

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 PRESTRESSED CONCRETE BOX BEAMS.

RECESSES FOR TRANSVERSE POST-TENSIONED STEEL BAR SHALL BE GROUDED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK 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.

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 P.S.I. FOR SPANS A & C AND 5200 P.S.I. FOR SPAN B.

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 SEALS, SEE SPECIAL PROVISIONS.

THE 1 1/4" Ø 150 KSI POST-TENSIONING ASSEMBLY SHALL CONFORM TO ASTM 722.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE RAIL.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE BOX BEAMS, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

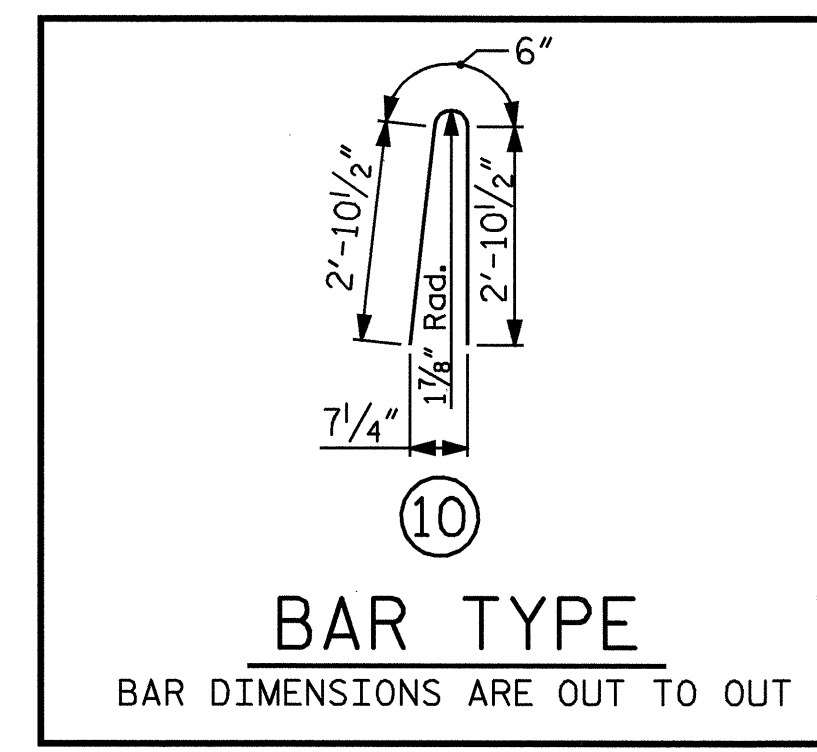
THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

THE COST OF THE #3 BARS CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

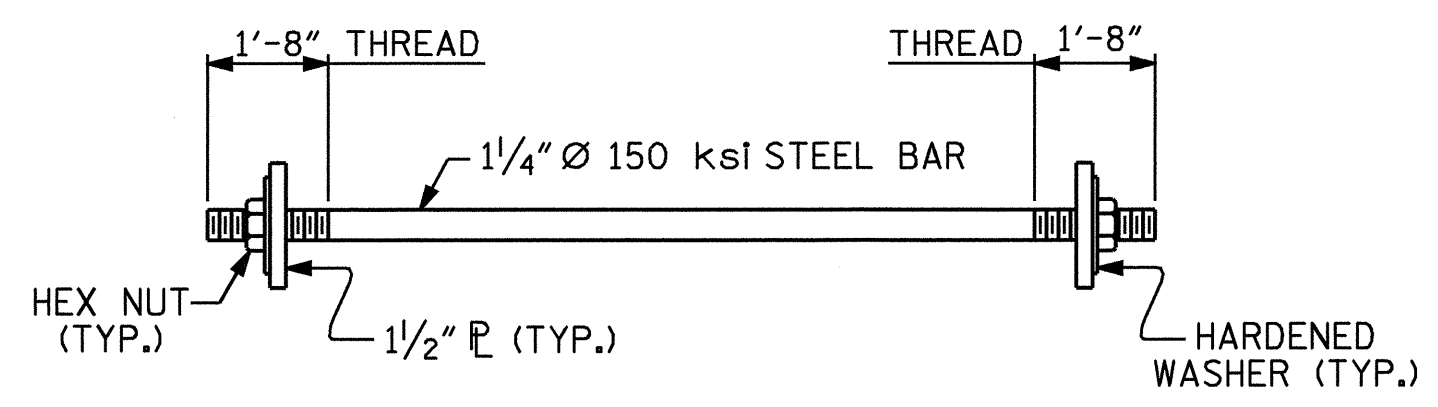
GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

CONCRETE WEARING SURFACE	REINFORCING STEEL (FOR WEARING SURFACE)
SQ. FT.	APPROX. LBS.
7,884	6618

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
SPAN A	13	78'-7 9/16"	1022'-2 5/16"
SPAN B	13	84'-10 1/4"	1103'-1 1/4"
SPAN C	13	53'-7 9/16"	697'-2 5/16"
TOTAL	39		2822'-5 7/8"

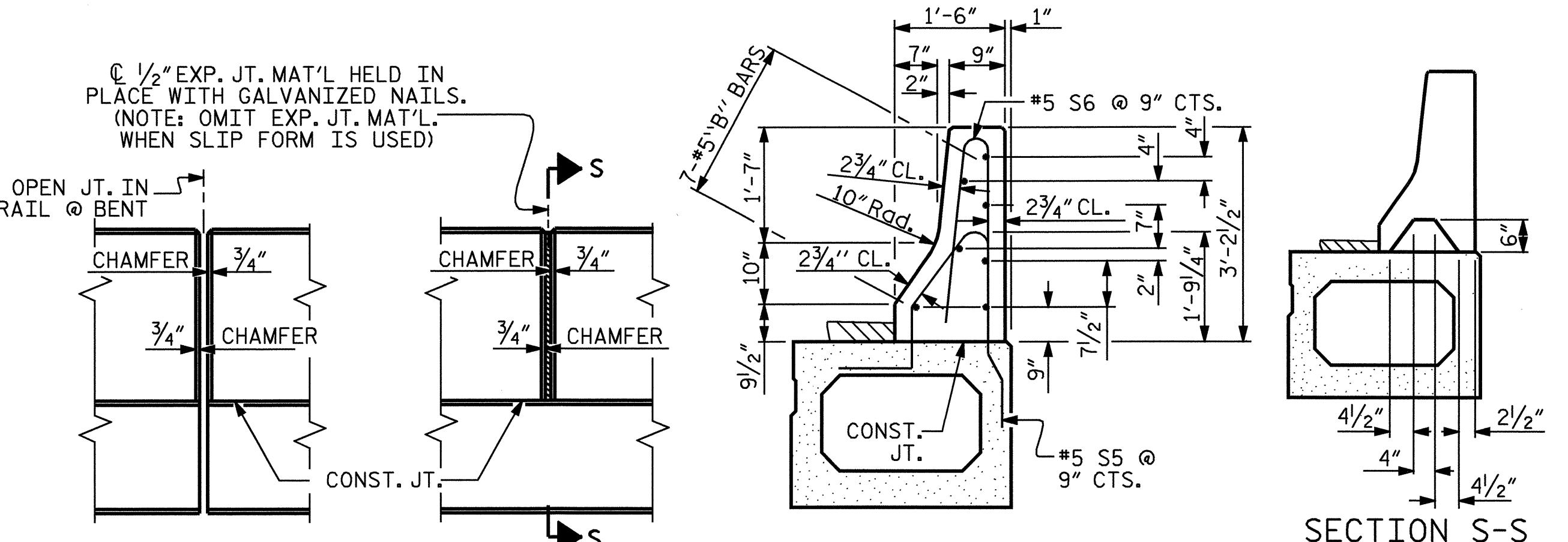


1 1/4" Ø 150 ksi POST-TENSIONED STEEL BAR		
NUMBER	LENGTH	TOTAL LENGTH
18	40'-0"	720'-0"
12	19'-0"	228'-0"
TOTAL		948'-0"



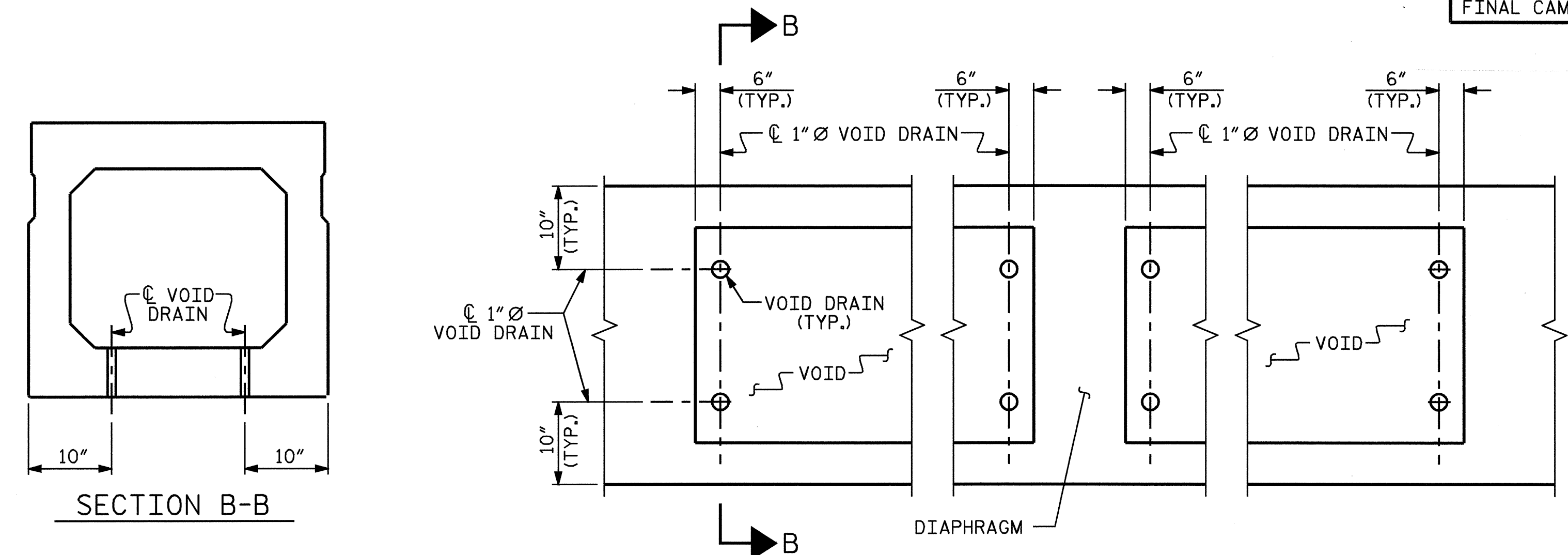
1 1/4" Ø POST-TENSIONING ASSEMBLY

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL								
BAR	BARS PER SPAN			TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	SPAN A	SPAN B	SPAN C					
*B2	56			112	#5	STR	15'-2"	1772
*B3	14			14	#5	STR	24'-7"	359
*B5		56		56	#5	STR	16'-6"	964
*B6		14		14	#5	STR	25'-7"	374
*S6	206	222	140	568	#5	10	6'-3"	3703
*EPOXY COATED REINFORCING STEEL							LBS.	7172
CLASS AA CONCRETE							CU.YDS.	56.6
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL								434.09



BARRIER RAIL DETAILS

DEAD LOAD DEFLECTION AND CAMBER			
	3'-0" x 2'-9"		
	0.6" Ø L.R. STRAND		
	SPAN "A"	SPAN "B"	SPAN "C"
CAMBER (BEAM ALONE IN PLACE)	3/4" ↑	4 1/4" ↑	3/4" ↑
DEFLECTION DUE TO CONCRETE WEARING SURFACE	1/2" ↓	1 1/16" ↓	1/8" ↓
FINAL CAMBER	2 3/4" ↑	3 3/16" ↑	5/8" ↑



VOID DRAIN DETAILS
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

GROOVING BRIDGE FLOORS	
APPROACH SLABS	693 SQ.FT.
BRIDGE DECK	7099 SQ.FT.
TOTAL	7792 SQ.FT.

CLASS AA CONCRETE SHALL BE USED IN THE CONCRETE WEARING SURFACE AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR, FOR CALCIUM NITRITE CORROSION INHIBITOR, SEE SPECIAL PROVISIONS.

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

PROJECT NO. B-3664
HENDERSON COUNTY
 STATION: 20+95.00-L-

SHEET 10 OF 10

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

MARCH 2005

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS 27



ASSEMBLED BY : V. X. NGUYEN DATE : 3-15-05
 CHECKED BY : D. HODGE DATE : 5-05
 DRAWN BY : TLA 3/05 ADDED
 CHECKED BY :