

Rajshahi University of Engineering and Technology  
Department of Civil Engineering

Chapter No: 01

Chapter Name: Details of Estimating.

Chapter No: 02

Chapter Name: Preparation of an Estimate for the quantities and cost of items for a Residential Building.

Subject: Details of Estimating.

Course No: CE-2220

Submitted By -

Name: Kazi Rashadul Islam Roni

Class: 2nd year Even Semester

Roll No: 1800131

Session: 2018-19

# **Rajshahi University of Engineering & Technology**

Department of Civil Engineering

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## Estimation

### Estimation:

Estimation is the scientific way to work out the approximate cost of an engineering project before execution of the work.

It is totally different from calculation of the exact cost after completion of the project.

Estimation requires a thorough knowledge of construction procedures and cost of materials and labour in addition to skill, experience, foresight and good judgement.

### Estimate:

An estimate of the cost of a construction job is the probable cost of that job as computed from plans and specifications.

For a good estimate, the actual cost of the proposed work after completion should not differ by more than 5 to 10% from its approximate cost estimate, provided there are no unusual, unforeseen circumstances.

### Need for estimate:

1. It'll help to work out the approximate cost of the project in order to decide its feasibility with respect to the cost and to ensure the financial resources, if the proposal is approved.

2. Requirements of controlled materials such as cement, steel can be estimated for making applications of the controlling authorities.

3. It is used for framing the tenders for the works and to check contractor's work during and after the its execution for the purpose of making payments to the contractor.

4. From quantities of different times of works calculated in detailed estimation, resources are allocated to different activities of the project and ultimately their durations and whole planning and scheduling of the project is carried out.

### Site conditions affecting the overall cost:

Each type of work requires a different method of construction. Construction may be of an ordinary house or office and it may also be of a Dam, Tunnel, Multistory building, Airport, Bridge, or a Road already in operation. Each of these works needs totally different construction techniques, types of machinery and formwork.

Quality of labour and labour output varies in different localities.

Weather conditions greatly affect the output and hence the overall cost.

Ground conditions vary and change the method of construction. For example, excavation may be dry.

wet, hard, soft, shallow or deep requiring different efforts.

The work may be in open ground such as fields or it may be in congested areas such as near or on the public roads, necessitating extensive watching, lightening and controlling efforts etc.

The source of availability of a sufficient supply of materials of good quality is also a factor.

The availability of construction machinery also affects the method of construction.

Access to the site must be reasonable. If the access is poor, temporary roads may be constructed.

### Essential qualities of a good estimator:

- In preparing an estimate, the Estimator must have good knowledge regarding the important rules of quantity surveying.
- He must thoroughly understand the drawings of the structure for which he is going to prepare an estimate.
- He must also be clearly informed about the specifications showing nature and classes of works and the materials to be used because the rates at which various types of works can be executed depend upon its specifications.

→ A good estimator of construction costs should possess the following capabilities also:-

1) A knowledge of the details of construction work.

- ii) Experience in construction work.
- iii) Having information regarding the materials required, machinery needed, overhead problems and costs of all kinds.
- iv) Good judgement with regard to ~~to~~ different localities, different job and different workmen.
- v) Selection of a good method for preparing an estimate.
- vi) Ability to be careful, thorough, hard working and accurate.
- vii) Ability to collect, classify and evaluate data.
- viii) Ability to visualize all the steps during the process of construction.

→ Before preparing the estimate, the estimator should visit the site and make a study of conditions there. For example, if the construction of a large building is planned, the estimator or his representative should visit the site and

- Note the location of the proposed building.
- Get all data available regarding the soil.
- Make a sketch of the site showing all important details.
- Obtain information concerning light, power and water.
- Secure information concerning banking facilities.
- Note conditions of streets leading to railway yards and to material dealers, and
- Investigate general efficiency of local workman.

Types of Estimates:

There are two main types:-

- 1) Rough cost estimate
- ii) Detailed estimate

→ Depending upon the purpose of estimation, some types of detailed estimates are as follows:-

- a. Contractor's estimate
- b. Engineer's estimate
- c. Progress estimate

### Rough cost estimate:

Estimation of cost before construction from plans or architectural drawings of the project scheme, when even detailed or structural design has not been carried out, is called Rough cost estimate.

- These estimates are used for obtaining Administrative Approval from the concerning Authorities.
- Sometimes, on the basis of rough cost estimates, a proposal may be dropped altogether.
- Unit cost is worked out for projects similar to the project under consideration carried out recently in nearly the same site conditions.
- Unit cost means cost of execution of a unit quantity of the work.
- To find rough cost of any project, this worked average unit cost is multiplied with total quantity of the present work in the same units.
- For example, in case of a building, plinth area (sq. ft) of the proposed building is worked out, which is then multiplied by the cost per unit area (Rs./ft<sup>2</sup>) of similar building actually constructed in the near past in nearly the same site conditions, to find out the rough cost estimate of the building.
- This cost is sometimes adjusted by the average percentage rise in the cost of materials and wages.

→ The rough cost estimate may be prepared on the following basis for different types of projects:-

1. Cost per square foot of covered area (plinth area) is the most commonly adopted criterion for preparing rough cost estimate for most of the residential buildings.

2. For public building, cost per person (cost per capita) is used, for example,

Student hostel ----- cost per student

Hospitals ----- cost per bed

Hotel ----- cost per guest

3. Cost per cubic foot is particularly suitable for commercial offices, shopping centers and factory etc.

4. For water tank/reservoir, cost may be worked out on the basis of capacity in gallons of water stored.

5. For roads and railways, cost may be found out per mile/kilometer of length.

6. For streets, costs may be per hundred feet/meters of length.

7. In case of bridges, cost per foot/meter of clear span may be calculated.

### Detailed Estimate:

Detailed estimates are prepared by carefully and separately calculating in detail the costs of various items of the work that constitute the whole project from the detailed working drawings after the design has been finalized.

• The mistakes, if any, in the rough cost estimate are eliminated in detailed estimate.

- Detailed estimates are submitted to the competent authorities for obtaining technical sanction.
- The whole project is sub-divided different items of work or activities. The quantity of each item is then calculated separately from the drawings as accurately as possible. The procedure is known as "taking out of quantities".
- The quantities for each item may be estimated and shown in the pattern which is called "Bill of quantities".
- The unit, in which each item of the work is to be calculated, should be according to the prevailing practice as followed in various departments of the country.
- Each item of the work is then multiplied by its estimated current rate calculated by a fixed procedure to find out cost of the item.
- The rates are usually as per schedule of Rates for the locality plus a premium to allow for rise in labour and material rates over and above the schedule of rates.
- A percentage, usually 5% is also provided on the total estimated cost for the work to allow for the possible contingencies due to unforeseen items or expenditure on other causes besides 2% - establishment charges.

☐ → Besides drawings and details of measurements and calculation of quantities (Bill of Quantities), the following documents are also usually submitted with the detailed estimate for obtaining Technical Sanction:

1. A report explaining History, necessity and main feature

of the project, its design and estimate etc.

2. Specifications laying down the nature and class of work and material to be used in various parts of the work.

3. The abstract of cost (priced Bill of Quantities under each sub-head, rate per unit of measurement and cost.

4. Calculation sheets showing calculations for important parts of the structure. In fact, in estimating the art and skill lies only in the computation of details without any omissions, of all parts of the building or work.

### Classification depending upon purpose of detailed estimate:

1. Contractor estimate: It is made by the contractor for determining the price or prices to be bid. It is usually a carefully prepared detailed estimate.

2. Engineer's estimate: This type of estimate is made by the engineer (consultant) usually for the purpose of financing the work and on checking bids and running bills submitted by contractors.

3. Progress estimates: These are made by the engineer at regular intervals for the completed parts of the project during the progress of the work for determining the amounts of partial payments to be the contractor.

Unforeseen items in detailed estimate: While preparing a detailed estimate, one had to be very careful to see that all items of the work are incorporated.

It is likely that a few items, though unimportant in nature might have been overlooked and which may result in raising the estimate of the project.

There may be also certain unforeseen circumstances affecting the project.

### Methods of Detailed Estimate:

• The dimensions, length, breadth and height or depth are to be taken out from the working drawings (plan, elevation and section)

• Junctions of walls, corners and the meeting points of walls require special attention.

• For symmetrical footings, which is the usual case earth-work in excavation in foundations, foundation concrete brickwork in foundation and plinth and brickwork in super structure may be estimated by either of the two methods:

- 1) Separate or individual wall method
- 2) Center line method.

### 1) Separate or individual walls method:

• The walls running in one direction are termed as 'long walls' and the walls running in the transverse direction, as 'short walls', without keeping in mind which wall is lesser in length and which wall is greater in length.

- Lengths of long walls are measured on found 'out-to-out' and those of short walls as 'In-to-In'.
- Different quantities are calculated by multiplying the length by the breadth and height of the wall.
- The same rule applies to the excavation in foundation, concrete bed in foundation, D.P.C, masonry in foundation and super structure etc.
- For symmetrical footing on either side, the center line remains same for super structure, foundation and plinth. So, the simple method is to find out the centre-to-centre lengths of long walls and short walls from the plan.

#### Long wall length out-to-out:

Long wall length = center to center length + half breadth on one side + half breadth on other side.  
 = center to center length + one breadth

#### Short wall length in-to-in:

Short wall length = center to center length - one breadth

- This method can also be worked out in a quicker way, as follows.

#### a. For long walls:

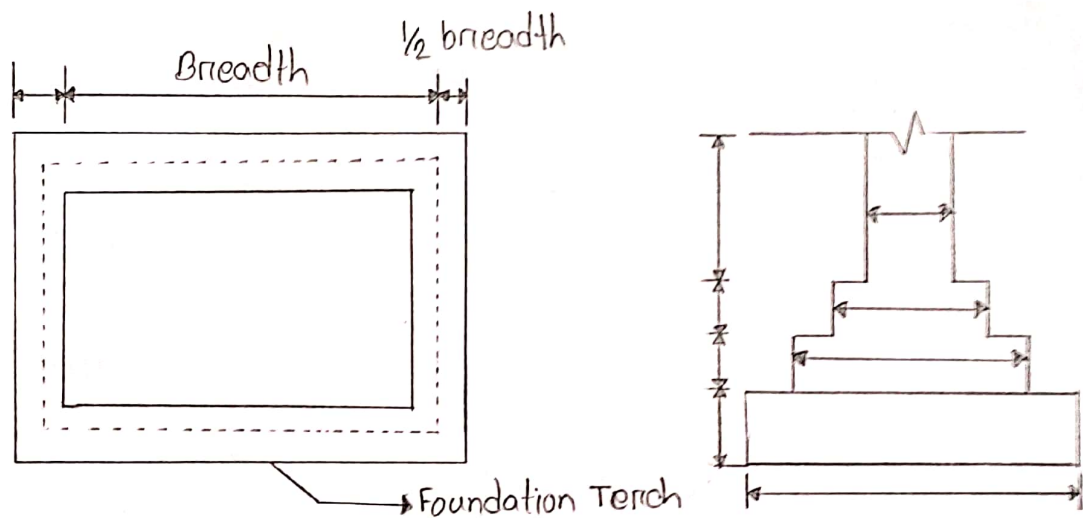
- First of all, find the length of the foundation trench of the long wall 'out-to-out' in the same manner as explained above.

- The length of the foundation concrete is the same.
- For the length of the first footing or first step of the brick wall, subtract two affects ( $2 \times 6'' = 12''$ ) in the foundation concrete from the length of the trench or

concrete.

• For the second footing subtract from the length of the 1st footing two offsets ( $2 \times 2.25'' = 4.5''$ ), for 3rd footing subtract from the length of the 2nd footing 2 offsets ( $4.5''$ ) and in this way the long walls up to the super structure.

b. For short walls: Follow the same method but instead of subtracting add two offsets to get the corresponding lengths in-to-in.



2. Centre line method:

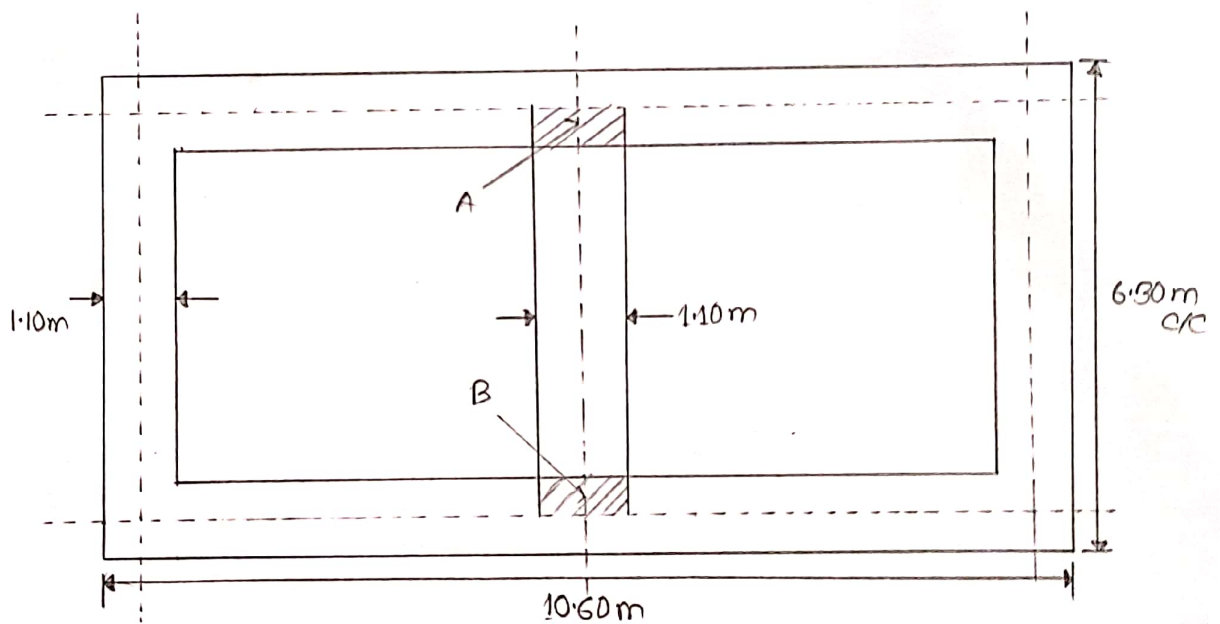
• In this method, total length of centre lines of walls, long and short has to be found out.

• Find the total length of centre lines of walls some type having same type of foundations and footing and then find the quantities by multiplying total centre length by the respective breadth and the height.

• In this method, the length will remain the same for

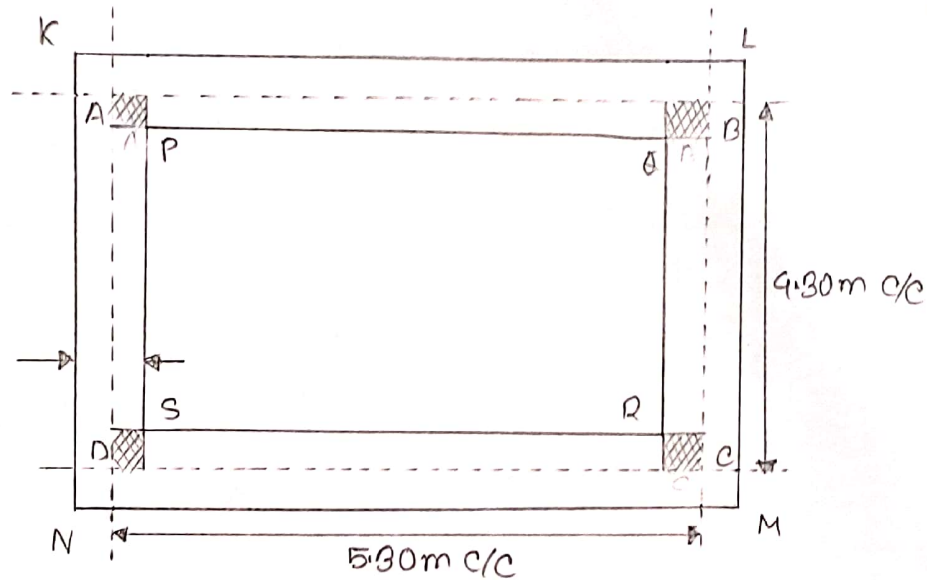
excavation in foundations, for concrete in foundations, for all footings and for superstructure (with slight difference when there are cross wall or number of junctions)

- This method is quicker but requires special attention and considerations at the junctions, meeting points of partition or cross walls.
- For buildings having cross or partition walls, for every junctions half breadth of the respective item of footing is to be deducted from the total centre length.



- For buildings having different <sup>or</sup> types of walls, each set of walls shall have to be dealt ~~separately~~ separately.
- Suppose the outer walls (main walls) are of A type and inner cross walls are of B type.
- Then all A type walls shall be taken jointly first, and then all B type walls shall be taken together separately.
- In such case, no deduction of any kind need be made for A type walls but when B type walls are taken for

each junction deduction of half breadth of A type walls (main walls) shall have to be made from the total centre length of B type walls.



- At corners of the building where two walls are meeting, no subtraction or addition is required.
- In the figure, the double cross-hatched areas - marked P, Q, R, S come twice, while blank areas, A, B, C, D do not come at all. But these portions being equal in magnitude, we get the correct quantity.

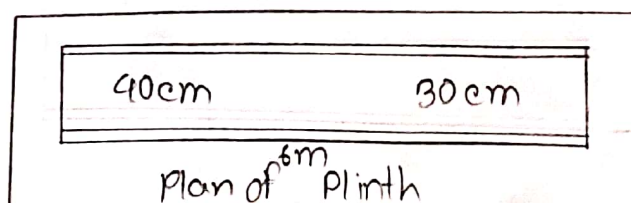
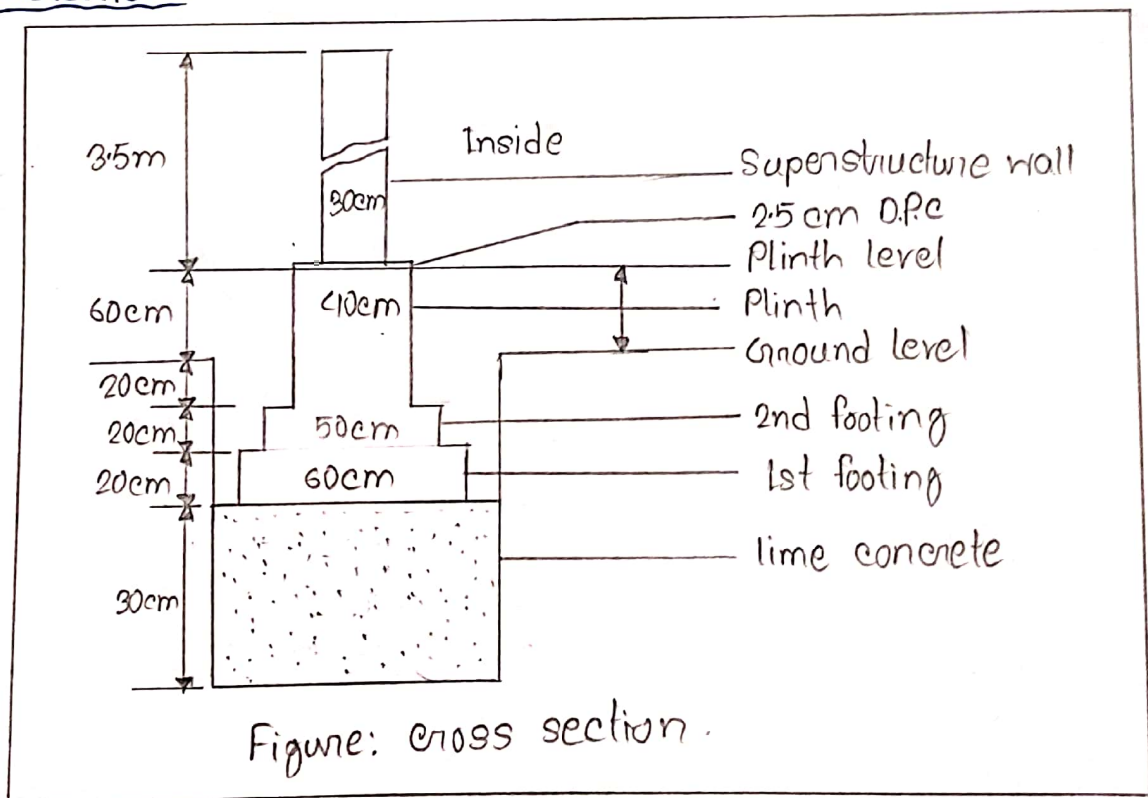
Example of methods of Estimation:

▣ Prepare a detailed estimate of part of a wall of a building from the given plan and section and general specification.

General specifications:

- 1) Foundation concrete shall be of lime concrete.
- 2) Foundation and plinth shall be of 1st class brickwork in lime mortar.
- 3) Damp proof course - 2.5cm c.c 1:1.5:3 with water proofing compound.
- 4) Superstructure - 1st class brickwork in lime mortar.
- 5) Wall finishing - Inside wall 12mm cement plastered 1:6 and white washed coats.

→ Solution:



Details of measurement and calculation of quantities:

Item no	Description of items of work	No.	Dimensions			Quantities or Contents	Total Quantities
			Length (m)	Breadth (m)	Height/Depth (m)		
1.	Earthwork in excavation in foundation	1	6.00	0.80	0.90	4.32	4.32 cu.m
2	Lime concrete in foundation.	1	6.00	0.80	0.30	1.44	1.44 cu.m
3	1st class brickwork in lime mortar in foundation and plinth						
	1st footing	1	6.00	0.60	0.20	0.72	3.24 cu. m
	2nd footing	1	6.00	0.50	0.20	0.60	
	Plinth wall upto G.L.	1	6.00	0.40	0.20	0.48	
Plinth wall above G.L.	1	6.00	0.40	0.60	1.44		
4	2.5cm Damp proof course (D.P.C) c.c 1:1.5:3	1	6.00	0.40	0.25	0.60	0.60 cu.m
5	First class brickwork in lime mortar for superstructure	1	6.00	0.30	3.50	6.3	6.30 cu. m
6	12mm Plaster of cement sand 1:6 - Inside	1	6.00	-	3.50	21.0	46.38 sq. m
	Outside (including 13mm below G.L)	1	6.00	-	4.23	25.38	
7	White washing 3 coats (Inside)	1	6.00	-	3.50	21.0	21.0 sq. m
8	Colour washing 2 coats over one coat of white washing (outside above G.L)	1	6.00	-	4.10	24.6	24.6 sq. m

Estimate the quantities of brickwork and plastering required in a wall 4m long, 3m high and 30cm thick. Also calculate the cost if the rate of the brickwork is 320 taka per cu. m and of plastering is 8.5 per sq. m.

Solution:

$$\begin{aligned}\text{Quantity of brickwork} &= L \times B \times H \\ &= 4\text{m} \times 3\text{m} \times 0.30\text{m} \\ &= 3.6 \text{ cu. m}\end{aligned}$$

$$\begin{aligned}\text{Quantity of plastering (two face)} &= 2 \times L \times H \\ &= 2 \times 4\text{m} \times 3\text{m} \\ &= 24 \text{ sq. m}\end{aligned}$$

$$\begin{aligned}\text{cost of brick work} &= 3.6 \times 320 \\ &= 1152 \text{ taka}\end{aligned}$$

$$\begin{aligned}\text{cost of plastering work} &= 24 \times 8.5 \\ &= 204 \text{ taka}\end{aligned}$$

$$\begin{aligned}\text{Total cost} &= 1152 + 204 \\ &= 1356 \text{ taka}\end{aligned}$$

Ans.

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Department of Civil Engineering

**Chapter No: 02**

**Chapter Name: Preparation of an Estimate for the quantities  
and cost of items for a Residential Building**

## **Submitted By**

**Name** : Kazi Rashadul Islam Roni

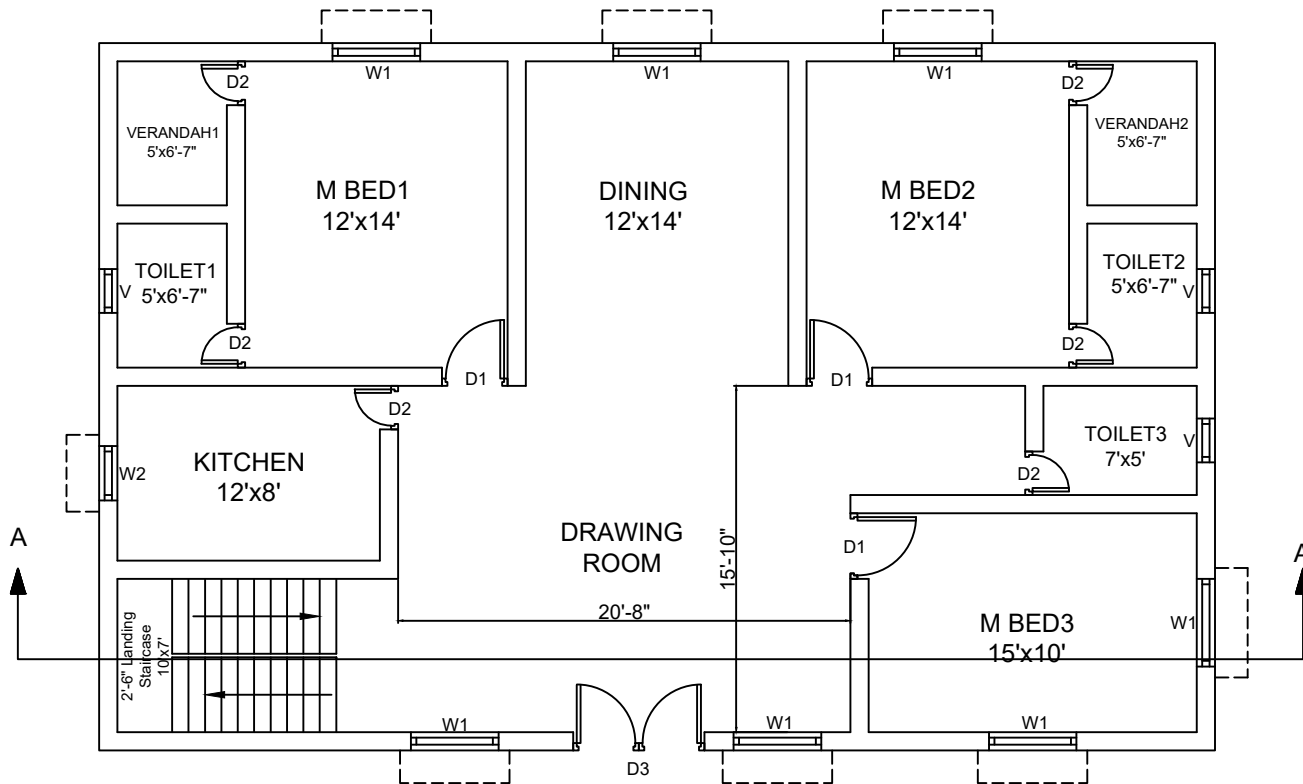
**Roll** : 1800131

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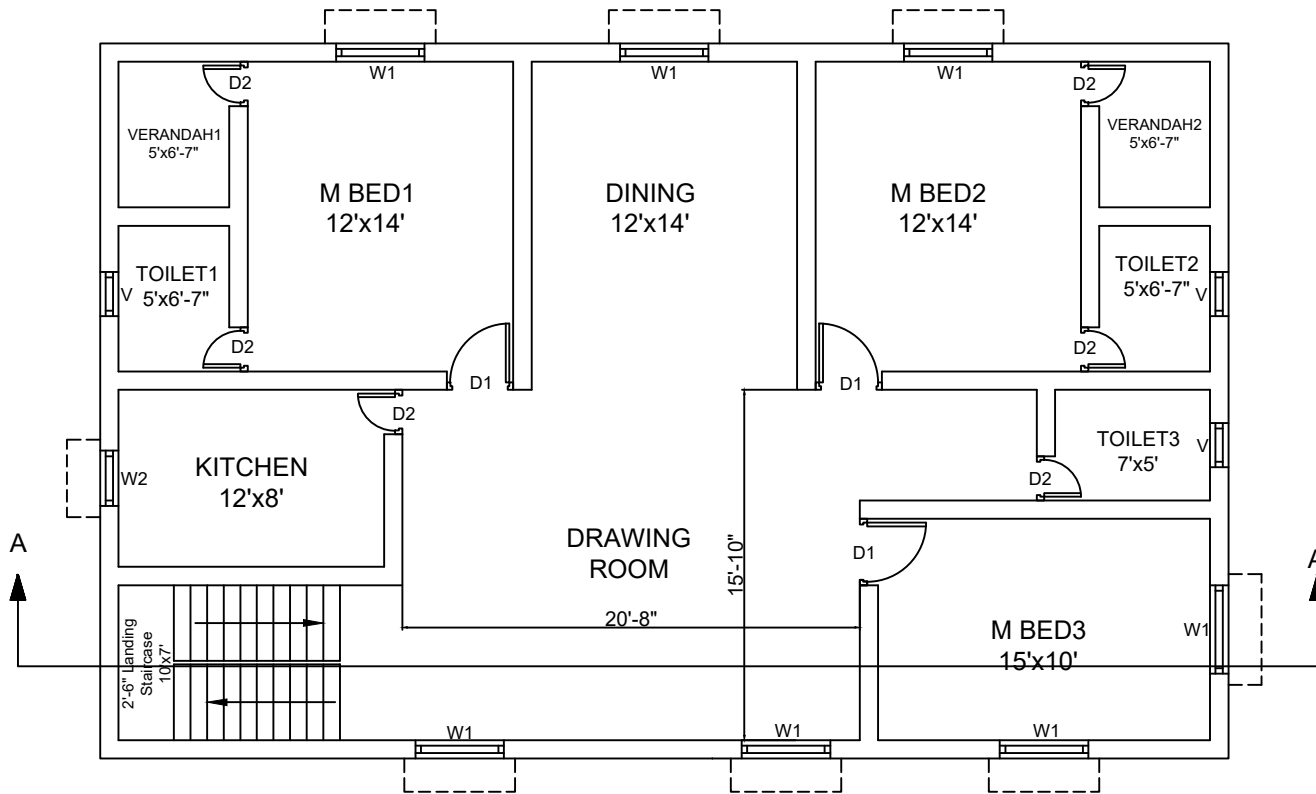
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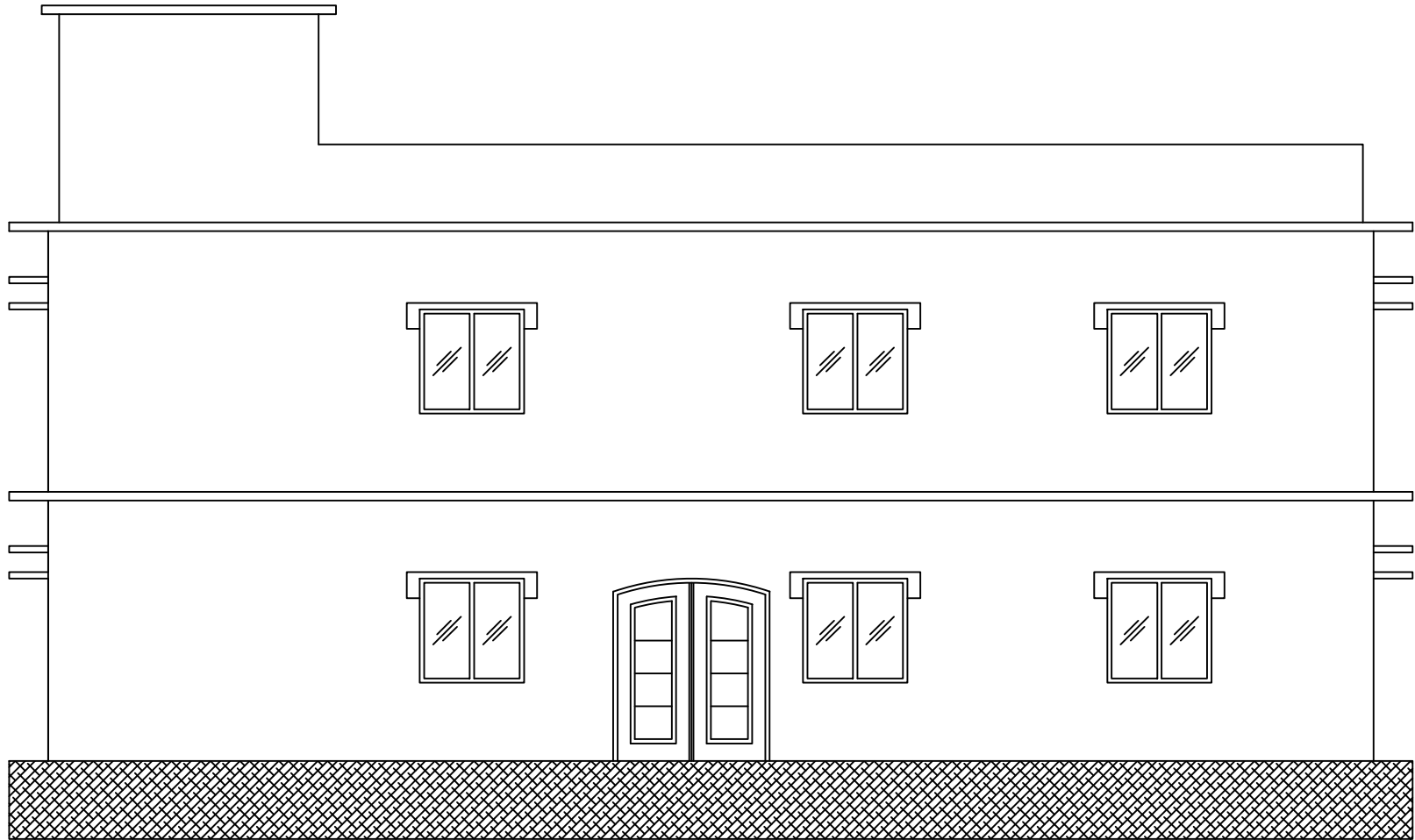
Ground Floor Plan

Dimension Box	
Name	Dimension
D1	3'x7'
D2	2'x7'
D3	6'x7'
W1	4'x4'
W2	3'x4'
V	2'x7'

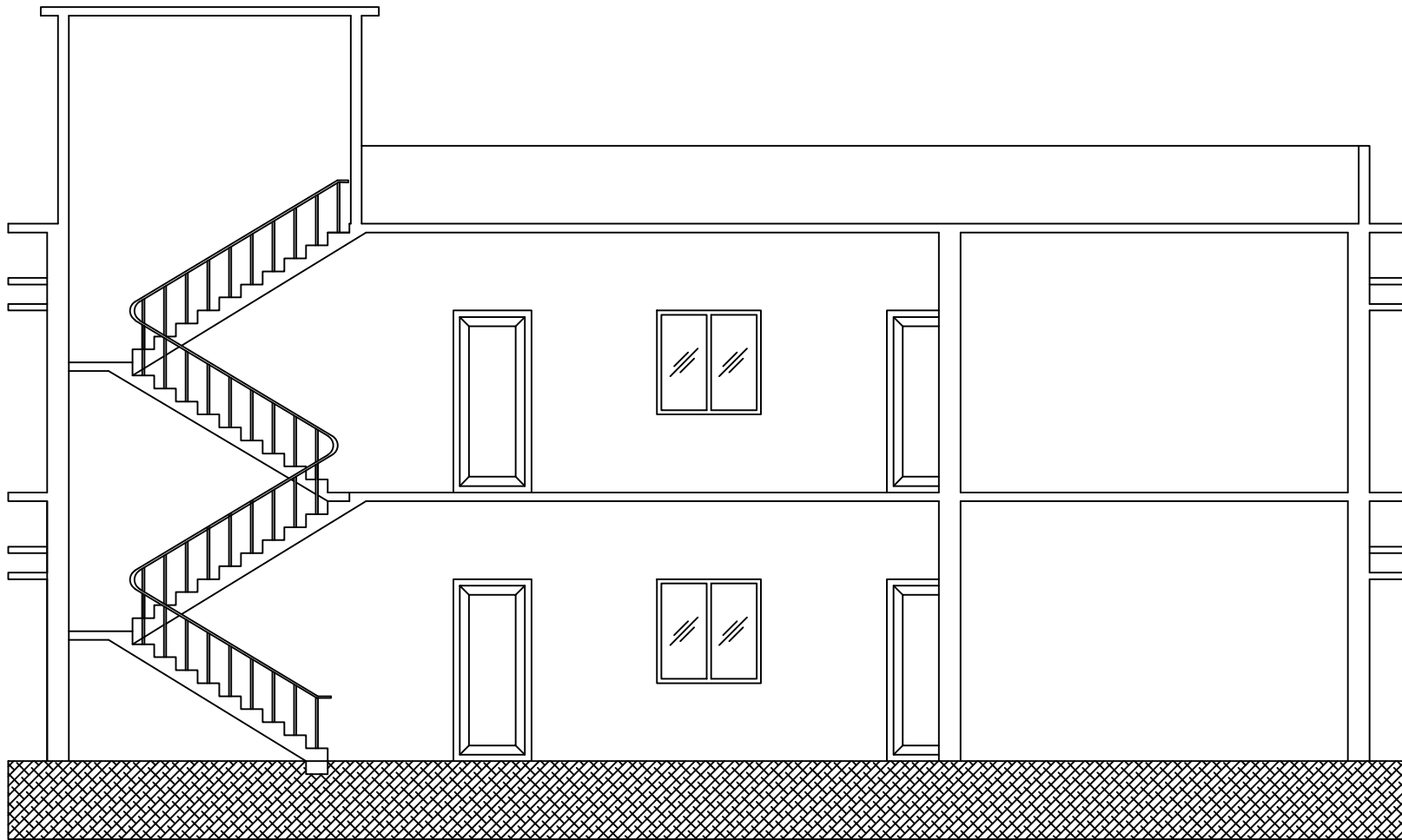


1st Floor Plan

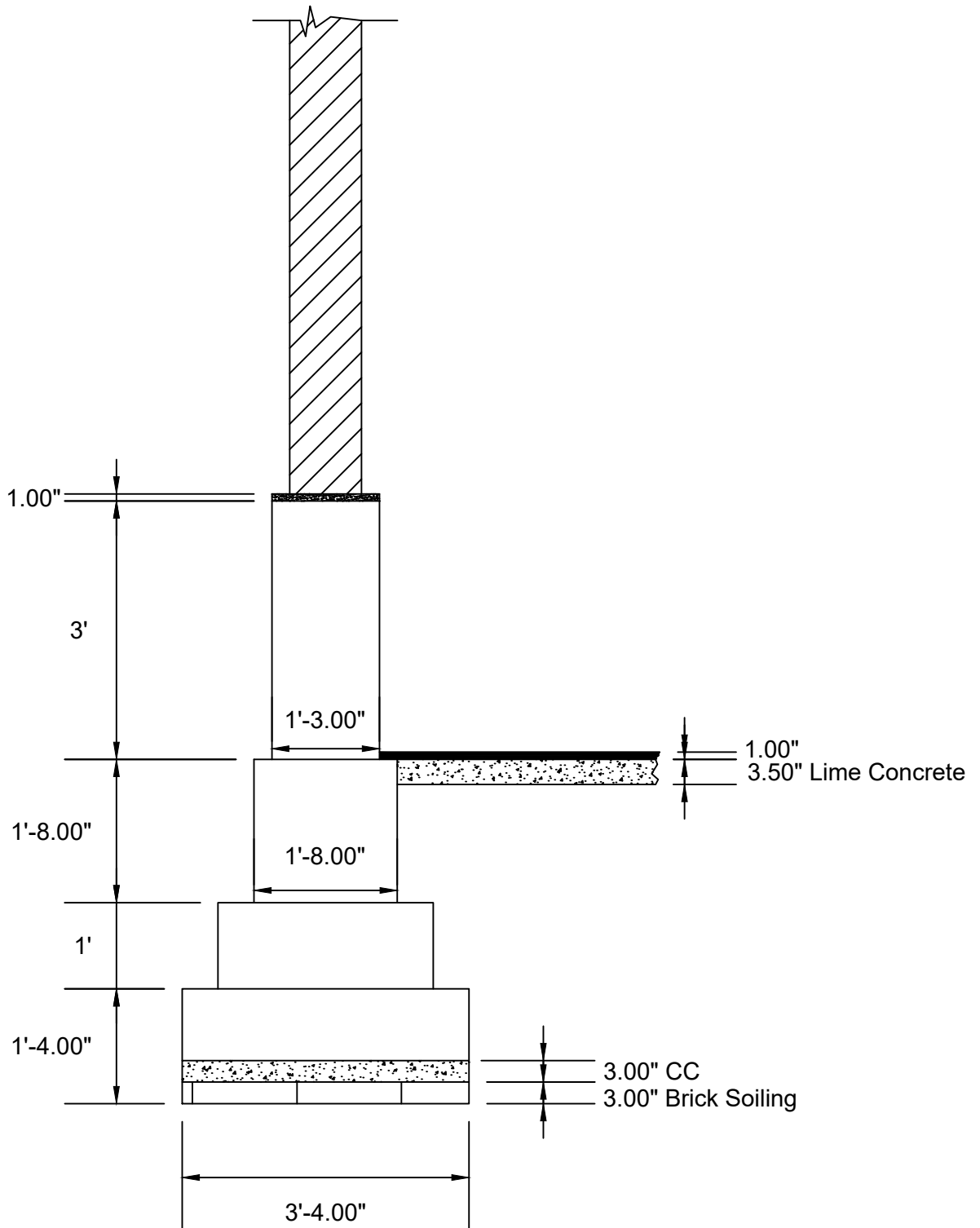
Dimension Box	
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D2	2'x7'
W1	4'x4'
W2	3'x4'
V	2'x7'

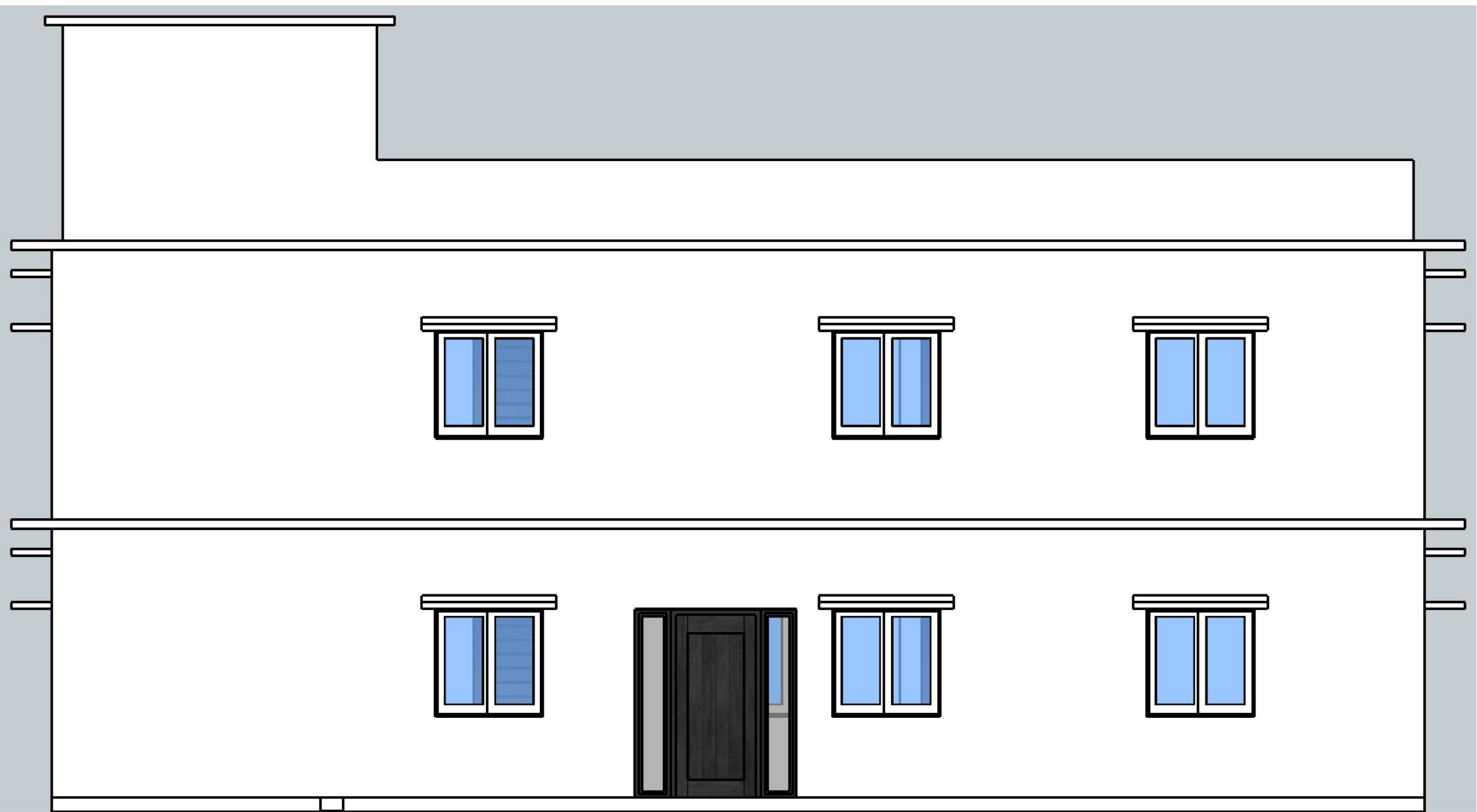


Front Elevation



Section A-A











center to center length of wall:

▣ The center to center lengths of different walls are calculated as shown below:

a. Masterbed-1 + Dining Room + Masterbed-2 combined:

$$\text{Long walls} = 12 + 12 + 12 + (5 + 10 + 10 + 5) / 12 = 38.50 \text{ ft}$$

$$\text{Short walls} = 14 + (5 + 5) / 12 = 14.83 \text{ ft}$$

b. Drawing Room:

$$\text{Long walls} = 28 + (5 + 8 + 5) / 12 = 29.50 \text{ ft}$$

$$\text{Short walls} = 15 + (5 + 10 + 5) / 12 = 16.67 \text{ ft}$$

c. Kitchen + Stair combined:

$$\text{Long walls} = 7 + 8 + (5 + 10 + 5) / 12 = 16.67 \text{ ft}$$

$$\text{Short walls} = 12 + (5 + 5) / 12 = 12.83 \text{ ft}$$

d. Masterbed-3:

$$\text{Long walls} = 15 + (5 + 5) / 12 = 15.83 \text{ ft}$$

$$\text{Short walls} = 10 + (5 + 5) / 12 = 10.83 \text{ ft}$$

e. Toilet-1 + Verandah-1 combined:

$$\text{Long walls} = 6 + 6 + (5 + 7 + 10 + 7 + 5) / 12 = 14.83 \text{ ft}$$

$$\text{Short walls} = 5 + (5 + 5) / 12 = 5.83 \text{ ft}$$

f. Toilet-2 + Verandah-2 combined:

$$\text{Long walls} = 6 + 6 + (5 + 7 + 10 + 7 + 5) / 12 = 14.83 \text{ ft}$$

$$\text{Short walls} = 5 + (5 + 5) / 12 = 5.83 \text{ ft}$$

g. Toilet-3 + Open-space combined:

$$\text{Long walls} = 7 + 7 + (5 + 10 + 2 + 5) / 12 = 15.83 \text{ ft}$$

$$\text{Short walls} = 5 + (5 + 5) / 12 = 5.83$$

Particulars of items	No.	Length	Breadth	Depth	Quantity	Unit
<b>Earthwork in foundation</b>						
<b>Masterbed-1+Diningroom+ Masterbed-2</b>						
Long walls	2	41.83	3.33	7	1952.22	
Short walls	4	11.50	3.33	7	1073.33	
<b>Drawing Room</b>						
Long walls	1	32.83	3.33	7	766.11	
Short walls	2	13.33	3.33	7	622.22	
<b>Kitchen + stain</b>						
Long walls	1	20.00	3.33	7	466.67	
Short walls	2	9.50	3.33	7	443.33	
<b>Masterbed-3</b>						
Long walls	2	19.17	3.33	7	894.44	
Short walls	1	7.50	3.33	7	175.00	
<b>Toilet-1 + verandah-1</b>						
Long walls	1	18.17	3.33	7	423.89	
Short walls	2	2.50	3.33	7	116.67	
<b>Toilet-2 + verandah-2</b>						
Long walls	1	18.17	3.33	7	423.89	
Short walls	2	2.50	3.33	7	116.67	
<b>Toilet-3 + openspace</b>						
Long walls	0	19.17	3.33	7	0	
Short walls	2	2.50	3.33	7	116.67	

Total = 7591.11 cft

Item No.	Particulars of items	No.	Length	Breadth	Depth	Quantity	Unit
02.	Bricksoiling under foundation						
	Masterbed-1 + Dining room + masterbed-2						
	Long walls	2	41.83	3.33		278.89	
	Short walls	4	11.50	3.33		153.33	
	Drawing Room						
	Long walls	1	32.83	3.33		109.44	
	Short walls	2	13.33	3.33		88.89	
	Kitchen + Stair						
	long walls	1	20.00	3.33		66.67	
	short walls	2	9.50	3.33		63.33	
	Masterbed-3						
	Long walls	2	19.17	3.33		127.78	
	Short walls	1	7.50	3.33		2.50	
	Toilet-1 + verandah-1						
	Long walls	1	18.17	3.33		60.56	
	Short walls	2	2.50	3.33		16.67	
	Toilet-2 + verandah-2						
	long walls	1	18.17	3.33		60.56	
	Short walls	2	2.50	3.33		16.67	
	Toilet-3 + open-space						
	Long walls	0	19.17	3.33		0	
	Short walls	2	2.50	3.33		16.67	

Total = 1084.44 sqft

Item No.	Particulars of Items	No	Length	Breadth	Depth	Quantity	Unit
03	Cement concrete in foundation(1:3:6)						
	Masterbed-1 + Dining Room + Masterbed-2						
	Long walls	2	41.33	3.33	0.25	69.72	
	Short walls	4	11.50	3.33	0.25	38.33	
	Drawing Room						
	Long walls	1	32.83	3.33	0.25	27.36	
	Short walls	2	13.33	3.33	0.25	22.22	
	Kitchen + Stair						
	Long walls	1	20.00	3.33	0.25	16.67	
	Short walls	2	9.50	3.33	0.25	15.83	
	Masterbed-3						
	Long walls	2	19.17	3.33	0.25	31.94	
	Short walls	1	7.50	3.33	0.25	6.25	
	Toilet-1 + verandah						
	Long walls	1	18.17	3.33	0.25	15.14	
	Short walls	2	2.50	3.33	0.25	4.17	
	Toilet-2 + verandah						
	Long walls	1	18.17	3.33	0.25	15.14	
	Short walls	2	2.50	3.33	0.25	4.17	
	Toilet-3 + Openspace						
	Long walls	0	19.17	3.33	0.25	0	
	Short walls	2	2.50	3.33	0.25	4.17	

Total = 271.11 c.ft

Item No.	Particulars of item	No.	Length	Breadth	Depth	Quantity	Unit
04	1st class Brickwork in foundation						
	Masterbed-1 + Diningroom + Masterbed-2						
Long walls	1st lift	2	41.83	3.33	0.83	232.41	
	2nd lift	2	41.00	2.50	1	205.00	
	3rd lift	2	40.17	1.67	1.67	223.15	
	Plinth lift	2	39.75	1.25	3	298.13	
Short walls	1st lift	4	11.50	3.33	0.83	127.78	
	2nd lift	4	12.33	2.50	1	123.33	
	3rd lift	4	13.17	1.67	1.67	146.30	
	Plinth lift	4	13.58	1.25	3	203.75	
	Drawing Room						
Long walls	1st lift	1	32.83	3.33	0.83	91.20	
	2nd lift	1	32.00	2.50	1	80.00	
	3rd lift	1	31.17	1.67	1.67	86.57	
	Plinth lift	1	30.75	1.25	3	115.31	
Short walls	1st lift	2	13.33	3.33	0.83	74.07	
	2nd lift	2	14.17	2.50	1	70.83	
	3rd lift	2	15.00	1.67	1.67	83.33	
	Plinth lift	2	15.42	1.25	3	115.63	
	Kitchen + Stair						
Long walls	1st lift	1	20.00	3.33	0.83	55.56	
	2nd lift	1	19.17	2.50	1	47.92	
	3rd lift	1	18.33	1.67	1.67	50.93	
	Plinth lift	1	17.92	1.25	3	67.19	
Short walls	1st lift	2	9.50	3.33	0.83	52.78	
	2nd lift	2	10.33	2.50	1	51.67	
	3rd lift	2	11.17	1.67	1.67	62.04	
	Plinth wall	2	11.58	1.25	3	86.88	

Item No	Particulars of Items	No	Length	Breadth	Depth	Quantity	Unit
04	1st class brickwork in foundation						
	Masterbed-3						
Long walls	1st lift	2	19.17	3.33	0.83	106.48	
	2nd lift	2	18.33	2.50	1	91.67	
	3rd lift	2	17.50	1.67	1.67	92.22	
	Plinth wall	2	17.08	1.25	3	128.13	
Short walls	1st lift	4	7.50	3.33	0.83	20.83	
	2nd lift	1	8.33	2.50	1	20.83	
	3rd lift	1	9.17	1.67	1.67	28.46	
	Plinth wall	1	9.58	1.25	3	35.94	
	Toilet-1+verandah-1						
Long walls	1st lift	1	18.17	3.33	0.83	50.46	
	2nd lift	1	17.33	2.50	1	43.33	
	3rd lift	1	16.50	1.67	1.67	45.83	
	Plinth wall	1	16.08	1.25	3	60.31	
Short walls	1st lift	2	2.50	3.33	0.83	13.89	
	2nd lift	2	3.33	2.50	1	16.67	
	3rd lift	2	4.17	1.67	1.67	23.15	
	Plinth wall	2	4.58	1.25	3	34.38	
	Toilet-2+verandah-2						
Long walls	1st lift	1	18.17	3.33	0.83	50.46	
	2nd lift	1	17.33	2.50	1	43.33	
	3rd lift	1	16.50	1.67	1.67	45.83	
	Plinth wall	1	16.08	1.25	3	60.31	
Short walls	1st lift	2	2.50	3.33	0.83	13.89	
	2nd lift	2	3.33	2.50	1	16.67	
	3rd lift	2	4.17	1.67	1.67	23.15	
	Plinth wall	2	4.58	1.25	3	34.38	

Item No	Particulars of items	No	Length	Breadth	Depth	Quantity	Unit
04	1st class brickwork in foundation						
	Toilet-3 + Open-space						
Long walls	1st lift	0	19.17	3.33	0.83	0	
	2nd lift	0	18.33	2.50	1	0	
	3rd lift	0	17.50	1.67	1.67	0	
	Plinth wall	0	17.08	1.25	3	0	
Short walls	1st lift	2	2.50	3.33	0.83	13.89	
	2nd lift	2	3.33	2.50	1	16.67	
	3rd lift	2	4.17	1.67	1.67	23.15	
	Plinth wall	2	4.58	1.25	3	34.38	

Total = 3942.42 cft

Item No.	Particulars of Items	No	Length	Breadth	Depth	Quantity	Unit
05	DPC						
	Masterbed-1 + Dining Room + Masterbed-2						
	Long walls	2	30.75	1.25		99.38	
	Short walls	4	13.58	1.25		67.92	
	Drawing Room						
	Long walls	1	30.75	1.25		38.44	
	Short walls	2	15.92	1.25		38.54	
	Kitchen + Stair						
	Long walls	1	17.92	1.25		22.40	
	Short walls	2	11.58	1.25		28.96	
	Masterbed-3						
	Short walls	1	9.58	1.25		11.98	
	Long walls	2	17.08	1.25		42.71	
	Toilet-1 + verandah-1						
	Long walls	1	16.08	1.25		20.10	
	Short walls	2	4.58	1.25		11.46	
	Toilet-2 + verandah-2						
	Long-walls	1	16.08	1.25		20.10	
	Short walls	2	4.58	1.25		11.46	
	Toilet-3 + open-space						
	Long walls	0	17.08	1.25		0	
	Short walls	2	4.58	1.25		11.46	

Total = 424.90 sft

Deduction		No	Length	Breadth	Depth	Quantity	Unit
Door sills D1		3	3.00	1.25		11.25	
Door sills D2		6	2.00	1.25		15.00	
Door sills D2		1	6.00	1.25		7.50	

Net total = 391.15 sft

Total = 33.75 sft

Item No	Particulars of items	No.	Length	Breadth	Depth	Quantity	Unit
06	Lime concrete under cc floor						
	Masterbed - 1	1	11.58	13.58	0.29	45.89	
	Masterbed - 2	1	11.58	13.58	0.29	45.89	
	Masterbed - 3	1	14.58	9.58	0.29	40.76	
	Dining Room	1	11.58	13.58	0.29	45.89	
	Drawing Room	1	28.25	15.42	0.29	127.03	
	Kitchen	1	11.58	7.58	0.29	25.62	
	Stair Room	1	11.58	6.58	0.29	22.24	
	Toilet - 1	1	4.58	6.17	0.29	8.24	
	Toilet - 2	1	4.58	6.17	0.29	8.24	
	Toilet - 3	1	6.58	4.58	0.29	8.80	
	Verandah - 1	1	4.58	6.17	0.29	8.24	
	Verandah - 2	1	4.58	6.17	0.29	8.24	
	Openspace	1	6.75	4.58	0.29	9.02	

Total = 404.12 cft

Item No	Particulars of Items	No.	Length	Breadth	Depth	Quantity	Unit
07	CC Flooring						
	Masterbed-1	1	12.00	14.00		168.00	
	Masterbed-2	1	12.00	14.00		168.00	
	Masterbed-3	1	15.00	10.00		150.00	
	Dining Room	1	12.00	14.00		168.00	
	Drawing Room	1	28.67	15.83		453.89	
	Kitchen	1	12.00	8.00		96.00	
	Stain Room	1	12.00	7.00		84.00	
	Toilet-1	1	5.00	6.58		32.92	
	Toilet-2	1	5.00	6.58		32.92	
	Toilet-3	1	7.00	5.00		35.00	
	Verandah-1	1	5.00	6.58		32.92	
	Verandah-2	1	5.00	6.58		32.92	
	Open-space	1	7.17	5.00		35.83	

Total = 1490.39 sf<sup>4</sup>

Additions →							
Door openings							
	Doors D1	3	3.00	0.83		7.50	
	Doors D2	6	2.00	0.83		10.00	
	Doors D3	1	6.00	0.83		5.00	
Entrances							
	Diningroom entrance	1	12.00	0.83		10.00	
	Staircase entrance	1	7.00	0.83		5.83	
	Toilet-3 entrance	1	5.00	0.83		4.17	

Total = 42.50 sf<sup>4</sup>

Net total = 1532.89 sf<sup>4</sup>

Item No.	Particulars of items	No.	Length	Breadth	Depth	Quantity	Unit
08	Brickwork is superstructure (Ground floor)						
	Masterbed-1 + Dining Room + Masterbed-2						
	Long walls	2	39.83	0.83	10	655.56	
	Short walls	4	14.00	0.83	10	466.67	
	Drawing Room						
	Long walls	1	30.83	0.83	10	252.78	
	Short walls	2	15.83	0.83	10	263.89	
	Kitchen + Stair						
	Long walls	1	17.50	0.83	10	145.83	
	Short walls	2	12.00	0.83	10	200.00	
	Masterbed-3						
	Long walls	2	16.67	0.83	10	277.78	
	Short walls	1	10.00	0.83	10	83.33	
	Toilet-1 + verandah-1						
	Long walls	1	15.67	0.83	10	130.56	
	Short walls	2	5.00	0.83	10	83.33	
	Toilet-2 + verandah-2						
	Long walls	1	15.67	0.83	10	130.56	
	Short walls	2	5.00	0.83	10	83.33	
	Toilet-3 + Openspace						
	Long walls	0	16.67	0.83	10	0	
	Short walls	2	5.00	0.83	10	83.33	

Total = 2856.94 cft

Item No.	Particulars of items	No.	Length	Breadth	Depth	Quantity	Unit
08	Deductions →						
	Door Openings						
	Doors D1	3	3.00	0.83	7	52.50	
	Doors D2	6	2.00	0.83	7	70.00	
	Doors D3	1	6.00	0.83	7	35.00	
	Window openings						
	Windows W1	7	4.00	0.83	4	93.33	
	Windows W2	1	2.50	0.83	4	8.33	
	Ventilators V	3	2.00	0.83	2	10.00	
	Verandah openings						
	Verandah	2	12.42	0.83	7	144.86	
	Lintels						
	Over Doors D1	3	4.00	0.83	0.5	5.00	
	Over Doors D2	6	3.00	0.83	0.5	7.50	
	Over Doors D3	1	7.00	0.83	0.5	2.92	
	Over windows W1	7	5.00	0.83	0.5	14.58	
	Over windows W2	1	3.50	0.83	0.5	1.46	
	Over Ventilators V	3	3.00	0.83	0.5	1.25	
	Walls/Entrance openings						
	Dining room Entrance	1	12.00	0.83	10	100.00	
	Staircase entrance	1	7.00	0.83	10	58.33	
	Toilet-3 Entrance	1	5.00	0.83	10	41.67	

Total = 646.74 cft

Net total = 2210.21 cft

Item No	Particulars of Items	No.	Length	Breadth	Depth	Quality	Unit
09	Brickwork in superstructure (1st floor)						
	Brickwork from ground floor					2210.21	
	Additions →						
	Door openings						
	Doors D3	1	6.00	0.83	7	35.00	
	Lintels						
	Over Doors D3	1	7.00	0.83	0.5	2.92	

Total = 37.92 cft

Net total = 2248.13 cft

10	Brickwork in Roof						
	Staircase Door						
	Long walls	2	11.67	0.42	8	77.78	
	Short walls	2	7.00	0.42	8	46.67	
	Parapet walls						
	Long walls	2	50.17	0.42	3	125.42	
	Short walls	2	30.33	0.42	3	75.83	

Total = 325.69 cft

	Deductions →						
	Staircase Door	1	3.00	0.42	7	8.75	
	Staircase Room walls						
	Long walls	1	11.67	0.42	3	14.58	
	Short walls	1	7.00	0.42	3	8.75	

Total = 32.08 cft

Net total = 293.61 cft

Item No	Particulars of items	No	Length	Breadth	Depth	Quantity	Unit
11	RCC (1:2:4) in Ground Floor						
	Lintels						
	Over Door D1	3	4.00	0.83	0.50	5.00	
	Over Door D2	6	3.00	0.83	0.50	7.50	
	Over Door D3	1	7.00	0.83	0.50	2.91	
	Over Window W1	7	5.00	0.83	0.50	14.58	
	Over Window W2	1	3.50	0.83	0.50	1.46	
	Ventilator V	3	3.00	0.83	0.50	3.75	
	Sunshades						
	Over Window W1	7	5.00	1.50	0.25	13.13	
	Over Window W2	1	3.50	1.50	0.25	1.31	
	Ventilator V	3	3.00	1.50	0.25	3.38	
	Stair						
	Inclined Slab-1	1	8.75	4.33	0.33	12.63	
	Inclined slab-2	1	9.72	4.33	0.33	14.04	
	Steps	19		Triangular area 0.21		13.97	
	Landing Slab	1		3.33	0.33	9.63	

Total = 103.29 cft

12	RCC (1:2:4) in 1st Floor						
	Lintels, Sunshades, Stair (From RCC in Ground Floor)					103.29	
	Floor Slab including cornice	1	54.00	35.33	0.33	636.00	
						Total = 739.29 cft	
	Deductions →						
	Lintels over Door D3	1	7.00	0.83	0.50	2.92	
	Stair Case	1	10.83	7.00	0.33	25.28	

Total = 28.19 cft

Net total = 711.09 cft

Item No	Particulars of Items	No	Length	Breadth	Depth	Quantity	Unit
13	RCC(1:2:4) in Roof and Stair Room						
	Roof Slab including cornice	1	54.00	35.33	0.33	636.00	
	Stair Room roof slab	1	13.00	9.17	0.33	39.72	

Total = 675.72 cft

Deductions →							
	Stair Case	1	10.83	7.00	0.33	25.28	

Total = 25.28 cft

Net total = 650.44 cft.

14	Lime concrete Roof terracing Over RCC						
	Lime concrete roof terracing	1	54.00	35.33	0.33	636.00	

Total = 636.00 cft

15	Plastering in Ground Floor						
	Exterior surface						
	Exterior surface of walls (considered solid)	1	166.67	10		1666.67	
	Sunshades						
	Over windows w1	7	3.00	5.00		105.00	
	Over windows w2	1	3.00	3.50		10.50	
	Over Ventilator v	3	3.00	3.00		27.00	

Total = 1782.17 cft

Item No	Particulars of items	No	Length	Breadth	Depth	Quantity	Unit
15	Deductions →						
	Door D3	1	6.00	7.00		42.00	
	Windows						
	Windows W1	7	4.00	4.00		112.00	
	Windows W2	1	2.50	4.00		10.00	
	Ventilator V	3	2.00	2.00		12.00	
	Verandah	2	12.42	7.00		173.83	

Total = 349.83 sqft

Total Exterior Plaster = 1482.33 sqft

15	Interior Surface						
	Inside surface walls (considered solid)						
	Master Bedroom 1	1	52.00	10.00		520.00	
	Master Bedroom 2	1	52.00	10.00		520.00	
	Master Bedroom 3	1	50.00	10.00		500.00	
	Dining Room	1	52.00	10.00		520.00	
	Drawing Room	1	89.00	10.00		890.00	
	Kitchen	1	40.00	10.00		400.00	
	Stair Room	1	38.00	10.00		380.00	
	Toilet 1	1	23.17	10.00		231.67	
	Toilet-2	1	23.17	10.00		231.67	
	Toilet -3	1	24.00	10.00		240.00	
	Verandah 1	1	23.17	10.00		231.67	
	Verandah 2	1	23.17	10.00		231.67	
	Open space	1	24.33	10.00		243.33	

Item	Particulars of items	No	Length	Breadth	Depth	Quantity	Unit
15.	Stair						
	Inclined Slab - 1	1	8.75			30.61	
	Inclined Slab - 2	1	9.72			34.01	
	Steps & Risers + Treads	19	3.50			88.67	
	Steps (sides)	19	Triangular Area = 0.21			3.99	
	Landing Slab (Top + Bottom)	2	7.00	2.50		35.00	

Total = 5332.28 sft

Deductions →							
Door openings							
	Doors D1	3	3.00	7.00		63.00	
	Doors D2	6	2.00	7.00		84.00	
	Doors D3	1	6.00	7.00		42.00	
Window Openings							
	Windows W1	7	4.00	4.00		112.00	
	Windows W2	1	2.50	4.00		10.00	
	Ventilator V	3	2.00	2.00		12.00	
Verandah Openings							
	Verandah	2	12.42	7.00		173.83	
Walls							
	Dining Room Entrance	1	12.00	10.00		120.00	
	Stair Room Entrance	1	7.00	10.00		70.00	
	Toilet-3 Entrance	1	5.00	10.00		50.00	

Total = 736.83 sft

Total Interior Plaster = 4595.45 sft

Total Plaster = 6027.78 sft

Item	Particulars of Items	No	Length	Breadth	Depth	Quantity	Unit
16	Plastering in 1st floor						
	Total Net plaster (From cur flow)					6027.78	

Total = 6027.78 sft

Additions →

16	Exterior surface						
	Door D3	1	6.00	7.00		42.00	

Total = 42.00 sft

16	Interior surface						
	Door D3	1	6.00	7.00		42.00	

Total = 42.00 sft

Total Plaster = 6111.78 sft

17	Plastering in Stair Room						
	Exterior surface						
	Exterior surface walls (considered solid)	1	39.00	8.00		312.00	

Total = 312.00 sft

17	Deductions →						
	Stair Case Door	1	3.00	7.00		21.00	

Total = 21.00 sft

Total Exterior plaster = 333.00 sft

17	Interior surface						
	Interior surface wall (solid)	1	35.67	8.00		285.33	

Total = 285.33 sft

17	Deductions →						
	Stair Case Door	1	3.00	7.00		21.00	

Total = 21.00 sft

Total Interior plaster = 306.33 sft

Total Plaster = 639.33 sft.

Item	Particulars of Items	No	Length	Breadth	Depth	Quantity	Unit
18	Mild steel						
	Mild steel bar @ 1% of RCC work					3266.56	

Total = 3266.56 kg

19	Sal wood works for Chowkath						
	For Door D1	3	17.25	0.25	0.42	5.39	
	For Door D2	6	16.25	0.25	0.42	10.16	
	For Door D3	1	20.25	0.25	0.42	2.11	

Total = 17.66 cft

20	Kathal wood Door leaf/shutter						
	For Door D1	3	2.92	6.96		60.89	
	For Door D2	6	1.92	6.96		80.02	
	For Door D3	1	5.92	6.96		41.17	

Total = 182.08 sft

21	Aluminium sliding windows (ss color)						
	For windows w1	7	4.00	4.00		112.00	
	For windows w2	1	2.50	4.00		10.00	
	ventilator v	3	2.00	2.00		12.00	

Total = 134.00 sft

22	White Wash 3 coats						
	Inside surface						
	Ground floor	1				4595.45	
	1st floor	1				4637.45	
	Stair Room	1				306.33	
	Ceiling of Rooms						
	Ground floor	1				1510.39	
	1st floor	1				1510.39	
	Stair Room	1				75.83	

Total = 12635.84 sft

Item	Particulars of Items	No	Length	Breadth	Depth	Quantity	Unit
23	Color washing						
	Outside Surfaces						
	Ground floor	1				1432.33	
	1st floor	1				1474.33	
	Stair Room	1				333.00	
	Outer projection of roof slab						
	Ground floor	1				595.56	
	1st floor	1				595.59	
	Stair Room	1				73.89	

Total = 4504.67 sft

24	M.S. Grill in Verandah						
	Verandah	2	12.42	7		173.83	

Total = 173.83 sft

25	M.S. Gate						
	Door D3	1	6.00	7.00		42.00	

Total = 42.00 sft

26	Glaze tiles in Ground floor	1				1532.89	
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Total = 1532.89 sft

27	Glaze tiles in 1st floor	1				1532.89	
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Total = 1532.89 sft

Table: Abstract of Estimated Cost →

Item No	Particulars of items of works	Quantity	Unit	Rate (BDT)	Per	Amount
01	Earthwork in foundation		cft	4.00	cft	30364.44
02	Brick soiling under foundation		cft	39.00	cft	42293.33
03	Cement concrete in foundation (1:3:5)		cft	188.00	cft	50968.89
04	1st class brickwork in foundation		cft	171.00	cft	674153.65
05	DPC		sft	102.00	sft	39896.88
06	Lime concrete under cc floor		sft	373.00	sft	150737.65
07	cc flooring		cft	47.00	cft	72045.78
08	Brickwork in Super-structure (Ground Floor)		cft	182.00	cft	401802.92
09	Brickwork in super-structure (1st floor)		cft	310.00	cft	696143.75
10	Brickwork in Roof		cft	438	cft	128966.67
11	RCC (1:2:4) in Ground floor		cft	215	cft	22206.63
12	RCC (1:2:4) in 1st floor		cft	291	cft	206927.84
13	RCC (1:2:4) in Roof and stain room		cft	366	cft	238062.67
14	Lime concrete roof Terracing		cft	373.00	cft	237228.00
15	Plastering in Ground floor		sft	23.00	sft	138639.01
16	Plastering in 1st floor		sft	35.00	sft	213912.41

Item No	Particulars of items of works	Quantity	Unit	Rate (BDT)	Per	Amount (Taka)
17	Plastering in Stair Room		sft	47.00	sft	30048.67
18	Mild steel bars @1% of total Rec works		kg	82.00	kg	267857.60
19	Sal wood works for Chorrkath		cft	3147.00	cft	55564.22
20	Kathal wood Door leaf/shutter		sft	696.00	sft	126725.17
21	Aluminium sliding window (SS colour)		sft	469.00	sft	62846.00
22	White wash 3 coats		sft	2.00	sft	25271.69
23	Color washing		sft	2.35	sft	10585.97
24	M.S. Grill in verandah		sft	219.00	sft	38069.50
25	M.S. Grate		sft	561.00	sft	23562.00
26	Glaze tiles in Ground Floor		sft	167.00	sft	255992.44
27	Glaze tiles in 1st Floor		sft	180.00	sft	275920.00
Total						4516793.75
Add 3% for contingencies						135503.81
Add 2% for work charged establishment						90335.88
Grand Total (Taka)						4742633.44