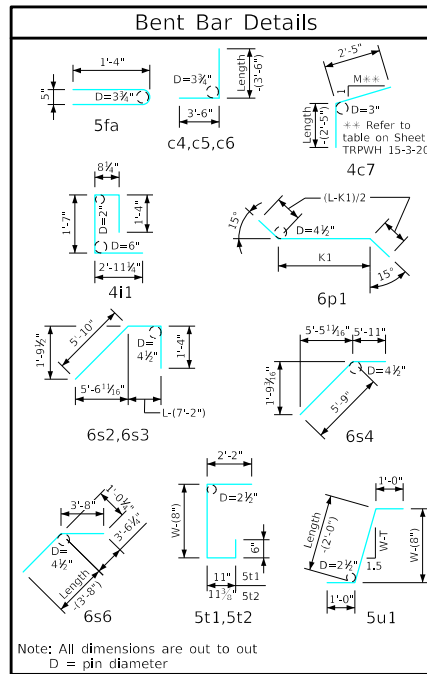


ENGLISHLRFDDESIGNEDTRIPLECULVERTS.DGN - TRPWH 15-6-20 S2 - THIS SHEET ISSUED 07-2020.



Bill of Reinforcing for One Headwall 15° Skew Span x Culvert Height

Location	Shape	12' x 6'				12' x 5'				12' 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	23'-0	48	5b1	2	19'-10	41	5b1	2	16'-9	35	
Wingwall, F.F.H.	5b2	10 Var.	2 Each 9'-2 to 21'-7	160	5b2	8 Var.	2 Each 9'-2 to 18'-5	115	5b2	6 Var.	2 Each 9'-2 to 15'-4	77	
Wingwall, B.F.H.	4b3	2	23'-1	31	4b3	2	19'-11	27	4b3	2	16'-10	22	
Wingwall, B.F.H.	4b4	8 Var.	2 Each 12'-4 to 21'-8	91	4b4	6 Var.	2 Each 12'-4 to 18'-6	62	4b4	4 Var.	2 Each 12'-4 to 15'-5	37	
Interior Wall, Both F.H.	5b5	18 Var.	2 Each 6'-11 to 22'-6	276	5b5	14 Var.	2 Each 7'-1 to 19'-4	193	5b5	10 Var.	2 Each 7'-4 to 16'-2	123	
Wingwall, F.F.V.	4c1	52 Var.	2 Each 2'-8 to 8'-9	198	4c1	34 Var.	2 Each 2'-8 to 7'-10	119	4c1	26 Var.	2 Each 2'-8 to 6'-6	80	
Wingwall, F.F.V.	c2	--	--	--	c2	--	--	--	c2	--	--	--	
Wingwall, F.F.V. (O)	4c3	2	9'-1	12	4c3	2	8'-1	11	4c3	2	7'-1	9	
Wingwall, F.F.V. (A)	4c3	2	9'-1	12	4c3	2	8'-1	11	4c3	2	7'-1	9	
Wingwall, B.F.V.	5c4	40 Var.	2 Each 6'-4 to 12'-6	393	5c4	44 Var.	2 Each 6'-4 to 11'-5	407	5c4	36 Var.	2 Each 6'-4 to 10'-6	316	
Wingwall, B.F.V. (O)	5c5	1	12'-7	13	5c5	1	11'-7	12	5c5	1	10'-7	11	
Wingwall, B.F.V. (A)	5c5	2	12'-7	26	5c5	2	11'-7	24	5c5	2	10'-7	22	
Wingwall, B.F.V.	5c6	12	8'-6	106	c6	--	--	--	c6	--	--	--	
Interior Wall, Both F.V	4c7	4	3'-10	10	4c7	4	3'-10	10	4c7	4	3'-10	10	
Interior Wall, Both F.V	4c8	74 Var.	2 Each 1'-7 to 6'-2	192	4c8	62 Var.	2 Each 1'-7 to 5'-3	142	4c8	50 Var.	2 Each 1'-6 to 4'-3	96	
Interior Wall, Both F.V	4c9	4	6'-7	18	4c9	4	5'-7	15	4c9	4	4'-7	12	
Apron, Longit., Bott.	4d1	39	22'-11	597	4d1	39	19'-10	517	4d1	39	16'-8	434	
Apron, Longit., Top	6f1	39	22'-11	1342	6f1	39	19'-10	1162	6f1	39	16'-8	976	
Parapet, Vertical	4i1	75	6'-7	330	4i1	75	6'-7	330	4i1	75	6'-7	330	
Parapet, Horiz.	7j1	4	40'-0	327	7j1	4	40'-0	327	7j1	4	40'-0	327	
Apron, Trans., Top	5m1	21	39'-2	858	5m1	16	39'-2	654	5m1	12	39'-2	490	
Apron, Trans., Top	5m2	13 Var.	2'-7 to 36'-2	263	5m2	14 Var.	2'-2 to 38'-7	298	5m2	13 Var.	4'-7 to 38'-2	290	
Apron, Trans., Bott.	4m3	19	36'-3	460	4m3	21	36'-3	509	4m3	13	36'-3	315	
Curtain, Horiz.	6p1	5	40'-6	322	6p1	5	40'-6	322	6p1	5	40'-6	322	
Wing Slope, Both F.	6s1	4	17'-1	103	6s1	4	13'-10	83	6s1	4	10'-7	64	
Wing Slope, Both F. (O)	6s2	2	7'-10	24	6s2	2	7'-10	24	6s2	2	7'-10	24	
Wing Slope, Both F. (A)	6s3	2	8'-0	24	6s3	2	8'-0	24	6s3	2	8'-0	24	
Wing Slope, F.F.	6s4	2	11'-8	35	6s4	2	11'-8	35	6s4	2	11'-8	35	
Wing Slope, F.F.	6s5	2	14'-8	44	6s5	2	11'-4	34	6s5	2	8'-1	24	
Interior Wall, Both F.	6s6	4	23'-7	142	6s6	4	20'-4	122	6s6	4	17'-1	103	
Curtain, Vert.	5t1	39	6'-5	261	5t1	39	6'-5	261	5t1	39	6'-5	261	
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	6773 LB				5946 LB				4933 LB			
	Concrete	Parapet Δ	3.6	53.7 CY		3.6	45.8 CY		3.6	38.2 CY		3.6	
		Wingwalls	8.4			6.1			4.1				
		Apron =	41.7			36.1			30.5				

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.

(A) - Indicates bar located at acute corner.
(O) - Indicates bar located at obtuse corner.
Refer to Sheet TRPWH 15-1-20 for acute and obtuse corner locations.

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	<p style="text-align: center;">Standard Design - Triple Reinforced Concrete Box Culverts</p> <h2 style="text-align: center;">Parallel Wing Headwalls</h2> <p style="text-align: center;">July, 2020</p> <table border="1" style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 50%; text-align: center;">Quantity Tabulation 12'-0" Span 15° Skew</td> <td style="width: 50%; text-align: center;">TRPWH 15-6-20 Sheet 2 of 2</td> </tr> </table>	Quantity Tabulation 12'-0" Span 15° Skew	TRPWH 15-6-20 Sheet 2 of 2
Quantity Tabulation 12'-0" Span 15° Skew	TRPWH 15-6-20 Sheet 2 of 2			