

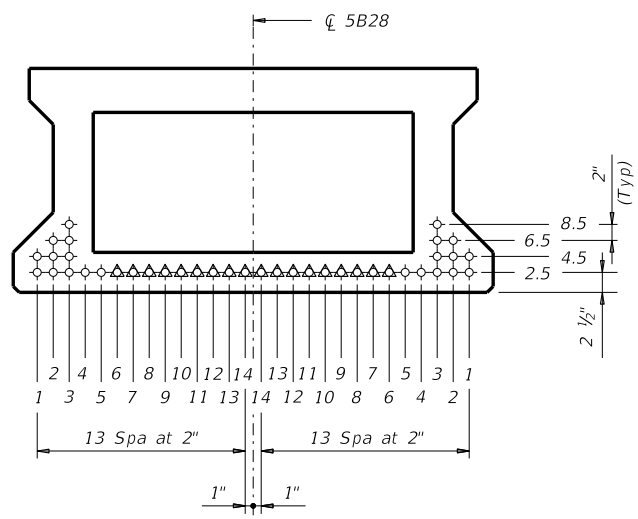
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STANDARD SBBS-B28-28	DESIGNED BEAMS (STRAIGHT STRANDS)																OPTIONAL DESIGN								
	SPAN LENGTH (ft)	BEAM NO.	BEAM TYPE	PRESTRESSING STRANDS						DEBONDED STRAND PATTERN PER ROW						CONCRETE		DESIGN LOAD COMP STRESS (TOP) (I) (SERVICE I) f _{ct} (ksi)	DESIGN LOAD TENSILE STRESS (BOTT) (II) (SERVICE III) f _{cb} (ksi)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRENGTH I) (ft-kips)	LIVE LOAD DISTRIBUTION FACTOR (II)				
				NON- STD STRAND PATTERN	TOTAL NO.	SIZE (in)	STRGTH f _{pu} (ksi)	"e" CL (in)	"e" END (in)	TOT NO. DEB	DIST FROM BOTTOM (in)	NO. OF STRANDS		NUMBER OF STRANDS DEBONDED TO (ft from end)							RELEASE STRGTH (I) f' _{ci} (ksi)	MINIMUM 28 DAY COMP STRGTH f' _c (ksi)	LIVE LOAD DISTRIBUTION FACTOR (II)		
												TOTAL	DE- BONDED	3	6	9	12						15	Moment	Shear
28' Roadway 5" Slab	30	ALL	5B28		8	0.6	270	11.24	11.24	0	2.50	8	0	0	0	0	0	4.000	5.000	0.457	-0.544	757	0.461	0.700	
	35	ALL	5B28		8	0.6	270	11.24	11.24	0	2.50	8	0	0	0	0	0	4.000	5.000	0.599	-0.704	950	0.447	0.689	
	40	ALL	5B28		10	0.6	270	11.24	11.24	0	2.50	10	0	0	0	0	0	4.000	5.000	0.759	-0.880	1157	0.434	0.679	
	45	ALL	5B28		10	0.6	270	11.24	11.24	0	2.50	10	0	0	0	0	0	4.000	5.000	0.942	-1.081	1342	0.424	0.671	
	50	ALL	5B28		12	0.6	270	11.24	11.24	0	2.50	12	0	0	0	0	0	4.000	5.000	1.150	-1.313	1477	0.415	0.664	
	55	ALL	5B28		12	0.6	270	11.24	11.24	0	2.50	12	0	0	0	0	0	4.000	5.000	1.377	-1.562	1477	0.407	0.657	
	60	ALL	5B28		14	0.6	270	11.24	11.24	0	2.50	14	0	0	0	0	0	4.000	5.000	1.620	-1.828	1707	0.399	0.651	
	65	ALL	5B28		16	0.6	270	11.24	11.24	0	2.50	16	0	0	0	0	0	4.000	5.000	1.883	-2.113	1952	0.393	0.646	
	70	ALL	5B28		18	0.6	270	11.24	11.24	0	2.50	18	0	0	0	0	0	4.000	5.000	2.163	-2.416	2208	0.387	0.641	
	75	ALL	5B28		22	0.6	270	11.24	11.24	2	2.50	22	2	2	0	0	0	4.000	5.000	2.461	-2.738	2477	0.382	0.636	
80	ALL	5B28		26	0.6	270	11.24	11.24	4	2.50	26	4	0	2	0	2	0	4.000	5.000	2.778	-3.078	2758	0.377	0.632	

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 f_{pu}.
 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 424.4.2.2.4.
 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 Δ.



TxDOT 5B28 BOX BEAM

- ① Based on the following allowable stresses (ksi):
 Compression = 0.65 f'_{ci}
 Tension = 0.24 √f'_{ci}
 Optional designs must likewise conform.
- ② Portion of full HL93.

HL93 LOADING

				Bridge Division Standard	
PRESTR CONC BOX BEAM STANDARD DESIGNS					
TYPE B28				28' RDWY (WITH SLAB)	
BBSDS-B28-28					
FILE: bbstds27.dgn	DN: SRW	CK: BMP	DW: SFS	CK: SDB	
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REVISIONS					
04-11: f'ci and LLDF.	DIST		COUNTY	SHEET NO.	
01-16: Notes, 0.6" stand designs.					