

ENGLISHDESIGNEDTRIPLECULVERTS.DGN - TRPWH 0-7-20 S2 - THIS SHEET ISSUED 07-2020.

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

Location	Shape	10' x 6'				10' x 5'				10' x 4'							
		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				
Wingwall, F.F.H.		5b1	2	22'-3"	46	5b1	2	19'-3"	40	5b1	2	16'-3"	34				
Wingwall, F.F.H.		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				
Wingwall, B.F.H.		4b3	2	22'-3"	30	4b3	2	19'-3"	26	4b3	2	16'-3"	22				
Wingwall, B.F.H.		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				
Interior Wall, Both F.H.		5b5	18 Var.	2 Each 6'-7 to 21'-10	267	5b5	14 Var.	2 Each 6'-9 to 18'-9	186	5b5	10 Var.	2 Each 7'-1 to 15'-9	119				
Wingwall, F.F.V.		4c1	50 Var.	2 Each 2'-7 to 8'-7	186	4c1	32 Var.	2 Each 2'-7 to 7'-7	109	4c1	26 Var.	2 Each 2'-7 to 6'-7	80				
Wingwall, F.F.V.		c2	--	--	--	c2	--	--	--	c2	--	--	--				
Wingwall, F.F.V. (L)		4c3	2	9'-0"	12	4c3	2	8'-0"	11	4c3	2	7'-0"	9				
Wingwall, F.F.V. (R)		4c3	2	9'-0"	12	4c3	2	8'-0"	11	4c3	2	7'-0"	9				
Wingwall, B.F.V.		5c4	38 Var.	2 Each 6'-3 to 12'-3	367	5c4	32 Var.	2 Each 6'-3 to 11'-3	292	5c4	26 Var.	2 Each 6'-3 to 10'-3	224				
Wingwall, B.F.V. (L)		5c5	2	12'-6"	26	5c5	2	11'-6"	24	5c5	2	10'-6"	22				
Wingwall, B.F.V. (R)		5c5	2	12'-6"	26	5c5	2	11'-6"	24	5c5	2	10'-6"	22				
Wingwall, B.F.V.		5c6	14	8'-6"	124	c6	--	--	--	c6	--	--	--				
Interior Wall, Both F.V		4c7	4	3'-9"	10	4c7	4	3'-9"	10	4c7	4	3'-9"	10				
Interior Wall, Both F.V		4c8	74 Var.	2 Each 1'-6 to 6'-3	192	4c8	62 Var.	2 Each 1'-6 to 5'-3	140	4c8	50 Var.	2 Each 1'-5 to 4'-3	95				
Interior Wall, Both F.V		4c9	4	6'-6"	17	4c9	4	5'-6"	15	4c9	4	4'-6"	12				
Apron, Longit., Bott.		4d1	33	22'-3"	490	4d1	33	19'-3"	424	4d1	33	16'-3"	358				
Apron, Longit., Top		6f1	33	22'-3"	1103	6f1	33	19'-3"	954	6f1	33	16'-3"	805				
Parapet, Vertical		4i1	63	6'-5"	270	4i1	63	6'-5"	270	4i1	63	6'-5"	270				
Parapet, Horizontal		7j1	4	32'-8"	267	7j1	4	32'-8"	267	7j1	4	32'-8"	267				
Apron, Trans., Top		5m1	27	33'-2"	934	5m1	23	33'-2"	796	5m1	19	33'-2"	657				
Apron, Trans., Top		m2	--	--	--	m2	--	--	--	m2	--	--	--				
Apron, Trans., Batt.		4m3	19	28'-10"	366	4m3	16	28'-10"	308	4m3	13	28'-10"	250				
Curtain, Horiz.		6p1	5	33'-2"	249	6p1	5	33'-2"	249	6p1	5	33'-2"	249				
Wing Slope, Both F.		6s1	4	16'-9"	101	6s1	4	13'-7"	82	6s1	4	10'-5"	63				
Wing Slope, Both F. (L)		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				
Wing Slope, F.F.		6s4	2	11'-5"	34	6s4	2	11'-5"	34	6s4	2	11'-5"	34				
Wing Slope, F.F.		6s5	2	14'-2"	43	6s5	2	11'-0"	33	6s5	2	7'-10"	24				
Interior Wall, Both F.		6s6	4	22'-10"	137	6s6	4	19'-8"	118	6s6	4	16'-7"	100				
Curtain, Vert.		5l1	32	6'-5"	214	5l1	32	6'-5"	214	5l1	32	6'-5"	214				
Curtain, Vert, Ends		5t2	4	6'-5"	27	5t2	4	6'-5"	27	5t2	4	6'-5"	27				
Bracket, Vert.		5u1	4	5'-4"	22	5u1	4	5'-4"	22	5u1	4	5'-4"	22				
Estimated Quantities One Headwall		Reinf. Steel		5866 LB		4908 LB		4160 LB		Concrete		3.0		3.0		3.0	
		Parapet Δ		3.0		3.0		3.0		Wingwalls		8.1		3.9		30.8 CY	
		Apron Δ		32.5		28.2		23.9									

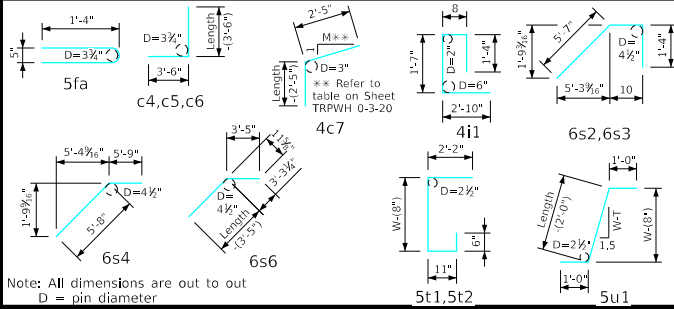
Note: Weight of bars over 40'-0" long include an allowance of 2'-5" for lap.

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 TRPWH 0-1-20 for left and right corner locations.

Bent Bar Details



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 - Triple Reinforced Concrete Box Culverts	
		Parallel Wing Headwalls	
		July, 2020	
		Quantity Tabulation 10'-0" Span 0° Skew	TRPWH 0-7-20 Sheet 2 of 2