

DESIGN & DRAWING OF CRATE WIRE STRUCTURE

2m HEIGHT

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Typical Design of Crate Wire Structure (2 m Height)

I. Brief Summary of Structure

• Mean annual rain fall	:	1000 mm
• Catchment area	:	10 ha
• Type of Structure proposed	:	Crate Wire
• Peak Discharge	:	1 Cum/Sec
• Depth of foundation below NSL	:	0.60 m
• Height of water harvesting structure above NSL	:	2.00 m
• Net height	:	1.40 m
• Top Width	:	1.00 m
• Base Width	:	2.00 m
• Drop of Dam	:	1.40 m
• Spillway Length	:	2.00 m
• Height of Weir	:	0.60 m

II. Technical Data

• Elevation difference	:	3 m
• Top of HILL R.L	:	147.00 m
• Bed level R.L	:	144 m

III. Run-off Calculation

• Area of the catchment	:	10 ha
• Type of soil	:	Sandy Loam
• Run-off coefficient(c)	:	0.30
• Max Intensity of Rainfall	:	120 mm/hr
• Using Rational Formula		

$$Q = \frac{CIA}{360} = \frac{0.30 \times 120 \times 10}{360} = 1 \text{ cum}$$

Design of Spillway:

• Maximum Discharge	:	1 cum/sec
• Height over crest	:	0.50 m

$$Q = 1.71 LH^{3/2}$$

$$L = \frac{1}{1.71 \times 0.5^{3/2}} = 1.66 \text{ Say } 2 \text{ m}$$

IV. Estimated Cost: Rs. 21,762/-

Detailed Estimate of Crate Wire Structure (2 m Height)

S. No	Particulars	No	L	B	H	Contents
			M	M	M	M ³
1	Excavation of earthwork in foundation	1	2.00	2.00	0.60	2.40
	Right Side					
	1st Step	1	0.60 + 0.40	2.00	0.40	0.40
			2			
	2nd Step	1	0.70 + 0.40	1.00	1.00	0.55
			2			
	3rd Step	1	0.40	1.00	0.60	0.24
	Right Side					
	1st Step	1	0.60 + 0.40	2.00	0.40	0.40
			2			
2nd Step	1	0.65 + 0.45	1.00	1.00	0.55	
		2				
3rd Step	1	0.45 + 0.40	1.00	1.00	0.42	
		2				
	Total					4.96 Cum
2	Weaving of wire netting mesh 15x15 cm					
	1st Step					
	Top & Bottom	2	2.00	2.00	-	8.00
	Front & Back	2	2.00	-	1.00	4.00
	Sides	2	-	2.00	1.00	4.00
	2nd Step					
	Top & Bottom	2	2.50	1.00	1.00	5.00
	Front & Back	2	2.50	-	1.00	5.00
	Sides	2	-	1.00	1.00	2.00
	3rd Step					
	Top & Bottom	2x2	0.75	1.00	-	3.00
	Front & Back	2x2	0.75	-	0.60	1.80
	Sides	2x2	-	1.00	0.60	2.40
	Total					35.20 Sq M
3	Filling of Stones in wire crates					
	1st Step	1	2.00	2.00	1.00	4.00
	2nd Step	1	2.50	1.00	1.00	2.50
	3rd Step	2	0.75	1.00	0.60	0.90
	Total					7.40 Cum

Material Statement

S. No	Particular	Qty	GI Wire 4 mm	Stone
			Kg	Cum
1	Weaving netting wire mesh 15 x 15 cm	35.20	83.07	-
2	Filling of Stone in crates	7.40	-	8.14
3	Less 1/7 voids	-	-	-1.14
	Total		83.07 Say 83 Kg	7.00 Cum

Cost Analysis of Crate Wire Structure

S. No	Particular	Qty	Unit	Rate	Amount
1	Excavation in foundation, trenches etc in earth work, lift upto 1.50 m, stacking the excavated soil not more than 3 m clear from the edge of excavation and their returning the stacked soil in 15 cm layers, where required, into plinth, sides of foundation etc. consolidating each deposited layer by ramming and watering and then disposing of all surplus excavated earth as directed with in a lead of 20 m. Pick Work	4.96	Cum	62.70	310.99
2	Weaving of wire netting for wire crate with GI wire 4 mm/5 mm or SWG No 6/8 I/c binding sides & portions to make crate of 15cmx 15 cm and 25 cm x 7.5 cm. Mesh	35.20	Sq M	8.70	306.24
3	Filling of stone in to wire crates	7.00	Cum	57.70	403.90
4	Tipping of wire crates	7.00	Cum	39.60	277.20
5	Spreading wire crates over pitching	35.20	Sq.M	11.80	415.36
6	Carriage of stone from road side to site of work. Average Lead 1 Km	7.00	Cum	210.40	1472.80
7	Cost and carriage of stones from outside the project	7.00	Cum	1100.00	7700.00
8	Cost of GI Wire 4 mm dia	83.00	Kg	85.00	7055.00
	Total				17941.49
	Add 100% enhancement on items 1-6				3186.49
A	Total				21127.98
	Add 3% Contingency				633.84
	Grand Total				21761.82

Say 21,762/-

Rs. Twenty One Thousand Seven Hundred and Sixty Two Only

*** The rates applied are general in nature. To calculate the exact cost, appropriate rates may please be applied**

Crate Wire Structure

All Dimensions in Meters

