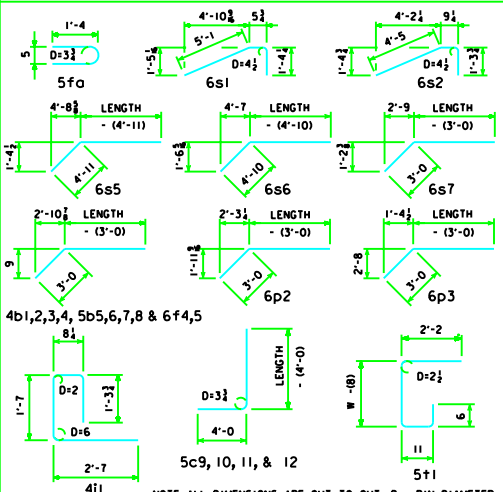


**BILL OF REINFORCING FOR ONE HEADWALL 15° SKEW CULVERT SPAN X CULVERT HEIGHT**

BAR	LOCATION	SHAPE	12'-0" x 12'-0"		12'-0" x 10'-0"		12'-0" x 8'-0"		12'-0" x 6'-0"		10'-0" x 12'-0"		10'-0" x 10'-0"		10'-0" x 8'-0"		10'-0" x 6'-0"		MARK							
			NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH		NO.	LENGTH					
5f0	FENCE ANCHOR (GALV.)		2	3'-1"	2	3'-1"	2	3'-1"	2	3'-1"	2	3'-1"	2	3'-1"	2	3'-1"	2	3'-1"	2	3'-1"	5f0					
4b1	WINGWALL, B.F.H. LONG		1	45'-1"	31	38'-3"	26	31'-5"	21	24'-6"	16	18'-8"	11	12'-8"	6	8'-8"	2	4'-6"	16	4b1						
4b2	WINGWALL, B.F.H. SHORT		1	39'-10"	27	33'-10"	23	27'-10"	19	21'-10"	15	15'-10"	11	9'-10"	7	3'-10"	2	2'-10"	15	4b2						
4b3	WINGWALL, F.F.H. LONG		10	12'-8"	191	12'-8"	132	12'-8"	85	12'-8"	48	12'-8"	27	12'-8"	15	12'-8"	8	12'-8"	4	12'-8"	48					
4b4	WINGWALL, B.F.H. SHORT		10	11'-5"	166	11'-5"	117	11'-5"	76	11'-5"	43	11'-5"	25	11'-5"	14	11'-5"	8	11'-5"	4	11'-5"	43					
5b5	WINGWALL, F.F.H. LONG		1	45'-1"	49	38'-3"	40	31'-5"	33	24'-6"	26	18'-8"	17	12'-8"	10	8'-8"	4	4'-6"	26	5b5						
5b6	WINGWALL, F.F.H. SHORT		1	39'-10"	42	33'-10"	35	27'-10"	29	21'-10"	23	15'-10"	16	9'-10"	10	3'-10"	4	2'-10"	23	5b6						
5b7	WINGWALL, F.F.H. LONG		11	9'-2"	307	9'-2"	215	9'-2"	142	9'-2"	84	9'-2"	48	9'-2"	27	9'-2"	15	9'-2"	8	9'-2"	84					
5b8	WINGWALL, F.F.H. SHORT		11	8'-5"	269	8'-5"	192	8'-5"	127	8'-5"	75	8'-5"	43	8'-5"	25	8'-5"	14	8'-5"	8	8'-5"	75					
5b9	CENTER WALLS, BOTH F.H.		42	2 EACH	721	2 EACH	511	2 EACH	336	2 EACH	194	2 EACH	112	2 EACH	64	2 EACH	36	2 EACH	19	2 EACH	194					
4c1	WINGWALL, F.F.V. LONG		42	2'-10"	248	2'-10"	182	2'-10"	132	2'-10"	85	2'-10"	48	2'-10"	27	2'-10"	15	2'-10"	8	2'-10"	83					
4c2	WINGWALL, F.F.V. SHORT		37	2'-11"	220	2'-11"	164	2'-11"	116	2'-11"	75	2'-11"	41	2'-11"	23	2'-11"	13	2'-11"	7	2'-11"	74					
4c3	WINGWALL, F.F.V. LONG		1	13'-9"	9	11'-9"	8	9'-9"	7	7'-9"	5	5'-9"	3	3'-9"	2	2'-9"	1	1'-9"	5	4'-3"	5					
4c3	WINGWALL, F.F.V. SHORT		1	13'-9"	9	11'-9"	8	9'-9"	7	7'-9"	5	5'-9"	3	3'-9"	2	2'-9"	1	1'-9"	5	4'-3"	5					
4c4	CENTER WALLS, BOTH F.V.		4	1'-9"	5	1'-9"	5	1'-9"	5	1'-9"	4	1'-9"	4	1'-9"	4	1'-9"	4	1'-9"	4	1'-9"	4					
4c5	CENTER WALLS, BOTH F.V.		98	2 EACH	472	2 EACH	342	2 EACH	231	2 EACH	135	2 EACH	78	2 EACH	46	2 EACH	26	2 EACH	13	2 EACH	132					
4c6	CENTER WALLS, BOTH F.V.		4	12'-7"	34	10'-7"	28	8'-7"	23	6'-7"	18	4'-7"	12	2'-7"	7	1'-7"	4	10'-6"	23	4	17					
5c7	WINGWALL, B.F.V. LONG		9	2'-10"	38	2'-10"	38	2'-10"	38	2'-10"	38	2'-10"	37	2'-9"	37	2'-9"	37	2'-9"	37	2'-9"	37					
5c8	WINGWALL, B.F.V. SHORT		6	2'-11"	23	2'-11"	23	2'-11"	23	2'-11"	23	2'-11"	23	2'-10"	23	2'-10"	23	2'-10"	23	2'-10"	23					
5c9	WINGWALL, B.F.V. LONG		33	9'-5"	486	9'-5"	355	9'-5"	252	9'-5"	150	9'-4"	83	9'-4"	48	9'-4"	25	9'-4"	13	9'-4"	149					
5c10	WINGWALL, B.F.V. SHORT		31	8'-11"	450	8'-11"	337	8'-11"	236	8'-11"	148	8'-10"	87	8'-10"	47	8'-10"	25	8'-10"	13	8'-10"	147					
5c11	WINGWALL, B.F.V. LONG		25	10'-6"	274	10'-6"	197	10'-6"	120	10'-6"	68	10'-6"	38	10'-6"	21	10'-6"	11	10'-6"	6	10'-6"	111					
5c11	WINGWALL, B.F.V. SHORT		20	10'-6"	219	10'-6"	153	10'-6"	88	10'-6"	48	10'-6"	25	10'-6"	14	10'-6"	8	10'-6"	4	10'-6"	88					
5c12	WINGWALL, B.F.V. LONG		1	17'-8"	18	15'-8"	16	13'-8"	14	11'-8"	12	9'-8"	10	7'-8"	8	5'-8"	6	3'-8"	4	1'-8"	11	11'-7"	12			
5c12	WINGWALL, B.F.V. SHORT		1	17'-8"	18	15'-8"	16	13'-8"	14	11'-8"	12	9'-8"	10	7'-8"	8	5'-8"	6	3'-8"	4	1'-8"	11	11'-7"	12			
4d1	APRON, LONGIT., BOTTOM		25	28'-4"	473	25	24'-2"	404	25	20'-0"	334	25	15'-11"	266	21	28'-4"	397	21	24'-2"	339	21	20'-0"	281	21	15'-11"	223
4d2	APRON, LONGIT., BOT. LONG		3	39'-4"	79	3	32'-8"	65	3	25'-11"	52	3	19'-1"	38	3	39'-4"	79	3	32'-8"	65	3	25'-11"	52	3	19'-1"	38
4d3	APRON, LONGIT., BOT. SHORT		3	34'-11"	70	3	29'-0"	58	3	23'-11"	46	3	17'-2"	34	3	34'-11"	70	3	29'-0"	58	3	23'-11"	46	3	17'-2"	34
6f1	APRON, LONGIT., TOP		37	28'-4"	1575	37	24'-2"	1343	37	20'-0"	1111	37	15'-11"	885	31	28'-4"	1319	31	24'-2"	1125	31	20'-0"	931	31	15'-11"	741
6f2	APRON, LONGIT., TOP, LONG		9	5'-5"	210	7	6'-3"	145	5	7'-2"	92	4	5'-6"	56	9	5'-5"	210	7	6'-3"	145	5	7'-2"	92	4	5'-6"	56
6f3	APRON, LONGIT., TOP, SHORT		8	5'-5"	187	6	7'-0"	129	5	5'-9"	87	4	4'-5"	53	8	5'-5"	187	6	7'-0"	129	5	5'-9"	87	4	4'-5"	53
6f4	APRON, LONGIT., TOP, LONG		1	45'-1"	71	1	38'-3"	57	1	31'-5"	47	1	24'-6"	37	1	45'-1"	71	1	38'-3"	57	1	31'-5"	47	1	24'-6"	37
6f5	APRON, LONGIT., TOP, SHORT		1	39'-10"	60	1	33'-10"	51	1	27'-10"	42	1	21'-10"	33	1	39'-10"	60	1	33'-10"	51	1	27'-10"	42	1	21'-10"	33
4h1	PARAPET, VERTICAL		79	6'-2"	325	77	6'-2"	317	77	6'-2"	317	67	6'-2"	276	65	6'-2"	268	65	6'-2"	268	65	6'-2"	268	65	6'-2"	268
7j1	PARAPET, HORIZONTAL		4	41'-0"	335	4	40'-4"	330	4	40'-2"	327	4	34'-10"	285	4	34'-2"	279	4	34'-2"	279	4	33'-9"	276	4	33'-9"	276
6m1	APRON, TRANS., TOP		8	42'-7"	504	8	41'-11"	496	8	41'-11"	496	8	41'-7"	492	7	36'-2"	375	7	35'-6"	368	7	35'-6"	368	7	35'-2"	364
6m2	APRON, TRANS., TOP		21	50'-4"	1469	15	47'-5"	1009	10	45'-7"	659	4	43'-0"	255	23	44'-9"	1403	17	41'-5"	992	12	39'-11"	683	6	37'-4"	328
6m3	APRON, TRANS., TOP		13	40'-2"	478	13	40'-11"	477	13	37'-8"	430	13	37'-9"	431	11	34'-8"	359	11	34'-8"	357	11	32'-3"	317	11	32'-4"	319
6m5	APRON, TRANS., BOTTOM		24	47'-5"	1485	20	44'-10"	1193	16	42'-9"	930	12	40'-5"	675	24	41'-2"	1260	20	38'-8"	1008	16	36'-6"	781	12	34'-2"	563
6p1	CURTAIN, HORIZONTAL		4	39'-7"	238	4	39'-3"	236	4	39'-2"	235	4	33'-4"	200	4	33'-0"	200	4	33'-0"	198	4	33'-0"	198	4	32'-10"	197
6p2	CURTAIN, HORIZ. LONG		4	21'-10"	131	4	18'-9"	113	4	15'-9"	95	4	12'-9"	77	4	21'-10"	131	4	18'-9"	113	4	15'-9"	95	4	12'-9"	77
6p3	CURTAIN, HORIZ. SHORT		4	16'-11"	102	4	14'-8"	88	4	12'-5"	75	4	10'-3"	62	4	16'-11"	102	4	14'-7"	88	4	12'-5"	75	4	10'-3"	62
6s1	WING SLOPE, BOTH F. LONG		2	6'-11"	21	2	6'-11"	21	2	6'-11"	21	2	6'-11"	21	2	6'-11"	21	2	6'-11"	21	2	6'-11"	21	2	6'-11"	21
6s2	WING SLOPE, BOTH F. SHORT		2	6'-6"	20	2	6'-6"	20	2	6'-6"	20	2	6'-6"	20	2	6'-6"	20	2	6'-6"	20	2	6'-6"	20	2	6'-6"	20
6s3	WING SLOPE, BOTH F. LONG		2	4'-9"	131	2	34'-7"	104	2	27'-6"	83	2	20'-4"	61	2	41'-9"	131	2	34'-7"	104	2	27'-6"	83	2	20'-4"	61
6s4	WING SLOPE, BOTH F. SHORT		2	37'-4"	112	2	31'-0"	93	2	24'-8"	74	2	18'-4"	55	2	37'-4"	112	2	31'-0"	93	2	24'-8"	74	2	18'-4"	55
6s5	WING SLOPE, F.F. LONG		1	46'-1"	72	1	38'-11"	58	1	31'-9"	48	1	24'-7"	37	1	46'-1"	72	1	38'-11"	58	1	31'-9"	48	1	24'-7"	37
6s6	WING SLOPE, F.F. SHORT		1	41'-3"	65	1	34'-11"	52	1	28'-8"	43	1	22'-4"	34	1	41'-3"	65	1	34'-11"	52	1	28'-8"	43	1	22'-4"	34
6s7	CENTER WALL, BOTH F.HOR.		4	30'-6"	183	4	25'-11"	156	4	21'-4"	128	4	16'-9"	101	4	30'-6"	183	4	25'-11"	156	4	21'-4"	128	4	16'-9"	101
5f1	CURTAIN, VERTICAL		52	7'-11"	429	48	7'-5"	371	45	6'-11"	325	40	6'-5"	268	46	7'-11"	380	42	7'-5"	325	39	6'-11"	281	34	6'-5"	228
ESTIMATED QUANTITIES ONE HEADWALL			REINFORCING STEEL		13,157 LBS.		10,564 LBS.		8300 LBS.		6110 LBS.		12,080 LBS.		9624 LBS.		7505 LBS.		5456 LBS.							
			PARAPET & WINGWALLS		3.7		3.6		3.6		3.5		3.3		3.1		3.1		3.0							
			CONC.		35.2		21.1		14.2		7.7		35.2		21.1		14.2		7.8							
			FOOTING		77.9		62.2		48.8		36.0		66.5		52.7		41.1		30.1							
			CU. YD.		21.1		14.2		8.8		4.8		10.5		7.9		5.8		4.0							
			CU. YD.		77.9		62.2		48.8		36.0		66.5		52.7		41.1		30.1							

**BENT BAR DETAILS**



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = SPIN DIAMETER

"SHORT" DENOTES SHORT WINGWALL

"LONG" DENOTES LONG WINGWALL

VARIABLE LENGTH BARS DENOTED BY X/Y

WEIGHT OF BARS OVER 40'-0" LONG INCLUDES AN ALLOWANCE FOR LAP (2'-8" FOR TOP APRON "m" BARS AND 2'-2" ALL OTHER BARS).

LENGTHS SHOWN FOR BARS OVER 40'-0" LONG DO NOT INCLUDE LAP (2'-8" FOR TOP APRON "m" BARS AND 2'-2" ALL OTHER).

NOTE: INCLUDES TOP OF WINGWALL QUANTITIES.

Δ ASSUMES APRON AND FLOOR ARE EQUAL THICKNESS, ADJUST CONCRETE QUANTITIES FOR TRANSITION WHERE APRON AND FLOOR THICKNESS ARE NOT EQUAL.

**HEADWALL NOTES:**

SEE SHEET TRRCB-G1-01 FOR GENERAL INFORMATION, SPECIFICATIONS, AND DESIGN STRESSES.