

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

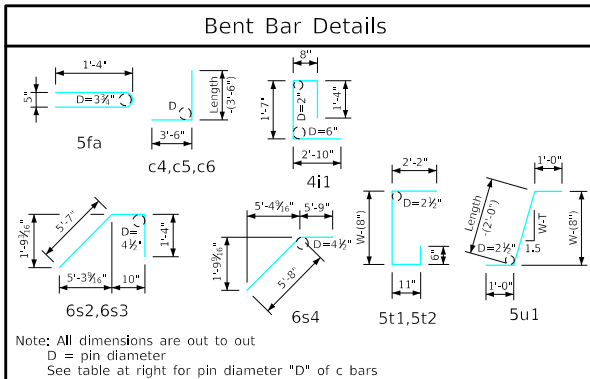
Location	Shape	12' x 12'				12' x 11'				12' x 10'				12' x 9'				12' x 8'				12' x 7'			
		Bar No.	No.	Length	Wt.	Bar No.	No.	Length	Wt.	Bar No.	No.	Length	Wt.	Bar No.	No.	Length	Wt.	Bar No.	No.	Length	Wt.	Bar No.	No.	Length	Wt.
Fence Anchor (Galv.)		5fa	2	2'-10"	6	5fa	2	2'-10"	6	5fa	2	2'-10"	6	5fa	2	2'-10"	6	5fa	2	2'-10"	6	5fa	2	2'-10"	6
Wingwall, F.F.H.		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	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	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	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	74 Var.	2 Each 2'-8 to 14'-8	669	5c1	68 Var.	2 Each 2'-8 to 13'-8	579	4c1	62 Var.	2 Each 2'-8 to 12'-8	318	4c1	56 Var.	2 Each 2'-8 to 11'-8	268	4c1	66 Var.	2 Each 2'-8 to 10'-8	294	4c1	58 Var.	2 Each 2'-8 to 9'-8	239
Wingwall, F.F.V.		5c2	36 Var.	2 Each 9'-2 to 14'-10	451	5c2	30 Var.	2 Each 9'-2 to 13'-10	360	4c2	24 Var.	2 Each 9'-2 to 12'-10	176	4c2	18 Var.	2 Each 9'-2 to 11'-10	126	c2	--	--	--	c2	--	--	--
Wingwall, F.F.V. (L)		5c3	2	15'-1"	31	5c3	2	14'-1"	29	4c3	2	13'-1"	17	4c3	2	12'-1"	16	4c3	2	11'-1"	15	4c3	2	10'-1"	13
Wingwall, F.F.V. (R)		5c3	2	15'-1"	31	5c3	2	14'-1"	29	4c3	2	13'-1"	17	4c3	2	12'-1"	16	4c3	2	11'-1"	15	4c3	2	10'-1"	13
Wingwall, B.F.V.		6c4	74 Var.	2 Each 6'-4 to 18'-4	1371	5c4	68 Var.	2 Each 6'-4 to 17'-4	839	5c4	62 Var.	2 Each 6'-4 to 16'-4	733	5c4	56 Var.	2 Each 6'-4 to 15'-4	633	5c4	50 Var.	2 Each 6'-4 to 14'-4	539	5c4	44 Var.	2 Each 6'-4 to 13'-4	451
Wingwall, B.F.V. (L)		6c5	2	18'-7"	56	5c5	2	17'-7"	37	5c5	2	16'-7"	35	5c5	2	15'-7"	33	5c5	2	14'-7"	30	5c5	2	13'-7"	28
Wingwall, B.F.V. (R)		6c5	2	18'-7"	56	5c5	2	17'-7"	37	5c5	2	16'-7"	35	5c5	2	15'-7"	33	5c5	2	14'-7"	30	5c5	2	13'-7"	28
Wingwall, B.F.V.		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, LongR. Bott.		4d1	13	40'-3"	371	4d1	13	37'-3"	323	4d1	13	34'-3"	297	4d1	13	31'-3"	271	4d1	13	28'-3"	245	4d1	13	25'-3"	219
Apron, LongR. Top		6f1	13	40'-3"	833	6f1	13	37'-3"	727	6f1	13	34'-3"	669	6f1	13	31'-3"	610	6f1	13	28'-3"	552	6f1	13	25'-3"	493
Parapet, Vertical		4i1	25	6'-5"	107	4i1	25	6'-5"	107	4i1	25	6'-5"	107	4i1	25	6'-5"	107	4i1	25	6'-5"	107	4i1	25	6'-5"	107
Parapet, Horiz.		7j1	4	13'-8"	112	7j1	4	13'-8"	112	7j1	4	13'-4"	109	7j1	4	13'-4"	109	7j1	4	13'-4"	109	7j1	4	13'-2"	108
Apron, Trans., Top		5m1	51	14'-2"	754	5m1	47	14'-2"	694	5m1	43	13'-10"	620	5m1	39	13'-10"	563	5m1	35	13'-10"	505	5m1	31	13'-8"	442
Apron, Trans., Bott.		m2	--	--	--	m2	--	--	--	m2	--	--	--	m2	--	--	--	m2	--	--	--	m2	--	--	--
Apron, Trans., Bott.		5m3	73	10'-7"	806	5m3	67	10'-7"	740	6m3	31	11'-1"	516	5m3	28	10'-3"	299	5m3	25	10'-3"	267	5m3	22	10'-1"	231
Curtain, Horiz.		6p1	6	14'-2"	128	6p1	6	14'-2"	128	6p1	6	13'-10"	125	6p1	6	13'-10"	125	6p1	6	13'-10"	125	6p1	5	13'-8"	103
Wing Slope, Both F.		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
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
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
Wing Slope, F.F.		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	13	7'-11"	107	5t1	13	7'-8"	104	5t1	13	7'-5"	101	5t1	13	7'-2"	97	5t1	13	6'-11"	94	5t1	13	6'-8"	90
Curtain, Vert., Ends		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	6'-7"	27	5u1	4	6'-5"	27	5u1	4	6'-2"	26	5u1	4	5'-11"	25	5u1	4	5'-9"	24	5u1	4	5'-6"	23
Estimated Quantities One Headwall	Reinf. Steel	8012 LB				6547 LB				5360 LB				4585 LB				4010 LB				3461 LB			
	Concrete	51.7 CY				46.4 CY				37.9 CY				33.6 CY				29.4 CY				24.4 CY			
	Parapet Δ	1.8				1.8				1.6				1.6				1.6				1.5			
	Wingwalls	21.5				18.4				13.0				10.8				8.8				6.3			
	Apron =	28.4				26.2				23.3				21.2				19.0				16.6			

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 12'-0" Span 0° Skew	PWH 0-7-20 SHEET 1 OF 2
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