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DATE:
FILE:

STANDARD SBBS-B34-24

DESIGNED BEAMS (STRAIGHT STRANDS)

SPAN LENGTH (ft)	BEAM NO.	BEAM TYPE	PRESTRESSING STRANDS: NON-STD STRAND PATTERN	TOTAL 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	DE-BONDED	NUMBER OF STRANDS DEBONDED TO (ft from end): 3	6	9	12	15	CONCRETE: RELEASE STRGTH ① f'ci (ksi)	MINIMUM 28 DAY COMP STRGTH f'c (ksi)
30	1&6	5B34		8	0.6	270	13.78	13.78	0	2.50	8	0	0	0	0	0	0	4.000	5.000
30	2-5	4B34		6	0.6	270	13.58	13.58	0	2.50	6	0	0	0	0	0	0	4.000	5.000
35	1&6	5B34		8	0.6	270	13.78	13.78	0	2.50	8	0	0	0	0	0	0	4.000	5.000
35	2-5	4B34		8	0.6	270	13.58	13.58	0	2.50	8	0	0	0	0	0	0	4.000	5.000
40	1&6	5B34		10	0.6	270	13.78	13.78	0	2.50	10	0	0	0	0	0	0	4.000	5.000
40	2-5	4B34		8	0.6	270	13.58	13.58	0	2.50	8	0	0	0	0	0	0	4.000	5.000
45	1&6	5B34		10	0.6	270	13.78	13.78	0	2.50	10	0	0	0	0	0	0	4.000	5.000
45	2-5	4B34		8	0.6	270	13.58	13.58	0	2.50	8	0	0	0	0	0	0	4.000	5.000
50	1&6	5B34		10	0.6	270	13.78	13.78	0	2.50	10	0	0	0	0	0	0	4.000	5.000
50	2-5	4B34		10	0.6	270	13.58	13.58	0	2.50	10	0	0	0	0	0	0	4.000	5.000
55	1&6	5B34		12	0.6	270	13.78	13.78	0	2.50	12	0	0	0	0	0	0	4.000	5.000
55	2-5	4B34		10	0.6	270	13.58	13.58	0	2.50	10	0	0	0	0	0	0	4.000	5.000
60	1&6	5B34		12	0.6	270	13.78	13.78	0	2.50	12	0	0	0	0	0	0	4.000	5.000
60	2-5	4B34		10	0.6	270	13.58	13.58	0	2.50	10	0	0	0	0	0	0	4.000	5.000
65	1&6	5B34		12	0.6	270	13.78	13.78	0	2.50	12	0	0	0	0	0	0	4.000	5.000
65	2-5	4B34		12	0.6	270	13.58	13.58	0	2.50	12	0	0	0	0	0	0	4.000	5.000
70	1&6	5B34		14	0.6	270	13.78	13.78	0	2.50	14	0	0	0	0	0	0	4.000	5.000
70	2-5	4B34		14	0.6	270	13.58	13.58	0	2.50	14	0	0	0	0	0	0	4.000	5.000
75	1&6	5B34		16	0.6	270	13.78	13.78	0	2.50	16	0	0	0	0	0	0	4.000	5.000
75	2-5	4B34		16	0.6	270	13.58	13.58	0	2.50	16	0	0	0	0	0	0	4.000	5.000
80	1&6	5B34		18	0.6	270	13.78	13.78	0	2.50	18	0	0	0	0	0	0	4.000	5.000
80	2-5	4B34		18	0.6	270	13.58	13.58	0	2.50	18	0	0	0	0	0	0	4.000	5.000
85	1&6	5B34		22	0.6	270	13.78	13.78	0	2.50	22	0	0	0	0	0	0	4.000	5.000
85	2-5	4B34		22	0.6	270	13.58	13.58	4	2.50	22	4	2	2	0	0	0	4.000	5.000
90	1&6	5B34		24	0.6	270	13.78	13.78	0	2.50	24	0	0	0	0	0	0	4.000	5.000
90	2-5	4B34		24	0.6	270	13.42	13.36	6	2.50	22	6	4	2	0	0	0	4.000	5.400
95	1&6	5B34		28	0.6	270	13.78	13.78	4	2.50	28	4	2	2	0	0	0	4.000	5.000
95	2-5	4B34		28	0.6	270	13.15	13.04	6	2.50	22	6	2	0	2	2	0	4.200	5.000

24' Roadway

5" Slab

OPTIONAL DESIGN

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 DISTRIBUTION FACTOR ②: Moment	Shear
0.361	-0.395	761	0.465	0.704
0.405	-0.428	673	0.395	0.522
0.471	-0.509	955	0.450	0.693
0.528	-0.551	838	0.376	0.509
0.595	-0.637	1165	0.438	0.683
0.670	-0.692	1027	0.366	0.499
0.735	-0.782	1401	0.427	0.675
0.831	-0.852	1240	0.357	0.491
0.896	-0.948	1680	0.418	0.668
1.015	-1.036	1488	0.349	0.486
1.071	-1.128	1893	0.410	0.661
1.215	-1.234	1559	0.342	0.481
1.258	-1.319	1880	0.402	0.655
1.430	-1.448	1543	0.336	0.477
1.460	-1.525	1961	0.396	0.650
1.665	-1.680	1754	0.333	0.473
1.675	-1.743	2218	0.390	0.645
1.920	-1.932	2002	0.333	0.469
1.903	-1.973	2486	0.384	0.640
2.191	-2.200	2264	0.333	0.466
2.146	-2.217	2768	0.379	0.636
2.479	-2.483	2539	0.333	0.463
2.403	-2.476	3065	0.375	0.632
2.785	-2.783	2827	0.333	0.460
2.672	-2.745	3370	0.370	0.629
3.107	-3.099	3129	0.333	0.457
2.955	-3.028	3690	0.366	0.625
3.446	-3.431	3444	0.333	0.455

DESIGN NOTES:

Designed in accordance with AASHTO LRFD Bridge Design Specifications.

Prestress losses for the designed beams have been calculated for a relative humidity of 60 percent. Optional designs must likewise conform.

Beam designs are applicable for 5" concrete slabs without overlay and 0 degree skew.

FABRICATION NOTES:

Provide Class H concrete.

Provide Grade 60 reinforcing steel bars.

Use low relaxation strands, each pretensioned to 75 percent of fpu.

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.

Locate strands for the designed beam as low as possible on the 2" grid system unless a non-standard stand 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 symmetrically about vertical centerline of box.
3) Space strands as equally as possible across the entire width.

Strand debonding must comply with Item 424.4.2.2.2.4.

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

Full-length debonded strands are only permitted in positions marked △.

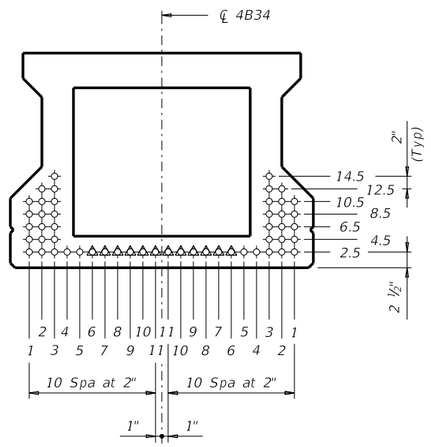
① Based on the following allowable stresses (ksi):

Compression = 0.65 f'ci

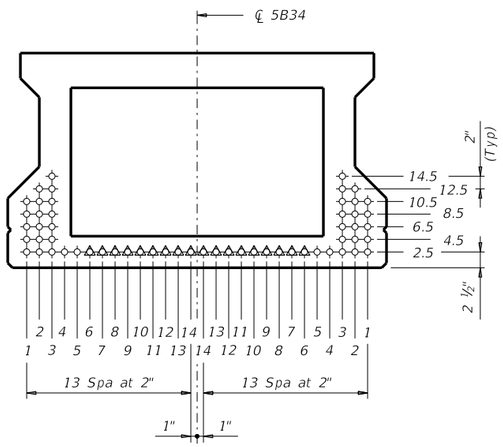
Tension = $0.24\sqrt{f'ci}$

Optional designs must likewise conform.

② Portion of full HL93.



TxDOT 4B34 BOX BEAM



TxDOT 5B34 BOX BEAM

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRESTR CONC BOX BEAM STANDARD DESIGNS

TYPE B34 24' RDWY (WITH SLAB)

BBSDS-B34-24

FILE: bbstds15.dgn	DN: SRW	CK: BMP	DW: SFS	CK: SDB
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS				
04-11: f'ci and LLDF. 01-16: Notes, 0.6" stand designs.	DIST	COUNTY		SHEET NO.