DESIGNED BEAMS (STRAIGHT STRANDS)

STRUCTURE	SPAN NO.	BEAM NO.	BEAM TYPE	NON-STD STRAND PATTERN	PRESTRESSING STRANDS NO.	SIZE (in)	STRGTH fpu (ksi)	"e" ℄ (in)	"e" END (in)	TOT NO. DEB	DEBONDED STRAND PATTERN PER ROW: DIST FROM BOTTOM (in)	NO. OF STRANDS TOTAL	NO. OF STRANDS DE-BONDED	NUMBER OF STRANDS DEBONDED TO (ft from end) 3	6	9	12	15						CONCRETE RELEASE STRGTH f'ci (ksi)	MINIMUM 28 DAY COMP STRGTH f'c (ksi)
BELLA LANE BRIDGE	1	4-6	4B28		8	1/2	270	11.12	11.12	0	2.5	8	0	0	0	0	0	0	0	0	0	0	0	4.000	5.000
	1	1-3,7-11	5B28		8	1/2	270	11.24	11.24	0	2.5	8	0	0	0	0	0	0	0	0	0	0	0	4.000	5.000
	2	4-6	4B28		30	1/2	270	10.45	10.28	6	2.5	22	6	2	0	2	2	0	0	0	0	0	0	4.104	5.000
	2	1-3,7-11	5B28		32	1/2	270	10.99	10.93	6	2.5	28	6	2	2	2	0	0	0	0	0	0	0	4.000	5.000
	3	4-6	4B28		10	1/2	270	11.12	11.12	0	2.5	10	0	0	0	0	0	0	0	0	0	0	0	4.000	5.000
	3	1-3,7-11	5B28		10	1/2	270	11.24	11.24	0	2.5	10	0	0	0	0	0	0	0	0	0	0	0	4.000	5.000

OPTIONAL DESIGN

STRUCTURE	SPAN NO.	BEAM NO.	BEAM TYPE	DESIGN LOAD COMP STRESS (TOP ℄) (SERVICE I) fct (ksi)	DESIGN LOAD TENSILE STRESS (BOTT ℄) (SERVICE III) fcb (ksi)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRENGTH I) (ft-kips)	LIVE LOAD DISTRIB FACTOR ①
BELLA LANE BRIDGE	1	4-6	4B28	0.497	-0.616	678	0.300
	1	1-3,7-11	5B28	0.485	-0.623	844	0.360
	2	4-6	4B28	2.505	-2.977	2,317	0.360
	2	1-3,7-11	5B28	2.289	-2.703	2,487	0.360
	3	4-6	4B28	0.687	-0.865	977	0.360
	3	1-3,7-11	5B28	0.795	-0.978	1,075	1.000

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

Use Class H concrete. Use Class H (HPC) if required elsewhere in plans. All reinforcing bars must be Grade 60.

When shown on this sheet, the Fabricator has the option of furnishing either the designed beam or an approved optional beam design. All optional design submittals and shop drawings must be signed, sealed and dated by a Professional Engineer registered in the State of Texas.

Prestress losses for the designed beams have been calculated for a relative humidity of 65 percent. Optional designs must likewise conform.

Locate strands for the designed beam as low as possible on the 2" grid system unless a Non-Standard Strand Pattern is indicated. Fill row "2.5", then row "4.5", then row "6.5", etc. Place strands within a row as follows:

1) Locate a strand in each "1" position
2) Place strand pattern symmetrically about vertical centerline of box
3) Space strands as equally as possible across the entire width

Strands in the position "1" may not be debonded. Distribute debonded strands equally about the vertical centerline. Decrease debonded lengths working inward, with debonding staggered in each row.

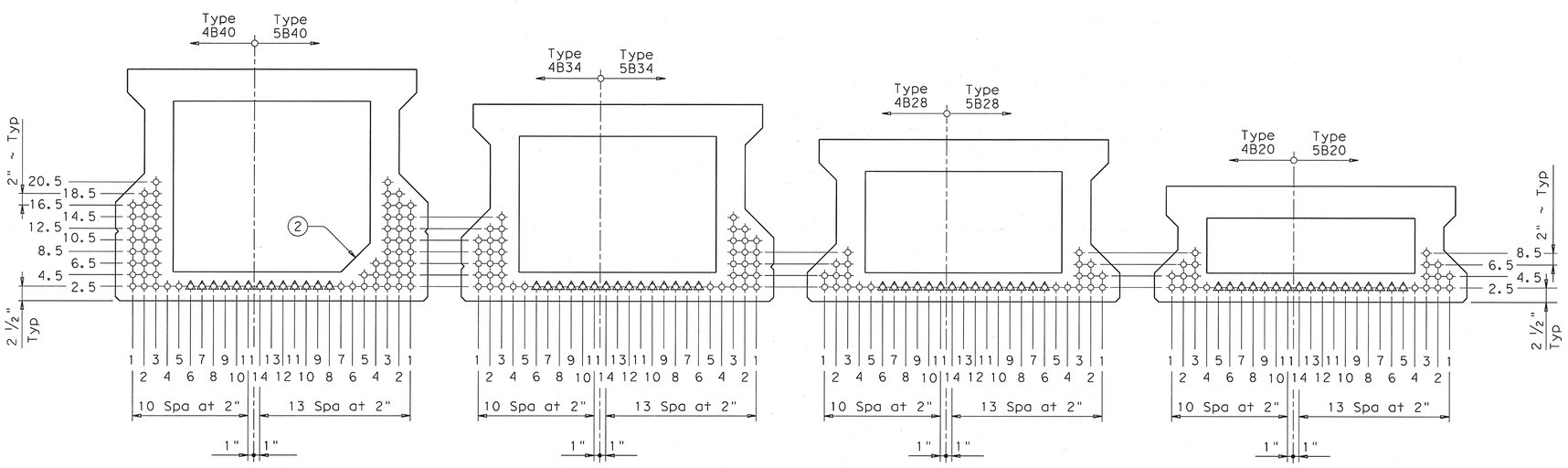
Encase debonded strands in plastic sheathing along entire debonded length, and seal ends of sheathing with waterproof tape. Split plastic sheathing may be used provided the seam of the sheathing is sufficiently sealed with waterproof tape to prohibit grout infiltration. Wrapping of strands with tape to provide debonding is not allowed.

Use low relaxation strands pretensioned to 75 percent of fpu.

① Portion of full HL93.

② Bottom corner chamfer required for 4 ft & 5 ft B40 Boxes when beam lengths are greater than 100 feet.

③ Full-length debonded strands are only permitted in strand positions marked △. Double encase all full-length debonded strands. Internal vibrator diameter cannot exceed 1 1/8" diameter for bottom flange concrete placement. Full-length debonding must comply with Item 426.4.F.4.



TxDOT B40 BOX BEAMS ③ TxDOT B34 BOX BEAMS ③ TxDOT B28 BOX BEAMS ③ TxDOT B20 BOX BEAMS ③

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HL93 LOADING

Texas Department of Transportation
Bridge Division

PRESTRESSED CONCRETE BOX BEAM DESIGNS (NON-STANDARD SPANS)

BBND

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