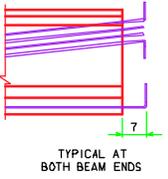


THE TOP AND BOTTOM ROWS OF THE DEFLECTED STRANDS ARE TO BE CUT WITH 1'-6" PROJECTIONS WHICH ARE TO BE SHOP BENT AS SHOWN. THE REMAINING TOP DEFLECTED STRANDS ARE TO BE CUT WITH 7" PROJECTIONS. SIX BOTTOM STRANDS ARE TO BE CUT WITH 1'-6" PROJECTIONS WHICH ARE TO BE SHOP BENT AS SHOWN. THE REMAINING BOTTOM STRANDS ARE TO BE CUT OFF REASONABLY FLUSH WITH THE CONCRETE.



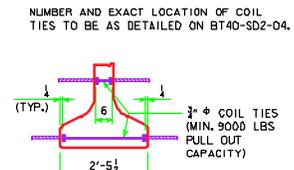
STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE END DIAPHRAGMS

4-1/4" NOMINAL DIA. GRADE 270 STRANDS THREADED THROUGH EACH PIPE SLEEVE BENT AS SHOWN AFTER THREADING. ALTERNATE LIFTING DEVICES MAY BE SUBMITTED FOR APPROVAL (SEE LIFTING LOOP TABLE).

LIFTING LOOP DETAIL

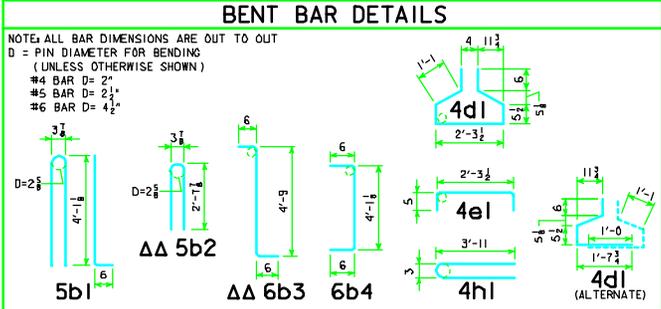
LIFTING LOOP TABLE				
BEAMS	LIFTING LOOPS EACH END	# OF STRANDS PER LOOP	D	BEAM OVERHANG (FT)
BTD10	2	4	8'-2"	12
BTD115	2	4	8'-3"	12
BTD120	2	4	9'-3"	14
BTD125	2	4	9'-3"	16
BTD130	2	4	9'-3"	16

LIFTING LOOPS SHALL CARRY LOADS EQUALLY.



COIL TIE DETAIL

ΔΔ 5b2 AND 6b3 BARS TO BE EPOXY COATED
* 6b3 AND 6b4 BARS TO BE USED IN PAIRS



REINFORCING BAR LIST									
BEAM	BTD110	BTD115	BTD120	BTD125	BTD130				
BAR	SHAPE	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH
5o1		12	37'-9"	12	21'-4"	12	23'-10"	12	26'-4"
5o2		6	40'-0"	12	40'-0"	12	40'-0"	12	40'-0"
5b1		85	9'-4"	91	9'-4"	97	9'-4"	103	9'-4"
ΔΔ 5b2		85	5'-6"	91	5'-6"	97	5'-6"	103	5'-6"
ΔΔ 6b3		36	5'-9"	36	5'-9"	36	5'-9"	36	5'-9"
* 6b4		20	5'-1"	20	5'-1"	24	5'-1"	24	5'-1"
4c1		139	2'-7"	145	2'-7"	151	2'-7"	163	2'-7"
4dl		105	6'-5"	111	6'-5"	117	6'-5"	123	6'-5"
4e1		26	3'-2"	26	3'-2"	26	3'-2"	26	3'-2"
4h1		6	8'-0"	6	8'-0"	6	8'-0"	6	8'-0"

BTD BEAM DATA

BTD BEAM	SPAN LENGTH @-E BEARING	OVERALL BEAM LENGTH (LFT)	CONCRETE STRENGTH		STRAND SIZE DIA. (in)	NO. OF STRANDS	NO. OF STRANDS DEFLECTED	TOTAL INITIAL PRESTRESS KIPS	HOLD DOWN FORCE-KIPS	CAMBER (in)		DEFLECTION (in) Δ _a		PERMISSIBLE MAXIMUM SPACING	WEIGHT (TONS)	CONCRETE (CU YD.)	REINFORCING STEEL (WEIGHT-LBS)
			f'cI (ksi)	f'c (ksi)						AT RELEASE	AFTER LOSSES	IMMEDIATE (ELASTIC) Δ ₁	TIME (PLASTIC) Δ ₂				
			HL-93 LOADING	STEEL DIAPHRAGM						STEEL DIAPHRAGM	STEEL DIAPHRAGM						
BTD110	110'-0"	111'-4"	6.50	7.50	0.60	32	6	1617	20.9	2.60	4.57	2.16	0.54	9'-3"	43.4	21.4	3219
BTD115	115'-0"	116'-4"	7.00	7.50	0.60	36	6	1788	20.3	2.89	5.09	2.59	0.65	9'-3"	46.4	22.4	3452
BTD120	120'-0"	121'-4"	7.50	8.00	0.60	38	8	1958	24.4	3.27	5.75	2.97	0.74	9'-3"	47.3	23.4	3613
BTD125	125'-0"	126'-4"	8.00	8.50	0.60	42	12	2297	31.9	3.81	6.71	3.42	0.86	9'-3"	49.3	24.3	3814
BTD130	130'-0"	131'-4"	8.00	9.00	0.60	42	14	2384	33.9	3.95	6.94	3.79	0.95	9'-0"	51.2	25.3	3934

- DEFLECTIONS AT MID-SPAN DUE TO WEIGHT OF SLAB AND DIAPHRAGM. THE DEFLECTIONS SHOWN ARE FOR A SLAB (8 in) AND HAUNCH (1.5 in) WEIGHT OF:
 - 0.88 kips/ft for 9'-3 BEAM SPACING
 - 0.96 kips/ft for 9'-0 BEAM SPACING
- AND ONE STEEL DIAPHRAGM (0.500 kips) AT 1/4 OF SPAN FOR BTD110 TO BTD120, AND THREE STEEL DIAPHRAGMS (0.500 kips) AT 1/4 POINTS OF SPAN FOR BTD125 AND BTD130. FOR DIFFERENT SLAB AND DIAPHRAGM WEIGHTS, DEFLECTIONS WILL BE DIRECTLY PROPORTIONAL.
- DEFLECTIONS DUE TO THE COMBINED EFFECT OF CREEP DUE TO WEIGHT OF SLAB AND SHRINKAGE OF SLAB. TOTAL BEAM DEFLECTIONS AT 1/4 OF SPAN, Δ₀, DUE TO WEIGHT OF SLAB AND DIAPHRAGMS FOR DETAILING PURPOSE: Δ₀ = Δ₁ + Δ₂ FOR END SPANS OF CONTINUOUS BRIDGE.
- TOTAL INITIAL PRESTRESS IS BASED ON 72.6% f'_s, f'_s = 270 ksi. AND A_s = 0.217 in².
- REQUIRES A 4000 psi, 28 DAY COMPRESSIVE STRENGTH FOR CAST-IN-PLACE SLAB CONCRETE.

BEAM NOTES:

THESE BEAMS ARE DESIGNED FOR AASHTO LIVE LOADS AS INDICATED IN ABOVE TABLE WITH AN ALLOWANCE OF 20 LBS PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE. HOLD DOWN POINTS FOR DEFLECTED STRANDS MAY BE MOVED TOWARD ENDS OF BEAM A DISTANCE OF 0.05 L MAXIMUM AT PRODUCER'S OPTION.

ALL PRESTRESSING STRANDS EXCEPT LIFTING LOOP STRANDS SHALL BE 0.60 in. NOMINAL DIAMETER (NOMINAL STEEL AREA = 0.217 in²) AND CONFORM TO ASTM A416 GRADE 270 LOW RELAXATION STRANDS. MINIMUM STRAND BREAKING STRENGTH SHALL BE 58.6 KIPS.

TOPS OF BEAMS ARE TO BE STRUCK OFF LEVEL AND INTENTIONALLY ROUGHENED TRANSVERSELY TO A FULL AMPLITUDE OF APPROXIMATELY 1/4" EXCEPT A 2 INCH WIDE FINISH SHALL BE PROVIDED ON THE TOP EDGE ON ONE SIDE ONLY OF THE BEAM.

BEARINGS SHALL BE AS DETAILED ON OTHER DESIGN SHEETS. BEAMS TO BE USED IN BRIDGES MADE CONTINUOUS BY THE POURED IN PLACE FLOOR ARE TO BE AT LEAST 28 DAYS OLD BEFORE THE FLOOR IS PLACED UNLESS A SHORTER CURING TIME IS APPROVED BY THE BRIDGE ENGINEER.

THE PORTIONS OF THE PRESTRESSED BEAMS THAT ARE TO BE EMBEDDED IN THE ABUTMENT AND PIER DIAPHRAGMS SHALL BE ROUGHENED FOR A DISTANCE OF 10" FROM THE BEAM END BY SANDBLASTING OR OTHER APPROVED METHODS TO PROVIDE SUITABLE BOND BETWEEN THE BEAM AND THE DIAPHRAGM IN ACCORDANCE WITH ARTICLE 2403.14 OF THE SPECIFICATIONS.

THE EXTERIOR SURFACES OF THE EXTERIOR (FASCIA) BEAM ENDS OVER THE PIER SHALL NOT BE ROUGHENED.

UNLESS OTHERWISE NOTED ALL BEAMS ARE TO BE INCREASED IN LENGTH BY .0005L TO COMPENSATE FOR ELASTIC SHORTENING, CREEP AND SHRINKAGE.

FOR TRANSPORTING, THE ALLOWABLE OVERHANG IS SHOWN IN THE LIFTING LOOP TABLE.

THE CONTRACTOR SHALL ASSURE THE LATERAL STABILITY OF THE BEAMS DURING HANDLING, TRANSPORTING AND ERECTION BY PROVIDING TEMPORARY BRACING AS NEEDED.

HOLES MUST BE CAST IN THE WEB TO ACCOMMODATE THE STEEL DIAPHRAGM ATTACHMENTS AS DETAILED ON BT40-SD2-04.

MINIMUM CONCRETE f'c (AT 28 DAYS) AND MINIMUM f'cI AT RELEASE ARE LOCATED IN THE BTD BEAM DATA TABLE ABOVE. FOUR 0.60 IN. DIAMETER STRANDS STRESSED TO NOT MORE THAN 5000 lbf. EACH MAY BE USED IN LIEU OF BARS 5o1 AND 5o2 IN THE TOP FLANGE.

IF THE PRECAST PANEL OPTION IS ALLOWED AND USED FOR BRIDGE DECK FORMATION, THE BEAM STIRRUPS WILL NEED TO BE EXTENDED AND TOP FLANGE BEAM FINISH SHALL BE MODIFIED AS PER DETAILS ON THE PRECAST DECK PANEL SHEET.

LATEST REVISION DATE	APPROVED BY BRIDGE ENGINEER		
		STANDARD DESIGN - 40' ROADWAY, 2 SPAN BRIDGES	
		PRETENSIONED PRESTRESSED BULB TEE CONCRETE BEAM BRIDGES	
		ALL SPANS	JULY, 2004
		BTD BEAM DETAILS	BT40-DB1-04