

BILL OF MATERIAL			
Mk.	Qty.	Description	Total wgt.
66		RAIL POST W 6 X 25 WITH BASE PLATE	
8		SPEC. END POST W 6 X 25 W/BASE PLATE & OFFSET BLOCK	
66		ANCHORAGE ASSEMBLY WITH PLATE, (4) ANCH STUDS & HARDWARE	
8		DRILL & GROUT ANCHOR W/(4) STUDS & HARDWARE	
2		RAIL TUBE (TS 8 X 4 X 5/16) X 16'-7 1/2" OAL	
6		RAIL TUBE (TS 8 X 4 X 5/16) X 23'-11" OAL	
12		RAIL TUBE (TS 8 X 4 X 5/16) X 23'-11" OAL (EXP. END)	
4		RAIL TUBE (TS 8 X 4 X 5/16) X 21'-0" OAL	
6		RAIL TUBE (TS 4 X 4 X 1/4) X 16'-7 1/2" OAL	
18		RAIL TUBE (TS 4 X 4 X 1/4) X 23'-11" OAL	
36		RAIL TUBE (TS 4 X 4 X 1/4) X 23'-11" OAL (EXP. END)	
12		RAIL TUBE (TS 4 X 4 X 1/4) X 21'-0" OAL	
16		8" RAIL SPLICE TUBE (FIXED)	
48		4" RAIL SPLICE TUBE (FIXED)	
6		8" RAIL SPLICE TUBE (EXPANSION JOINT)	
18		4" RAIL SPLICE TUBE (EXPANSION JOINT)	
74		1/8" THICK BEARING PAD	
592		3/4 X 6" RD. HEAD BOLT WITH WASHER & LOCKNUT	
352		5/8 X 2" HEX HEAD BOLT WITH HARDENED WASHER	
96		3/4 SCH 40 SPACER PIPE 1/2" LONG	
32		3/4 X 2" HEX HEAD BOLT WITH WASHER & LOCKNUT	

- GENERAL ERECTION NOTES**
- All work and materials shall conform to the provisions of Section 525 - Railings of the Vermont Standard Specifications for Construction.
 - Tubing & posts shall meet the requirements of Section 732 - Railing materials of the Standard Specifications for Construction.
 - All exposed cut or sheared edges shall be ground to a 1/16" radius & be free of burrs.
 - Rail posts shall be set normal to grade.
 - Sections of rail bar shall be attached to a minimum of two (2) posts and preferably to at least four (4) posts.
 - Rail bar expansion joints shall be provided in any rail bay spanning a superstructure expansion joint. Expansion joint width shall be "x" at 45° F and will be adjusted in the field by the engineer.
 - All parts shall be galvanized after fabrication in accordance with AASHTO M111, except that hardware shall meet the requirements of AASHTO M232.
 - Rail posts anchoring nuts shall be tightened to a snug-tight fit and given an additional 1/8 turn.
 - Rail bars shall be attached using 3/4" full diameter body head bolts AASHTO M164 (Type-I) inserted through the face of the bar. Holes in post shall be 1/16" larger than the bolt size.
 - Holes in rails for attachment to posts will be field-drilled. Holes shall be coated with an approved zinc-rich paint prior to erection.
 - Radiused rails (if required) will be shop-curved. No field-bending of rail tubes.
 - The drop-weight tear test in section 732 shall not apply to the structure tubing on this standard.
 - New bridge rail posts on existing wingwalls shall include offset blocks to accommodate the proposed face of rail. The configuration of the offset block(s) shall be determined from field measurements. New rail posts shall be positioned on existing wingwalls so that the rail post anchor bolts are at least 4 inches away from the front face and back face of the existing wingwall masonry as shown on this sheet.
 - New bridge rail posts on existing wingwalls require a single shim plate between the 1/8" bearing pad and the railpost base plate. The shim plate thickness shall be determined from field measurements based on the increase in finished grade of the sidewalk and the existing elevation of the wingwall. Anchor bolt lengths for posts on wingwalls shall be adjusted to compensate for shim plate thickness.

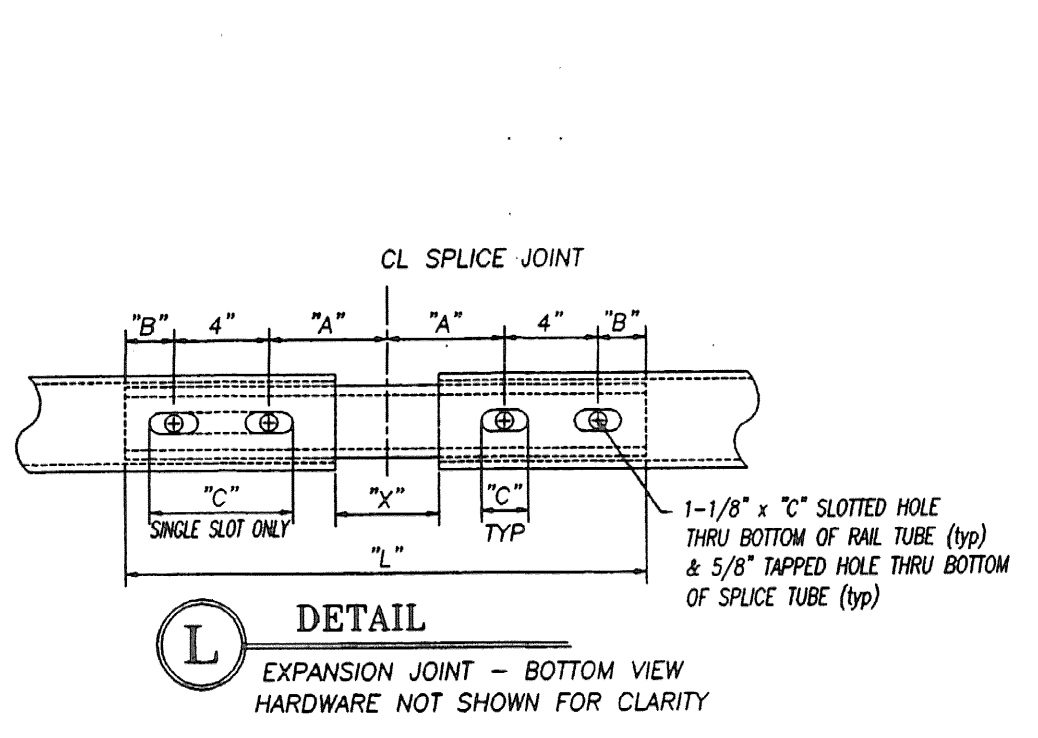
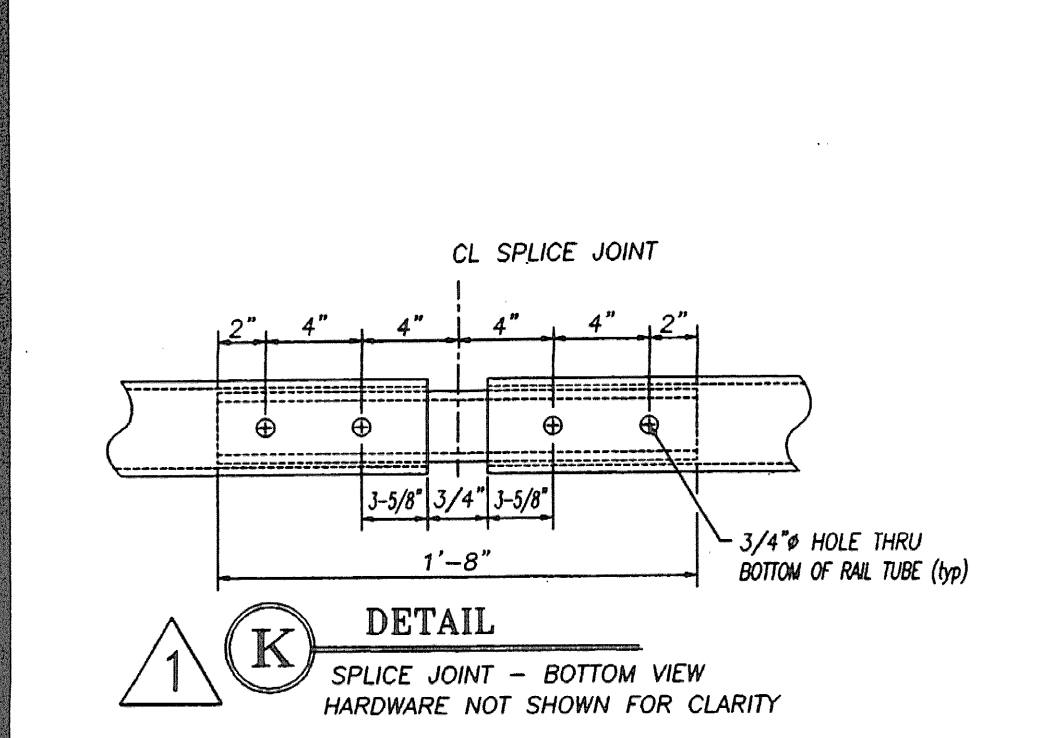
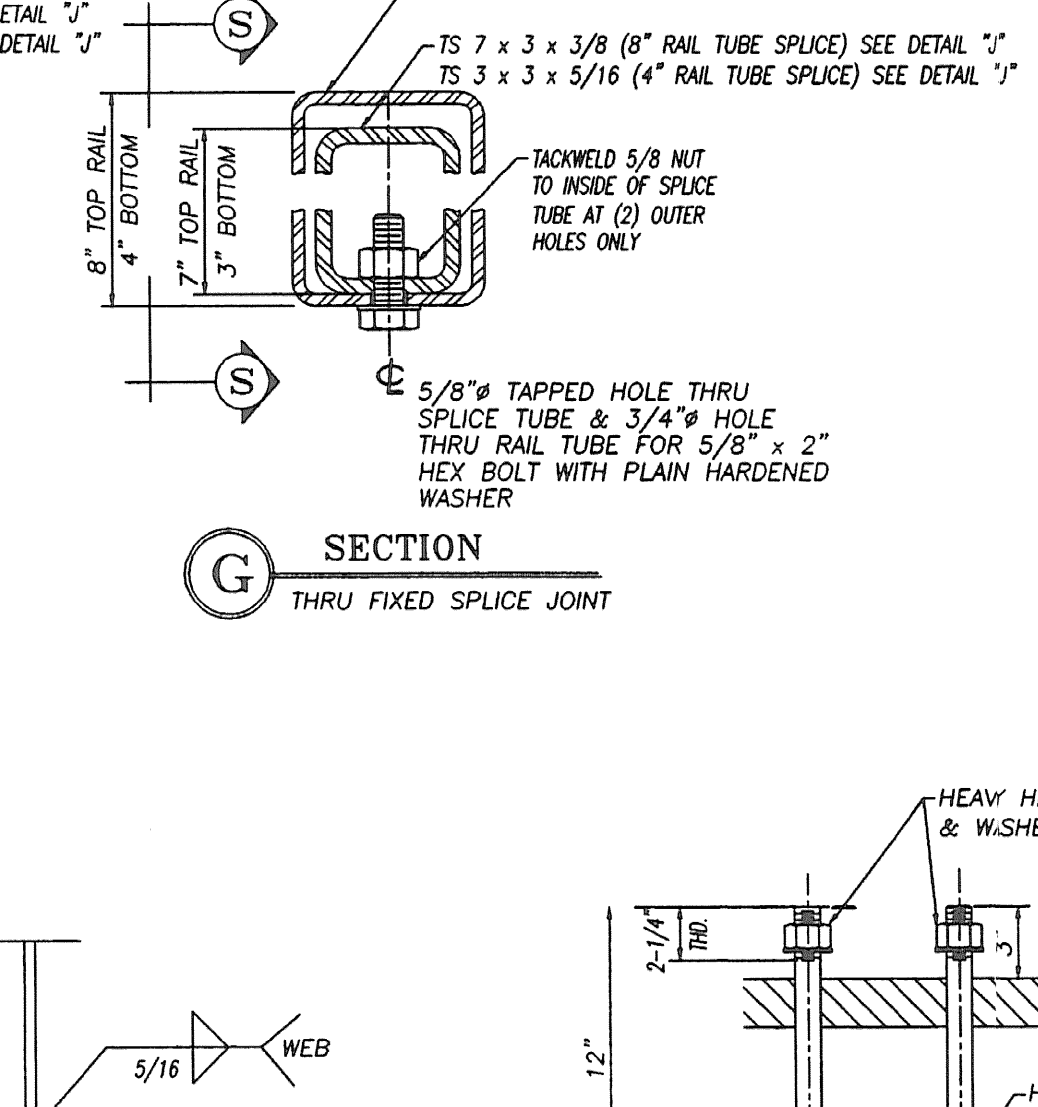
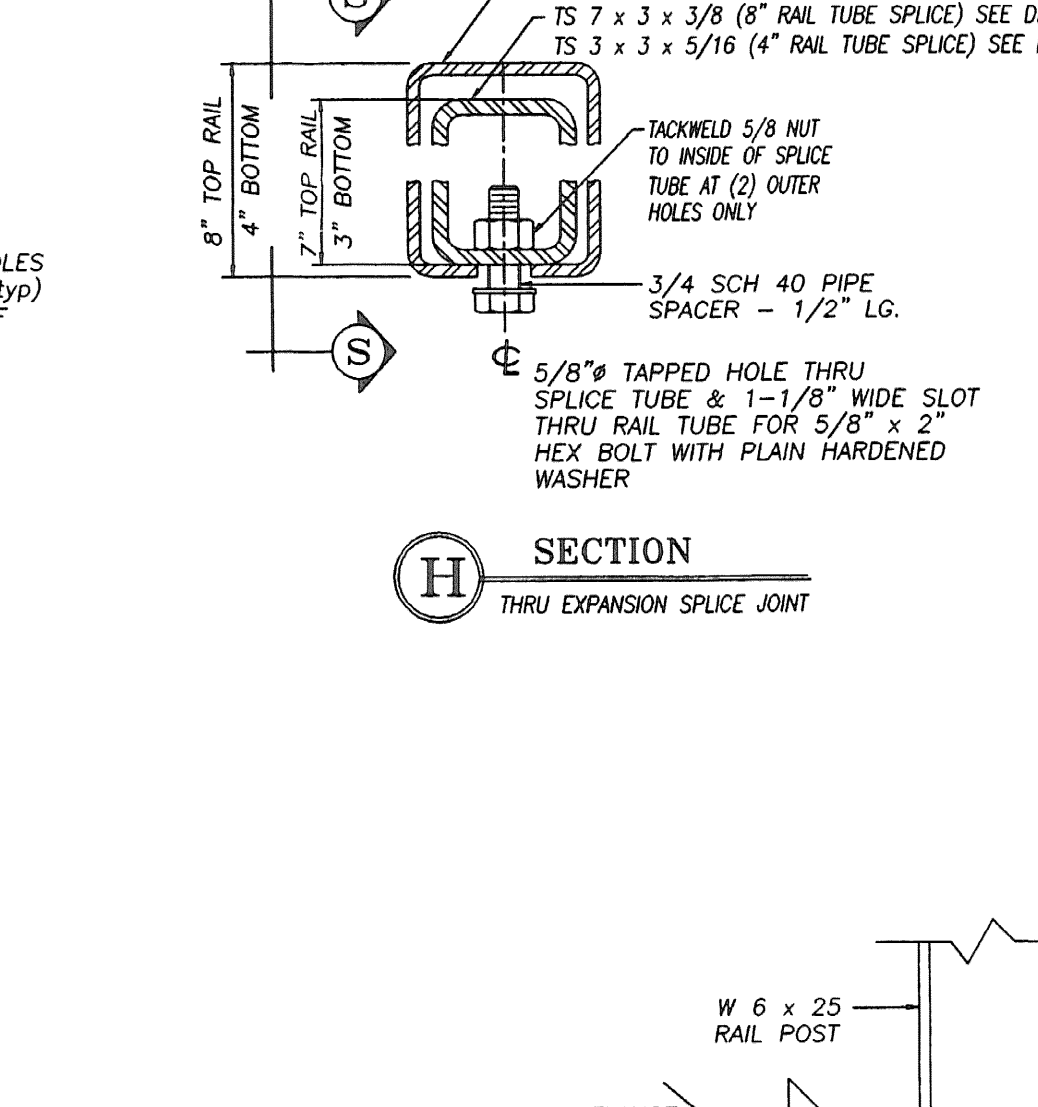
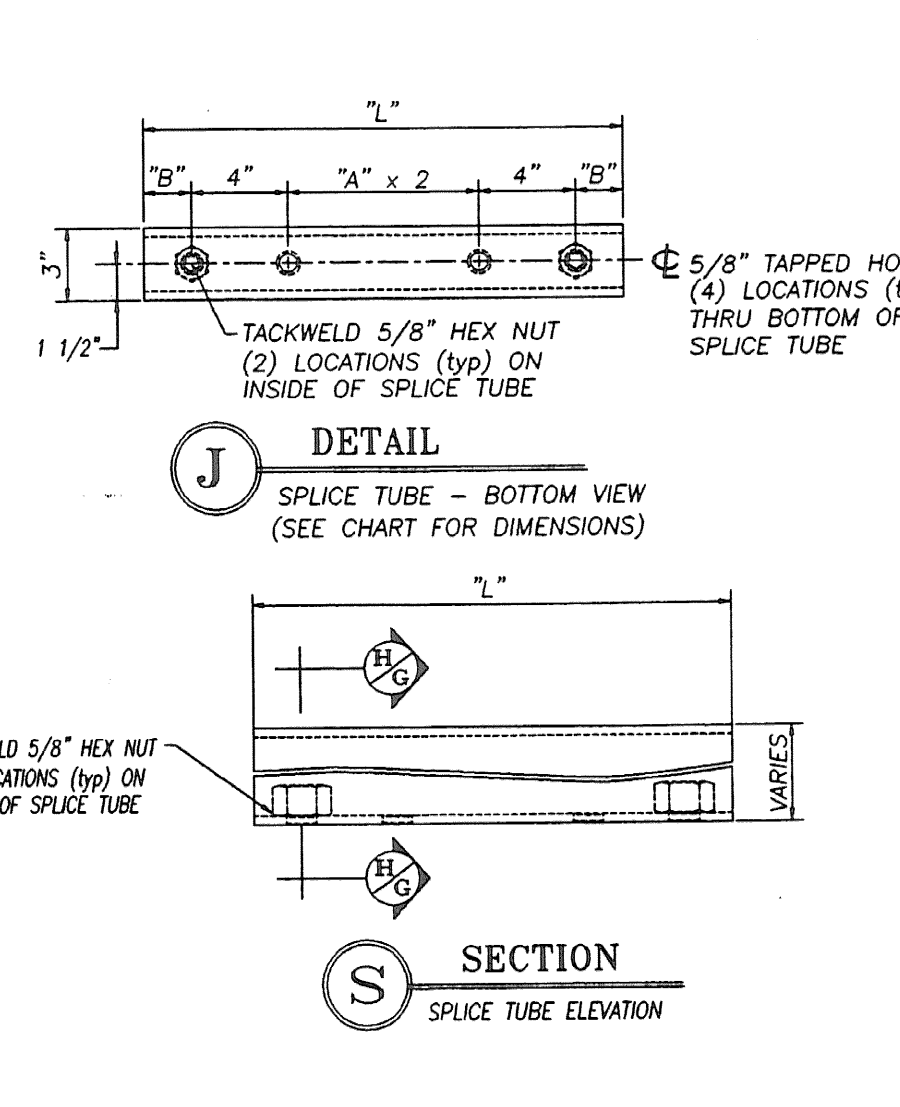
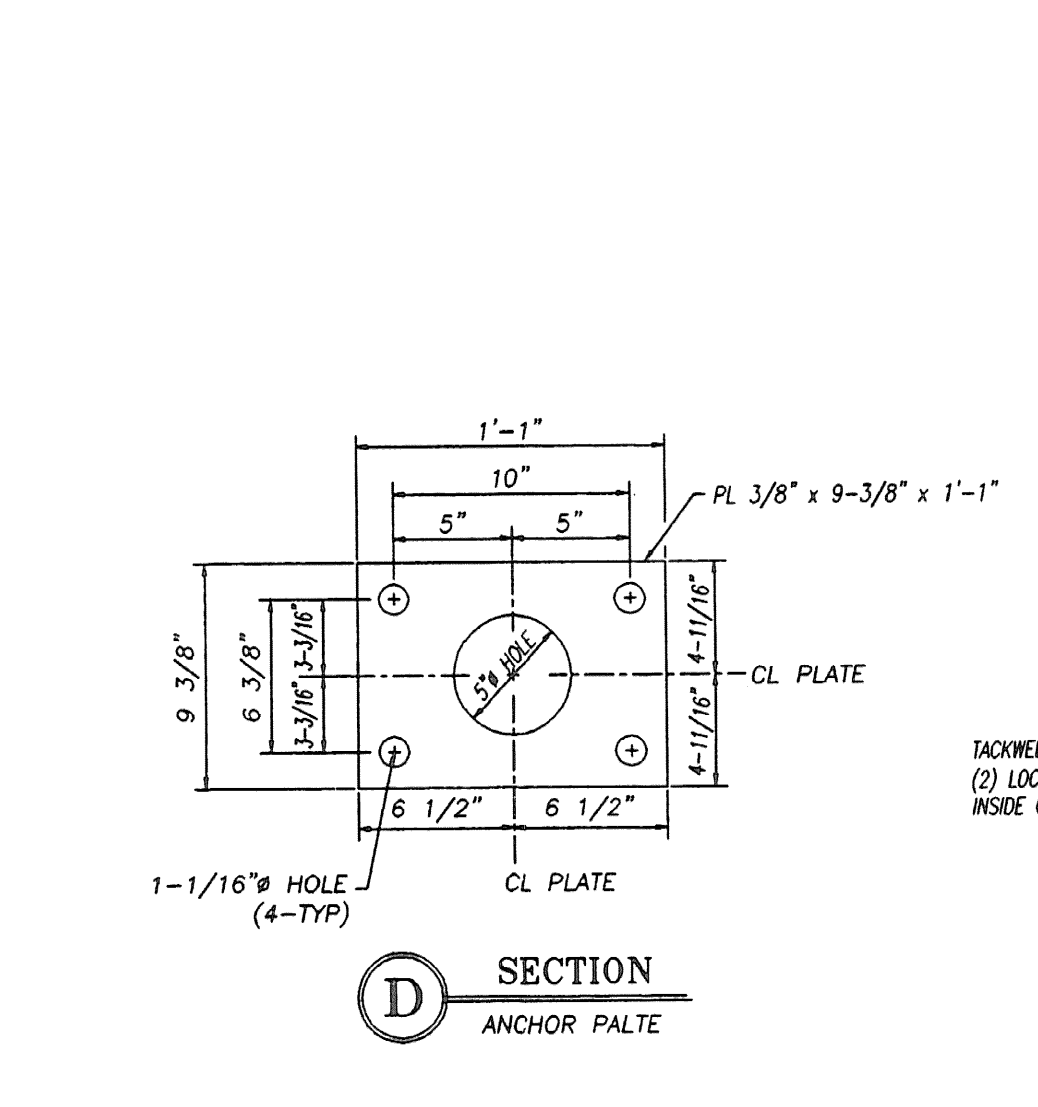
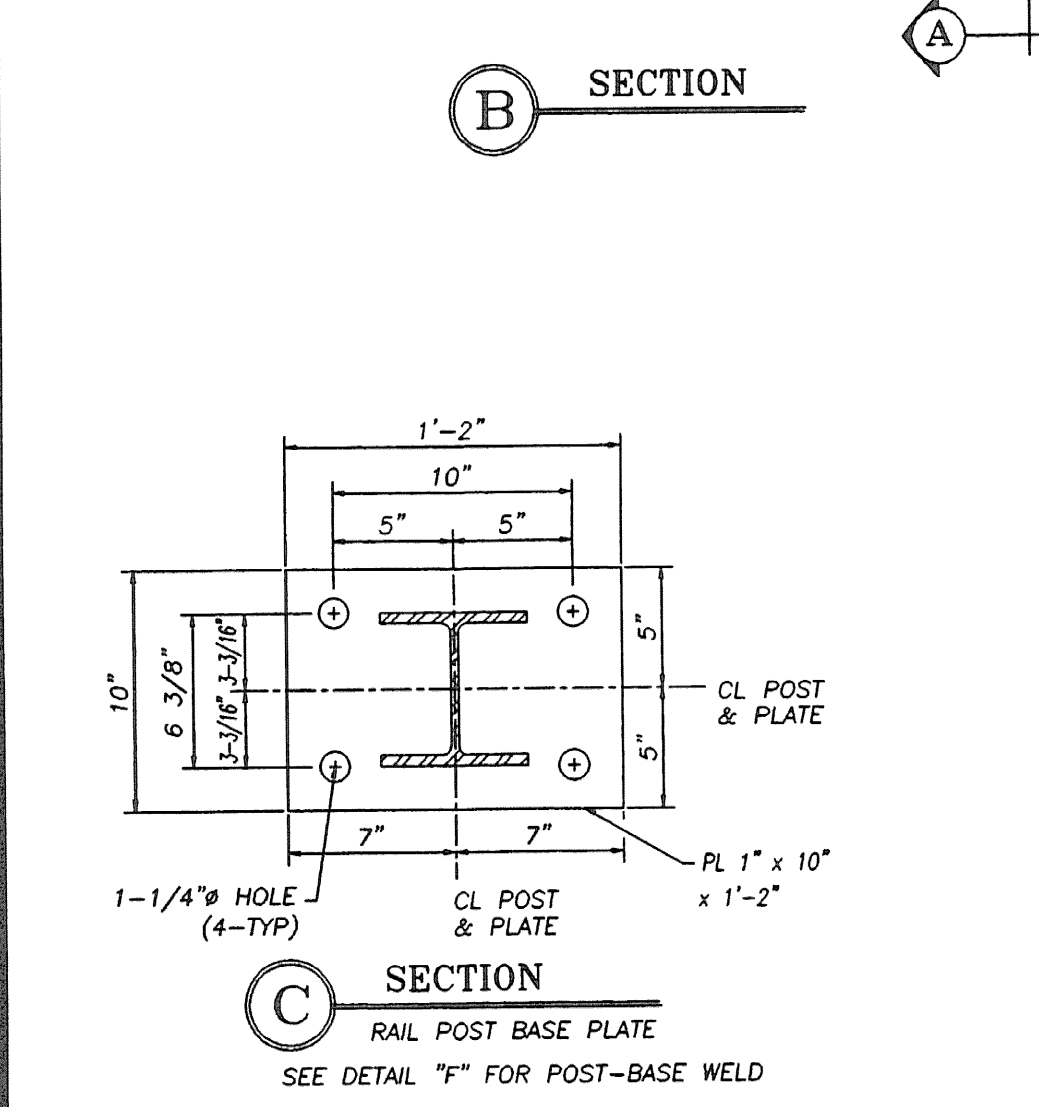
MATERIALS

Rail bars.....	ASTM A500 GR B or ASTM A501
Rail posts.....	ASTM A709 GR 50
All other shapes & plates.....	ASTM A709 GR 50
Anchor studs.....	ASTM A449
All other bolts [unless noted].....	AASHTO M164, TYPE I

Nuts for ASTM A307 bolts & AASHTO M164 bolts shall comply with AASHTO M291. Nuts for anchor studs shall comply with ASTM A563.

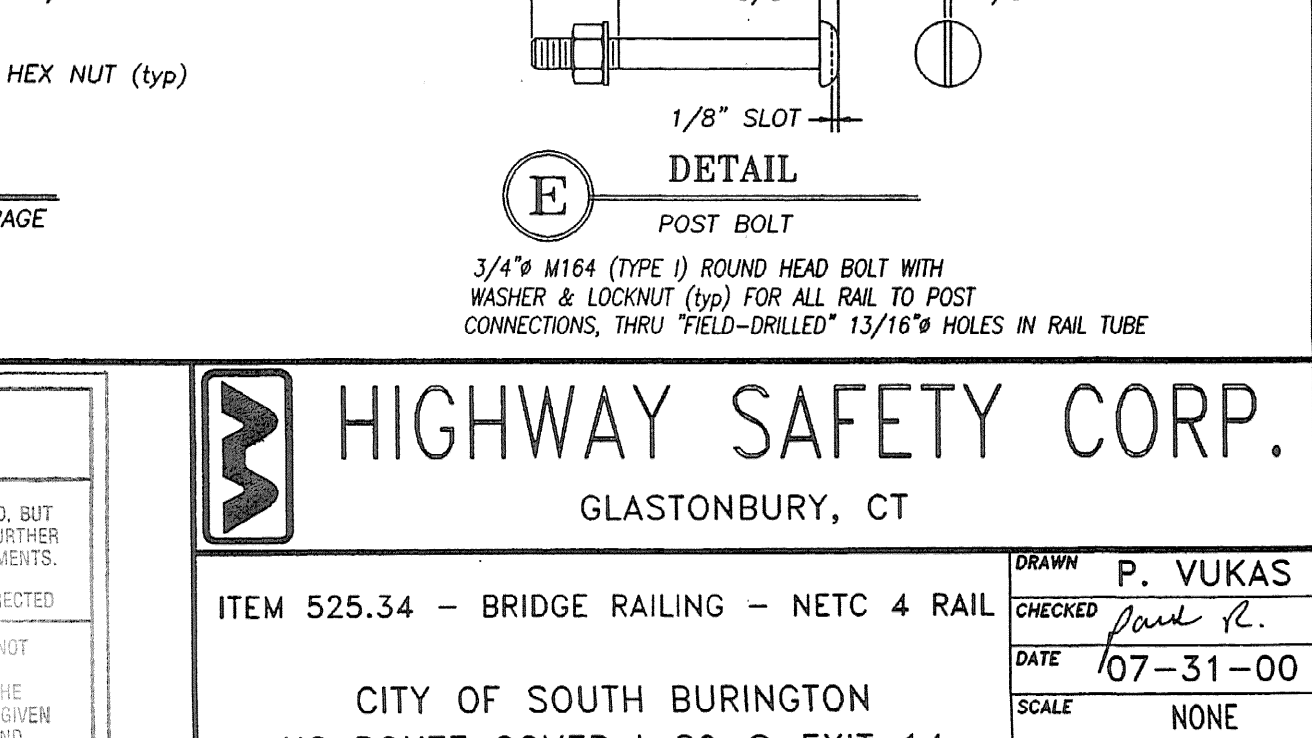
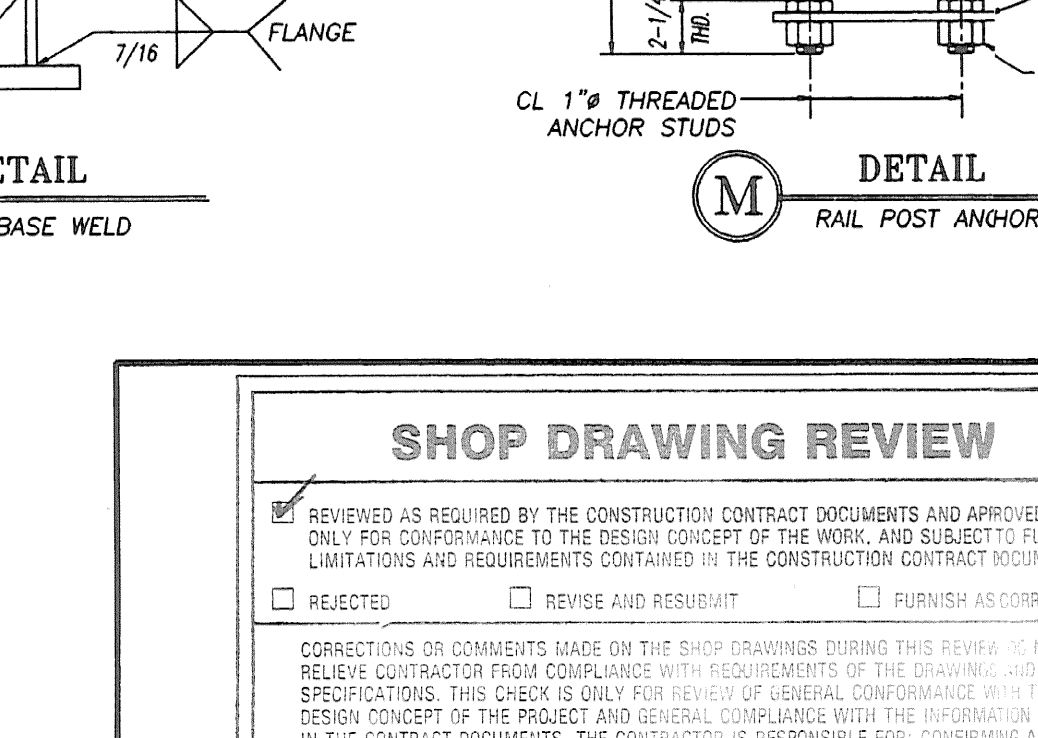
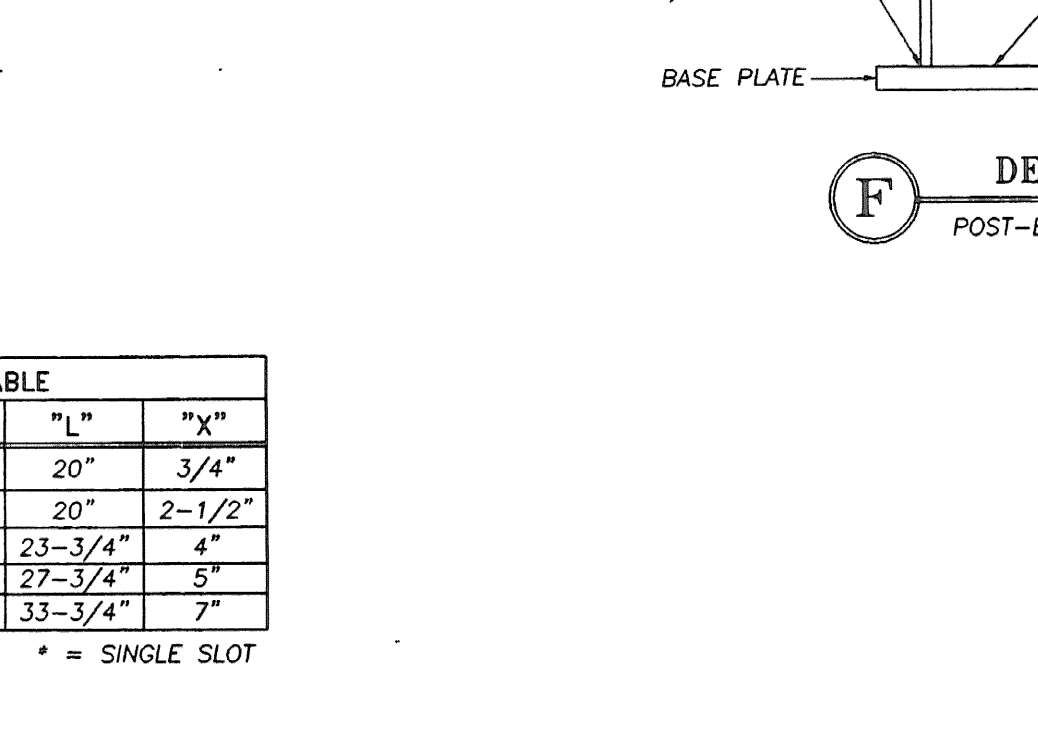
Washers shall comply with ASTM F436

1/8" pad shall comply with standard specification subsection 731.01 or 731.02 of Vermont Standard Specifications.



SPICE & EXPANSION JOINT TABLE					
"T"	"A"	"B"	"C"	"L"	"X"
SPICE	4"	2"	--	20"	3/4"
≤ 4"	4"	2"	2-1/2"	20"	2-1/2"
> 4" ≤ 6-1/2"	5-1/2"	2-3/8"	3-1/2"	23-3/4"	4"
> 6-1/2" ≤ 9"	6-1/2"	3-3/8"	9"	27-3/4"	5"
> 9" ≤ 13"	8-1/2"	4-3/8"	11"	33-3/4"	7"

"T" = TOTAL REQUIRED MOVEMENT
"X" = SINGLE SLOT



SHOP DRAWING REVIEW

REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

REJECTED REVISE AND RESUBMIT FURNISH AS CORRECTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW WILL NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS, SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION, COORDINATING HIS WORK WITH THAT OF ALL OTHER TRADES, AND PERFORMING HIS WORK IN A SAFE AND SATISFACTORY MANNER.

VHB Vanessa Hengen Bruntlin, Inc.
Engineers, Planners, and Surveyors
Six Bedford Farms, Kilton Rd.,
Bedford, NH 03110 603.844.0888

Job Number: 509339
Reviewed By: A-SR
Date: 1-19-00

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 525.34 - BRIDGE RAILING - NETC 4 RAIL

CITY OF SOUTH BURLINGTON
US ROUTE 20VER I-89 @ EXIT 14
IM DECK(36) BRIDGE #68

GENERAL CONTRACTOR
SUB CONTRACTOR F.R. LAFAYETTE, INC.

DRAWN P. VUKAS
CHECKED Paul R.
DATE 07-31-00
SCALE NONE
HSC REFERENCE NO. 1213
SIZE D REVISION 1
SHEET NO. 2 of 2

REVISIONS		
No.	Remarks	Date
0	Initial submittal	01/19/00
1	MISC CORRECTIONS, FIELD VERIFICATION	01/16/00