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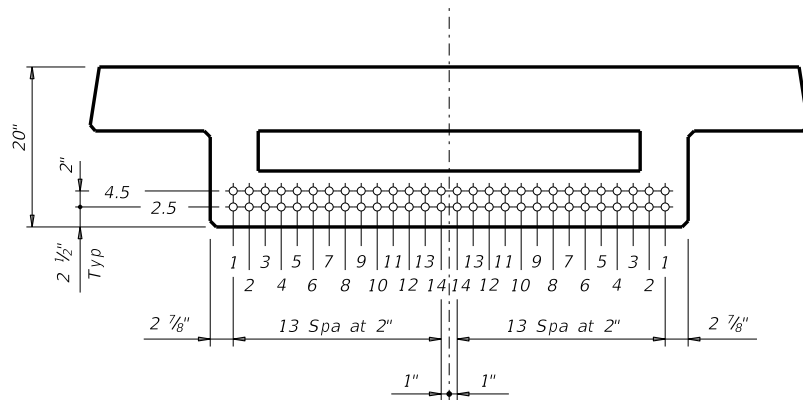
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STRUCTURE	DESIGNED BEAMS (STRAIGHT STRANDS)																		OPTIONAL DESIGN					LOAD RATING				
	SPAN NO.	BEAM NO.	BEAM TYPE	PRESTRESSING STRANDS						DEBONDED STRAND PATTERN PER ROW						CONCRETE		DESIGN LOAD COMP STRESS (TOP $\bar{\epsilon}$ ) (SERVICE I)	DESIGN LOAD TENSILE STRESS (BOTT $\bar{\epsilon}$ ) (SERVICE III)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRENGTH I)	LIVE LOAD DISTRIBUTION FACTOR		STRENGTH I			SERVICE III		
				NON-STD STRAND PATTERN	TOTAL NO.	SIZE	STRGTH	"e" $\bar{\epsilon}$	"e" END	TOT NO. DEB	DIST FROM BOTTOM	NO. OF STRANDS		NUMBER OF STRANDS DEBONDED TO (ft from end)							RELEASE STRGTH $\bar{\epsilon}$ (ksi)	MINIMUM 28 DAY COMP STRGTH $\bar{\epsilon}$ (ksi)	②		Inv	Opr	Inv	
												TOTAL	DE-BONDED	3	6	9	12						15	Moment				Shear
28' ROADWAY 7DS20 BEAM	30	ALL	7DS20		10	0.6	270	8.73	8.73	0	2.50	10	0	0	0	0	0	0	4.000	5.000	1.151	-1.277	812	0.719	0.719	1.01	1.31	1.35
	35	ALL	7DS20		14	0.6	270	8.73	8.73	0	2.50	14	0	0	0	0	0	4.000	5.000	1.452	-1.623	1015	0.704	0.704	1.13	1.47	1.35	
	40	ALL	7DS20		16	0.6	270	8.73	8.73	0	2.50	16	0	0	0	0	0	4.000	5.000	1.781	-2.003	1235	0.693	0.693	1.01	1.32	1.15	
	45	ALL	7DS20		20	0.6	270	8.73	8.73	2	2.50	20	2	2	0	0	0	4.000	5.000	2.158	-2.439	1486	0.684	0.684	1.02	1.33	1.07	
	50	ALL	7DS20		26	0.6	270	8.73	8.73	6	2.50	26	6	2	4	0	0	4.000	5.000	2.599	-2.946	1783	0.677	0.677	1.09	1.41	1.07	
28' ROADWAY 7DS23 BEAM	30	ALL	7DS23		10	0.6	270	10.53	10.53	0	2.50	10	0	0	0	0	0	4.000	5.000	0.888	-1.007	900	0.719	0.719	1.25	1.62	1.79	
	35	ALL	7DS23		12	0.6	270	10.53	10.53	0	2.50	12	0	0	0	0	0	4.000	5.000	1.120	-1.280	1022	0.704	0.704	1.18	1.52	1.56	
	40	ALL	7DS23		14	0.6	270	10.53	10.53	0	2.50	14	0	0	0	0	0	4.000	5.000	1.375	-1.581	1244	0.693	0.693	1.10	1.42	1.36	
	45	ALL	7DS23		16	0.6	270	10.53	10.53	0	2.50	16	0	0	0	0	0	4.000	5.000	1.667	-1.926	1498	0.684	0.684	1.00	1.30	1.21	
	50	ALL	7DS23		20	0.6	270	10.53	10.53	0	2.50	20	0	0	0	0	0	4.000	5.000	2.009	-2.327	1798	0.677	0.677	1.01	1.31	1.11	
	55	ALL	7DS23		24	0.6	270	10.53	10.53	2	2.50	24	2	2	0	0	0	4.000	5.000	2.372	-2.755	2114	0.671	0.671	1.00	1.30	1.03	
	60	ALL	7DS23		30	0.6	270	10.40	10.37	6	2.50	30	6	2	2	2	0	4.000	5.000	2.756	-3.211	2447	0.666	0.666	1.06	1.37	1.02	

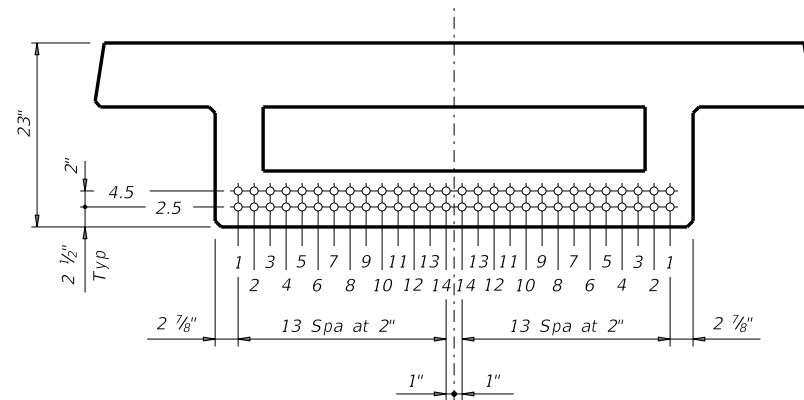
- ① Based on the following allowable stresses (ksi):  
 Compression = 0.65 f'ci  
 Tension = 0.24  $\sqrt{f'ci}$   
 Optional designs must likewise conform.
- ② Portion of full HL93.

**DESIGN NOTES:**  
 Load rated in accordance to The 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

		<b>Bridge Division Standard</b>	
<b>PRESTRESSED CONCRETE          DECKED SLAB BEAM          STANDARD DESIGNS          28' ROADWAY</b>			
<b>DSBSD-28</b>			
FILE: dsbste15-20.dgn	DN: JLR	CK: SDC	DW: EFC
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REVISIONS	DISTRICT	COUNTY	SHEET NO.