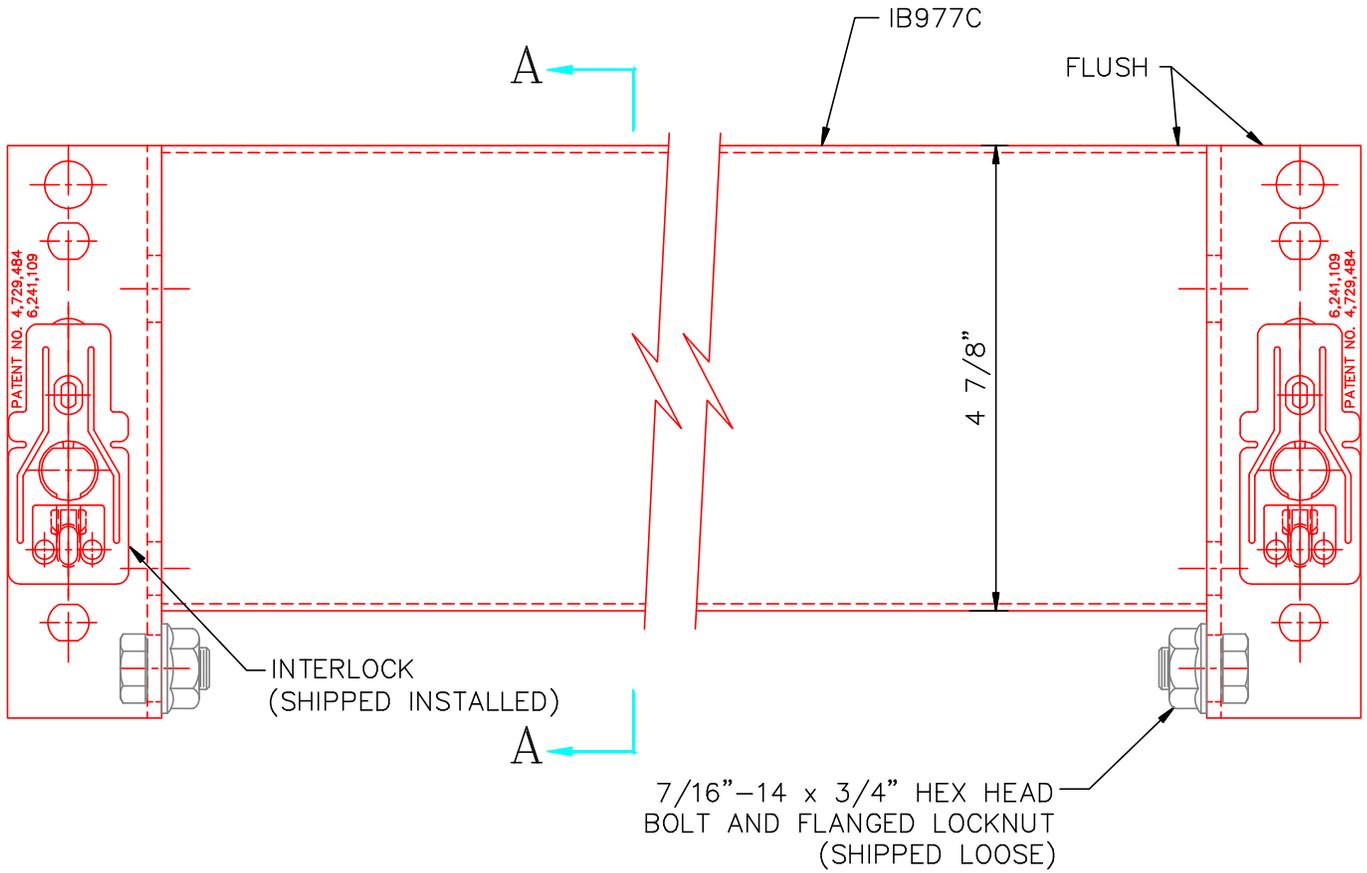
SECTION A-A

RAIL SUPPORT BEAM W/DR-RAIL (ROLL FORMED COLUMNS)



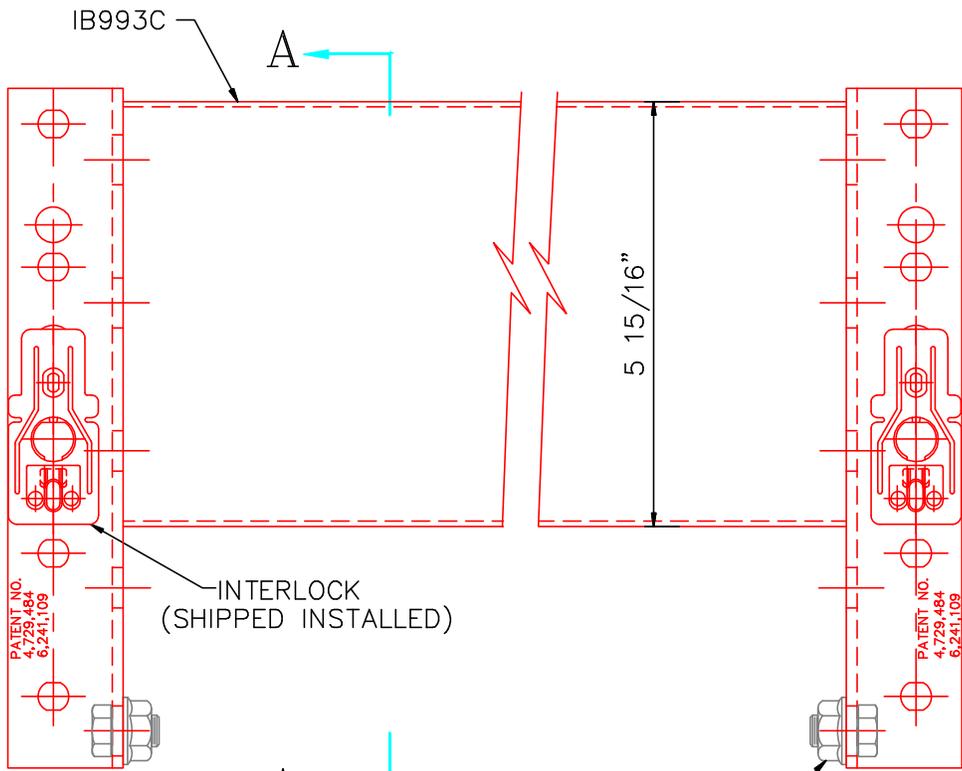
SECTION A-A

RAIL SUPPORT BEAM
W/END HUNG ANGLE RAIL
(ROLL FORMED COLUMNS)

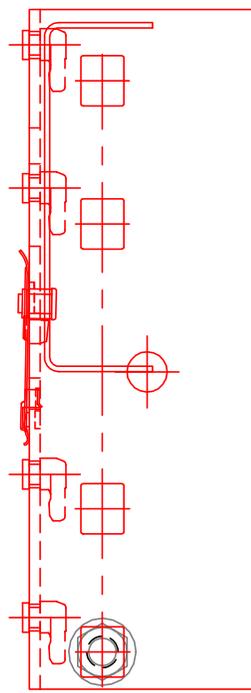


SECTION A-A

STANDARD OVERHEAD TIE BEAM
(ROLL FORMED COLUMNS)

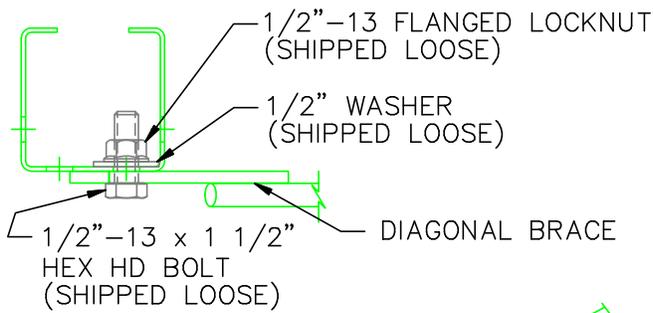


A ←
 7/16"–14 x 3/4" HEX HEAD
 BOLT AND FLANGED LOCKNUT
 (SHIPPED LOOSE)

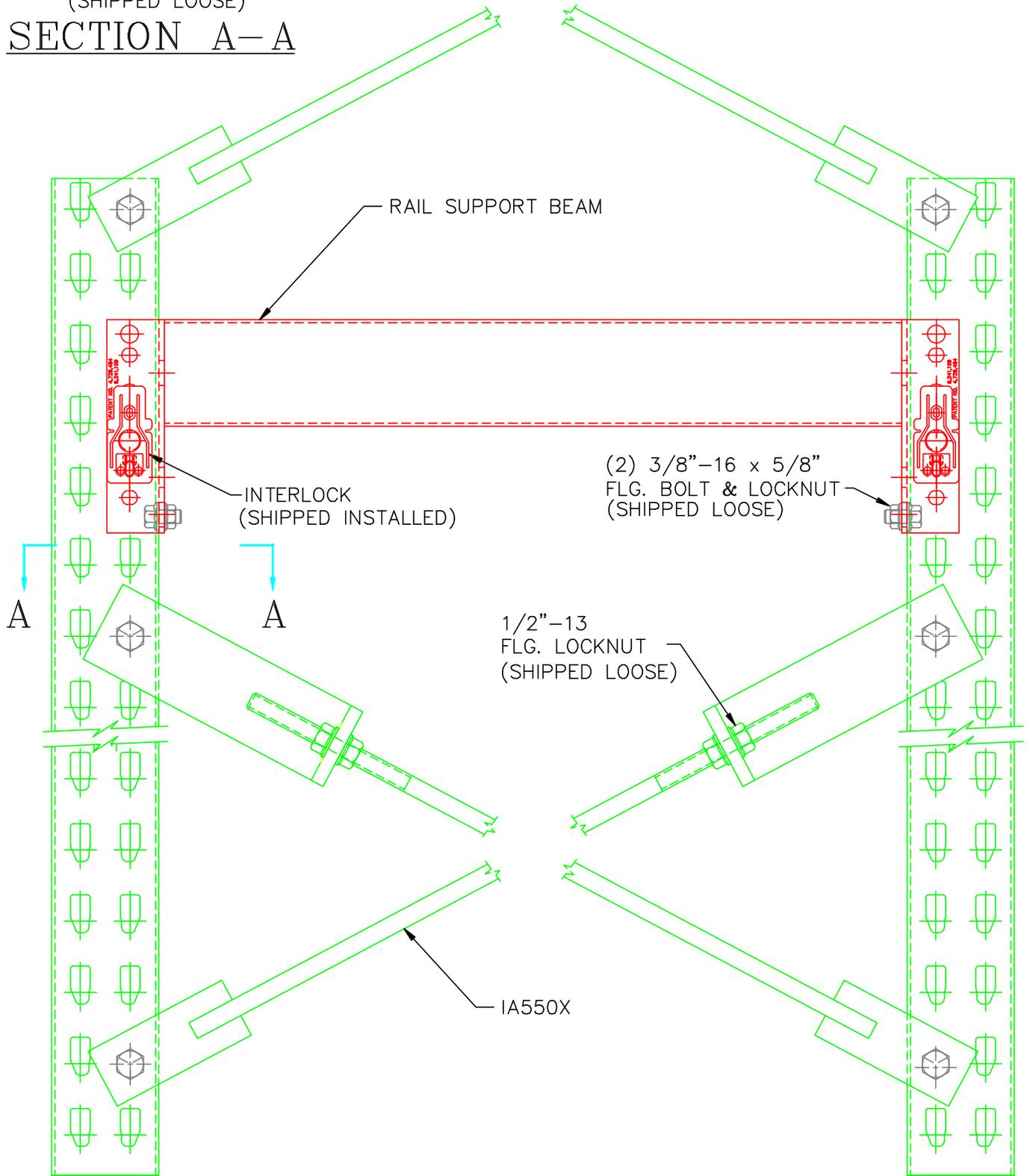


SECTION A-A

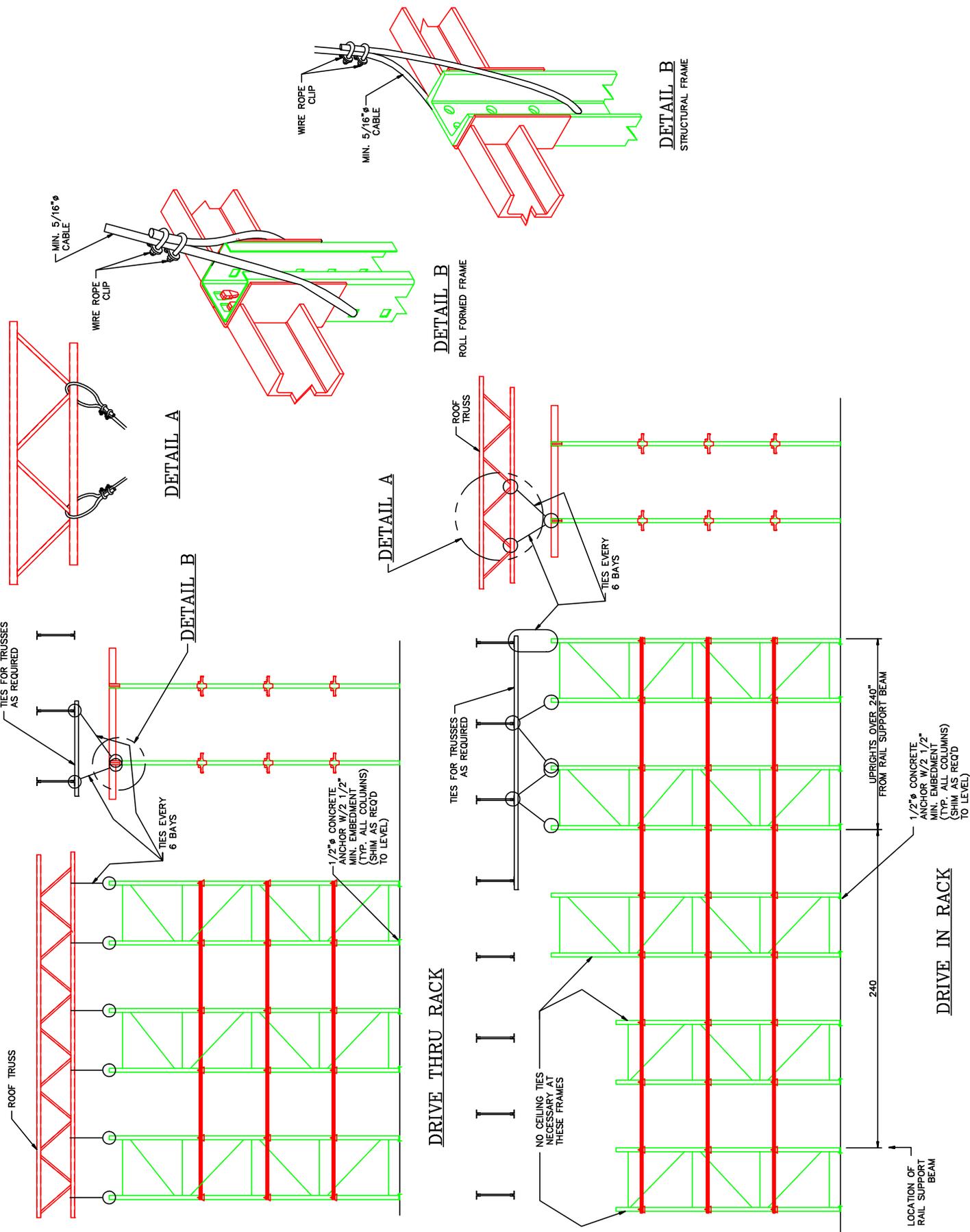
HEAVY DUTY OVERHEAD TIE BEAM
(ROLL FORMED COLUMNS)



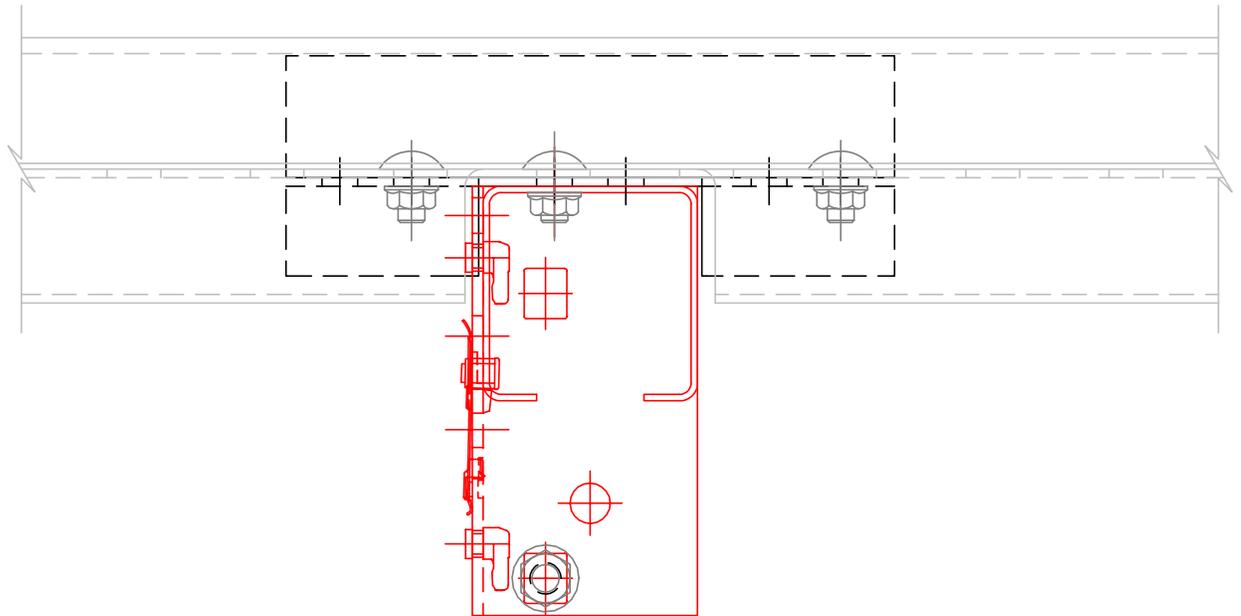
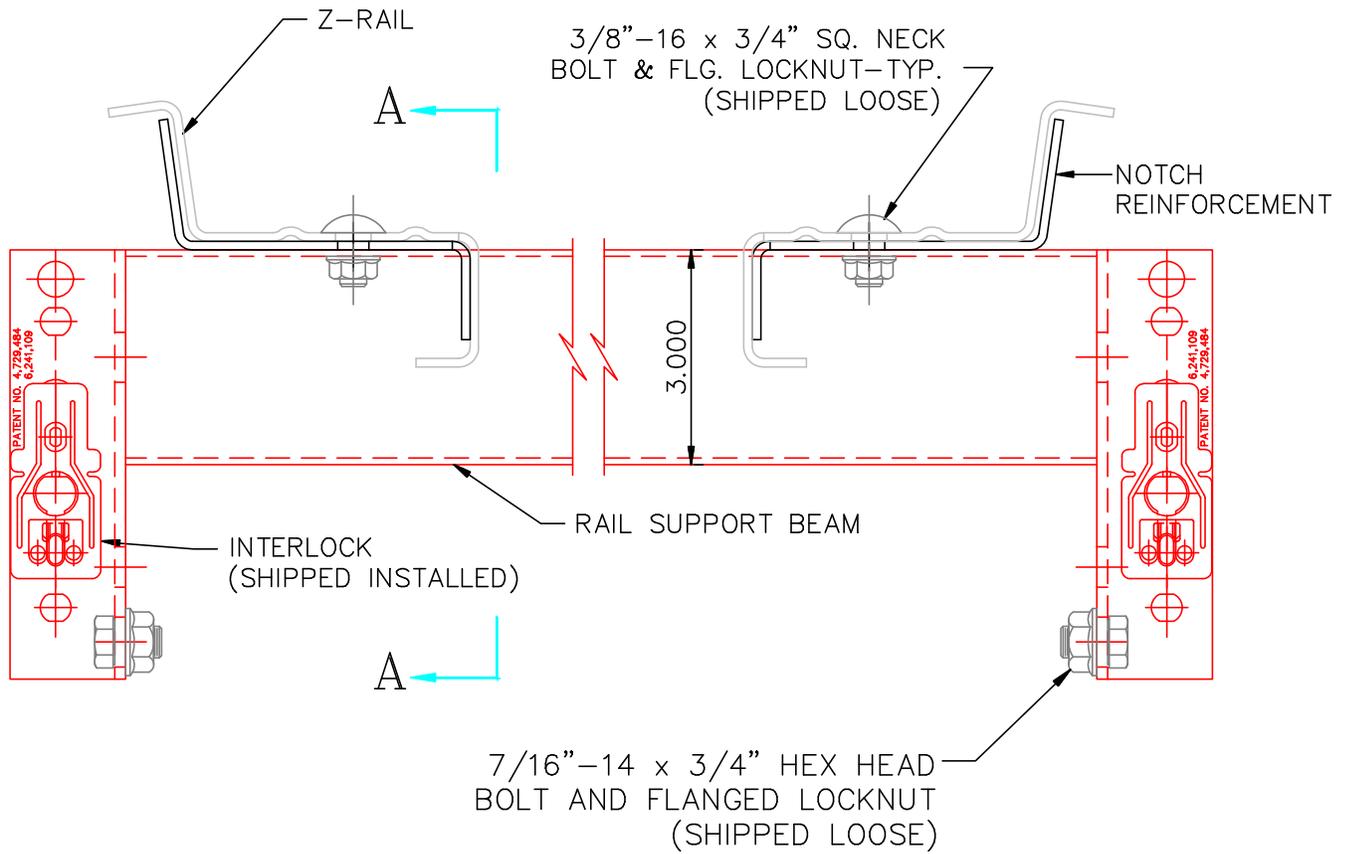
SECTION A–A



DRIVE–IN VERTICAL X–BRACING



CEILING TIE DETAILS



SECTION A-A

ZINC COATED Z-RAIL NOTCH REINFORCEMENT
AT RAIL SUPPORT BEAM
(ROLL FORMED COLUMNS)