

# Assignment/Quiz 2020.

Name : Mushtaq Ahmad.

ID No# : 7722

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Subject: Quantity Surveying & Estimation.

Instructor: Engr. Emtiaz Khan.

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Q<sub>no#01</sub> = 100 cft concrete. ratio (1:4:8)

brickwork of 75 cft ratio (1:4)

required?

↔ No of brick. Dry volume and quantity of mortar?

Sol: Quantity of wet material = 100 cft.

Dry volume of concrete = 1.54

Quantity of dry material =  $100 \times 1.54 = 154$  cft.

ratio of concrete = 1:4:8

Sum of ratio =  $1+4+8 = 13$

Quantity of cement =  $\frac{\text{ratio of cement}}{\text{Sum of ratio}} \times \text{Dry material}$

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$$Q_{\text{c}} = \frac{1}{13} \times 154 = 11.78 \text{ cft.}$$

$$\therefore 1 \text{ bag} = 1.25 \text{ cft}$$

$$Q_{\text{of cement}} = \frac{11.78}{1.25} = 9.42 \text{ bags. Say 10 bags}$$

Q. of Sand =  $\frac{\text{ratio of Sand}}{\text{Sum of ratio}} \times \text{Dry material}$

$$= \frac{4}{13} \times 154 = ~~91.12~~ \text{ cft} = 47.12 \text{ cft}$$

$$= \frac{47.12}{1.25} = 37.69 \text{ bags.}$$

$$= \frac{47.12}{1.25} = 37.6 \text{ Say 38 bags.}$$

Quantity of Coarse Aggregate: 7799 3

$$Q. \text{ of coarse Agg} = \frac{\text{ratio of coarse Agg}}{\text{Sum of ratio}} \times \text{dry material.}$$

$$= \frac{8}{13} \times 154 = 94.24 \text{ cft.}$$

$$= \frac{94.24}{1.25} = 75.3 \text{ Say } 76 \text{ bags}$$

Quantity Cement bag = 10

Sand ~~bag~~ 47.12 cft.

Quantity of coarse Agg. 94.24 cft.

Brick work of 75 cft. and  
ratio (1:4)

Vol of brick work = 75 cft.

To find Vol of mortar taking 25% of  
brick work for mortar.

$$\frac{25}{100} \times 75 = 18.75 \text{ cft. (wet volume)}$$

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We have a brick work of 75 cft.  
and ratio of that is given (1:4).

Volume of brick work = 175 cft.

1 cft = 13.5 No of brick.

No of brick:

Total no of brick = 1012.5

for dry volume we have to multiple  
factor 1.27 with wet volume.

Dry Vol = Wet Vol  $\times$  1.27.

$$= 18.75 \times 1.27 = 23.81 \text{ cft.}$$

Now: Cement?

Sand?

For cement we have

Quantity of cement =  $\frac{\text{Ratio of cement}}{\text{Sum of Ratio}} \times \text{Dry material.}$

Ratio = 1:4 (1 cement & 4 sand)

Sum of ratio is = 1+4 = 5

CPTD

$$\text{Dry volume} = 23.81 \text{ cft.}$$

5

$$= \frac{1}{5} \times 23.81 = 4.76 \text{ cft.}$$

If bag ( $\because$  1 bag = 1.25 cft)

$$\frac{4.76}{1.25} = 3.8 \text{ bags say } 4 \text{ bags.}$$

for Sand (1.4 sand) = ?

$$\frac{4}{5} \times 23.81 = 19 \text{ cft.}$$

$\Leftarrow$

Part (B)

Dry and Wet Volume of Concrete

Dry volume of concrete is the combined volume of cement, fine aggregate and coarse aggregate in dry condition after mixing the resultant wet

volume turns out to be approximately 60-70% of the dry volume for estimation purpose dry volume of concrete can be taken as 1.54 of its wet volume.

For concrete  $1\text{m}^3 = 54\%$

$$\text{Dry Vol} = \text{Wet Vol} + 54\% \text{ of Wet Volume}$$

$$= 1 + \left( \frac{54}{100} \times 1 \right)$$

$$= 1 + 0.54$$

$$\boxed{\text{Dry volume} = 1.54}$$

Dry and Wet Volume of mortar:

When water is added to dry mix of concrete - sand the vol of dry mix is

reduced. It happens due to the presence of air void of sand particles

When we calculated the mortar quantity

for every masonry work, we get the

wet volume of mortar if we want to calculate the required vol of sand

and cement we need to convert

that wet volume into dry volume.

For estimation purpose dry vol of mortar can be taken as 1.27 and 1.54 times of its wet

Volume: For cement mortar  $1\text{m}^2$

= 27% and 54%

$$\text{Dry vol} = \text{Wet vol} + 27\% \text{ of wet volume}$$

$$= 1 + \left( \frac{27}{100} \times 1 \right) = 1 + 0.27$$

$$\boxed{\text{Dry Volume} = 1.27}$$

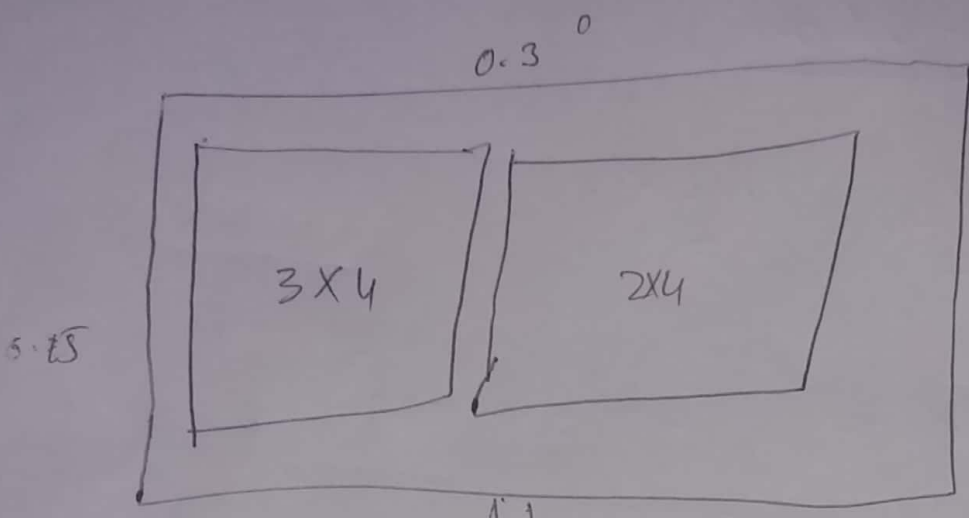
# Qno H02

Item Description	NO	length	Breadth	Height	quantity	
① Excavation in foundation long wall	2	11.20m	0.90m	0.90m	18.14 <del>11.95</del> 14 18.14	10.3 + 0.90 = 11.2
	2	7.4	0.90m	0.90m	11.98	8.3 - 0.90 = 7.4
Short wall	2	7.4	0.90m	0.90m	30.12 cum	
② concrete & foundation - long wall	2	11.20	0.90m	0.30m	6.64	
	2	7.4	0.90m	0.30m	3.99	
Short wall	2	7.4	0.90m	0.30m	10.03 cum	
③ Brick w. in fndn. and pth	2	10.90	0.60	0.30	3.94	
	2	7.80	0.50	0.30	2.34	
	2	7.90	0.40	0.30	1.89	
P length wall	2	7.90	0.40	0.30	16.72 cum	
④ Brick work in super structure	2	10.6m	0.30m	3.50m	22.26	10.30 + 0.30
	2	8m	0.30m	3.50m	16.80	10.6m
Short wall	2	8m	0.30m	3.50m	39.06 cum	8.30 - 0.30 8m

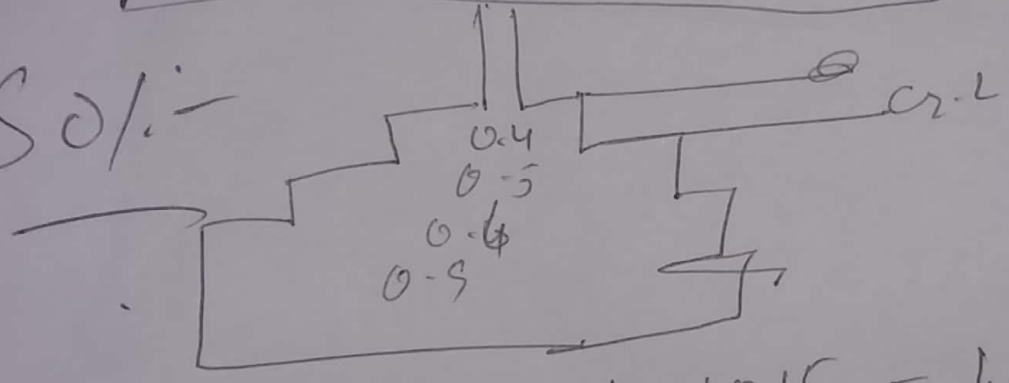
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Sol:-



$$V = 0.15 + 4 + 0.15 = 4.3$$

$$eV = 3 \times 4.3 = 12.9$$

$$H = 0.15 + 3 + 0.3 + 2 + 0.15 = 5.6$$

$$eH = 2 \times 5.6 = 11.2$$

Center line length := 11.2 + 12.9

$$= 24.8$$

Excavation. L = 24.8 - 0.9 = 23.9

So

$$L \times 23.9 \times 0.9 \times 0.5 = 10.755 \text{ m}^3$$



Concrete

$$1 \times 23.9 \times 0.9 \times 0.1 = 2.151 \text{ m}^3$$

Brick work

$$\text{1st footing} = 1 \times 24.2 \times 0.6 \times 0.2$$
$$= 2.904 \text{ m}^3$$

$$\text{2nd footing} = 1 \times 24.3 \times 0.5 \times 0.2$$
$$= 2.43 \text{ m}^3$$

$$\text{3rd footing} = 1 \times 24.4 \times 0.4 \times 0.2$$
$$= 1.952 \text{ m}^3$$

$$\text{Brick wall} = 1 \times 24.5 \times 0.3 \times 0.6$$
$$= 4.41 \text{ m}^3$$