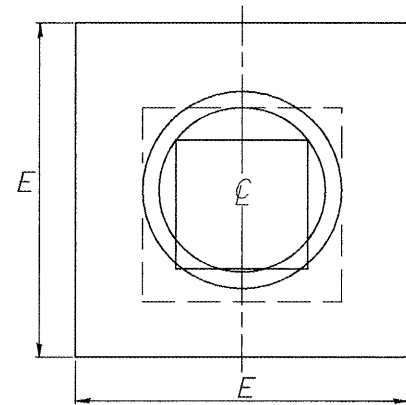
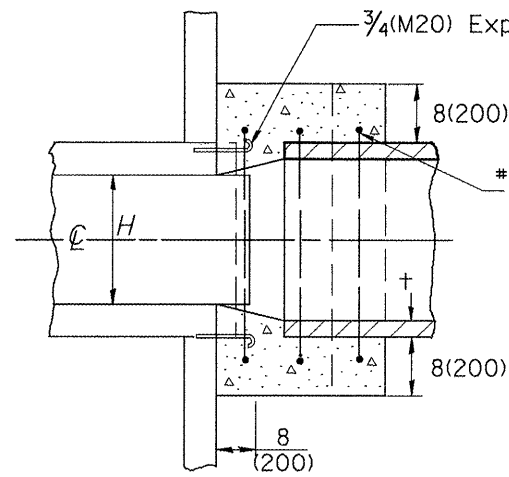


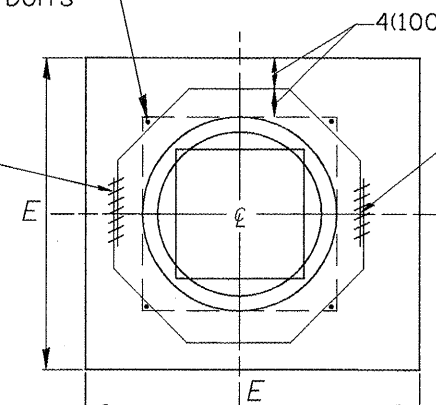
SECTION A-A



END VIEW



SECTION A-A



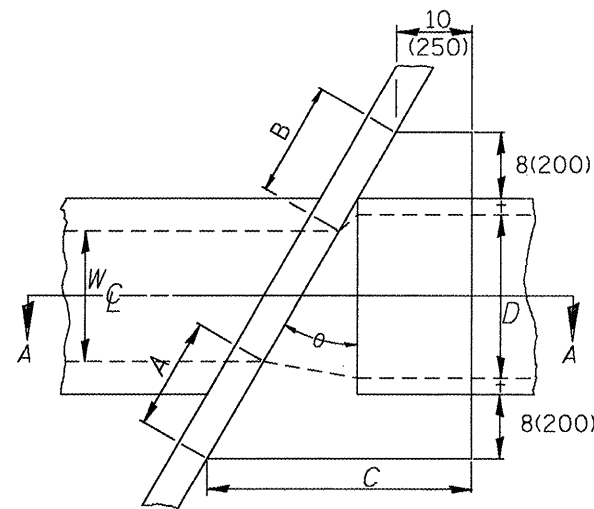
END VIEW

$$A = B = \frac{D - W}{2} + t + 8(200) \cos \theta$$

$$C = \tan \theta [D + 2t + 16(410)] + 10(250)$$

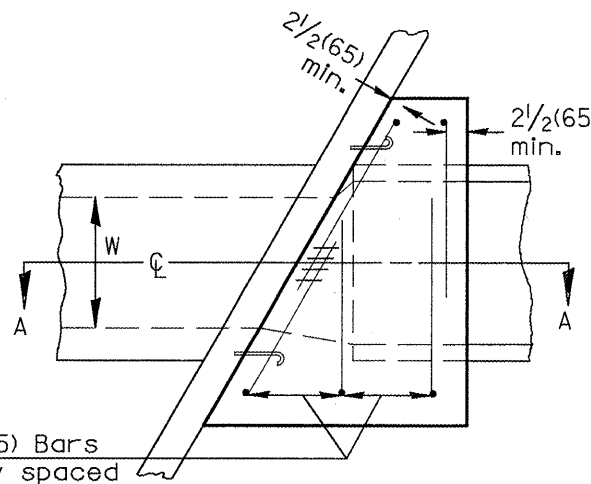
$$G = \frac{D + 2t + 8(200)}{2.4142 [\cos \theta]}$$

(Note: 'G' is based upon maximum skewed length)

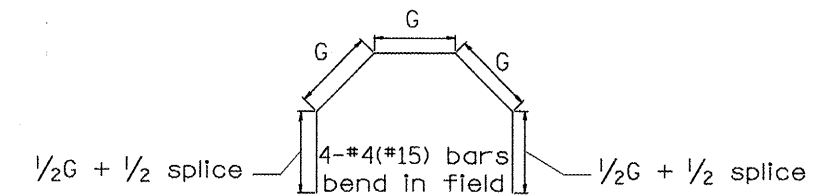


PLAN VIEW UP STREAM

NOTE:  
Dimensions are shown in Plan View of Up Stream End while Reinforcement is shown in plan view of Down Stream End.



PLAN VIEW DOWN STREAM



GENERAL NOTES

- The collar shall be constructed entirely of CLASS SI CONCRETE and in accordance with the applicable portions of section 503 of the Standard Specifications. Reinforcement bars shall conform to section 508.
- Expansion bolts shall consist of approved expansion anchors, and 3/4 (M20) hook bolts which conform to section 1006.09. These bolts shall extend at least 8(200) into the new concrete.

EXISTING BOX		θ	EACH COLLAR						CONCRETE CU. YD. (m <sup>3</sup> )	REINFORCEMENT BARS			EXPAN. BOLTS EACH
W	H		A	B	C	D	E	t		G	L	KG(LBS.)	
3'-0"	2'-0"	2.44°	12	12	12½	36	5'-0"	4	0.50	1'-9"	8'-4"	(22.27)	4
3'-0"	2'-0"	2.44°	12	12	12½	36	5'-0"	4	0.50	1'-9"	8'-4"	(22.27)	4
2'-0"	2'-0"	16.51°	15	15	25½	30	4'-5"	3½	0.66	1'-7"	7'-8"	(20.49)	4
2'-0"	2'-0"	35.63°	16¼	16¼	48	30	4'-5"	3½	1.08	1'-11"	9'-0"	(30.06)	4
2'-0"	2'-0"	5.51°	21¼	21¼	16¼	42	5'-7"	4¼	0.69	2'-½"	9'-6"	(25.38)	4

QUANTITIES  
CALC. BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
QUANTITY CALCULATIONS ARE ON FILE AT THE DISTRICT 4 OFFICE; BUREAU OF PROJECT IMPLEMENTATION; DOCUMENTATION SECTION

01-01-97	RENUM. J-11.03, NEW REVISION BOX, REVISED	T.P.
10-16-06	TITLE BOX, ADDED QUANTITY CALCULATION BOX REVISED TO 2007 SPEC.	M.A.

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SKewed PIPE CULVERT EXTENSION COLLAR (WITH END SECTION)

NOT TO SCALE

CADD STD. 542011-D4

All dimensions are in inches (millimeters) unless otherwise noted.

F.A.P. RTE. 685	SECTION ..	COUNTY ..	TOTAL SHEETS 329	SHEET NO. 202
CONTRACT NO. 68599				

FED. ROAD DIST. NO. [ILLINOIS] FED. AID PROJECT