

STATE PROJECT NUMBER	FEDERAL PROJECT NUMBER	STATE DIST. NO.	COUNTY	SHEET NO.	TOTAL SHEETS

**DESIGN DATA FOR 17" DEPTH ADJACENT BOX BEAM**

SPAN LENGTH $\phi$ TO $\phi$ BEARING		20'-0"	22'-0"	24'-0"	26'-0"	28'-0"	30'-0"	32'-0"	34'-0"	36'-0"	38'-0"	40'-0"						
OVERALL LENGTH OF BEAM		21'-6"	23'-6"	25'-6"	27'-6"	29'-6"	31'-6"	33'-6"	35'-6"	37'-6"	39'-6"	41'-6"						
NO. OF 270 KSI, 1/2" $\phi$ LOW-RELAXATION STRANDS, AREA/STRAND = 0.167 SQ. IN.		10	10	10	10	12	12	14	14	16	16	16						
STRAND POSITION NUMBER	ROW 1	1,2,11,12	1,2,11,12	1,2,11,12	1,2,11,12	1,2,7,8,13,14	1,2,7,8,13,14	1,2,7,8,13,14	1,2,7,8,13,14	1,2,5,6,9,10,13,14	1,2,5,6,9,10,13,14	1,2,5,6,9,10,13,14						
	ROW 2	17,18,25,26	17,18,25,26	17,18,25,26	17,18,25,26	17,18,27,28	17,18,27,28	17,18,21,22,27,28	17,18,21,22,27,28	17,18,21,22,27,28	17,18,21,22,27,28	17,18,21,22,27,28						
	ROW 3	---	---	---	---	---	---	---	---	---	---	---						
	ROW 4	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34					
PRESTRESSING FORCE IMMEDIATELY AFTER STRAND RELEASE, P <sub>pt</sub> , (KIPS/BEAM)		326	326	326	326	389	389	451	451	512	512	513						
EFFECTIVE PRESTRESSING FORCE AFTER ALL LOSSES, P <sub>pe</sub> , (KIPS/BEAM)		293	293	294	294	345	346	396	397	443	445	447						
REQUIRED FACTORED MOMENT @ STRENGTH I, M <sub>u</sub> (FT-KIPS/BEAM)		204	231	260	289	319	349	382	415	453	491	531						
FACTORED FLEXURAL RESISTANCE, M <sub>r</sub> (FT-KIPS/BEAM)		408	408	408	408	496	496	566	566	646	646	646						
TOTAL NO. DEBONDED STRANDS		---	---	---	---	---	---	---	---	---	---	---						
DEBONDED STRAND POSITION NUMBER & SHIELDING LENGTH FROM EACH END	ROW 1	---	---	---	---	---	---	---	---	---	---	---						
	ROW 2	---	---	---	---	---	---	---	---	---	---	---						
NUMBER & LENGTH #4 ET TOP TENSION BARS @ EACH END		3 - #4 x 3'-6"	3 - #4 x 3'-6"	3 - #4 x 4'-0"	3 - #4 x 4'-0"	3 - #4 x 4'-0"	3 - #4 x 4'-6"	3 - #4 x 4'-6"	3 - #4 x 5'-0"	3 - #4 x 9'-0"	3 - #4 x 9'-0"	3 - #4 x 9'-6"						
NUMBER & LENGTH #5 BT BOTTOM TENSION BARS @ EACH END		2 - #5 x 4'-0"	2 - #5 x 4'-0"	2 - #5 x 4'-6"	2 - #5 x 4'-6"	2 - #5 x 4'-6"	2 - #5 x 5'-0"	2 - #5 x 5'-0"	2 - #5 x 5'-6"	2 - #5 x 5'-6"	2 - #5 x 5'-6"	2 - #5 x 6'-0"						
DESIGN CAMBER + = POSITIVE (UP) (INCHES)	@ RELEASE	0.13	0.14	0.16	0.17	0.28	0.30	0.40	0.42	0.59	0.62	0.63						
	@ ERECTION	0.21	0.24	0.26	0.27	0.45	0.47	0.64	0.65	0.93	0.95	0.95						
	@ FINAL	0.27	0.29	0.30	0.30	0.53	0.53	0.71	0.69	1.03	0.99	0.92						
NUMBER & SPACING OF TL-2 GUARDRAIL INSERTS	NO OF INSERTS REQD.																	
	END OF BEAM TO $\phi$ OF FIRST INSERT EA. END																	
SEE NOTE 6	$\phi$ OF 1st INSERT TO $\phi$ 2nd INSERT EA. END																	
WEIGHT OF TYPICAL BEAM INCLUDING DIAPHRAGM (TONS)		5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6						

MIN. CONCRETE STRENGTH @ RELEASE	= 5500 PSI
MIN. CONCRETE STRENGTH @ 28 DAYS	= 8000 PSI
INITIAL PULL/STRAND	= 33,820 LBS
CROSS-SECTION AREA/STRAND	= 0.167 SQ.IN.

**NOTES**

- BEAM WEIGHTS LISTED IN THE DESIGN TABLE ARE BASED ON ZERO SKEW, 2 FT. LONG ENDBLOCK AND DIAPHRAGMS SPACED @ 15 FT C/C. WEIGHTS FOR SKEWED BEAMS, LONGER ENDBLOCKS AND ADDITIONAL DIAPHRAGMS SHOULD BE ADJUSTED ACCORDINGLY.  
FOR ADDITIONAL DIAPHRAGMS, ADD 135 LBS/DIAPHRAGM.  
FOR SKEW ADD 17 LBS/DEGREE OF SKEW/END.  
FOR LONGER ENDBLOCK, ADD 163 LBS/LF/END.
- DESIGNERS SHOULD NOTE THAT DATA IN STANDARD TABLE IS BASED ON EVEN SPAN LENGTHS, A TWO LANE STRUCTURE 8 BEAMS WIDE AND ZERO SKEW. SUPERIMPOSED DEAD LOADS INCLUDE TYPE F PARAPET (321 PLF) AND A FWS OF 50 PSF. FOR NON-STANDARD BRIDGES DATA SHOULD BE VERIFIED AND IF REQUIRED NEW DESIGN DATA ENTERED INTO BLANK COLUMNS. IN NO CASE SHALL THE STANDARD DESIGN TABLE BE ALTERED.
- IF BEAM DOES NOT MEET ALL TOLERANCES REFER TO MP 603.10.40 FOR GUIDANCE. MEASUREMENT OF CAMBER FOR COMPARISON TO PREDICTED DESIGN VALUES SHOULD BE COMPLETED WITHIN 72 HOURS OF RELEASE. ADDITIONALLY, CAMBER SHOULD BE EVALUATED UNDER CONDITIONS THAT MINIMIZE THE EFFECT OF TEMPERATURE VARIATION.

- DESIGNER, FABRICATOR, AND ERECTOR SHALL BE AWARE THAT SKEWED END BEAMS MAY TWIST OR WARP, CAUSING UNEVEN BEAM SEATING AT THE BEARINGS. THE CONTRACTOR IS REQUIRED TO CORRECT AT THE TIME OF ERECTION., BEFORE THE BEAMS ARE SECURED IN PLACE. METHOD OF CORRECTION SHALL PROVIDE AN EVEN, TOTAL BEARING AND A LEVEL TOP BEAM SURFACE. TOLERANCE, AFTER CORRECTION, SHALL BE (+/-) 1/8 INCH. THE FABRICATOR SHALL NOTIFY THE CONTRACTOR AND DESIGNER IF CORRECTIONS ARE REQUIRED PRIOR TO SHIPMENT.
- MAXIMUM BEAM SKEW SHALL BE 30 DEGREES.
- DESIGNER INPUT VALUES OF NUMBER OF INSERTS, DISTANCE FROM END OF BEAM TO  $\phi$  FIRST INSERT, AND  $\phi$  FIRST INSERT TO  $\phi$  SECOND INSERT. ABOVE VALUES SHALL BE BASED ON THE REQUIRED 6'-3" GUARDRAIL POST SPACING ACROSS THE BRIDGE.
- SPECIAL STRAND NOTE FOR 17" BOX SECTION ONLY: WHEN TL-2 GUARDRAIL INSERTS ARE REQUIRED THE BOTTOM INSERT (TYPE 2A ANCHOR) CONFLICTS WITH STRAND NO. 15. STRANDS 15 AND 16 HAVE BEEN MOVED TO POSITIONS 17 AND 18. FOR UNIFORMITY PURPOSES, ALL BEAMS OF THE SAME DESIGN SHALL USE SAME STRAND PATTERN.
- THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-B17A, BR-B100, BR-B101, BR-B102A & B, BR-B103, BR-B104, BR-B105A & B AND BR-B106 AS APPLICABLE.

APPROVED: _____	DIRECTOR, ENGINEERING DIVISION	DATE: _____
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS ENGINEERING DIVISION		PREPARED: 07-02-07
DESIGN TABLE FOR 17" PRESTRESSED BOX BEAM		REVISED: 07-10 TW
REVISED STANDARD SHEET BR-B17B		

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS ENGINEERING DIVISION	
DESIGNED BY: THB/	
DRAWN BY: THB/	
CHECKED BY: TM/	
REVIEWED BY: TW/	
DATE:	
SCALE:	
SHEET NO. OF	
BRIDGE NUMBER	
DESIGN TABLE FOR 17" PRESTRESSED BOX BEAM	