

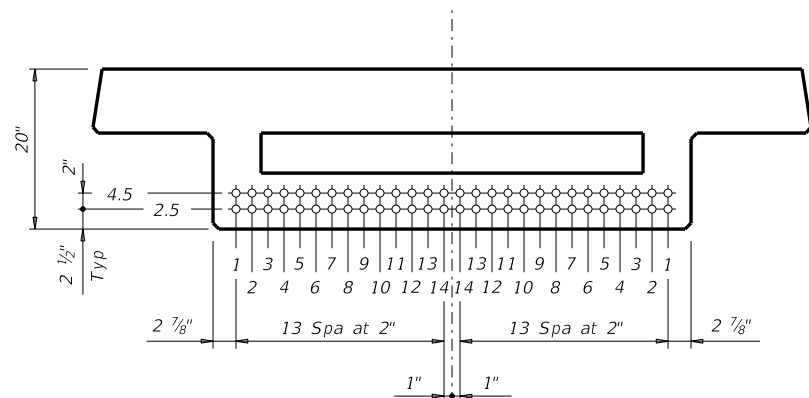
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STRUCTURE	DESIGNED BEAMS (STRAIGHT STRANDS)																		OPTIONAL DESIGN					LOAD RATING FACTORS							
	SPAN NO.	BEAM NO.	BEAM TYPE	PRESTRESSING STRANDS						DEBONDED STRAND PATTERN PER ROW						CONCRETE		DESIGN LOAD COMP STRESS (TOP ϵ) (SERVICE I)	DESIGN LOAD TENSILE STRESS (BOTT ϵ) (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{c}	"e" END	TOT NO. DEB	DIST FROM BOTTOM	NO. OF STRANDS		NUMBER OF STRANDS DEBONDED TO (ft from end)							RELEASE STRGTH f'_{ci} (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
24' ROADWAY 6DS20 BEAM	30	ALL	6DS20		10	0.6	270	8.31	8.31	0	2.50	10	0	0	0	0	0	0	4.000	5.000	1.125	-1.152	710	0.612	0.612	1.20	1.56	1.59			
	35	ALL	6DS20		12	0.6	270	8.31	8.31	0	2.50	12	0	0	0	0	0	0	4.000	5.000	1.426	-1.470	887	0.601	0.601	1.11	1.44	1.37			
	40	ALL	6DS20		14	0.6	270	8.31	8.31	0	2.50	14	0	0	0	0	0	0	4.000	5.000	1.754	-1.819	1081	0.592	0.592	1.01	1.31	1.17			
	45	ALL	6DS20		18	0.6	270	8.31	8.31	0	2.50	18	0	0	0	0	0	0	4.000	5.000	2.129	-2.219	1305	0.585	0.585	1.05	1.37	1.14			
	50	ALL	6DS20		22	0.6	270	8.31	8.31	2	2.50	22	2	2	0	0	0	0	4.000	5.000	2.568	-2.684	1567	0.579	0.579	1.03	1.34	1.04			
24' ROADWAY 6DS23 BEAM	30	ALL	6DS23		10	0.6	270	10.02	10.02	0	2.50	10	0	0	0	0	0	0	4.000	5.000	0.871	-0.906	882	0.612	0.612	1.49	1.93	2.10			
	35	ALL	6DS23		10	0.6	270	10.02	10.02	0	2.50	10	0	0	0	0	0	0	4.000	5.000	1.104	-1.157	894	0.601	0.601	1.11	1.43	1.54			
	40	ALL	6DS23		12	0.6	270	10.02	10.02	0	2.50	12	0	0	0	0	0	0	4.000	5.000	1.359	-1.434	1090	0.592	0.592	1.06	1.38	1.37			
	45	ALL	6DS23		16	0.6	270	10.02	10.02	0	2.50	16	0	0	0	0	0	0	4.000	5.000	1.651	-1.750	1316	0.585	0.585	1.17	1.52	1.39			
	50	ALL	6DS23		18	0.6	270	10.02	10.02	0	2.50	18	0	0	0	0	0	0	4.000	5.000	1.991	-2.117	1581	0.579	0.579	1.04	1.35	1.17			
	55	ALL	6DS23		22	0.6	270	10.02	10.02	2	2.50	22	2	2	0	0	0	0	4.000	5.000	2.355	-2.512	1864	0.575	0.575	1.05	1.36	1.10			
	60	ALL	6DS23		26	0.6	270	10.02	10.02	4	2.50	26	4	2	2	0	0	0	4.000	5.000	2.741	-2.931	2160	0.571	0.571	1.04	1.35	1.04			

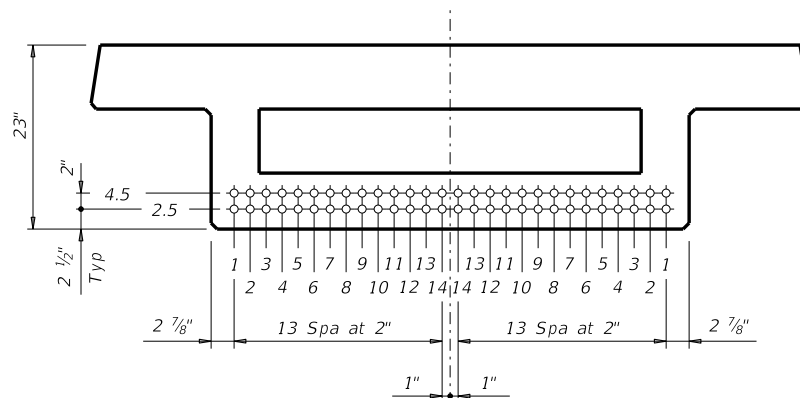
- ① Based on the following allowable stresses (ksi):
 Compression = 0.65 f'_{ci}
 Tension = $0.24 \sqrt{f'_{ci}}$
 Optional designs must likewise conform.
- ② Portion of full HL93.

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 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 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 24' ROADWAY DSBSD-24			
FILE: DSB-SD24-20.dgn	DN: JLR	CK: SDC	OW: EFC
©TxDOT August 2020	CONT	SECT	HIGHWAY
REVISIONS		SHEET NO.	
DIST		COUNTY	

DATE:
FILE: