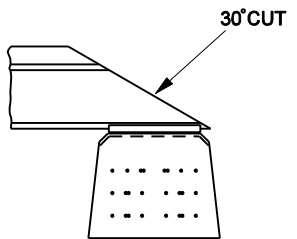
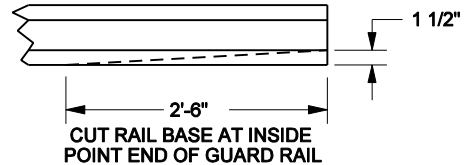


**CONCRETE TIE APPROACH**

- NOTES:**
- INSIDE GUARD RAILS ARE NOT REQUIRED ON BRIDGES UNTIL BRIDGE OR BRIDGE DECK IS REPLACED OR RUNNING RAIL IS RELAYED ACROSS BRIDGE.
  - INSIDE GUARD RAILS SHALL BE MADE FROM SECOND HAND RAIL. RAIL SIZE CANNOT EXCEED THE SIZE OF THE MAINLINE RAIL. GUARD RAIL BASE SIZE CANNOT BE MORE THAN 1/2 INCH SMALLER THAN MAINLINE RAIL. ON CONCRETE TIES, 6" BASE RAIL MUST BE USED.
  - SECOND HAND FROG POINTS (#10 AND #14) SHOULD BE USED AT END OF GUARD RAILS IF AVAILABLE.
  - ON CONCRETE TIES, INSIDE GUARD RAILS SHALL BE FASTENED TO EACH TIE. ON WOOD TIES, INSIDE GUARD RAILS SHALL BE PLATED AND SPIKED A MINIMUM OF EVERY OTHER TIE. WHEN PLATING EVERY OTHER TIE, BOTH RAILS MUST BE SPIKED ON THE ANCHORED TIE.
  - GUARD RAIL JOINT SHALL BE FULLY BOLTED USING SECOND HAND JOINT BARS WHEN AVAILABLE.
  - ON TANGENT TRACK, SPIKE THE INSIDE GUARD RAIL WITH TWO SPIKES PER PLATE ON EACH RAIL OF THE TANGENT PORTION AND FOUR SPIKES ON EACH RAIL OF THE CURVED PORTION. ON CURVED TRACK, SPIKE THE ENTIRE GUARD RAIL WITH FOUR SPIKES PER PLATE ON EACH RAIL. IN FLARED AREA ALL TIES SHALL BE FULLY SPIKED.
  - ON WOOD TIES, BOX ANCHOR TWO TIES NEAR THE CENTER OF BRIDGE TO RESTRICT LONGITUDINAL MOVEMENT OF GUARD RAIL.
  - THE QUANTITY OF TD PLATES ON CONCRETE TIES WILL VARY DEPENDING ON NUMBER OF TIES. THEY ARE TO BE ORDERED AS NEEDED. PLATES 1 THROUGH 8 COME AS TWO SETS AND ARE TO BE ROTATED 180° ON OPPOSITE ENDS.



**DEPRESSED RAIL HEAD DETAIL**



**RAIL BASE CUT DETAIL**

- WHERE TO INSTALL INSIDE GUARD RAILS SHALL BE INSTALLED ACROSS BRIDGES OF THE FOLLOWING TYPES:**
- \* THRU TRUSSES AND PONY TRUSSES
  - \* DECK TRUSSES ON TOWERS
  - \* DECK PLATE GIRDERS ON TOWERS
  - \* THRU PLATE GIRDERS OVER 100' IN LENGTH
  - \* MOVABLE SPANS
  - \* OTHER STRUCTURES DESIGNATED BY CHIEF ENGINEER

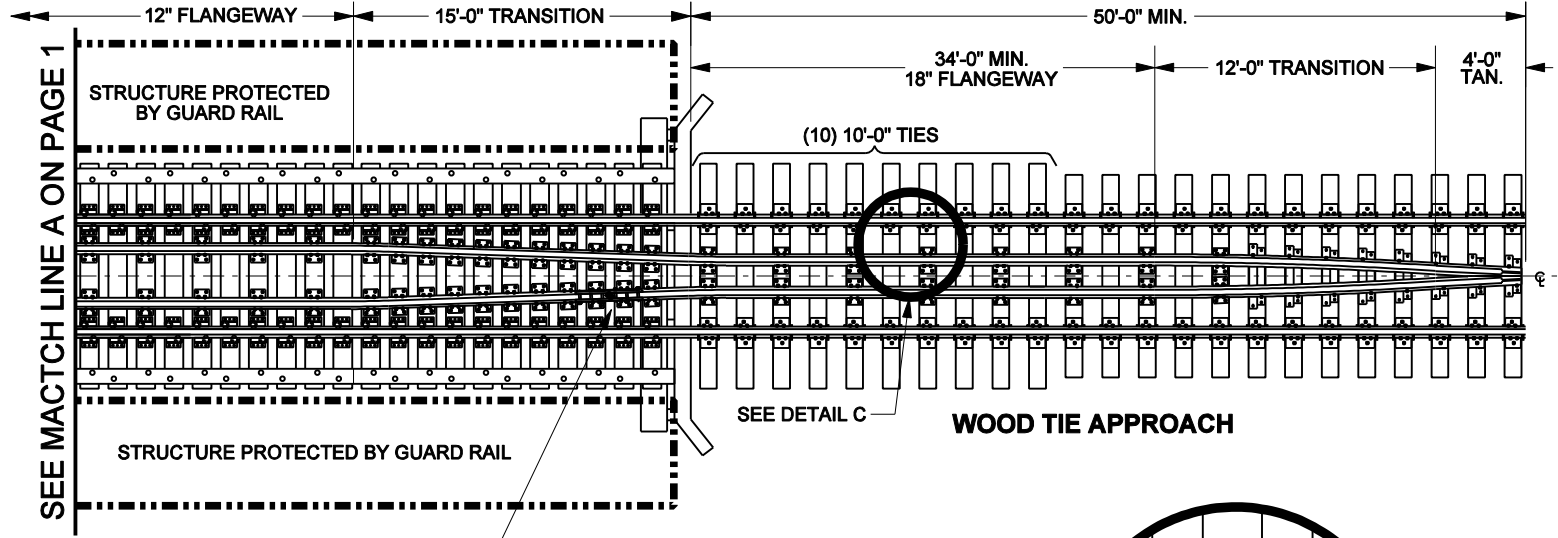
**REFERENCE DRAWINGS:**  
 FOR PLATES (ON CONCRETE), SEE STD DWG 4016  
 FOR CONCRETE TIE, SEE STD DWG 0202  
 FOR SCREW AND WASHER, SEE STD DWG 0420

**UNION PACIFIC RAILROAD  
 ENGINEERING STANDARDS  
 DOUBLE INSIDE GUARD  
 RAIL FOR OPEN DECK  
 BRIDGES**

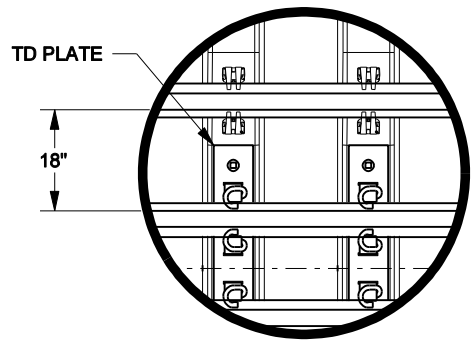
APPROVED: *Charles A. Conwell*  
 VP ENGINEERING  
 ADOPTED: DEC. 31, 1996  
 REVISED: SEP. 29, 2009  
 FILE NO.: 4005E

STD DWG  
**4005E**  
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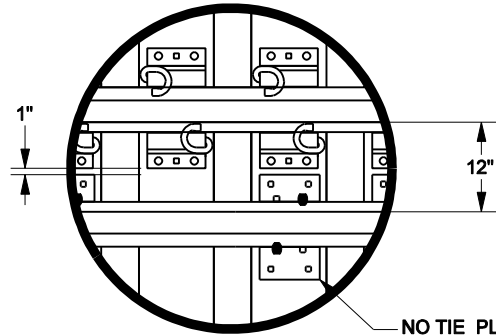
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INSULATED JOINT REQUIRED WHERE TRACK CIRCUITS EXIST

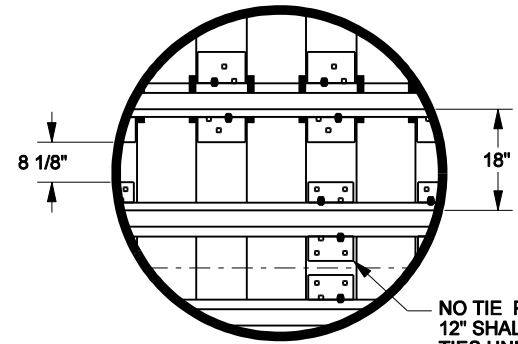


DETAIL A



DETAIL B

NO TIE PLATES LONGER THAN 12" SHALL BE USED ON WOOD TIES UNDER THE GUARD RAIL. PLATES TO BE REVERSED UNDER GUARD RAIL WITH SHORT END OF PLATE TOWARD RUNNING RAIL.



DETAIL C

NO TIE PLATES LONGER THAN 12" SHALL BE USED ON WOOD TIES UNDER THE GUARD RAIL. PLATES TO BE REVERSED UNDER GUARD RAIL WITH SHORT END OF PLATE TOWARD RUNNING RAIL.

NOTE: SEE PAGE 1 FOR THE REST OF THE DWG.

**UNION PACIFIC RAILROAD  
ENGINEERING STANDARDS  
DOUBLE INSIDE GUARD  
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