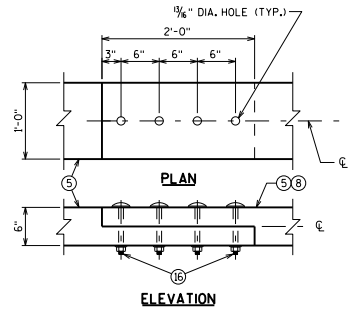
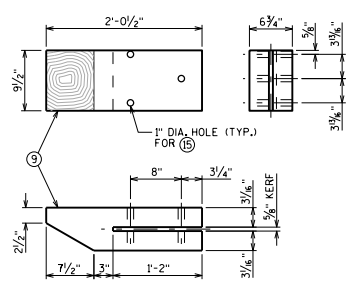


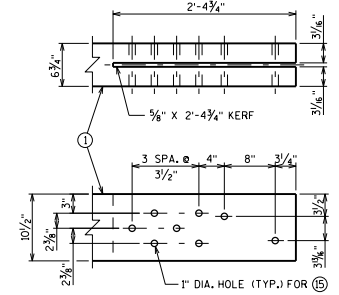
**CURB TRANSITION**



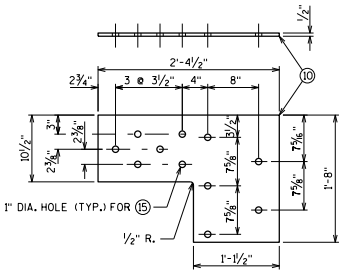
**CURB SPLICE DETAIL**



**TRANSITION BLOCK**



**TRANSITION GLULAM RAIL BORING DETAIL**



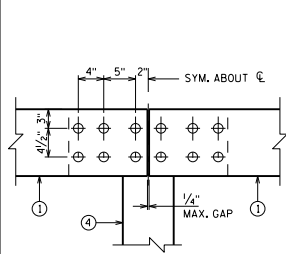
**STEEL TRANSITION PLATE**

**LEGEND**

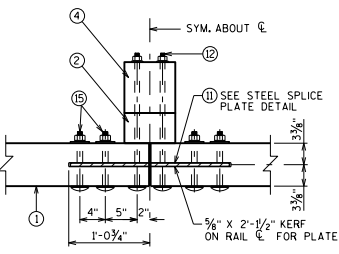
- ① GLULAM RAIL 6 3/4" X 10 1/2"
- ② RAIL SPACER BLOCK 8" X 4 3/4" X 10 1/2"
- ③ SCUPPER BLOCK 6" X 12" X 3'-0"
- ④ RAIL POST Ø STRUCTURE 8" X 8" X 3'-8"
- ⑤ CURB 6" X 12"
- ⑥ RAIL POST Ø BEAM GUARD 8" X 8"
- ⑦ RAIL SPACER BLOCK Ø BEAM GUARD 8" X 11 1/2" X 1'-10 1/2"
- ⑧ CURB TRANSITION Ø BEAM GUARD
- ⑨ TRANSITION BLOCK Ø BEAM GUARD
- ⑩ STEEL TRANSITION PLATE, ASTM A36.
- ⑪ STEEL SPLICE PLATE, ASTM A36.
- ⑫ 3/4" DIA. X 1'-10" LONG ASTM A307, GRADE 2, DOME-HEAD BOLT W/ 1-PLATE WASHER PER BOLT. (2 REOD. Ø EACH RAIL TO POST CONNECTION, 4 REOD. Ø EACH RAIL SPLICE.)
- ⑬ 1/4" DIA. X 1'-10" LONG, ASTM A325, DOME-HEAD BOLT W/ 2 - 5/2" X 5/2" X 1/4" PLATE WASHERS, W/ 1 3/8" DIA. HOLE. (1 REOD. Ø EACH CURB TO POST CONNECTION.)
- ⑭ 3/4" DIA. X 1'-11" LONG ASTM A325 BOLT, 1 - 4" X 4" X 3/16" PLATE WASHER REOD. AT CURB TO SLAB CONNECTION, 1 - 4" X 4" X 3/16" PLATE WASHER REOD. AT POST TO SLAB CONNECTION.
- ⑮ 3/8" DIA. X 9" LONG ASTM A307, GRADE 2, DOME HEAD BOLT AT RAIL SPLICE DETAIL AND AT BEAM GUARD ATTACHMENT.
- ⑯ 3/4" DIA. X 8" LONG ASTM A307, GRADE 2, DOME-HEAD BOLT (4 REOD. Ø EACH CURB SPLICE DETAIL.)
- ⑰ 4" DIA. SHEAR PLATE (8 REOD. Ø EACH CURB TO SCUPPER CONNECTION, 4 REOD. Ø EACH SCUPPER TO SLAB CONNECTION AND 1 REOD. Ø EACH POST TO SLAB CONNECTION). MALLEABLE IRON MEETING REQUIREMENTS OF ASTM A47, GRADE 32510.
- ⑱ 2" X 2'-6" X 3/16" ANCHOR PLATE WITH 4 - 3/16" DIA. HOLES FOR ANCHOR BOLTS NO. 14 (CURB TO SLAB CONNECTION).
- ⑳ 3/8" DIA. ASTM A325 DOME-HEAD BOLT W/ 1-PLATE WASHER PER BOLT. (1 REOD. Ø EACH THREE BEAM POST TO CURB TRANSITION CONNECTION.)

**NOTES**

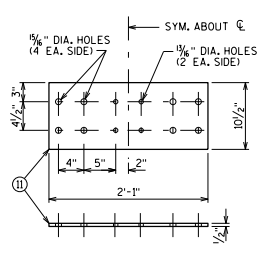
1. BID ITEM SHALL BE "TREATED LUMBER AND TIMBER" WHICH INCLUDES ALL ITEMS SHOWN EXCEPT ITEMS NO. 6, 7 AND THREE BEAM TERMINAL CONNECTOR..
2. DIMENSIONS GIVEN FOR GLUED-LAMINATED (GLULAM) TIMBER RAILS ARE ACTUAL DIMENSIONS.
3. DIMENSIONS FOR WOOD POSTS, CURBS AND SCUPPERS ARE GIVEN AS NOMINAL DIMENSIONS. ACTUAL DIMENSIONS MAY BE A MAXIMUM OF 1/2" INCH LESS THAN THE STATED NOMINAL DIMENSIONS. DIMENSION FOR SPACER BLOCK DEPTH ARE ACTUAL DIMENSIONS.
4. CURB AND RAIL SPLICES SHALL BE LOCATED SO THAT CURB AND RAIL MEMBERS ARE CONTINUOUS OVER NOT LESS THAN TWO POSTS. CURB SPLICES SHALL BE LOCATED A MINIMUM OF 15 POST SPACINGS AWAY FROM RAIL SPLICES. IT IS RECOMMENDED THAT GLULAM RAILS BE CONTINUOUS OVER THE LENGTH OF THE BRIDGE.
5. SAWN LUMBER AND GLULAM SHALL COMPLY WITH THE REQUIREMENTS OF AASHTO M168 AND SHALL BE PRESSURE TREATED WITH WOOD PRESERVATIVES IN ACCORDANCE WITH AASHTO M133 AND STANDARD SPECIFICATIONS.
6. BRIDGE RAIL SHALL BE HORIZONTALLY LAMINATED GLULAM, VISUALLY GRADED WESTERN SPECIES COMBINATION NO. 2, OR VISUALLY GRADED SOUTHERN PINE COMBINATION NO. 4B. OTHER SPECIES AND GRADES OF GLULAM MAY BE USED, PROVIDED THE MINIMUM TABULATED VALUES ARE NOT LESS THAN THE FOLLOWING:  
 $F_b = 1,800 \text{ LB/IN}^2$      $E = 1,800,000 \text{ LB/IN}^2$
7. POSTS, CURBS, SCUPPERS, TRANSITION BLOCKS AND SPACER BLOCKS MAY BE SAWN LUMBER OR GLULAM. WHEN SAWN LUMBER IS USED, MATERIAL SHALL BE VISUALLY GRADED NO. 1 SOUTHERN PINE OR VISUALLY GRADED NO. 1 DOUGLAS FIR-LARCH, GLULAM AND OTHER SPECIES AND GRADES OF SAWN LUMBER MAY BE USED, PROVIDED THE MINIMUM TABULATED VALUES ARE NOT LESS THAN THE FOLLOWING:  
 $F_b = 1,350 \text{ LB/IN}^2$      $E = 1,500,000 \text{ LB/IN}^2$
8. ALL STEEL COMPONENTS AND FASTENERS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M113 OR M232.
9. TO THE EXTENT POSSIBLE, ALL WOOD SHALL BE CUT, DRILLED, AND COMPLETELY FABRICATED PRIOR TO PRESSURE TREATMENT WITH PRESERVATIVES. WHEN FIELD FABRICATION OF WOOD IS REQUIRED OR IF WOOD IS DAMAGED, ALL CUTS, BORE HOLES, AND DAMAGE SHALL BE IMMEDIATELY TREATED WITH WOOD PRESERVATIVE IN ACCORDANCE WITH AASHTO M133 AND STANDARD SPECIFICATIONS.
10. UNLESS NOTED, MALLEABLE IRON WASHERS SHALL BE PROVIDED UNDER BOLT HEADS AND UNDER NUTS THAT ARE IN CONTACT WITH WOOD, WHEN THE SIZE AND STRENGTH OF THE HEAD ARE SUFFICIENT TO DEVELOP CONNECTION STRENGTH WITHOUT WOOD CRUSHING, WASHERS MAY BE OMITTED UNDER HEADS OF DOME-HEAD BOLT TIS.
11. TOPS OF RAIL POSTS AND TOP OF THE RAIL SPLICE PLATE KERF SHALL BE SEALED WITH ROOFING CEMENT OR OTHERWISE PROTECTED FROM DIRECT EXPOSURE TO WEATHER.
12. DESTROY THREADS ON ALL BOLTS WITH A CENTER PUNCH AFTER TIGHTENING NUT. EXPOSED BOLT PROJECTION OVER 1" SHALL BE CUT OFF. REPAIR END OF BOLT BY PAINTING WITH ZINC RICH PRIMER.
13. WHEN PLACING OVERLAY (FWS) ON TOP OF EXISTING SLAB, THE THICKNESS OF THE OVERLAY MUST BE TAPERED NEAR THE VICINITY OF THE RAILING TO MAINTAIN THE REOD. (CRASH TESTED) DISTANCE FROM TOP OF SLAB TO TOP OF RAIL TO 32 INCHES.
14. THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 2 (TL-2).



**ELEVATION**



**PLAN VIEW**



**STEEL SPLICE PLATE**

**RAIL SPLICE DETAILS**

**BILL OF TREATED LUMBER**

ITEM	NO. REQ'D.	SIZE	LENGTH	MBM
GLULAM RAIL		6 3/4" X 10 1/2"		
RAIL SPACER BLOCK		8" X 4 3/4" X 10 1/2"		
SCUPPER BLOCK		6" X 12" X 3'-0"		
RAIL POST		8" X 8"		
CURB		6" X 12"		
CURB TRANSITION				
TRANSITION BLOCK				
TOTAL MBM				

THESE RAILING DETAILS MAY BE USED WITH CONCRETE SLAB SUPERSTRUCTURES (SLAB DEPTH > 14") THAT HAVE ABUTMENTS WITH WINGS PARALLEL TO  $\epsilon$  OF ABUTMENT OR HAVE AS ABUTMENTS.

**TIMBER RAILING ATTACHED TO CONCRETE SLAB DETAILS**



APPROVED: Bill Oliva DATE: 7-16