

ENGLISH.DESIGNEDTWINCULVERTS.DGN - TWH 30-7-12 - THIS SHEET ISSUED 04-1-12

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

BAR	LOCATION	SHAPE	12' x 5'			12' x 4'			10' x 12'			10' x 11'			10' x 10'			10' x 9'			10' x 8'			BAR
			NO.	LENGTH	WT.	NO.	LENGTH	WT.	NO.	LENGTH	WT.	NO.	LENGTH	WT.	NO.	LENGTH	WT.	NO.	LENGTH	WT.	NO.	LENGTH	WT.	
5fa	FENCE ANCHOR (GALV.)		2	2'-10"	6	2	2'-10"	6	2	2'-10"	6	2	2'-10"	6	2	2'-10"	6	2	2'-10"	6	2	2'-10"	6	5fa
4b1	WINGWALL, B.F.H. LONG		1	25'-0"	17	1	20'-10"	14	1	54'-2"	38	1	50'-0"	35	1	45'-10"	32	1	41'-8"	29	1	37'-6"	25	4b1
4b2	WINGWALL, B.F.H. SHORT		1	19'-5"	13	1	16'-3"	11	1	41'-2"	29	1	38'-1"	25	1	35'-0"	23	1	31'-10"	21	1	28'-9"	19	4b2
4b3	WINGWALL, B.F.H. LONG		3	14'-8" TO 23'-1"	38	2	14'-8" TO 18'-10"	22	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 39'-9"	127	6	14'-8" TO 35'-7"	101	4b3
4b4	WINGWALL, B.F.H. SHORT		3	11'-9" TO 18'-0"	30	2	11'-9" TO 14'-10"	18	10	11'-11" TO 39'-9"	173	9	11'-11" TO 36'-8"	146	8	11'-11" TO 33'-7"	122	7	11'-10" TO 30'-5"	99	6	11'-10" TO 27'-4"	78	4b4
5b5	WINGWALL, F.F.H. LONG		1	25'-0"	26	1	20'-10"	22	1	54'-3"	59	1	50'-1"	55	1	45'-11"	50	1	41'-9"	46	1	37'-7"	39	5b5
5b6	WINGWALL, F.F.H. SHORT		1	19'-5"	20	1	16'-4"	17	1	41'-3"	45	1	38'-2"	40	1	35'-0"	37	1	31'-11"	33	1	28'-9"	30	5b6
5b7	WINGWALL, F.F.H. LONG		4	10'-7" TO 23'-1"	70	3	10'-7" TO 18'-11"	46	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 39'-9"	210	7	10'-7" TO 35'-7"	169	5b7
5b8	WINGWALL, F.F.H. SHORT		4	8'-9" TO 18'-0"	56	3	8'-8" TO 14'-11"	37	11	8'-10" TO 39'-10"	279	10	8'-10" TO 36'-9"	238	9	8'-10" TO 33'-7"	199	8	8'-10" TO 30'-6"	164	7	8'-9" TO 27'-4"	132	5b8
5b9	INTERIOR WALL, BOTH F.H.		7	5'-10" TO 14'-9"	75	5	6'-1" TO 12'-5"	48	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	5b9
4c1	WINGWALL, F.F.V. LONG		22	2'-10" TO 7'-10"	78	18	2'-10" TO 6'-11"	59	51	2'-9" TO 14'-9"	298	47	2'-9" TO 13'-9"	259	43	2'-9" TO 12'-10"	224	39	2'-9" TO 11'-10"	190	35	2'-9" TO 10'-11"	160	4c1
4c2	WINGWALL, F.F.V. SHORT		17	2'-10" TO 8'-0"	62	14	2'-10" TO 7'-0"	46	38	2'-9" TO 14'-8"	221	35	2'-9" TO 13'-8"	192	32	2'-9" TO 12'-9"	166	29	2'-9" TO 11'-9"	140	26	2'-9" TO 10'-9"	117	4c2
4c3	WINGWALL, F.F.V. LONG		---	---	---	---	---	---	28	8'-4" TO 14'-10"	217	24	8'-4" TO 13'-11"	178	20	8'-4" TO 12'-11"	142	16	8'-4" TO 12'-0"	109	---	---	---	4c3
4c4	WINGWALL, F.F.V. SHORT		---	---	---	---	---	---	18	9'-4" TO 14'-10"	145	15	9'-4" TO 13'-10"	116	12	9'-4" TO 12'-10"	89	9	9'-4" TO 11'-11"	64	---	---	---	4c4
4c5	WINGWALL, F.F.V. LONG		2	6'-9"	9	2	5'-9"	8	2	13'-8"	18	2	12'-8"	17	2	11'-8"	16	1	10'-8"	7	1	9'-8"	6	4c5
4c5	WINGWALL, F.F.V. SHORT		1	6'-9"	5	2	5'-9"	8	2	13'-8"	18	2	12'-8"	17	2	11'-8"	16	2	10'-8"	14	2	9'-8"	13	4c5
4c6	INTERIOR WALL, BOTH F.V.		2	1'-8"	2	2	1'-8"	2	2	1'-8"	2	2	1'-8"	2	2	1'-8"	2	2	1'-8"	2	2	1'-8"	2	4c6
4c7	INTERIOR WALL, BOTH F.V.		22	1'-10" TO 5'-5"	53	18	1'-10" TO 4'-6"	38	54	1'-10" TO 12'-3"	254	60	1'-10" TO 11'-5"	221	45	1'-10" TO 10'-4"	183	41	1'-10" TO 9'-5"	154	36	1'-10" TO 8'-4"	122	4c7
4c8	INTERIOR WALL, BOTH F.V.		2	5'-7"	7	2	4'-7"	6	2	12'-6"	17	2	11'-6"	15	2	10'-6"	14	2	9'-6"	13	2	8'-6"	11	4c8
5c9	WINGWALL, B.F.V. LONG		11	2'-10" TO 5'-3"	46	11	2'-10" TO 5'-3"	46	11	2'-9" TO 5'-2"	45	11	2'-9" TO 5'-2"	45	11	2'-9" TO 5'-2"	45	11	2'-9" TO 5'-2"	45	11	2'-9" TO 5'-2"	45	5c9
5c10	WINGWALL, B.F.V. SHORT		5	2'-10" TO 4'-2"	18	5	2'-10" TO 4'-2"	18	5	2'-9" TO 4'-1"	18	5	2'-9" TO 4'-1"	18	5	2'-9" TO 4'-1"	18	5	2'-9" TO 4'-1"	18	5	2'-9" TO 4'-1"	18	5c10
5c11	WINGWALL, B.F.V. LONG		11	9'-6" TO 11'-0"	122	7	9'-6" TO 11'-0"	92	33	8'-5" TO 18'-9"	588	36	8'-5" TO 17'-9"	510	32	8'-5" TO 16'-10"	438	28	8'-5" TO 15'-10"	369	24	8'-5" TO 14'-11"	305	5c11
5c12	WINGWALL, B.F.V. SHORT		12	8'-6" TO 12'-0"	128	9	8'-6" TO 11'-0"	92	33	8'-5" TO 18'-8"	466	30	8'-5" TO 17'-8"	408	27	8'-5" TO 16'-9"	354	24	8'-5" TO 15'-9"	302	21	8'-5" TO 14'-9"	254	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	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	6c13
5c14	WINGWALL, B.F.V. LONG		2	10'-9"	22	2	9'-9"	20	2	17'-8"	37	2	16'-8"	35	2	15'-8"	33	1	14'-8"	15	1	13'-8"	14	5c14
5c14	WINGWALL, B.F.V. SHORT		1	10'-9"	11	2	9'-9"	20	2	17'-8"	37	2	16'-8"	35	2	15'-8"	33	2	14'-8"	31	2	13'-8"	29	5c14
4d1	APRON, LONGIT., BOTT.		17	15'-4"	174	17	13'-0"	148	15	31'-6"	316	13	29'-2"	253	13	26'-10"	233	13	24'-7"	213	13	22'-3"	193	4d1
4d2	APRON, LONGIT., BOTT. LONG		3	19'-6"	39	3	15'-5"	31	3	48'-4"	101	3	44'-2"	93	3	40'-1"	85	3	35'-11"	72	3	31'-9"	64	4d2
4d3	APRON, LONGIT., BOTT. SHORT		3	15'-3"	31	3	12'-3"	25	3	36'-10"	74	3	33'-9"	68	3	30'-8"	61	3	27'-7"	55	3	24'-6"	49	4d3
6f1	APRON, LONGIT., TOP		24	15'-4"	553	24	13'-0"	469	20	31'-6"	946	20	29'-2"	876	20	26'-10"	806	20	24'-7"	738	20	22'-3"	668	6f1
6f2	APRON, LONGIT., TOP LONG		4	5'-3" TO 12'-4"	53	3	5'-3" TO 10'-0"	34	11	5'-4" TO 28'-6"	279	10	5'-4" TO 26'-2"	237	9	5'-4" TO 23'-10"	197	8	5'-4" TO 21'-7"	162	7	5'-4" TO 19'-3"	129	6f2
6f3	APRON, LONGIT., TOP SHORT		3	6'-2" TO 12'-6"	42	2	7'-0" TO 10'-3"	26	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	6f3
6f4	APRON, LONGIT., TOP LONG		1	25'-0"	38	1	20'-10"	31	1	54'-3"	85	1	50'-1"	79	1	45'-11"	72	1	41'-9"	66	1	37'-7"	56	6f4
6f5	APRON, LONGIT., TOP SHORT		1	19'-5"	29	1	16'-4"	25	1	41'-3"	65	1	38'-2"	57	1	35'-0"	53	1	31'-11"	48	1	28'-9"	43	6f5
411	PARAPET, VERTICAL		49	6'-4"	207	49	6'-4"	207	43	6'-4"	182	41	6'-4"	173	41	6'-4"	173	41	6'-4"	173	41	6'-4"	173	411
7J1	PARAPET, HORIZONTAL		4	29'-11"	245	4	29'-11"	245	4	26'-2"	214	4	25'-10"	211	4	25'-7"	209	4	25'-7"	209	4	25'-7"	209	7J1
6m1	APRON, TRANS., TOP		9	28'-0" TO 29'-6"	389	6	28'-0" TO 28'-11"	256	10	24'-6"	381	10	24'-3" TO 25'-11"	377	10	23'-11" TO 25'-8"	372	10	23'-11" TO 25'-8"	372	10	23'-11" TO 25'-8"	372	6m1
6m2	APRON, TRANS., TOP		2	22'-7" TO 23'-11"	70	5	18'-7" TO 23'-10"	159	22	26'-6" TO 34'-5"	1006	19	26'-3" TO 33'-0"	845	15	26'-0" TO 31'-3"	645	12	26'-0" TO 30'-2"	506	9	26'-0" TO 29'-0"	372	6m2
6m3	APRON, TRANS., TOP		16	4'-9" TO 29'-8"	314	13	4'-1" TO 17'-5"	210	15	9'-2" TO 24'-9"	381	15	8'-4" TO 23'-11"	363	16	7'-7" TO 24'-3"	383	16	6'-11" TO 22'-11"	366	16	6'-3" TO 22'-11"	350	6m3
6m4	APRON, TRANS., BOTT.		10	23'-7" TO 29'-8"	400	8	23'-7" TO 28'-4"	312	24	19'-3" TO 34'-11"	976	22	19'-2" TO 33'-5"	869	20	19'-1" TO 32'-0"	767	18	19'-1" TO 30'-7"	671	16	19'-0" TO 29'-3"	580	6m4
6p1	CURTAIN, HORIZONTAL		4	28'-9"	173	4	28'-8"	172	4	24'-5"	147	4	24'-4"	146	4	24'-3"	146	4	24'-3"	146	4	24'-3"	146	6p1
6p2	CURTAIN, HORIZONTAL LONG		4	13'-11"	84	4	11'-11"	72	4	28'-0"	168	4	26'-0"	156	4	24'-0"	144	4	22'-0"	132	4	20'-0"	120	6p2
6p3	CURTAIN, HORIZONTAL SHORT		4	8'-8"	52	4	7'-7"	46	4	15'-11"	96	4	14'-11"	90	4	13'-10"	83	4	12'-10"	77	4	11'-9"	71	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	19'-3"	58	2	15'-0"	45	2	49'-4"	155	2	45'-0"	142	2	40'-9"	129	2	36'-5"	109	2	32'-2"	97	6s3
6s4	WING SLOPE, BOTH F. SHORT	</																						