

**MODEL ESTIMATE OF ROOF TOP RAIN WATER HARVESTING SCHEME FOR
20,000 LITERS CAPACITY RESERVOIR UNDER NREGA**

REQUIREMENT OF ROOF AREA - ABOVE 800 Sq.ft.

REQUIREMENT OF LAND AREA FOR RESURVOIR- 400 Sq.ft. FOR 20,000 LITERS CAPACITY

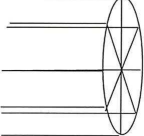
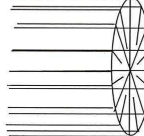
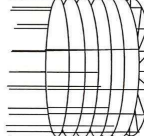
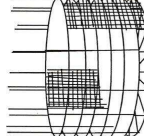
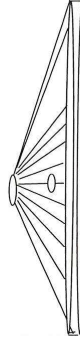
Sl No.	Description of item	No	Unit	Length (m)	Breath (m)	Height (m)	Quantity	Remarks
SUB STRUCTURE								
1	EW in excavation in storage tank.	1	cum	10.07	0.6	0.45	2.72	Center Line= 2 π r, where r=1.603m
2	EW in excavation in soak pit.	1	cum	1.5	1.5	1.5	3.38	
3	25mm thick sand must be compacted before concreting at foundation.	1	cum	10.07	0.6	0.025	0.151	
4	P.C.C (1:4:8) at Foundation. (150 mm thick)	1	cum	10.07	0.6	0.15	0.906	
5	375 mm thick brick work at foundation.	1	cum	10.07	0.375	0.45	1.70	
6	250 mm thick brick work upto P.L.	1	cum	10.07	0.25	0.15	0.38	
7	Sand filling upto P.L. (part-1)	1	cum	πr^2	πr^2	0.15	0.944	r = 2.33/2
8	Sand filling upto P.L. (part-2)	1	cum	πr^2	πr^2	0.15	1.117	r = 3.08/2
9	P.C.C (1:4:8) at Plinth Level. (62 mm thick)	1	cum	πr^2	πr^2	0.062	0.4619	r = 3.08/2
10	Brick bats for soak pit.	1	cum	1.5	1.5	1.5	3.375	
11	Bricks for Plinth Protection.	1	sqm	13.84	0.6	0	8.304	r = 2.203m & 270 nos bricks
12	Plastering (1:4) for plinth protection & vertical wall (G.L to P.L)	1	sqm	12	0.9	0	10.8	
SUPER STRUCTURE								
1	R.C.C at bottom of tank (1:2:4)	1	cum	πr^2	πr^2	0.062	0.623	Technical Officer Assistant Engineer Dist.-MGNREGS Cell Tamlak, Purba Medinipur
2	40 mm thick plastering with (1:3) cement mortar at wall of tank	1	sqm	11.25	2.2	0	24.75	length = 2 π r = 2 $\times$ π $\times$ 1.79 = 11.25

Sl No.	Description of item	No	Unit	Length (m)	Breath (m)	Height (m)	Quantity	Remarks
3	25 mm thick plastering with (1:3) cement mortar at cover of tank.	1	sqm	πr^2	πr^2	0	10.35	Here r = 1.815m. Considering top of tank (manhole) will be placed @ 300 mm upper from end of wall (2.2 m).
4	R.C.C (1:2:4) for soak pit cover.	1	cum	1.5	1.5	0.05	0.113	Soak pit is a connector of first dirty rainfall, overflow of tank, & overuse water connected by a nala.
5	Chicken wire mesh generally called Tarjali (20 gauge) to be provided both inner & outer rounded wall of tank with reinforcement.	2	sqm	11.25	2.6	0	58.5	When provided to reinforcement upper portion should be 100 mm & lower portion 300 mm extra. So total width of Tarjali = (2.2+0.1+0.3)= 2.6m.
6	Chicken wire mesh generally called Tarjali (20 gauge) to be provided both inner & outer cover of tank with reinforcement.	2	sqm	πr^2	πr^2	0	20.69	Clearing should be made for 600 mm dia manhole & 250 mm dia filter.

REQUIREMENT OF LABOURS & MATERIALS

1	For 6.095 cum. Earth Work in excavation, only unskilled labour required 2.5 nos
2	Filling of sand 80 cft. Only 2 unskilled labour required
3	Total P.C.C (1:4:8) is 1.369 cum where cement, sand, & aggregate required 5 bags, 23 cft, 46 cft. (2 skilled & 3 unskilled)
4	Total R.C.C (1:2:4) is 0.738 cum where cement, sand, & aggregate required 5 bags, 12 cft, 23 cft. (3 skilled & 3 unskilled)
5	Total brick work (1:4) is 2.077 cum where bricks, cement, & sand, required 700 nos, 4 bags, 18 cft. (2 skilled & 4 unskilled)
6	Total plastering (1:3) is 44.29 sqm where cement & sand required 17 bags, 82 cft. (17 skilled & 25 unskilled)
7	For 75.813 kg. reinforcement works skilled labour required 3 nos & unskilled labour required 2nos.
8	For 79.19 sqm chicken wire mesh works skilled labour required 2 nos & unskilled labour required 2nos.

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INSTRUCTIONS	
1	 STEP-1..... Take 4 nos (sl no-1) bar & 1 no (sl no-4) ring and place equally as per drawing, where you will get 8 nos equal division.
2	 STEP-2..... After getting 8 nos equal space provide 8 nos (sl no-2) bar at middle of place & after that 16 nos (sl no-3) bar place at remain 16 nos place.
3	 STEP-3..... Take @ 1 ring from 3.0,2.5,2.0,1.5,1.0,0.6 diameter & place at bottom, so arrangement completed for 62 mm thick R.C.C (1:2:4) at bottom of tank. After completed R.C.C binder ring should be placed. First 4 nos @ 6mm dia ring place 200mm c/c from bottom ring & after that place 7 nos @ 5mm dia ring 200 mm c/c. Place all binder ring at inner side of existing reinforcement.
4	 STEP-4..... Place chicken wire mesh (Tajjal @ 20 gauge) at both outside & inside of existing reinforcement structure. Only plastering (1:3) will be made over this structure. Outside plastering 20mm thick & inside 20mm thick. This mechanism is called "Ferro Cement".
5	 STEP-5..... Take another @ 1 ring from 3.0,2.5,2.0,1.5,1.0,0.6 diameter & place them as shown. At top is 600mm dia place for providing manhole. 250mm dia place also leave for providing filler. Chicken wire mesh also be provided both side of cover. Thickness of cover should 25mm thick. Height of cover is 300 mm.

Technically Verified

 Assistant Engineer
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 District - Pudukkottai

REINFORCEMENT ARRANGEMENT DETAILS

Sl no.	Dia. Of bar (mm)	Shape of bar	Length (m)	No. of bar	Total length (m)	Weight (kg per meter)	Total weight
1	6	Height=2.2m & Width= 3.55m	$(2H + W) + (2 * 5d) = 8.022m$	4	32.088	0.22	7.059
2	6	Height=2.2m & Width= 1.0m	$(H + W) + 6d = 3.236$	8	25.888	0.22	5.695
3	6	Height=2.2m & Width= 0.6m	$(H + W) + 6d = 2.636$	16	45.376	0.22	9.983
4	6	D= 3.55m	11.152	5	55.763	0.22	12.268
5	5	D= 3.55m	11.152	7	78.064	0.15	11.710
6	5	D= 3.0m	9.424	2	18.849	0.15	2.827
7	5	D= 2.5m	7.853	2	15.707	0.15	2.356
8	5	D= 2.0m	6.283	2	12.566	0.15	1.885
9	5	D= 1.5m	4.712	2	9.424	0.15	1.414
10	5	D= 1.0m	3.141	2	6.283	0.15	0.942
11	5	D= 0.6m	1.884	3	5.654	0.15	0.848
12	6	place at cover @ 300mm c/c	1.515	38	57.57	0.22	12.665
13	6	place at cover of soak pit @ 50mm c/c	1.4	20	28	0.22	6.160
TOTAL REINFORCEMENT (KG)						75.813	

Technically Verified

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 District - Pudukkottai

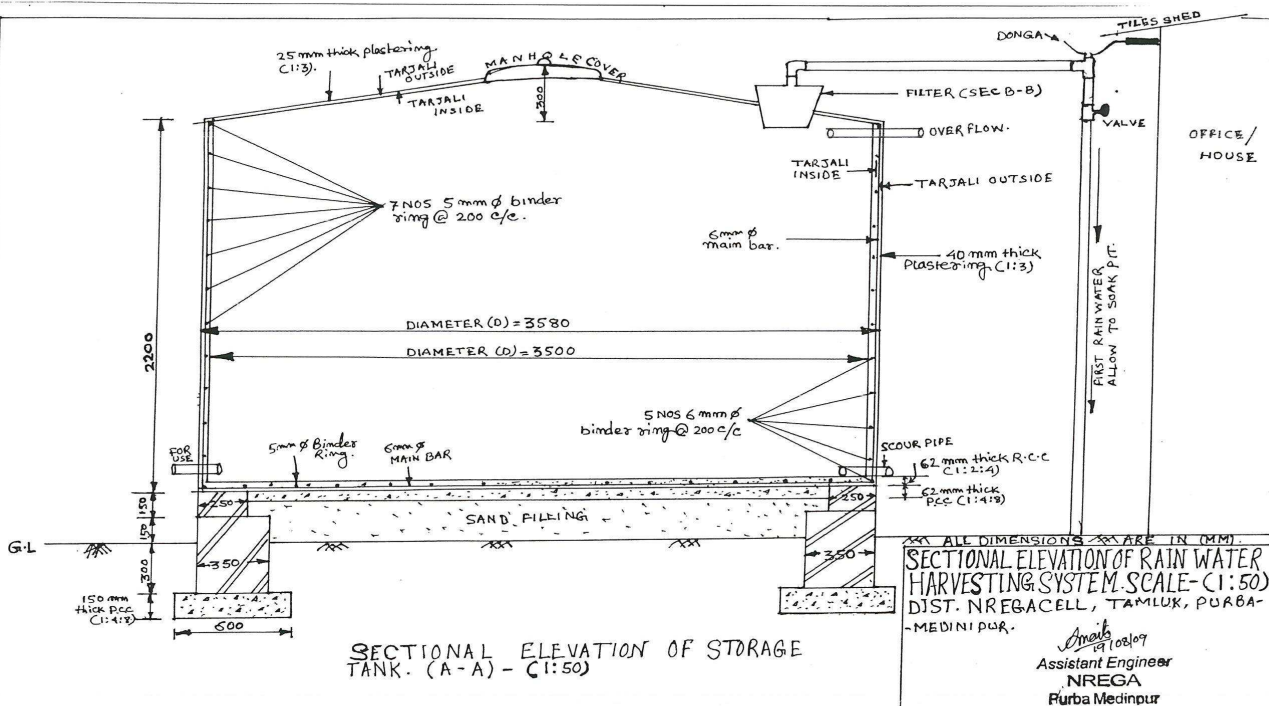
**TOTAL COSTING OF ROOF TOP RAIN WATER HARVESTING SCHEME FOR 20,000
LITERS CAPACITY RESERVOIR UNDER NREGA**

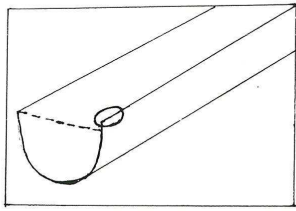
Sl No	Description of Item	Quantity	Unit	Rate (Rs) per unit	Amount (Rs)	Remarks
1	Cement	32	bags	320.15	10244.80	
2	Sand	150	cubic feet	586.88	88032.00	
3	Sand for filling	80	cubic feet	372.96	29836.80	
4	1/2" Aggregate (stonechips)	80	cubic feet	63.36	5068.80	
5	Brick Bats	120	cubic feet	45.35	5442.00	
6	Reinforcement (6 mm & 5 mm dia bar)	75.813	kg	67.78	5138.61	
7	Chicken wire mesh (Tarjali @ 20 gauge)	79.19	sq mtr	75	5939.25	
8	Binding wire	4	kg	101.7	406.80	
9	Bricks (250*125*75)	1000	nos	9.066	9066.00	
10	Skilled Labour	29	nos	382	11078.00	
11	Unskilled Labour	43.5	nos	191	8308.50	
12	Tap (Blcock)	1	No	150	150.00	
13	100 mm dia pipe for carrying rain water.	150	feet (max ^m)	89.02	13353.00	Total length of pipe may vary for each Gram Panchayat. (Only for concrete roof)
14	Gutter (Donga) half circle @ 200 mm dia using for tiles shed.	160	feet (max ^m)	45	7200.00	Total length of pipe may vary for each Gram Panchayat. (Only for tiles shed)
15	Valve for controlling rain water	1	No	2000	2000.00	
16	M-Seal	1 No		Lumsum	120.00	
17	Water proof material (Sico)	1 No		Lumsum	1500.00	
18	Aluminium Bucket for Filter	1 No		Lumsum	500.00	
19	Bend & T pipes, overflow pipes etc.	Depend on Joins		Lumsum	1000.00	
20	Clamps Using for fixation of Gutter (Donga)	Depend on Joins		Lumsum	2000.00	Only for tiles shed.
21	Plumber	2 nos		286.5 per day	573.00	
22	Transporting Cost	depend upon place to place		Lumsum	2500.00	
Total cost for concrete roof					209457.56	
Rupees Two Lakhs Nine Thousands Four Hundreds and Fifty Eight Only					209458.00	

Technically Vetted

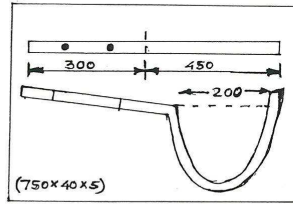
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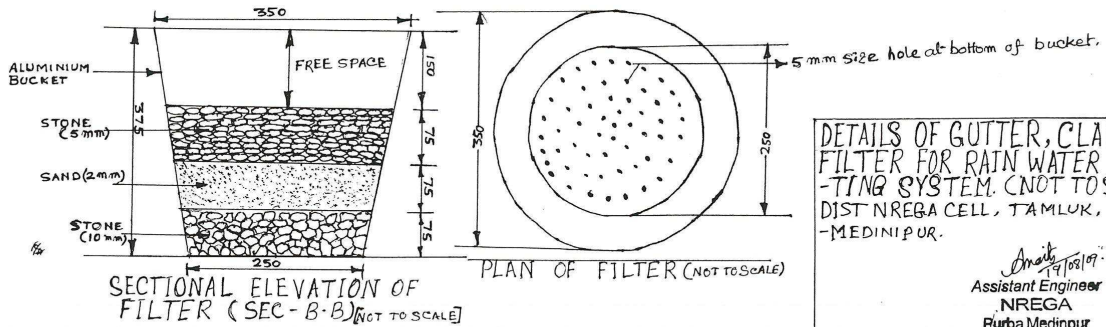




GUTTER (DONGA) USING AT TILES SHED. (NOT TO SCALE)

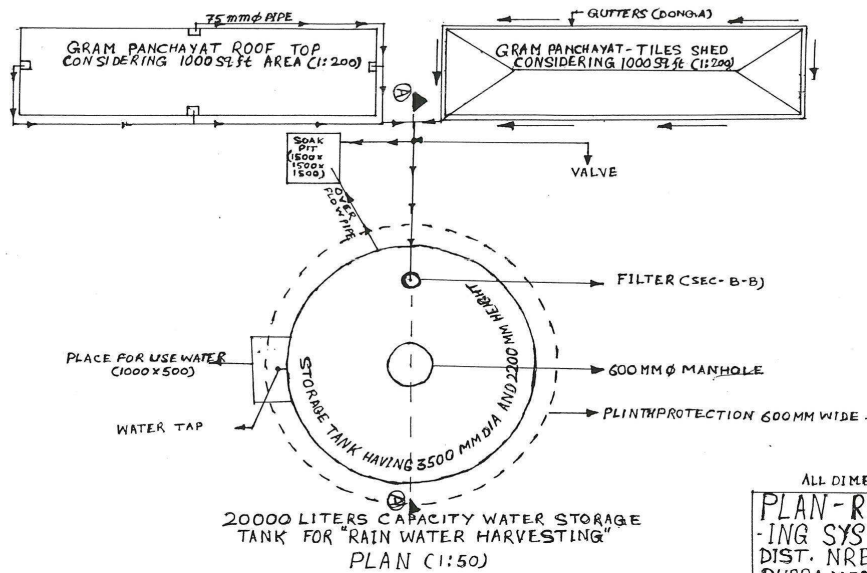


CLAMP USING TO FIXATION OF DONGA. (NOT TO SCALE)



DETAILS OF GUTTER, CLAMP AND FILTER FOR RAIN WATER HARVESTING SYSTEM. (NOT TO SCALE)
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ALL DIMENSIONS ARE IN (MM).

PLAN-RAINWATER HARVESTING SYSTEM (SCALE-1:50)
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