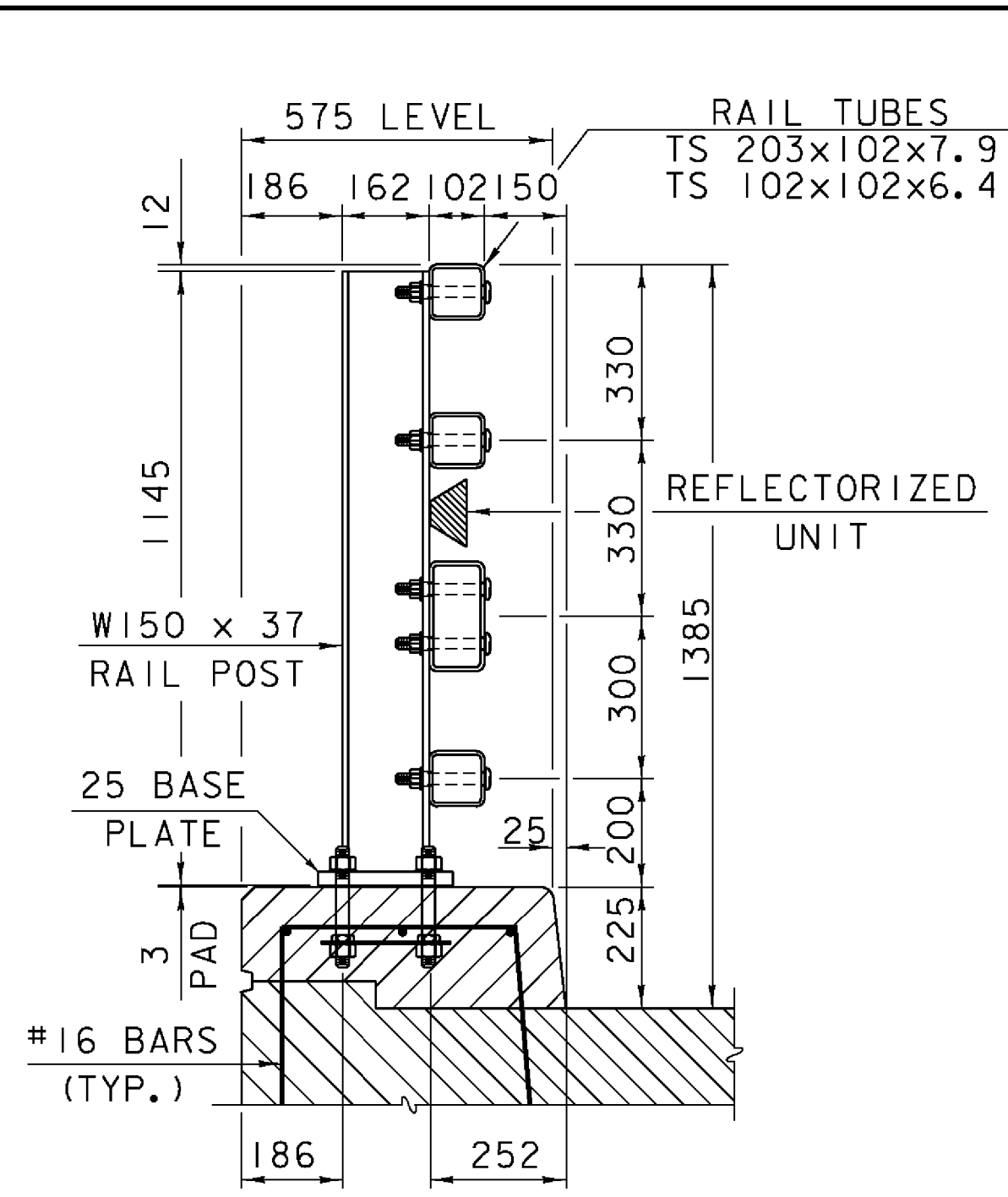
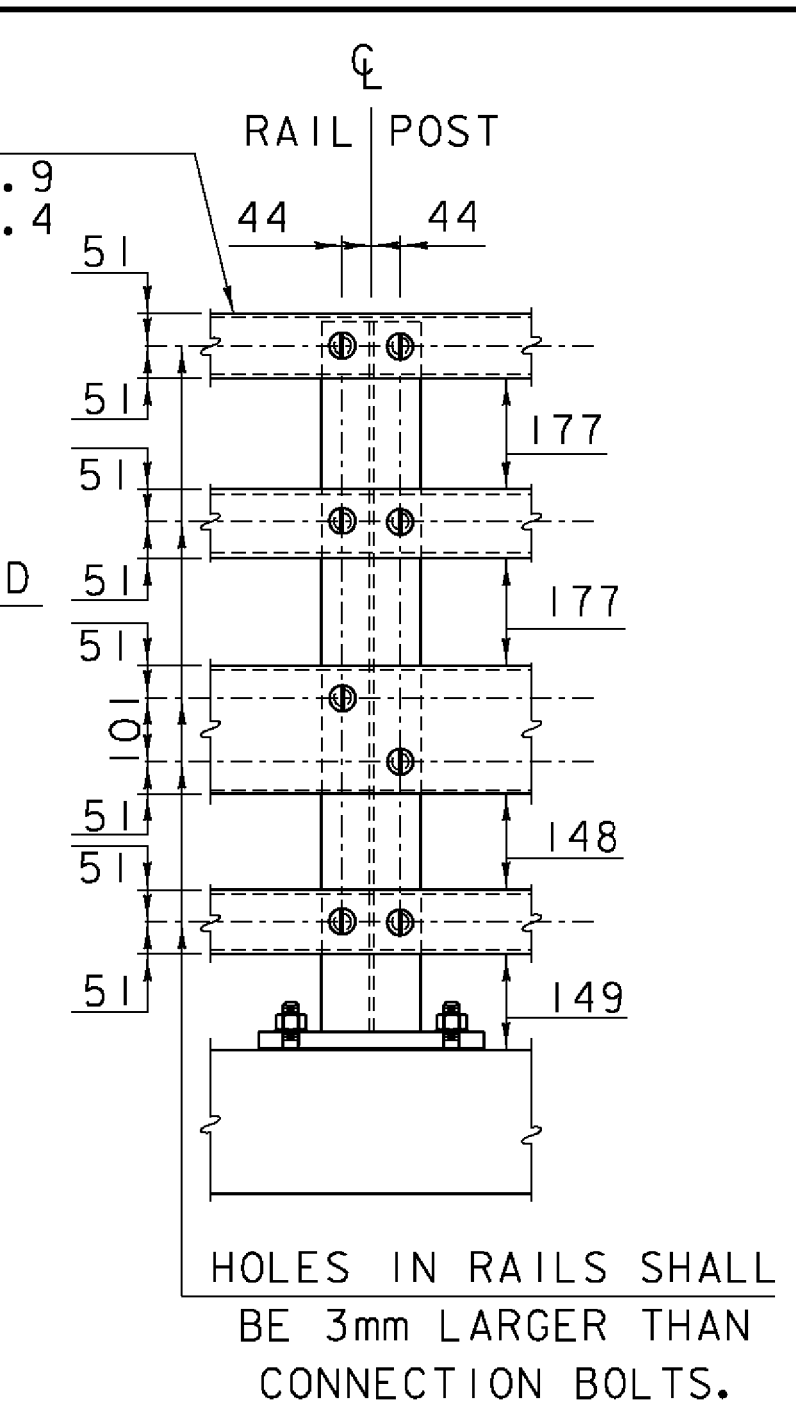


BRIDGE RAILING ELEVATION



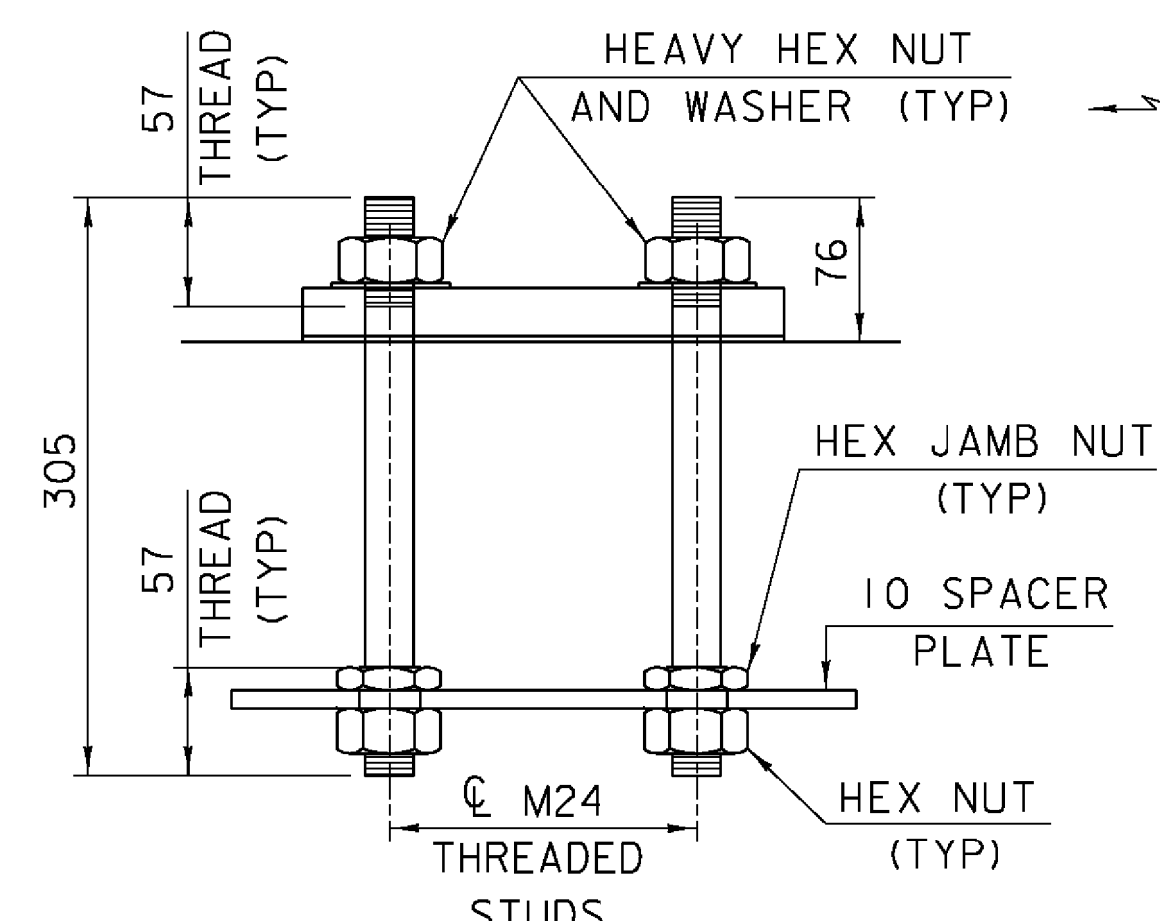
TYPICAL SECTION



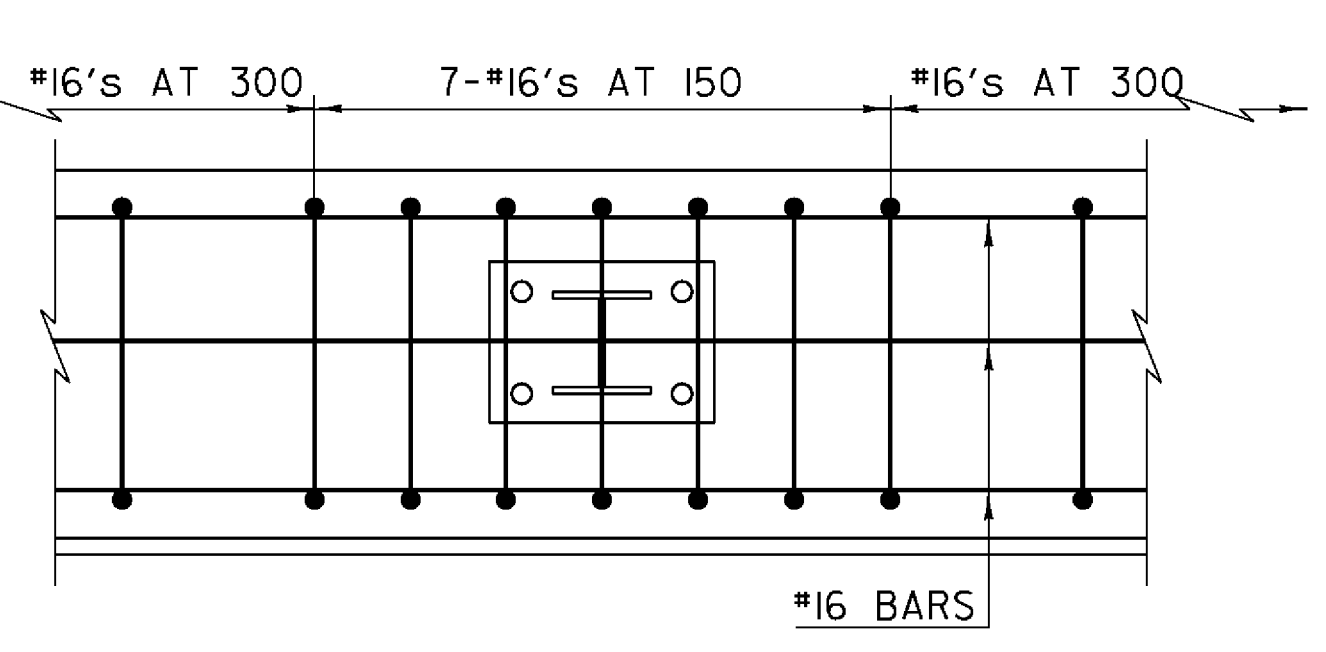
ELEVATION

NOTES

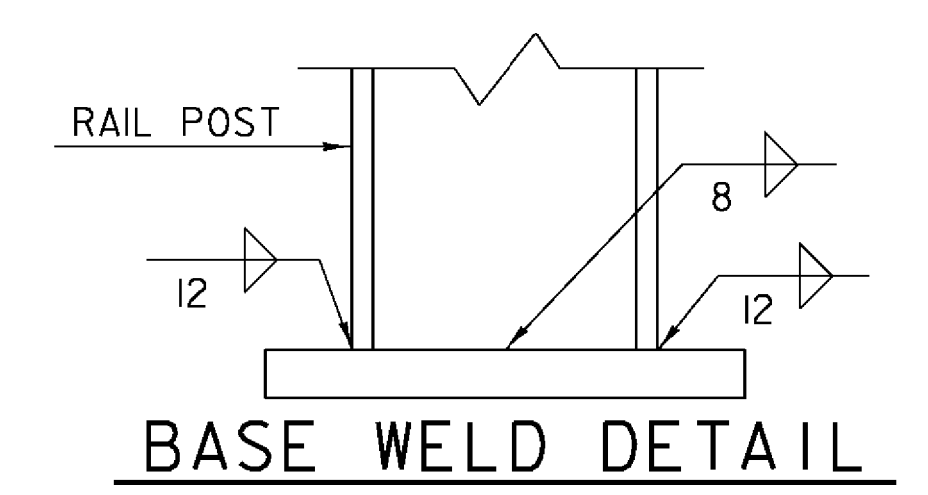
- ALL WORK AND MATERIALS SHALL CONFORM TO THE PROVISIONS OF SECTION 525 - RAILINGS OF THE STANDARD SPECIFICATION FOR CONSTRUCTION.
- TUBING AND POSTS SHALL MEET THE REQUIREMENTS OF SECTION 732 - RAILING MATERIALS OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION EXCEPT THE DROP-WEIGHT TEAR TEST IN SECTION 732 SHALL NOT APPLY TO THE STRUCTURAL TUBING IN THIS STANDARD.
- ALL EXPOSED CUT OR SHEARED EDGES SHALL BE ROUNDED TO A 2mm RADIUS AND BE FREE OF BURRS.
- RAIL POSTS SHALL BE SET NORMAL TO GRADE.
- SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO (2) RAIL POSTS AND PREFERABLY TO AT LEAST FOUR (4) POSTS.
- RAIL TUBE EXPANSION JOINTS SHALL BE PROVIDED IN ANY RAIL BAY SPANNING A SUPERSTRUCTURE EXPANSION JOINT. EXPANSION JOINT WIDTH SHALL BE "X" AT 10°C AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
- ALL PARTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M 111M, EXCEPT THAT HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M 232M.
- RAIL POSTS ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ONE-EIGHTH TURN.
- RAIL TUBES SHALL BE ATTACHED USING M20 FULL DIAMETER BODY AASHTO M 164M (TYPE 1) ROUND HEAD BOLTS INSERTED THROUGH THE FACE OF THE TUBE. HOLES IN POSTS SHALL BE 2mm LARGER THAN THE BOLT SIZE.
- HOLES IN RAILS FOR RAIL TUBE ATTACHMENT MAY BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO ERECTION.
- ANY BENDING OF RAIL SHALL BE BY SHOP PROCEDURE ONLY.
- THE FABRICATOR SHALL SUBMIT SHOP DRAWINGS INCLUDING WELDING PROCEDURES TO THE STRUCTURES SECTION FOR APPROVAL IN ACCORDANCE WITH THE PROVISION OF 506.04, DRAWINGS AND PROCEDURES. ALL WELDING SHALL CONFORM WITH SECTION 506.10.
- RAIL POSTS AND BASE PLATES SHALL BE TESTED FOR IMPACT PROPERTIES IN ACCORDANCE WITH ASTM A370 CHARPY IMPACT TESTING USING A TYPE A SPECIMEN.



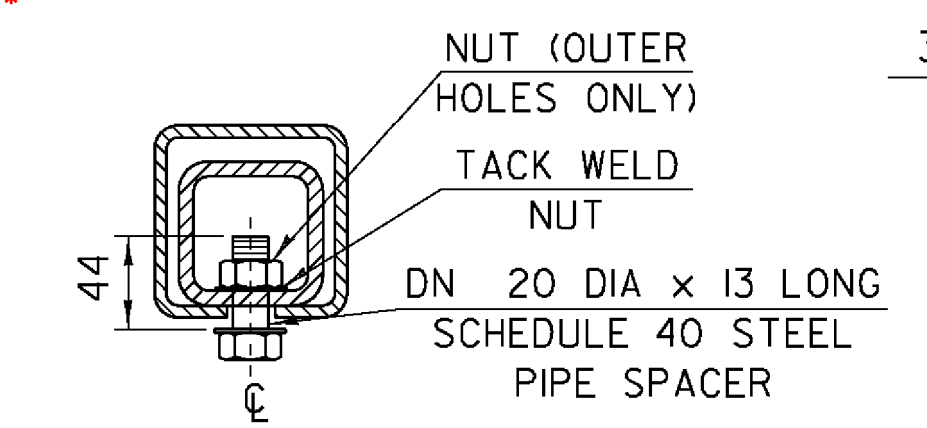
RAIL POST ANCHORAGE



CURB REINFORCING PLAN

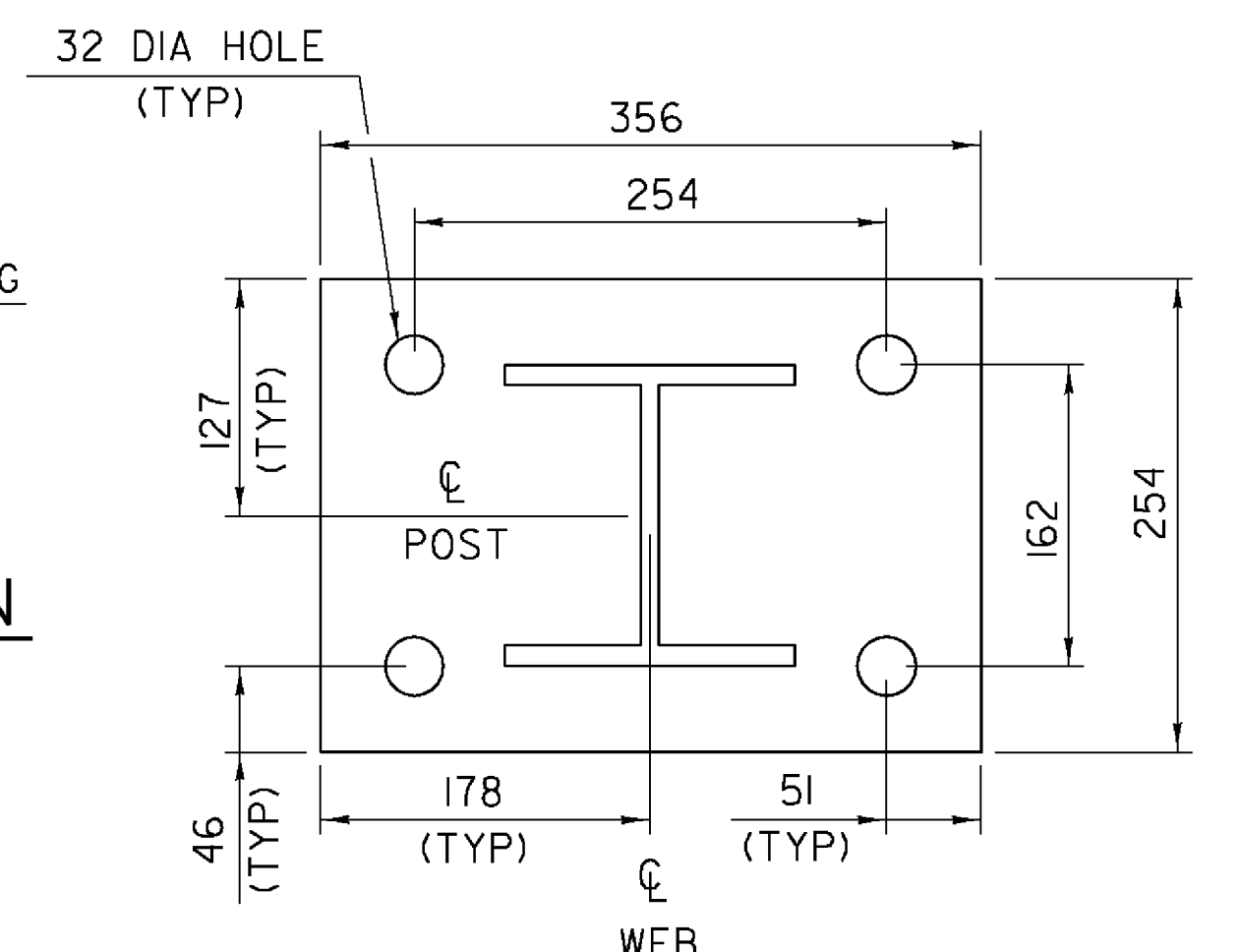


BASE WELD DETAIL



EXPANSION JOINT SECTION

FOR DETAILS NOT SHOWN, SEE "RAIL TUBE SPLICE SECTION."



POST AND BASE PLATE

MATERIALS

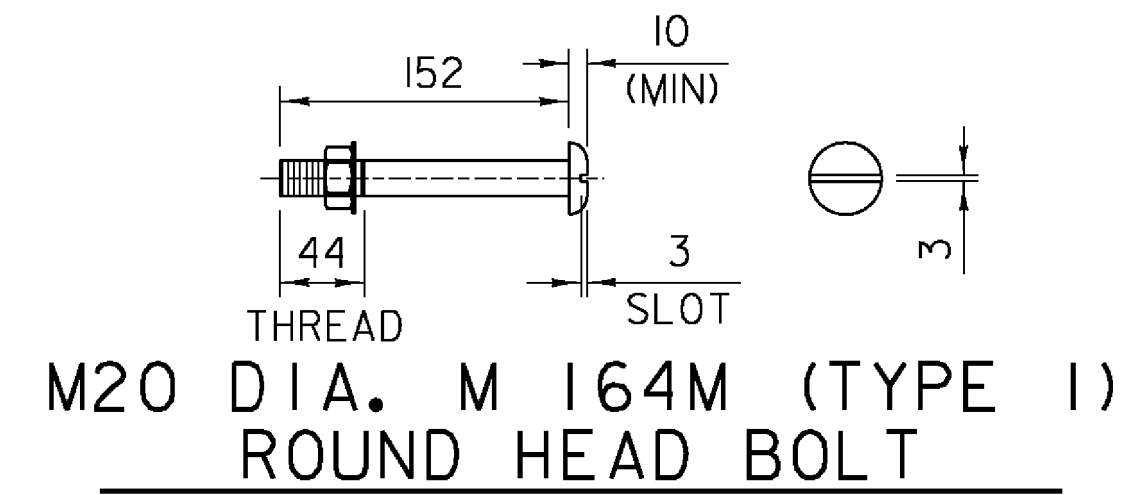
RAIL TUBES.....ASTM A500, GRADE B OR ASTM A501
 RAIL POSTS AND BASE PLATES.....ASTM A709/A709M, GRADE 345
 ALL OTHER SHAPES AND PLATES.....ASTM A709/A709M, GRADE 250
 ANCHOR STUDS.....ASTM F 568M, CLASS 8.8
 ALL OTHER BOLTS (UNLESS NOTED).....AASHTO M 164M, TYPE 1

NUTS FOR AASHTO M 164M BOLTS AND FOR ANCHOR STUDS SHALL COMPLY WITH AASHTO M 291M (ASTM A563M).

WASHERS SHALL COMPLY WITH AASHTO M 293M (ASTM F436M) SPECIFICATIONS.

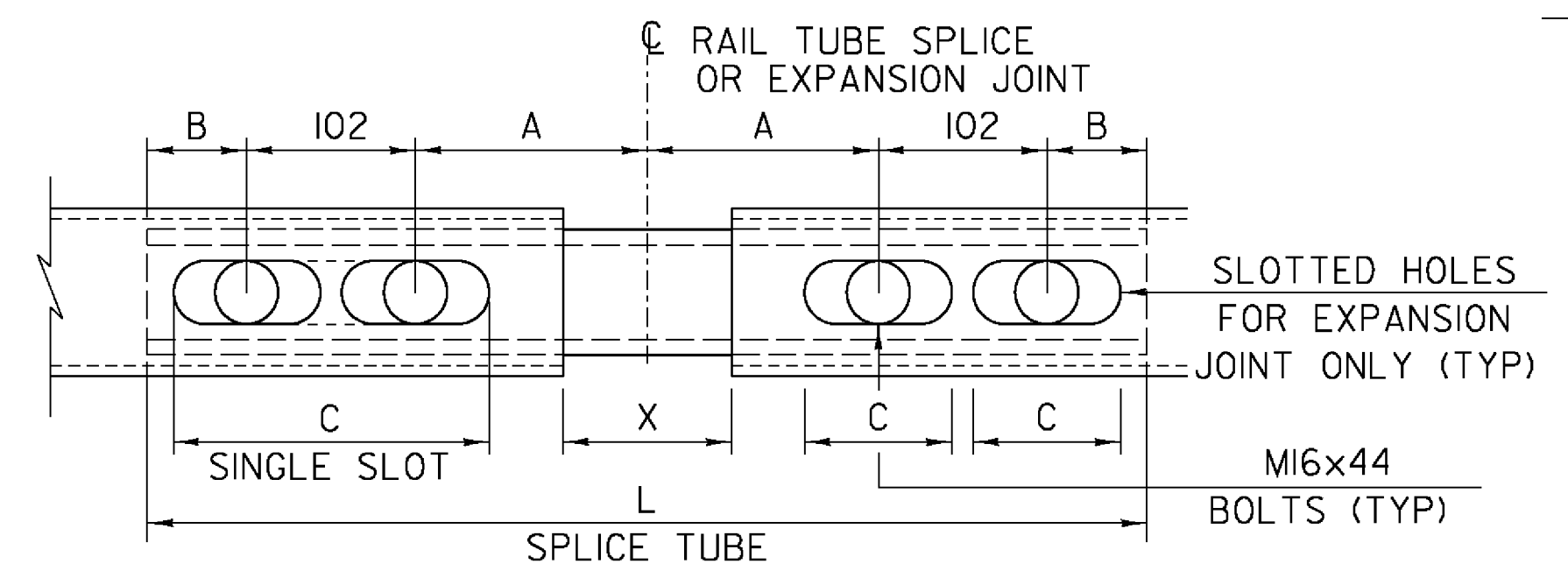
3 mm PAD SHALL COMPLY WITH STANDARD SPECIFICATION SUBSECTION 731.01 OR 731.02.

*SEE SHEET 276 FOR REVISED CURB REBAR DETAIL AT S.U.P. BRIDGE



M20 DIA. M 164M (TYPE 1) ROUND HEAD BOLT

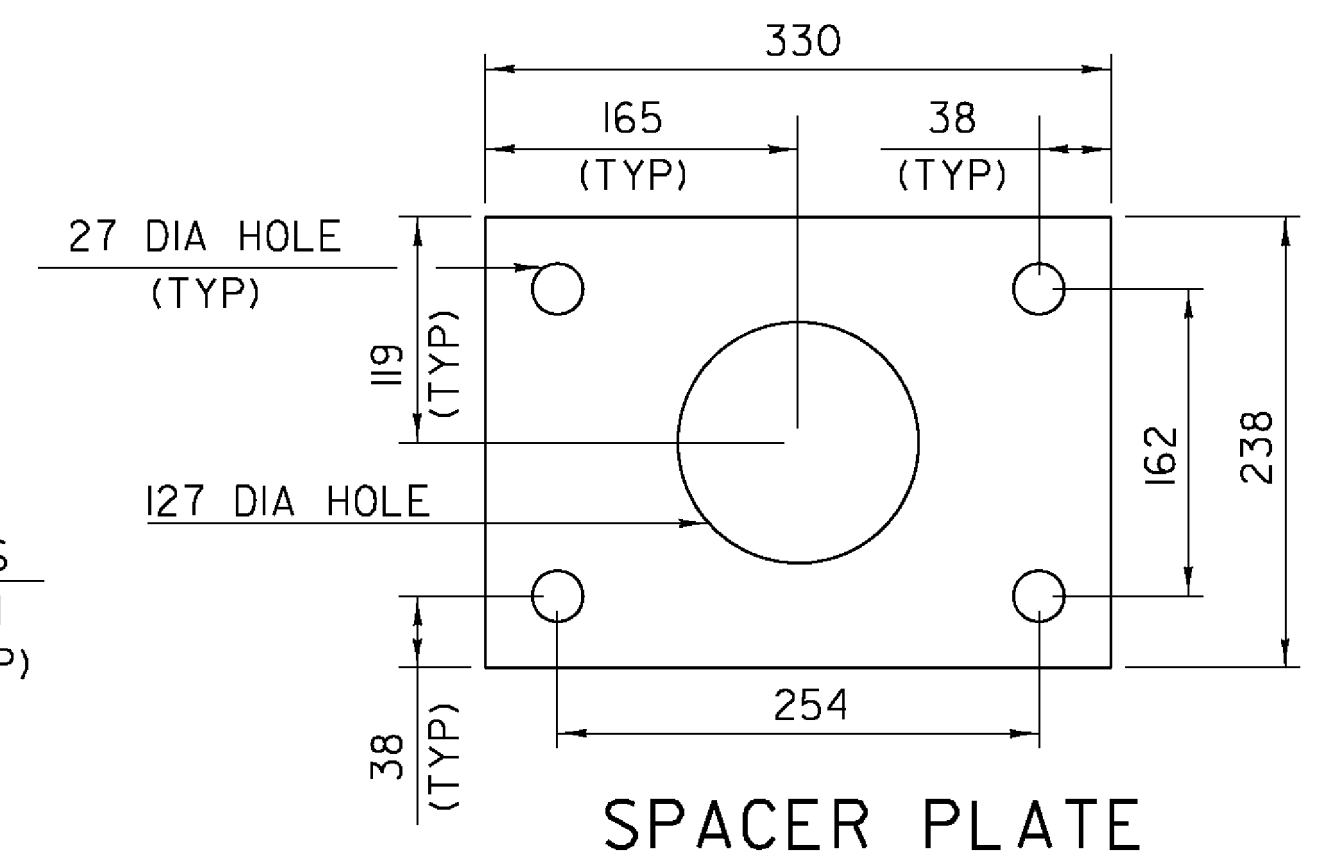
(WITH WASHER AND PREVAILING TORQUE TYPE LOCK NUT) (SEE NOTE #9)
 ONLY FULL DIAMETER BODY BOLTS WILL BE ALLOWED.



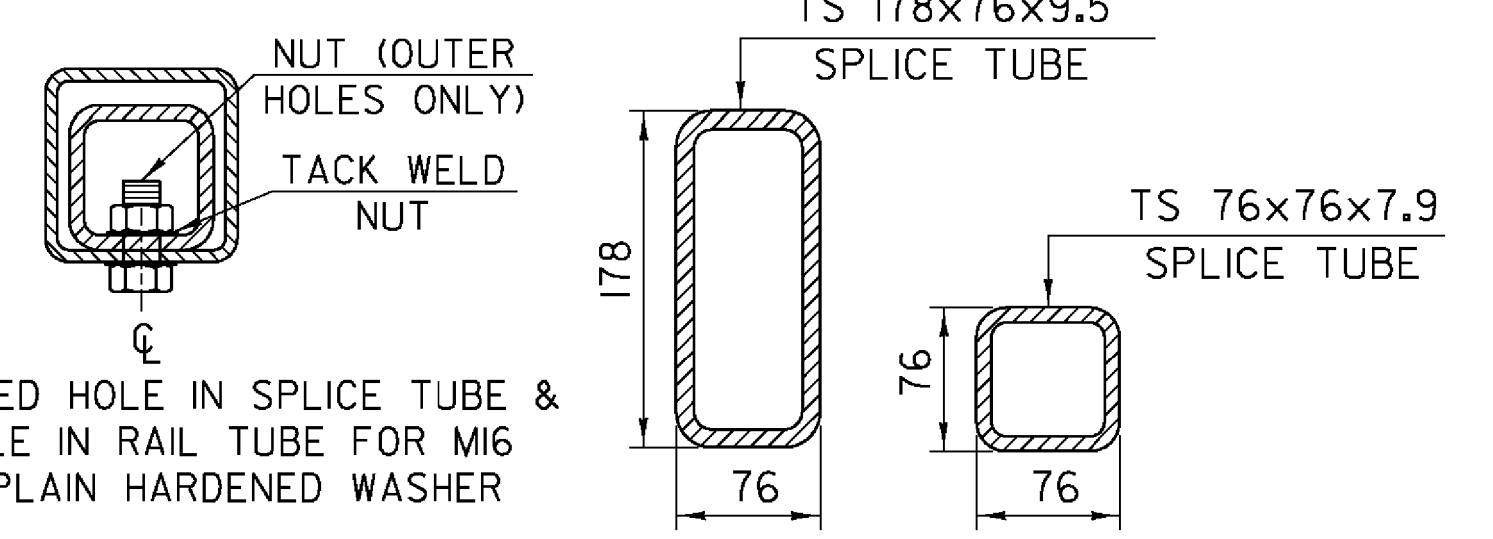
RAIL TUBE SPLICE AND RAIL EXPANSION JOINT DETAIL (BOTTOM VIEW)

SPLICE TABLE					
T	A	B	C	L	X
N/A	102	50	--	510	20
EXPANSION JOINT TABLE					
70	140	60	90	600	102

T = TOTAL MOVEMENT BETWEEN BRIDGE EXPANSION JOINTS. SEE NOTE 6.



SPACER PLATE



RAIL TUBE SPLICE SECTION

16 DIA TAPPED HOLE IN SPLICE TUBE & 19 DIA HOLE IN RAIL TUBE FOR M16 BOLT & PLAIN HARDENED WASHER

STATE OF VERMONT AGENCY OF TRANSPORTATION

Town Of	BENNINGTON	Bridge No.	Bill
Highway No.	TH 5	Log Sta.	
		Surv. Sta.	
EAST ROAD OVER VT ROUTE 279			
BRIDGE RAILING - NETC 4 RAIL			
Designed By	VTrans	Drawn By	VTrans
Checked By	S. BURBANK	Date	03/06
		Bridge Design Supervisor	G. BOGUE
		Date	03/07
PROJECT	BENNINGTON	PROJECT NO.	AC NH 019-1(53)
Dgn.:	...Design\NER\ER-BRail.dgn	Plot Date:	5/25/2011
Bridge Sheet No.	BR644	Sheet	291 of 577



V:\953\active\9530002\Transportation\Structural\Design\NER\ER-BRail.dgn