DISCLAIMER:
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STRUCTURE	DESIGNED BEAMS (STRAIGHT STRANDS)																		OPTIONAL DESIGN					LOAD RATING FACTORS		
				PRESTRESSING STRANDS							DEBONDED STRAND PATTERN PER ROW								CONCRETE							
	SPAN NO.	BEAM NO.	BEAM TYPE	NON-STD STRAND PATTERN	TOTAL NO.	SIZE (in)	STRGTH fpu (ksi)	"e" ℄ (in)	"e" END (in)	TOT. NO. DEB	DIST FROM BOTTOM (in)	NO.OF STRANDS TOTAL	NO.OF STRANDS DE-BONDED	NUMBER OF STRANDS DEBONDED TO (ft from end) 3	6	9	12	15	RELEASE STRGTH ① f'ci (ksi)	MINIMUM 28 DAY COMP STRGTH f'c (ksi)	DESIGN LOAD COMP STRESS (TOP ℄) (SERVICE I) fct(ksi)	DESIGN LOAD TENSILE STRESS (BOTT ℄) (SERVICE III) fcb(ksi)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRENGTH I) (ft-kips)	LIVE LOAD DISTRIBUTION FACTOR ② Moment	Shear	STRENGTH I Inv	STRENGTH I Opr	SERVICE III Inv

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 in accordance with AASHTO LRFD Bridge Design Specifications.

Load rated using Load and Resistance Factor Rating according to AASHTO Manual for Bridge Evaluation.

Optional designs must have a calculated residual camber equal to or greater than that of the designed beam.

Prestress losses for the designed beams have been calculated for a relative humidity of __ percent. Optional designs must likewise conform.

The grid pattern for the strands is based on exact conversions from a metric grid spacing of 50mm.

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.

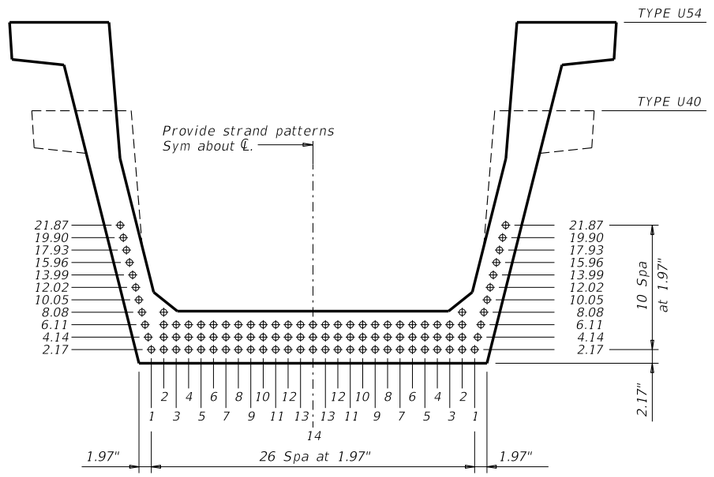
Locate strands for the designed beam as low as possible on the 1.97" grid system unless a non-standard stand pattern is indicated. Fill row "2.17", then row "4.14", then row "6.11", etc., beginning each row in the "1" position and, distributing uniformly as practical, working inward until the required number of strands is reached.

Strand debonding must comply with Item 424.4.2.2.2.4.

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" and "2".

To complete this sheet input the girder designs in the table and the relative humidity under Design Notes. In all cases, remove this block. This sheet must be signed, sealed, and dated by a registered Professional Engineer.



TxDOT TYPE U54 & TYPE U40 BMS

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

PRESTRESSED CONCRETE U-BEAM DESIGNS (DESIGN DATA)

UBND

FILE: ubstds04-22.dgn	DN: TxDOT	CK: TxDOT	DW: SFS	CK: SDB
©TxDOT July 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS				
01-16: Notes. 03-22: Added Load Rating.	DIST	COUNTY		SHEET NO.

DATE:
FILE: