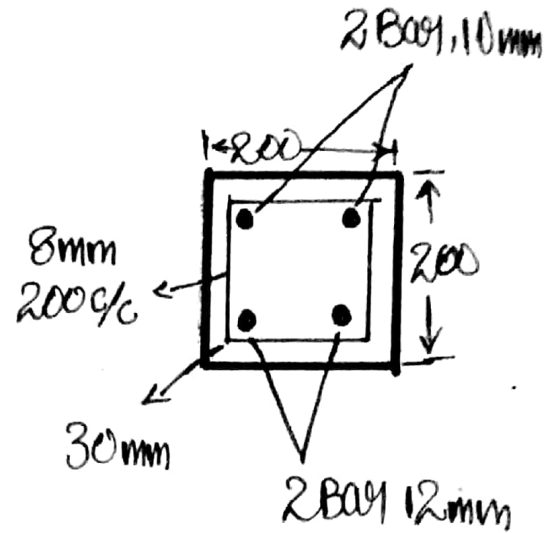
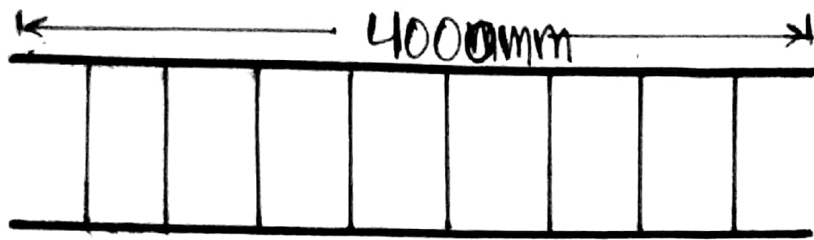


|           |   |                                  |
|-----------|---|----------------------------------|
| Name      | * | M. HAROON                        |
| ID        | * | 7770                             |
| Section   | * | C                                |
| Subject   | * | Quantity Survey<br>& Estimation. |
| Submitted | * | ENGR. IMTIAZ KHAN                |
| Date      | * | 28/09/20.                        |

~8~

# Ans:02 ; "Bay Bending Schedule for Rec Beam";

Given Beam ;



Beam length = 4000mm

Clear cover = 30mm

Wastage = 5%

Sol ;

**Step:01** ; "Length of bottom Bar "12mm";

Length of steel 12mm = (length of beam - cover) (No bars)

$$= (4000 - 2(30)) \times 2$$

$$= 7880 \text{ mm or } \mathbf{7.880 \text{ m}}$$

**Step:02** "Length of top Bar "10mm"

Length of steel 10mm = (length of beam - cover) (No bars)

$$= (4000 - 2(30)) \times 2$$

$$= 7880 \text{ mm or } \mathbf{7.880 \text{ m}}$$

**Step: 03** (Weight of Bar 12mm Bottom Bars)

$$= \left( \frac{d^2}{162} \right) \times L$$

$$= \left( \frac{(12)^2}{162} \right) \times 5.880$$

$$= \boxed{5.226 \text{ kg}}$$

**Step: 04**

(Weight of Bar 10mm Top Bars);

$$= \left( \frac{d^2}{162} \right) \times L$$

$$= \left( \frac{(10)^2}{162} \right) \times 5.880$$

$$= \boxed{3.629 \text{ kg}}$$

**Step: 05**

(No of Stirrups);

Length of Beam / spacing + 1

$$= \left( \frac{4000}{200} \right) + 1$$

$$= \boxed{21 \text{ NO'S}}$$

**Step:06** (Cutting length of stirrups);

$$(2(x)) + (2(y)) + \text{HOOK}(10d) - \text{Bend}(2d \text{ if } 90^\circ).$$

$$= (2 \times 132) + (2 \times 132) + (2 \times 10 \times 8) - (5 \times 2 \times 8)$$

$$= 608 \text{ mm}$$

$$= 0.608 \text{ m "cutting length"}$$

**Step:07** Total length of stirrups;

$$\text{Cutting length} \times \text{No of stirrups}$$

$$= 0.608 \times 21$$

$$= 12.768 \text{ m}$$

**Step:08** Weight of stirrups;

$$= \left( \frac{d^2}{162} \right) \times L$$

$$= \left( \frac{18^2}{162} \right) \times 12.768$$

$$= 5.044 \text{ kg}$$

# Wastage of steel; 5%

"1"; Weight of Bay 12mm Bottom Bars;

$$= 5.226 \times \frac{5}{100}$$

$$= 0.2613 \text{ kg}$$

So;

$$\text{Total weight} = 5.226 + 0.2613$$

$$= \boxed{5.4873} \text{ kg}$$

"2"; Weight of Bay 10mm Bottom Bars;

$$= 3.629 \times \frac{5}{100}$$

$$= 0.181 \text{ kg}$$

$$\text{Total weight} = 3.629 + 0.181$$

$$= \boxed{3.810} \text{ kg}$$

"3"; Weight of stirrups;

$$= 5.044 \times \frac{5}{100} = 0.252 \text{ kg}$$

$$\text{Total weight} = 5.044 + 0.252$$

$$= \boxed{5.296} \text{ kg}$$

~\*~\*~\*~\*~\*~\*~\*

Ans: 01;

Solution: →

External length of Building

$$= 14' + 14' + 2(1125) + 0.75$$

$$= 31.75$$

External breadth of building.

$$= 12' + 8' + 2(1125) + 0.75$$

$$= 23.75$$

$$\begin{aligned} \text{Plinth area of building} &= 31.75 \times 23.75 \\ &= 754.06 \text{ ft}^2 \end{aligned}$$

$$\text{Rate of construction} = \text{Rs } 300 \text{ / ft}^2$$

$$\begin{aligned} \text{Cost of construction} &= 754.06 \times 300 \\ &= \text{Rs } 226218 \end{aligned}$$

$$\begin{aligned} \text{water supply and Sanity } 10\% &= 226218 \times \frac{10}{100} \\ &= \text{Rs } 22621.8 \end{aligned}$$

Cost of electric supply is 10%.

$$= 226218 \times \frac{10}{100}$$

$$= \text{Rs } 22621.8$$

Cost of gas supply is 5%

$$= 213900 \times \frac{5}{100}$$

$$= \text{Rs } 10695$$

$$\text{Total cost} = 213900 + 21390 + 21390 + 10695$$

$$\text{Rs} = 267375$$

Contingencies 3% of total cost

$$= 267375 \times \frac{3}{100}$$

$$= 8021.25$$

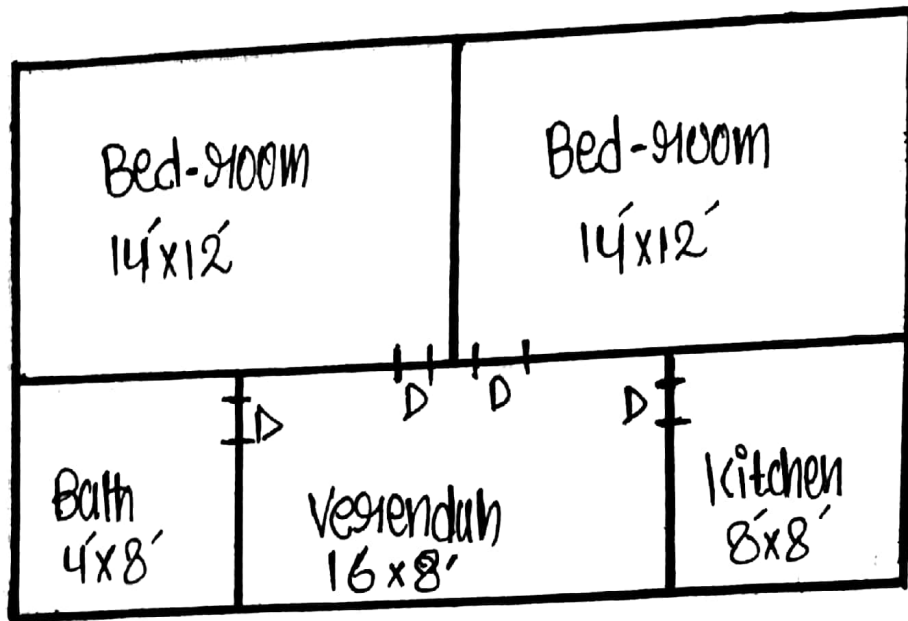
$$\text{Grand total} = 267375 + 8021.25$$

$$= 275396.25$$

\*—\*—\*—\*—\*—\*

Ans: or ;  
"H";

# Calculating internal plaster



Plastered area of rooms = ?

" " kitchen = ?

" " Bath = ?

Height of wall = 3m =  $3 \times 3.28 = 9.84'$

Door Size =  $2m \times 1m = 6.56' \times 3.28'$

Sol

**Step: 01** Rooms; Total wall length;

$$L = 2(14 + 12 + 14 + 12) \\ = 104 \text{ feet.}$$

Kitchen; Total wall length;

$$L = (8 + 8 + 8 + 8) \\ = 32 \text{ feet}$$



Bath, Total wall length;

$$L = 4 + 8 + 4 + 8 \\ = 24 \text{ feet.}$$

**Step: 02**

"Total Area of Wall and Door"

$$\begin{aligned} \text{Total area of Rooms wall} &= L \times H \\ &= 104 \times 9.84 \\ &= 1023 \text{ sq. feet.} \end{aligned}$$

$$\begin{aligned} \text{Total area of kitchen wall} &= L \times H \\ &= 32 \times 9.84 \\ &= 314.88 \text{ sq. feet.} \end{aligned}$$

$$\begin{aligned} \text{Total area of Bath wall} &= L \times H \\ &= 24 \times 9.84 \\ &= 236.16 \text{ sq. feet.} \end{aligned}$$

$$\begin{aligned} \text{Total area of Door} &= \cancel{L} \times H \times W \\ &= \cancel{20} = 6.56 \times 3.28 \\ &= 21.51 \text{ sq. feet.} \end{aligned}$$

Step 03

Deduct area of Doors;

$$\text{Plaster area of rooms} = 1023 - (21.51)2$$

$$= \del{1023 - 43.02}$$

$$= 979.98 \text{ sq. feet.}$$

$$\text{Plaster area of kitchen} = 314.88 - 21.51$$

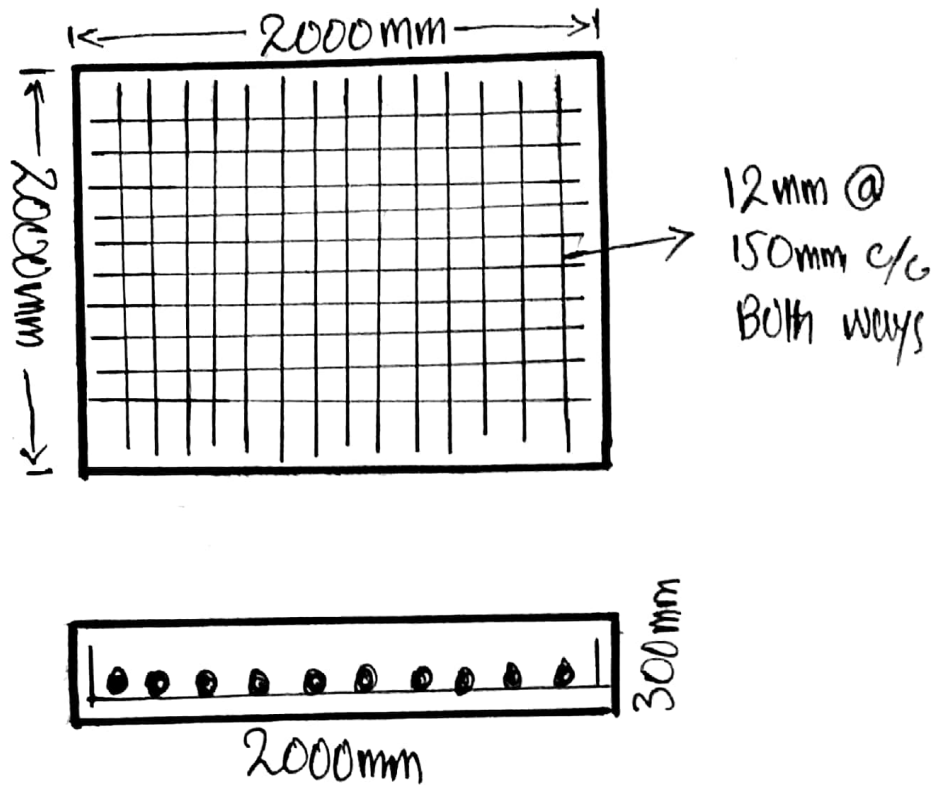
$$= 293.37 \text{ sq. feet.}$$

$$\text{Plaster area of Bath} = 236.16 - 21.51$$

$$= 214.65 \text{ sq. feet}$$

| S.No                                     | Description | L    | B | H    | Q<br>sym        | Rate<br>(Rs) | Remarks          |
|--|-------------|------|---|------|-----------------|--------------|------------------|
| 1  | Rooms - Pla | 104  | - | 9.84 | 1023            |              | FOR<br>1000-9000 |
|  | Kitchen     | 32   | - | 9.84 | 314.88          |              |                  |
|  | Bath        | 24   | - | 9.84 | 236.16          |              |                  |
|  | Door        | 6.56 |   | 3.28 | 21.51           |              |                  |
| After Deduction of Doors. "Plaster area" |             |      |   |      |                 |              |                  |
| 2  | Rooms       |      |   |      | 979.98          |              |                  |
|  | Kitchen     |      |   |      | 293.37          |              |                  |
|  | Bath        |      |   |      | 214.65          |              |                  |
| total                                    |             |      |   |      | = 1488 sq. feet |              |                  |

# Q.3; "BBS OF COLUMN FOOTING";



Clear cover = 50mm

Wastage = 5%

Sol;

**Step:04** Find the effective length.

$$X = \text{length} - \text{Both side covers.}$$

$$= 2000 - 2(50)$$

$$= 1900\text{mm}$$

$$Y = 2000 - 2(50)$$

$$= 1900\text{mm}$$

**Step: 02**; Find the No's of Bars

$$\text{No of Bars (x)} = \frac{\text{eff length}}{\text{spacing}} + 1$$

$$= \frac{1900}{150}$$

$$= (1900/150) + 1 = 13.6$$

$$= \boxed{14 \text{ No's}}$$

$$\text{No of Bars (y)} = \frac{\text{Eff length}}{\text{spacing}} + 1$$

$$= (1900/150) + 1 = 13.6$$

$$= \boxed{14 \text{ No's}}$$

**Step: 03**; Find the cutting length

$$\text{Along x} = (\text{Eff. length} + \text{bends}) - \text{bent deductions}$$

$$= 1900 + 2(300 - 2(50)) - 2(2 \times 12)$$

$$= 2252 \text{ mm}$$

04;

$$= \boxed{2.25 \text{ m}}$$

$$\text{Along "y"} = (\text{Eff length} + \text{Bend}) - \text{bent deduction}$$

$$= 1900 + 2(300 - 2(50)) - 2(2 \times 12)$$

$$= 2252 \text{ mm}$$

09 ;

$$= 2.25 \text{ m}$$

| Sr. No         | Type of Bar | Dia (mm) | No | L (m) | T. Length (m) | Weight (kg/m) | Total weight (kg) | Notes                            |
|----------------|-------------|----------|----|-------|---------------|---------------|-------------------|----------------------------------|
| 1              | X           | 12       | 14 | 2.25  | 31.5          | 0.89          | 28.035            | $\frac{12^2}{162} \times = 0.89$ |
| 2              | Y           | 12       | 14 | 2.25  | 31.5          | 0.89          | 28.035            | $\frac{12^2}{162} = 0.89$        |
| <u>Total</u>   |             |          |    |       |               |               | 56.07 kg          |                                  |
| Add 5% wastage |             |          |    |       |               |               | 2.80 kg           |                                  |
| G.W            |             |          |    |       |               |               | 58.87 kg          |                                  |



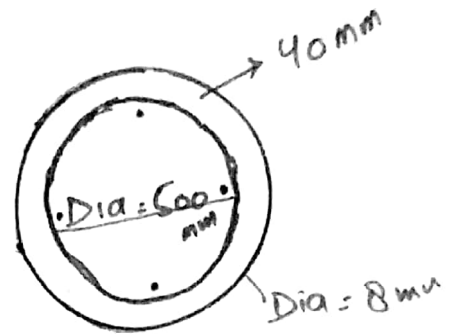
Ans: 0.4796 (4)

## Circular Column

$$\text{Dia of Column} = 500 \text{ mm}$$

$$\text{Dia of Stirrup c/c} = 500$$

$$= 500 - (2 \times 40) - (4 + 4) = \boxed{420 \text{ mm}}$$



$$\text{Perimeter of Stirrup} = \pi d = 3.14 \times 420$$

$$= \boxed{1319.64 \text{ mm}}$$

$$\text{Hook length} = 10 D$$

$$= 10 \times 8 = 80 \times 2 = \boxed{160 \text{ mm}}$$

$$\text{Cutting length of Stirrup} = \text{perimeter of Stirrup} + \text{hook length}$$

$$= 1319.64 + 160 \text{ mm}$$

$$= 1479.64$$

1000

$$= \boxed{1.4796 \text{ m}}$$

Ans: 05:

(ADR)  
Alternative dispute resolution.

Main types of ADR

- i) Arbitration
- ii) Mediation
- iii) Negotiation
- iv) Conciliation

→ Arbitration:

Arbitration is the adjudication of a dispute by one or more specially appointed experts or lawyer arbitration involve an independent third party make suggestions and actually imposes a decision on the parties.

(a) choosing - An arbitrator.

parties are free to decide between themselves whom they will appoint as an arbitrator.

where there is no agreement a party can apply to a court under the arbitration Act 1996 s.18 to have appointed by the court.

(b) Arbitration - By contract.

Arbitration is common

in many trade parties.

for instance many insurance policies contain a clause stating that any dispute over a claim will first be referred to an arbitrator before any court claim is made.

(c) Arbitration Act - 1996 - s.9

where a party try to ignore arbitrator clause agreed in a contract court in which he or she is trying to make his claim will order a stay.



● people who work as arbitrators often belong to the Chartered Institute of Arbitrators

● Arbitration is governed by the Arbitration Act 1996.

● Arbitration is binding.

## ➤ Arbitration Act 1996, s.1

- (a) the object of arbitration is to obtain the fair resolution of disputes by an impartial tribunal without unnecessary delay in the public interest.
- (b) the parties should be free to agree how their disputes are resolved subject only to such safeguards as are necessary in the public interest.
- (c) matters governed by this part the court should not intervene except as provided by this part.

## ⇒ Mediation:

parties in a dispute may refer their dispute to an independent third party who will act as a go-between.

mediation involve an impartial third party who listens and directs discussion but does not suggest outcomes.

the mediator will help the parties discuss their dispute in order to try settle it.

Mediation is not binding.

## ⇒ Negotiation.

negotiation require parties to bargain without outside assistance.

exchanging compromises to reach a solution.

in this approach parties can begin bargaining discussion at the beginning.

of a dispute without the presence of legal representation.

like mediation settlement discussion within negotiation context are controlled entirely by parties.

negotiation context are controlled entirely by parties.

in parties negotiation is not binding.



# Cancellation;

Similar to mediation but  
the conciliator may suggest a way  
to settle the dispute.  
If parties in litigation refuse an offer  
of conciliation without good reason  
even if they win their case, the  
Judge can refuse to award them  
some or all of their legal costs.  
Conciliation is not binding.

