STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	TSAP193(9)	83	135

TABLE P-4-1

MODIFICATION OF STANDARD DIMENSIONS, BAR LENGTHS, AND QUANTITIES FOR CAST-IN-PLACE BOX CULVERTS, WINGWALLS AND PARAPETS, WHERE CONNECTED TO MULTIPLE LINES OF PRECAST BOX CULVERTS.

CLEAR SPAN	CLEAR HEIGHT	DOUBLES: MODIFIED BAR LENGTHS A BARS	G BARS	H BARS	K BARS	MODIFIED DIMENSIONS $T_{(M)}$ (=2T + 6")	P_C	$P_{(M)}$	$R_{(M)}$	MODIFIED QUANTITIES: CAST-IN-PLACE BARREL (ΔL) -PER LIN. FT. LBS. STEEL	CU. YDS. CONC.	WINGWALLS & PARAPETS -TOTAL LBS. STEEL	CU. YDS. CONC.	CLEAR HEIGHT	CLEAR SPAN
4'	4'	10' 4"		5' 2"	11' 7"	1' 4"	10' 2"	18' 8"	11' 11"	102.3	0.9124	298	11.87	4'	4'
5'	4'	12' 6"	12' 11"	5' 10"	13' 7"	1' 6"	12' 6"	12' 10"	14' 1"	123.5	1.074	303	12.81	4'	5'
	5'	12' 6"	12' 11"	5' 10"	13' 7"	1' 6"	12' 6"	12' 10"	14' 1"	124.32	1.163	[illegible]	15.17	5'	
6'	3'	14' 6"	14' 11"	6' 0"	15' 11"	1' 8"	14' 10"	14' 10"	16' 3"	127.5	1.070	230	9.61	3'	6'
	4'	14' 8"	15' 1"	6' 0"	15' 11"	1' 8"	14' 10"	15' 0"	16' 3"	133.6	1.216	308	13.56	4'	
	5'	14' 10"	15' 3"	6' 0"	15' 11"	1' 8"	14' 10"	15' 2"	16' 3"	139.1	1.380	385	16.04	5'	
	6'	14' 10"	15' 3"	6' 0"	15' 11"	1' 8"	14' 10"	15' 2"	16' 3"	143.5	1.494	490	18.80	6'	
7'	4'	17' 2"	17' 5"	6' 0"	17' 8"	1' 10"	17' 2"	17' 6"	18' 0"	164.8	1.510	610	16.18	4'	7'
	5'	17' 2"	17' 5"	6' 0"	18' 0"	1' 10"	17' 2"	17' 6"	18' 4"	169.1	1.639	741	18.73	5'	
	6'	17' 2"	17' 5"	6' 0"	18' 0"	1' 10"	17' 2"	17' 6"	18' 4"	181.7	1.768	866	21.59	6'	
	7'	17' 2"	17' 5"	6' 0"	18' 4"	1' 10"	17' 2"	17' 6"	18' 8"	192.6	1.952	1029	24.80	7'	
8'	4'	19' 2"	19' 6"	6' 6"	19' 8"	1' 10"	19' 2"	19' 6"	20' 0"	185.4	1.741	638	16.92	4'	8'
	5'	19' 2"	19' 6"	6' 6"	20' 0"	1' 10"	19' 2"	19' 6"	20' 4"	189.8	1.870	772	19.60	5'	
	6'	19' 2"	19' 6"	6' 6"	20' 0"	1' 10"	19' 2"	19' 6"	20' 4"	202.6	2.000	896	22.48	6'	
	7'	19' 2"	19' 6"	6' 6"	20' 4"	1' 10"	19' 2"	19' 6"	20' 8"	213.3	2.130	1062	25.67	7'	
	8'	19' 6"	19' 10"	6' 6"	20' 4"	1' 10"	19' 2"	19' 10"	20' 8"	228.4	2.439	2708	30.54	8'	
9'	4'	21' 4"	21' 8"	7' 0"	21' 10"	2' 0"	21' 6"	21' 8"	22' 2"	216.2	2.033	694	18.21	4'	9'
	5'	21' 4"	21' 8"	7' 0"	22' 2"	2' 0"	21' 6"	21' 8"	22' 6"	220.6	2.169	810	20.95	5'	
	6'	21' 4"	21' 8"	7' 0"	22' 2"	2' 0"	21' 6"	21' 8"	22' 6"	233.6	2.305	960	23.91	6'	
	7'	21' 4"	21' 8"	7' 0"	22' 6"	2' 0"	21' 6"	21' 8"	22' 10"	244.4	2.442	1105	27.14	7'	
	8'	21' 8"	22' 0"	7' 0"	22' 6"	2' 0"	21' 6"	22' 0"	22' 10"	255.8	2.769	2817	32.10	8'	
	9'	21' 8"	22' 0"	7' 0"	22' 8"	2' 0"	21' 6"	22' 0"	23' 0"	276.2	2.913	3250	36.00	9'	
	10'	21' 10"	22' 2"	7' 4"	23' 2"	2' 2"	21' 10"	22' 2"	23' 6"	288.0	3.061	3822	41.36	10'	
10'	4'	25' 2"	25' 7"	7' 4"	24' 0"	2' 2"	23' 10"	23' 10"	24' 4"	252.9	2.352	828	19.96	4'	10'
	5'	25' 2"	25' 7"	7' 4"	24' 4"	2' 2"	23' 10"	23' 10"	24' 4"	258.8	2.493	870	22.55	5'	
	6'	25' 2"	25' 7"	7' 4"	24' 4"	2' 2"	23' 10"	23' 10"	24' 4"	272.0	2.635	1098	25.95	6'	
	7'	25' 2"	25' 7"	7' 4"	24' 8"	2' 2"	23' 10"	23' 10"	24' 8"	283.2	2.850	1238	28.87	7'	
	8'	25' 6"	25' 11"	7' 4"	24' 10"	2' 2"	23' 10"	24' 2"	24' 8"	309.1	3.119	2414	36.95	8'	
	9'	25' 6"	25' 11"	7' 4"	24' 10"	2' 2"	23' 10"	24' 2"	24' 8"	372.2	3.273	2721	42.10	9'	
	10'	25' 6"	25' 11"	7' 4"	25' 0"	2' 2"	23' 10"	24' 2"	25' 0"	380.5	3.502	3698	48.33	10'	

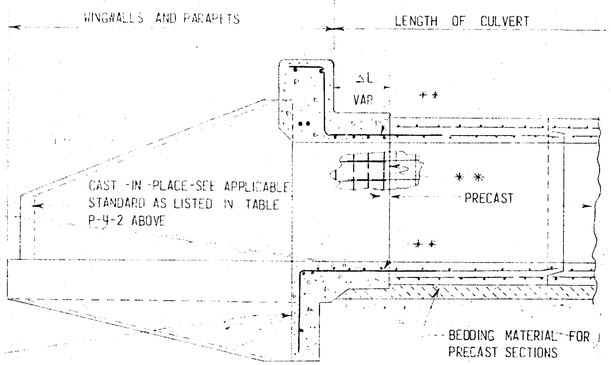
CLEAR SPAN	CLEAR HEIGHT	TRIPLES: MODIFIED BAR LENGTHS A BARS	G BARS	H BARS	K BARS	MODIFIED DIMENSIONS $T_{(M)}$ (=2T + 6")	P_C	$P_{(M)}$	$R_{(M)}$	MODIFIED QUANTITIES: CAST-IN-PLACE BARREL (ΔL) -PER LIN. FT. LBS. STEEL	CU. YDS. CONC.	WINGWALLS & PARAPETS - TOTAL LBS. STEEL	CU. YDS. CONC.	CLEAR HEIGHT	CLEAR SPAN
4'	4'	15' 9"		10' 3"	17' 0"	1' 4"	15' 6"	16' 0"	17' 4"	161.8	1.202	312	13.79	4'	4'
5'	4'	19' 0"	19' 10"	10' 8"	20' 3"	1' 6"	19' 0"	19' 4"	20' 7"	183	1.525	320	15.23	4'	5'
	5'	19' 0"	19' 10"	10' 8"	20' 3"	1' 6"	19' 0"	19' 4"	20' 7"	195	1.643	336	17.73	5'	
6'	3'	22' 2"	22' 11"	12' 10"	23' 7"	1' 8"	22' 6"	22' 6"	23' 11"	203	1.579	250	14.22	3'	6'
	4'	22' 4"	23' 1"	12' 10"	23' 7"	1' 8"	22' 6"	22' 8"	23' 11"	211.3	1.880	323	16.46	4'	
	5'	22' 6"	23' 5"	12' 10"	23' 7"	1' 8"	22' 6"	22' 10"	23' 11"	219.2	2.080	406	19.12	5'	
	6'	22' 6"	23' 5"	12' 10"	23' 7"	1' 8"	22' 6"	22' 10"	23' 11"	225.0	2.252	511	22.02	6'	
7'	4'	26' 0"	26' 6"	15' 0"	26' 6"	1' 10"	26' 0"	26' 4"	26' 10"	265.8	2.280	699	19.64	4'	7'
	5'	26' 0"	26' 6"	15' 0"	26' 10"	1' 10"	26' 0"	26' 4"	27' 2"	271.5	2.479	831	22.43	5'	
	6'	26' 0"	26' 6"	15' 0"	26' 10"	1' 10"	26' 0"	26' 4"	27' 2"	288.3	2.688	956	25.40	6'	
	7'	26' 0"	26' 7"	15' 0"	27' 2"	1' 10"	26' 0"	26' 4"	27' 6"	302.9	2.955	1119	28.77	7'	
8'	4'	29' 0"	29' 7"	16' 6"	29' 6"	1' 10"	29' 0"	29' 4"	29' 10"	302.5	2.629	739	20.82	4'	8'
	5'	29' 0"	29' 7"	16' 6"	29' 10"	1' 10"	29' 0"	29' 4"	30' 2"	308.3	2.826	873	23.64	5'	
	6'	29' 0"	29' 7"	16' 6"	29' 10"	1' 10"	29' 0"	29' 4"	30' 2"	325.3	3.024	997	26.65	6'	
	7'	29' 0"	29' 7"	16' 6"	30' 2"	1' 10"	29' 0"	29' 4"	30' 6"	339.5	3.222	1163	29.30	7'	
	8'	29' 4"	30' 0"	16' 6"	30' 6"	1' 10"	29' 0"	29' 8"	30' 10"	359.0	3.628	2811	34.39	8'	
9'	4'	32' 4"	38' 11"	18'	32' 10"	2' 0"	32' 6"	32' 6"	33' 2"	355	3.087	808	22.53	4'	9'
	5'	32' 4"	32' 11"	18' 0"	33' 2"	2' 0"	32' 6"	32' 8"	33' 6"	360.7	3.297	925	25.46	5'	
	6'	32' 4"	32' 11"	18' 0"	33' 2"	2' 0"	32' 6"	32' 8"	33' 6"	378.0	3.507	1075	28.57	6'	
	7'	32' 4"	32' 11"	18' 0"	33' 6"	2' 0"	32' 6"	32' 8"	33' 10"	392.4	3.718	1220	31.35	7'	
	8'	32' 8"	33' 4"	18' 0"	33' 6"	2' 0"	32' 6"	33' 0"	33' 10"	412.0	4.149	2931	37.06	8'	
	9'	32' 8"	33' 4"	18' 0"	33' 8"	2' 0"	32' 6"	33' 0"	34' 0"	433.8	4.371	3363	41.11	9'	
	10'	33' 0"	33' 8"	18' 4"	34' 4"	2' 2"	33' 0"	33' 4"	34' 8"	444.3	4.593	3937	46.57	10'	
10'	4'	37' 4"	38' 2"	7' 4"	36' 2"	2' 2"	36' 0"	36' 0"	36' 6"	391.1	3.582	1007	24.85	4'	10'
	5'	37' 4"	38' 2"	7' 4"	36' 2"	2' 2"	36' 0"	36' 0"	36' 6"	402.0	3.803	1142	27.92	5'	
	6'	37' 4"	38' 2"	7' 4"	36' 6"	2' 2"	36' 0"	36' 0"	36' 10"	419.6	4.026	1275	31.17	6'	
	7'	37' 4"	38' 2"	7' 4"	36' 6"	2' 2"	36' 0"	36' 0"	36' 10"	434.5	4.359	1416	34.25	7'	
	8'	37' 8"	38' 6"	7' 4"	36' 6"	2' 2"	36' 0"	36' 4"	36' 10"	453.3	4.710	2590	42.50	8'	
	9'	37' 8"	38' 6"	7' 4"	36' 10"	2' 2"	36' 0"	36' 4"	37' 2"	533.7	5.262	2839	47.82	9'	
	10'	37' 8"	38' 6"	7' 4"	37' 2"	2' 2"	36' 0"	36' 4"	37' 6"	544.6	5.640	3875	54.22	10'	

NOTE: MODIFIED WINGWALL AND PARAPET QUANTITIES ARE FOR FOUR WINGWALLS AND TWO PARAPETS EXPANDED FOR MULTIPLE LINES WITH A 6" SPACE. FOR TOTAL CAST-IN-PLACE QUANTITIES, MULTIPLY ΔL (BOTH ENDS) BY THE MODIFIED BARREL QUANTITIES AND ADD THIS TO THE MODIFIED WINGWALL AND PARAPET QUANTITIES. MODIFIED BARREL QUANTITIES ARE BASED ON STANDARDS. SPECIAL DESIGNS SIMILIARLY MODIFIED BY INCREASING THE INTERIOR WALL THICKNESS AND REINFORCING BAR LENGTHS MAY BE USED INSTEAD.

TABLE P-4-2 - STANDARDS FOR CAST-IN-PLACE DETAILS

CULVERT SIZE	SINGLE CULVERT	DOUBLE * OR TRIPLE *
4'X4' TO 6'X6'	STANDARD 2321	STANDARD 2325
7'X4' TO 9'X10'	STANDARD 2323	STANDARD 2326
10'X4' TO 10'X10'	STANDARD 2324	STANDARD 2327

* CAST-IN-PLACE CONSTRUCTION FOR DOUBLE AND TRIPLE CULVERTS WILL BE AS SHOWN ON STANDARDS LISTED, EXCEPT THAT INTERIOR WALL THICKNESSES AND PARAPET LENGTHS WILL BE INCREASED AS SHOWN ON THIS PLAN, RESULTING IN THE MODIFIED BAR LENGTHS, DIMENSIONS, AND QUANTITIES GIVEN IN THE TABLE AT TOP.



MULTIPLE LINES: LENGTH OF TOE WALL DIRECTLY UNDER PARAPET INCREASED SAME AS INCREASE IN INTERIOR WALL THICKNESS

SIDE VIEW — SINGLE OR MULTIPLE LINES

GENERAL NOTES:

1. SPECIFICATIONS: GEORGIA STANDARD AND/OR SPECIAL PROVISIONS.
2. FOR DETAILS OF PRECAST BOX CULVERT SECTIONS SEE DETAIL SHEET NOS. P-1 AND P-2.
3. INSTALLATION OF PRECAST BOXES, BEDDING, BACKFILLING, ETC. WILL BE ACCORDING TO DETAIL SHEET NO. P-3.
4. FOR PRECAST BOX CULVERT TO WINGWALLS AND PARAPET CONNECTIONS ADDITIONAL DETAILS FOR SKEWS, SEE DETAIL SHEET NO. P-5.
5. SINGLE BOX CULVERTS: CAST-IN-PLACE CONSTRUCTION AT THE END OF SINGLE PRECAST BOX CULVERTS WILL BE IN ACCORDANCE WITH APPLICABLE STANDARD AS LISTED IN TABLE P-4-2.
6. MULTIPLE BOX CULVERTS: CAST-IN-PLACE CONSTRUCTION AT THE END OF MULTIPLE PRECAST BOX CULVERTS WILL BE IN ACCORDANCE WITH APPLICABLE STANDARD AS LISTED IN TABLE P-4-2 EXCEPT THAT THE THICKNESS OF THE INTERIOR WALL(S) AND PARAPET LENGTHS WILL BE INCREASED AS SHOWN TO ACCOMODATE THE PRECAST SECTIONS. MODIFICATIONS GIVEN IN TABLE P-4-1 ARE BASED ON A 6" SPACE BETWEEN LINES OF SECTIONS AND A STANDARD DESIGN 1 FOR CAST-IN-PLACE CULVERTS. IF THE SPACE BETWEEN LINES OF PRECAST SECTIONS DIFFERS FROM 6", THE MODIFIED QUANTITIES, DIMENSIONS, AND BAR LENGTHS WILL VARY ACCORDINGLY.
7. ALL JOINTS BETWEEN CAST-IN-PLACE AND PRECAST SECTIONS WILL HAVE EXTENDING DOWEL REINFORCING CAST IN THE PRECAST SECTIONS (SEE DETAIL SHEET NOS. P-1 AND P-2) TIED TO THE LONGITUDINAL REINFORCING OF THE BUILT-IN-PLACE CONSTRUCTION.
8. MODIFIED CAST-IN-PLACE QUANTITIES ARE GIVEN FOR CONTRACTORS INFORMATION ONLY. SEE SPECIFICATIONS SEC. 512 FOR BASIS OF PAYMENT.
9. CAST-IN-PLACE 6" THICK REINFORCED CONCRETE APRONS WILL BE REQUIRED BETWEEN WINGWALLS AS SPECIFIED IN THE PLANS. MODIFIED QUANTITIES SHOWN ABOVE DO NOT INCLUDE APRON QUANTITIES.

** JOINTS BETWEEN PRECAST AND CAST-IN-PLACE CONSTRUCTION: REINFORCEMENT CAST FROM THE PRECAST SECTIONS WILL BE TIED TO LONGITUDINAL REINFORCING OF CAST-IN-PLACE SECTIONS ALL AROUND.

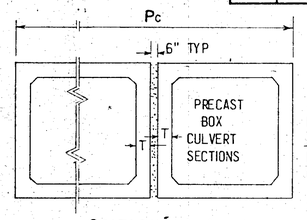
P_C = OUTSIDE SPAN. PRECAST BOX CULVERT (S)

$P_{(M)}$ = OUTSIDE SPAN. CAST-IN-PLACE. MODIFIED FOR TIE TO PRECAST SECTIONS

$T_{(M)}$ = INTERIOR WALL THICKNESS CAST-IN-PLACE MODIFIED FOR TIE TO PRECAST SECTIONS

$R_{(M)}$ = PARAPET LENGTH MODIFIED BY INCREASE AS SHOWN

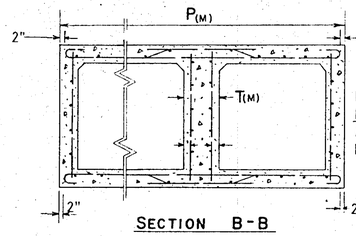
ΔL = LENGTH OF BARREL. CAST-IN-PLACE. MAY BE ZERO UNLESS SPECIFIED OTHERWISE



SECTION A-A

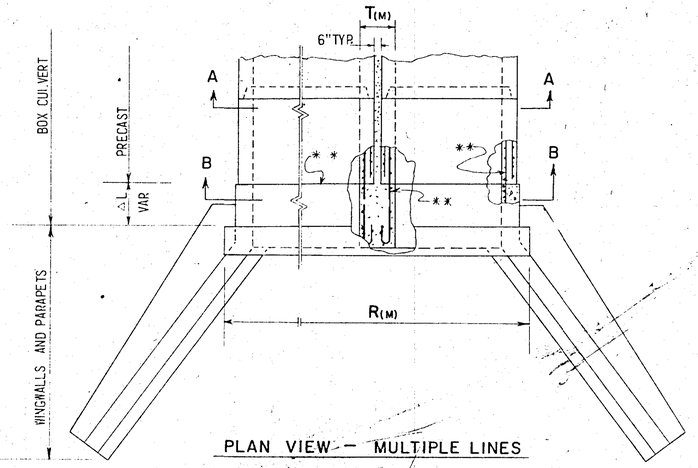
FOR DETAILS OF SECTION A-A NOT SHOWN HERE SEE DETAIL SHEET NO P-1 AND P-2

SEE DETAIL SHEET NO P-3 FOR BACKFILL REQUIREMENTS



SECTION B-B

FOR DETAILS OF SECTION B-B NOT SHOWN HERE. SEE APPLICABLE STANDARD LISTED IN TABLE P-4-2



PLAN VIEW — MULTIPLE LINES

6-8-79		
GEN. REV.	PRECAST BOX CULVERT TO WINGWALLS AND PARAPET CONNECTION DETAILS	
	NO SCALE	4-3-79
R.M.U.		P-4

FORM EF3