

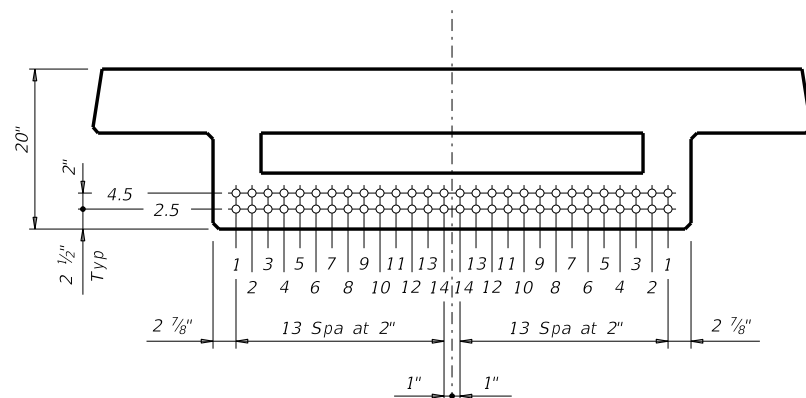
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

STRUCTURE	DESIGNED BEAMS (STRAIGHT STRANDS)																			OPTIONAL DESIGN					LOAD RATING FACTORS						
	SPAN NO. (ft)	BEAM NO.	BEAM TYPE	PRESTRESSING STRANDS						DEBONDED STRAND PATTERN PER ROW						CONCRETE		DESIGN LOAD COMP STRESS (TOP \bar{e}) (SERVICE I) fct(ksi)	DESIGN LOAD TENSILE STRESS (BOTT \bar{e}) (SERVICE III) fcb(ksi)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRENGTH I) (ft-kips)	LIVE LOAD DISTRIBUTION FACTOR		STRENGTH I			SERVICE III					
				NON-STD STRAND PATTERN	TOTAL NO.	SIZE (in)	STRGTH fpu (ksi)	"e" \bar{e} (in)	"e" END (in)	TOT NO. DEB	DIST FROM BOTTOM (in)	NO. OF STRANDS		NUMBER OF STRANDS DEBONDED TO (ft from end)							RELEASE STRGTH \bar{e} (ksi)	MINIMUM 28 DAY COMP STRGTH f'c (ksi)	LIVE LOAD DISTRIBUTION FACTOR		STRENGTH I			SERVICE III			
												TOTAL	DE-BONDED	3	6	9	12						15	Moment	Shear	Inv	Opr	Inv	Inv	Opr	Inv
30' ROADWAY 8DS20 BEAM	30	ALL	8DS20		12	0.6	270	8.92	8.92	0	2.50	12	0	0	0	0	0	4.000	5.000	1.165	-1.340	865	0.773	0.773	1.17	1.52	1.48				
	35	ALL	8DS20		14	0.6	270	8.92	8.92	0	2.50	14	0	0	0	0	0	4.000	5.000	1.468	-1.701	1080	0.757	0.757	1.05	1.36	1.25				
	40	ALL	8DS20		18	0.6	270	8.92	8.92	0	2.50	18	0	0	0	0	0	4.000	5.000	1.799	-2.097	1313	0.745	0.745	1.09	1.41	1.21				
	45	ALL	8DS20		22	0.6	270	8.92	8.92	2	2.50	22	2	2	0	0	0	4.000	5.000	2.177	-2.551	1579	0.735	0.735	1.07	1.39	1.11				
	50	ALL	8DS20		28	0.6	270	8.92	8.92	8	2.50	28	8	4	2	2	0	0	4.000	5.300	2.620	-3.079	1893	0.727	0.727	1.12	1.45	1.08			
30' ROADWAY 8DS23 BEAM	30	ALL	8DS23		10	0.6	270	10.76	10.76	0	2.50	10	0	0	0	0	0	4.000	5.000	0.894	-1.054	908	0.773	0.773	1.16	1.50	1.67				
	35	ALL	8DS23		12	0.6	270	10.76	10.76	0	2.50	12	0	0	0	0	0	4.000	5.000	1.127	-1.338	1084	0.757	0.757	1.09	1.41	1.45				
	40	ALL	8DS23		14	0.6	270	10.76	10.76	0	2.50	14	0	0	0	0	0	4.000	5.000	1.382	-1.650	1318	0.745	0.745	1.01	1.32	1.26				
	45	ALL	8DS23		18	0.6	270	10.76	10.76	0	2.50	18	0	0	0	0	0	0	4.000	5.000	1.673	-2.007	1586	0.735	0.735	1.08	1.39	1.24			
	50	ALL	8DS23		22	0.6	270	10.76	10.76	0	2.50	22	0	0	0	0	0	0	4.000	5.000	2.014	-2.423	1902	0.727	0.727	1.06	1.38	1.15			
	55	ALL	8DS23		26	0.6	270	10.76	10.76	4	2.50	26	4	2	2	0	0	0	4.000	5.000	2.376	-2.867	2234	0.720	0.720	1.04	1.34	1.05			
	60	ALL	8DS23		32	0.6	270	10.51	10.45	6	2.50	32	6	2	2	2	0	0	4.200	5.200	2.758	-3.338	2584	0.714	0.714	1.07	1.39	1.04			

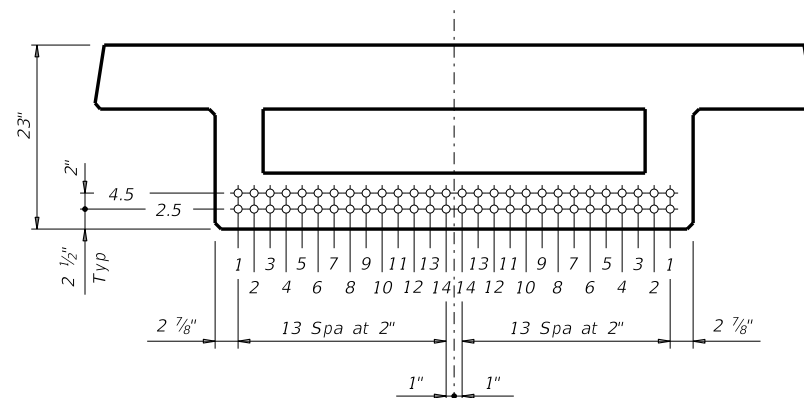
- ① Based on the following allowable stresses (ksi):
 Compression = 0.65 f'ci
 Tension = 0.24 $\sqrt{f'ci}$
 Optional designs must likewise conform.
- ② Portion of full HL93.

DESIGN NOTES:
 Designed according to AASHTO LRFD Bridge Design Specifications.
 Load rated using Load and Resistance Factor Rating according to AASHTO Manual for Bridge Evaluation.
 Prestress losses for the designed beams have been calculated for a relative humidity of 60 percent. Optional designs must likewise conform.

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 strand pattern is indicated. Fill row "2.5", then row "4.5".
 Place strands within a row as follows:
 1) Locate a strand in each "1".
 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 not permitted in positions "1" through "3".



TxDOT DS20 DECKED SLAB BEAM
 (Showing interior beam, exterior beam similar.)



TxDOT DS23 DECKED SLAB BEAM
 (Showing interior beam, exterior beam similar.)

HL93 LOADING

		Bridge Division Standard	
PRESTRESSED CONCRETE DECKED SLAB BEAM STANDARD DESIGNS 30' ROADWAY DSBSD-30			
FILE: DSB-SD30-20.dgn	DN: JLR	CK: SDC	DW: EFC
©TxDOT August 2020	CONT	SECT	HIGHWAY
REVISIONS		JOB	
DIST		COUNTY	
		SHEET NO.	

DATE:
FILE: