STANDARD IJ LAYOUT FOR WOOD TIES < 30 MGT APPLICATIONS

1 BOND WIRE 1" FROM END OF JOINT BAR ON BOTH SIDES OF RAIL AND BAR (4 WIRES TOTAL)

HIGH STRENGTH HUCK BOLTS

1/4" END POST

JOINT TO BE CENTERED BETWEEN TIES

A0 - 29"

STANDARD IJ LAYOUT FOR WOOD TIES < 30 MGT APPLICATIONS

6 HOLE BAR SPACING

1 3/16" DIA.

8 HOLE BAR SPACING

1 3/16" DIA.

1 BOND WIRE 1" FROM END OF JOINT BAR ON BOTH SIDES OF RAIL AND BAR (4 WIRES TOTAL)

HIGH STRENGTH HUCK BOLTS

1/4" END POST

JOINT TO BE CENTERED BETWEEN TIES

A0 - 29"

I Layout for Concrete Ties

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

NOTES:
1. Insulated joint locations shown are for reference only. Actual locations to be verified with a signal representative prior to installation.

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

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

UNION PACIFIC RAILROAD
ENGINEERING STANDARDS

INSULATED JOINT PLUG RAILS

STD DWG 09600R
PAGE 1 OF 3

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< 30 MGT ANNUAL - STANDARD INSULATED JOINT

### 0 < 30 MGT INSULATED JOINT

<table>
<thead>
<tr>
<th>RAIL SIZE</th>
<th>ITEM NO.</th>
<th>BUY AMERICA</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>COLOR</th>
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<td>553-1040</td>
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</table>

**NOTES:**

1. ALL PLUGS TO BE CONSTRUCTED FROM HEAD HARDENED RAIL.
2. REF. UP STD DWG 0432 FOR FASTENING ASSEMBLY FOR CONCRETE TIE LAYOUT.
3. 6-HOLE JOINTS TO BE DRILLED 3 1/2-6-6
8-HOLE JOINTS TO BE DRILLED 3 1/2-6-6-6
4. ATTACH BONDING WIRES AS SHOWN PER LAYOUT ON PAGE 1. BONDING MUST BE OF AN APPROVED LOW HEAT SOURCE.
5. 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.
6. 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.
7. INSULATION TO BE MADE OF KEVLAR.
8. 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 UNGER 30 MGT ON THE TOP OF THE RAIL.
9. EACH PAIR OF BARS WILL HAVE MANUFACTURER NAME AND SERIAL NUMBER WITH 3/8" MINIMUM CHARACTERS STAMPED OR ENGRAVED ON ONE END.
10. 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**

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> 30 MGT ANNUAL - CENTER LINER INSULATED JOINT

**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.

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. 42' 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'-6" 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

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**> 30 MGT INSULATED JOINT ONLY**

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<thead>
<tr>
<th>RAIL SIZE</th>
<th>ITEM NO.</th>
<th>BUY AMERICA</th>
<th>A</th>
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**INSULATED TIE PLATE PACKAGE FOR WOOD TIE APPLICATIONS**

**ITEM NO. 554-3221**

TIE PLATE PACKAGE INCLUDES 2 E-CLIPS, INSULATORS AND INSULATED PAD

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