

SECTION S-S AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

**BARRIER RAIL DETAILS**

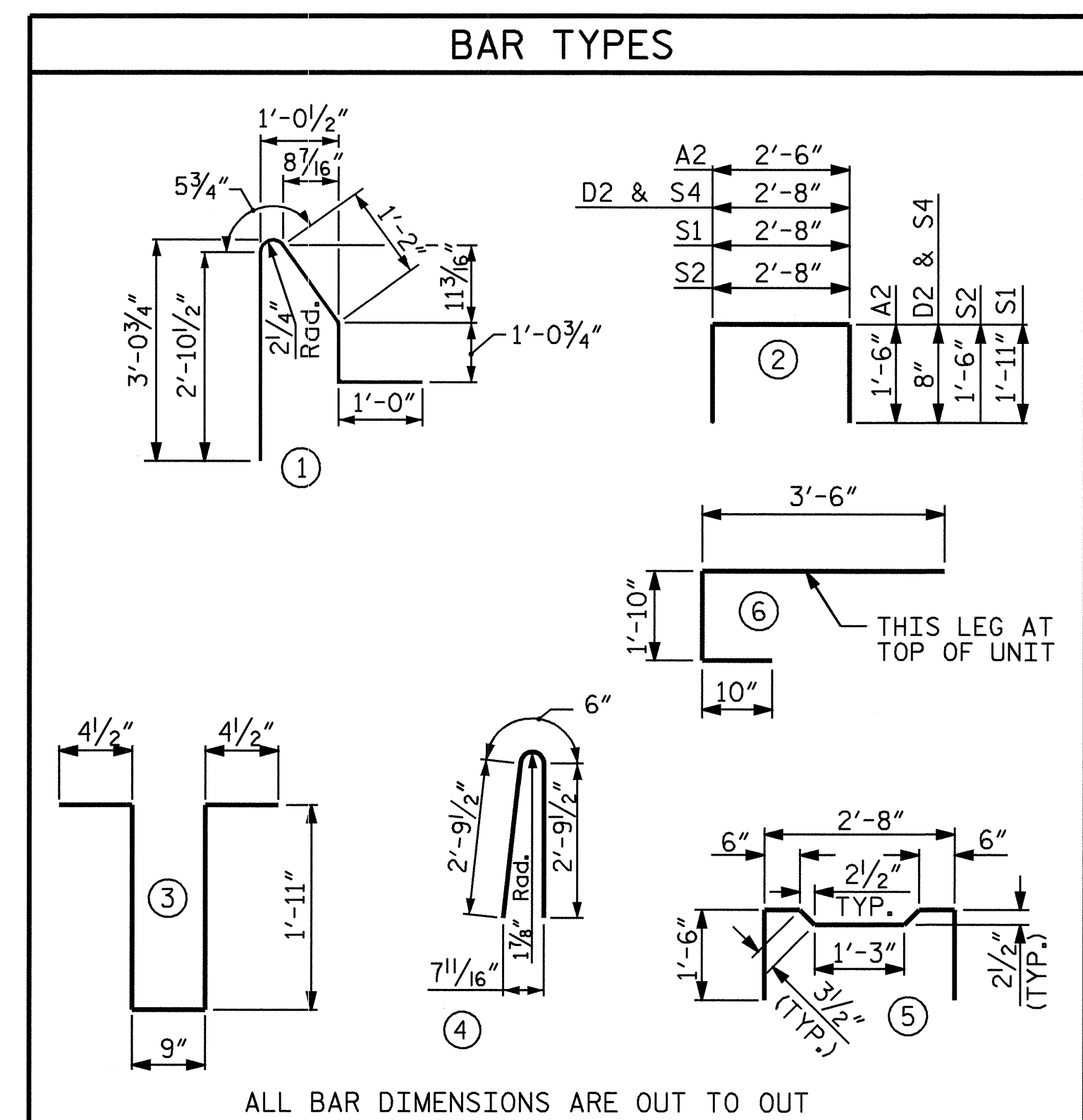
GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.6" Ø L.R.
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	44,000

DEAD LOAD DEFLECTION AND CAMBER	
SPAN A	
3'-0" x 2'-3" 0.6" Ø L.R. STRAND	
CAMBER (GIRDER ALONE IN PLACE)	↑ 3 1/16"
DEFLECTION DUE TO ** SUPERIMPOSED DEAD LOAD	↓ 1"
FINAL CAMBER	↑ 2 1/16"

\*\* INCLUDES FUTURE WEARING SURFACE

GROOVING BRIDGE FLOOR	
BRIDGE DECK	1955 SQ. FT.
APPROACH SLABS	1392 SQ. FT.
TOTAL	3347 SQ. FT.

CONCRETE WEARING SURFACE	2170 SQ. FT.
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BILL OF MATERIAL FOR ONE BOX BEAM SECTION							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
A1	10	#5	6	6'-2"	64	6'-2"	64
A2	6	#4	2	5'-6"	22	5'-6"	22
B1	12	#5	STR	37'-4"	467	37'-4"	467
D1	12	#4	3	5'-4"	43	5'-4"	43
D2	16	#4	2	4'-0"	43	4'-0"	43
D3	8	#4	STR	2'-8"	14	2'-8"	14
*R1	109	#4	1	6'-7"	479		
S1	60	#4	2	6'-6"	261	6'-6"	261
S2	60	#4	2	5'-8"	227	5'-8"	227
S3	43	#4	5	5'-10"	168	5'-10"	168
S4	103	#4	2	4'-0"	275	4'-0"	275
REINFORCING STEEL	lbs.				1584		1584
*EPOXY COATED REINFORCING STEEL	lbs.				479		
6000 psi. CONCRETE	CU. YDS.				11.6		11.4
0.6" Ø L.R. STRANDS	No.				22		

**NOTES**

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF SUPERSTRUCTURE.

RECESSES FOR TRANSVERSE STEEL BARS SHALL BE GROUTED AFTER THE TENSIONING OF THE STEEL BARS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT. THE 2 1/2" Ø DOWEL HOLES AT EXPANSION ENDS OF SLAB SECTIONS SHALL BE FILLED WITH JOINT SEALER MATERIAL TO 1/2" ABOVE THE TOP OF DOWELS AND THEN FILLED WITH GROUT.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. THE DOWEL BAR MATERIAL SHALL CONFORM TO ASTM A311 GRADE 1018.

WHEN BOX BEAMS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING BOX BEAMS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4800 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS. FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FOR ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

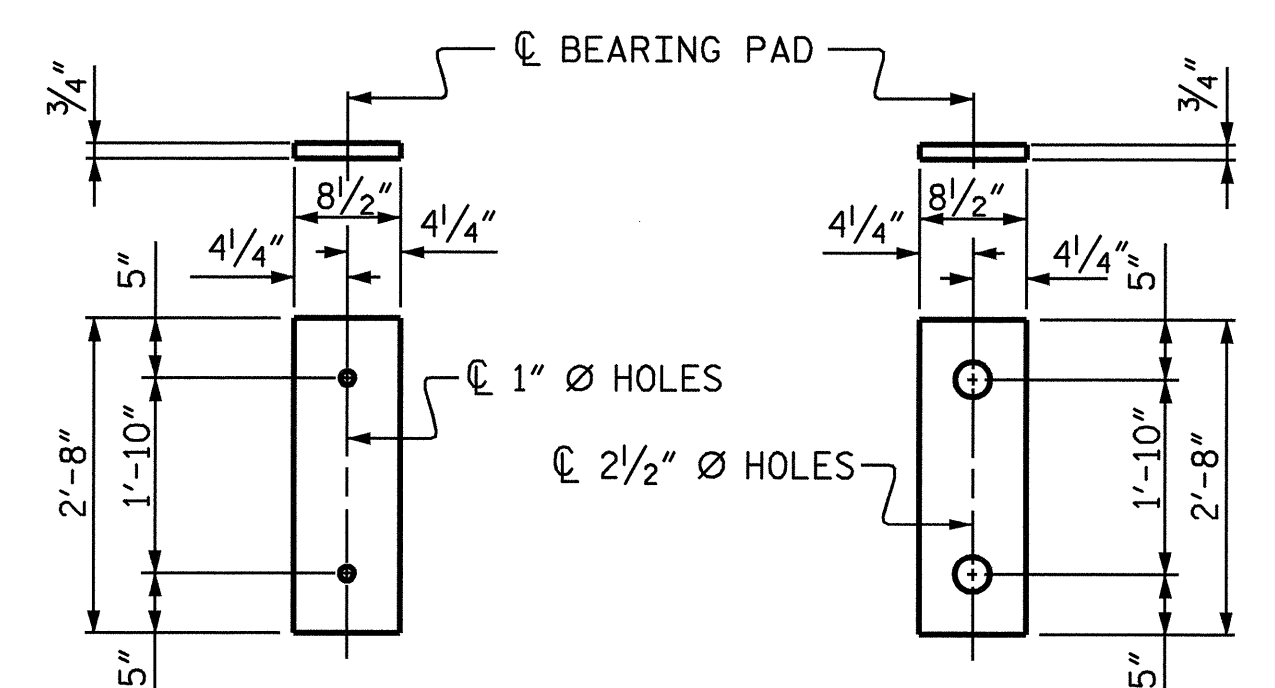
FOR EVAZOTE JOINT SEAL, SEE SPECIAL PROVISIONS.

PLACEMENT OF THE CONCRETE OVERLAY SHALL OCCUR AFTER CASTING THE CONCRETE RAIL.

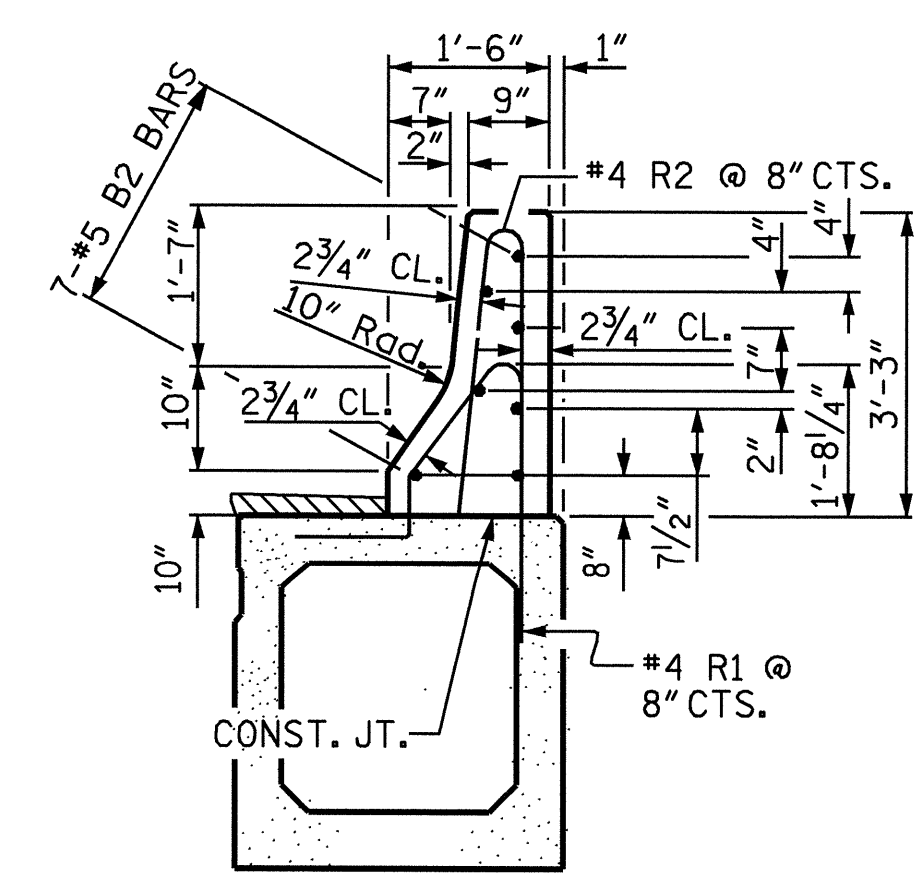
FOR BOX BEAMS, SEE SPECIAL PROVISIONS.

CONCRETE WEARING SURFACE SHALL NOT BE POURED UNTIL CONCRETE BARRIER RAIL HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSION STRENGTH OF 3000 psi.

BOX BEAMS REQUIRED			
UNIT TYPE	NUMBER	LENGTH	TOTAL LENGTH
INTERIOR	9	72'-9"	654'-9"
EXTERIOR	2	72'-9"	145'-6"
TOTAL NUMBER	11	72'-9"	800'-3"



**ELASTOMERIC BEARING DETAILS**



**SECTION THRU RAIL**

BILL OF MATERIAL FOR BARRIER RAIL					
BAR	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
*B2	42	#5	STR	23'-11"	1048
*R2	218	#4	4	6'-1"	886
*EPOXY COATED REINFORCING STEEL				LBS.	1934
CLASS AA CONCRETE				CU. YDS.	19.3
TOTAL LIN. FT. OF CONC. BARRIER RAIL					145.5

PROJECT NO. B-4180  
MACON COUNTY  
 STATION: 17+06.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

2'-3" x 3'-0" PRESTRESSED CONCRETE BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			18

DRAWN BY: J.B. WILSON DATE: 1/18/05  
 CHECKED BY: D.A. GLADDEN DATE: 2/9/05

