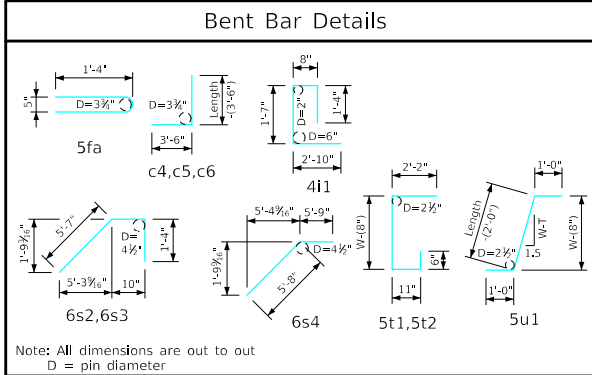


Bill of Reinforcing for One Headwall 0° Skew Span x Culvert Height

Location	Shape	6' x 8'				6' x 7'				6' x 6'				6' x 5'				6' x 4'				6' x 3'			
		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
Wingwall, F.F.H.		5b1	2	28'-3"	59	5b1	2	25'-3"	53	5b1	2	22'-3"	46	5b1	2	19'-3"	40	5b1	2	16'-3"	34	5b1	2	13'-3"	28
Wingwall, F.F.H.		5b2	14 Var.	2 Each 8'-10 to 26'-10	260	5b2	12 Var.	2 Each 8'-10 to 23'-10	204	5b2	10 Var.	2 Each 8'-10 to 20'-10	155	5b2	8 Var.	2 Each 8'-10 to 17'-10	111	5b2	6 Var.	2 Each 8'-10 to 14'-10	74	5b2	4 Var.	2 Each 8'-10 to 11'-10	43
Wingwall, B.F.H.		4b3	2	28'-3"	38	4b3	2	25'-3"	34	4b3	2	22'-3"	30	4b3	2	19'-3"	26	4b3	2	16'-3"	22	4b3	2	13'-3"	18
Wingwall, B.F.H.		4b4	12 Var.	2 Each 11'-10 to 26'-10	155	4b4	10 Var.	2 Each 11'-10 to 23'-10	119	4b4	8 Var.	2 Each 11'-10 to 20'-10	87	4b4	6 Var.	2 Each 11'-10 to 17'-10	59	4b4	4 Var.	2 Each 11'-10 to 14'-10	36	4b4	2	11'-10	16
Wingwall, F.F.V.		4c1	66 Var.	2 Each 2'-5 to 10'-5	283	4c1	58 Var.	2 Each 2'-5 to 9'-5	229	4c1	50 Var.	2 Each 2'-5 to 8'-5	181	4c1	32 Var.	2 Each 2'-5 to 7'-5	105	4c1	26 Var.	2 Each 2'-5 to 6'-5	77	4c1	20 Var.	2 Each 2'-5 to 5'-5	52
Wingwall, F.F.V.		c2	--	--	--	c2	--	--	--	c2	--	--	--	c2	--	--	--	c2	--	--	--	c2	--	--	--
Wingwall, F.F.V. (L)		4c3	2	10'-10"	14	4c3	2	9'-10"	13	4c3	2	8'-10"	12	4c3	2	7'-10"	10	4c3	2	6'-10"	9	4c3	2	5'-10"	8
Wingwall, F.F.V. (R)		4c3	2	10'-10"	14	4c3	2	9'-10"	13	4c3	2	8'-10"	12	4c3	2	7'-10"	10	4c3	2	6'-10"	9	4c3	2	5'-10"	8
Wingwall, B.F.V.		5c4	50 Var.	2 Each 6'-1 to 14'-1	526	5c4	44 Var.	2 Each 6'-1 to 13'-1	440	5c4	38 Var.	2 Each 6'-1 to 12'-1	360	5c4	32 Var.	2 Each 6'-1 to 11'-1	286	5c4	26 Var.	2 Each 6'-1 to 10'-1	219	5c4	20 Var.	2 Each 6'-1 to 9'-1	158
Wingwall, B.F.V. (L)		5c5	2	14'-4"	30	5c5	2	13'-4"	28	5c5	2	12'-4"	26	5c5	2	11'-4"	24	5c5	2	10'-4"	22	5c5	2	9'-4"	19
Wingwall, B.F.V. (R)		5c5	2	14'-4"	30	5c5	2	13'-4"	28	5c5	2	12'-4"	26	5c5	2	11'-4"	24	5c5	2	10'-4"	22	5c5	2	9'-4"	19
Wingwall, B.F.V.		5c6	26	8'-6"	231	5c6	20	8'-6"	177	5c6	14	8'-6"	124	c6	--	--	--	c6	--	--	--	c6	--	--	--
Apron, LongR. Bott.		4d1	7	28'-3"	132	4d1	7	25'-3"	118	4d1	7	22'-3"	104	4d1	7	19'-3"	90	4d1	7	16'-3"	76	4d1	7	13'-3"	62
Apron, LongR. Top		6f1	7	28'-3"	297	6f1	7	25'-3"	265	6f1	7	22'-3"	234	6f1	7	19'-3"	202	6f1	7	16'-3"	171	6f1	7	13'-3"	139
Parapet, Vertical		4i1	13	6'-5"	56	4i1	13	6'-5"	56	4i1	13	6'-5"	56	4i1	13	6'-5"	56	4i1	13	6'-5"	56	4i1	13	6'-5"	56
Parapet, Horiz.		7j1	4	7'-4"	60	7j1	4	7'-2"	59	7j1	4	7'-2"	59	7j1	4	7'-2"	59	7j1	4	7'-2"	59	7j1	4	7'-2"	59
Apron, Trans. Top		5m1	26	7'-10"	212	5m1	23	7'-8"	184	5m1	20	7'-8"	160	5m1	17	7'-8"	136	5m1	14	7'-8"	112	5m1	11	7'-8"	88
Apron, Trans. Bott.		m2	--	--	--	m2	--	--	--	m2	--	--	--	m2	--	--	--	m2	--	--	--	m2	--	--	--
Apron, Trans. Bott.		5m3	33	4'-3"	146	5m3	22	4'-1"	94	4m3	19	3'-4"	42	4m3	16	3'-4"	36	4m3	13	3'-4"	29	4m3	10	3'-4"	22
Curtain, Horiz.		6p1	6	7'-10"	71	6p1	5	7'-8"	58	6p1	5	7'-8"	58	6p1	5	7'-8"	58	6p1	5	7'-8"	58	6p1	5	7'-8"	58
Wing Slope, Both F.		6s1	4	23'-1"	139	6s1	4	19'-11"	120	6s1	4	16'-9"	101	6s1	4	13'-7"	82	6s1	4	10'-5"	63	6s1	4	7'-3"	44
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	20'-6"	62	6s5	2	17'-4"	52	6s5	2	14'-2"	43	6s5	2	11'-0"	33	6s5	2	7'-10"	34	6s5	2	4'-8"	14
Curtain, Vert.		5t1	7	6'-11"	50	5t1	7	6'-8"	49	5t1	7	6'-5"	47	5t1	7	6'-5"	47	5t1	7	6'-5"	47	5t1	7	6'-5"	47
Curtain, Vert. Ends		5t2	4	6'-11"	29	5t2	4	6'-8"	28	5t2	4	6'-5"	27	5t2	4	6'-5"	27	5t2	4	6'-5"	27	5t2	4	6'-5"	27
Bracket, Vert.		5u1	4	5'-8"	24	5u1	4	5'-5"	23	5u1	4	5'-3"	22	5u1	4	5'-3"	22	5u1	4	5'-3"	22	5u1	4	5'-3"	22
Estimated Quantities One Headwall	Reinf. Steel	3004 LB				2530 LB				2098 LB				1629 LB				1354 LB				1093 LB			
	Concrete	Parapet Δ	1.2			1.1				1.1				1.1				1.1				1.1			
		Wingwalls	8.8			6.3				4.8				3.5				2.4				1.5			
		Apron =	9.6	19.6 CY		8.4	15.8 CY			7.3	13.2 CY			6.4	11.0 CY			5.5	9.0 CY			4.5	7.1 CY		

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 6'-0" Span 0° Skew PWH 0-10-20