DESIGNED BEAMS (STRAIGHT STRANDS)

STRUCTURE	SPAN NO.	BEAM NO.	BEAM TYPE	PRESTRESSING STRANDS							DEBONDED STRAND PATTERN PER ROW			NUMBER OF STRANDS DEBONDED TO (ft from end)										CONCRETE		OPTIONAL DESIGN			
				STRAND PATTERN NO.	TOTAL NO.	SIZE (in)	STRGTH fpu (ksi)	"e" C.L. (in)	"e" END (in)	TOT NO. DEB	DIST FROM BOTTOM (in)	NO. OF STRANDS TOTAL	DE-BONDED	3	6	9	12	15						MINIMUM RELEASE STRGTH f'ci (ksi)	MINIMUM 28 DAY COMP STRGTH f'c (ksi)	DESIGN LOAD COMP STRESS (TOP C.L.)(SERV I) fct (ksi)	DESIGN LOAD TENSILE STRESS (BOTT C.L.)(SERV III) fcb (ksi)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRGTH I)(ft-kips)	LIVE LOAD DISTRIB FACTOR ①
PONTE AVE BRIDGE	1	1 & 7	U54		95	1/2	270	17.12	15.88	32	2.17	27	20	0	10	4	2	4	0	0	0	0	0	7.105	9.675	5.590	-4.589	10,334	0.999
											4.14	27	12	12	0	0	0	0	0	0	0	0	0						
	1	2-6	U54		87	1/2	270	18.00	16.95	38	2.17	27	20	0	6	8	2	4	0	0	0	0	0	6.645	8.114	5.077	-4.304	10,268	0.392
											4.14	27	18	14	4	0	0	0	0	0	0	0	0						

TYPE U54

TYPE U40

Strand patterns shall be Sym about C.L.

21.87
19.90
17.93
15.96
13.99
12.02
10.05
8.08
6.11
4.14
2.17

10 Spa at 1.97"

2.17"

2 4 6 8 10 12 12 10 8 6 4 2
1 3 5 7 9 11 13 11 9 7 5 3 1
14

1.97" 26 Spa at 1.97" 1.97"

TxDOT TYPE U54 & TYPE U40 BMS

GENERAL NOTES:

Designed in accordance with AASHTO LRFD Specifications.

All concrete must be Class H. Use Class H (HPC) if required elsewhere in plans. All reinforcing bars shall 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 registered Professional Engineer.

Optional designs must have a calculated residual camber equal to or greater than that of the designed beam.

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 1.97" grid system. Fill row "2.17", then row "4.14", then row "6.11", etc., beginning each row in the "1" position and, distributing uniformly as practical, working inward until the required number of strands is reached. All strands, including those in the web, must be adequately tied to reinforcing steel, bar supports, or other devices to prevent displacement during concrete placement.

Do not debond strands in position "1". Distribute debonded strands equally about the vertical centerline. Debonded lengths must decrease working inward, with debonding staggered in each row.

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

Full-length debonded strands are not permitted in strand positions 1 and 2. If placing concrete in two stages, double wrap all full-length debonded strands in row "2.17" and internal vibrator diameter cannot exceed 1 1/8" diameter for first stage. Full-length debonding must comply with Item 426.4.F.4.

Strands for the designed beam must be low relaxation strands pretensioned to 75 percent of fpu each.

The grid pattern for the strands is based on exact conversions from a metric grid spacing of 50mm.

① Portion of full HL 93

HL93 LOADING

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ERIC S. CHRISTIANSEN
85412
04-29-16

Texas Department of Transportation
Bridge Division

PRESTRESSED CONCRETE U-BEAMS
(DESIGN DATA)

UBND

ACC:

LEVELS DISPLAYED