STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

APRON QUANTITIES FOR CONCRETE BOX CULVERTS

S	H	SINGLE 90°			SINGLE 75°			SINGLE 60°			SINGLE 45°		
		W (FT.)	CU.YDS. CONC.	LBS. STEEL	W (FT.)	CU.YDS. CONC.	LBS. STEEL	W (FT.)	CU.YDS. CONC.	LBS. STEEL	W (FT.)	CU.YDS. CONC.	LBS. STEEL
4′	3′	11.133	1.27	108	12.831	1.55	127	12.831	1.55	127	16.715	1.95	157
	4′	15.433	2.23	178	17.279	2.58	204	17.279	2.58	204	23.174	3.35	262
	5′	17.033	2.65	209	20.324	3.44	267	20.324	3.44	267	26.244	4.16	320
	6′	18.633	3.09	240	22.109	3.99	307	23.553	4.45	340	29.386	5.06	385
5′	3′	12.133	1.44	121	13.830	1.73	140	13.830	1.73	140	17.715	2.13	170
	4′	16.433	2.45	194	18.278	2.82	222	18.278	2.82	222	24.174	3.58	279
	5′	18.083	2.89	227	21.324	3.71	286	21.324	3.71	286	27.244	4.41	339
	6′	19.633	3.35	259	23.108	4.28	328	24.553	4.76	362	30.386	5.33	406
	7′	21.233	3.85	297	24.553	4.76	362	27.742	5.91	445	33.653	6.31	476
	8′	22.833	4.38	334	26.398	5.41	411	29.988	6.80	510	36.753	7.37	553
6′	3′	13.133	1.61	133	14.828	1.91	153	14.828	1.91	153	18.715	2.30	183
	4′	17.433	2.67	210	19.278	3.05	238	19.278	3.05	238	25.174	3.81	295
	5′	19.033	3.13	244	22.323	3.98	306	22.323	3.98	306	28.244	4.66	358
	6′	20.633	3.61	278	24.108	4.57	350	25.552	5.06	384	31.386	5.61	426
	7′	22.233	4.13	317	25.552	5.06	384	28.742	6.25	471	34.653	6.61	499
	8′	23.833	4.68	355	27.397	5.74	434	30.988	7.17	537	37.753	7.70	577
7′	4′	18.433	2.89	227	20.277	3.28	256	20.277	3.28	256	26.174	4.04	312
	5′	20.033	3.37	262	23.323	4.24	325	23.323	4.24	325	29.243	4.92	376
	6′	21.633	3.87	297	25.108	4.86	371	26.552	5.37	407	32.386	5.89	447
	7′	23.233	4.41	337	26.552	5.37	407	29.741	6.60	496	35.653	6.92	521
	8′	24.833	4.98	378	28.397	6.07	458	31.987	7.54	564	38.753	8.03	601
8′	4′	19.433	3.11	242	21.276	3.51	272	21.276	3.51	272	27.174	4.27	328
	5′	21.033	3.61	280	24.323	4.51	345	24.323	4.51	345	30.243	5.17	395
	6′	22.633	4.13	316	26.107	5.15	392	27.552	5.68	429	33.386	6.17	467
	7′	24.233	4.69	358	27.552	5.68	429	30.741	6.94	521	36.653	7.22	543
	8′	25.833	5.28	399	29.397	6.40	482	32.987	7.91	591	39.753	8.35	625
	9′	27.333	5.86	443	31.142	7.11	535	35.233	8.94	668	43.040	9.64	720
	10′	28.833	6.46	486	32.666	7.78	582	37.379	9.98	743	46.141	10.93	815
9′	4′	20.433	3.33	259	22.275	3.75	290	22.275	3.75	290	28.174	4.49	345
	5′	22.033	3.85	297	25.322	4.78	365	25.322	4.78	365	31.243	5.42	413
	6′	23.633	4.39	335	27.107	5.44	413	28.551	5.98	452	34.386	6.45	488
	7′	25.233	4.97	378	28.551	5.98	452	31.741	7.28	546	37.653	7.52	565
	8′	26.833	5.58	421	30.396	6.72	506	33.987	8.28	617	40.753	8.68	649
	9′	28.333	6.17	466	32.141	7.46	561	36.233	9.34	697	44.040	9.99	747
	10′	29.833	6.80	510	33.666	8.14	608	38.379	10.40	774	47.141	11.31	842
10′	4′	21.433	3.55	275	23.275	3.98	306	23.275	3.98	306	29.174	4.72	362
	5′	23.033	4.09	315	26.322	5.05	385	26.322	5.05	385	32.243	5.68	432
	6′	24.633	4.65	355	28.107	5.72	434	29.551	6.29	474	35.386	6.73	508
	7′	26.233	5.25	399	29.551	6.29	474	32.740	7.63	571	38.652	7.83	587
	8′	27.833	5.87	443	31.396	7.05	530	34.986	8.65	645	41.753	9.01	673
	9′	29.333	6.49	489	33.141	7.81	586	37.233	9.73	725	45.040	10.35	772
	10′	30.833	7.14	535	34.666	8.51	635	39.379	10.82	804	48.141	11.69	870
	11′	32.433	7.86	588	36.551	9.41	701	41.626	12.02	890	51.572	13.25	982
	12′	34.033	8.61	644	37.995	10.12	751	43.873	13.28	981	54.642	14.77	1092

S	H	DOUBLE 90°			DOUBLE 75°			DOUBLE 60°			DOUBLE 45°		
		W (FT.)	CU.YDS. CONC.	LBS. STEEL	W (FT.)	CU.YDS. CONC.	LBS. STEEL	W (FT.)	CU.YDS. CONC.	LBS. STEEL	W (FT.)	CU.YDS. CONC.	LBS. STEEL
4′	3′	16.133	2.11	170	17.825	2.45	193	17.825	2.45	193	21.715	2.83	222
	4′	20.433	3.33	259	22.275	3.75	290	22.275	3.75	290	28.174	4.49	345
	5′	22.033	3.85	297	25.322	4.78	365	25.322	4.78	365	31.243	5.42	413
	6′	23.633	4.39	335	27.107	5.44	413	28.551	5.98	452	34.386	6.45	488
5′	3′	18.133	2.44	195	19.823	2.81	219	19.823	2.81	219	23.714	3.18	248
	4′	22.433	3.77	291	24.274	4.21	324	24.274	4.21	324	30.174	4.95	379
	5′	24.033	4.33	333	27.322	5.32	404	27.322	5.32	404	33.243	5.93	450
	6′	25.633	4.91	373	29.107	6.01	455	30.551	6.60	497	36.386	7.01	528
	7′	27.233	5.53	419	30.551	6.60	497	33.740	7.97	596	39.652	8.13	609
	8′	28.833	6.17	465	32.396	7.38	554	35.986	9.02	671	42.753	9.34	697
6′	3′	20.133	2.78	220	21.822	3.17	246	21.822	3.17	246	25.714	3.53	274
	4′	24.433	4.21	324	26.273	4.68	358	26.273	4.68	358	32.174	5.41	412
	5′	26.033	4.81	368	29.321	5.86	443	29.321	5.86	443	35.243	6.44	487
	6′	27.633	5.43	411	31.106	6.59	498	32.550	7.21	541	38.386	7.57	569
	7′	29.233	6.09	460	32.550	7.21	541	35.379	8.66	646	41.652	8.74	653
	8′	30.833	6.77	509	34.396	8.04	602	37.986	9.76	725	44.753	10.00	745
7′	4′	26.433	4.65	356	28.272	5.14	392	28.272	5.14	392	34.174	5.86	446
	5′	28.033	5.29	403	31.321	6.39	483	31.321	6.39	483	37.243	6.94	524
	6′	29.633	5.95	449	33.106	7.17	540	34.550	7.82	586	40.386	8.12	610
	7′	31.233	6.64	501	34.550	7.82	586	37.739	9.34	696	43.652	9.34	698
	8′	32.833	7.37	552	36.395	8.69	650	39.985	10.50	779	46.753	10.65	793
8′	4′	28.433	5.10	388	30.272	5.61	426	30.272	5.61	426	36.174	6.32	479
	5′	30.033	5.77	438	33.320	6.93	522	33.320	6.93	522	39.243	7.45	561
	6′	31.633	6.47	487	35.105	7.75	582	36.549	8.43	631	42.386	8.68	651
	7′	33.233	7.20	542	36.549	8.43	631	39.738	10.03	746	45.652	9.95	742
	8′	34.833	7.97	596	38.395	9.35	698	41.985	11.24	833	48.753	11.31	841
	9′	36.333	8.72	652	40.140	10.25	764	44.232	12.51	928	52.040	12.83	954
	10′	37.833	9.49	706	41.664	11.07	822	46.378	13.77	1019	55.141	14.35	1064
9′	4′	30.433	5.54	421	32.271	6.07	460	32.271	6.07	460	38.174	6.77	513
	5′	32.033	6.25	473	35.320	7.47	561	35.320	7.47	561	41.243	7.96	598
	6′	33.633	6.99	525	37.105	8.33	625	38.549	9.05	676	44.386	9.24	692
	7′	35.233	7.76	583	38.549	9.05	676	41.738	10.72	796	47.652	10.56	786
	8′	36.833	8.57	640	40.394	10.00	746	43.985	11.98	887	50.753	11.97	889
	9′	38.333	9.35	698	42.139	10.95	815	46.231	13.30	985	54.040	13.54	1005
	10′	39.833	10.16	755	43.664	11.81	875	48.378	14.62	1081	57.140	15.11	1119
10′	4′	32.433	5.98	453	34.271	6.54	494	34.271	6.54	494	40.174	7.23	546
	5′	34.033	6.73	508	37.319	8.00	600	37.319	8.00	600	43.243	8.46	635
	6′	35.633	7.51	563	39.105	8.91	667	40.549	9.66	720	46.386	9.80	732
	7′	37.233	8.32	624	40.549	9.66	720	43.738	11.41	846	49.652	11.17	831
	8′	38.833	9.17	684	42.394	10.66	793	45.984	12.72	941	52.753	12.62	937
	9′	40.333	9.99	745	44.139	11.64	865	48.231	14.09	1043	56.040	14.25	1057
	10′	41.833	10.84	805	45.664	12.54	929	50.378	15.46	1142	59.140	15.87	1174
	11′	43.433	11.77	874	47.550	13.69	1012	52.625	16.95	1249	62.572	17.73	1308
	12′	45.033	12.74	945	48.994	14.58	1076	54.872	18.50	1361	65.642	19.53	1438

S	H	TRIPLE 90°			TRIPLE 75°			TRIPLE 60°			TRIPLE 45°			H	S
		W (FT.)	CU.YDS. CONC.	LBS. STEEL	W (FT.)	CU.YDS. CONC.	LBS. STEEL	W (FT.)	CU.YDS. CONC.	LBS. STEEL	W (FT.)	CU.YDS. CONC.	LBS. STEEL		
4′	3′	21.133	2.95	232	22.821	3.35	260	22.821	3.35	260	26.714	3.71	287	3′	4′
	4′	25.433	4.43	339	27.273	4.91	375	27.273	4.91	375	33.174	5.63	429	4′	
	5′	27.033	5.05	385	30.321	6.12	463	30.321	6.12	463	36.243	6.69	506	5′	
	6′	28.633	5.69	431	32.106	6.88	519	33.550	7.52	563	39.386	7.85	589	6′	
5′	3′	24.133	3.45	269	25.820	3.89	299	25.820	3.89	299	29.714	4.24	326	3′	5′
	4′	28.433	5.10	388	30.272	5.61	426	30.272	5.61	426	36.174	6.32	479	4′	
	5′	30.033	5.77	438	33.320	6.93	522	33.320	6.93	522	39.243	7.45	561	5′	
	6′	31.633	6.47	487	35.105	7.75	582	36.549	8.43	631	42.386	8.48	651	6′	
	7′	33.233	7.20	542	36.549	8.13	609	39.738	10.03	746	45.652	9.95	742	7′	
	8′	34.833	7.97	596	38.395	9.35	698	41.985	11.31	841	48.753	11.31	841	8′	
6′	3′	27.133	3.95	306	28.818	4.43	339	28.818	4.43	339	32.714	4.77	365	3′	6′
	4′	31.433	5.76	436	33.271	6.30	477	33.271	6.30	477	39.174	7.00	529	4′	
	5′	33.033	6.49	491	36.320	7.74	581	36.320	7.74	581	42.243	8.21	617	5′	
	6′	34.633	7.25	545	38.105	8.62	646	39.549	9.35	698	45.386	9.52	712	6′	
	7′	36.233	8.04	603	39.549	9.35	698	42.738	11.06	822	48.652	10.86	809	7′	
	8′	37.833	8.87	661	41.394	10.33	769	44.985	12.35	914	51.753	12.30	913	8′	
7′	4′	34.433	6.42	485	36.270	7.00	528	36.270	7.00	528	42.174	7.68	579	4′	7′
	5′	36.033	7.21	544	39.319	8.54	640	39.319	8.54	640	45.243	8.97	672	5′	
	6′	37.633	8.03	601	41.105	9.49	709	42.549	10.27	765	48.386	10.36	773	6′	
	7′	39.233	8.88	664	42.549	10.27	765	45.737	12.09	896	51.652	11.77	875	7′	
	8′	40.833	9.77	727	44.394	11.32	841	47.984	13.46	995	54.753	13.28	985	8′	
8′	4′	37.433	7.08	533	39.269	7.70	579	39.269	7.70	579	45.174	8.37	629	4′	8′
	5′	39.033	7.93	596	42.319	9.35	699	42.319	9.35	699	48.243	9.73	728	5′	
	6′	40.633	8.81	659	44.104	10.36	773	45.548	11.19	832	51.386	11.19	834	6′	
	7′	42.233	9.72	726	45.548	11.19	832	48.737	13.12	972	54.652	12.68	942	7′	
	8′	43.833	10.66	793	47.393	12.30	913	50.984	14.57	1076	57.753	14.27	1056	8′	
	9′	45.333	11.58	860	49.138	13.38	992	53.231	16.08	1187	61.040	16.03	1186	9′	
	10′	46.833	12.52	928	50.663	14.37	1063	55.377	17.57	1295	64.140	17.77	1313	10′	
9′	4′	40.433	7.74	582	42.269	8.40	630	42.269	8.40	630	48.173	9.05	680	4′	9′
	5′	42.033	8.65	649	45.318	10.15	758	45.318	10.15	758	51.243	10.49	783	5′	
	6′	43.633	9.59	715	47.104	11.23	836	48.548	12.11	899	54.386	12.03	895	6′	
	7′	45.233	10.56	787	48.548	12.11	899	51.737	14.15	1047	57.652	13.59	1008	7′	
	8′	46.833	11.56	858	50.393	13.29	985	53.983	15.68	1157	60.753	15.25	1129	8′	
	9′	48.333	12.53	930	52.138	14.43	1069	56.230	17.27	1274	64.040	17.09	1264	9′	
	10′	49.833	13.53	1001	53.663	15.47	1143	58.377	18.83	1387	67.140	18.91	1396	10′	
10′	4′	43.433	8.40	630	45.268	9.09	681	45.268	9.09	681	51.173	9.74	729	4′	10′
	5′	45.033	9.37	702	48.318	10.96	817	48.318	10.96	817	54.243	11.25	839	5′	
	6′	46.633	10.37	773	50.104	12.10	900	51.548	13.03	966	57.386	12.87	956	6′	
	7′	48.233	11.40	849	51.548	13.03	966	54.736	15.19	1122	60.652	14.50	1075	7′	
	8′	49.833	12.46	924	53.393	14.27	1056	56.983	16.79	1238	63.753	16.24	1200	8′	
	9′	51.333	13.49	999	55.138	15.48	1145	59.230	18.46	1360	67.039	18.16	1342	9′	
	10′	52.833	14.54	1075	56.663	16.57	1223	61.377	20.10	1479	70.140	20.05	1479	10′	
	11′	54.433	15.69	1159	58.549	17.96	1324	63.624	21.88	1608	73.572	22.21	1634	11′	
	12′	56.033	16.88	1246	59.993	19.04	1400	65.871	23.72	1740	76.642	24.29	1785	12′	

NOTE: THE QUANTITIES SHOWN ABOVE ARE FOR OUTLET END APRONS WITH BAFFLES. IF APRONS ARE NEEDED AT INLETS (NOT USUAL), REDUCE THE ABOVE QUANTITIES FOR NO. BAFFLES AS FOLLOWS:
CONCRETE: REDUCE QUANTITY BY W × 0.0092 CU.YDS/FT.
STEEL: REDUCE QUANTITY BY W × 0.334 LBS/LIN.FT.

S = CLEAR SPAN OF BOX CULVERT
H = CLEAR HEIGHT (RISE) OF BOX CULVERT

DATE | REVISION | BY

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

STANDARD

CONCRETE BOX CULVERT APRONS AND BAFFLES DETAIL

NO SCALE — SEPTEMBER 2017

DES. WEI
DRW. EJC
TRA. ____
CHK. EJC

(SUBMITTED) STATE DESIGN POLICY ENGINEER
(APPROVED) CHIEF ENGINEER

NUMBER 2406
SHEET 2 OF 2