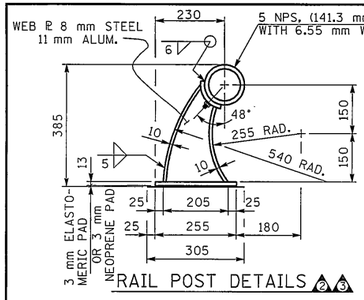
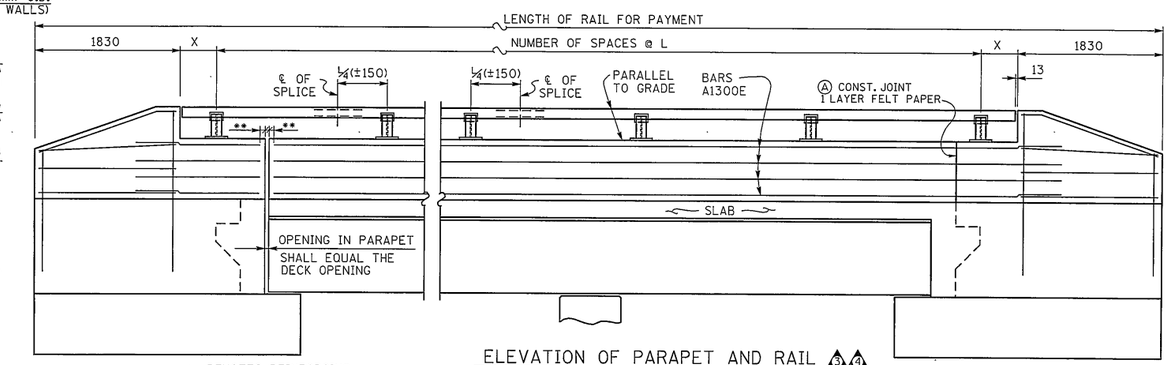
STDM111.DGN



RAIL POST DETAILS 2 3

CAST ALUMINUM POST CONFORMING TO THE DIMENSION SHOWN ABOVE FOR FABRICATED ALUMINUM MAY BE USED SUBJECT TO THE APPROVAL OF THE ENGINEER.

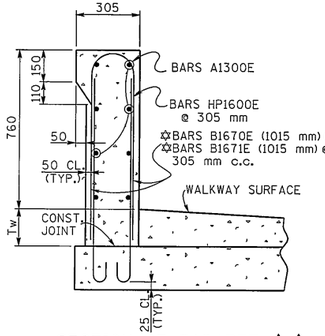


** DENOTES: REINFORCING STEEL TO CLEAR 75 mm FROM CONSTRUCTION JOINT.

ELEVATION OF PARAPET AND RAIL 3 4

(TYPICAL EXTERIOR VIEW OF CONTINOUS BRIDGE)

NOTE: X: 230 mm MIN TO 455 mm MAX.
L: MAX = 3.20 m

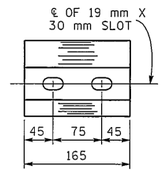


SECTION OF PARAPET 4 5

PROJECT NO.	YEAR	SHEET NO.
	1996	

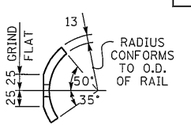
REVISIONS

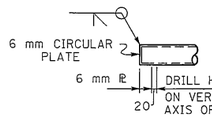
	NO.	DATE	BY	BRIEF DESCRIPTION
M/R	1	6-10-96	BRB	NEW METRIC STANDARD
M/R	2	4-28-97	MAH	REVISED RAIL SIZE ℄ NOTE
M/R	3	5-21-99	MAH	ADDED V-GROOVE NOTE #8 ℄ DELETED CASE NO.2 RAILING DETAILS ℄ REVISED RAIL POST DETAILS
M/R	4	7-31-00	CMH	REVISED NOTE #8, JOINT LOCATIONS, WINGPOST ℄ PARAPET REINFORCING, WATERSTOP DETAIL ℄ ADDED JOINT DETAIL, SLOPE BREAK, NOTE A ℄ #9
M/R	5	1-5-01	CMH	REVISED SECTION OF PARAPET ℄ DELETED NOTE #9 ℄ WATERSTOP ℄ ADDED NOTE UNDER QUANTITY BLOCK
M/R	6	8-13-02	CMH	REVISED SECTION OF PARAPET ℄ BARS HP500E ℄ NOTES ℄ QUANTITIES



BENT PLATE DETAIL

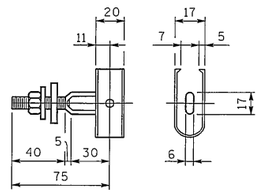
(TYPICAL AT EACH POST)





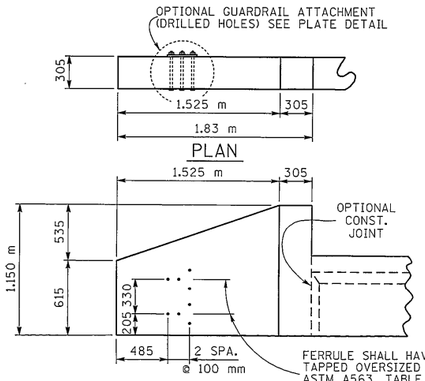
RAIL CAP DETAILS

(TYP. @ RAIL END)



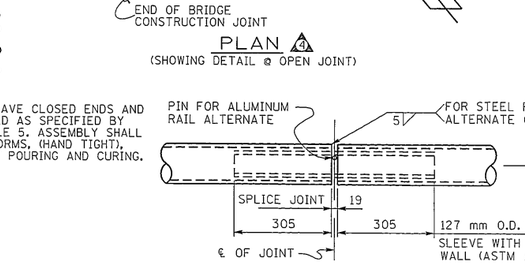
TOGGLE BOLT ASSEMBLY

NOTE: ALTERNATE DETAILS MAY BE SUBMITTED TO THE BRIDGE ENGINEER FOR APPROVAL. FASTENERS CONFORMING TO ASTM B211M SHALL HAVE AN ANODIC COATING OF 0.005 mm MINIMUM THICKNESS WITH DICHROMATE OR BOILING WATER SEAL.



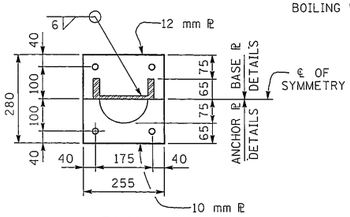
FERRULE SHALL HAVE CLOSED ENDS AND TAPPED OVERSIZED AS SPECIFIED BY ASTM A563, TABLE 5. ASSEMBLY SHALL BE BOLTED TO FORMS, (HAND TIGHT), DURING CONCRETE POURING AND CURING.

ELEVATION



PLAN 4

(SHOWING DETAIL @ OPEN JOINT)



PLAN

(SHOWING BASE ℞ ℄ ANCHOR ℞)

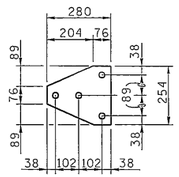
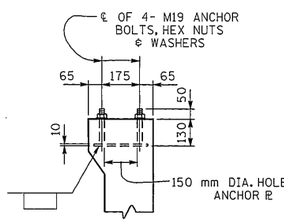


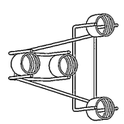
PLATE DETAIL

13mm ASTM A36M GALVANIZED PLATE WITH M22 ø HEX HEAD GALVANIZED BOLTS (A307) HOT DIP ZINC COATING ASTM A153



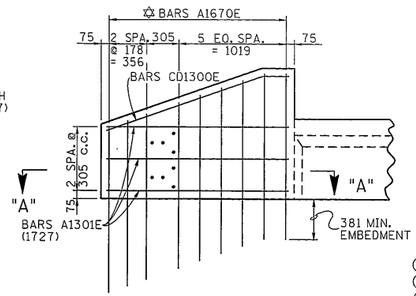
ANCHORAGE DETAIL

(SHOWING PART SECTION AT PARAPET)

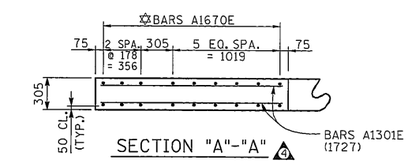


INSERT ASSEMBLY

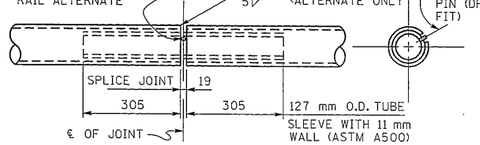
CAST IN PLACE THREADED INSERT WITH M22 x 51 HEX HEAD GALVANIZED BOLTS (A307) HOT DIP ZINC COATING ASTM A153



ELEVATION 4

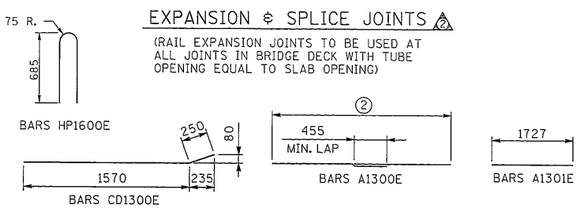


SECTION "A"-"A" 4



EXPANSION ℄ SPLICE JOINTS 2

(RAIL EXPANSION JOINTS TO BE USED AT ALL JOINTS IN BRIDGE DECK WITH TUBE OPENING EQUAL TO SLAB OPENING)



BAR DETAILS 6 8 ① ③

① -BAR DIMENSIONS ARE OUTSIDE TO OUTSIDE. THE FIRST TWO DIGITS OF NUMBER INDICATES SIZE.
② -THESE BARS SHALL BE FULL LENGTH OF PARAPET AND ARE TO EXTEND 610 mm INTO WINGPOST.
③ -ALL REINFORCING STEEL TO BE ASTM A615M GRADE 400 EPOXY COATED.

WINGPOST QUANTITIES * (EACH)	
CLASS "A" CONCRETE m^3	EPOXY REINF STEEL kg
.57	13.9

PARAPET QUANTITIES * (PER METER)	
CLASS "A" CONCRETE m^3	EPOXY REINF STEEL kg
0.20	15.8

4 6 8 ✡ BARS A1670E AND BARS B1670E TO BE INCLUDED IN EPOXY COATED REINFORCING QUANTITIES AND BILL OF STEEL FOR WINGWALLS.
✡ BARS B1671E TO BE INCLUDED IN EPOXY COATED REINFORCING QUANTITIES AND BILL OF STEEL FOR SUPERSTRUCTURE.
5 6 8 * NOTE: QUANTITIES DO NOT INCLUDE PARAPET OR WINGPOST CONCRETE WITHIN DEPTH Tw SHOWN IN PARAPET SECTION ABOVE.

GENERAL NOTES

4 A NOTE: CONTRACTOR MAY POUR THE PARAPET WITHOUT FELT PAPER PROVIDED HE FORMS A 13 mm V-GROOVE ALONG THE TRAFFIC FACE AND TOP OF PARAPET DURING CASTING OF CONCRETE OR SOON AFTER SLIP-FORMING.

DESIGN: AASHTO SPECIFICATIONS CURRENT EDITION WITH ADDENDA.

5 MATERIAL: TUBING AND RAIL POSTS MAY BE EITHER ALUMINUM OR STEEL.

FOR ALUMINUM ALTERNATE:
RAIL AND SPLICE SLEEVE TO BE ALLOY 6061-T6 OR 6063-T6, ASTM B429
FABRICATED POSTS - ALLOY 6061-T6, ASTM B209M
CAST ALUMINUM POST - ALLOY A444.0-T4
RAIL FASTENERS - ALLOY 2024-T4 FOR BOLTS AND ALLOY 6262-T9 FOR HEX NUTS, ASTM B211M

2 FOR STEEL ALTERNATE:
RAILING MEMBER - ASTM A53 GRADE A OR B STEEL PIPE
SPLICE SLEEVE - ASTM A500 GRADE A OR B CARBON STEEL TUBING
FABRICATED POST - ASTM A709M GRADE 250
RAIL FASTENERS - AASHTO M-164M

MISCELLANEOUS RAIL ITEMS.
WATERSTOPS - SEE TENNESSEE HIGHWAY DEPARTMENT SPECIFICATIONS,
ANCHOR PLATES - ASTM A709 GRADE 250. ANCHOR M-164M,
INSERT ASSEMBLIES - FOR LOCATION SEE ROADWAY PLANS,
ELASTOMERIC PADS OR NEOPRENE PADS - SEE TENNESSEE HIGHWAY DEPARTMENT SPECIFICATIONS.

5 RAIL ITEMS: BASIS OF PAYMENT TO BE PER METER. THE ITEM INCLUDES ALL COMPONENTS OF THE RAIL, ITS ANCHORAGE, THE REINFORCED CONCRETE PARAPET, ENDPOST AND MISCELLANEOUS RAIL ITEMS.

FABRICATION AND ERECTION:
1. THE RAILING MEMBER SHALL BE CONTINUOUS FROM ENDPOST TO ENDPOST WITH EACH RAIL SEGMENT ATTACHED TO A MINIMUM OF THREE POSTS.
2. ALIGNMENT AND PROFILE OF RAIL SHALL CONFORM TO PLANS DETAILS. RAIL SHALL BE PARALLEL TO AND POST NORMAL TO ROADWAY GRADE UNLESS OTHERWISE NOTED ON PLANS.
3. OPEN JOINTS OR CONSTRUCTION JOINTS WILL BE REQUIRED AS SHOWN ON THIS SHEET OR AS MODIFIED ON CONTRACT DRAWINGS.
4. NO CONCRETE FOR THE PARAPETS SHALL BE CAST ON ANY STRUCTURE UNTIL THE FLASHWORK HAS BEEN STRUCK.
5. ALL METAL MATERIALS NOT SPECIFIED TO BE ALUMINUM ALLOY SHALL BE GALVANIZED TO THE APPLICABLE ASTM REQUIREMENTS, SEE NOTE 7 BELOW.
6. ALL WELDING SHALL CONFORM TO THE REQUIREMENTS OF EITHER THE "SPECIAL PROVISION FOR WELDED STRUCTURES" FOR STEEL RAIL ALTERNATE, OR "AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES, AND TRAFFIC SIGNALS" FOR ALUMINUM RAIL ALTERNATE. AFTER WELDING, ALL EXPOSED JOINTS SHALL BE FINISHED BY GRINDING TO GIVE A NEAT APPEARANCE.
7. IF THE STEEL RAIL ALTERNATE IS SELECTED, ALL COMPONENTS SHALL BE HOT DIP GALVANIZED:
A) RAILING MEMBERS AND POSTS SHALL BE GALVANIZED TO ASTM REQUIREMENTS A123. ALL MISCELLANEOUS STEEL ITEMS SHALL BE GALVANIZED TO ASTM REQUIREMENTS A153.
B) ALL FABRICATION SHALL BE COMPLETE AND READY FOR ASSEMBLY BEFORE GALVANIZING EXCEPT THAT NUTS FOR ALL FASTENERS ARE TO BE RETAPPED AFTER GALVANIZING.
C) GALVANIZED MEMBERS SHALL BE FREE FROM DROSS, FLUX AND ROUGH-COATING CAUSED BY LOW VAT TEMPERATURES.

4 6 8. A 13 mm DEEP V-GROOVE ALONG THE TRAFFIC FACE AND TOP OF PARAPET SHALL BE FORMED DURING CASTING OF CONCRETE OR SOON AFTER SLIP-FORMING @ 3050 mm CENTER-TO-CENTER.

ALL UNITS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.

M/R MINOR REVISION - FHWA APPROVAL NOT REQUIRED

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

BRIDGE RAILING CONCRETE PARAPET WITH STRUCTURAL TUBING 1996

CORRECT Edward P. Wasserman
ENGINEER OF STRUCTURES

DIVISION OF METRIC CONVERSION

STDM-11-1

DESIGNED BY		DATE
DRAWN BY	T. LEWIS	DATE 4-88
SUPERVISED BY	J. FIELDS	DATE 4-88
CHECKED BY		DATE