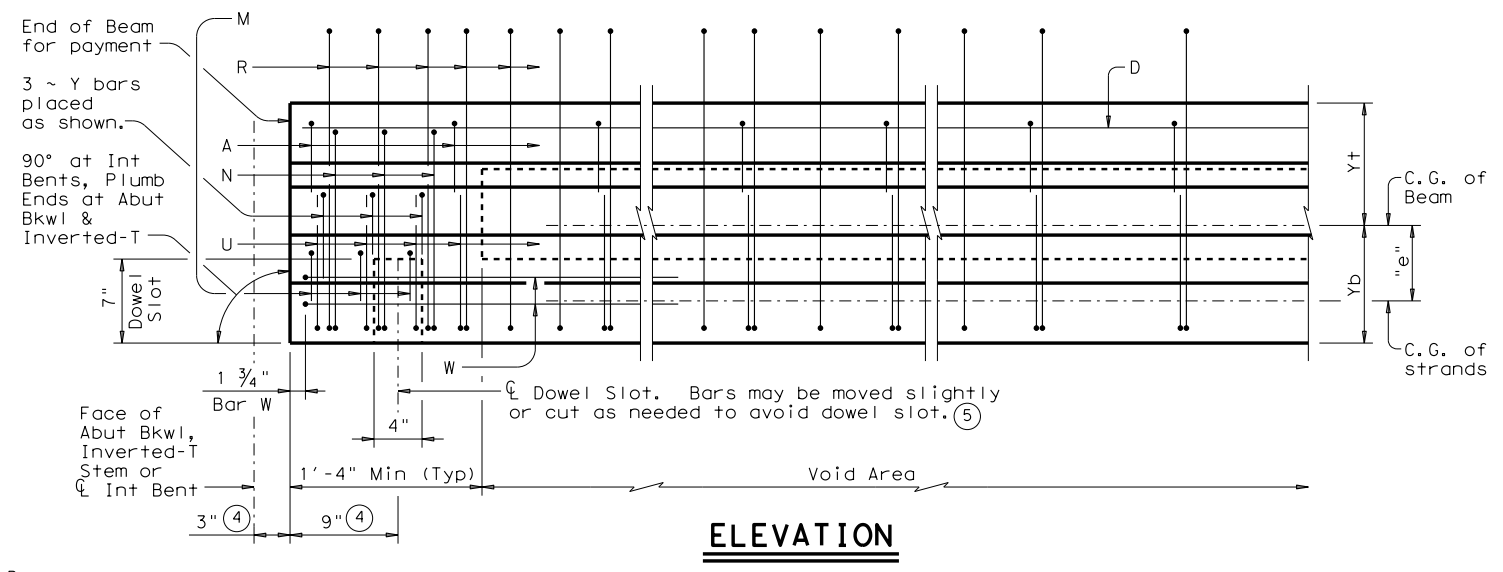
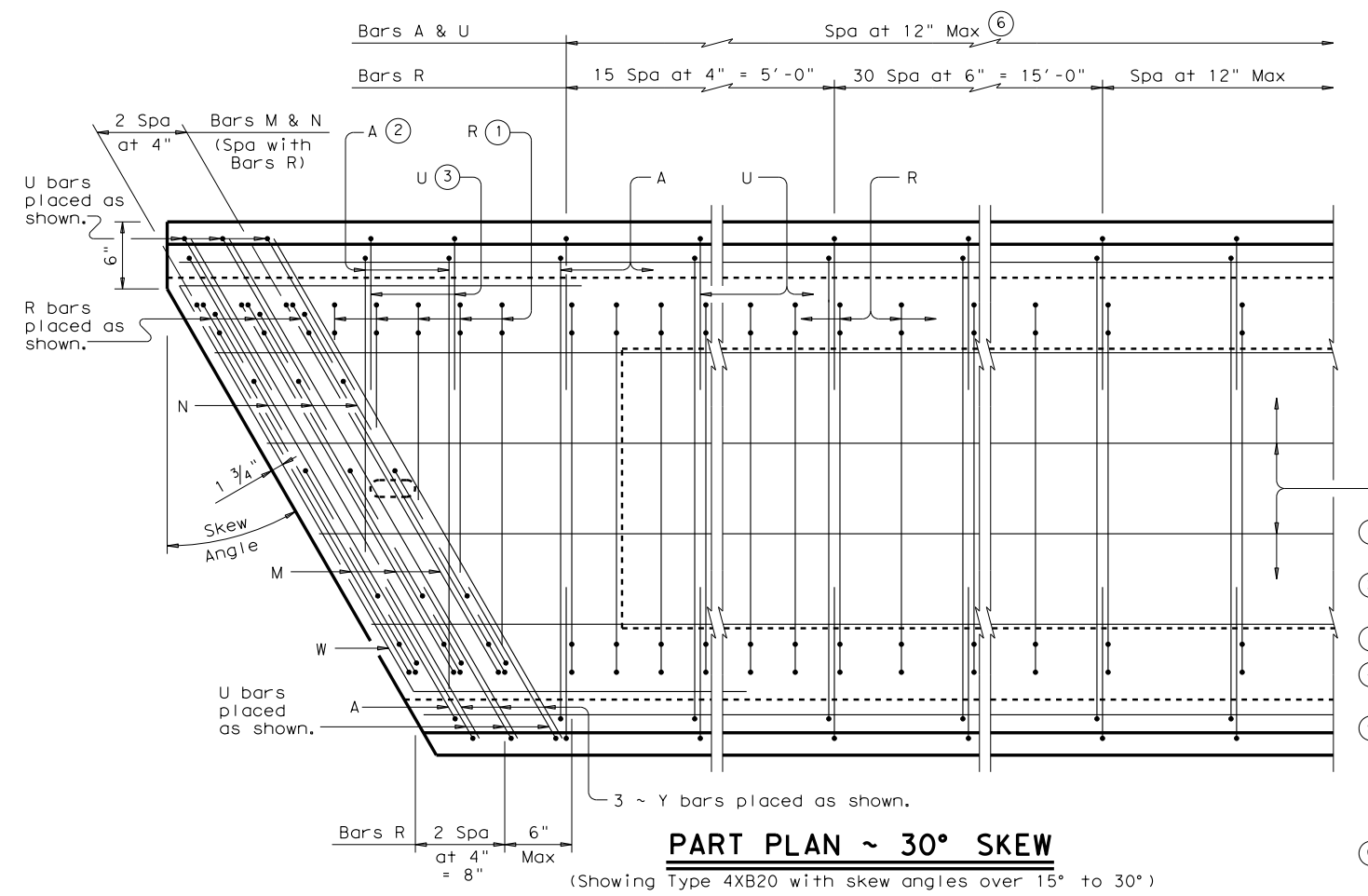
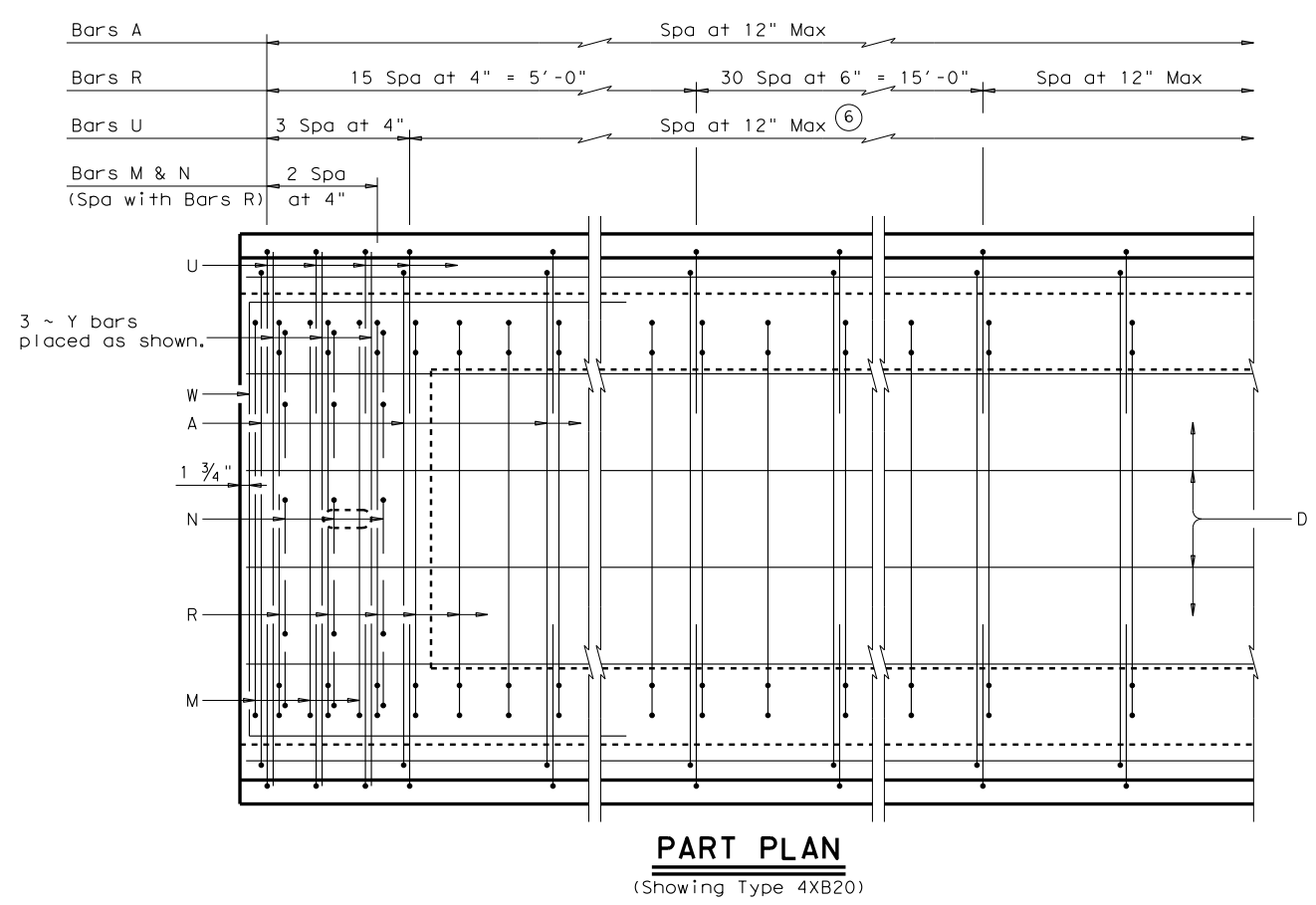
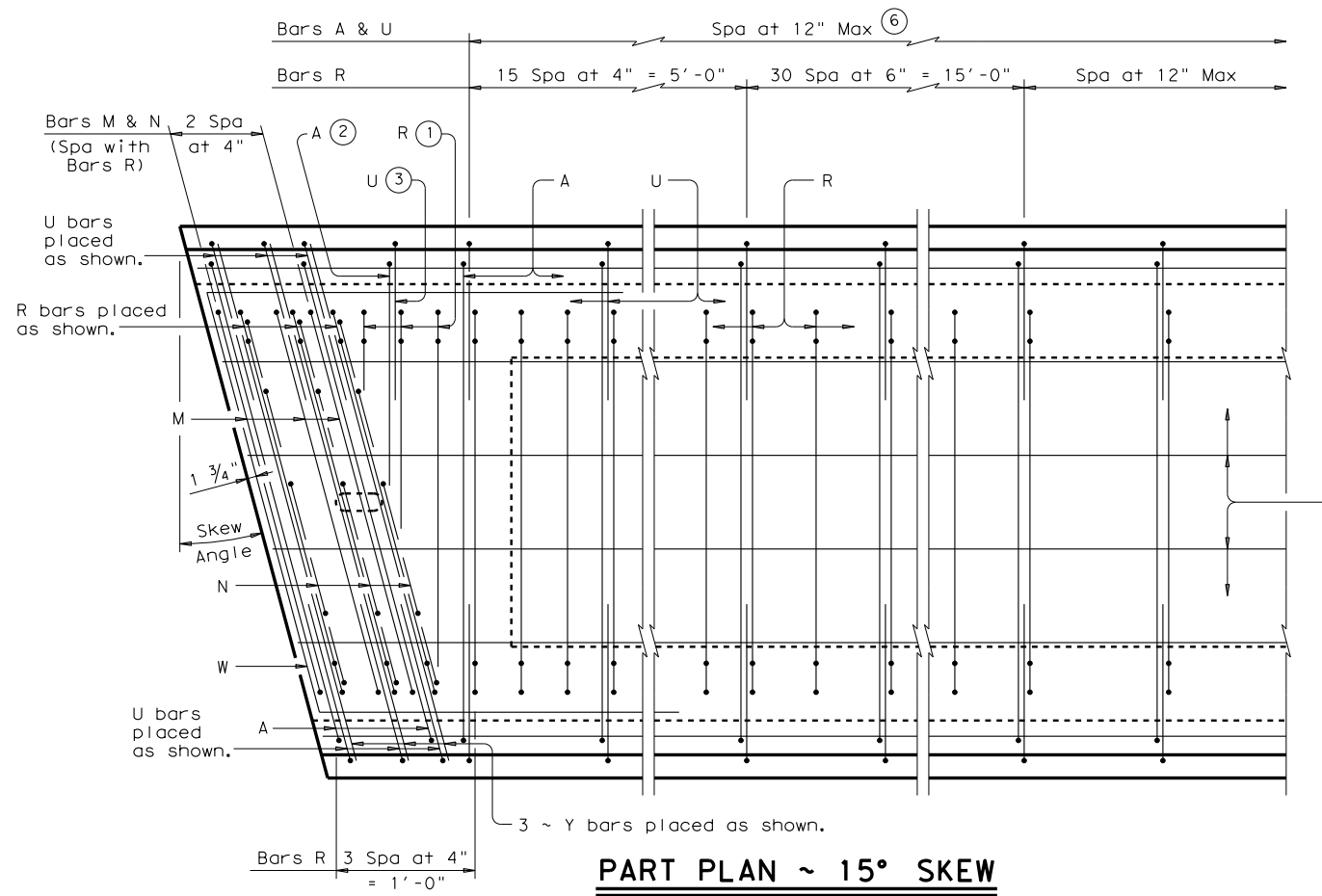


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- ① Bars R spaced at 4" Max. Cut Bars R as necessary to provide 2" clear between adjacent bars as shown.
- ② Bars A spaced with Bars U. Cut Bars A as necessary to provide 2" clear between adjacent bars as shown.
- ③ Bars U spaced at 8" Max as shown.
- ④ Measured perpendicular to $\bar{\bar{C}}$ Interior Bents, Abutment Bkwl or Inverted-T Stem.
- ⑤ $\bar{\bar{C}}$ 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 End Bars U the greater of 5' from beam ends or 3' beyond the last debonded strands.

HL93 LOADING SHEET 1 OF 2



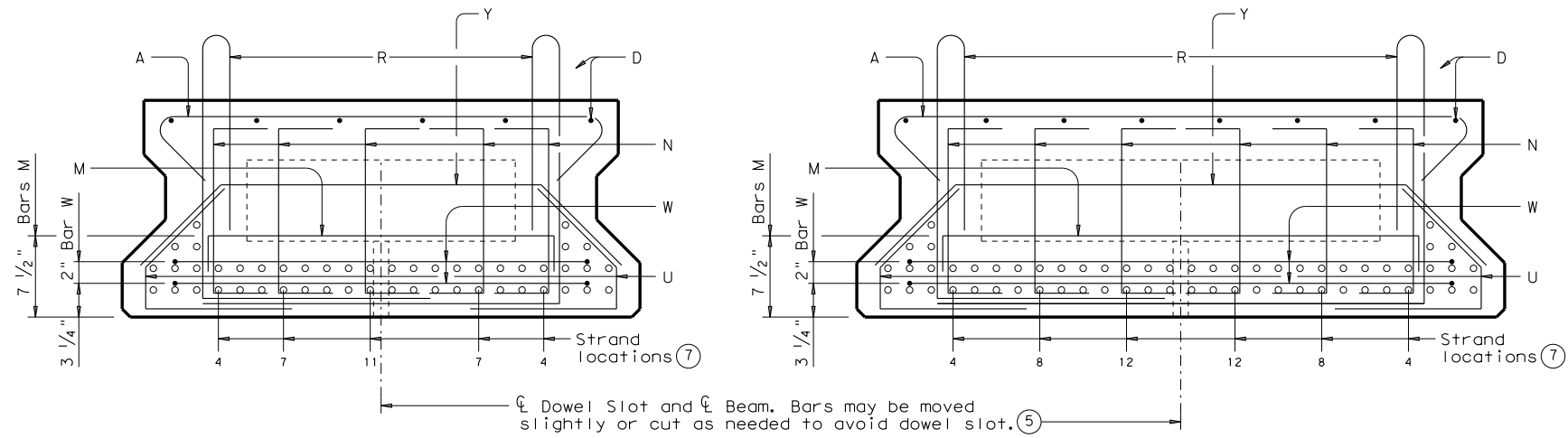
**PRESTRESSED CONCRETE
X-BEAM DETAILS
(TYPE XB20)**

XB20

FILE: xbsts01.dgn	DN: JMH	CK: AM	DW: JTR	CK: JMH
©TxDOT June 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY	SHEET NO.	

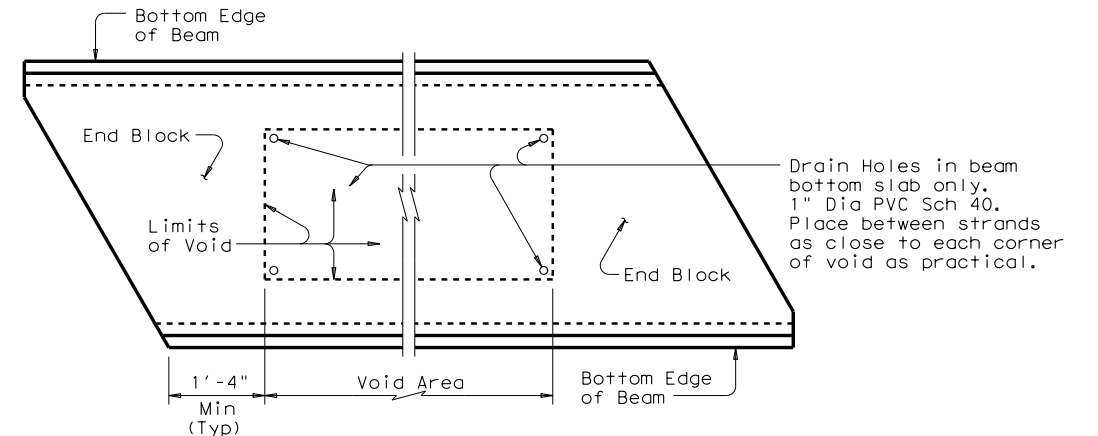
DATE:
FILE:

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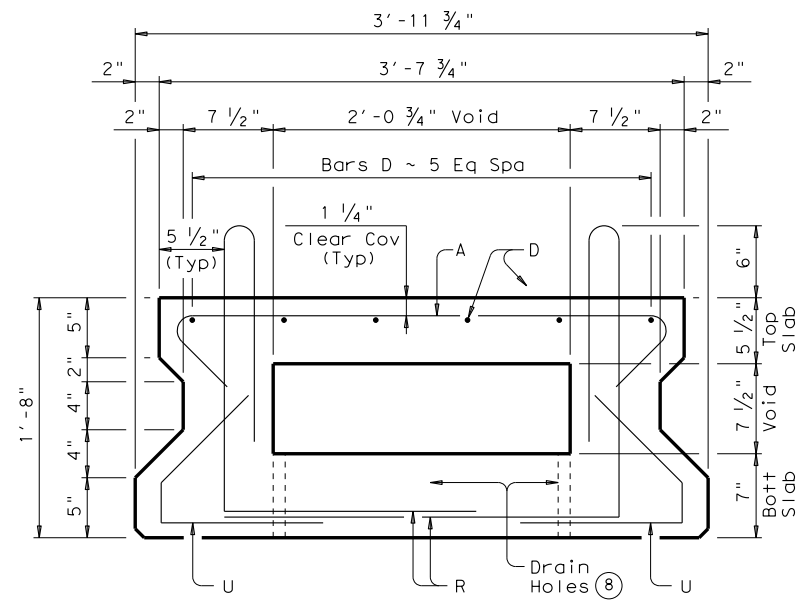
END BLOCK SECTION ~ TYPE 4XB20

END BLOCK SECTION ~ TYPE 5XB20

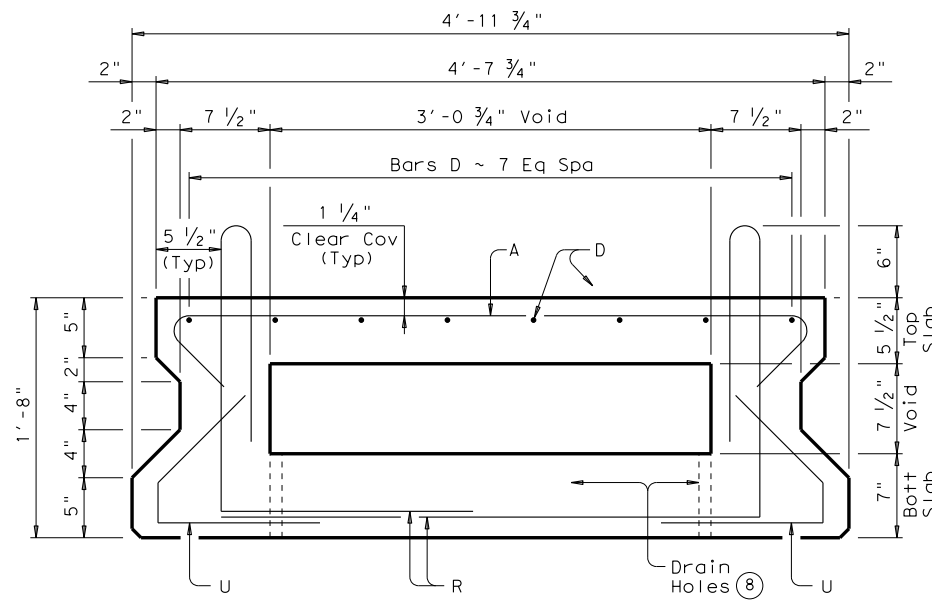


PLAN OF VOID
(Showing 30° skew)

- 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 3/8") at base. If holes are formed with sheet metal, forms may be left in place.
- ⑦ See standard XBND or appropriate Prestressed Concrete X-Beam Standard Designs sheet for locations of pretensioning strands.
- ⑧ Drain Holes 1" Dia PVC Sch 40 Pipe as shown between strands in all beam void corners. See "Plan of Void".
- ⑨ Based on 150 pcf weight density of concrete. Weight of end blocks is not included.
- ⑩ Dimension will vary slightly with skew. Adjust as necessary.
- ⑪ At the Fabricator's option, alternate designs utilizing deformed welded wire reinforcement (WWR) conforming to ASTM A1064 of equivalent cross sectional area to replace all or some of Bars A, D, R and U will be permitted. Smooth Welded Wire Reinforcement is not permitted.



TYPICAL SECTION ~ TYPE 4XB20



TYPICAL SECTION ~ TYPE 5XB20

BEAM PROPERTIES			
		Type 4XB20	Type 5XB20
Area	in ²	689	839
Y top	in	10.47	10.47
Y bott	in	9.53	9.53
I	in ⁴	29,124	36,621
Weight	lb/ft	718	874

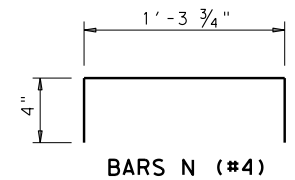
GENERAL NOTES:
 Designed according to AASHTO LRFD Specifications. Use Class H concrete. Use Class H (HPC) if required elsewhere in plans. All reinforcing steel must be Grade 60.
 Two-stage monolithic casting is required. The concrete in the first stage cast (bottom beam flange) must remain plastic until the second stage cast (webs and top beam flange) is placed. Vibrate as required to ensure consolidation between the two casts.
 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.

Type 4XB20	2'-8 3/4"	Normal
Type 5XB20	3'-8 3/4"	Normal
Type 4XB20	2'-8 3/4" @ Cos Skew	At skewed beam ends
Type 5XB20	3'-8 3/4" @ Cos Skew	At skewed beam ends

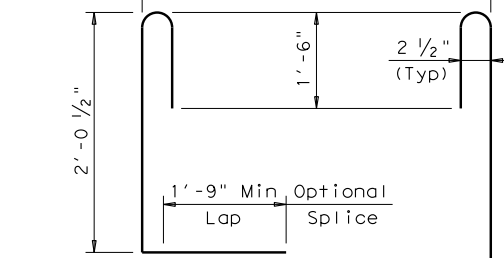
Type 4XB20	2'-4"	Normal
Type 5XB20	3'-4"	Normal
Type 4XB20	2'-4" @ Cos Skew	At skewed beam ends
Type 5XB20	3'-4" @ Cos Skew	At skewed beam ends

Type 4XB20	2'-8 3/4"	Normal
Type 5XB20	3'-8 3/4"	Normal
Type 4XB20	2'-8 3/4" @ Cos Skew	At skewed beam ends
Type 5XB20	3'-8 3/4" @ Cos Skew	At skewed beam ends

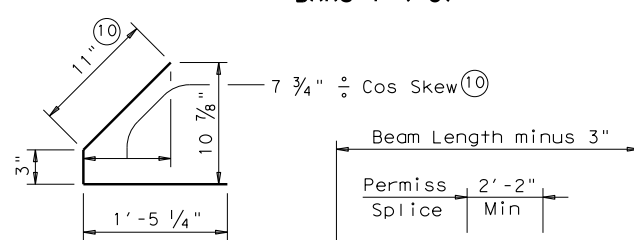
Type 4XB20	3'-4 3/4"	Normal
Type 5XB20	4'-4 3/4"	Normal
Type 4XB20	3'-4 3/4" @ Cos Skew	At skewed beam ends
Type 5XB20	4'-4 3/4" @ Cos Skew	At skewed beam ends



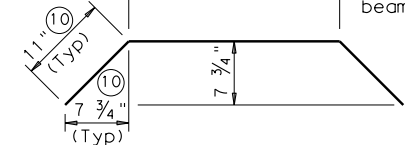
BARS N (#4)



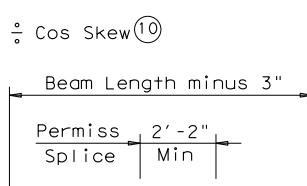
BARS R (#4) ⑪



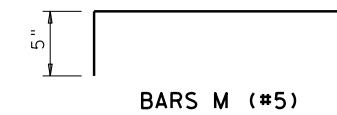
BARS U (#4) ⑪



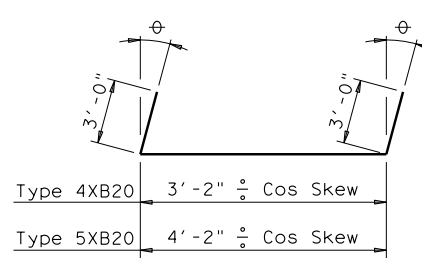
BARS Y (#5)



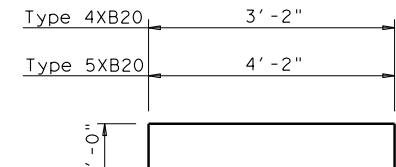
BARS D (#5) ⑪
(Place splices in middle third of span)



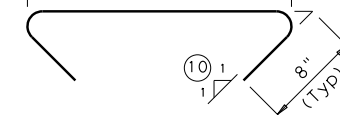
BARS M (#5)



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



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



BARS A (#4) ⑪

PRESTRESSED CONCRETE X-BEAM DETAILS (TYPE XB20)

XB20

FILE: xbstas01.dgn	DN: JMH	CK: AM	DW: JTR	CK: JMH
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REVISIONS	DIST	COUNTY	SHEET NO.	

DATE: FILE: