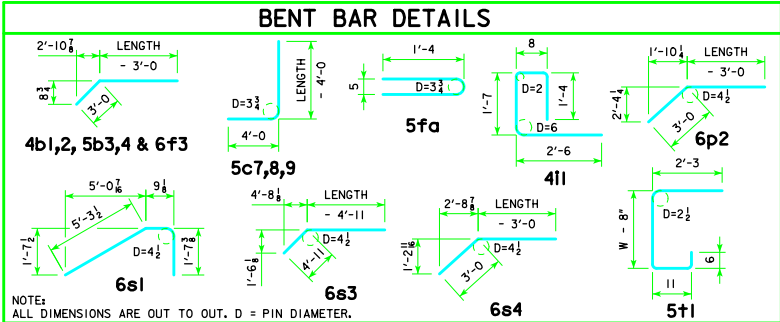


BILL OF REINFORCING FOR ONE HEADWALL 0° SKEW CULVERT SPAN x CULVERT HEIGHT

BAR	LOCATION	SHAPE	10' x 9'		10' x 8'		10' x 7'		10' x 6'		10' x 5'		10' x 4'		BAR						
			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	5fa			
4b1	WINGWALL, B.F.H.		2	3'-7"	42	2	28'-6"	38	2	22'-4"	30	2	19'-3"	26	2	16'-2"	22	4b1			
4b2	WINGWALL, B.F.H.		14	2 EACH 11'-7" TO 30'-2"	195	12	2 EACH 27'-1"	155	10	2 EACH 11'-7" TO 24'-0"	119	8	2 EACH 20'-11"	87	6	2 EACH 11'-7" TO 17'-10"	59	4	2 EACH 11'-7" TO 14'-9"	35	4b2
5b3	WINGWALL, F.F.H.		2	3'-8"	66	2	28'-7"	60	2	25'-5"	53	2	22'-4"	47	2	19'-3"	40	2	16'-2"	34	5b3
5b4	WINGWALL, F.F.H.		16	2 EACH 8'-7" TO 30'-3"	324	14	2 EACH 27'-2"	261	12	2 EACH 24'-0"	204	10	2 EACH 20'-11"	154	8	2 EACH 17'-10"	110	6	2 EACH 14'-9"	73	5b4
5b5	INTERIOR WALLS, BOTH F.H.		30	2 EACH 4'-11" TO 21'-3"	409	26	2 EACH 19'-3"	329	22	2 EACH 17'-3"	256	18	2 EACH 15'-3"	191	14	2 EACH 13'-3"	135	10	2 EACH 11'-2"	86	5b5
4c1	WINGWALL, F.F.V.		58	2 EACH 2'-9" TO 11'-10"	283	52	2 EACH 10'-10"	236	46	2 EACH 9'-11"	195	40	2 EACH 8'-11"	156	32	2 EACH 7'-8"	111	26	2 EACH 6'-8"	82	4c1
4c2	WINGWALL, F.F.V.		18	2 EACH 9'-5" TO 12'-0"	129	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	4c2
4c3	WINGWALL, F.F.V.		2	10'-8"	14	2	9'-8"	13	2	8'-8"	12	2	7'-8"	10	4	6'-8"	18	4	5'-8"	15	4c3
4c4	INTERIOR WALLS, BOTH F.V.		4	1'-8"	4	4	1'-8"	4	4	1'-8"	4	4	1'-8"	4	4	1'-8"	4	4	1'-7"	4	4c4
4c5	INTERIOR WALLS, BOTH F.V.		76	2 EACH 1'-10" TO 9'-10"	296	68	2 EACH 8'-10"	242	60	2 EACH 7'-9"	192	52	2 EACH 6'-9"	149	44	2 EACH 5'-9"	111	36	2 EACH 4'-9"	79	4c5
5c6	WINGWALL, B.F.V.		12	2 EACH 2'-9" TO 4'-5"	45	12	2 EACH 4'-5"	45	12	2 EACH 4'-5"	45	12	2 EACH 4'-5"	45	12	2 EACH 4'-5"	45	12	2 EACH 4'-5"	45	5c6
5c7	WINGWALL, B.F.V.		46	2 EACH 8'-9" TO 15'-10"	590	40	2 EACH 14'-10"	492	34	2 EACH 13'-11"	402	28	2 EACH 12'-11"	316	20	2 EACH 11'-8"	213	14	2 EACH 10'-8"	142	5c7
5c8	WINGWALL, B.F.V.		32	10'-6"	350	26	10'-6"	285	20	10'-6"	219	14	10'-6"	153	---	---	---	---	---	---	5c8
5c9	WINGWALL, B.F.V.		2	14'-8"	31	2	13'-8"	29	2	12'-8"	26	2	11'-8"	24	4	10'-8"	45	4	9'-8"	40	5c9
4d1	APRON, LONGIT., BOTT.		21	21'-6"	302	21	19'-6"	274	21	17'-6"	245	21	15'-6"	217	21	13'-6"	189	21	11'-6"	161	4d1
4d2	APRON, LONGIT., BOTT.		6	26'-7"	107	6	23'-6"	94	6	20'-6"	82	6	17'-5"	70	6	14'-5"	58	6	11'-6"	46	4d2
6f1	APRON, LONGIT., TOP		31	21'-6"	1001	31	19'-6"	908	31	17'-6"	815	31	15'-6"	722	31	13'-6"	629	31	11'-6"	535	6f1
6f2	APRON, LONGIT., TOP		12	2 EACH 5'-3" TO 18'-10"	217	10	2 EACH 16'-10"	171	10	2 EACH 14'-10"	141	8	2 EACH 12'-10"	105	6	2 EACH 10'-10"	73	4	2 EACH 8'-10"	45	6f2
6f3	APRON, LONGIT., TOP		2	31'-8"	95	2	28'-7"	86	2	25'-5"	76	2	22'-4"	67	2	19'-3"	58	2	16'-2"	49	6f3
4l1	PARAPET, VERTICAL		63	6'-1"	256	63	6'-1"	256	63	6'-1"	256	63	6'-1"	256	63	6'-1"	256	63	6'-1"	256	4l1
7j1	PARAPET, HORIZONTAL		4	33'-0"	270	4	33'-0"	270	4	32'-8"	267	4	32'-8"	267	4	32'-8"	267	4	32'-8"	267	7j1
6m1	APRON, TRANS., TOP		26	33'-2" TO 42'-7"	1503	23	33'-2" TO 41'-5"	1302	21	32'-10" TO 40'-4"	1157	18	32'-10" TO 39'-3"	974	15	32'-10" TO 38'-1"	799	13	32'-10" TO 37'-4"	685	6m1
6m2	APRON, TRANS., BOTT.		18	27'-5" TO 35'-11"	856	16	27'-5" TO 34'-11"	749	14	27'-3" TO 33'-9"	641	12	27'-3" TO 32'-9"	541	10	27'-3" TO 31'-9"	443	8	27'-3" TO 30'-9"	348	6m2
6p1	CURTAIN, HORIZONTAL		4	31'-11"	192	4	31'-11"	192	4	31'-9"	191	4	31'-9"	191	4	31'-9"	191	4	31'-9"	191	6p1
6p2	CURTAIN, HORIZONTAL		8	14'-10"	178	8	13'-7"	163	8	12'-4"	148	8	11'-1"	133	8	9'-10"	118	8	8'-7"	103	6p2
6s1	WING SLOPE, BOTH F.		4	7'-8"	46	4	7'-8"	46	4	7'-8"	46	4	7'-8"	46	4	7'-8"	46	4	7'-8"	46	6s1
6s2	WING SLOPE, BOTH F.		4	27'-9"	167	4	24'-6"	147	4	21'-3"	129	4	18'-0"	108	4	14'-9"	89	4	11'-6"	69	6s2
6s3	WING SLOPE, F.F.		2	33'-0"	99	2	29'-9"	89	2	26'-6"	80	2	23'-3"	70	2	20'-0"	60	2	16'-9"	50	6s3
6s4	INTERIOR WALLS, BOTH F.		4	23'-1"	139	4	20'-11"	126	4	18'-8"	112	4	16'-5"	99	4	14'-2"	85	4	11'-1"	72	6s4
5t1	CURTAIN, VERTICAL		41	7'-3"	310	39	7'-0"	285	37	6'-9"	260	35	6'-6"	237	33	6'-6"	224	31	6'-6"	210	5t1
ESTIMATED QUANTITIES ONE HEADWALL			REINF. STEEL		8522 LB		7353 LB		6412 LB		5475 LB		4508 LB		3796 LB						
			CONCRETE		PARAPET Δ 3.1		3.1		3.0		3.0		3.0		3.0						
					WINGWALLS 16.9		13.7		46.6 CY		39.4 CY		33.2 CY		27.4 CY						
					FOOTING * 44.9		38.5		33.9		29.0		24.8		20.7						



HEADWALL NOTES:

- SEE DRAWING TRRCB G1-12 FOR GENERAL INFORMATION, SPECIFICATIONS, AND DESIGN STRESSES.
- THIS HEADWALL IS BASED ON A 3/4 SLOPE NORMAL TO CENTERLINE OF ROADWAY.
- THE SIDES OF THE FOOTING ARE TO BE FORMED TO INSURE CORRECT LINE AND GRADE.
- ALL SLAB AND FLOOR REINFORCING STEEL IS TO BE SUPPORTED BY BAR CHAIRS AT INTERVALS OF NOT MORE THAN 3'-0" IN EITHER DIRECTION AS OUTLINED IN THE STANDARD SPECIFICATIONS.
- CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN. CLEARANCE TO THE BOTTOM ENDS OF VERTICAL BARS SHALL BE 3 INCHES.
- CONCRETE QUANTITIES ARE ESTIMATED FROM BACK OF PARAPET.
- HORIZONTAL TAILS OF BARS "b" & "s" ESTIMATED TO EXTEND 2'-0" BEYOND BACK OF PARAPET (INTO END OF BARREL). LONGITUDINAL BARS "d", "6f1", AND "6f3" ESTIMATED TO PROJECT INTO END SECTION OF BARREL A MINIMUM OF 2'-0" BEYOND BACK OF PARAPET.
- THE "LENGTH" COLUMN REFLECTS TOTAL NUMBER OF FEET NECESSARY TO MEET THESE REQUIREMENTS.

Δ INCLUDES TOP OF WINGWALL QUANTITIES.
 * ASSUMES APRON AND FLOOR ARE EQUAL THICKNESS, ADJUST CONCRETE QUANTITIES FOR TRANSITION WHERE APRON AND FLOOR THICKNESS ARE NOT EQUAL.

NOTE:
 WEIGHT OF BARS OVER 40'-0" LONG INCLUDES AN ALLOWANCE OF 2'-3" FOR LAP. LENGTHS SHOWN FOR BARS OVER 40'-0" LONG DO NOT INCLUDE LAP.

LATEST REVISION DATE APPROVED BY BRIDGE ENGINEER 	 STANDARD DESIGN TRIPLE REINFORCED CONCRETE BOX CULVERTS APRIL, 2012	FLARED WING HEADWALLS 0° SKEW TRH 0-6-12
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