STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	(SNHS-M003-00(340))	367	414

APRON QUANTITIES FOR CONCRETE BOX CULVERTS

S	H	SINGLE - 90 °			SINGLE - 75 °			SINGLE - 60 °			SINGLE - 45 °			DOUBLE - 90°			DOUBLE 75°			DOUBLE 60°			DOUBLE 45°			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	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	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'	4	13.183	1.70	138	14.468	1.91	155	16.469	2.28	183	23.238	3.17	249	17.800	2.59	202	19.297	2.87	223	21.828	3.42	264	29.850	4.67	351	22.466	3.48	266	24.125	3.83	292	27.198	4.56	346	36.415	5.92	447	4	4'
	5	15.000	2.23	173	16.458	2.49	193	19.025	2.96	228	25.958	3.97	300	19.600	3.16	243	21.280	3.51	270	24.380	4.26	327	33.250	5.45	408	-	-	-	-	-	-	-	-	-	-	-	-	5	
	6	16.733	2.57	202	18.318	2.86	226	21.091	3.47	271	29.387	4.72	364	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	
5'	4	14.183	1.89	152	15.502	2.11	169	17.616	2.52	200	24.648	3.46	271	19.800	2.97	230	21.366	3.28	253	24.129	3.91	299	32.649	5.13	390	25.466	4.06	308	27.230	4.44	337	30.654	5.29	399	40.654	6.80	510	4	5'
	5	15.983	2.34	185	17.487	2.62	207	20.171	3.19	249	28.002	4.31	333	21.600	3.54	271	23.352	3.92	300	26.678	4.75	362	36.003	6.19	468	27.266	4.75	358	29.216	5.22	394	33.198	6.32	475	44.007	8.06	603	5	
	6	17.783	2.80	219	19.353	3.12	244	22.236	3.77	293	30.798	5.08	390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	
6'	4	15.183	2.09	166	16.537	2.32	184	18.763	2.77	218	26.060	3.76	292	21.800	3.35	257	23.436	3.69	282	26.431	4.40	335	35.474	5.72	433	28.466	4.63	349	30.336	5.06	381	34.111	6.02	451	44.893	7.69	574	4	6'
	5	16.983	2.55	200	18.521	2.84	223	21.318	3.46	269	29.414	4.64	357	23.683	3.98	303	25.508	4.40	334	29.074	5.33	404	38.945	6.88	518	30.433	5.43	407	32.495	5.95	446	36.846	7.20	538	48.483	9.11	679	5	
	6	18.783	3.05	238	20.388	3.37	262	23.382	4.08	315	32.209	5.44	416	25.483	4.63	351	27.373	5.07	384	31.134	6.13	462	41.740	7.88	592	32.233	6.23	466	34.360	6.77	506	38.903	8.17	609	51.277	10.33	767	6	
7'	4	17.933	2.75	215	18.173	2.69	211	21.285	3.36	261	29.037	4.44	341	25.766	4.43	335	26.280	4.36	331	30.281	5.39	407	40.097	6.86	516	33.600	6.11	456	34.388	6.03	451	39.301	7.43	554	51.165	9.29	690	4	7'
	5	19.733	3.28	253	20.158	3.25	253	23.447	4.03	310	31.943	5.30	405	27.566	5.13	387	28.266	5.11	386	32.447	6.29	473	43.006	7.99	598	35.400	6.98	520	36.374	6.97	520	41.468	8.55	636	54.076	10.68	792	5	
	6	21.533	3.84	295	21.845	3.75	289	25.414	4.63	355	34.627	6.07	463	29.366	5.87	441	29.950	5.76	434	34.403	7.08	531	45.686	8.98	672	37.200	7.89	586	38.058	7.77	579	43.416	9.54	708	56.754	11.89	881	6	
	7	23.333	4.44	339	24.551	4.64	355	28.559	5.73	436	39.099	7.55	572	31.166	6.64	498	32.658	6.91	518	37.547	8.51	636	50.158	10.84	808	39.000	8.84	656	40.765	9.18	682	46.558	11.29	836	61.225	14.13	1045	7	
8'	4	18.933	2.97	230	19.450	2.96	231	22.431	3.62	280	31.463	4.96	379	27.766	4.86	366	28.590	4.86	367	32.583	5.91	445	43.366	7.60	569	36.600	6.75	502	37.733	6.76	504	42.758	8.21	610	55.847	10.37	768	4	8'
	5	20.733	3.51	270	21.374	3.54	273	24.987	4.41	338	33.802	5.74	437	29.566	5.60	420	30.516	5.65	425	35.131	7.00	524	46.275	8.80	657	38.400	7.69	571	39.659	7.76	577	45.301	9.58	717	58.758	11.86	877	5	
	6	22.533	4.10	314	23.299	4.16	319	27.149	5.17	394	36.709	6.71	509	31.366	6.38	478	32.442	6.48	486	37.297	8.01	598	49.185	10.07	750	40.200	8.67	642	41.586	8.80	653	47.468	10.85	803	61.669	13.43	991	6	
	7	24.333	4.72	360	25.830	5.00	381	30.101	6.19	470	40.959	8.08	610	33.166	7.21	538	34.970	7.58	567	40.232	9.36	698	53.428	11.82	879	42.000	9.69	716	41.111	9.98	740	50.392	12.52	925	65.907	15.56	1148	7	
	8	26.133	5.39	409	27.752	5.72	434	32.262	7.07	535	43.865	9.21	693	35.133	8.12	605	37.067	8.56	639	42.589	10.56	785	56.573	13.32	989	44.133	10.85	801	46.382	11.41	843	52.942	14.04	1036	69.288	17.44	1284	8	
9'	4	20.533	3.36	259	20.904	3.31	256	24.170	4.08	314	32.978	5.39	411	30.366	5.54	416	31.082	5.49	412	35.481	6.72	503	46.865	8.56	638	40.200	7.72	572	41.261	7.66	569	46.814	9.36	693	60.762	11.73	866	4	9'
	5	22.333	3.95	302	22.409	3.78	290	26.133	4.70	359	35.214	6.08	462	32.166	6.34	474	32.586	6.13	459	37.432	7.58	566	49.101	9.49	707	42.000	8.74	647	42.765	8.48	628	48.757	10.46	773	62.998	12.90	952	5	
	6	24.133	4.57	348	24.514	4.47	342	28.296	5.49	417	38.568	7.20	544	33.966	7.18	536	34.692	7.07	529	39.598	8.65	645	52.455	10.97	815	43.800	9.80	724	44.870	9.67	715	50.925	11.82	872	66.351	14.74	1086	6	
	7	25.933	5.23	396	27.048	5.34	406	31.246	6.55	496	42.819	8.62	649	35.766	8.06	600	37.221	8.23	614	42.531	10.07	749	56.698	12.81	950	45.600	10.90	804	47.397	11.12	822	53.846	13.60	1003	70.589	17.01	1252	7	
	8	27.733	5.93	448	28.970	6.09	461	33.407	7.46	562	45.724	9.79	735	37.733	9.04	671	39.318	9.27	690	44.888	11.33	841	59.843	14.39	1066	47.733	12.14	895	49.668	12.45	918	56.396	15.21	1120	73.970	18.99	1397	8	
	9	28.933	6.42	484	31.516	7.06	532	36.737	8.73	656	48.818	11.01	824	38.933	9.68	718	41.856	10.52	781	48.182	12.99	963	62.934	15.94	1179	48.933	12.93	952	52.201	13.98	1030	59.666	17.25	1269	77.060	20.86	1533	9	
	10	31.033	7.32	550	33.435	7.91	595	39.297	9.89	742	51.724	12.32	921	41.033	10.84	803	43.777	11.60	861	50.737	14.48	1072	65.843	17.58	1299	51.033	14.35	1055	54.124	15.30	1127	62.217	19.07	1402	79.970	22.84	1678	10	
10'	4	22.133	3.78	290	22.542	3.73	287	25.976	4.59	350	34.468	5.83	442	32.966	6.26	468	33.756	6.21	465	38.445	7.59	566	49.778	9.38	697	43.800	8.75	646	44.970	8.69	643	50.935	10.60	782	65.094	12.92	951	4	10'
	5	23.933	4.40	335	24.349	4.35	332	28.141	5.37	408	37.868	6.97	526	34.766	7.12	531	35.564	7.07	529	40.612	8.69	647	53.178	10.92	810	45.600	9.84	726	46.779	9.79	723	53.102	12.02	885	68.494	14.88	1094	5	
	6	25.733	5.06	383	26.272	4.99	380	30.101	6.08	460	40.502	7.83	590	36.566	8.02	596	37.485	7.95	592	42.560	9.66	718	55.804	12.18	866	47.400	10.98	809	48.698	10.91	805	55.043	13.25	975	71.121	16.31	1199	6	
	7	26.933	5.52	417	28.805	5.92	448	33.047	7.20	543	44.750	9.32	700	37.766	8.64	642	40.013	9.19	683	45.489	11.18	829	60.047	14.03	1038	48.600	11.76	866	51.225	12.47	919	57.961	15.16	1115	75.356	18.73	1377	7	
	8	28.733	6.24	470	30.606	6.67	503	35.603	8.27	622	47.657	10.54	789	39.733	9.66	716	41.990	10.24	760	48.231	12.68	938	63.193	15.69	1159	50.733	13.07	961	53.376	13.82	1017	60.889	17.08	1255	78.738	20.84	1530	8	
	9	30.533	7.01	526	32.172	7.15	538	37.176	8.99	674	50.340	11.61	868	41.533	10.67	789	43.555	11.09	822	49.803	13.61	1007	65.873	17.06	1260	52.533	14.33	1053	54.940	14.87	1094	62.460	18.24	1340	81.415	22.52	1652	9	
	10	32.333	7.81	585	34.108	8.11	609	39.145	9.86	738	53.024	12.73	950	43.333	11.72	866	45.485	12.13	898	51.761	14.75	1090	68.554	18.49	1364	54.333	15.62	1147	56.867	16.15	1188	64.411	19.65	1443	84.094	24.24	1778	10	
	11	34.133	8.65	647	35.906	8.98	673	41.703	11.10	829	55.930	14.14	1053	45.133	12.80	945	47.287	13.25	980	54.314	16.35	1207	71.463	20.26	1494	56.133	16.95	1244	58.671	17.52	1287	66.959	21.61	1585	87.004	26.38	1934	11	
	12	35.933	9.54	712	37.707	9.88	739	43.863	12.25	914	58.837	15.61	1161	46.933	13.93	1028	49.090	14.40	1064	56.478	17.83	1315	74.372	22.11	1628	57.933	18.33	1344	60.476	18.92	1389	69.125	23.40	1716	89.915	28.60	2095	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 x 0.0092 CU.YDS/FT.
STEEL: REDUCE QUANTITY BY W x 0.334 LBS/LIN.FT.

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

GENERAL NOTES:

1. SPECIFICATIONS : GEORGIA STANDARD; CURRENT EDITION, AND SUPPLEMENTS THERETO.
2. CONCRETE APRONS AND BAFFLES ARE REQUIRED AT ALL OUTLETS OF ALL BOX CULVERT DRAINS. APRON IS NOT TO BE OMITTED AT OULETS UNLESS THE ENGINEER DETERMINES THAT BED ROCK WILL PREVENT EROSION AND MAKE THE APRON DIFFICULT TO CONSTRUCT. APRONS (WITHOUT BAFFLES) ARE USED AT INLETS ONLY IF PLANS SPECIFY.
3. DETAILS HERESHOWN APPLY TO BOTH STANDARD AND SPECIAL DESIGN BOX CULVERTS, UNLESS OTHERWISE NOTED.
4. WHERE CONCRETE APRONS ARE REQUIRED, THE TOEWALL OF THE BOX CULVERT MAY BE REDUCED AS SHOWN IN SECTION B-B OR MAY BE AS SHOWN ON APPLICABLE STANDARDS FOR THE BOX CULVERTS. WHERE APRON IS NOT REQUIRED, DO NOT USE TOEWALL AS SHOWN IN SECTION B-B, BUT SEE BOX CULVERT STANDARD TOEWALL.
5. ALL CONCRETE SHALL BE CLASS A CONCRETE.

NOTE: SEE SEPARATE STANDARD DETAILS AND/OR SPECIAL DESIGNS, AS APPLICABLE FOR DETAILS OF BOX CULVERTS, WINGWALLS, PARAPETS, ETC.

BY	REVISION	DATE
G.J.P.	REDRAWN	6-30-98
R.M.U.	ADD ABUTTING JT.-TYP. PLAN V	7-24-85
R.M.U.	ADD 4' X 5' QUANTITIES	8-14-84

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

STANDARD
CONCRETE BOX CULVERT APRONS, BAFFLES, AND INLET BEVELING DETAIL & ADJACENT BOX CULVERTS JOINT DETAIL

NO SCALE — JULY, 1983

REV. R.M.U. (SUBMITTED)
TRA. G.M.E. STATE ROAD & AIRPORT DESIGN ENGR.
CHK. J.M.W. R.K.C. (APPROVED) STATE HIGHWAY ENGINEER

NUMBER 2332
SHEET 2 OF 2