

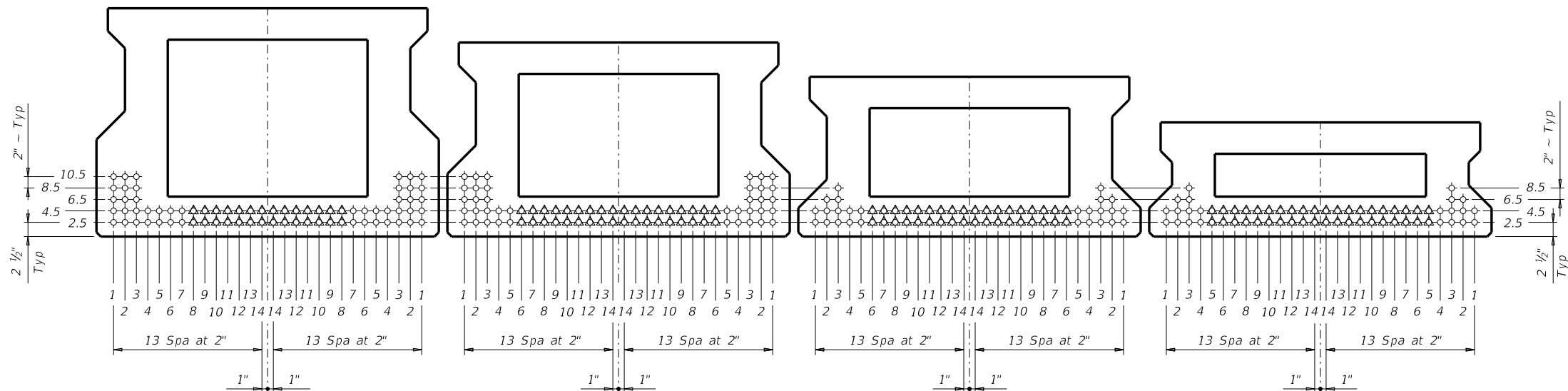
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

STRUCTURE	DESIGNED BEAMS (STRAIGHT STRANDS)																OPTIONAL DESIGN								
	SPAN LENGTH (ft)	BEAM NO.	BEAM TYPE	PRESTRESSING STRANDS						DEBONDED STRAND PATTERN PER ROW					CONCRETE		DESIGN LOAD COMP STRESS (TOP $\epsilon$ ) (SERVICE I)	DESIGN LOAD TENSILE STRESS (BOT $\epsilon$ ) (SERVICE III)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRENGTH I)	LIVE LOAD DISTRIBUTION FACTOR					
				NON-STD STRAND PATTERN	TOTAL NO.	SIZE (in)	STRGTH (ksi)	"e" $\bar{c}$ (in)	"e" END (in)	TOT NO. DEB	DIST FROM BOTTOM (in)	NO. OF STRANDS		NUMBER OF STRANDS DEBONDED TO (ft from end)						RELEASE STRGTH (1) $f_{ci}$ (ksi)	MINIMUM 28 DAY COMP STRGTH (ksi)	Moment Shear			
												TOTAL	DE-BONDED	3	6	9						12	15	2	3
TYPE 5XB20 X-BEAMS 44' Roadway 8" Slab	40	ALL	5XB20		10	0.6	270	7.03	7.03	0	2.50	10	0	0	0	0	0	4.000	5.000	1.183	-1.511	1148	0.626	0.823	
TYPE 5XB28 X-BEAMS 44' Roadway 8" Slab	40	ALL	5XB28		12	0.6	270	10.63	10.63	0	2.50	12	0	0	0	0	0	4.000	5.000	0.770	-0.952	1598	0.653	0.865	
TYPE 5XB34 X-BEAMS 44' Roadway 8" Slab	40	ALL	5XB34		10	0.6	270	13.11	13.11	0	2.50	10	0	0	0	0	0	4.000	5.000	0.633	-0.725	1668	0.670	0.892	
TYPE 5XB40 X-BEAMS 44' Roadway 8" Slab	40	ALL	5XB40		8	0.6	270	15.70	15.70	0	2.50	8	0	0	0	0	0	4.000	5.000	0.540	-0.588	1732	0.683	0.915	

**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 8" concrete slabs without overlay and 0 through 30 degree skews.

**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  $\Delta$ .

(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 5XB40 BEAMS**

**TxDOT 5XB34 BEAMS**

**TxDOT 5XB28 BEAMS**

**TxDOT 5XB20 BEAMS**

HL93 LOADING

		<b>Bridge Division Standard</b>		
<b>PRESTRESSED CONCRETE X-BEAM STANDARD DESIGNS</b> <b>44' ROADWAY</b> <b>XBSD-44</b>				
FILE: xbstds70.dgn	DN: SRW	CK: BMP	DW: SFS	CK: SDB
©TxDOT June 2011		CONT	SECT	HIGHWAY
REVISIONS				
DIST	COUNTY		SHEET NO.	
01-16: Notes, 0.6" strand designs.				

DATE:  
FILE: