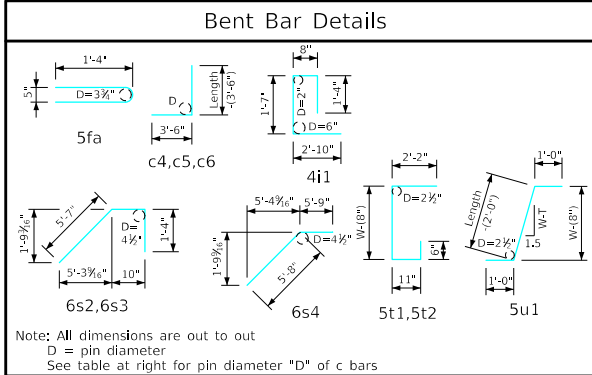


Bill of Reinforcing for One Headwall 0° Skew Span x Culvert Height

Location	Shape	14' x 14'				14' x 13'				14' x 12'				14' x 11'				14' x 10'				14' x 9'				14' x 8'				14' x 7'			
		Bar	No.	Length	Wt.	Bar	No.	Length	Wt.	Bar	No.	Length	Wt.	Bar	No.	Length	Wt.	Bar	No.	Length	Wt.	Bar	No.	Length	Wt.	Bar	No.	Length	Wt.	Bar	No.	Length	Wt.
Fence Anchor (Galv.)		5fa	2	2'-10"	6	5fa	2	2'-10"	6	5fa	2	2'-10"	6	5fa	2	2'-10"	6	5fa	2	2'-10"	6	5fa	2	2'-10"	6	5fa	2	2'-10"	6	5fa	2	2'-10"	6
Wingwall, F.F.H.		5b1	2	46'-3"	102	5b1	2	43'-3"	95	5b1	2	40'-3"	89	5b1	2	37'-3"	78	5b1	2	34'-3"	71	5b1	2	31'-3"	65	5b1	2	28'-3"	59	5b1	2	25'-3"	53
Wingwall, F.F.H.		5b2	24 Var.	2 Each 8'-10 to 44'-10	738	5b2	24 Var.	2 Each 8'-10 to 41'-10	639	5b2	22 Var.	2 Each 8'-10 to 38'-10	547	5b2	20 Var.	2 Each 8'-10 to 35'-10	466	5b2	18 Var.	2 Each 8'-10 to 32'-10	391	5b2	16 Var.	2 Each 8'-10 to 29'-10	323	5b2	14 Var.	2 Each 8'-10 to 26'-10	260	5b2	12 Var.	2 Each 8'-10 to 23'-10	204
Wingwall, B.F.H.		4b3	2	46'-3"	65	4b3	2	43'-3"	61	4b3	2	40'-3"	57	4b3	2	37'-3"	50	4b3	2	34'-3"	46	4b3	2	31'-3"	42	4b3	2	28'-3"	38	4b3	2	25'-3"	34
Wingwall, B.F.H.		4b4	24 Var.	2 Each 11'-10 to 44'-10	461	4b4	22 Var.	2 Each 11'-10 to 41'-10	398	4b4	20 Var.	2 Each 11'-10 to 38'-10	338	4b4	18 Var.	2 Each 11'-10 to 35'-10	287	4b4	16 Var.	2 Each 11'-10 to 32'-10	239	4b4	14 Var.	2 Each 11'-10 to 29'-10	195	4b4	12 Var.	2 Each 11'-10 to 26'-10	155	4b4	10 Var.	2 Each 11'-10 to 23'-10	119
Wingwall, F.F.V.		5c1	86 Var.	2 Each 2'-9 to 16'-9	875	5c1	80 Var.	2 Each 2'-9 to 15'-9	772	5c1	74 Var.	2 Each 2'-9 to 14'-9	675	5c1	68 Var.	2 Each 2'-9 to 13'-9	585	4c1	62 Var.	2 Each 2'-9 to 12'-9	321	4c1	56 Var.	2 Each 2'-9 to 11'-9	271	4c1	66 Var.	2 Each 2'-9 to 10'-9	298	4c1	58 Var.	2 Each 2'-9 to 9'-9	242
Wingwall, F.F.V.		5c2	48 Var.	2 Each 9'-3 to 16'-11	655	5c2	42 Var.	2 Each 9'-3 to 15'-11	551	5c2	36 Var.	2 Each 9'-3 to 14'-11	454	5c2	30 Var.	2 Each 9'-3 to 13'-11	362	4c2	24 Var.	2 Each 9'-3 to 12'-11	178	4c2	18 Var.	2 Each 9'-3 to 11'-11	127	c2	--	--	--	c2	--	--	--
Wingwall, F.F.V. (L)		5c3	2	17'-2"	36	5c3	2	16'-2"	34	5c3	2	15'-2"	32	5c3	2	14'-2"	30	4c3	2	13'-2"	18	4c3	2	12'-2"	16	4c3	2	11'-2"	15	4c3	2	10'-2"	14
Wingwall, F.F.V. (R)		5c3	2	17'-2"	36	5c3	2	16'-2"	34	5c3	2	15'-2"	32	5c3	2	14'-2"	30	4c3	2	13'-2"	18	4c3	2	12'-2"	16	4c3	2	11'-2"	15	4c3	2	10'-2"	14
Wingwall, B.F.V.		6c4	86 Var.	2 Each 6'-5 to 20'-5	1733	6c4	80 Var.	2 Each 6'-5 to 19'-5	1552	6c4	74 Var.	2 Each 6'-5 to 18'-5	1380	5c4	68 Var.	2 Each 6'-5 to 17'-5	845	5c4	62 Var.	2 Each 6'-5 to 16'-5	738	5c4	56 Var.	2 Each 6'-5 to 15'-5	638	5c4	50 Var.	2 Each 6'-5 to 14'-5	543	5c4	44 Var.	2 Each 6'-5 to 13'-5	455
Wingwall, B.F.V. (L)		6c5	2	20'-8"	62	6c5	2	19'-8"	59	6c5	2	18'-8"	56	5c5	2	17'-8"	37	5c5	2	16'-8"	35	5c5	2	15'-8"	33	5c5	2	14'-8"	31	5c5	2	13'-8"	29
Wingwall, B.F.V. (R)		6c5	2	20'-8"	62	6c5	2	19'-8"	59	6c5	2	18'-8"	56	5c5	2	17'-8"	37	5c5	2	16'-8"	35	5c5	2	15'-8"	33	5c5	2	14'-8"	31	5c5	2	13'-8"	29
Wingwall, B.F.V.		7c6	62	9'-3"	1172	6c6	56	8'-6"	715	6c6	50	8'-6"	638	5c6	44	8'-6"	390	5c6	38	8'-6"	337	5c6	32	8'-6"	284	5c6	26	8'-6"	231	5c6	20	8'-6"	177
Apron, Longit., Bott.		4d1	15	46'-3"	488	4d1	15	43'-3"	458	4d1	15	40'-3"	428	4d1	15	37'-3"	373	4d1	15	34'-3"	343	4d1	15	31'-3"	313	4d1	15	28'-3"	283	4d1	15	25'-3"	253
Apron, Longit., Top		6f1	15	46'-3"	1096	6f1	15	43'-3"	1029	6f1	15	40'-3"	961	6f1	15	37'-3"	839	6f1	15	34'-3"	772	6f1	15	31'-3"	704	6f1	15	28'-3"	636	6f1	15	25'-3"	569
Parapet, Vertical		4i1	29	6'-5"	124	4i1	29	6'-5"	124	4i1	29	6'-5"	124	4i1	29	6'-5"	124	4i1	29	6'-5"	124	4i1	29	6'-5"	124	4i1	29	6'-5"	124	4i1	29	6'-5"	124
Parapet, Horiz.		9j1	4	15'-10"	215	9j1	4	15'-10"	215	9j1	4	15'-8"	213	9j1	4	15'-4"	209	9j1	4	15'-4"	209	9j1	4	15'-4"	209	9j1	4	15'-4"	209	9j1	4	15'-2"	206
Apron, Trans., Top		5m1	88	16'-4"	1499	5m1	82	16'-4"	1397	5m1	76	16'-2"	1281	5m1	70	16'-2"	1180	5m1	64	15'-10"	1057	5m1	58	15'-10"	958	5m1	52	15'-10"	859	5m1	46	15'-8"	752
Apron, Trans., Top		m2	--	--	--	m2	--	--	--	m2	--	--	--	m2	--	--	--	m2	--	--	--	m2	--	--	--	m2	--	--	--	m2	--	--	--
Apron, Trans., Bott.		6m3	85	13'-7"	1734	5m3	79	12'-9"	1051	5m3	73	12'-7"	958	6m3	34	13'-5"	685	6m3	31	13'-1"	609	5m3	28	12'-3"	358	5m3	25	12'-3"	319	5m3	22	12'-1"	277
Curtain, Horiz.		6p1	7	16'-4"	172	6p1	7	16'-4"	172	6p1	6	16'-2"	146	6p1	6	16'-2"	146	6p1	6	15'-10"	143	6p1	6	15'-10"	143	6p1	6	15'-10"	143	6p1	5	15'-8"	118
Wing Slope, Both F.		6s1	4	42'-0"	267	6s1	4	38'-10"	233	6s1	4	35'-8"	214	6s1	4	32'-7"	196	6s1	4	29'-5"	177	6s1	4	26'-3"	158	6s1	4	23'-1"	139	6s1	4	19'-11"	120
Wing Slope, Both F. (L)		6s2	2	7'-9"	23	6s2	2	7'-9"	23	6s2	2	7'-9"	23	6s2	2	7'-9"	23	6s2	2	7'-9"	23	6s2	2	7'-9"	23	6s2	2	7'-9"	23	6s2	2	7'-9"	23
Wing Slope, Both F. (R)		6s3	2	7'-9"	23	6s3	2	7'-9"	23	6s3	2	7'-9"	23	6s3	2	7'-9"	23	6s3	2	7'-9"	23	6s3	2	7'-9"	23	6s3	2	7'-9"	23	6s3	2	7'-9"	23
Wing Slope, F.F.		6s4	2	11'-5"	34	6s4	2	11'-5"	34	6s4	2	11'-5"	34	6s4	2	11'-5"	34	6s4	2	11'-5"	34	6s4	2	11'-5"	34	6s4	2	11'-5"	34	6s4	2	11'-5"	34
Wing Slope, F.F.		6s5	2	39'-5"	118	6s5	2	36'-4"	109	6s5	2	33'-2"	100	6s5	2	30'-0"	90	6s5	2	26'-10"	81	6s5	2	23'-8"	71	6s5	2	20'-6"	62	6s5	2	17'-4"	52
Curtain, Vert.		5t1	15	8'-5"	132	5t1	15	8'-2"	128	5t1	15	7'-11"	124	5t1	15	7'-8"	120	5t1	15	7'-5"	116	5t1	15	7'-2"	112	5t1	15	6'-11"	108	5t1	15	6'-8"	104
Curtain, Vert., Ends		5t2	4	8'-5"	35	5t2	4	8'-2"	34	5t2	4	7'-11"	33	5t2	4	7'-8"	32	5t2	4	7'-5"	31	5t2	4	7'-2"	30	5t2	4	6'-11"	29	5t2	4	6'-8"	28
Bracket, Vert.		5u1	4	7'-1"	30	5u1	4	6'-10"	29	5u1	4	6'-8"	28	5u1	4	6'-5"	27	5u1	4	6'-2"	26	5u1	4	6'-0"	25	5u1	4	5'-9"	24	5u1	4	5'-7"	23
Estimated Quantities One Headwall	Reinf. Steel	11,993 LB				10,034 LB				9050 LB				7308 LB				6201 LB				5334 LB				4697 LB				4082 LB			
	Concrete	72.3 CY				65.9 CY				57.3 CY				51.5 CY				42.7 CY				37.9 CY				33.4 CY				27.9 CY			
	Parapet Δ	2.0				2.0				1.9				1.9				1.8				1.8				1.8				1.7			
	Wingwalls	30.7				26.9				21.5				18.4				13.0				10.8				8.8				6.3			
	Apron *	39.6				37.0				33.9				31.2				27.9				25.3				22.8				19.9			

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.
 (L) - Indicates bar located at left corner.
 (R) - Indicates bar located at right corner.
 Refer to Sheet PWH 0-1-20 for left and right corner locations.
 Note: Weight of bars over 40'-0" long include an allowance of 2'-5" for lap.



- #### Headwall Notes:
- This headwall is based on a 3:1 slope normal to centerline of roadway.
 - The sides of the apron are to be formed to ensure correct line and grade.
 - All apron 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'-5" beyond back of parapet (into end of barrel). Longitudinal bars "4d1" and "6f1" estimated to project into end section of barrel a minimum of 2'-5" beyond back of parapet. The "length" column reflects total number of feet necessary to meet these requirements.
 - Dimensions are in feet and inches unless otherwise noted.

LATEST REVISION DATE	 APPROVED BY BRIDGE ENGINEER	 Standard Design - Single Reinforced Concrete Box Culverts Parallel Wing Headwalls July, 2020 Quantity Tabulation 14'-0" Span 0° Skew	PWH 0-6-20 SHEET 1 OF 2
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ENGLISH\FDS\DESIGNED\SINGLE\CULVERTS.DGN - PWH 0-6-20 51 - THIS SHEET ISSUED 07-2020.