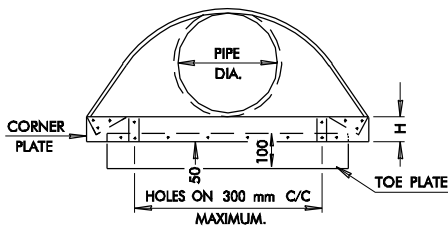
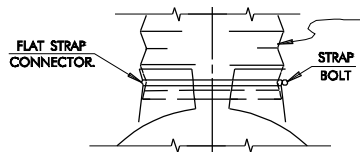


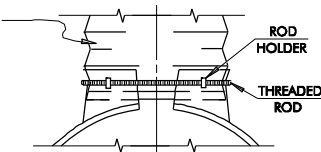
DIMENSIONS OF END SECTIONS FOR ROUND METAL PIPE								
PIPE DIAM. mm	GA.	A mm	B mm	H mm	L mm	W mm	APPROX. SLOPE	BODY TYPE
300	16	152	152	152	533	600	2 : 5	1 PC.
375	16	178	203	152	660	750	2 : 5	1 PC.
450	16	203	254	152	787	900	2 : 5	1 PC.
525	16	229	305	152	914	1050	2 : 5	1 PC.
600	16	254	330	152	1041	1200	2 : 5	1 PC.
750	14	305	406	203	1295	1500	2 : 5	1 PC.
900	14	356	483	229	1524	1800	2 : 5	2 PC.
1050	12	406	559	279	1753	2100	2 : 5	2 PC.
1200	12	457	686	305	1981	2250	4 : 9	2 PC.
1350	12	457	750	305	2134	2550	1 : 2	2 PC.
1500	12	457	825	305	2210	2850	4 : 7	3 PC.
1650	12	457	900	305	2210	3000	2 : 3	3 PC.
1800	12	457	975	305	2210	3150	3 : 4	3 PC.
1950	12	457	1050	305	2210	3300	4 : 5	3 PC.
2100	12	457	1125	305	2210	3450	6 : 7	3 PC.



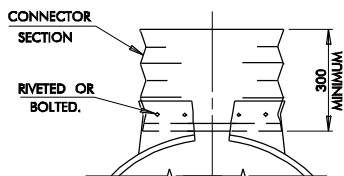
ROUND METAL PIPE END SECTION
END VIEW



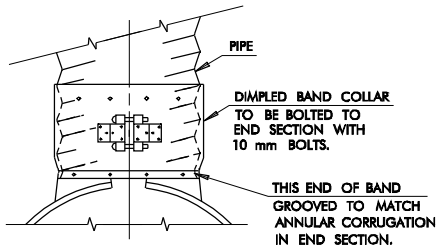
TYPE 1
FOR 300 mm THRU 600 mm ROUND AND
EQUIVALENT ROUND PIPE ARCH SIZES.



TYPE 2
FOR 750 mm THRU 900 mm ROUND AND
750 mm THRU 1200 mm EQUIVALENT ROUND
PIPE - ARCH SIZES.

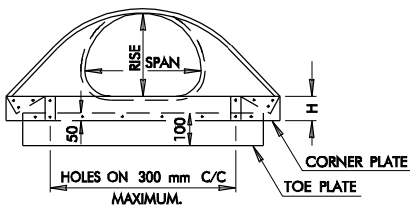


TYPE 3
FOR 1050 mm THRU 2100 mm ROUND AND
1350 mm THRU 1800 mm EQUIVALENT ROUND
PIPE - ARCH SIZES.

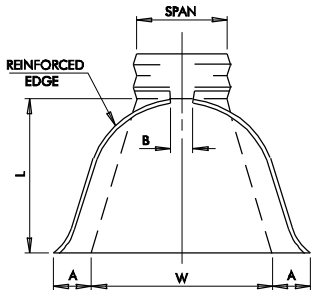


TYPE 4
FOR USE WITH ALL ROUND
AND PIPE ARCH SIZES.

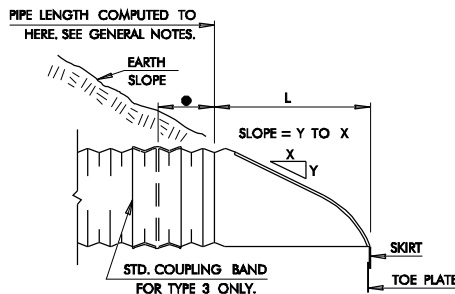
TYPICAL METAL END SECTION CONNECTIONS



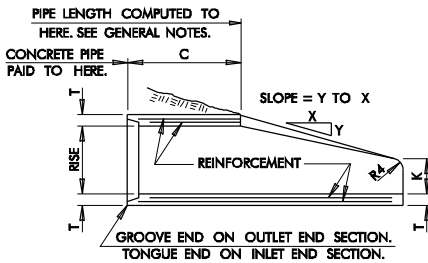
ARCH METAL PIPE END SECTION
END VIEW



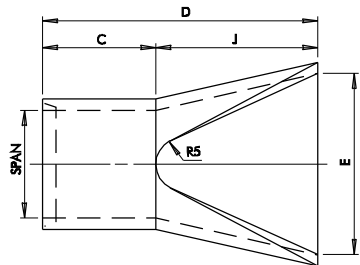
METAL END SECTION
PLAN VIEW



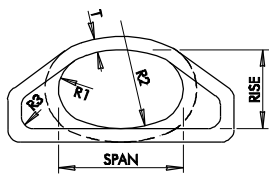
METAL END SECTION
SIDE VIEW



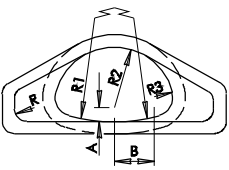
CONCRETE PIPE END SECTION
LONGITUDINAL SECTION



CONCRETE PIPE END SECTION
PLAN VIEW



ELLIPTICAL CONCRETE PIPE
END SECTION
END VIEW



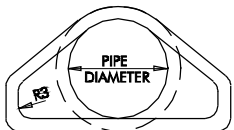
ARCH CONCRETE PIPE
END SECTION
END VIEW

DIMENSIONS OF END SECTIONS FOR METAL PIPE - ARCH										
SPAN x RISE mm x mm	EQUIV. ROUND mm	GA.	A mm	B mm	H mm	L mm	W mm	APPROX. SLOPE	BODY TYPE	
425 x 325	375	16	178	229	152	483	762	2 : 5	1 PC.	
510 x 380	450	16	178	254	152	584	914	2 : 5	1 PC.	
* 600 x 450	525	16	203	305	152	711	1067	2 : 5	1 PC.	
* 680 x 500	600	#16	229	356	152	813	1219	2 : 5	1 PC.	
* 875 x 600	750	14	254	406	152	991	1524	2 : 5	1 PC.	
* 1030 x 740	900	#14	305	457	203	1168	1905	2 : 5	1 PC.	
* 1225 x 825	1050	12	330	533	229	1346	2159	2 : 5	2 PC.	
* 1390 x 970	1200	12	457	660	305	1600	2286	2 : 5	2 PC.	
* 1600 x 1075	1350	12	457	762	305	1778	2591	4 : 9	2 PC.	
* 1775 x 1175	1500	12	457	838	305	1958	2896	4 : 9	3 PC.	
2130 x 1400	1800	12	457	991	305	1958	3505	1 : 2	3 PC.	

FOR ALUMINUM END SECTIONS THE 725 mm x 440 mm SHALL BE 14 GAGE
AND THE 1030 mm x 740 mm SHALL BE 12 GAGE.

* HARD CONVERTED ENGLISH ARCH UNITS USED FOR METRIC METAL PIPE ARCH

DIMENSIONS OF PRECAST END SECTIONS FOR ROUND PIPE											
DIAMETER	R ₃	R ₄	R ₅	T	K	J	C	D	E	SLOPE	
mm	mm	mm	mm	mm	mm	m	m	m	m		
450	75	75	150	63	225	0.686	1.167	1.853	0.914	1 : 3	
600	75	75	175	75	238	1.106	0.762	1.865	1.219	1 : 3	
750	75	75	200	88	300	1.372	0.503	1.878	1.524	1 : 3	
900	75	75	263	100	375	1.600	0.884	2.484	1.828	1 : 3	
1050	75	75	263	113	525	1.600	0.890	2.490	1.981	1 : 3	
1200	150	150	350	125	600	1.829	0.661	2.490	2.133	1 : 3	
1350	150	150	-	138	675	1.652	0.890	2.539	2.286	2 : 5	
1500	150	150	-	150	750	1.524	0.991	2.515	2.438	1 : 2	
1650	150	150	-	163	600	1.981	0.533	2.591	2.591	1 : 2	
1800	150	150	-	175	600	1.981	0.533	2.743	2.743	1 : 2	



ROUND CONCRETE PIPE
END SECTION
END VIEW

APPROX. EQUIV. DIAMETER	DIMENSIONS OF PRECAST END SECTIONS FOR ELLIPTICAL PIPE														SLOPE
	RISE	SPAN	R ₁	R ₂	R ₃	R ₄	R ₅	T	K	J	C	D	E		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	m	m	m	m		
600	475	750	210	661	75	75	178	83	216	0.99	0.84	1.83	1.22	1 : 3	
750	600	950	263	827	75	75	229	96	241	1.37	0.46	1.83	1.52	1 : 3	
900	725	1125	316	992	75	75	305	114	286	1.52	0.91	2.43	1.83	1 : 3	
1050	850	1325	368	1157	150	150	330	127	400	1.52	0.91	2.43	1.98	1 : 3	
1200	950	1500	421	1323	150	150	356	140	533	1.52	0.91	2.43	1.78	1 : 3	
1350	1075	1700	457	1488	150	150	406	152	648	1.52	0.91	2.43	1.91	1 : 3	
1500	1200	1900	525	1653	150	150	932	165	762	1.52	0.91	2.51	2.43	1 : 2	
1650	1325	2075	578	1819	150	150	918	178	610	1.98	0.99	2.51	2.59	1 : 2	
1800	1450	2275	631	2210	150	150	965	191	610	1.98	0.99	2.51	2.74	1 : 2	

APPROX. EQUIV. DIAMETER	DIMENSIONS OF PRECAST END SECTIONS FOR ARCH PIPE																
	RISE	SPAN	A	B	R	R ₁	R ₂	R ₃	R ₄	R ₅	T	K	J	C	D	E	SLOPE
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	m	m	m	m	
600	450	713	87	245	75	1033	370	117	75	427	75	241	0.109	0.762	1.853	1.219	1 : 3
750	563	906	95	307	75	1295	476	153	75	470	88	205	1.372	0.482	1.853	1.524	1 : 3
900	666	1094	105	445	150	1575	572	162	75	618	100	381	1.600	0.884	2.484	1.829	1 : 3
1050	783	1304	129	457	150	1854	667	192	75	699	113	533	1.600	0.890	2.490	1.981	1 : 3
1200	900	1463	152	521	150	2134	762	222	75	724	125	610	1.829	0.661	2.490	2.134	1 : 3
1350	1000	1625	165	576	150	2350	848	249	150	841	138	686	1.652	0.890	2.542	2.286	5 : 12
1500	1125	1825	191	642	150	2667	953	285	150	856	150	762	1.524	0.991	2.515	2.438	1 : 2
1800	1350	2200	229	799	150	3200	1143	319	150	989	175	610	1.981	0.533	2.515	2.743	1 : 2

DESCRIPTION	REVISIONS	DATE
RE-ISSUE W/METRIC 1999 SPECS. Redefine Metal Arch Pipe Sizes	lgc 7/99	

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 1999 METRIC STANDARD SPECIFICATIONS.
2. 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 OR ARCH.
3. WHEN CULVERT PIPE IS SPECIFIED, THE END SECTION 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., ARCH.
4. TRENCH EXCAVATION REQUIRED FOR INSTALLATION OF CULVERT END SECTIONS SHALL BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS OF WORK.
5. DIMENSIONS SHOWN FOR END SECTIONS ARE SUBJECT TO MANUFACTURER TOLERANCES.
6. 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, 10 mm BOLTS TO BE FURNISHED. LENGTH OF TOE PLATES FOR ROUND PIPE END SECTIONS SHALL BE W=250 mm FOR 300 TO 750 mm DIAMETER PIPE, W=500 mm FOR 900 TO 2100 mm DIAMETER PIPE. LENGTH OF TOE PLATES FOR ARCH PIPE END SECTIONS SHALL BE W=250 mm FOR RISE OF 325 TO 725 mm AND W=500 mm FOR RISE OF 825 TO 1425 mm.
7. 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.
8. IF TYPE 3 METAL END SECTION IS USED AS OPTIONAL PIPE, THE LENGTH OF PIPE TO BE REDUCED BY 300 mm 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)	▼ PREFABRICATED CULVERT END SECTION, ROUND	EACH
613.06(M)	▼ PREFABRICATED CULVERT END SECTION, ARCH	EACH

▼ END SECTION DIMENSION(S) SHALL BE SPECIFIED.

APPROVED BY ROADWAY ENGINEER

DATE

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

1999 SPECIFICATIONS

PCES-3

OOM

ALL DIMENSIONS ON THIS SHEET IN MILLIMETERS UNLESS OTHERWISE NOTED.

R-79M