

CULVERT SIZE DIAMETER (in.)	1 ½ : 1 Slope				2 : 1 Slope			
	EC-3 Type B	Depth (T) (18")	Depth (T) (24")	Depth (T) (36")	EC-3 Type B	Depth (T) (18")	Depth (T) (24")	Depth (T) (36")
		Class A1	Class I	Class II		Class A1	Class I	Class II
	Sq. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Sq. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.
12	1.59	0.79	1.06	1.59	1.50	0.75	1.00	1.50
15	2.49	1.24	1.66	2.49	2.34	1.17	1.56	2.34
18	3.61	1.81	2.41	3.61	3.39	1.69	2.26	3.39
24	6.39	3.19	4.26	6.39	6.00	3.00	4.00	6.00
30	9.97	4.99	6.65	9.97	9.37	4.69	6.25	9.37
36	21.18	10.59	14.12	21.18	19.97	9.98	13.31	19.97
42	28.55	14.27	19.03	28.55	26.91	13.46	17.94	26.91
48	36.93	18.47	24.62	36.93	34.80	17.40	23.20	34.80
54	46.53	23.27	31.02	46.53	43.82	21.91	29.21	43.82
60	57.23	28.61	38.15	57.23	53.24	26.62	35.49	53.24

**TABLE D-1 CULVERT OUTLET PROTECTION WITH ST'D. ES-1 END SECTIONS**

CULVERT SIZE DIAMETER (in.)	1 ½ : 1 Slope				2 : 1 Slope			
	EC-3 Type B	Depth (T) (18")	Depth (T) (24")	Depth (T) (36")	EC-3 Type B	Depth (T) (18")	Depth (T) (24")	Depth (T) (36")
		Class A1	Class I	Class II		Class A1	Class I	Class II
	Sq. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Sq. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.
12	1.78	0.89	1.19	1.78	1.69	0.85	1.13	1.69
15	2.77	1.39	1.85	2.77	2.62	1.31	1.75	2.62
18	3.99	1.99	2.66	3.99	3.76	1.88	2.51	3.76
24	7.05	3.52	4.70	7.05	6.64	3.32	4.43	6.64
30	10.96	5.48	7.31	10.96	10.35	5.17	6.90	10.35
36	22.56	11.28	15.04	22.56	21.33	10.67	14.22	21.33
42	30.69	15.35	20.46	30.69	29.01	14.51	19.34	29.01
48	39.68	19.84	26.45	39.68	37.47	18.74	24.98	37.47
54	49.98	24.99	33.32	49.98	47.21	23.60	31.47	47.21
60	61.53	30.77	41.02	61.53	57.45	28.73	38.30	57.45

**TABLE D-2 CULVERT OUTLET PROTECTION WITH ST'D. ES-2 END SECTIONS**

Quantities To Be Used Only For Computations of Dry Rip Rap For Outlet Protection.\*

\* Rev. 7/10