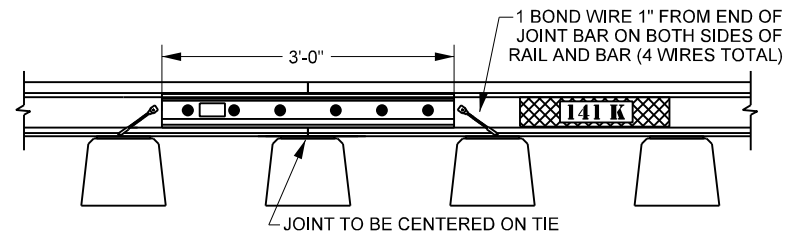
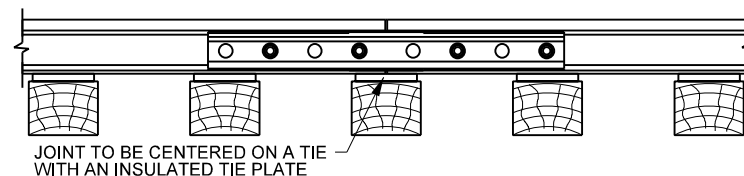


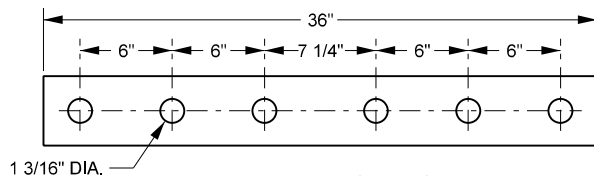
**STANDARD IJ LAYOUT FOR WOOD TIES < 30 MGT APPLICATIONS**



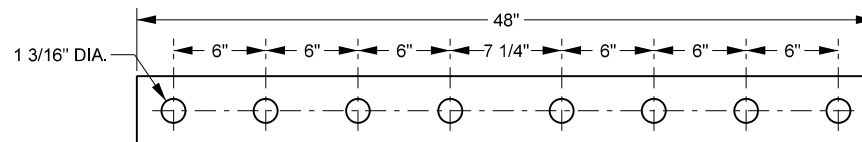
**IJ LAYOUT FOR CONCRETE TIES**



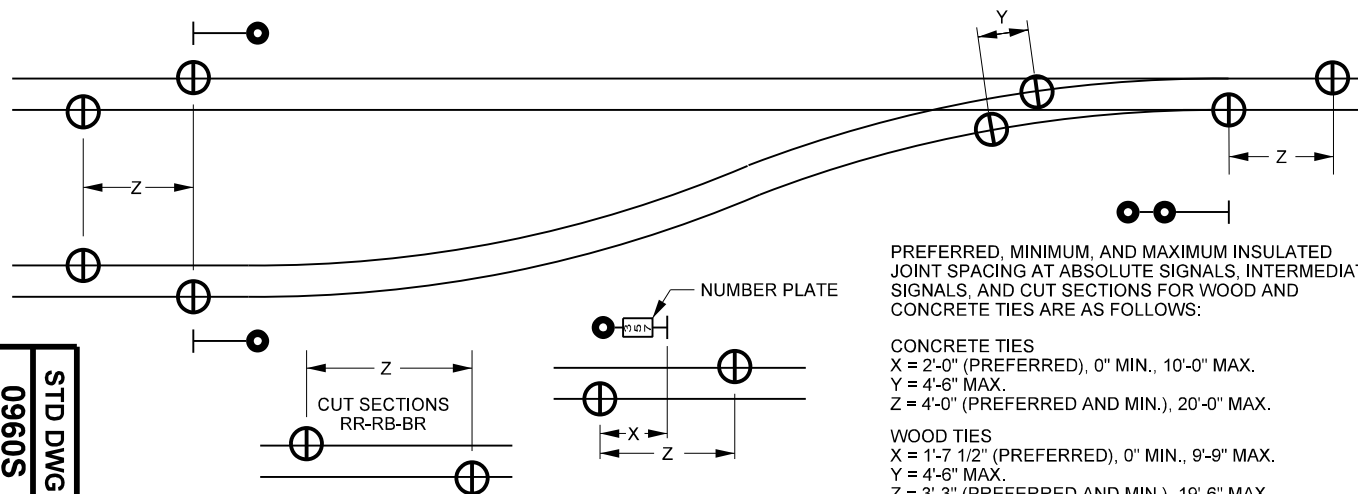
**PREFERRED IJ LAYOUT FOR CENTER LINER JOINT ON WOOD TIES > 30 MGT APPLICATIONS**



**6 HOLE BAR SPACING**



**8 HOLE BAR SPACING**



PREFERRED, MINIMUM, AND MAXIMUM INSULATED JOINT SPACING AT ABSOLUTE SIGNALS, INTERMEDIATE, SIGNALS, AND CUT SECTIONS FOR WOOD AND CONCRETE TIES ARE AS FOLLOWS:

**CONCRETE TIES**  
 X = 2'-0" (PREFERRED), 0" MIN., 10'-0" MAX.  
 Y = 4'-6" MAX.  
 Z = 4'-0" (PREFERRED AND MIN.), 20'-0" MAX.

**WOOD TIES**  
 X = 1'-7 1/2" (PREFERRED), 0" MIN., 9'-9" MAX.  
 Y = 4'-6" MAX.  
 Z = 3'-3" (PREFERRED AND MIN.), 19'-6" MAX.

NOTES:  
 1. INSULATED JOINT LOCATIONS SHOWN ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS TO BE VERIFIED WITH A SIGNAL REPRESENTATIVE PRIOR TO INSTALLATION.

**UNION PACIFIC RAILROAD  
 ENGINEERING STANDARDS**

**INSULATED JOINT  
 PLUG RAILS**



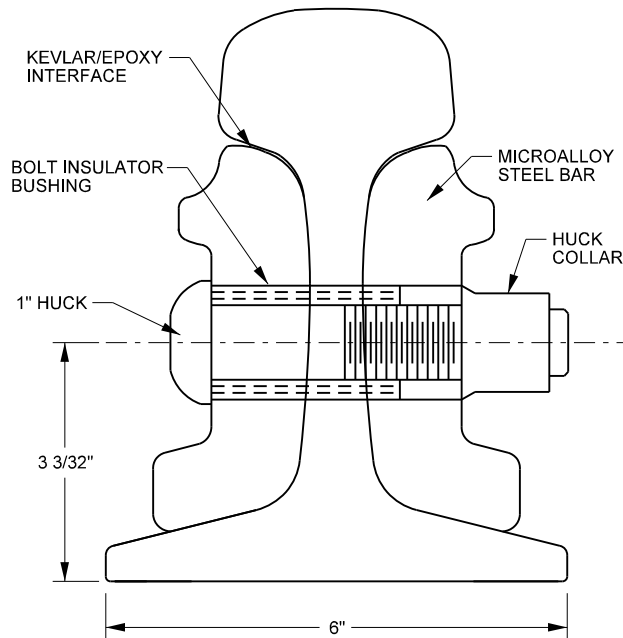
APPROVED: *Eric Selinger*  
 VP ENGINEERING  
 ADOPTED: JAN. 27, 1997  
 REVISED: APR. 22, 2019  
 FILE NO.: 0960S

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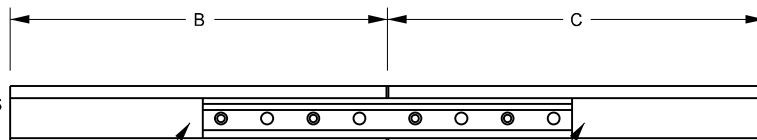
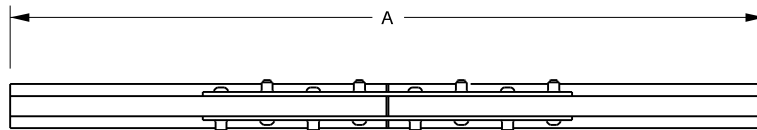
PAGE 1 OF 3

# < 30 MGT ANNUAL - STANDARD INSULATED JOINT



NOTE: 141LB RAIL SHOWN

0 < 30 MGT INSULATED JOINT						
RAIL SIZE	ITEM NO.	BUY AMERICA	A	B	C	COLOR
115 LB.	553-1040	NO	20'	7'-7"	12'-5"	LIGHT GREEN
115 LB.	553-0001	YES	20'	7'-7"	12'-5"	
115 LB.	553-1050	NO	26'-6"	10'-10"	15'-8"	
115 LB.	553-0002	YES	26'-6"	10'-10"	15'-8"	
115 LB.	553-1094	NO	40'	17'-7"	22'-5"	
115 LB.	553-0003	YES	40'	17'-7"	22'-5"	LIGHT PURPLE
133 LB.	553-1706	NO	20'	7'-7"	12'-5"	
133 LB.	553-1710	NO	26'-6"	10'-10"	15'-8"	
133 LB.	553-1723	NO	40'	17'-7"	22'-5"	LIGHT BLUE
136 LB.	553-2220	NO	20'	7'-7"	12'-5"	
136 LB.	553-0006	YES	20'	7'-7"	12'-5"	
136 LB.	553-2231	NO	26'-6"	10'-10"	15'-8"	
136 LB.	553-2232	YES	26'-6"	10'-10"	15'-8"	
136 LB.	553-2280	NO	40'	17'-7"	22'-5"	
136 LB.	553-2281	YES	40'	17'-7"	22'-5"	



RAIL ENDS  
BLANK

APPLY BOND WIRES  
PER UPRR SPEC

APPLY BOND WIRES  
PER UPRR SPEC

## NOTES:

- ALL PLUGS TO BE CONSTRUCTED FROM HEAD HARDENED RAIL.
- REF. UP STD DWG 0432 FOR FASTENING ASSEMBLY FOR CONCRETE TIE LAYOUT.
- 6-HOLE JOINTS TO BE DRILLED 3 1/2-6-6  
8-HOLE JOINTS TO BE DRILLED 3 1/2-6-6-6
- ATTACH BONDING WIRES AS SHOWN PER LAYOUT ON PAGE 1. BONDING MUST BE OF AN APPROVED LOW HEAT SOURCE.
- 20' AND 26'-6" PLUGS TO BE USED IN TANGENT TRACK AND CURVES UP TO ONE DEGREE. 40' PLUGS TO BE USED WHERE CURVATURE EXCEEDS 1 DEGREE.
- PLUGS TO BE CROPPED BACK A CRIB OR TWO FOR INITIAL INSTALLATION TO ALLOW SUBSEQUENT REPLACEMENT WITH LONGER PLUG RAILS IN THE FUTURE, HOWEVER, PLUG RAIL MUST REMAIN AT LEAST 15'-0" IN LENGTH.
- INSULATION TO BE MADE OF KEVLAR.
- MANUFACTURER TO PAINT BOTH WEBS OF RAIL NEAR CENTER OR FIVE FEET FROM END POST SOLID WHITE. USE 2" BLOCK LETTERING TO IDENTIFY RAIL WEIGHT ON THE WEB AND UNDER 30 MGT ON THE TOP OF THE RAIL.
- EACH PAIR OF BARS WILL HAVE MANUFACTURERS NAME AND SERIAL NUMBER WITH 3/8" MINIMUM CHARACTERS STAMPED OR ENGRAVED ON ONE END.
- BUY AMERICA INSULATED JOINT PLUG RAILS TO BE MANUFACTURED USING AMERICAN RAIL AND COMPONENTS. TO BE USED ONLY IN PROJECTS THAT REQUIRE AMERICAN MANUFACTURED GOODS. BUY AMERICA INSULATED JOINTS WILL BE MARKED WITH THE STANDARD BUY AMERICA CERTIFIED ITEM STICKER PRIOR TO LEAVING THE MANUFACTURER.

11. REF. SIGNAL STD DWG NO. SD50A.3

## UNION PACIFIC RAILROAD ENGINEERING STANDARDS

## INSULATED JOINT PLUG RAILS



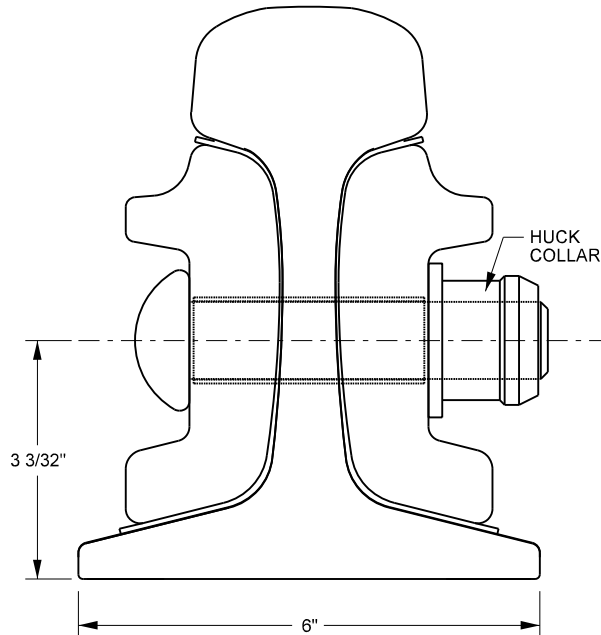
APPROVED: *Eric Dehinger*  
VP ENGINEERING  
ADOPTED: JAN. 27, 1997  
REVISED: APR. 22, 2019  
FILE NO.: 0960S

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# ≥ 30 MGT ANNUAL - CENTER LINER INSULATED JOINT

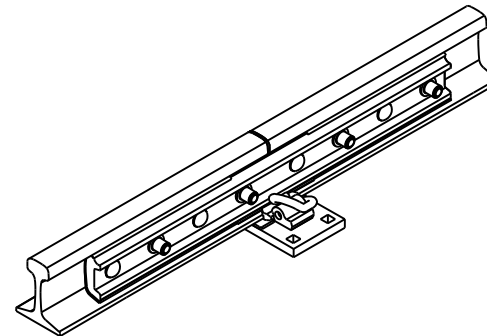
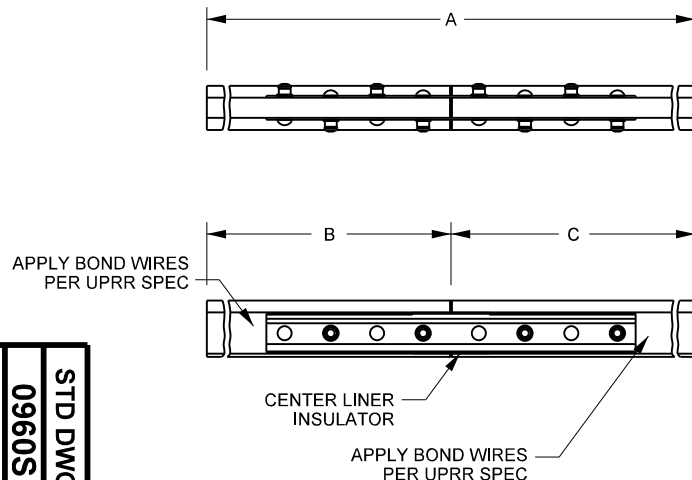


NOTE: 141LB RAIL SHOWN

≥ 30 MGT INSULATED JOINT ONLY						
RAIL SIZE	ITEM NO.	BUY AMERICA	A	B	C	COLOR
133 LB.	553-1707	YES	20'	7'-7"	12'-5"	LIGHT PURPLE
133 LB.	553-1711	YES	26'-6"	10'-10"	15'-8"	
133 LB.	553-1975	YES	40'	17'-7"	22'-5"	
136 LB.	553-2218	NO	20'	7'-7"	12'-5"	LIGHT BLUE
136 LB.	553-2233	NO	26'-6"	10'-10"	15'-8"	
136 LB.	553-2234	YES	26'-6"	10'-10"	15'-8"	
136 LB.	553-2282	NO	40'	17'-7"	22'-5"	
136 LB.	553-2283	YES	40'	17'-7"	22'-5"	WHITE
141 LB.	553-2290	NO	20'	7'-7"	12'-5"	
141 LB.	553-2293	NO	26'-6"	10'-10"	15'-8"	
141 LB.	553-2294	YES	26'-6"	10'-10"	15'-8"	
141 LB.	553-2318	NO	40'	17'-7"	22'-5"	
141 LB.	553-2319	YES	40'	17'-7"	22'-5"	

## NOTES:

1. THE CENTER LINER INSULATED JOINT'S INTENDED USE IS ON GREATER THAN 30 MGT TRACK.
2. ON WOOD TIES, INSULATED JOINTS' END POST SHOULD BE CENTERED ON AN INSULATED SUPPORT PLATE OVER A TIE, ITEM NO. 554-3221. THE END POST CAN BE SUSPENDED IF NO INSULATED SUPPORT PLATE IS AVAILABLE, HOWEVER, THE JOINT WILL ONLY BE WARRANTED FOR 500 MGT INSTEAD OF 650 MGT.
3. CENTER LINER INSULATED JOINTS NOT AVAILABLE IN 115LB, USE 0 < 30 MGT INSULATED JOINT IF NEEDED.
4. ALL PLUGS TO BE CONSTRUCTED FROM HEAD HARDENED RAIL.
5. REF. UP STD DWG 0432 FOR FASTENING ASSEMBLY FOR CONCRETE TIE LAYOUT.
6. 8-HOLE JOINTS TO BE DRILLED 3 1/2-6-6-6.
7. ATTACH BONDING WIRES AS SHOWN PER LAYOUT ABOVE. BONDING MUST BE OF AN APPROVED LOW HEAT SOURCE.
8. 20' AND 26'-6" PLUGS TO BE USED IN TANGENT TRACK AND CURVES UP TO ONE DEGREE. 40' PLUGS TO BE USED WHERE CURVATURE EXCEEDS 1 DEGREE.
9. PLUGS TO BE CROPPED BACK A CRIB OR TWO FOR INITIAL INSTALLATION TO ALLOW SUBSEQUENT REPLACEMENT WITH LONGER PLUG RAILS IN THE FUTURE, HOWEVER, PLUG RAIL MUST REMAIN AT LEAST 15'-0" IN LENGTH.
10. MANUFACTURER TO PAINT BOTH WEBS OF RAIL NEAR CENTER OR FIVE FEET FROM END POST SOLID WHITE. USE 2" BLOCK LETTERING TO IDENTIFY RAIL WEIGHT ON THE WEB AND OVER 30 MGT ON THE TOP OF THE RAIL.
11. EACH PAIR OF BARS WILL HAVE MANUFACTURERS NAME AND SERIAL NUMBER WITH 3/8" MINIMUM CHARACTERS STAMPED OR ENGRAVED ON ONE END.
12. BUY AMERICA INSULATED JOINT PLUG RAILS TO BE MANUFACTURED USING AMERICAN RAIL AND COMPONENTS. TO BE USED ONLY IN PROJECTS THAT REQUIRE AMERICAN MANUFACTURED GOODS.
13. IN APPLICATIONS WITH WORN RAIL, REF. STD DWG 0961.
14. REF. SIGNAL STD DWG NO. SD50A.3



## INSULATED TIE PLATE PACKAGE FOR WOOD TIE APPLICATIONS ITEM NO. 554-3221

TIE PLATE PACKAGE INCLUDES 2 e-CLIPS, INSULATORS AND INSULATED PAD  
\*1:40 CANT PLATE PROVIDED FOR USE ON ALL PARENT RAIL CANTS

## UNION PACIFIC RAILROAD ENGINEERING STANDARDS

## INSULATED JOINT PLUG RAILS



APPROVED: *Eric Selinger*  
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