

## EXAMPLE

### ANALYSIS OF RATES

- To determine the rate of a particular item of work from a quantities of materials and labours required and their costs
- The rates of materials and labour are changing from place to place, therefore the rates of different items of work also changes from place to place

## ANALYSIS OF RATES

- Every Estimate should be accompanied by the analysis of rates of the items provided in it .
- Analysis of rates comprises of
  1. Cost of Material
  2. Cost of Labour
  3. T and P , and Sundries
  4. Carriage
  5. Contractor's Profit

## ANALYSIS OF RATES

- Tools and Plants ( T & P ) = 2.5 to 3 % of the labour cost
- Transportation cost more than 8 km is considered
- Water charges = 1.5 to 2 % Of total cost
- Contractor ' s profit = 10 %

## ANALYSIS OF RATES

- Rates of Materials and Labours :
- 1<sup>st</sup> class bricks = Rs 4500 per 1000 Nos.
- 2<sup>nd</sup> class bricks = Rs 4000 per 1000 Nos.
- Brick Ballast = Rs 800 per cum
- Coarse sand = Rs 800 per cum
- Cement 50 kg bag = Rs 270 per bag
- Twisted bars = Rs 5000 per Quintel
- Bitumen = Rs 10 per kg

## ANALYSIS OF RATES

- Mason = Rs 450 per day
- Plaster = Rs 400 per day
- Carpenter = Rs 400 per day
- Bhishti = Rs 250 per day
- Mazdoor = Rs 250 per day
- Painter = Rs 300 per day

## ANALYSIS OF RATES

- Earth work in excavation: Mazdoor = 33  
     (% cum)                      Mason = 1.5
- Earth work in Filling : Mazdoor = 18  
     (% cum)                      Mason = 0.5
- Cement concrete : Mazdoor = 15  
     in foundation              Mason = 1.5  
   Bhishti = 2

## ANALYSIS OF RATES

- Cement concrete : Mazdoor = 15  
   Mason = 1  
   Bhishti = 2.5
- R. Cement concrete : Mazdoor = 40  
     (10 cum )              Mason = 2.5  
   Bhishti = 5  
   Blacksmith = 4  
   Carpenter = 4

## ANALYSIS OF RATES

- DPC : Mazdoor = 2.5  
(10 cum ) Mason = 1.5  
Bhishti = 0.5
- 1<sup>st</sup> class brick work : Mazdoor = 15  
Mason = 8  
Bhishti = 2

## ANALYSIS OF RATES

- Plastering work : Mazdoor = 10  
( 100 sqm) Mason = 10  
Bhishti = 2
- Distemping/painting/white washing :  
Mazdoor = 5  
( 100 sqm) Painter = 4

**ANALYSIS OF RATES**

**Example 1.** Find out dry materials required for 1 cu m. C. concrete 1:4:8 in foundation.

**Solution.**

Ratio = 1:4:8 (cement,sand and aggregate)

Sum = 1+4+8=13

cont..

Total dry mortar for 1 cu m cement concrete  
=1.54 cu m

Therefore the following materials are required:

Cement =  $(1*1.54*28.8)/13$   
= 3.41 bags

Sand =  $(4*1.54)/13$   
= 0.47 cu m

cont..

$$\begin{aligned} \text{Aggregate (Brick ballast)} &= (8 \times 1.57) / 13 \\ &= 0.94 \text{ cu m} \end{aligned}$$

*so materials for 1 cu m cement concrete  
1:4:8.*

Cement	3.41 bags	}	Ans.
Sand	0.47 cu m		
Brick ballast	0.94 cu m		

**Example 2.** Find out dry materials for 1 cu m lime concrete.

**Solution:**

$$\text{Ratio} = 1:2 \text{ (lime, surkhi)}$$

$$\begin{aligned} \text{Sum} &= 1+2 \\ &= 3 \end{aligned}$$

$$\begin{aligned} \text{Total dry mortar for 1 cu m lime concrete} \\ &= 0.40 \text{ (lime, surkhi mortar)} \end{aligned}$$

Therefore the following materials are required.

$$\begin{aligned}\text{Lime} &= (1 \times 0.40) / 3 \\ &= 0.13 \text{ cu m}\end{aligned}$$

$$\begin{aligned}\text{Surkhi} &= (2 \times 0.40) / 3 \\ &= 0.27 \text{ cu m}\end{aligned}$$

$$\text{Aggregate (brick ballast)} = 1.00 \text{ cu m}$$

*Materials required for 1 cu m lime concrete 1:2*

Lime	0.13 cu m	} Ans.
Surkhi	0.27 cu m	
Brick ballast	1.00 cu m	



**ANALYSIS OF RATES OF  
DIFFERENT ITEMS OF WORK.**

<b>1. Excavation for foundation:</b>	<b>payment % cu m</b>
(a) <i>Materials at the site for % cu m</i>	<i>nil</i>
<i>No material is required</i>	<i>Rs. P.</i>
 (b) <i>labour for % cu m</i>	
<i>Mazdoor 33 nos. @ 250.00/day</i>	<i>= 8250.00</i>

<i>Mason 1 no. @ 450.00</i>	<i>=</i>	<i>450.00</i>
<i>Sundries and Tand P 3%</i>		
<i>on labour</i>	<i>=</i>	<i>261.00</i>
<i>Total</i>	<i>=</i>	<i>8961.00</i>
<i>(c) Add 10% contractor's profit</i>	<i>=</i>	<i>896.10</i>
<i>grand total</i>	<i>=</i>	<i>9857.10</i>
<i>say Rs.</i>	<i>=</i>	<i>9857.00</i>

**Rate per % cu m = Rs. 9857.00**

<b>2. Earth filling under floors</b>	<b>payment % cu m</b>
(a) <i>Materials at site for %cu m</i>	<i>Rs.P.</i>
<i>No material is required</i>	<i>nil</i>
(b) <i>Labour for % cu m</i>	
<i>Majdoor 18nos. @ 250.00/day</i>	<i>= 4500.00</i>
<i>Bhishti 1/2no. @ 250.00/day</i>	<i>= 125.00</i>
<i>Sundries and Tand P 3% on labour 465.00</i>	<i>= 123.75</i>
<i>total</i>	<i>= 4748.75</i>
<i>Add 10% contractor's profit</i>	<i>= 474.87</i>
	<hr/>

<i>G.Total = 5223.62 say Rs. = 5224.00</i>	
<b>Rate per % cu m = Rs. 5224.00</b>	
<b>3. Cement concrete 1:4:8 in foundations</b>	
(a) <i>Materials at site for 1 cu m</i>	<i>payment per cu m</i>
<i>Cement 3.41 bags @ 270 bag = 929.70</i>	
<i>Sand 0.47 cu m @ 800.00 per cu m = 376.00</i>	

*Brick ballast 0.94 cu m @ 800.00*  
*= 752.00*

*Cost of labour for 10 cu m = 7520.00*

*(b) Labour for 10 cu m Rs. P*

*Mason 1 @ 400.00/ day = 400.00*

*Mazdoors 15 @ 250.00/ day = 3750.00*

*Bhishti 2 @ 250.00/ day = 500.00*

*Sundries and Tand P @ 3%*

*on labour = 139.50*

- *Cost of for 10 cu m = 12309.50*
- *Cost of for 1 cu m = 12309.50/10*
- *= 1230.95*
- **PROBLEM:** *Conglomerate floor 4 cm thick of cement concrete 1:2:4 over 10 cm thick cement concrete 1:6:18 over 10 cm sand filling.*

calculation of material for 10 sq m

(1) Wet mortar for cement concrete

$$1:2:4 = 10 \text{ sq m} * 4 \text{ cm}$$

$$= 10 * 4 / 100$$

$$= 0.40 \text{ cu m}$$

$$\text{Dry mortar} = 0.40 * 1.54 = 0.616 + 0.62 \text{ cu m}$$

$$\text{Ratio} = 1:2:4 \quad \text{Sum} = 1+2+4=7$$

$$\text{Cement} = 1 * 0.62 * 28.8 / 7 = 2.55 \text{ bags}$$

$$\text{Sand} = 2 * 0.62 / 7 = 0.18 \text{ cu m}$$

$$\text{Crusher} = 4 * 0.62 / 7 = 0.36 \text{ cu m}$$

(2) Wet mortar for cement concrete 1:6:18

$$= 10 \text{ sq m} * 10 \text{ cm}$$

$$= 10 * 10 / 100$$

$$= 1 \text{ cu m}$$

$$\text{Dry mortar } 1 * 1.54 = 1.54 \text{ cu m}$$

$$\begin{aligned} \text{Ratio} &= 1:6:18 = 1+6+18 \\ &= 25 \end{aligned}$$

$$\begin{aligned} \text{Cement} &= 1 * 1.54 * 28.8 / 25 \\ &= 1.78 \text{ bags} \end{aligned}$$

$$\begin{aligned} \text{Sand} &= 6 * 1.54 / 25 \\ &= 0.37 \text{ cu m} \end{aligned}$$

$$\begin{aligned} \text{Brick ballast} &= 18 * 1.54 / 2 \\ &= 1.11 \text{ cu m} \end{aligned}$$

$$\begin{aligned} \text{(3) Sand for 10 sq m} &= 10 \text{ sq m} * 10 \text{ cm} \\ &= 10 * 10 / 10 \end{aligned}$$

$$= 1 \text{ cu m}$$

Total dry mortar for 10 sq m conglomerate flooring.

$$\text{Cement} = 2.55 + 1.78$$

$$\text{Sand} = 0.18 + 0.37 + 1.00$$

$$\text{Crusher} = 0.46$$

(a) Materials at site for 10 sq m Rs.P

Cement 4.33 bags @ 270.00/bag = 1170.00

sand 1.55 cum@ 800.00 per cu m = 1240.00

Crusher 0.36 cu m @1200 /cu m = 432.00

Brick ballast 1.11 cu m@ 800 / cu m = 888.00

Cost of material for 10 sq m =3730.00

(b) Labour for 10 sq m Rs. P

Mason 2@ 400.00/ day = 900.00

Mazdoor 3@ 250.00/day = 750.00

Bhishti 1@ 250.00 / day = 250.00

Sundries T and P 3% on labour  
= 57.00

Cost of labour for 10 sq m = 1957.00

Cost of material and labour for 10 sq m  
=5687.00

Add 10% contractor's profit =  
568.70

and total = 6255.70

Rate for 10 sq m = Rs.6256.00

***Rate per sq m = Rs.625.60***