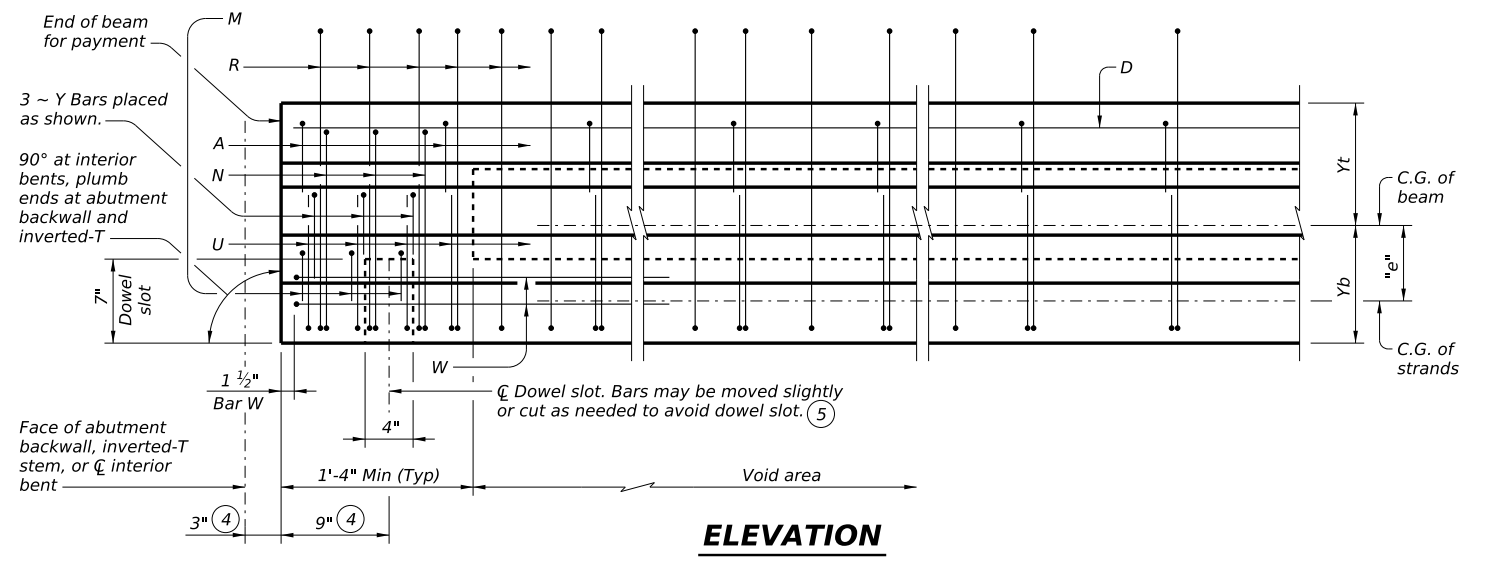
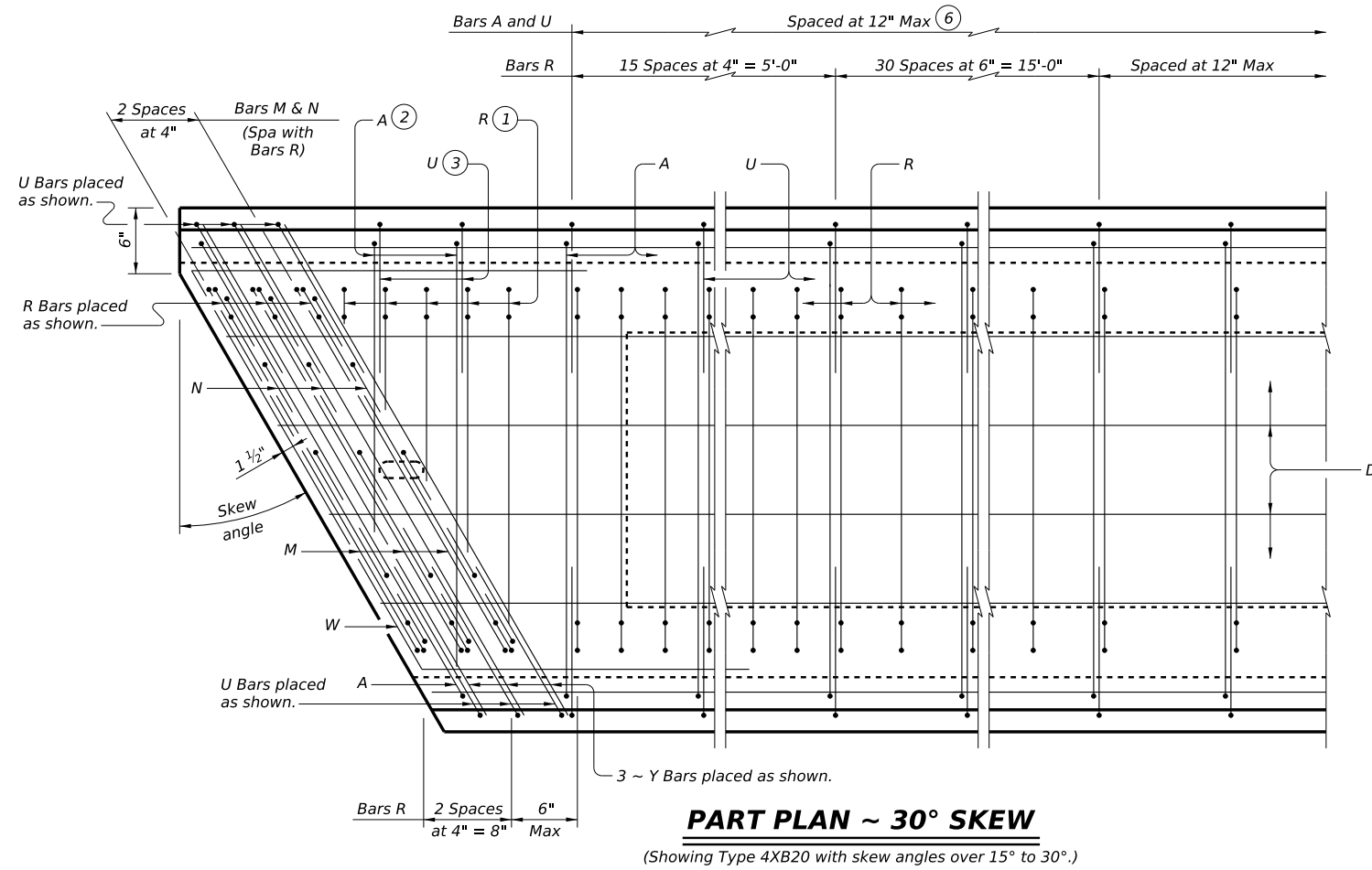
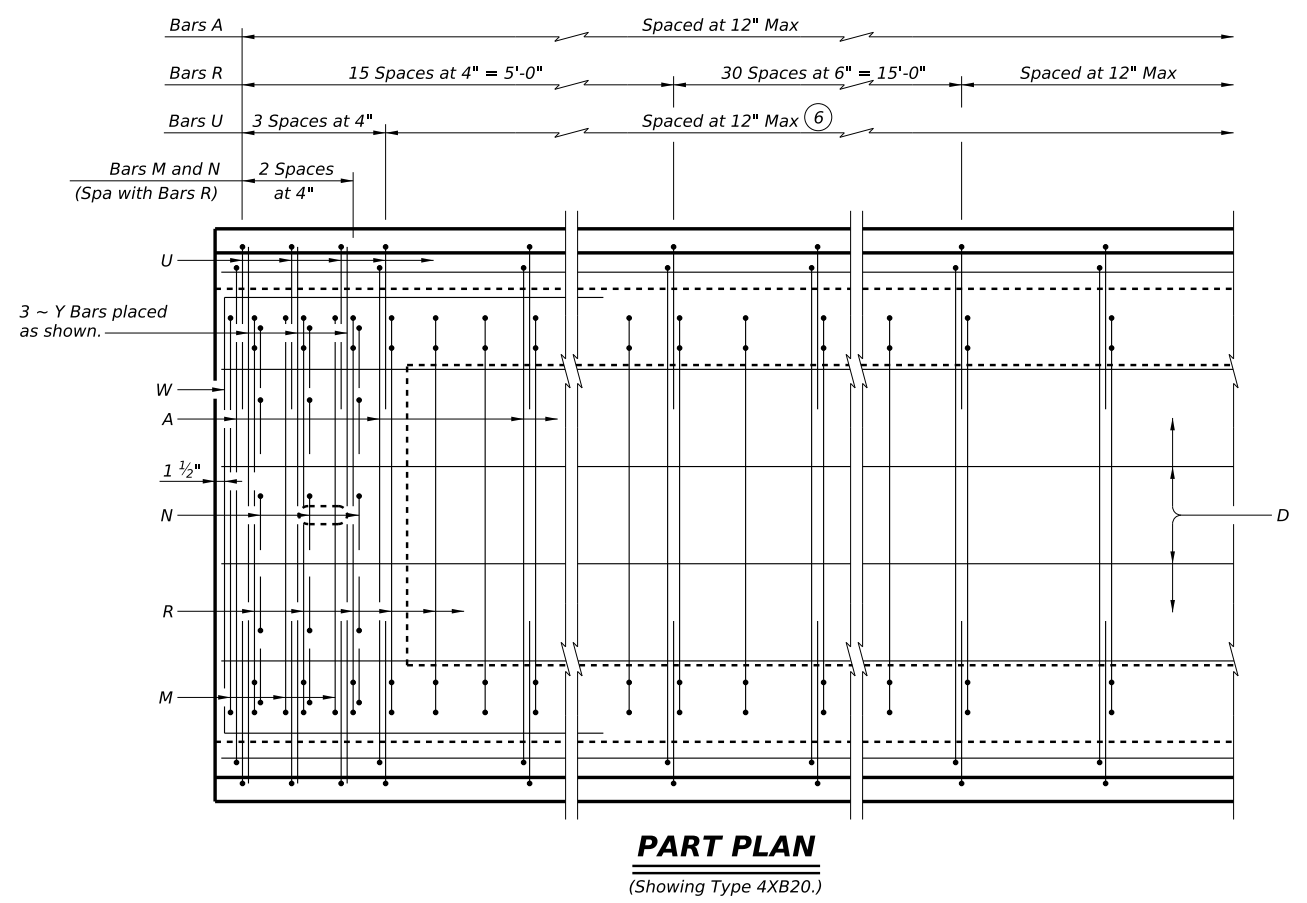
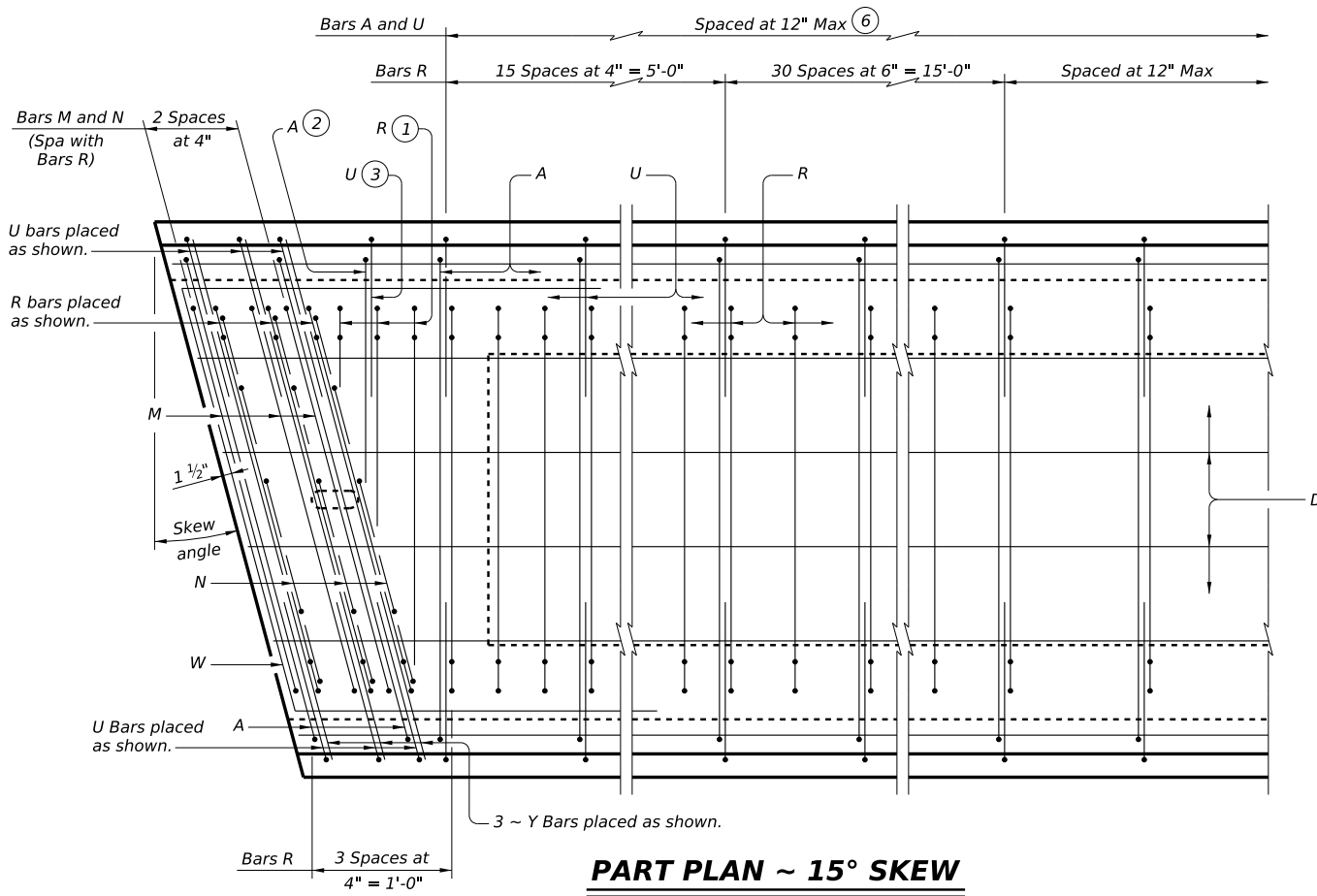


DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



- ① Bars R spaced at 4" Max. Cut Bars R as necessary to provide 2" clear between adjacent bars as shown.
- ② Bars A spaced with Bars U. Cut Bars A as necessary to provide 2" clear between adjacent bars as shown.
- ③ Bars U spaced at 8" Max as shown.
- ④ Measured perpendicular to ⌀ interior bents, abutment backwall, or inverted-T stem.
- ⑤ ⌀ 4" x 1 1/2" Vertical slotted hole at doweled beam end (labeled [D] on Bridge Layout.) Required for outside beam only or as shown on substructure details. Anchorage holes may be tapered (4 3/4" x 1 5/8") at base. If holes are formed with sheet metal, forms may be left in place.
- ⑥ Terminate Bars U 5 ft from beam ends or 3 ft beyond the last debonded strands, whichever is greater.

DATE: FILE:

HL93 LOADING SHEET 1 OF 3

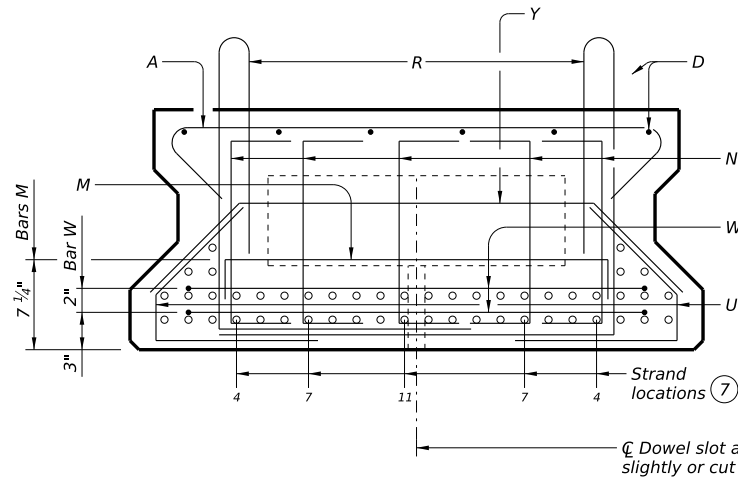
Texas Department of Transportation Bridge Division Standard

PRESTRESSED CONCRETE X-BEAM DETAILS (TYPE XB20)

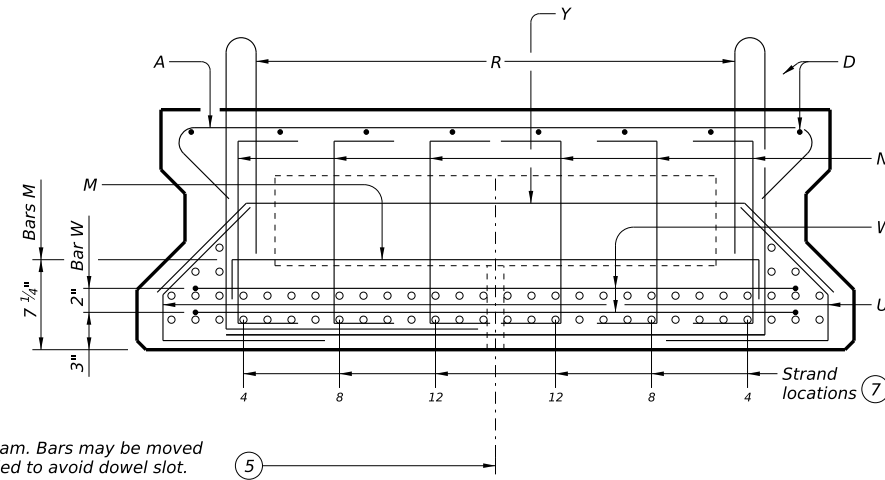
XB20

FILE: XB-XB20-22.dgn	DN: JMH	CK: TAR	DW: JER	CK: TAR
©TxDOT August 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY	SHEET NO.	

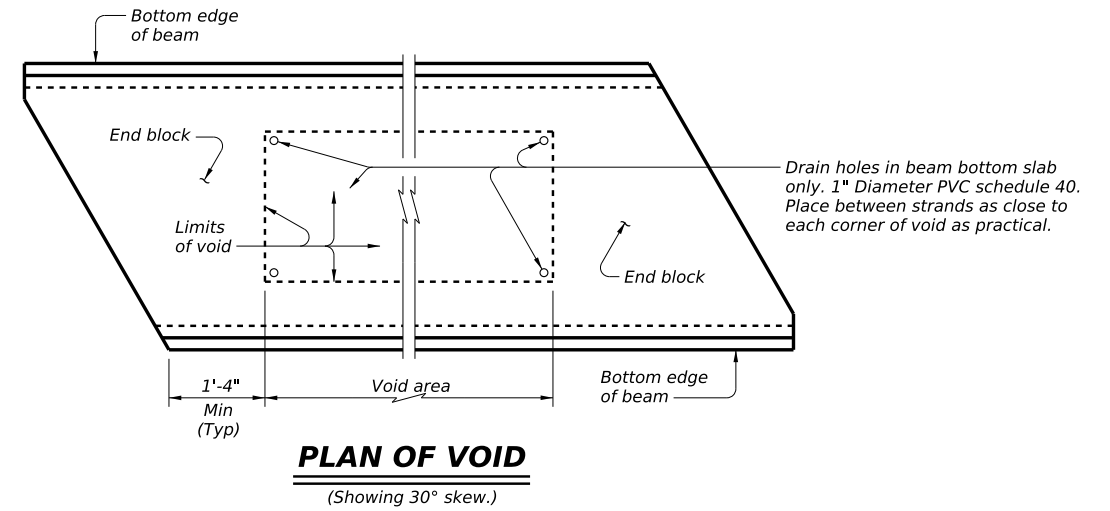
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



END BLOCK SECTION ~ TYPE 4XB20

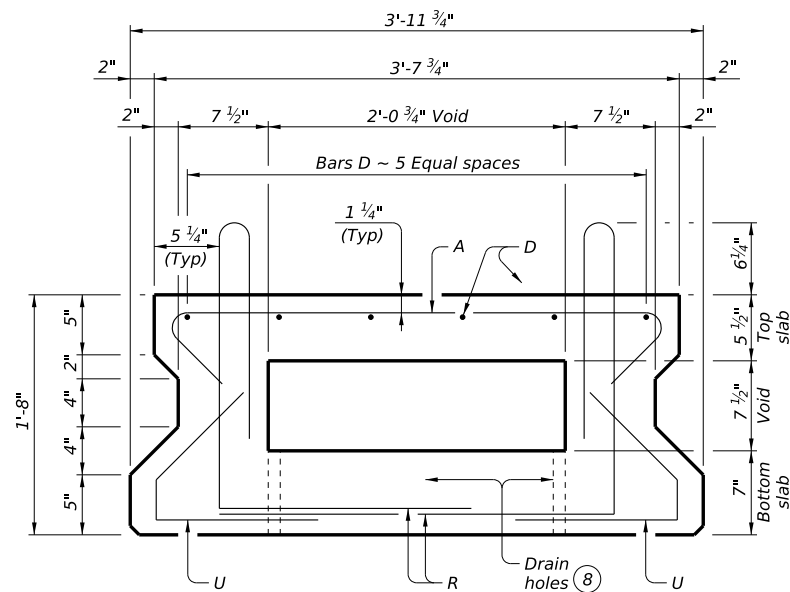


END BLOCK SECTION ~ TYPE 5XB20

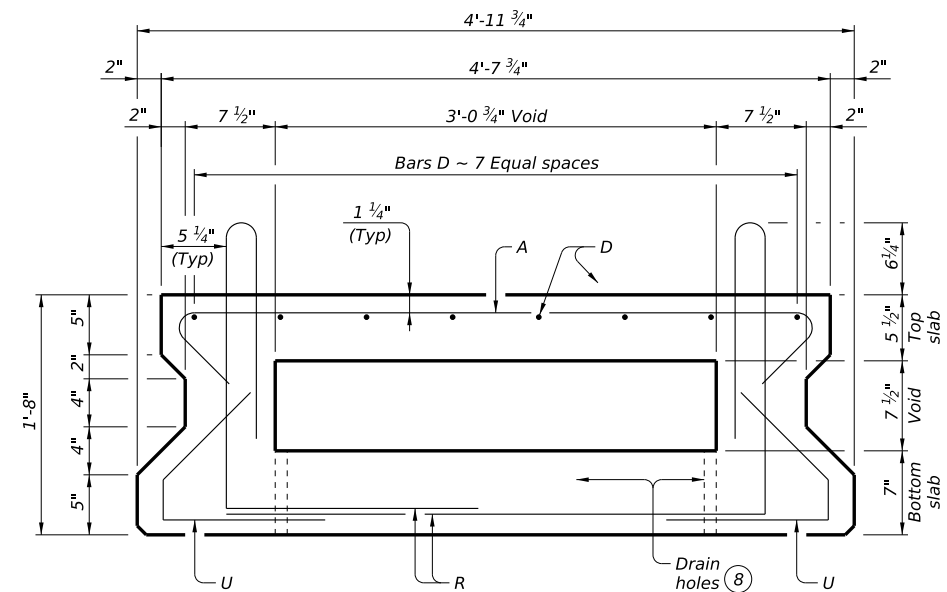


- ⑤ \varnothing 4" x 1 1/2" Vertical slotted hole at doweled beam end (labeled [D] on Bridge Layout.) Required for outside beam only or as shown on substructure details. Anchorage hole may be tapered (4 3/4" x 1 5/8") at base. If holes are formed with sheet metal, forms may be left in place.
- ⑦ See Prestressed Concrete X-Beam Designs (Non-Standard Spans) (XBND) standard or the appropriate Prestressed Concrete X-Beam Standard Designs (XBSD-##) standard sheet for locations of pretensioning strands.
- ⑧ Drain holes 1" diameter PVC schedule 40 pipe as shown between strands in all beam void corners. See "Plan of Void."
- ⑨ Based on 155 pcf weight density of concrete. Weight of end blocks is not included.

BEAM PROPERTIES			
	Type 4XB20	Type 5XB20	
Area	in ²	689	839
Y Top	in	10.47	10.47
Y Bottom	in	9.53	9.53
I	in ⁴	29,124	36,621
Weight ⑨	lb/ft	742	903



TYPICAL SECTION ~ TYPE 4XB20



TYPICAL SECTION ~ TYPE 5XB20

HL93 LOADING **SHEET 2 OF 3**

Bridge Division Standard

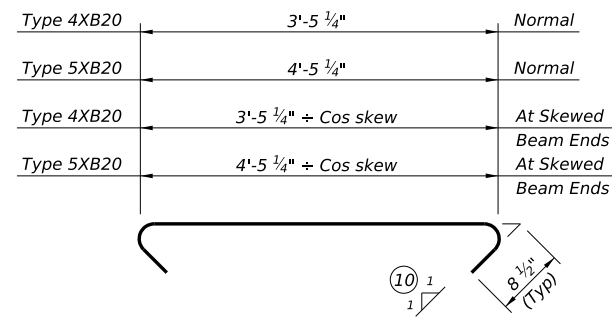
PRESTRESSED CONCRETE X-BEAM DETAILS (TYPE XB20)

XB20

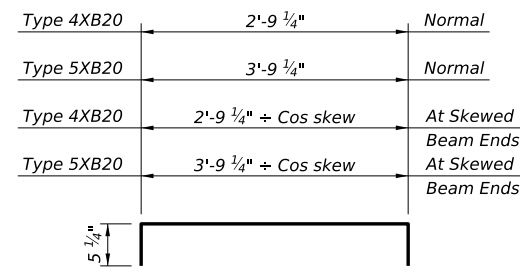
FILE: XB-XB20-22.dgn	DN: JMH	CK: TAR	DW: JER	CK: TAR
© TxDOT August 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST		COUNTY	SHEET NO.

DATE:
FILE:

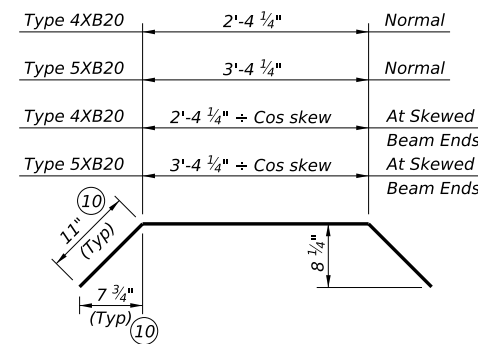
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



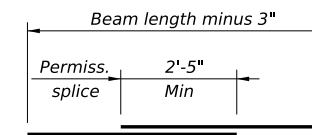
BARS A (#4)



BARS M (#5)

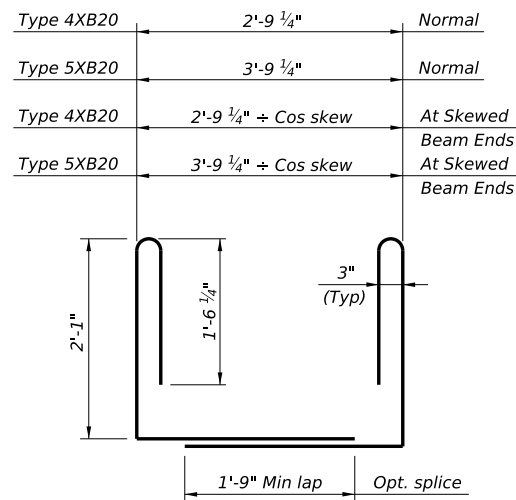


BARS Y (#5)



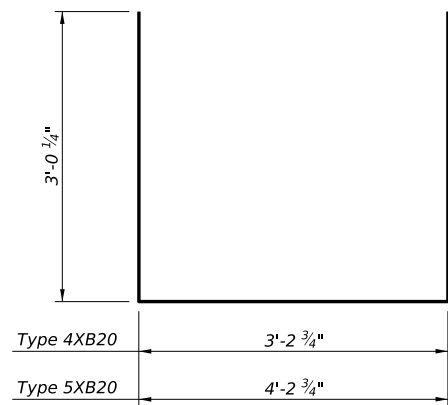
BARS D (#5)

(Place splices in middle third of span.)

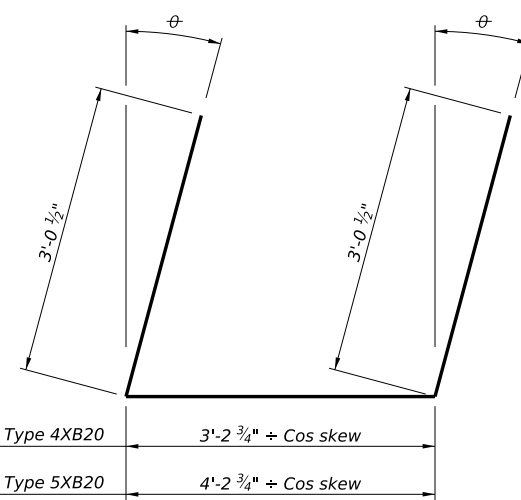


BARS R (#4)

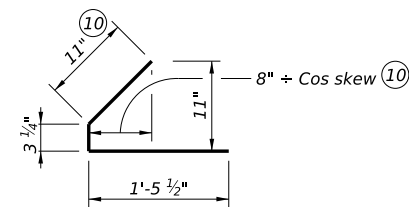
⑩ Dimension will vary slightly with skew. Adjust as necessary.



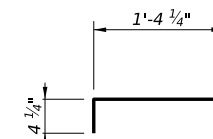
BARS W (#5)
(For square beam ends)



BARS W (#5)
(For skewed beam ends)



BARS U (#4)



BARS N (#4)

MATERIAL NOTES:

Provide Class H concrete.
Provide Grade 60 reinforcing steel.
An equal area of deformed welded wire reinforcement (WWR) (ASTM A1064) may be substituted for all or some of Bars A, D, R, and U.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications. Two-stage monolithic casting is required when conventional concrete is used. The concrete in the first stage cast (bottom beam flange) must remain plastic until the second stage cast (webs and top beam flange) is placed. Vibrate as required to ensure consolidation between the two casts.

When approved by the Engineer, self-consolidating concrete may be placed in a one-stage monolithic casting.

1 1/4" clear cover to reinforcement is required unless noted otherwise.

These details are applicable for skews up to 30 degrees only.

Chamfer bottom beam corners 3/4" or round to a 3/4" radius.

Punch through all drain holes, removing any blockage, before beams are shipped.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions shown are out-to-out of bar.

HL93 LOADING

SHEET 3 OF 3



Bridge Division Standard

**PRESTRESSED CONCRETE
X-BEAM DETAILS
(TYPE XB20)**

XB20

FILE: XB-XB20-22.dgn	DN: JMH	CK: TAR	DW: JER	CK: TAR
©TxDOT August 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY	SHEET NO.	

DATE:
FILE: