

**BILL OF REINFORCING FOR ONE HEADWALL 30° SKEW CULVERT SPAN x CULVERT HEIGHT**

BAR	LOCATION	SHAPE	12' x 12'		12' x 11'		12' x 10'		12' x 9'		12' x 8'		12' x 7'		12' x 6'		BAR								
			NO.	LENGTH	WT.	NO.	LENGTH	WT.	NO.	LENGTH	WT.	NO.	LENGTH	WT.	NO.	LENGTH		WT.	NO.	LENGTH	WT.				
5f4	FENCE ANCHOR (GALV.)		2	2'-10"	6	2'-10"	6	2'-10"	6	2'-10"	6	2'-10"	6	2'-10"	6	2'-10"	6	5f4							
4b1	WINGWALL, B.F.H. LONG		1	54'-2	38	1	50'-0	35	1	45'-0	32	1	41'-8	29	1	37'-6	25	1	33'-4	22	1	29'-2	15	4b1	
4b2	WINGWALL, B.F.H. SHORT		1	41'-2	29	1	38'-1	25	1	35'-0	23	1	31'-10	21	1	28'-9	19	1	25'-7	17	1	22'-6	15	4b2	
4b3	WINGWALL, B.F.H. LONG		10	14'-8 TO 52'-3	228	9	14'-8 TO 48'-1	192	8	14'-8 TO 43'-11	158	7	14'-8 TO 35'-7	127	6	14'-8 TO 31'-5	101	5	14'-8 TO 27'-3	77	4	14'-8 TO 23'-0	56	4b3	
4b4	WINGWALL, B.F.H. SHORT		10	11'-11 TO 39'-9	173	9	11'-11 TO 36'-8	146	8	11'-11 TO 33'-7	122	7	11'-11 TO 30'-5	99	6	11'-11 TO 27'-4	78	5	11'-11 TO 24'-3	60	4	11'-11 TO 21'-1	44	4b4	
5b5	WINGWALL, F.F.H. LONG		1	54'-3	59	1	50'-1	55	1	45'-11	50	1	41'-9	46	1	37'-7	39	1	33'-5	35	1	29'-2	30	5b5	
5b6	WINGWALL, F.F.H. SHORT		1	41'-3	45	1	38'-2	40	1	35'-0	37	1	31'-11	33	1	28'-9	30	1	25'-8	27	1	22'-6	23	5b6	
5b7	WINGWALL, F.F.H. LONG		11	10'-7 TO 52'-4	368	10	10'-7 TO 48'-2	311	9	10'-7 TO 43'-11	258	8	10'-7 TO 35'-7	210	7	10'-7 TO 31'-5	169	6	10'-7 TO 27'-3	131	5	10'-7 TO 23'-0	99	5b7	
5b8	WINGWALL, F.F.H. SHORT		11	8'-10 TO 39'-9	279	10	8'-10 TO 36'-8	238	9	8'-10 TO 33'-7	199	8	8'-10 TO 30'-6	164	7	8'-10 TO 27'-4	132	6	8'-10 TO 24'-3	103	5	8'-10 TO 21'-1	78	5b8	
5b9	INTERIOR WALL, BOTH F.H.		21	5'-7 TO 30'-11	400	19	5'-7 TO 28'-8	339	17	5'-7 TO 26'-4	283	15	5'-7 TO 24'-0	231	13	5'-8 TO 21'-9	186	11	5'-8 TO 19'-5	144	9	5'-9 TO 17'-1	107	5b9	
4c1	WINGWALL, F.F.V. LONG		51	2'-10 TO 14'-10	301	47	2'-10 TO 13'-10	262	43	2'-10 TO 12'-11	226	39	2'-10 TO 11'-11	192	35	2'-10 TO 10'-10	162	31	2'-10 TO 9'-11	133	26	2'-10 TO 8'-10	101	4c1	
4c2	WINGWALL, F.F.V. SHORT		38	2'-10 TO 14'-9	223	35	2'-10 TO 13'-9	194	32	2'-10 TO 12'-10	167	29	2'-10 TO 11'-10	142	26	2'-10 TO 10'-10	119	23	2'-10 TO 9'-11	98	20	2'-10 TO 8'-11	78	4c2	
4c3	WINGWALL, F.F.V. LONG		23	9'-8 TO 14'-11	189	19	9'-8 TO 13'-11	150	15	9'-8 TO 13'-0	114	11	9'-8 TO 12'-1	80	---	---	---	---	---	---	---	---	---	---	4c3
4c4	WINGWALL, F.F.V. SHORT		18	9'-5 TO 14'-11	146	15	9'-5 TO 13'-11	117	12	9'-5 TO 12'-11	90	9	9'-5 TO 12'-0	64	---	---	---	---	---	---	---	---	---	---	4c4
4c5	WINGWALL, F.F.V. LONG		2	13'-9	18	2	12'-9	17	2	11'-9	16	1	10'-9	7	1	9'-9	7	1	8'-9	6	2	7'-9	10	4c5	
4c5	WINGWALL, F.F.V. SHORT		2	13'-9	18	2	12'-9	17	2	11'-9	16	1	10'-9	14	2	9'-9	13	1	8'-9	6	1	7'-9	5	4c5	
4c6	INTERIOR WALL, BOTH F.V.		2	1'-9	2	1'-9	2	1'-9	2	1'-9	2	1'-9	2	1'-9	2	1'-9	2	1'-9	2	1'-9	2	1'-8	2	4c6	
4c7	INTERIOR WALL, BOTH F.V.		54	1'-11 TO 12'-4	257	50	1'-11 TO 11'-6	224	45	1'-11 TO 10'-5	185	41	1'-11 TO 9'-6	156	36	1'-11 TO 8'-5	124	32	1'-11 TO 7'-6	101	27	1'-11 TO 6'-6	76	4c7	
4c8	INTERIOR WALL, BOTH F.V.		2	12'-7	17	2	11'-7	15	2	10'-7	14	2	9'-7	13	2	8'-7	11	2	7'-7	10	2	6'-7	9	4c8	
5c9	WINGWALL, B.F.V. LONG		11	2'-10 TO 5'-3	46	11	2'-10 TO 5'-3	46	11	2'-10 TO 5'-3	46	11	2'-10 TO 5'-3	46	11	2'-10 TO 5'-3	46	11	2'-10 TO 5'-3	46	11	2'-10 TO 5'-3	46	5c9	
5c10	WINGWALL, B.F.V. SHORT		5	2'-10 TO 4'-2	18	5	2'-10 TO 4'-2	18	5	2'-10 TO 4'-2	18	5	2'-10 TO 4'-2	18	5	2'-10 TO 4'-2	18	5	2'-10 TO 4'-2	18	5	2'-10 TO 4'-2	18	5c10	
5c11	WINGWALL, B.F.V. LONG		40	9'-6 TO 18'-10	591	36	9'-6 TO 17'-10	513	32	9'-6 TO 16'-11	441	28	9'-6 TO 15'-11	371	24	9'-6 TO 15'-0	307	20	9'-6 TO 14'-0	245	15	9'-6 TO 12'-10	175	5c11	
5c12	WINGWALL, B.F.V. SHORT		33	8'-6 TO 18'-9	469	30	8'-6 TO 17'-9	411	27	8'-6 TO 16'-10	357	24	8'-6 TO 15'-10	305	21	8'-6 TO 14'-10	256	18	8'-6 TO 13'-11	210	15	8'-6 TO 12'-11	168	5c12	
6c13	WINGWALL, B.F.V. LONG		33	10'-6	520	29	10'-6	457	25	10'-6	394	21	10'-6	331	17	10'-6	268	13	10'-6	205	8	10'-6	126	6c13	
6c13	WINGWALL, B.F.V. SHORT		25	10'-6	394	22	10'-6	347	19	10'-6	300	16	10'-6	252	13	10'-6	205	10	10'-6	158	7	10'-6	110	6c13	
5c14	WINGWALL, B.F.V. LONG		2	17'-9	37	2	16'-9	35	2	15'-9	33	1	14'-9	15	1	13'-9	14	1	12'-9	13	2	11'-9	25	5c14	
5c14	WINGWALL, B.F.V. SHORT		2	17'-9	37	2	16'-9	35	2	15'-9	33	2	14'-9	31	2	13'-9	29	1	12'-9	13	1	11'-9	12	5c14	
4d1	APRON, LONGIT., BOT.		17	31'-6	358	17	29'-2	331	17	26'-10	305	17	24'-9	279	17	22'-3	253	17	19'-11	226	17	17'-8	201	4d1	
4d2	APRON, LONGIT., BOT.		3	48'-4	101	3	44'-2	93	3	40'-1	85	3	35'-11	72	3	31'-9	64	3	27'-8	55	3	23'-7	47	4d2	
4d3	APRON, LONGIT., BOT.		3	36'-10	74	3	33'-9	68	3	30'-8	61	3	27'-7	55	3	24'-6	49	3	21'-5	43	3	18'-4	37	4d3	
6f1	APRON, LONGIT., TOP		24	31'-6	1136	24	29'-2	1051	24	26'-10	967	24	24'-7	886	24	22'-3	802	24	19'-11	718	24	17'-8	637	6f1	
6f2	APRON, LONGIT., TOP		11	5'-4 TO 28'-6	279	10	5'-4 TO 26'-2	237	9	5'-4 TO 24'-1	197	8	5'-4 TO 21'-9	162	7	5'-4 TO 19'-3	129	6	5'-3 TO 16'-11	100	5	5'-3 TO 14'-7	74	6f2	
6f3	APRON, LONGIT., TOP		8	7'-0 TO 28'-8	214	7	7'-9 TO 26'-5	180	7	5'-5 TO 24'-1	155	6	6'-2 TO 21'-9	126	5	6'-11 TO 19'-6	99	4	7'-9 TO 17'-2	75	4	5'-5 TO 14'-10	61	6f3	
6f4	APRON, LONGIT., TOP		1	54'-3	85	1	50'-1	79	1	45'-11	72	1	41'-9	66	1	37'-7	56	1	33'-5	50	1	29'-2	44	6f4	
6f5	APRON, LONGIT., TOP		1	41'-3	65	1	38'-2	57	1	35'-0	53	1	31'-11	48	1	28'-9	43	1	25'-8	39	1	22'-6	34	6f5	
4i1	PARAPET, VERTICAL		51	6'-4	216	49	6'-4	207	49	6'-4	207	49	6'-4	207	49	6'-4	207	49	6'-4	207	49	6'-4	207	4i1	
7j1	PARAPET, HORIZONTAL		4	30'-9	251	4	30'-6	249	4	30'-2	247	4	30'-2	247	4	30'-2	247	4	29'-11	245	4	29'-11	245	7j1	
6m1	APRON, TRANS., TOP		11	28'-9 TO 30'-8	491	11	28'-6 TO 30'-4	486	11	28'-3 TO 30'-1	482	11	28'-3 TO 30'-1	482	11	28'-3 TO 30'-1	482	11	28'-0 TO 29'-10	478	11	28'-0 TO 29'-10	478	6m1	
6m2	APRON, TRANS., TOP		19	30'-11 TO 37'-8	979	16	30'-8 TO 36'-3	804	13	30'-5 TO 34'-11	638	10	30'-5 TO 33'-9	482	7	30'-5 TO 32'-8	332	4	30'-2 TO 31'-3	184	1	30'-2 TO 30'-2	45	6m2	
6m3	APRON, TRANS., TOP		19	8'-8 TO 27'-10	533	19	7'-10 TO 27'-10	509	19	7'-10 TO 27'-10	488	19	6'-5 TO 26'-5	468	19	5'-9 TO 25'-9	449	18	6'-1 TO 24'-11	419	18	5'-5 TO 24'-3	401	6m3	
6m4	APRON, TRANS., BOT.		24	23'-10 TO 39'-6	1142	22	23'-9 TO 38'-1	1022	20	23'-8 TO 36'-7	905	18	23'-8 TO 35'-3	796	16	23'-8 TO 33'-10	691	14	23'-7 TO 32'-5	589	12	23'-7 TO 31'-1	493	6m4	
6p1	CURTAIN, HORIZONTAL		4	29'-1	175	4	28'-11	174	4	28'-10	173	4	28'-10	173	4	28'-10	173	4	28'-9	173	4	28'-9	173	6p1	
6p2	CURTAIN, HORIZONTAL LONG		4	28'-0	168	4	26'-0	156	4	24'-0	144	4	22'-0	132	4	20'-0	120	4	18'-0	108	4	16'-0	96	6p2	
6p3	CURTAIN, HORIZONTAL SHORT		4	15'-11	96	4	14'-11	90	4	13'-10	83	4	12'-10	77	4	11'-9	71	4	10'-9	65	4	9'-8	58	6p3	
6s1	WING SLOPE, BOTH F. LONG		2	8'-0	24	2	8'-0	24	2	8'-0	24	2	8'-0	24	2	8'-0	24	2	8'-0	24	2	8'-0	24	6s1	
6s2	WING SLOPE, BOTH F. SHORT		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	
6s3	WING SLOPE, BOTH F. LONG		2	49'-4	155	2	45'-0	142	2	40'-9	129	2	36'-5	109	2	32'-2	97	2	27'-10	84	2	23'-7	71	6s3	
6s4	WING SLOPE, BOTH F. SHORT		2	38'-6	116	2	35'-2	106	2	31'-11	96	2	28'-8	86	2	25'-4	76	2	22'-1	66	2	18'-10	57	6s4	
6s5	WING SLOPE, F.F. LONG		1	54'-7	85	1	50'-3	79	1	46'-0	72	1	41'-8	66	1	37'-5	56	1	33'-1	50	1	28'-10	43	6s5	
6s6	WING SLOPE, F.F. SHORT		1	42'-7	67	1	39'-4	59	1	36'-1	54	1	32'-9	49	1	29'-6	44	1	26'-3	39	1	22'-11	34	6s6	