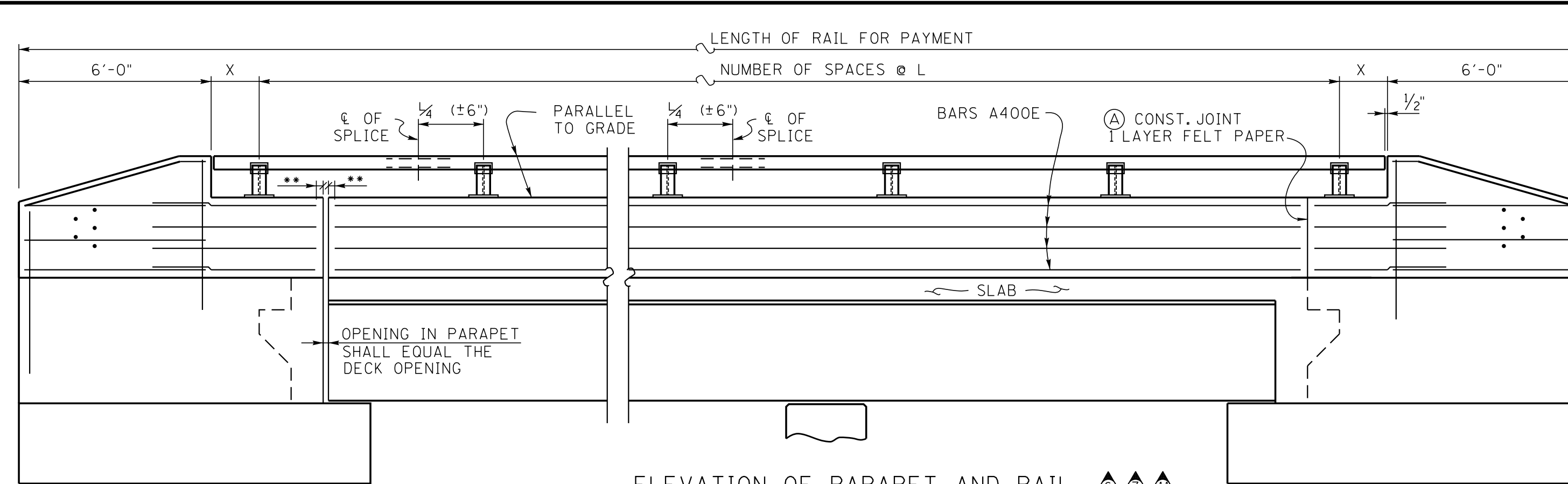
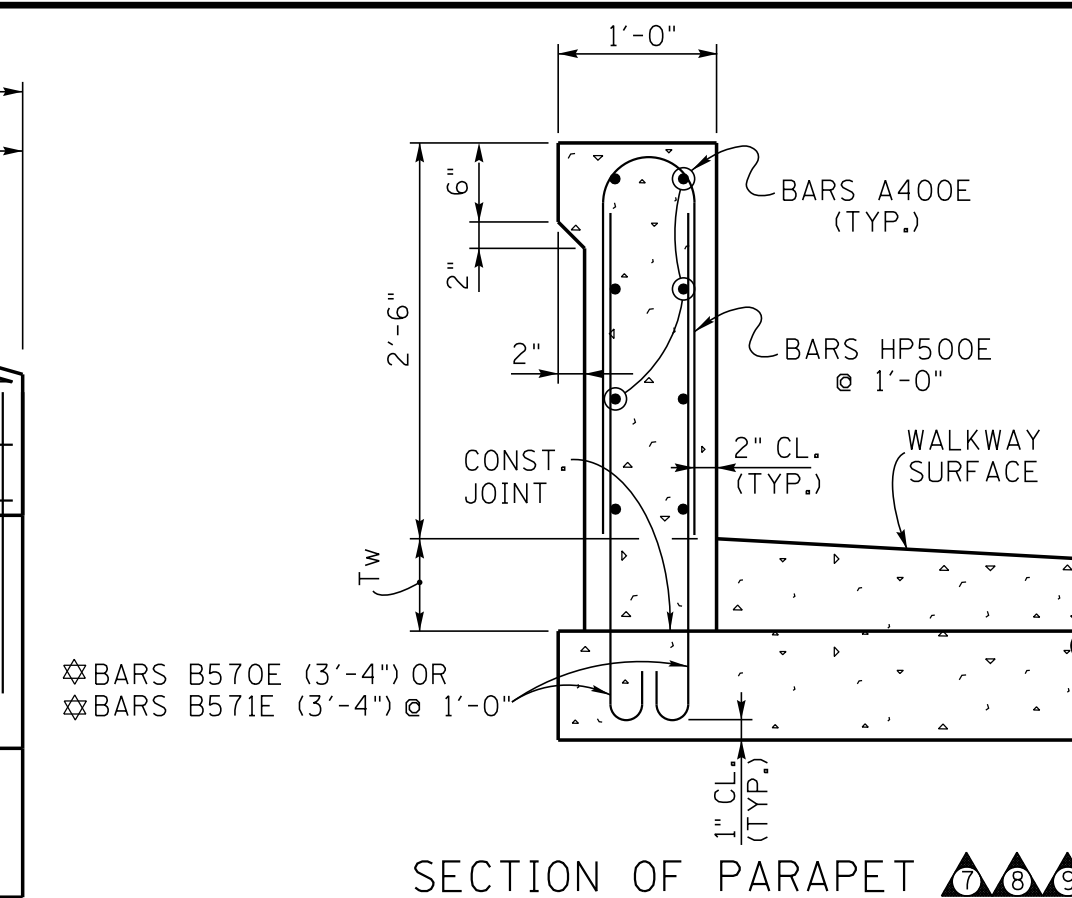


**RAIL POST DETAILS**  
 CAST ALUMINUM POST CONFORMING TO THE DIMENSION SHOWN ABOVE FOR FABRICATED ALUMINUM MAY BE USED SUBJECT TO THE APPROVAL OF THE ENGINEER.



**ELEVATION OF PARAPET AND RAIL**  
 (TYPICAL EXTERIOR VIEW OF CONTINUOUS BRIDGE)

NOTE: X: 9" MIN TO 1'-6" MAX.  
 L: MAX = 10'-6"



**SECTION OF PARAPET**

PROJECT NO.	YEAR	SHEET NO.	
	1988		
REVISIONS			
NO.	DATE	BY	BRIEF DESCRIPTION
1	3-30-92	RMD	CHANGED LENGTH OF BOLTS
2	10-26-92	RMD	CHANGED WINGPOST DETAILS & NOTES
3	3-28-94	MAH	REVISED NOTE
4	12-18-95	BRB	REVISED SPACING OF WINGPOST REINF. AND LENGTH OF BOLT
5	4-28-97	MAH	REVISED RAIL SIZE & NOTE
6	5-21-99	MAH	ADDED V-GROOVE NOTE #8 & DELETED CASE NO. 2 RAILING DETAILS & REVISED RAIL POST DETAILS
7	7-31-00	CMH	REVISED NOTE #8, JOINT LOCATIONS, WINGPOST & PARAPET REINFORCING, WATERSTOP DETAIL & ADDED JOINT DETAIL, SLOPE BREAK, NOTE (A) & #9
8	1-5-01	CMH	REVISED SECTION OF PARAPET & DELETED NOTE #9 & WATERSTOP & ADDED NOTE UNDER QUANTITY BLOCK
9	8-13-02	CMH	REVISED SECTION OF PARAPET & BARS HP500E & NOTES & QUANTITIES
10	5-1-14	JHW	REVISED DIMENSIONS & QUANTITIES
11	4-15-20	JHW	REVISED GUARDRAIL ATTACHMENT AND REMOVED DETAILS AND CHANGED BARS A400E MIN. LAP LENGTH

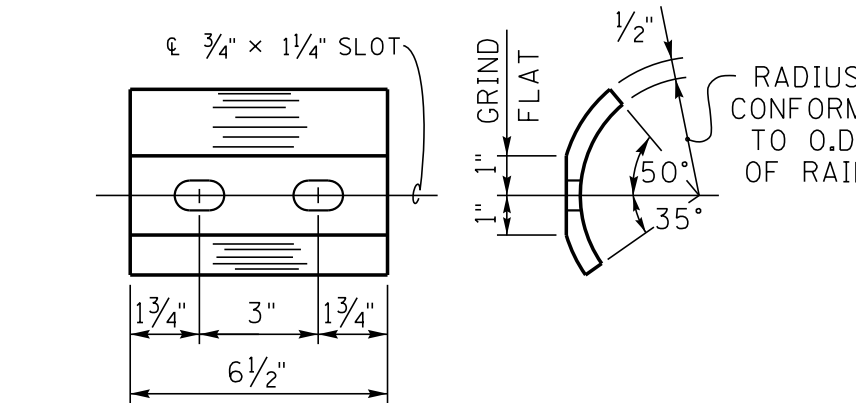
**GENERAL NOTES**

- ① ④ NOTE: CONTRACTOR MAY POUR THE PARAPET WITHOUT FELT PAPER PROVIDED HE FORMS A 1/2 INCH 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 B209 CAST ALUMINUM POST - ALLOY A444.0-T4 RAIL FASTENERS - ALLOY 2024-T4 FOR BOLTS AND ALLOY 6262-T9 FOR HEX NUTS, ASTM B211 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 A709 GRADE 36 RAIL FASTENERS - ASTM A307
- ⑥ MISCELLANEOUS RAIL ITEMS. WATERSTOPS - SEE TENNESSEE HIGHWAY DEPARTMENT SPECIFICATIONS. ANCHOR PLATES - ASTM A709 GRADE 36. ANCHOR A307. INSERT ASSEMBLIES - FOR LOCATION SEE ROADWAY PLANS. ELASTOMERIC PADS OR NEOPRENE PADS - SEE TENNESSEE HIGHWAY DEPARTMENT SPECIFICATIONS.
- ⑦ RAIL ITEMS: BASIS OF PAYMENT TO BE PER LINEAR FOOT. THE ITEM INCLUDES ALL COMPONENTS OF THE RAIL, ITS ANCHORAGE, THE REINFORCED CONCRETE PARAPET, ENDPST AND MISCELLANEOUS RAIL ITEMS. FABRICATION AND ERECTION: 1. THE RAILING MEMBER SHALL BE CONTINUOUS FROM ENDPST TO ENDPST 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 FLASEWORK 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. 8. A 1/2 INCH DEEP V-GROOVE ALONG THE TRAFFIC FACE AND TOP OF PARAPET SHALL BE FORMED DURING CASTING OF CONCRETE OR SOON AFTER SLIP-FORMING @ 10'-0" CENTER-TO-CENTER.

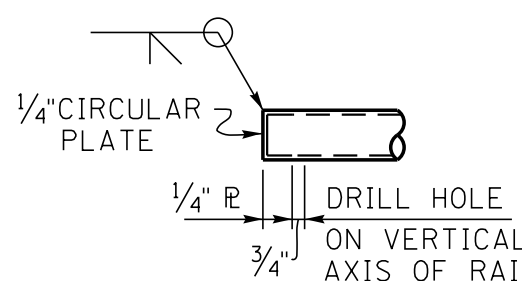
MINOR REVISION - FHWA APPROVAL NOT REQUIRED

STATE OF TENNESSEE  
 DEPARTMENT OF TRANSPORTATION  
 BRIDGE RAILING  
 CONCRETE PARAPET WITH  
 STRUCTURAL TUBING  
 1988

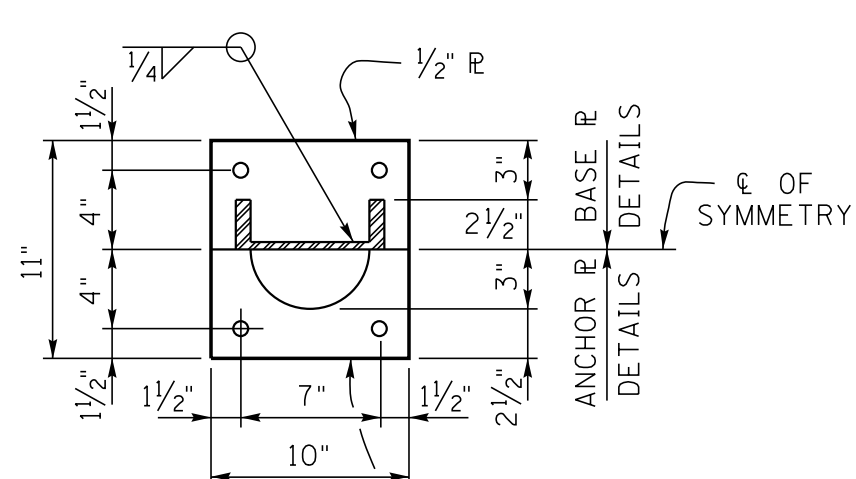
CORRECT *Edward P. Wasserman*  
 ENGINEER OF STRUCTURES



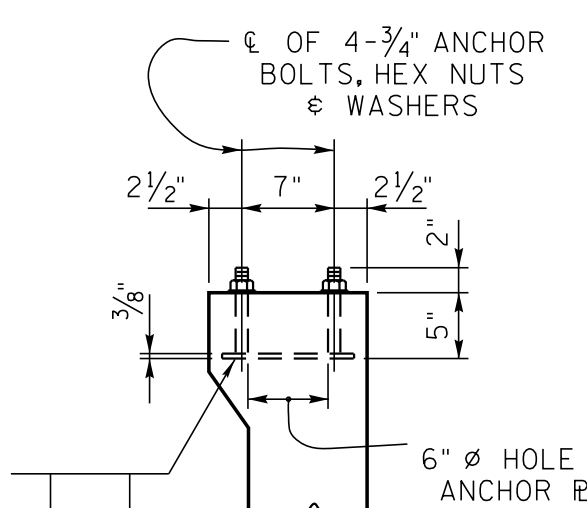
**BENT PLATE DETAIL**  
 (TYPICAL AT EACH POST)



**RAIL CAP DETAILS**  
 (TYP. @ RAIL END)

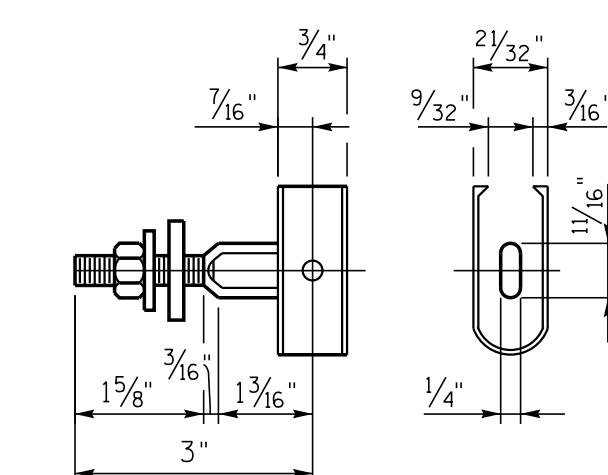


**ANCHORAGE DETAIL**  
 (SHOWING PART SECTION AT PARAPET)



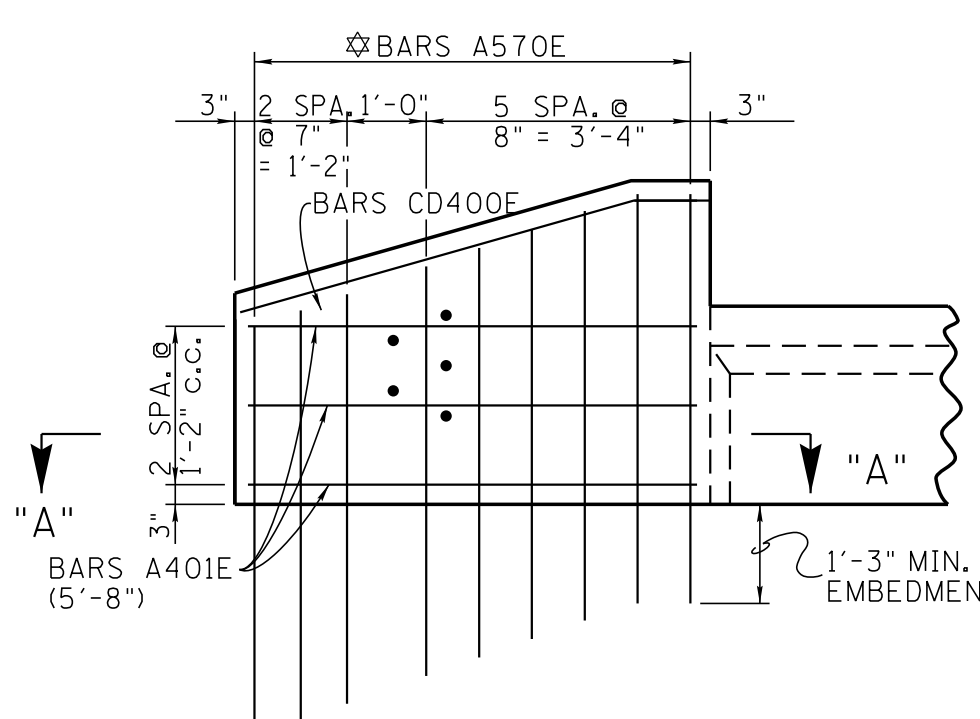
**ANCHORAGE DETAIL**  
 (SHOWING PART SECTION AT PARAPET)

•• DENOTES: REINFORCING STEEL TO CLEAR 3" FROM CONSTRUCTION JOINT OR EXPANSION JOINT.

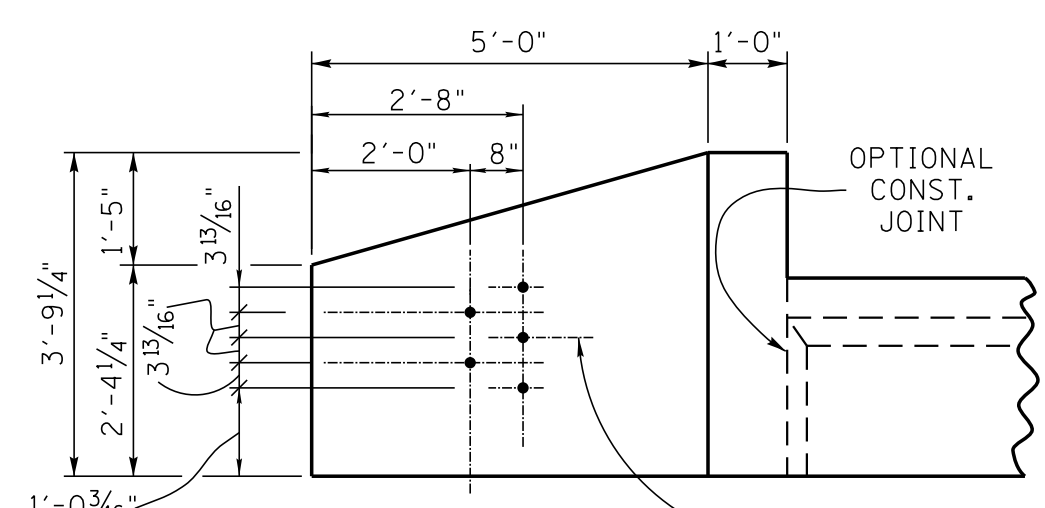


**TOGGLE BOLT ASSEMBLY**

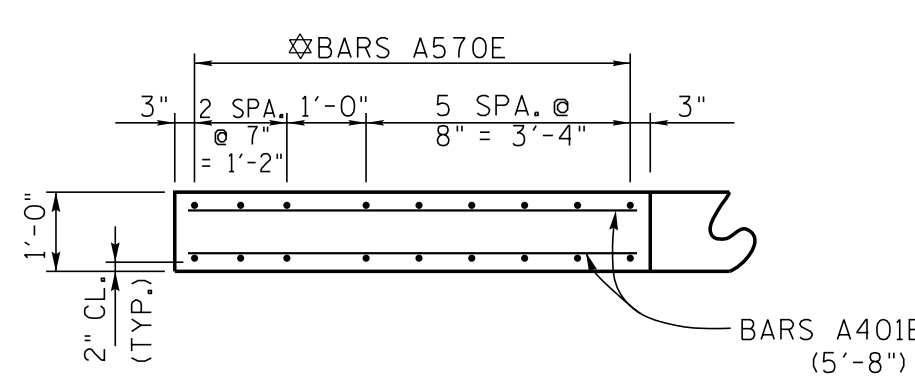
NOTE: ALTERNATE DETAILS MAY BE SUBMITTED TO THE BRIDGE ENGINEER FOR APPROVAL. FASTENERS CONFORMING TO ASTM B211 SHALL HAVE AN ANODIC COATING OF .0002 INCH MINIMUM THICKNESS WITH DICHROMATE OR BOILING WATER SEAL.



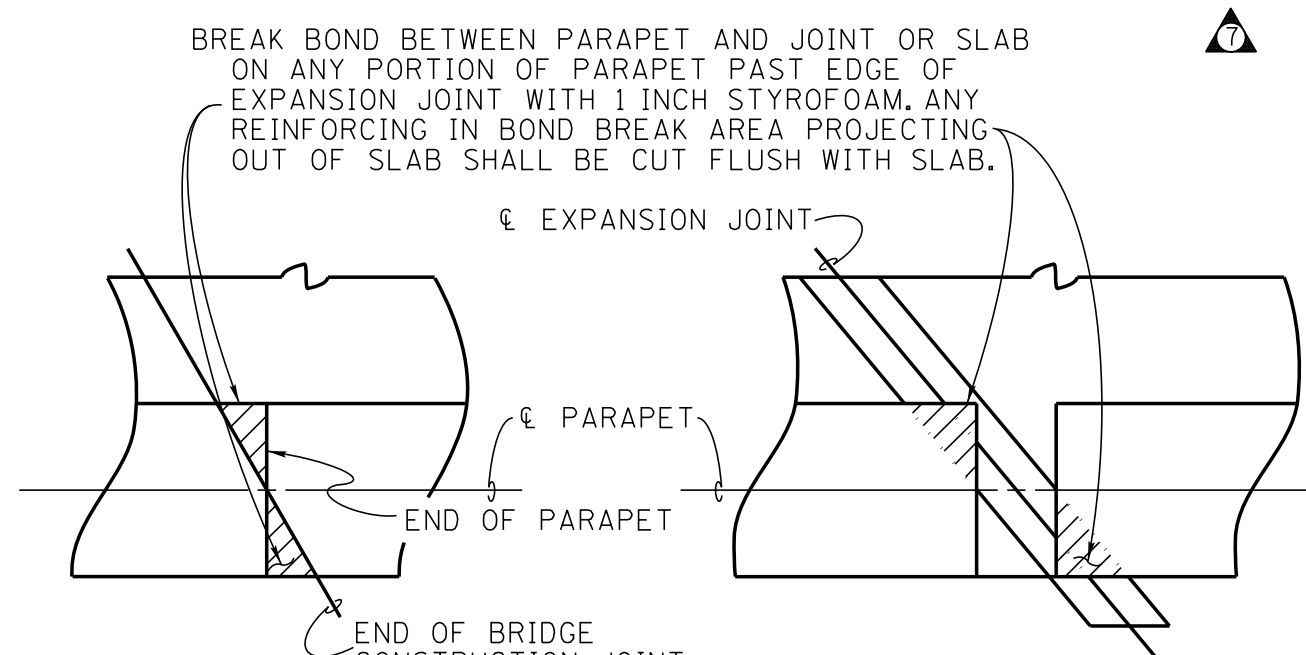
**ELEVATION**



**ELEVATION**

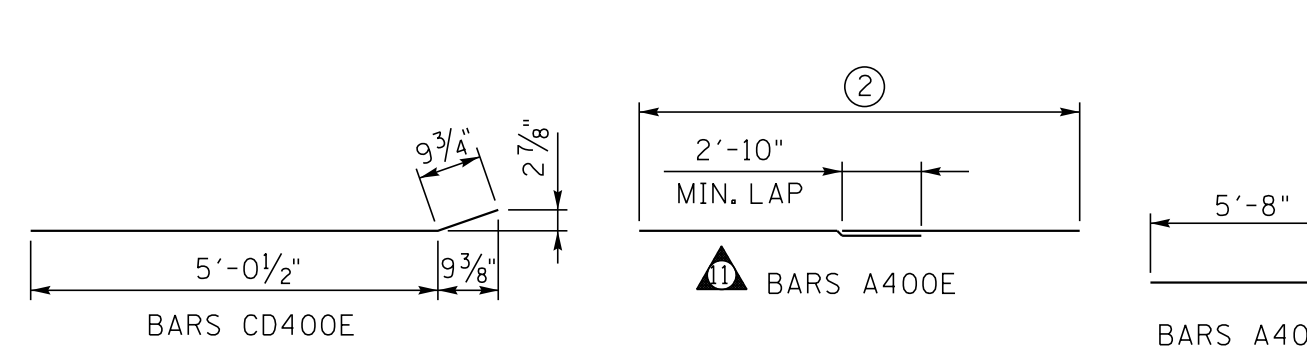


**SECTION "A-A"**



**EXPANSION & SPLICE JOINTS**

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



**BAR DETAILS**

- ① -BAR DIMENSIONS ARE OUTSIDE TO OUTSIDE. FIRST DIGIT OF NUMBER INDICATES SIZE.
- ② -THESE BARS SHALL BE FULL LENGTH OF PARAPET AND ARE TO EXTEND 2'-0" INTO WINGPOST.
- ③ -ALL REINFORCING STEEL TO BE ASTM A615 GRADE 60 EPOXY COATED.

WINGPOST QUANTITIES * (EACH)	
CLASS "A" CONCRETE C.Y.	EPOXY REINF STEEL LB.
.78	30.6

PARAPET QUANTITIES * (PER FOOT)	
CLASS "A" CONCRETE C.Y.	EPOXY REINF STEEL LB.
.081	10.3

- ④ \* BARS A570E AND BARS B570E TO BE INCLUDED IN EPOXY COATED REINFORCING QUANTITIES AND BILL OF STEEL FOR WINGWALLS.
- ⑤ \* BARS B571E TO BE INCLUDED IN EPOXY COATED REINFORCING QUANTITIES AND BILL OF STEEL FOR SUPERSTRUCTURE.
- NOTE: BARS LISTED IN ABOVE NOTES ARE NOT INCLUDED IN WINGPOST QUANTITIES OR PARAPET QUANTITIES SHOWN THIS SHEET.
- ⑥ \* NOTE: QUANTITIES DO NOT INCLUDE PARAPET OR WINGPOST CONCRETE WITHIN DEPTH TW SHOWN IN PARAPET SECTION ABOVE.

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

CAST IN PLACE THREADED STEEL INSERT WITH 7/8"x2" HEX HEAD GALVANIZED BOLTS (A307) HOT DIP ZINC COATING ASTM A153