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

# DESIGN DATA FOR 42" DEPTH ADJACENT BOX BEAM

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPAN LENGTH ℄ TO ℄ BEARING | | 76'-0" | 78'-0" | 80'-0" | 82'-0" | 84'-0" | 86'-0" | 88'-0" | 90'-0" | 92'-0" | 94'-0" | 96'-0" | 98'-0" | 100'-0" | | | |
| OVERALL LENGTH OF BEAM | | 77'-6" | 79'-6" | 81'-6" | 83'-6" | 85'-6" | 87'-6" | 89'-6" | 91'-6" | 93'-6" | 95'-6" | 97'-6" | 99'-6" | 101'-6" | | | |
| NO. OF 270 KSI, ½" ø LOW-RELAXATION STRANDS, AREA/STRAND = 0.167 SQ. IN. | | 18 | 20 | 20 | 22 | 22 | 22 | 24 | 24 | 26 | 26 | 28 | 28 | 30 | | | |
| STRAND POSITION NUMBER | ROW 1 | 1,2,5,6,9,10, 13,14 | 1,2,5,6,9,10, 13,14 | 1,2,5,6,9,10, 13,14 | 1,2,3,4,7,8, 11,12,13,14 | 1,2,3,4,7,8, 11,12,13,14 | 1,2,3,4,7,8, 11,12,13,14 | 1,2,3,4,7,8, 11,12,13,14 | 1,2,3,4,7,8, 11,12,13,14 | 1,2,3,4,5,6,9, 10,11,12,13,14 | 1,2,3,4,5,6,9, 10,11,12,13,14 | 1,2,3,4,5,6,9, 10,11,12,13,14 | 1,2,3,4,5,6,9, 10,11,12,13,14 | 1 THRU 14 | | | |
| | ROW 2 | 15,16,21,22, 27,28 | 15,16,19,20, 23,24,27,28 | 15,16,19,20, 23,24,27,28 | 15,16,19,20, 23,24,27,28 | 15,16,19,20, 23,24,27,28 | 15,16,19,20, 23,24,27,28 | 15,16,17,18, 21,22,25,26, 27,28 | 15,16,17,18, 21,22,25,26, 27,28 | 15,16,17,18, 21,22,25,26, 27,28 | 15,16,17,18, 21,22,25,26 27,28 | 15,16,17,18,19, 20,23,24,25, 26,27,28 | 15,16,17,18, 19,20,23,24, 25,26,27,28 | 15,16,17,18, 19,20,23,24, 25,26,27,28 | | | |
| | ROW 3 | 31,32 | 31,32 | 31,32 | 31,32 | 31,32 | 31,32 | 31,32 | 31,32 | 31,32 | 31,32 | 31,32 | 31,32 | 31,32 | | | |
| | | | | | | | | | | | | | | | | | |
| | 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 | 33,34 | | | |
| PRESTRESSING FORCE IMMEDIATELY AFTER STRAND RELEASE, Ppt, (KIPS/BEAM) | | 587 | 649 | 650 | 711 | 712 | 713 | 774 | 775 | 835 | 836 | 896 | 897 | 956 | | | |
| EFFECTIVE PRESTRESSING FORCE AFTER ALL LOSSES, Ppe, (KIPS/BEAM) | | 531 | 582 | 584 | 632 | 635 | 637 | 685 | 688 | 734 | 738 | 783 | 787 | 830 | | | |
| REQUIRED FACTORED MOMENT @ STRENGTH I, Mu (FT-KIPS/BEAM) | | 1861 | 1945 | 2031 | 2118 | 2207 | 2297 | 2388 | 2482 | 2585 | 2682 | 2780 | 2879 | 2981 | | | |
| FACTORED FLEXURAL RESISTANCE, Mr (FT-KIPS/BEAM) | | 2179 | 2420 | 2420 | 2603 | 2603 | 2603 | 2803 | 2803 | 3007 | 3007 | 3186 | 3186 | 3370 | | | |
| TOTAL NO. DEBONDED STRANDS | | ——— | 2 | 2 | 4 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 6 | 6 | | | |
| DEBONDED STRAND POSITION NUMBER & SHIELDING LENGTH FROM EACH END | ROW 1 | ——— | 5,6 @ 5'-0" | 5,6 @ 5'-0" | 3,4 @ 5'-0" | 3,4 @ 5'-0" | 3,4 @ 5'-0" | 3,4 @ 5'-0" | 3,4 @ 5'-0" | 3,4,9,10 @ 5'-0" | 3,4,9,10 @ 5'-0" | 3,4,9,10 @ 5'-0" | 3,4,9,10 @ 5'-0" | 3,4,9,10 @ 5'-0" | | | |
| | ROW 2 | ——— | ——— | ——— | 23,24 @ 3'-0" | 23,24 @ 3'-0" | 23,24 @ 3'-0" | 25,26 @ 3'-0" | 25,26 @ 3'-0" | 25,26 @ 3'-0" | 25,26 @ 3'-0" | 25,26 @ 3'-0" | 25,26 @ 3'-0" | 25,26 @ 3'-0" | | | |
| NUMBER & LENGTH #4 ET TOP TENSION BARS @ EACH END | | 3 - #4 x 9'-0" | 3 - #4 x 9'-0" | 3 - #4 x 9'-6" | 3 - #4 x 9'-6" | 3 - #4 x 10'-0" | 3 - #4 x 10'-0" | 3 - #4 x 10'-0" | 3 - #4 x 10'-6" | 3 - #4 x 10'-6" | 3 - #4 x 11'-0" | 3 - # 4 x 11'-0" | 3 - # 4 x 11'-0" | 3 - # 4 x 11'-6" | | | |
| NUMBER & LENGTH #5 BT BOTTOM TENSION BARS @ EACH END | | 4 - #5 x 9'-6" | 6 - #5 x 9'-6" | 6 - #5 x 10'-0" | 6 - #5 x 10'-0" | 6 - #5 x 10'-6" | 6 - #5 x 10'-6" | 4 - #5 x 10'-6" | 4 - #5 x 11'-0" | 4 - #5 x 11'-0" | 4 - #5 x 11'-6" | 2 - #5 x 11'-6" | 2 - #5 x 11'-6" | 2 -# 5 x 12'-0" | | | |
| DESIGN CAMBER + = POSITIVE (UP) (INCHES) | @ RELEASE | 0.39 | 0.52 | 0.50 | 0.67 | 0.65 | 0.62 | 0.79 | 0.76 | 0.96 | 0.93 | 0.97 | 1.16 | 1.12 | | | |
| | @ ERECTION | 0.42 | 0.64 | 0.57 | 0.84 | 0.77 | 0.68 | 0.94 | 0.84 | 1.15 | 1.04 | 1.05 | 1.34 | 1.20 | | | |
| | @ FINAL | 0.04 | 0.28 | 0.12 | 0.43 | 0.26 | 0.06 | 0.34 | 0.12 | 0.43 | 0.17 | 0.09 | 0.38 | 0.07 | | | |
| NUMBER & SPACING OF TL-2 GUARDRAIL INSERTS SEE NOTE 6 | NO OF INSERTS REQD. | | | | | | | | | | | | | | | | |
| | END OF BEAM TO ℄ OF FIRST INSERT EA. END | | | | | | | | | | | | | | | | |
| | ℄ OF 1st INSERT TO ℄ 2nd INSERT EA. END | | | | | | | | | | | | | | | | |
| WEIGHT OF TYPICAL BEAM INCLUDING DIAPHRAGM (TONS) | | 32.6 | 33.4 | 34.1 | 34.9 | 35.6 | 36.4 | 37.1 | 37.9 | 39.0 | 39.7 | 40.4 | 41.1 | 41.9 | | | |

| | |
|---|---|
| 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

1. 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 700 LBS/DIAPHRAGM.

   FOR SKEW ADD 41 LBS/DEGREE OF SKEW/END.

   FOR LONGER ENDBLOCK, ADD 840 LBS/LF/END.

2. 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.

3. 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.

4. 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 (+/-) ⅛ INCH. THE FABRICATOR SHALL NOTIFY THE CONTRACTOR AND DESIGNER IF CORRECTIONS ARE REQUIRED PRIOR TO SHIPMENT.

5. MAXIMUM BEAM SKEW SHALL BE 30 DEGREES.

6. DESIGNER INPUT VALUES OF NUMBER OF INSERTS, DISTANCE FROM END OF BEAM TO ℄ FIRST INSERT, AND ℄ FIRST INSERT TO ℄ SECOND INSERT. ABOVE VALUES SHALL BE BASED ON THE REQUIRED 6'-3" GUARDRAIL POST SPACING ACROSS THE BRIDGE.

7. THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-B42A, BR-B100, BR-B101, BR-B102A & B, BR-B103, BR-B104, BR-B105A & B AND BR-106 AS APPLICABLE.

APPROVED: _____ DIRECTOR, ENGINEERING DIVISION DATE: _____

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
ENGINEERING DIVISION

DESIGN TABLE FOR 42"

PRESTRESSED BOX BEAM

*REVISED STANDARD SHEET BR-B42B*

| PREPARED: | |
|---|---|
| 07-02-07 | |
| REVISED: | |
| 07-10 | TW |

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
ENGINEERING DIVISION

DESIGNED BY:THB/
DRAWN BY:THB/
CHECKED BY:TM/
REVIEWED BY:TM/
DATE:
SCALE:
SHEET NO OF
BRIDGE NUMBER

DESIGN TABLE FOR 42"
PRESTRESSED BOX BEAM