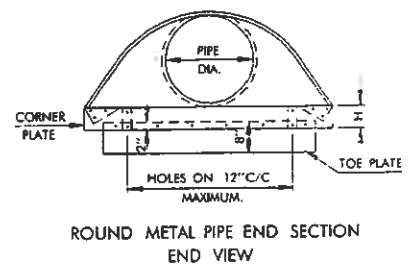


**DIMENSIONS OF END SECTIONS FOR ROUND METAL PIPE**

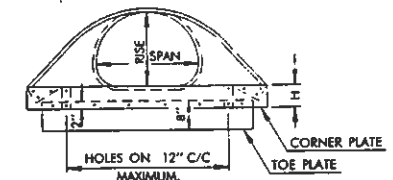
PIPE DIAM. IN.	GA.	A IN.	B IN.	H IN.	L IN.	W IN.	APPROX. SLOPE	BODY TYPE
12	16	6	6	6	21	24	2 1/2 : 1	1 PC.
15	16	7	8	6	26	30	2 1/2 : 1	1 PC.
18	16	8	10	6	31	36	2 1/2 : 1	1 PC.
21	16	9	12	6	36	42	2 1/2 : 1	1 PC.
24	16	10	13	6	41	48	2 1/2 : 1	1 PC.
30	14	12	16	8	51	60	2 1/2 : 1	1 PC.
36	14	14	19	9	60	72	2 1/2 : 1	2 PC.
42	12	16	22	11	69	84	2 1/2 : 1	2 PC.
48	12	18	27	12	78	90	2 1/2 : 1	2 PC.
54	12	18	30	12	84	102	2 : 1	2 PC.
60	12	18	33	12	87	114	1 1/2 : 1	3 PC.
66	12	18	36	12	87	120	1 1/2 : 1	3 PC.
72	12	18	39	12	87	126	1 1/2 : 1	3 PC.
78	12	18	42	12	87	132	1 1/2 : 1	3 PC.
84	12	18	45	12	87	138	1 1/2 : 1	3 PC.



ROUND METAL PIPE END SECTION END VIEW

**DIMENSIONS OF END SECTIONS FOR METAL PIPE - ARCH**

SPAN/RISE IN. x IN.	EQUIV. ROUND IN.	GA.	A IN.	B IN.	H IN.	L IN.	W IN.	APPROX. SLOPE	BODY TYPE
17 x 13	15	16	7	9	6	19	30	2 1/2 : 1	1 PC.
21 x 15	18	16	7	10	6	23	36	2 1/2 : 1	1 PC.
24 x 18	21	16	8	12	6	28	42	2 1/2 : 1	1 PC.
28 x 20	24	#16	9	14	6	32	48	2 1/2 : 1	1 PC.
35 x 24	30	#14	10	16	6	39	60	2 1/2 : 1	1 PC.
42 x 29	36	#14	12	18	8	46	75	2 1/2 : 1	1 PC.
49 x 33	42	#12	13	21	9	53	85	2 1/2 : 1	2 PC.
57 x 38	48	#12	18	26	12	63	90	2 1/2 : 1	2 PC.
64 x 43	54	#12	18	30	12	70	102	2 1/2 : 1	2 PC.
71 x 47	60	#12	18	33	12	77	114	2 1/2 : 1	3 PC.
77 x 52	66	#12	18	36	12	77	126	2 : 1	3 PC.
83 x 57	72	#12	18	39	12	77	138	2 : 1	3 PC.

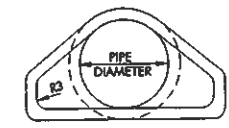


ARCH METAL PIPE END SECTION END VIEW

# FOR ALUMINUM END SECTIONS THE 28 x 20 SHALL BE 14 GAGE AND THE 42 x 29 SHALL BE 12 GAGE.

**DIMENSIONS OF PRECAST END SECTIONS FOR ROUND PIPE**

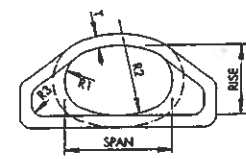
DIAMETER IN.	R <sub>2</sub> IN.	R <sub>4</sub> IN.	R <sub>5</sub> IN.	T IN.	K IN.	J IN.	C IN.	D IN.	E IN.	SLOPE
18	3	3	6	2.5	9	2.25	3.83	6.08	3.00	3 : 1
24	3	3	7	3	9.5	3.63	2.50	6.12	4.00	3 : 1
30	3	3	8	3.5	12	4.50	1.65	6.16	5.00	3 : 1
36	3	3	10 1/2	4	15	5.25	2.90	8.15	6.00	3 : 1
42	3	3	10 1/2	4.5	21	5.25	2.92	8.17	6.50	3 : 1
48	6	6	14	5	24	6.00	2.17	8.17	7.00	3 : 1
54	6	6	-	5.5	27	5.42	2.92	8.33	7.50	2 1/2 : 1
60	6	6	-	6	30	5.00	3.25	8.25	8.00	2 : 1
66	6	6	-	6.5	24	6.50	1.75	8.25	8.50	2 : 1
72	6	6	-	7	24	6.50	1.75	8.25	9.00	2 : 1



ROUND CONCRETE PIPE END SECTION END VIEW

**DIMENSIONS OF PRECAST END SECTIONS FOR ELLIPTICAL PIPE**

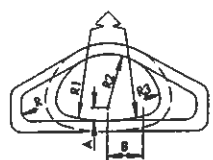
APPROX. EQUIV. DIAMETER IN.	RISE IN.	SPAN IN.	R <sub>1</sub> IN.	R <sub>2</sub> IN.	R <sub>3</sub> IN.	R <sub>4</sub> IN.	R <sub>5</sub> IN.	T IN.	K IN.	J IN.	C IN.	D IN.	E IN.	SLOPE
24	19	30	8 9/32	26 1/32	3	3	7	3.25	8.50	3.25	2.75	6.00	4.00	3 : 1
30	24	38	10 1/32	32 9/16	3	3	9	3.75	9.50	4.50	1.50	6.00	5.00	3 : 1
36	29	45	12 7/16	39 1/16	3	3	12	4.50	11.25	5.00	3.00	8.00	6.00	3 : 1
42	34	53	14 1/2	45 9/16	6	6	13	5.00	15.75	5.00	3.00	8.00	6.50	3 : 1
48	38	60	16 9/16	52 3/32	6	6	14	5.50	21.00	5.00	3.00	8.00	7.00	3 : 1
54	43	68	18 5/8	58 19/32	6	6	16	6.00	25.50	5.00	3.00	8.00	7.50	3 : 1
60	48	76	20 1/16	65 3/32	6	6	36 1/16	6.50	30.00	5.00	3.25	8.25	8.00	2 : 1
66	53	83	22 3/16	71 5/8	6	6	36 1/8	7.00	24.00	6.50	1.75	8.25	8.50	2 : 1
72	58	91	24 1/32	78 1/8	6	6	38	7.50	24.00	6.50	1.75	8.25	9.00	2 : 1



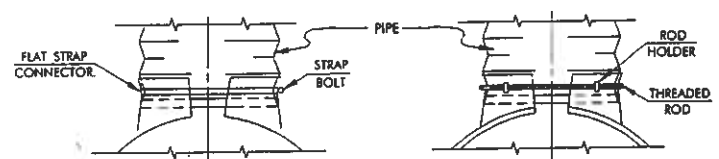
ELLIPTICAL CONCRETE PIPE END SECTION END VIEW

**DIMENSIONS OF PRECAST END SECTIONS FOR ARCH PIPE**

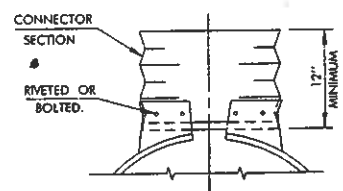
APPROX. EQUIV. DIAMETER IN.	RISE IN.	SPAN IN.	A IN.	B IN.	R IN.	R <sub>1</sub> IN.	R <sub>2</sub> IN.	R <sub>3</sub> IN.	R <sub>4</sub> IN.	R <sub>5</sub> IN.	T IN.	K IN.	J IN.	C IN.	D IN.	E IN.	SLOPE	
24	18	28 1/2	3 1/16	9 21/32	3	3	40 1/16	14 1/16	4 1/32	3	16 1/16	3	9 1/2	3.58	2.50	6.08	4.00	3 : 1
30	22 1/2	36 1/4	3 3/4	12 3/32	3	3	51	18 1/4	6 1/32	3	18 1/2	3 1/2	12	4.50	1.58	6.08	5.00	3 : 1
36	26 3/8	43 3/4	4 1/8	17 1/2	6	6	62	22 1/2	6 3/8	3	24 5/16	4	15	5.25	2.90	8.15	6.00	3 : 1
42	31 1/16	51 1/8	5 1/16	18	6	6	73	26 1/4	7 9/16	3	27 1/2	4 1/2	21	5.25	2.92	8.17	6.50	3 : 1
48	36	58 1/2	6	20 1/2	6	6	84	30	8 3/4	3	28 1/2	5	24	6.00	2.17	8.17	7.00	3 : 1
54	40	65	6 1/2	22 1/16	6	6	92 1/2	33 3/8	9 15/16	6	33 1/8	5 1/2	27	5.42	2.92	8.34	7.50	2.4 : 1
60	45	73	7 1/2	25 9/32	6	6	105	37 1/2	11 7/32	6	33 1/16	6	30	5.00	3.25	8.25	8.00	2 : 1
72	54	88	9	31 7/16	6	6	126	45	12 5/16	6	38 1/16	7	24	6.50	1.75	8.25	9.00	2 : 1



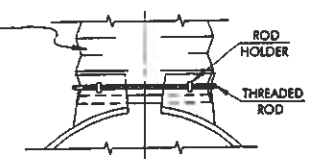
ARCH CONCRETE PIPE END SECTION END VIEW



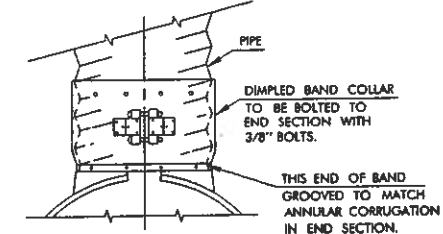
TYPE 1 FOR 12" THRU 24" ROUND AND EQUIVALENT ROUND PIPE ARCH SIZES.



TYPE 3 FOR 42" THRU 84" ROUND AND 54" THRU 72" EQUIVALENT ROUND PIPE - ARCH SIZES.

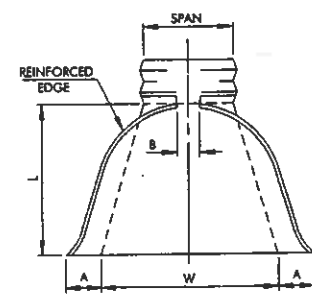


TYPE 2 FOR 30" THRU 36" ROUND AND 30" THRU 48" EQUIVALENT ROUND PIPE - ARCH SIZES.

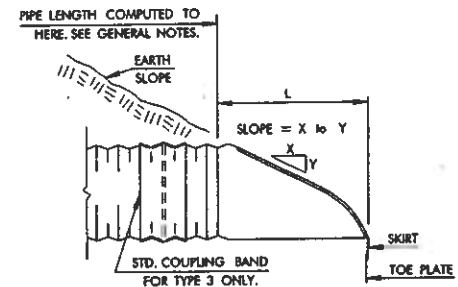


TYPE 4 FOR USE WITH ALL ROUND AND PIPE ARCH SIZES.

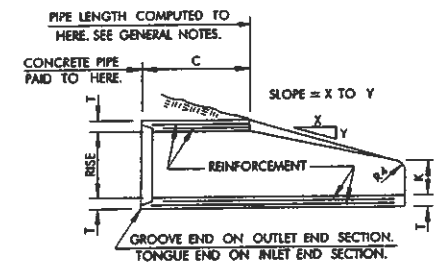
TYPICAL METAL END SECTION CONNECTIONS



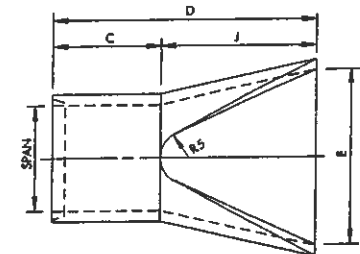
METAL END SECTION PLAN VIEW



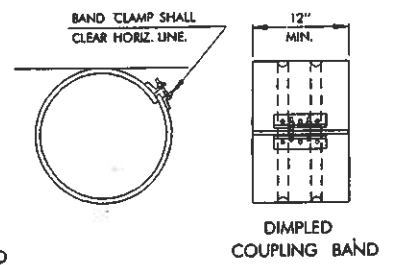
METAL END SECTION SIDE VIEW



CONCRETE PIPE END SECTION LONGITUDINAL SECTION



CONCRETE PIPE END SECTION PLAN VIEW



STANDARD COUPLING BAND

DIMPLED COUPLING BAND

GENERAL NOTES

- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 1999 ENGLISH STANDARD SPECIFICATIONS.
- WHEN CULVERT END SECTIONS ARE OPTIONAL, THEY SHALL BE OF THE SAME MATERIAL AS THE PIPE ON WHICH THEY ARE INSTALLED. THE OPTIONAL PAYMENT SHALL BE FOR PREFABRICATED CULVERT END SECTIONS, ROUND, ARCH OR ELLIPTICAL.
- WHEN CULVERT PIPE IS SPECIFIED, THE END SECTION PAID FOR SHALL BE OF THE SAME SHAPE (ROUND, ARCH, OR ELLIPTICAL). IF ELLIPTICAL CONCRETE PIPE IS USED, THE ELLIPTICAL END SECTION SHALL BE USED AND PAID FOR AS PREFAB. CULVERT END SEC., ELLIPTICAL.
- TRENCH EXCAVATION REQUIRED FOR INSTALLATION OF CULVERT END SECTIONS SHALL BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS OF WORK.
- DIMENSIONS SHOWN FOR END SECTIONS ARE SUBJECT TO MANUFACTURER TOLERANCES.
- TOE PLATE WILL BE REQUIRED ON ALL METAL END SECTIONS UNLESS SOLID ROCK IS ENCOUNTERED. HOLES IN TOE PLATE TO BE PUNCHED TO MATCH HOLES IN SKIRT UP, 3/8" BOLTS TO BE FURNISHED. LENGTH OF TOE PLATES FOR ROUND PIPE END SECTIONS SHALL BE W=10" FOR 12" TO 30" DIAMETER PIPE, W=20" FOR 36" TO 84" DIAMETER PIPE. LENGTH OF TOE PLATES FOR ARCH PIPE END SECTIONS SHALL BE W=10" FOR A RISE OF 13" TO 29" AND W=20" FOR A RISE OF 33" TO 57".
- CONNECTOR SECTION, CORNER PLATE, AND TOE PLATE ON METAL END SECTIONS SHALL BE THE SAME GAGE AND MATERIAL AS THE SKIRT AND SHALL BE INCLUDED IN PRICE BID FOR END SECTION.
- IF TYPE 3 METAL END SECTION IS USED AS OPTIONAL PIPE, THE LENGTH OF PIPE TO BE REDUCED BY 12" FOR EACH END SECTION. IF CONCRETE PIPE OPTION IS USED, THE LENGTH OF PIPE TO BE REDUCED BY THE C DIMENSION FOR EACH END SECTION.

**BASIS OF PAYMENT**

ITEM NO.	ITEM	UNIT
613.06(M)	▽ PREFAB. CULVERT END SECTION, ROUND	EA.
613.06(M)	▽ PREFAB. CULVERT END SECTION, ARCH	EA.

▽ END SECTION DIMENSION(S) SHALL BE SPECIFIED.

APPROVED BY ROADWAY ENGINEER *C.M. Lemkowski* DATE 9/1/99

OKLAHOMA DEPT. OF TRANSPORTATION  
ROADWAY STANDARD (ENGLISH)  
PREFABRICATED CULVERT  
END SECTIONS

1999 SPECIFICATIONS

PCES-3 OOE  
R-79E