2 : 1 SLOPE

CULVERT SIZE	H	L	W	Longitudinal Pipe			Cross Tube			
				S	No.	Length	No.	Length	S1	S2
12	2'–0"	4'–0"	2'–0"	4'–5 5/8"	1	5'–7 5/8"	–	–	5'–1 5/8"	–
15 & 18	2'–6"	5'–0"	2'–0"	5'–7"	1	6'–9"	1	2'–7 1/2"	4'–9 1/8"	1'–6"
21 & 24	3'–0"	6'–0"	3'–0"	6'–8 1/2"	2	7'–10 1/2"	–	–	7'–4 1/2"	–
27 & 30	3'–6"	7'–0"	3'–0"	7'–9 7/8"	2	10'–1 1/4"	–	–	8'–5 7/8"	–
33 & 36	4'–0"	8'–0"	4'–0"	8'–11 3/8"	3	10'–11 3/8"	–	–	9'–7 3/8"	–
42	4'–6"	9'–0"	4'–0"	10'–0 3/4"	3	11'–1 1/4"	–	–	10'–8 3/4"	–
48	5'–0"	10'–0"	5'–0"	11'–2 1/8"	3	12'–4 1/8"	–	–	11"–10 1/8"	–
54	5'–6"	11'–0"	6'–0"	12'–3 3/8"	4	13'–5 1/2"	1	6'–7 1/2"	9'–11 3/8"	3'–0"
60	6'–0"	12'–0"	6'–0"	13'–5"	4	14'–7"	1	6'–7 1/2"	11'–1"	3'–0"

3 : 1 SLOPE

CULVERT SIZE	H	L	W	Longitudinal Pipe			Cross Tube			
				S	No.	Length	No.	Length	S1	S2
12	2'–0"	6'–0"	2'–0"	6'–3 5/8"	1	7'–9"	1	2'–7 1/2"	5'–3 5/8"	2'–0"
15 & 18	2'–6"	7'–6"	2'–0"	7'–10 5/8"	1	9'–3 5/8"	1	2'–7 1/2"	5'–4 5/8"	3'–6"
21 & 24	3'–0"	9'–0"	3'–0"	9'–5 5/8"	2	10'–10 5/8"	1	3'–7 1/2"	6'–11 5/8"	3'–6"
27 & 30	3'–6"	10'–6"	3'–0"	11'–0 3/4"	2	12'–5 1/8"	1	3'–7 1/2"	8'–6 3/4"	3'–6"
33 & 36	4'–0"	12'–0"	4'–0"	12'–7 1/2"	3	14'–0 5/8"	1	4'–7 1/2"	10'–1 1/4"	3'–6"
42	4'–6"	13'–6"	4'–0"	14'–2 3/4"	3	15'–7 3/4"	1	4'–7 1/2"	10'–8 3/4"	4'–6"
48	5'–0"	15'–0"	5'–0"	15'–9 1/2"	3	17'–2 5/8"	1	5'–7 1/2"	12'–3 1/2"	4'–6"
54	5'–6"	16'–6"	6'–0"	17'–4 3/4"	4	18'–9 1/4"	1	6'–7 1/2"	10'–4 3/4"	8'–0"
60	6'–0"	18'–0"	6'–0"	18'–11 3/4"	4	20'–4 1/4"	1	6'–7 1/2"	11'–11 3/4"	8'–0"

4 : 1 SLOPE

CULVERT SIZE	H	L	W	Longitudinal Pipe			Cross Tube			
				S	No.	Length	No.	Length	S1	S2
12	2'–0"	8'–0"	2'–0"	8'–3"	1	9'–11 1/2"	1	2'–7 1/2"	5'–7"	4'–0"
15 &18	2'–6"	10'–0"	2'–0"	10'–3 1/2"	1	12'–0 1/2"	2	2'–7 1/2"	5'–7 1/2"	3'–0"
21 & 24	3'–0"	12'–0"	3'–0"	12'–4 3/8"	2	14'–1"	1	3'–7 1/2"	9'–2 1/2"	4'–6"
27 & 30	3'–6"	14'–0"	3'–0"	14'–5 1/4"	2	16'–1 5/8"	1	3'–7 1/2"	9'–3 1/8"	6'–6"
33 & 36	4'–0"	16'–0"	4'–0"	16'–5 5/8"	3	18'–2 1/2"	1	4'–7 1/2"	11'–3 5/8"	6'–6"
42	4'–6"	18'–0"	4'–0"	18'–6 3/8"	3	20'–3 1/4"	1	4'–7 1/2"	12'–4 3/8"	7'–6"
48	5'–0"	20'–0"	5'–0"	20'–7 3/8"	3	22'–4"	1	5'–7 1/2"	11'–5 3/8"	10'–6"
54	5'–6"	22'–0"	6'–0"	22'–8 1/8"	4	24'–4 3/4"		6'–7 1/2"	12'–6 1/8"	11'–6"
60	6'–0"	24'–0"	6'–0"	24'–8 7/8"	4	26'–5 1/2"	2	6'–7 1/2"	12'–6 7/8"	6'–9"

5 : 1 SLOPE

CULVERT SIZE	H	L	W	Longitudinal Pipe			Cross Tube			
				S	No.	Length	No.	Length	S1	S2
12	2'–0"	10'–0"	2'–0"	10'–2 3/8"	1	12–2 3/4"	2	2'–7 1/2"	6'–2 3/8"	2'–10"
15 & 18	2'–6"	12'–6"	2'–0"	12'–9"	1	14'–9 3/8"	2	2'–7 1/2"	5'–11"	4'–3"
21 & 24	3'–0"	15'–0"	3'–0"	15'–3 1/2"	2	17'–4"	1	3'–7 1/2"	9'–2 1/2"	7'–9"
27 & 30	3'–6"	17'–6"	3'–0"	17'–10 1/2"	2	19'–10 1/2"	2	3'–7 1/2"	9'–6 1/8"	5'–0"
33 & 36	4'–0"	20'–0"	4'–0"	20'–4 1/2"	3	22'–5 1/4"	1	4'–7 1/2"	13'–0 3/4"	9'–0"
42	4'–6"	22'–6"	4'–0"	22'–11 3/8"	3	24'–11 1/4"	1	4'–7 1/2"	13'–1 3/8"	11'–6"
48	5'–0"	25'–0"	5'–0"	25'–6"	3	27'–6 1/4"	2	5'–7 1/2"	13'–2"	7'–0"
54	5'–6"	27'–6"	6'–0"	28'–0 1/2"	4	30'–0 5/8"	2	6'–7 1/2"	13'–2 1/2"	8'–3"
60	6'–0"	30'–0"	6'–0"	30'–7 1/8"	4	32'–7 1/2"	2	6'–7 1/2"	11'–9 1/8"	10'–3"

6 : 1 SLOPE

CULVERT SIZE	H	L	W	Longitudinal Pipe			Cross Tube			
				S	No.	Length	No.	Length	S1	S2
12	2'–0"	12'–0"	2'–0"	12'–2"	1	14'–6 1/4"	2	2'–7 1/2"	6'–2"	4'–0"
15 & 18	2'–6"	15'–0"	2'–0"	15'–2 1/2"	1	17'–6 1/2"	2	2'–7 1/2"	6'–8 1/2"	5'–3"
21 & 24	3'–0"	18'–0"	3'–0"	18'–3"	2	20'–7 1/4"	2	3'–7 1/2"	9'–9"	5'–3"
27 & 30	3'–6"	21'–0"	3'–0"	21'–3 1/2"	2	23'–7 3/4"	2	3'–7 1/2"	9'–9 1/2"	6'–9"
33 & 36	4'–0"	24'–0"	4'–0"	24'–4"	3	26'–8 1/4"	2	4'–7 1/2"	13'–4"	6'–6"
42	4'–6"	27'–0"	4'–0"	27'–4 1/2"	3	29'–8 3/4"	2	4'–7 1/2"	13'–4 1/2"	8'–0"
48	5'–0"	30'–0"	5'–0"	30'–5"	3	32'–9 1/4"	2	5'–7 1/2"	13'–5"	9'–6"
54	5'–6"	33'–0"	6'–0"	33'–5 1/2"	4	35'–9 3/4"	2	6'–7 1/2"	12'–11 1/2"	11'–3"
60	6'–0"	36'–0"	6'–0"	36'–6"	4	38'–10 1/8"	3	6'–7 1/2"	13'–0"	8'–6"

APPROXIMATE QUANTITIES

PIPE DIAMETER	2 : 1 SLOPE				3 : 1 SLOPE				4 : 1 SLOPE				5 : 1 SLOPE				6 : 1 SLOPE			
	Concrete, Cu. Yds.		Reinf. Steel, lb.	Str. Steel, lb.	Concrete, Cu. Yds.		Reinf. Steel, lb.	Str. Steel, lb.	Concrete, Cu. Yds.		Reinf. Steel, lb.	Str. Steel, lb.	Concrete, Cu. Yds.		Reinf. Steel, lb.	Str. Steel, lb.	Concrete, Cu. Yds.		Reinf. Steel, lb.	Str. Steel, lb.
	Conc. Pipe	C.M. Pipe			Conc. Pipe	C.M. Pipe			Conc. Pipe	C.M. Pipe			Conc. Pipe	C.M. Pipe			Conc. Pipe	C.M. Pipe		
12	1.1	1.1	290	80	1.4	1.4	375	160	1.7	1.7	465	195	2.1	2.1	555	275	2.4	2.4	645	305
15 & 18	1.3	1.3	345	145	1.8	1.8	460	180	2.2	2.2	575	270	2.8	2.8	690	305	3.0	3.0	805	345
21 & 24	1.9	1.9	460	215	2.5	2.5	620	370	3.1	3.1	775	460	3.7	3.8	935	545	4.3	4.4	1090	705
27 & 30	2.1	2.2	525	245	2.9	3.0	715	410	3.6	3.7	905	510	4.4	4.5	1095	680	5.2	5.3	1285	780
33 & 36	2.8	2.9	670	410	3.8	3.9	910	660	4.8	4.9	1150	825	5.9	6.0	1395	995	6.9	7.0	1640	1255
42	3.2	3.3	745	450	4.4	4.5	1025	720	5.6	5.7	1305	905	6.8	8.9	1585	1090	8.0	8.1	1870	1370
48	4.0	4.1	1.1	910	5.5	5.6	1250	80	8.5	8.7	1940	1310	10.1	10.2	1940	1310	10.1	10.2	2285	1515
54	4.9	5.1	1090	845	6.8	6.9	1500	1125	8.6	8.8	1915	1415	10.5	10.7	2330	1845	12.4	12.6	2745	2145
60	5.4	5.8	1180	900	7.8	7.7	1640	1205	9.8	9.8	2105	1850	11.7	11.9	2570	1970	13.8	14.0	3035	2425

INDIANA DEPARTMENT OF TRANSPORTATION

GRATED BOX END SECTION TYPE I DIMENSIONS AND QUANTITIES

JANUARY 1999

STANDARD DRAWING NO. E 715–GBTO–05

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER — DATE

/s/ Firooz Zandi 11-15-99
CHIEF HIGHWAY ENGINEER — DATE

ORIGNALLY APPROVED 1-04-99