



No. J-11016/11/2012-MGNREGA, IV  
Government of India  
Ministry of Rural Development  
Department of Rural Development  
(Mahatma Gandhi NREGA Division)

Krishi Bhawan, New Delhi  
Dated: 16<sup>th</sup> February, 2016

To: The Spl CSs/Prl Secretaries/ Secretaries of Rural Development (In charge-MGNREGS).

Subject: Suggestive/ indicative estimates of Farm Pond, NADEP & Vermi Compost Tanks etc.

Sir/ Madam,

In the list of "focus / thrust areas" for 2016-17, one of the focus areas are construction of 5 lakh farm ponds and 10 lakh VERMI/ NADEP compost tanks in Financial Year 2016-17. To facilitate the States/ UTs, suggestive/ indicative estimates with drawings of farm pond, NADEP & Vermi compost tanks are attached herewith. As regards farm ponds, expected outcome i.e. irrigation potential in hectare is to be built up in the estimate & measured while making the payment.

2. It is also requested to fix the district wise targets of farm ponds ,Vermi/ NADEP compost tanks, IHHLs and AWCs as per the requirement of the area and communicate the same to the Ministry by 1<sup>st</sup> March , 2016 so that the national target can be achieved on time. This will also be part of State's presentation before the Empowered Committee for finalisation of LB for each State/ UT administration.

Yours faithfully,

(Aparajita Sarangi)  
Joint Secretary (MGNREGA)

Enclosure: As above

16/2/16

**ONE MILLION FARM PONDS TO BRING FARM LAND UNDER IRRIGATION UNDER MGNREGA:**

**A. FARM POND:** Farm pond is a structure constructed on a farmer's land to harvest rainwater, which would otherwise have flowed out of the farm. On flatter land in the village, streams are not very deep, nor do they have high embankments. Thus it becomes difficult to build water harvesting structures like earthen dams. In such flat lands, Farm Ponds are the most effective water harvesting Solution. The main objective of such structures is to provide protective irrigation to the kharif crop. In addition, in West Bengal, Assam, Chhattisgarh, Bihar, Jharkhand and Orissa, Farm ponds are being used to irrigate the rabi crops and also for fish Farming.

**B. TYPICAL SIZE OF FARM POND:** top area= 20m x 20m, bottom area =14m x 14m, & depth= 3m, with 1: 1 side slope, so that the grass planting/ sodding can be carried out on the inner side slope of the pond for the durability of the pond. **Detailed drawing is attached.**

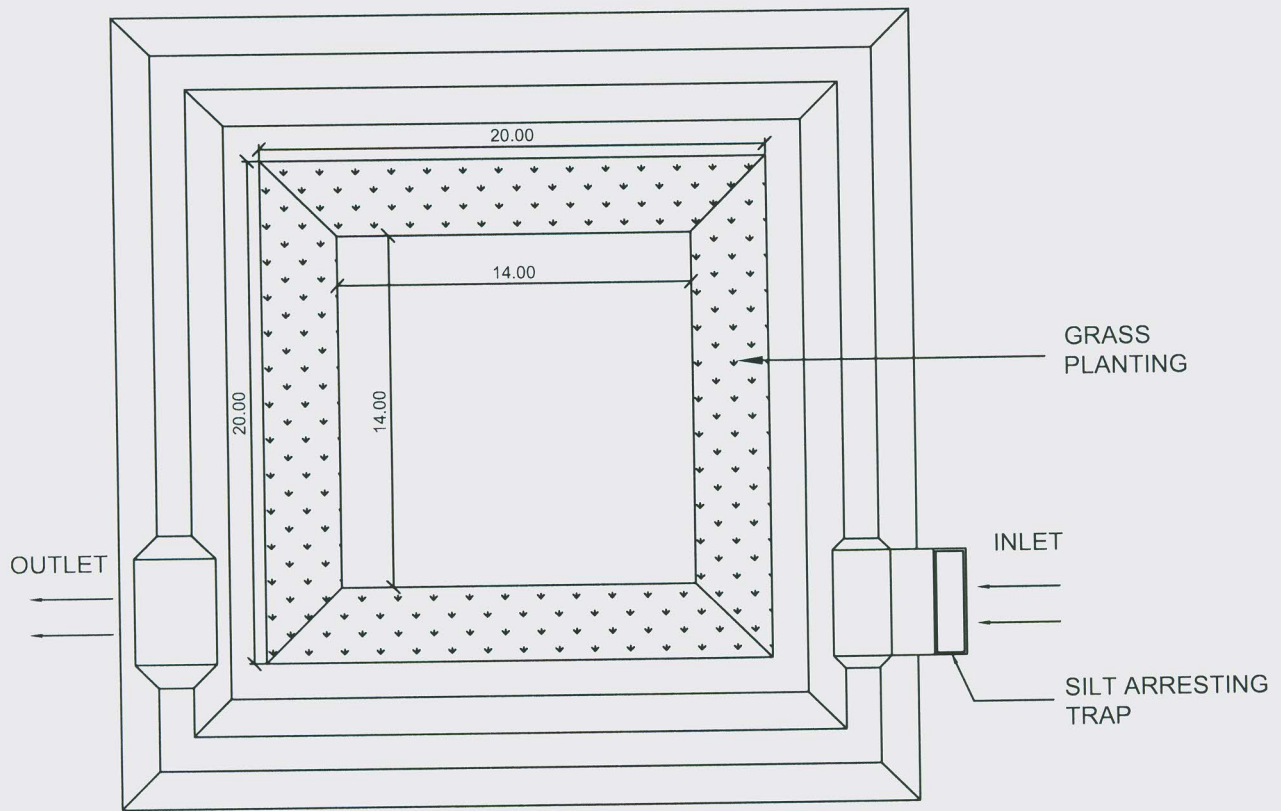
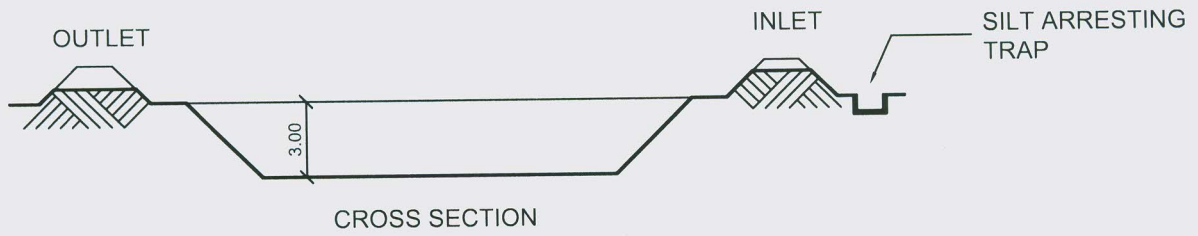
The size of Farm Pond will depend on the land use, land slope, type of soil, annual rainfall and catchment area. However, in cultivated area, where annual rainfall is at least 500 mm, the catchment area for this size of pond should be 1-2 hectare & where annual rainfall is at least 1000 mm; the catchment area for this size of pond should be at least 0.5-1 hectare.

**C. ESTIMATE OF THE FARM POND;** The Farm Pond with above mentioned specification will cost Rs. 1, 60, 000/- with labour component Rs. 133283/- (83.3%) and material component Rs. 26700.94 (16.7%). **Detailed estimate is attached.**

**D. OUTCOME:** Total quantity of water stored will be nearly 880 cubic meters,

i) 5000 cum. water can irrigate 1 ha land with 0.5 m depth of irrigation water, therefore 880 cum. water will be able to irrigate  $880 / 5000 = 0.176$  ha land with single refill of pond, whereas, in normal rain fall, there will be at least 2-3 refill of pond, which will be able to irrigate  $0.176 \times 2 = 0.352$  ha land throughout the year i.e. in kharif as well as in rabi season.

ii) Like this 1 million farm pond costing Rs 1.6 lakh X 1000000 = Rs. 16000 crore, will irrigate 3. 52 lakh ha agriculture land, will recharge ground water, will check soil erosion & can be used for fish culture.



PLAN  
FARM POND

## TYPICAL ESTIMATE OF A FARM POND UNDER MGNREGA

**Pond Size:** top area 20m x 20m, bottom area 14x14, depth - 3m

S. No.	Item of work	Unit	Quantity	Rate	Unskilled Labour Component	Material Component (including Skilled/semiskilled labour)	Total Amount
1.	Excavation in ordinary soil up to 1.5m depth and disposing soil with initial lead up to 50 m, compaction of the bottom, watering, dressing of side slope. (20x20+17x17/2)x1.5=516.75	Cum	516.75	Rs.124.81 / Cum	Rs. 63854.79	Rs.640.77	Rs. 64495.56
2.	Excavation in hard, gravelly soil --do---- beyond 1.5 m depth (17x17+14x14/2)x1.5=363.75	Cum	363.75	Rs.174.54 / Cum	Rs. 62928.75	Rs. 560.17	Rs.63488.92
3.	Construction of pucca silt arresting open type inlet and Drop Spillway type outlet (Lump Sum)	No's	1+1=2		Rs.5000	Rs.25000	Rs.30000
4.	Grass planting/ sowing/ sodding (Lump Sum)				Rs. 1500	Rs. 500	Rs. 2000
	<b>Total</b>				<b>Rs.1,33,283.54</b>	<b>Rs.26,700.94</b>	<b>Rs.1,59,984.48</b>

**G. total=** Rs. 1, 59984.48, say **Rs. 1, 60, 000/-**

Labour component= Rs. **133283.54 (83.3%)** & material component= Rs. **26700.94 (16.7%)**

**Note:** i) Rates taken from MGNREGA SOR, 1.4.2015 of Bhilwara District, Rajasthan State.

## **ONE MILLION NADEP COMPOST TANK TO ENHANCE FERTILITY OF FARM LAND UNDER MGNREGA:**

**A. COMPOSTING:** Composting is the process of reducing vegetable and animal refuses to quickly utilizable condition for maintaining soil fertility. NADEP method of composting developed by Shri N.D. Pandhari Pande is one such processes facilitating aerobic decomposition of organic matter. This method takes care of all the disadvantages of heaping of farm residues and cattle shed wastes, etc. in open.

**B. THE SIZE OF NADEP COMPOST TANK;** will be 3m x 1.8 m with 23 cm thick perforated/ lattice brick wall in cement mortar to height of 0.9 m above ground. The perforated wall will facilitate passage of air for aerobic decomposition. The floor of the tank will be laid with bricks. The tank will be covered above with a thatched roof. This will prevent loss of nutrients by seepage or evaporation and the contents are not exposed to sun and rain. **Detailed drawing is attached.**

**C. ESTIMATE OF NADEP COMPOST TANK;** The NADEP Compost Tank with above mentioned specification will cost Rs. 10,700, with labour component Rs. 2224 (21 %) and material component Rs. 8475 (79%). **Detailed estimate is attached.**

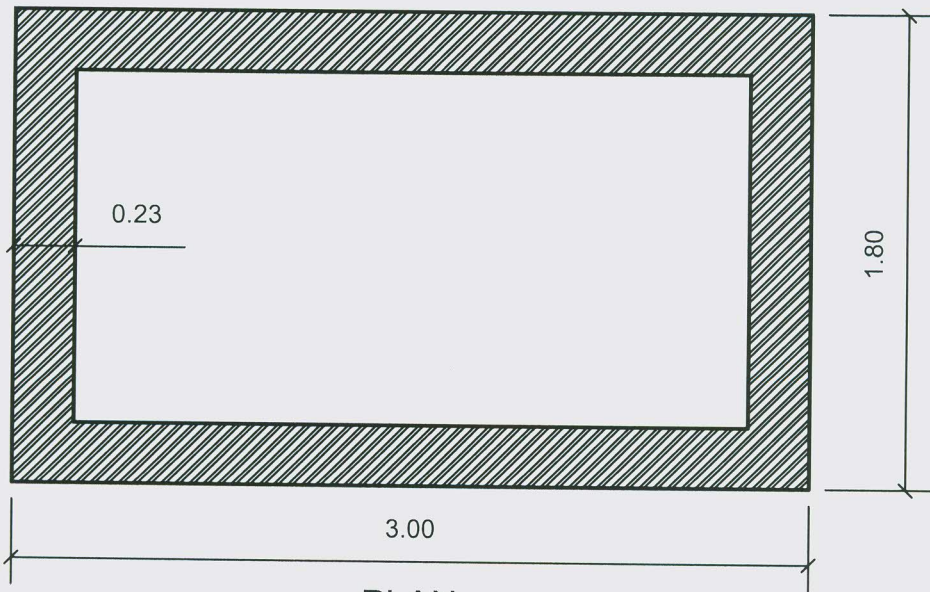
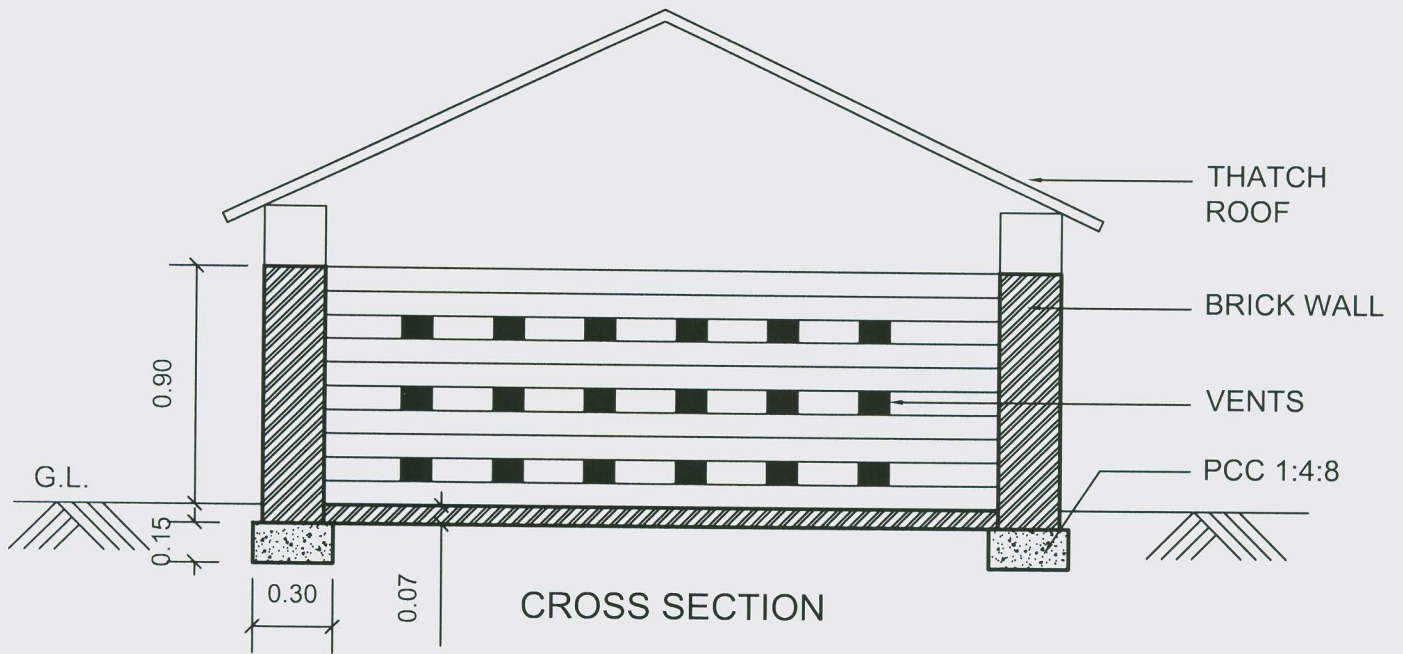
### **D. METHOD OF COMPOSTING:**

i. The ingredients for making compost are agro-wastes, animal dung and soil in the ratio of 45: 5: 50 by weight.

ii. Inside this trough a series of layers of agricultural waste, dung and soil are successively heaped upon each other. About 100-110 kg of agricultural waste is first placed on the ground in a layer which is about 6 inches high. 4 kg of dung mixed in 125-150 litres of water is applied on top of this layer (the quantity of water used varies with the seasonal temperature, more water being necessary in the summer months). On top of the second layer, cleaned and sifted soil (roughly half the weight of the agricultural waste used, i.e. 50-55 kg) free of stones, glass etc. is spread, on which a little water is also sprinkled. In this manner successive layers are heaped to a height of about 1.5 ft. above the top of the trough. After this the top of the pile is sealed with a 3 inch plastering of soil mixed with dung (400-500 kg). Within 2-3 months dark brown, friable, soft and moist compost, free of all foul odour is ready. The nutrient status of this manure is Nitrogen 0.5-1.5%, Phosphorous 0.5-0.9% and Potassium 1.2-1.4%.

**E. OUTCOME:** About 3 tons of compost is generated per tank per cycle. In the first year 2 cycles and from the 2<sup>nd</sup> year onwards 3 cycles can be produced. Thus one tank can produce 6 tons in the first year and 9 tons from the 2<sup>nd</sup> year onwards.

**Like this 1 million NADEP compost tanks** will cost, Rs. 100000 x 0.11 =Rs. 1100.00 crore & will facilitate in producing 1000000X 9= 9000 Kilo tons compost, which will be sufficient to enhance productivity of nearly 30 lakh hectare of land with application of compost @ 3.0 tons per hectare.



PLAN  
NADEP COMPOST PIT

**Typical Estimate for NADEP compost tank (3.00 m X 1.8 m X 0.9 m)**

S.No	Detail	No.	L	W	H/D	Unit	Qty	Rate			Amount		
								Labour Comp	Material Comp	Total	Labour Comp	Material Comp	Total Amount
1	Earth work excation in hard soil												
	For foundation of long walls	2	3.00	0.30	0.15	cum	0.27						
	For foundation of Short walls	2	1.34	0.30	0.15	cum	0.12						
	Earth work excavation for brick on edge flooring in hard soil	1	2.54	1.34	0.11	cum	0.37						
	<b>Total</b>						0.76	153.23	1.54	154.77	117.22	1.18	118.40
2	Plain Cement Concrete PCC (1:4:8) with 40 mm HBG metal for brick work foundation including cost and conveyance of 40mm metal, sand, cement and water.												
	Long wall	2	3.00	0.30	0.15	cum	0.27						
	Short Wall	2	1.34	0.30	0.15	cum	0.12						
	<b>Total</b>						0.39	526.41	1785.90	2312.31	205.62	697.57	903.19
3	Country Brick/ Cement block masonry in cement mortar 1:6 including cost and conveyance of bricks, sand, cement and water for mortar and curing and masonry charges												
	Long Wall	2	3.00	0.23	0.90	cum	0.621						
	Short Wall	2	1.34	0.23	0.90	cum	0.277						
	<b>Total Brick Masonary</b>						0.898						
	Deduction for Aeration 10% of Masanary work						-0.09						
	<b>Net Masonary work</b>						1.71	247.14	2792.42	3039.56	421.85	4766.44	5188.29
4	Plastering 20 mm thick at top 1:4 Cement motor												
	Long Wall	2	3.00	0.23		sqm	1.38						
	Short Wall	2	1.34	0.23		sqm	0.62						
	<b>Total Plastering</b>						0.85	39.54	81.69	121.23	33.63	69.49	103.12
5	Brick on edge flooring	1	2.54	1.34		sqm	3.40	48.93	327.07	376.00	166.54	1113.22	1279.75
6	Plastering 20 mm thick of 1:4 on brick on edge flooring	1	2.54	1.34		sqm	3.40	39.54	81.69	121.23	134.58	278.04	412.62
7	Unskilled Labour charges for Laying of thatced roof with locally available bamboos and wooden sticks	6				Person days	6	180.00			1080.00	1000.00	2080.00
	<b>Cost of Nadep Compost</b>									<b>Total</b>	<b>2159.44</b>	<b>7925.94</b>	<b>10085.37</b>
	<b>Add for Drinking water coolie,palna coolie 3%</b>									<b>Total</b>	<b>2159.44</b>	<b>7925.94</b>	<b>10085.37</b>
	<b>Add 3% Contigencies Charges</b>									<b>Total</b>	<b>64.78</b>	<b>237.78</b>	<b>302.56</b>
	<b>TOTAL</b>									<b>Total</b>	<b>2224.22</b>	<b>8163.72</b>	<b>10387.93</b>
	<b>Labour Component</b>						<b>20.79</b>			<b>%</b>	<b>20.79</b>		<b>2224.22</b>
	<b>Material Component</b>						<b>79.21</b>			<b>%</b>	<b>79.21</b>		<b>8475.35</b>
	<b>TOTAL</b>												<b>10700</b>

Note: Rates taken from MGNREGA Sor, 2015, District Bhilwara (Rajasthan)

## ONE MILLION VERMI COMPOST TANK TO ENHANCE FERTILITY OF FARM LAND UNDER MGNREGA:

**A. VERMICOMPOSTING:** Vermicomposting is a method of preparing enriched compost with the use of earthworms by turning organic wastes into very high quality Compost. It is one of the easiest methods to recycle agricultural wastes and to produce good quality compost. Earth worms consume biomass and excrete it in digested form called **worm casts**. Worm casts are popularly called as **Black gold**. The casts are rich in nutrients, growth promoting substances, beneficial soil micro flora and having properties of inhibiting pathogenic microbes. In ideal conditions worms can produce at least their own weight of organic matter in a day.

**B. THE SIZE OF VERMI COMPOST TANK;** Vermicomposting tank with a dividing wall in the middle will be in two part, each of inner size 3.6 m x 0.76 m x 0.6m, so that these two part can be used in rotation or at a time, as per the availability of vermicomposting material. The wall will be 23 cm thick wall in cement mortar with few openings covered with wire mesh for aeration to earth worms. The floor of the tank will be laid with bricks & plastered with proper drainage in it. The tank will be covered above with a thatched roof open from all sides. This will prevent earthworms from sun and rain. Detailed drawing is attached.

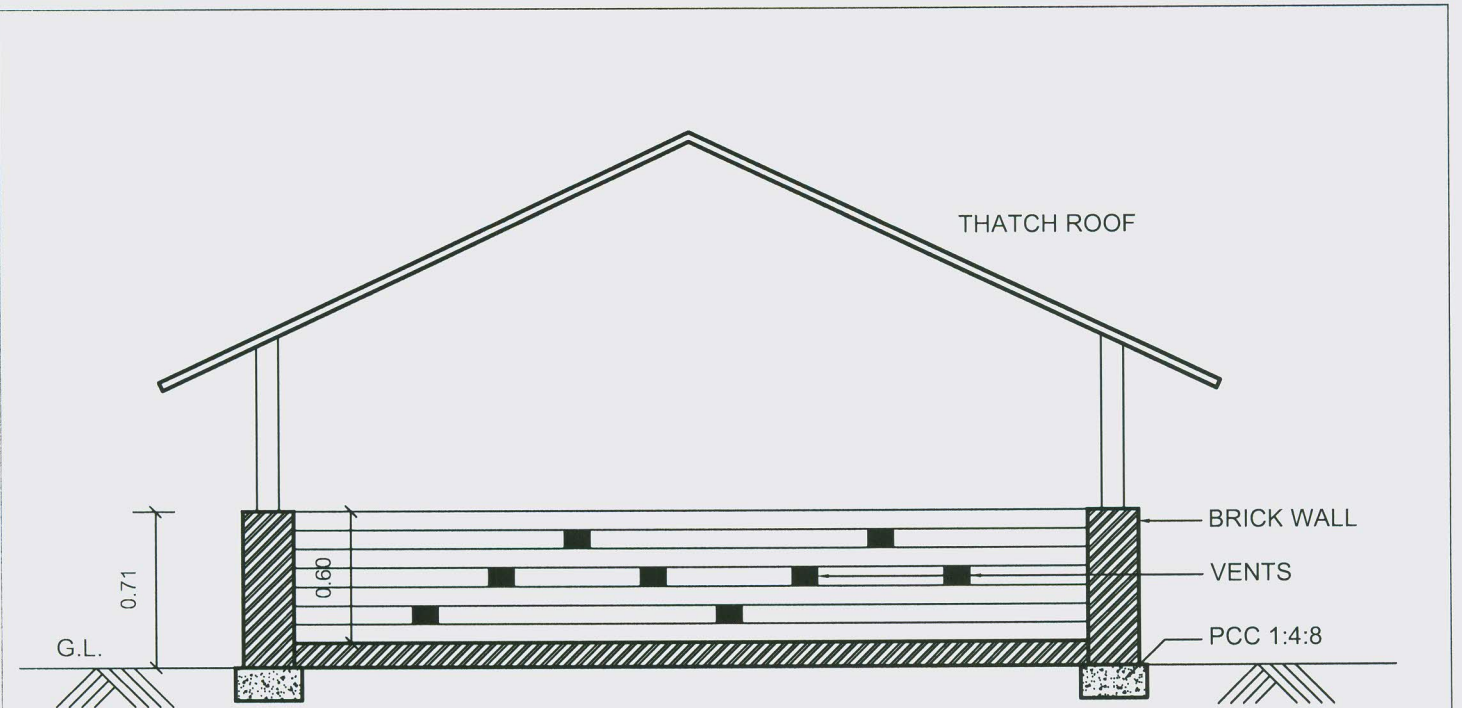
**C. ESTIMATE OF TYPICAL VERMI COMPOST TANK;** The Vermicomposting Tank with above mentioned specification will cost Rs. 10,000 with labour component Rs.2435 (24.5%) and material component Rs.7524 (75.5 %). Detailed estimate is attached.

**D. VERMICOMPOSTING MATERIALS:** Decomposable organic wastes such as animal excreta, kitchen waste, farm residues and forest litter. In general, animal dung mostly cow dung and dried chopped crop residues are the key materials. Mixture of leguminous and non-leguminous crop residues enriches the quality of vermicompost.

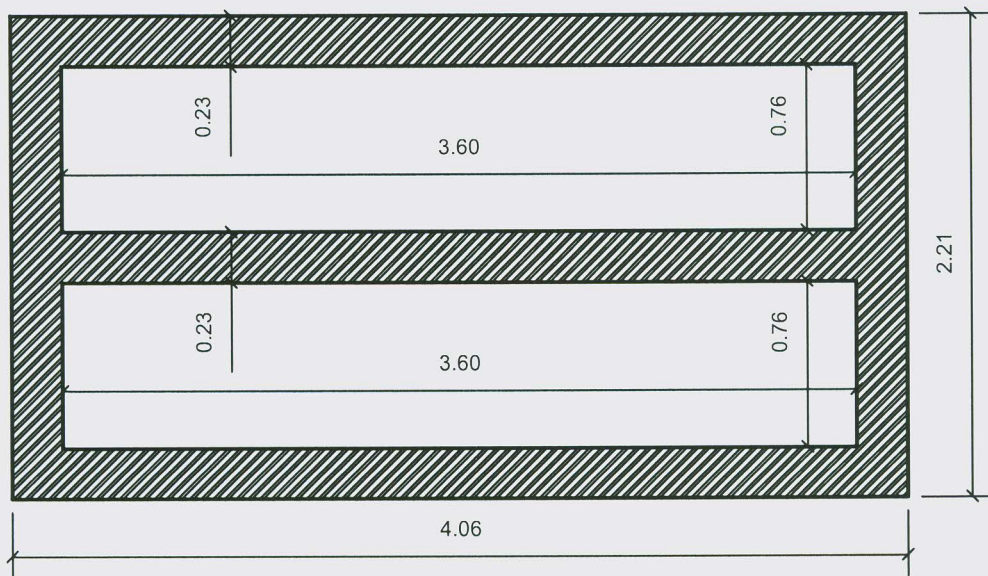
### **E. PROCESS OF VERMICOMPOSTING:**

- Vermicomposting unit should be in a cool, moist and shady site;
- Cow dung and chopped dried leafy materials are mixed in the proportion of 3:1 and are kept for partial decomposition for 15-20 days;
- A layer of 15-20cm of chopped dried leaves/grasses should be kept as bedding material at the bottom of the bed;
- Beds of partially decomposed material of size 6x2x2 feet should be made;
- Each bed should contain 1.5-2.0q of raw material and the number of beds can be increased as per raw material availability and requirement;
- Red earthworm @ 350 worms per cum of bed volume that weighs nearly 1 kg. should be released on the upper layer of bed.
- Water should be sprinkled immediately after the release of worms;
- Beds should be kept moist by sprinkling of water (daily) and by covering with gunny bags/polythene;





CROSS SECTION



PLAN

**VERMI COMPOST TANK**

**Typical Estimate for Vermi compost tank (4.0mX2.2mX0.7m)**

S.No	Detail	No.	L	W	H/D	Unit	Qty	Rate			Amount			
								Labour Comp	Material Comp	Total	Labour Comp	Material Comp	Total Amount	
1	Earth work excavation for foundation in hard soil													
	Long walls	3	4.06	0.30	0.15	cum	0.55							
	Short walls	4	0.76	0.30	0.15	cum	0.14							
	Total						0.69	153.23	1.54	154.77	105.73	1.06	106.79	
2	Plain Cement Concrete PCC (1:4:8) with 40 mm HBG metal for brick work foundation including cost and conveyance of 40mm metal, sand, cement and water.													
	Long wall	3	4.06	0.30	0.15	cum	0.55							
	Short Wall	4	0.76	0.30	0.15	cum	0.14							
	Total						0.69	526.41	1785.90	2312.31	363.22	1232.27	1595.49	
3	Country Brick/ Cement block masonry in cement mortar 1:6 including cost and conveyance of bricks, sand, cement and water for mortar and curing and masonry charges													
	Long Wall	3	4.06	0.23	0.71	cum	0.66							
	Short Wall	4	0.76	0.23	0.71	cum	0.12							
	Total Brick Masonary						0.78	247.14	2792.42	3039.56	192.77	2178.09	2370.86	
4	Plastering 20 mm thick at top 1:4 Cement motor													
	Long Wall	3	4.06	0.23		sqm	2.80							
	Short Wall	4	0.76	0.23		sqm	0.70							
	Total Plastering					sqm	3.50	39.54	81.69	121.23	138.41	285.96	424.38	
5	Brick on edge flooring	2	3.60	0.76		sqm	5.47	48.93	327.07	376.00	267.74	1789.73	2057.47	
6	Plastering 20 mm thick of 1:4 on brick on edge flooring	2	3.60	0.76		sqm	5.47	39.54	81.69	121.23	216.36	447.01	663.37	
7	Unskilled Labour charges for Laying of thatched roof with locally available bamboos and wooden sticks	6				Person days	6	180.00			1080.00	800.00	1880.00	
8	Wire mesh on openings											500.00	500.00	
<b>Cost of Vermi Compost Tank</b>														
										<b>Total</b>	<b>2364.24</b>	<b>7234.12</b>	<b>9598.36</b>	
											<b>2364.24</b>	<b>7234.12</b>	<b>9598.36</b>	
										Add for Drinking water coolie,palna coolie 3%	70.93		70.93	
										<b>Total</b>	<b>2435.17</b>	<b>7234.12</b>	<b>9669.29</b>	
										Add 3% Contingencies Charges			290.08	
										<b>Total</b>			<b>9959.37</b>	
								Labour Component	<b>24.45</b>	%	24.45		<b>2435.17</b>	
								Material Component	<b>75.55</b>	%	75.55		<b>7524.20</b>	
								<b>TOTAL</b>		%	100.00		<b>9959</b>	

Note: Rates taken from MGNREGA SOR, 2015, District Bhilwara (Rajasthan)