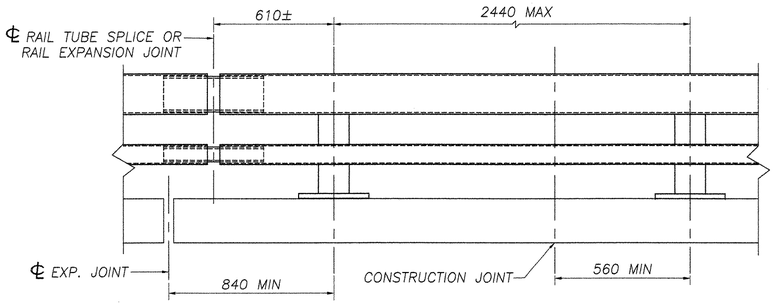
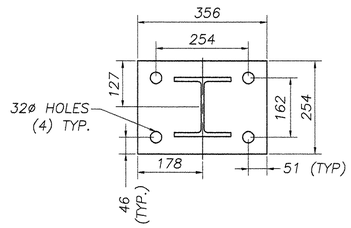
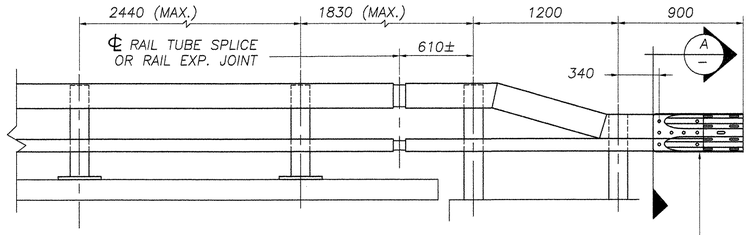


BRIDGE RAILING ELEVATION



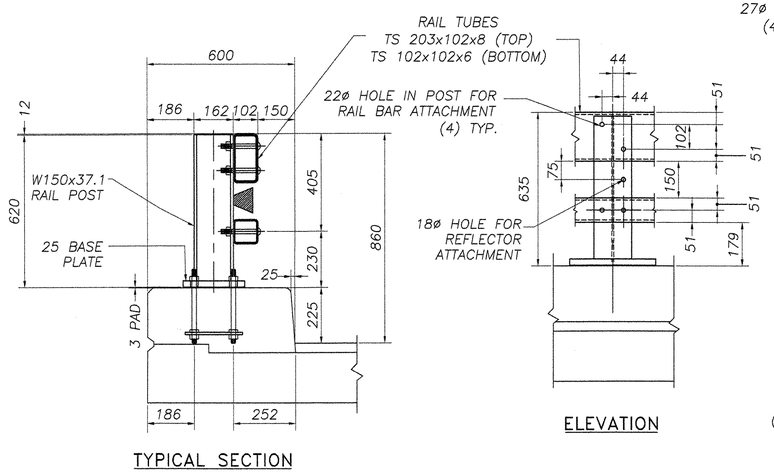
POST AND BASE PLATE



RAILING TRANSITION ELEVATION
(BOTHEND OF BRIDGE)

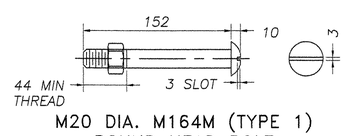
BILL OF MATERIAL (BOTH SIDES OF BRIDGE)	
Qty.	Description
26	W150x37.1 POST W/BASEPLATE (620mm) OAL
4	W150x37.1 DRIVEN POST (2.134m) OAL
4	W150x37.1 DRIVEN POST (1.956m) OAL
4	TS 203 x 102 x 8 (4.030m) OAL
2	TS 203 x 102 x 8 (5.722m) OAL
4	TS 203 x 102 x 8 (7.804m) OAL
4	TS 203 x 102 x 8 (4.030m) OAL
2	TS 203 x 102 x 8 (5.722m) OAL
4	TS 203 x 102 x 8 (7.804m) OAL
2	TS 203 x 102 x 8 (2.476m) OAL CUT AND WELD
2	TS 203 x 102 x 8 (2.520m) OAL CUT AND WELD
2	TS 203 x 102 x 8 (2.476m) OAL CUT AND WELD
2	TS 203 x 102 x 8 (2.520m) OAL CUT AND WELD
12	TS 178 x 76 x 10 SPLICE TUBE 510 LG.
12	TS 76 x 76 x 8 SPLICE TUBE 510 LG.
26	3mm BEARING PAD
4	BACK UP PLATE 381x254x10
4	TERMINAL CONNECTOR
160	M20 ROUND HEAD BOLT, 152 LONG W/NUT AND WASHER
96	M16 SPLICE BOLT, 44 LONG W/PLAIN HARDENED WASHER
* 96	M24 ANCHOR STUD, 305 LG. W/(2) HEX NUTS/(1) JAMB NUT/(1) WASHER
* 26	SPACER PLATE 330 x 238 x 10
16	M20 x 13 SCH. 40 PIPE SPACER

ITEMS MARKED "*" ARE NOT SUPPLIED BY HIGHWAY SAFETY CORPORATION, AND THEY ARE SHOWN ONLY FOR REFERENCE.

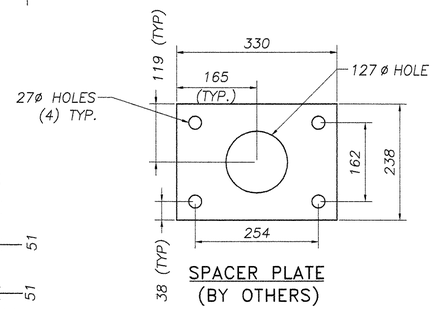


TYPICAL SECTION

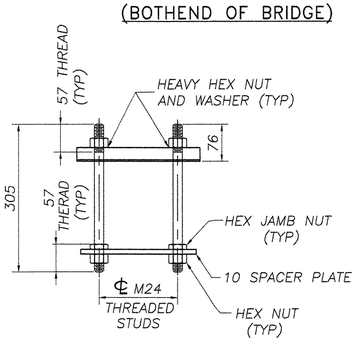
ELEVATION



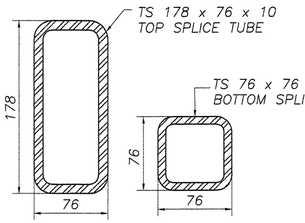
M20 DIA. M164M (TYPE 1)
ROUND HEAD BOLT
(WITH WASHER AND PREVAILING TORQUE TYPE LOCK NUT)
(SEE NOTE #9)
ONLY FULL DIAMETER BODY BOLTS WILL BE ALLOWED.



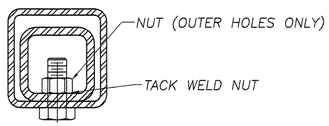
SPACER PLATE
(BY OTHERS)



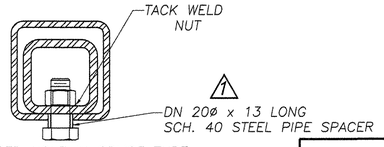
RAIL POST ANCHORAGE
(BY OTHERS)



RAIL TUBE SPLICE SECTION



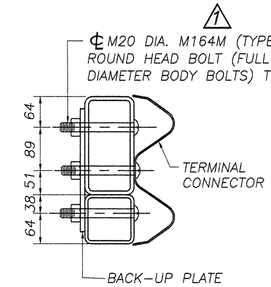
16ø TAPPED HOLE IN SPLICE TUBE & 19ø HOLE IN RAIL TUBE FOR M16 BOLT & PLAIN HARDENED WASHER

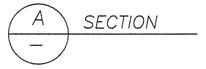


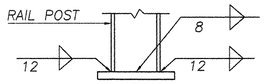
16ø TAPPED HOLE IN SPLICE TUBE AND 29 x 'C' SLOT IN RAIL TUBE FOR M16 BOLT AND PLAIN HARDENED WASHER

EXPANSION JOINT SECTION

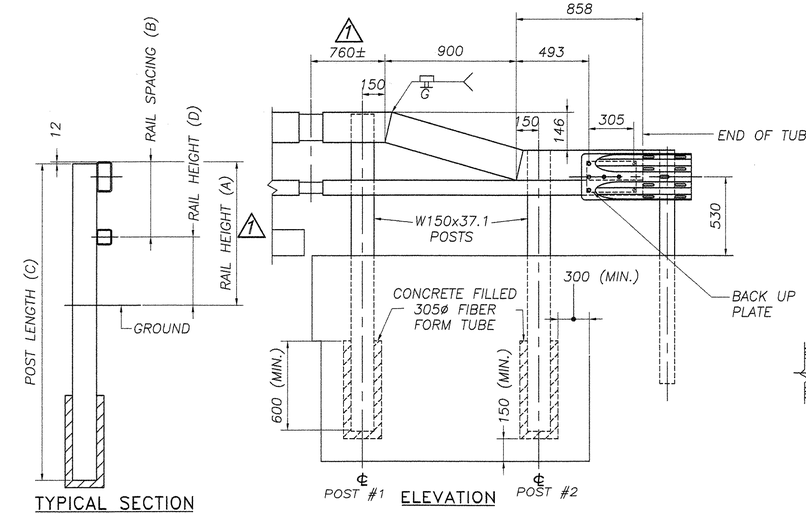
FOR DETAILS NOT SHOWN, SEE "RAIL TUBE SPLICE SECTION."





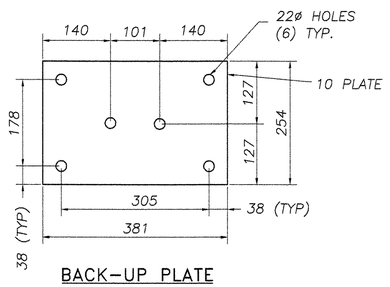


BASE WELD DETAIL

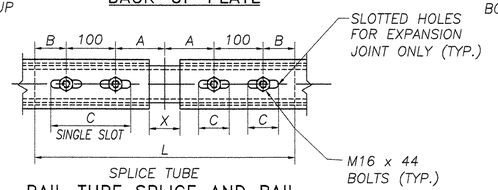


TYPICAL SECTION

ELEVATION



BACK-UP PLATE



RAIL TUBE SPLICE AND RAIL
EXPANSION JOINT DETAIL

	RAIL HEIGHT	RAIL SPACING	POST LENGTH	RAIL HEIGHT
POST NUMBER	(A)	(B)	(C)	(D)
1	860	405	2134	455
2	702	254	1956	448

SPLICE TABLE					
T	A	B	C	L	X
N/A	100	50	--	510	20
EXPANSION JOINT TABLE					
<100	100	50	65	510	65

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

* = SINGLE SLOT

NOTES:

1. ALL RAILINGS AND MATERIALS SHALL CONFORM TO THE PROVISION OF SECTION 525, "RAILINGS OF THE STANDARD SPECIFICATION FOR CONSTRUCTION".

2. TUBING AND POSTS SHALL MEET THE REQUIREMENTS OF SECTION 732, "RAILING MATERIALS OR THE STANDARD SPECIFICATION FOR CONSTRUCTION," EXCEPT THAT THE DROP-WEIGHT TEAR TEST IN SECTION 732 SHALL NOT APPLY TO THE STRUCTURAL TUBING SHOWN ON THIS SHEET.

3. ALL EXPOSED CUT OR SHEARED EDGES SHALL BE ROUNDED TO A 2mm RADIUS AND BE FREE OF BURRS.

4. RAIL POSTS SHALL BE SET NORMAL TO GRADE.

5. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO (2) RAIL POSTS AND PREFERABLY TO AT LEAST FOUR (4) POSTS.

6. RAIL TUBE EXPANSION JOINT SHALL BE PROVIDED IN ANY RAIL BAY SPANNING A SUPERSTRUCTURE EXPANSION JOINT. EXPANSION JOINT WIDTH SHALL BE "X" AT 7°C AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.

7. ALL PARTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111, EXCEPT HARDWARE, WHICH SHALL MEET THE REQUIREMENTS OF AASHTO M232M.

8. RAIL POST ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ONE-EIGHTH TURN.

9. RAIL TUBES SHALL BE ATTACHED USING M20 FULL DIAMETER BODY AASHTO M164 (TYPE 1) ROUND HEAD BOLT INSERTED THOUGH THE FACE OF THE TUBE. HOLES IN POSTS SHALL BE 2mm LARGER THAN THE BOLT SIZE.

10. HOLES IN RAILS FOR RAIL TUBE ATTACHMENT MAY BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO ERECTION.

11. IF THERE IS A CONFLICT BETWEEN THE DETAILS SHOWN ON THIS SHEET AND THE DESIGN, THE REQUIREMENTS OF THE DESIGN DRAWINGS SHALL BE FOLLOWED.

12. ANY BENDING OF RAIL SHALL BE BY SHOP PROCEDURE ONLY.

13. THE FABICATOR SHALL SUBMIT SHOP DRAWINGS, INCLUDING WELDING PROCEDURES TO THE STRUCTURES SECTION FOR APPROVAL IN ACCORDANCE WITH THE PROVISION OF 506.04, SHOP DRAWINGS. ALL WELDING SHALL CONFORM WITH SECTION 506.10.

14. RAIL POSTS AND BASE PLATES SHALL BE TESTED FOR IMPACT PROPERTIES IN ACCORDANCE WITH ASTM A370 CHARPY IMPACT TESTING USING TYPE A SPECIMENS.

15. TO FACILITATE FIELD FIT – UP OF THE TRANSITION RAILING, POSTS SHALL BE SET LOOSELY INTO FIBER FORM TUBES WHILE TRANSITION PARTS ARE BEING ASSEMBLED. POST HOLES SHALL BE BACKED FILLED WITH A CONCRETE MIX APPROVED BY THE ENGINEER. PAYMENT FOR COMPONENTS, INCLUDING BACKUP PLATE AND END TERMINAL CONNECTOR FOR GUARD RAIL, AUGERING, FIBER FORM TUBES AND CONCRETE , AND INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO ITEM 525.33, "BRIDGE RAILING – NETC 2 RAILING".

16. ALL APPROACH RAIL SPLICES SHALL BE LAPPED ON THE DIRECTION OF TRAFFIC FLOW.

MATERIALS

RAIL TUBES.....ASTM A500, GRADE B OR ASTM A501
RAIL POSTS AND BASE PLATES.....ASTM A709/A709M, GRADE 345
ALL OTHER SHAPRE AND PLATES.....ASTM A709/A709M, GARDE 250
ANCHOR STUDS.....ASTM FS6BM CLASS 8.8
ALL OTHER BOLTS (UNLESS NOTED).....AASHTO M164M, TYPE1

NUTS FOR AASHTO M164M (ASTM A325M) BOLTS AND ANCHOR STUDS SHALL COMPLY WITH AASTHO M291M (ASTM A563M).

WASHERS SHALL COMPLY WITH AASHTO M293M (ASTM F436M) SPECIFCATIONS.

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

REVISIONS		
No.	Remarks	Date
0	Initial submittal	
1	Final Copy w/Approved as Noted Corrections	06.20.06

VTrans - PDD
JUL 0 5 2006
Structures Design Section
RECORD PLANS

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

item 525.33 NETC 2-rail bridge railing
Town of Lyndon, Vermont
Caledonia County, Route VT 114
Bridge no. 8 over East Branch Passumpsic River
Proj. BRS 0269 (8) S

DRAWN	MHM
CHECKED	
DATE	5-16-06
SCALE	NONE
HSC REFERENCE NO.	1549
SIZE	D
REVISION	0
SHEET NO.	2 of 2

GENERAL CONTRACTOR

SUB CONTRACTOR F.R. Lafayette

093-BR