

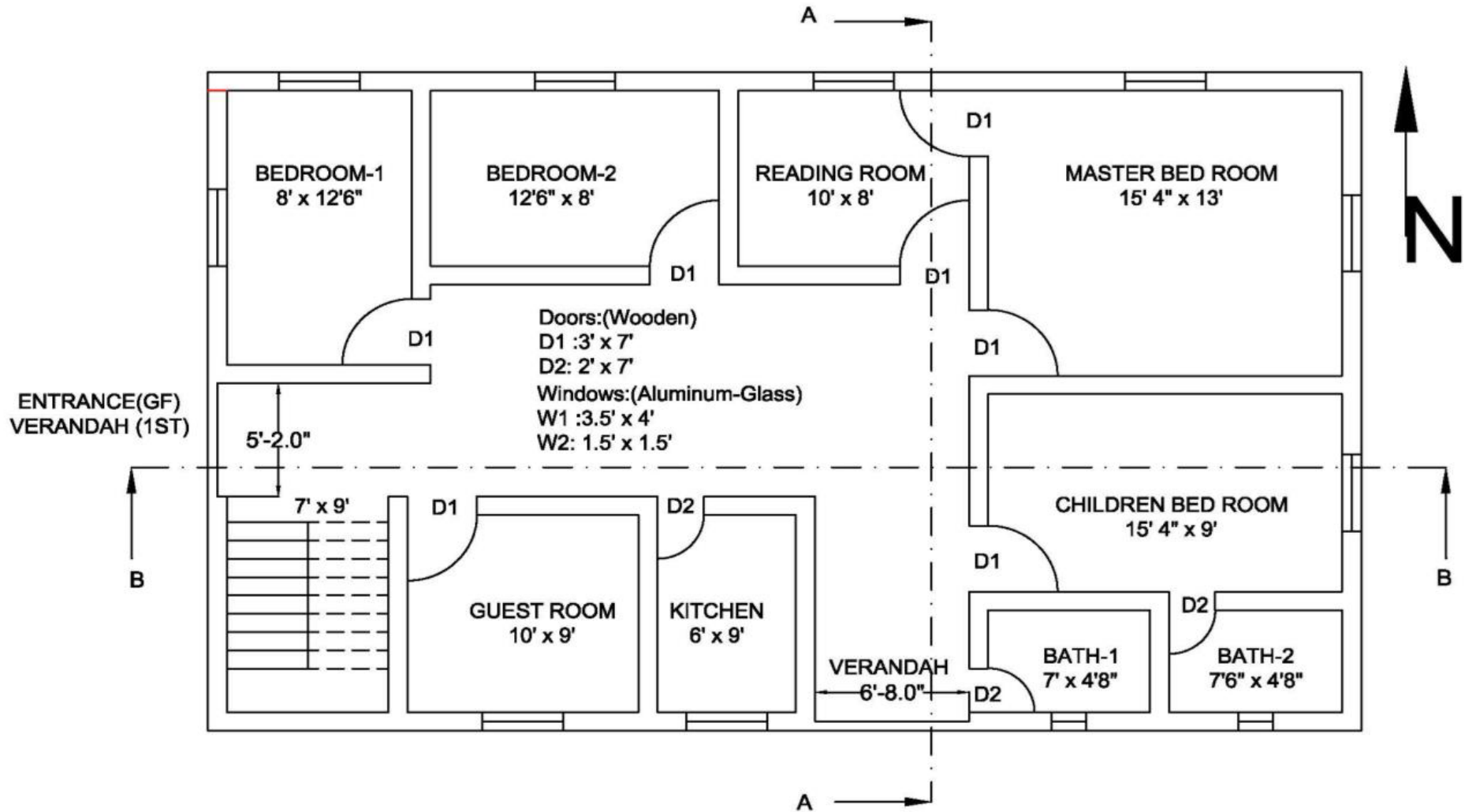
- ❑ Course Title: Details of Estimating**
- ❑ Course No. CE 2220**
- ❑ Credits : 0.75**
- ❑ Conduct hours/week : 3/2**

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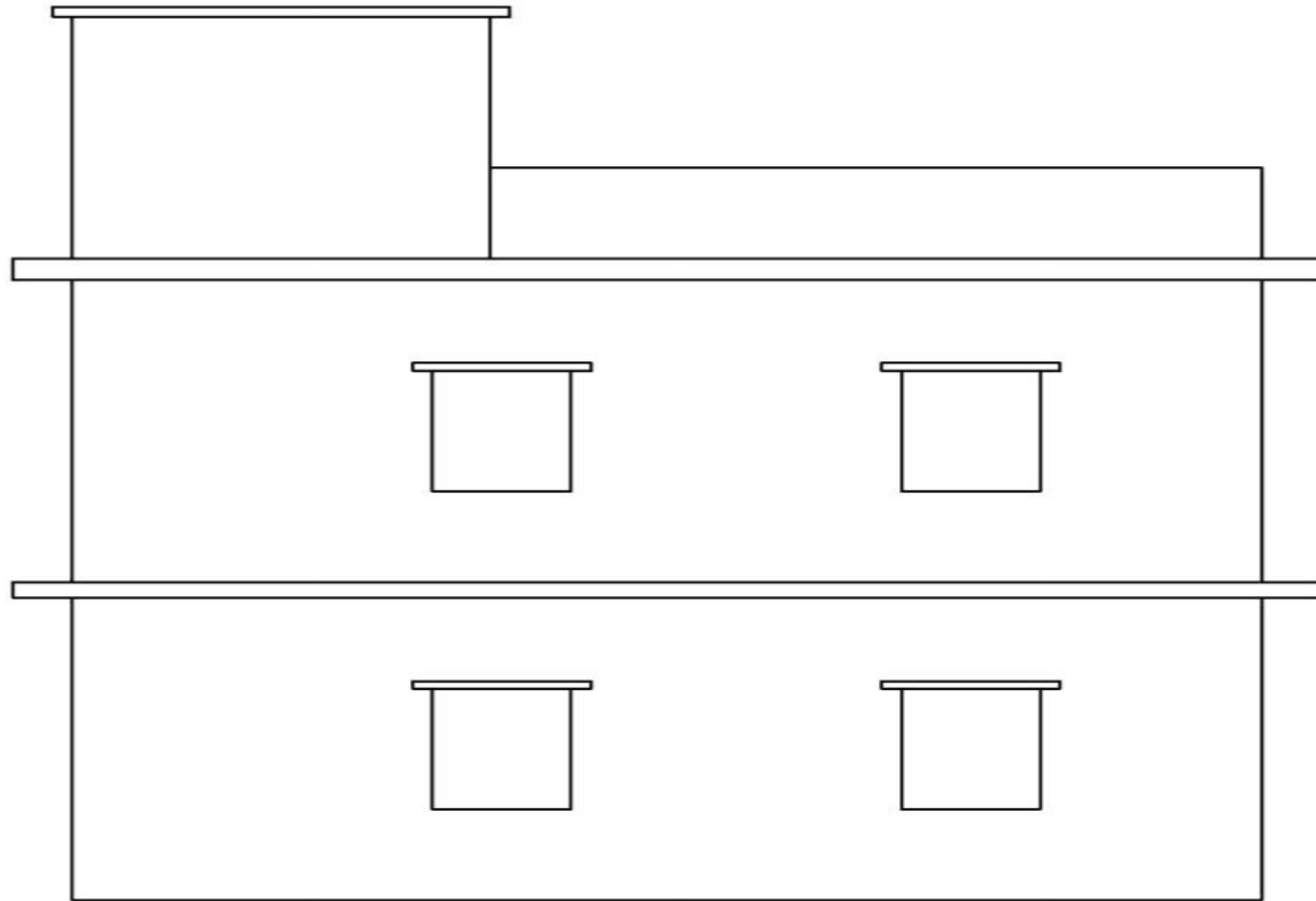
Preparation of an Estimate For The Quantities and Cost of Items For a Residential Building

Plan of a Residential Building



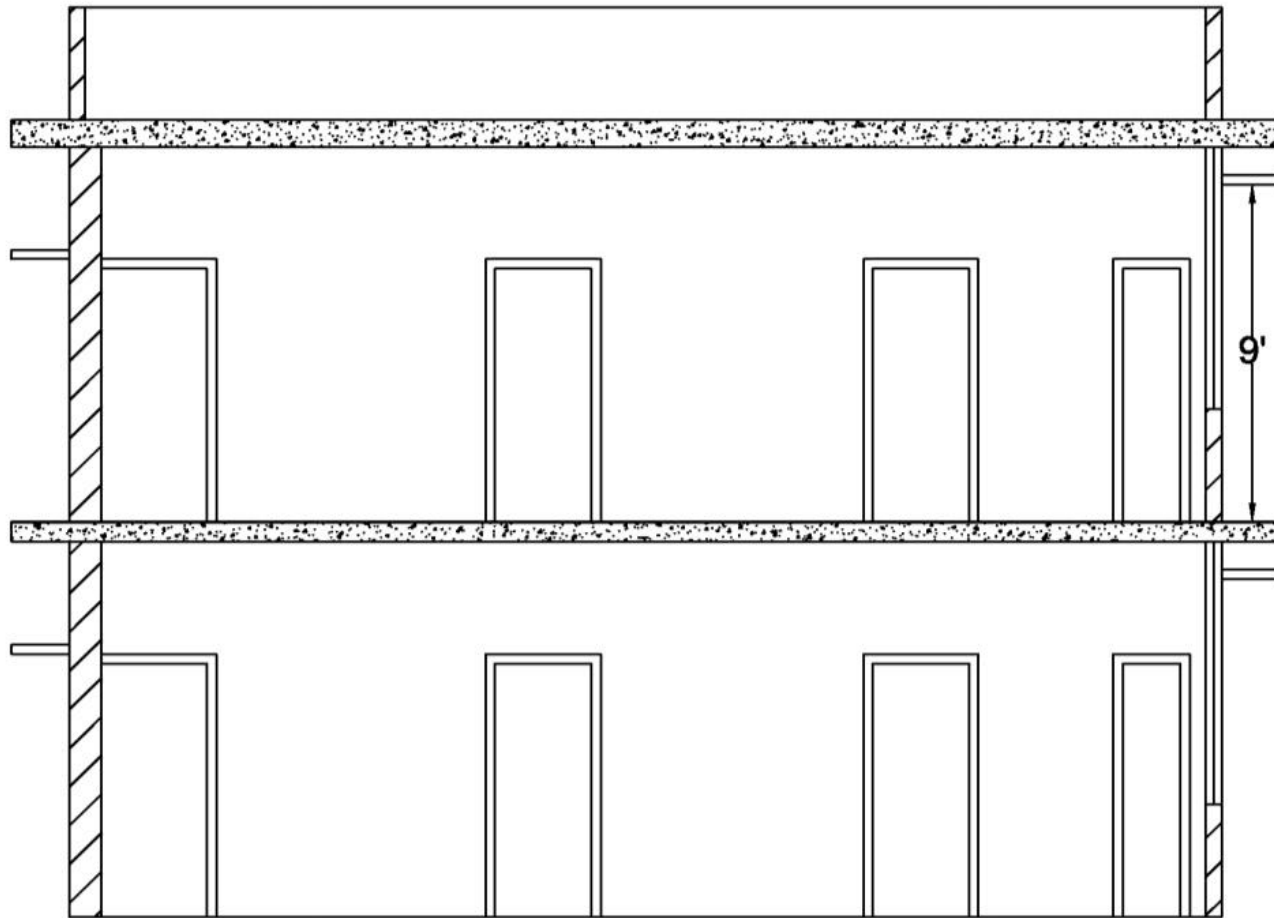
Ground Floor and 1st floor plan of a residential Building

Elevation of A Residential Building



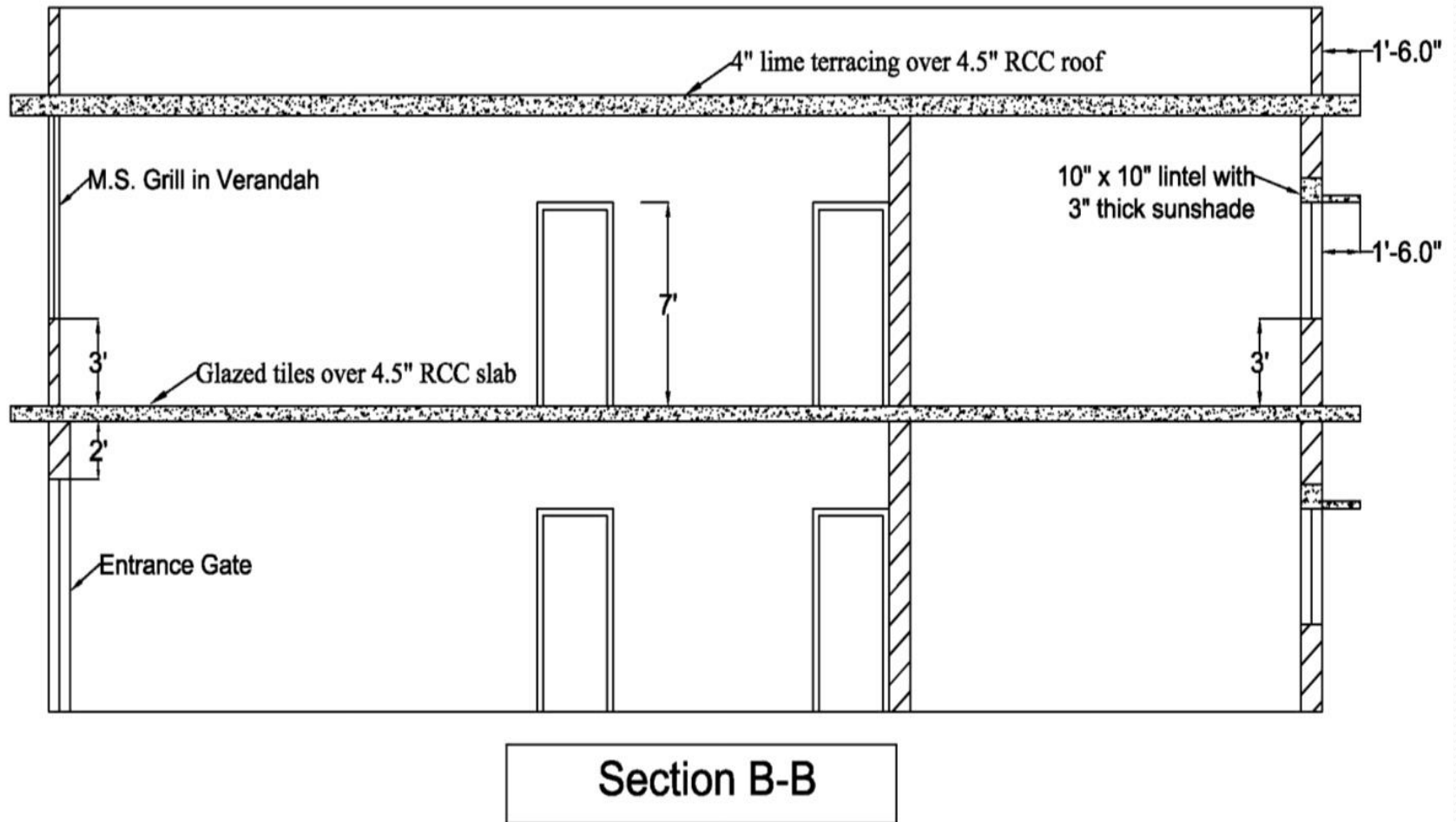
East Side Elevation

Section of that Residential Building

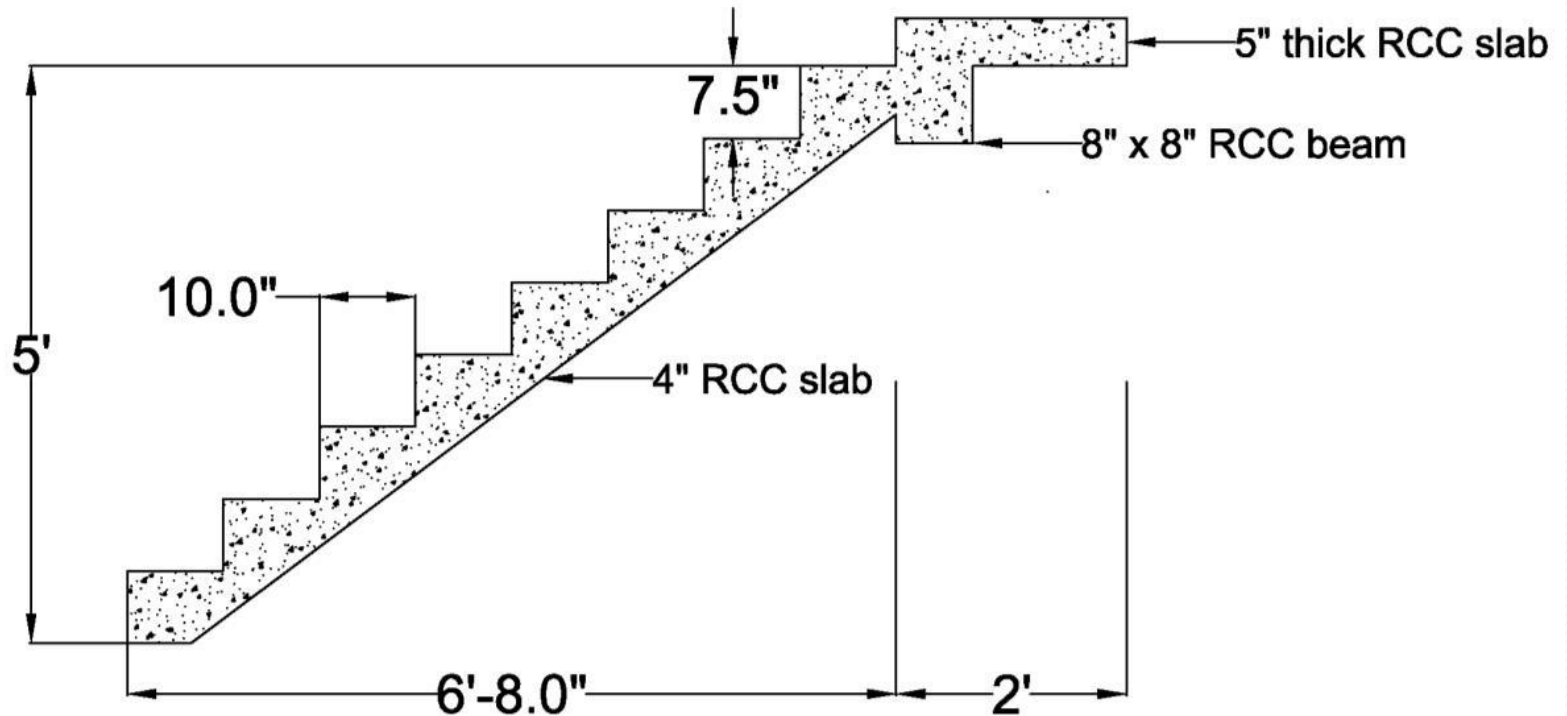


Section A-A

Section of that Residential Building Cont..

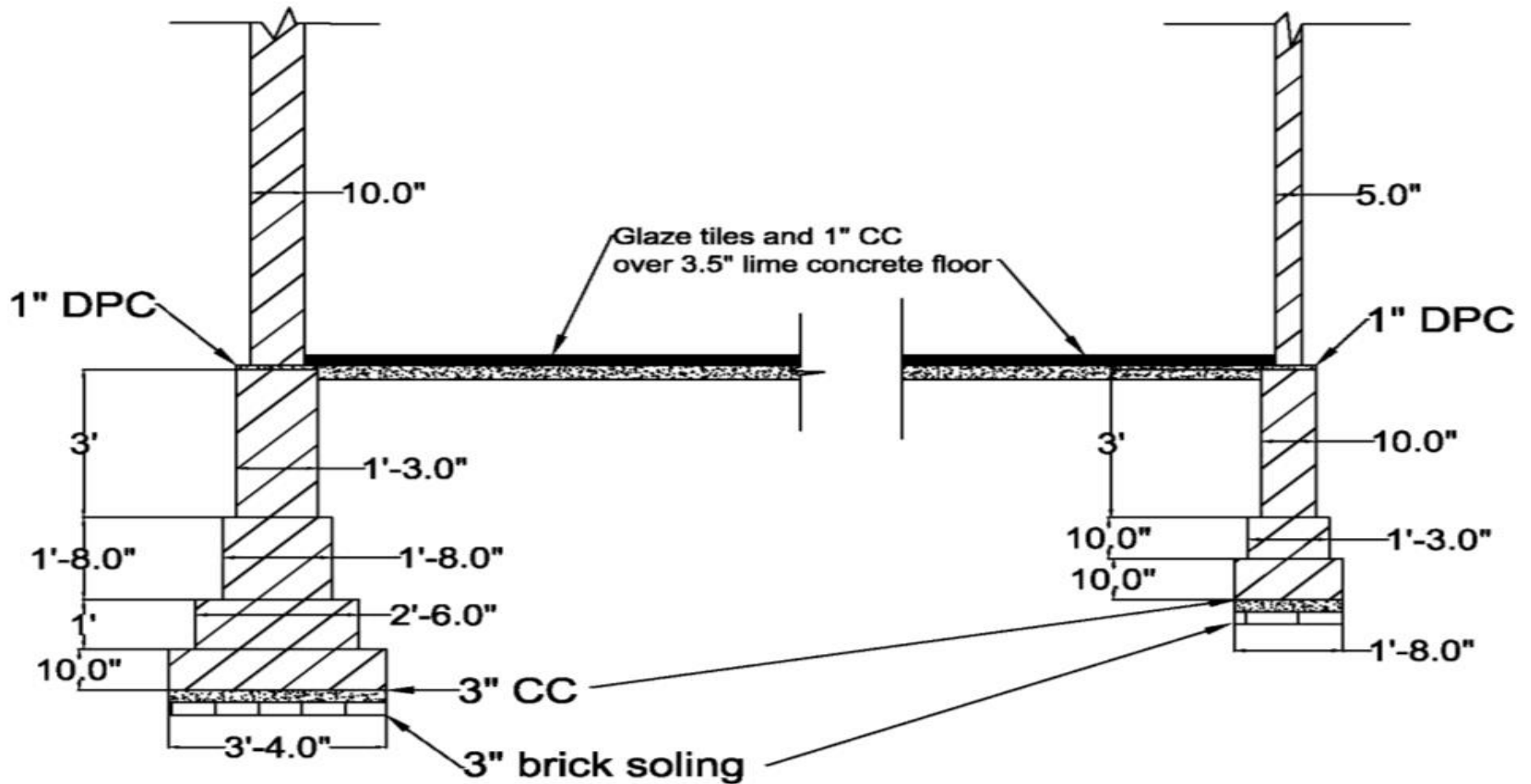


Stair Case Details of that Residential Building



Stair case Details

Foundation Details of that Residential Building



Foundation Details

Solution:

Center To Center Length Of Wall:

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

➤ Stair+Guest Room+Kitchen combined:

✓ *Long Walls* = $7+10+6+(10+10+5+5)/12=25.5 \text{ ft}$

✓ *Short Walls* = $9+(5+5)/12=9.83 \text{ ft}$

➤ Master Bedroom +Children's Bed:

✓ *Long Walls* = $13+9+(10+5+5)/12=23.67 \text{ ft}$

✓ *Short Walls* = $15.33+(5+5)/12=16.16 \text{ ft}$

➤ Bathroom 1 and Bathroom 2 :

✓ *Long Walls* = $7+7.5+(10+5+5)/12=16.17 \text{ ft}$

✓ *Short Walls* = $4.67+(5+5)/12=5.50 \text{ ft}$

Center To Center Length Of Wall:

- Reading Room+ Bedroom 2:
 - ✓ *Long Walls* = $12.5+10+(10+5+5)/12=24.17 \text{ ft}$
 - ✓ *Short Walls* = $8+(5+5)/12=8.83 \text{ ft}$
- Bedroom 1:
 - ✓ *Long Walls* = $12.5+(5+5)/12=13.33 \text{ ft}$
 - ✓ *Short Walls* = $8+(5+5)/12=8.83 \text{ ft}$
- South Verandah:
 - ✓ *Long Walls* = $6.67+(5+5)/12=7.5 \text{ ft}$
- Main gate/West Verandah:
 - ✓ *Long Walls* = $5.17+(5+5)/12=6.0 \text{ ft}$

:

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
1.	Earthwork in foundation						
	Stair+Guest Room+Kitchen						
	Long Walls	2	28.83	3.33	7	1344.05	
	Short Walls	4	6.5	3.33	7	606.06	
	Master Bedroom+Children's Bed						
	Long Walls	2	27	3.33	7	1258.74	
	Short Walls	3	12.83	3.33	7	897.2	
	Bathroom 1 and Bathroom 2						
	Long Walls	1	19.5	3.33	7	454.55	
	Short Walls	3	2.17	3.33	7	151.75	
	Bedroom 2 and Reading Room						
	Long Walls	2	20.84	3.33	7	971.56	
	Short Walls	1	5.5	3.33	7	128.21	
	Bedroom 1						
	Long Walls	2	16.66	3.33	7	776.69	
	Short Walls	2	5.5	3.33	7	256.41	
	Verandah						
	South	1	4.17	1.67	5.16	35.93	
	Main gate	1	2.67	1.67	5.16	23.01	
					Total	6904.16	cft

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
2.	Brick Soling under foundation						
	Stair+Guest Room+Kitchen						
		Long Walls	2	28.83	3.33		192.01
		Short Walls	4	6.5	3.33		86.58
	Master Bedroom+Children's Bed						
		Long Walls	2	27	3.33		179.82
		Short Walls	3	12.83	3.33		128.17
	Bathroom 1 and Bathroom 2						
		Long Walls	1	19.5	3.33		64.94
		Short Walls	3	2.17	3.33		21.68
	Bedroom 2 and Reading Room						
		Long Walls	2	20.84	3.33		138.79
		Short Walls	1	5.5	3.33		18.32
	Bedroom 1						
		Long Walls	2	16.66	3.33		110.96
		Short Walls	2	5.5	3.33		36.63
	Verandah						
		South	1	5	1.67		8.35
		Main gate	1	3.5	1.67		5.85
						Total	992.1

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
3.	Cement Concrete in foundation (1:3:6)						
	Stair+Guest Room+Kitchen						
	Long Walls	2	28.83	3.33	0.25	48	
	Short Walls	4	6.5	3.33	0.25	21.65	
	Master Bedroom+Children's Bed						
	Long Walls	2	27	3.33	0.25	44.96	
	Short Walls	3	12.83	3.33	0.25	32.04	
	Bathroom 1 and Bathroom 2						
	Long Walls	1	19.5	3.33	0.25	16.23	
	Short Walls	3	2.17	3.33	0.25	5.42	
	Bedroom 2 and Reading Room						
	Long Walls	2	20.84	3.33	0.25	34.7	
	Short Walls	1	5.5	3.33	0.25	4.58	
	Bedroom 1						
	Long Walls	2	16.66	3.33	0.25	27.74	
	Short Walls	2	5.5	3.33	0.25	9.16	
	Verandah						
	South	1	5	1.67	0.25	2.09	
	Maingate						
		1	3.5	1.67	0.25	1.46	
					Total	248.03	cft

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
4.	1st class brickwork in foundation						
	Stair+Guest Room+Kitchen						
	Long Walls						
		1st lift	2	28.83	3.33	0.83	159.37
		2nd lift	2	28	2.5	1	140
		3rd lift	2	27.17	1.67	1.67	151.55
		plinth wall	2	26.75	1.25	3	200.63
	Short Walls						
		1st lift	4	6.5	3.33	0.83	71.86
		2nd lift	4	7.33	2.5	1	73.3
		3rd lift	4	8.16	1.67	1.67	91.03
		plinth wall	4	8.58	1.25	3	128.7
	Master Bedroom+Children's Bed						
	Long Walls						
		1st lift	2	27	3.33	0.83	149.25
		2nd lift	2	26.17	2.5	1	130.85
		3rd lift	2	25.34	1.67	1.67	141.34
		plinth wall	2	24.92	1.25	3	186.9
	Short Walls						
		1st lift	3	12.83	3.33	0.83	106.38
		2nd lift	3	13.66	2.5	1	102.45
		3rd lift	3	14.49	1.67	1.67	121.23
		plinth wall	2	14.91	1.25	3	117.51

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit	
4.	1st class brickwork in foundation Cont.....							
	Bathroom 1 and Bathroom 2							
	Long Walls							
	1st lift		1	19.5	3.33	0.83	53.9	
	2nd lift		1	18.67	2.5	1	46.68	
	3rd lift		1	17.84	1.67	1.67	49.75	
	plingth wall		1	17.42	1.25	3	65.33	
	Short Walls							
	1st lift		3	2.17	3.33	0.83	17.99	
	2nd lift		3	3	2.5	1	22.5	
	3rd lift		3	3.83	1.67	1.67	32.04	
	plingth wall		3	4.25	1.25	3	47.81	
	plingth wall		3	4.25	1.25	3	47.81	
	Bedroom 2 and Reading Room							
	Long Walls							
	1st lift		2	20.84	3.33	0.83	115.2	
	2nd lift		2	21.67	2.5	1	108.35	
	3rd lift		2	22.5	1.67	1.67	125.5	
	plingth wall		2	22.92	1.25	3	171.9	
	Short Walls							
	1st lift		1	5.5	3.33	0.83	15.2	
	2nd lift		1	6.33	2.5	1	15.83	
	3rd lift		1	7.16	1.67	1.67	19.97	
	plingth wall		1	7.58	1.25	3	28.43	

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
4.	1st class brickwork in foundation Cont.....						
	Bedroom 1						
	Long Walls						
		1st lift	2	16.66	3.33	0.83	92.09
		2nd lift	2	15.83	2.5	1	79.15
		3rd lift	2	15	1.67	1.67	83.67
		plingth wall	2	14.58	1.25	3	109.35
	Short Walls						
		1st lift	2	5.5	3.33	0.83	30.4
		2nd lift	2	6.33	2.5	1	31.65
		3rd lift	2	7.16	1.67	1.67	39.94
		plingth wall	2	7.58	1.25	3	56.85
	Maingate						
		1st lift	1	4.33	1.67	0.83	6
		2nd lift	1	4.33	1.25	0.83	4.49
		plingth wall	1	4.75	0.83	3	11.83
	South Verandah						
		1st lift	1	5.83	1.67	0.83	8.08
		2nd lift	1	5.83	1.25	0.83	6.05
		plingth wall	1	6.25	0.83	3	15.56
						Total	3634.1

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
5	DPC						
	Stair+Guest Room+Kitchen						
	Long Walls	2	26.75	1.25		66.88	
	Short Walls	4	8.58	1.25		42.9	
	Master Bedroom+Children's Bed						
	Long Walls	2	24.92	1.25		62.3	
	Short Walls	3	14.91	1.25		55.91	
	Bathroom 1 and Bathroom 2						
	Long Walls	1	17.42	1.25		21.78	
	Short Walls	3	4.25	1.25		15.94	
	Bedroom 2 and Reading Room						
	Long Walls	2	22.92	1.25		57.3	
	Short Walls	1	7.58	1.25		9.48	
	Bedroom 1						
	Long Walls	2	14.58	1.25		36.45	
	Short Walls	2	7.58	1.25		18.95	
	Verandah						
	South	1	7.5	0.83		6.23	
	Maingate	1	5.17	0.83		4.29	
						Total	398.41
	Deductions:						
	Door Sills D1	7	3	1.25		26.25	
	Door Sills D2	3	2	1.25		7.5	
						Total	33.75
						Net Total	364.66 sft

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
6	Lime concrete under CC floor						
	Stair Room	1	6.58	8.58	0.29	16.37	
	Guest Room	1	9.58	8.58	0.29	23.84	
	Kitchen	1	5.58	8.58	0.29	13.88	
	Bathroom 1	1	6.58	4.25	0.29	8.11	
	Bathroom 2	1	7.08	4.25	0.29	8.73	
	Children Room	1	14.91	8.58	0.29	37.1	
	Master Bedroom	1	14.91	12.58	0.29	54.39	
	Reading room	1	9.58	7.58	0.29	21.06	
	Bedroom 2	1	12.08	7.58	0.29	26.55	
	Bedroom 1	1	7.58	12.08	0.29	26.55	
	South Verandah	1	6.25	9.83	0.29	17.82	
	Drawing	1	22.91	9.25	0.29	61.46	
	Maingate entry way	1	8.83	4.75	0.29	12.16	
					Total	328.02	cft

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
8	Brickwork in Superstructure (Ground floor)						
	Stair+Guest Room+Kitchen						
	Long Walls	2	26.33	0.83	10	437.08	
	Short Walls	4	9	0.83	10	298.8	
	Master Bedroom+Children's Bed						
	Long Walls	2	24.5	0.83	10	406.7	
	Short Walls	3	15.33	0.83	10	381.72	
	Bathroom 1 and Bathroom 2						
	Long Walls	1	17	0.83	10	141.1	
	Short Walls	3	4.67	0.83	10	116.28	
	Bedroom 2 and Reading Room						
	Long Walls	2	23.34	0.83	10	387.44	
	Short Walls	1	8	0.83	10	66.4	
	Bedroom 1						
	Long Walls	2	14.16	0.83	10	235.06	
	Short Walls	2	8	0.83	10	132.8	
	Verandah						
	South	1	6.67	0.42	3	8.4	
	Above Maingate	1	5.17	0.83	2	8.58	
					Total	2620.36	

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
	Deductions						
	Lintels						
	Over window W1	9	5.17	0.83	0.83	32.05	
	Over window W2	2	3.17	0.83	0.83	4.37	
	Over Door D1	7	4.67	0.83	0.83	22.52	
	Over Door D2	3	3.67	0.83	0.83	7.58	
	Over Maingate	1	6.84	0.83	0.83	4.71	
	Door Openings						
	Doors D1	7	3	0.83	7	122.01	
	Doors D2	3	2	0.83	7	34.86	

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
9	Window Openings						
	Windows W1	9	3.5	0.83	4	104.58	
	Windows W2	2	1.5	0.83	1.5	3.74	
	Stair case entry	1	7	0.83	10	58.1	
					Total	394.52	
					Net Total	2225.84	cft
	Brickwork in Superstructure (1st floor)						
	All as ground floor except maingate					2611.78	
	West verandah	1	5.17	0.42	3	6.51	
					Total	2618.29	
Deduction							
All as ground floor except maingate					389.81		
				Net Total	2228.48	cft	

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
10	Brickwork in Roof						
	Stair case room walls						
	Long Walls	2	11.67	0.42	8	78.42	
	Short Walls	2	9	0.42	8	60.48	
	Parapet Wall						
	Long Walls	2	50	0.42	3	126	
	Short Walls	2	29.17	0.42	3	73.51	
					Total	338.41	
	Deduction						
	Stair case door	1	3	0.42	7	8.82	
	Stair case room walls						
	Long Walls	1	11.67	0.42	3	14.7	
	Short Walls	1	9.83	0.42	3	12.39	
					Total	35.91	
					Net Total	302.5	cft

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
11	RCC (1:2:4) in ground floor						
	Lintels						
	Over window W1	9	5.17	0.83	0.83	32.05	
	Over window W2	2	3.17	0.83	0.83	4.37	
	Over Door D1	7	4.67	0.83	0.83	22.52	
	Over Door D2	3	3.67	0.83	0.83	7.58	
	Over Maingate	1	6.84	0.83	0.83	4.71	
	Sunshades						
	Over window W1	9	4.5	1.5	0.25	15.19	
	Over window W2	2	3	1.5	0.25	2.25	

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit	
12	Stair							
	Inclined slabs	2	8.34	4.33	0.33	23.83	cft	
	Steps	16	3.5	Trinagular Area = 0.26		14.56		
	Landing Slab	1	8.67	2.83	0.42	10.31		
	Total							137.37
	RCC (1:2:4) in 1st floor							
	Floor slab including cornice	1	53	33	0.38	664.62		
	Lintels,Sunshade, stair (except maingate)					132.66		
	Total							797.28
	Deduction							
Stair case	1	10	9	0.38	34.2			
Total						34.2		
Net Total						763.08	cft	

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
13	RCC (1:2:4) in Roof and stair room	1	9.67	11.67	0.33	664.62	cft
	Roof slab including cornice					37.24	
	Stair room roof slab						
	Total	701.86					
Deduction	Stair case	1	10	9	0.38	34.2	
						Total	34.2
						Net Total	667.66
14	Lime concrete roof terracing	1	53	33	0.33	577.17	
						Total	577.17

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
15	Plastering in Ground floor Exterior surfaces						
	Exterior Surfaces of Walls (Considered Solid)	1	160	10		1600	
	Sunshades						
	Over window W1	9	3	4.5		121.5	
	Over window W2	2	3	3		18	
					Total	1739.50	sft
	Deduction						
	South Verandah outer wall	1	6.67	7		46.69	
	Main gate opening	1	5.17	8		41.36	
	Window openings						
		W1	3.5	4		126	
		W2	1.5	1.5		4.5	
					Total	218.55	sft
					Total Exterior Plaster	1520.95	sft

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit	
	Interior surfaces							
	Inside wall surfaces (Considered Solid)							
	Stair Room	1	32	10		320		
	Guest Room	1	38	10		380		
	Kitchen	1	30	10		300		
	Bathroom 1	1	23.34	10		233.4		
	Bathroom 2	1	24.34	10		243.4		
	Children Room	1	48.66	10		486.6		
	Master Bedroom	1	56.66	10		566.6		
	Reading room	1	36	10		360		
	Bedroom 2	1	41	10		410		
	Bedroom 1	1	41	10		410		
	South Verandah	1	33.84	10		338.4		
	Drawing	1	66	10		660		
	Maingate entry way	1	28.84	10		288.4		
	Stair Case							
	Inclined slabs	2	8.34	3.5		58.38		
	Steps (Risers and treads)	16	3.5	1.46		81.76		
	Steps (sides)	16	0.26			4.16		
	Landing(top and bottom)	2	7	2		28		
						Total	5169.1	sft

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
	Deductions						
	South Verandah outer wall	1	6.67	7		46.69	
	Maingate	1	5.17	8		41.36	
	Stair case Entry no wall	2	7	10		140	
	Drawing to West Verandah No partition	2	5	10		100	
	Drawing to south Verandah No partition	2	5	10		100	
	Door openings						
	D1	14	7	3		294	
	D2	6	7	2		84	
	Window openings						
	W1	9	3.5	4		126	
	W2	2	1.5	1.5		4.5	
					Total	936.55	
					Total Interior Plaster	4232.55	sft
					Net Total Plaster	5753.5	sft
16	Plastering in 1st floor				Net Total Plaster	5758.7	sft
17	Plastering in stair room						
	Interior surfaces of Walls	1	32	8		256	
	Deductions						
	Stair Case door	1	7	3		21	
					Total Interior plaster	235	Sft

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
	Exterior surfaces of Walls	1	35.32	8		282.56	
	Deductions						
	Stair Case door	1	7	3		21	
						Total Exterior plaster	261.56 sft
						Net Total Plaster	496.56 sft
18	Mild Steel bars @1% of total RCC work					Total	3496.9 kg
19	Sal Wood Works for Chowkath						
	For door D1	7	17.25	0.25	0.42	12.68	
	For door D2	3	16.25	0.25	0.42	5.12	
						Total	17.8 cft
20	Kathal wood Door leaf/Shutter						
	For door D1	7	2.92	6.96		142.26	
	For door D2	3	1.92	6.96		40.09	
						Total	182.35 sft
21	Aluminum sliding window (SS color)						
	For window W1	9	3.5	4		126	
	For window W2	2	1.5	1.5		4.5	
						Total	130.5 sft

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit		
22	White Wash 3 coats Inside surfaces	Ground floor				4232.55	sft		
		1st floor				4232.55			
		Stair room				235			
	Ceiling of rooms	Ground floor				1233.77			
		1st floor				1233.77			
		Stair room				63			
	Total							11230.64	
	23	Color Washing Outside surfaces	Ground floor					1520.95	sft
			1st floor					1520.95	
			Stair room					261.56	
Outer projection of roof slab		Ground floor	1	172	3.38	581.36			
		1st floor				581.36			
		Stair room	1	42.68	1.33	56.76			
Total						4522.94			
24		M.S. Grill in Verandah	West verandah	1	5.17	7	36.19	sft	
	South Verandah		2	6.67	7	93.38			
	Total						129.57		

Item No.	Particulars of Items	No.	Length (ft)	Breadth (ft)	Depth (ft)	Quantity	Unit
25	M.S. Gate Maingate	1	5.17	8		41.36	sft
					Total	41.36	
26	Glaze tiles in ground floor					Total	1233.8 sft
27	Glaze tiles in 1st floor					Total	1233.8 sft

CALCULATIONS

For Item No. 1:

$$\text{Quantity} = (\text{No.} \times \text{Length} \times \text{Breadth} \times \text{Depth}) \text{ cft}$$

- ❑ We will use individual wall method. We have to calculate the exact length of each wall avoiding overlaps.
 - *Effective length of a wall = Its C to C length \pm (Width of wall in one side/2 + Width of wall in another side/2)*
- ❑ It is therefore easier to understand if we name the walls of a (or a combination of) room as “Long wall” and “Short wall”. We consider long wall as out to out long and short wall as in to in long. Usually, for walls of equal width on both side, we may use
 - *Long wall length = C to C length + width of short wall.*
 - *Short wall length = C to C length – width of long wall.*
- ❑ For calculation of earthwork and other foundation items, use the width of respective item as width of wall.

➤ Stair+Guest Room+Kitchen

- ✓ $Width=3.33ft$
- ✓ Long wall $Length=25.5+(3.33/2+3.33/2)=28.83 ft$ [For excavation]
- ✓ Short Wall $Length=9.83-(3.33/2+3.33/2)=6.50 ft$

Master Bedroom+Children's Bed, Bathroom 1 + Bathroom 2 and Bedroom 1 are similar.

➤ Reading Room+Bedroom 2:

- ✓ $Width=3.33 ft$
- ✓ Long wall $Length=24.17-(3.332+3.332)=20.84 ft$ [as the other walls already considered in other segments]
- ✓ Short Wall $Length=8.33-(3.332+3.332)=5.50 ft$

➤ South Verandah:

- ✓ $Width=1.67 ft$ (Width of already excavated footing in connection = 3.3 ft)
- ✓ Long wall $Length=7.5-(3.33/2+3.33/2)=4.17$

Main gate part is similar.

Calculation for Item No. 2:

$$\text{Quantity}=(\text{No.}\times\text{Length}\times\text{Breadth}) \text{ sft}$$

➤ South Verandah:

- ✓ $\text{Width}=1.67 \text{ ft}$ (Width of brickwork at connection = 2.5 ft)
- ✓ Long wall $\text{Length}=7.5-(2.52+2.52)=5 \text{ ft}$

Main gate part is similar.

- ### ➤ Other Lengths and breadths are same as that in case of item no. 1

Calculation for Item No. 3:

$$\text{Quantity} = (\text{No.} \times \text{Length} \times \text{Breadth} \times \text{Depth}) \text{ cft}$$

- Other Lengths and breadths are same as that in case of item no. 2.
Depth/thickness is as per drawing.

Calculation for Item No. 4:

$$\text{Quantity} = (\text{No.} \times \text{Length} \times \text{Breadth} \times \text{Depth}) \text{ cft}$$

- Lengths will be calculated similarly as in case of item no. 1. But in this case width will vary in every step.

For example,

- Stair+Guest Room+Kitchen

- ✓ Long wall lengths

- ❖ For 1st lift, width = 3.33 ft and thus Length = same as item no. 1
- ❖ For 2nd lift, width = 2.5 ft, and thus length = C/C length + Width = $25.5 + 2.5 = 28$ ft
- ❖ For 3rd lift, width = 1.67 ft and thus length = $25.5 + 1.67 = 27.17$ ft
- ❖ For plinth wall, width = 1.25 ft and thus length = $25.5 + 1.25 = 26.75$ ft

Calculation for Item No. 4: Cont....

✓ Short wall lengths

- ❖ For 1st lift, width = 3.33 ft and thus Length = same as item no. 1
- ❖ For 2nd lift, width = 2.5 ft, and thus length = C to C length - Width
 $= 9.83 - 2.5 = 7.33$ ft
- ❖ For 3rd lift, width = 1.67 ft and thus length = $9.83 - 1.67 = 8.16$ ft
- ❖ For plinth wall, width = 1.25 ft and thus length = $9.83 - 1.25 = 8.58$ ft

➤ Reading Room+Bedroom-2:

✓ Long wall lengths

- ❖ For 1st lift, width = 3.33 ft and thus Length = same as item no. 1
- ❖ For 2nd lift, width = 2.5 ft, and thus length = C to C length - Width
 $= 24.17 - 2.5 = 21.67$ ft

➤ Main gate:

- ❖ For both 1st and 2nd lift, width = 1.25 ft (But width of connecting wall foundation = 1.67 ft) and thus, length = $6 - 1.67 = 4.33$ ft

Calculation for Item No. 5:

✓ $Quantity = (No. \times Length \times Breadth) \text{ sft}$

- ❖ Lengths are the same as plinth wall length calculated in item no. 2
- ❖ Apply deduction for Door sills.

Calculation for Item No. 6:

✓ $Quantity = (No. \times Length \times Breadth) \text{ sft}$

❖ Plinth wall to plinth wall clear length will be accounted. In the example plinth wall has 2.5" bearing with superstructure wall. Thus all the length will be calculated subtracting $2 \times 2.5 = 5''$ from clear room dimension.

- For example, Kitchen size is given as 6 ft x 9 ft; thus length = $6 - 5/12 = 5.58'$ and breadth = $9 - 5/12 = 8.58'$
- Better calculate dimensions of item no 7 first and then just subtract 5" from each.

Calculation for Item No. 8 & 9:

Calculation for Item No. 8:

Quantity = (No. × Length × Breadth × Depth) cft

Length calculation similar to item no. 4. Width of wall to deduct/add will be 10".

Apply deduction according to plan. For lintels use a bearing equal to its depth on both sides. As example

$$\text{Lintel length over W1} = 3.5 + \left(\frac{10 + 10}{12} \right) = 5.17 \text{ ft}$$

$$\text{Lintel length over W1} = 1.5 + \left(\frac{10 + 10}{12} \right) = 3.17 \text{ ft}$$

Calculation for Item No. 9:

Quantity = (No. × Length × Breadth × Depth) cft

Same as item no.8, just there is a west veranda in place of the maingate.

Calculation for Item No. 8 & 9:

Calculation for Item No. 8:

Quantity = (No. × Length × Breadth × Depth) cft

Length calculation similar to item no. 4. Width of wall to deduct/add will be 10".

Apply deduction according to plan. For lintels use a bearing equal to its depth on both sides. As example

$$\text{Lintel length over W1} = 3.5 + \left(\frac{10 + 10}{12} \right) = 5.17 \text{ ft}$$

$$\text{Lintel length over W1} = 1.5 + \left(\frac{10 + 10}{12} \right) = 3.17 \text{ ft}$$

Calculation for Item No. 9:

Quantity = (No. × Length × Breadth × Depth) cft

Same as item no.8, just there is a west veranda in place of the maingate.

Calculation for Item No. 10 & 11:

Calculation for Item No. 10:

$Quantity = (No. \times Length \times Breadth \times Depth) \text{ cft}$

Length calculation similar to item no.8.

Calculation for Item No. 11:

$Quantity = (No. \times Length \times Breadth \times Depth) \text{ cft}$

Use lintel lengths from item no. 8.

Use 6" bearings on both sides of sunshades. Sunshade Length = window length + 6" + 6"

For steps, $Quantity = (No. \times Length \times Triangular \text{ sectional area}) \text{ cft}$

Calculation for Item No. 12, 13 & 14:

Calculation for Item No. 12:

$Quantity = (No. \times Length \times Breadth \times Depth) \text{ cft}$

All quantities under item no. 11 will repeat here except the lintel over main gate. A floor slab will be added and the opening of staircase will be deducted from it.

Calculation for Item No. 13:

$Quantity = (No. \times Length \times Breadth \times Depth) \text{ cft}$

Only roof slab and stair room's roof are under this item. Staircase opening will be deducted from roof slab.

Calculation for Item No. 14:

$Quantity = (No. \times Length \times Breadth \times Depth) \text{ cft}$

Apply no deduction, staircase opening will be adjusted by stairroom's roof.

Calculation for Item No. 15 & 16:

Calculation for Item No. 15:

Quantity = (No. × Length × Breadth) sft

Calculate exterior and interior surfaces separately, this will help calculating quantities for item no. 22 and 23.

For areas closed with walls, use perimeter as length and wall's height as width. For Example:

$$\text{Exterior surface length} = \text{Exterior Perimeter} = 2(50 + 30) = 160 \text{ ft}$$

For sunshades, top and bottom surfaces will be considered. Edges will be adjusted with walls.

$$\text{Sunshade length} = \text{Exposed Perimeter} = 1.5 + 1.5 = 3 \text{ ft}$$

For calculating perimeters of interior surfaces, use dimensions calculated in item no. 7

Calculation for Item No. 16:

All same as item no. 15; except there is 1' more brick wall in West verandah in place of Maingate. Therefor

Quantity = Quantity in item 15 + (5.17 × 1)

Calculation for Item No. 17 , 18 ,19 & 20:

Calculation for Item No. 17:

Quantity = (No. × Length × Breadth) sft

Similar to item no. 15

Calculation for Item No. 18:

Quantity = (Summation of All RCC Quantities × 0.01 × 223) = ((item 11 + item 12 + item 13) × 0.01 × 223

Calculation for Item No. 19:

Quantity = (No. × Length × Breadth × Depth) cft

Chowkath's (3" × 5") perimeter will be accounted as its length. Allow a bearing of 1.5" for vertical members.

$$\begin{aligned} D - 1 \text{ Chowkath Length} &= 2 \text{ vertical members (left \& right)} + 1 \text{ horizontal member (top)} \\ &= 2 \left(7 + \frac{1.5}{12} \right) + 3 = 17.25 \text{ ft} \end{aligned}$$

Calculation for Item No. 20:

Quantity = (No. × Length × Breadth) sft

Deduct a bearing of 0.5" from each side of door's clear dimension. For example

$$D - 1 \text{ Leaf Length} = 3 - \left(\frac{0.5}{12} \right) - \left(\frac{0.5}{12} \right) = 2.92 \text{ ft}$$

$$D - 1 \text{ Leaf Width} = 7 - \left(\frac{0.5}{12} \right) = 6.96 \text{ ft}$$

Calculation for Item No. 21 & 22:

Calculation for Item No. 21:

Quantity = (No. × Length × Breadth) sft

Use clear dimensions.

Calculation for Item No. 22:

All interior surfaces along with ceilings of rooms are to be considered.

Add the interior quantities from item no. 15

For ceiling plasters use the quantity found in item no 7

Calculation for Item No. 23 , 24, 25 , 26 & 27:

Calculation for Item No. 23:

All the exterior surfaces are to be considered.

Use the exterior plaster quantities found in item no. 15

For projection of slabs (cornices),

Quantity = No. × Length(Outer Perimeter) × Width (Cross sectional perimeter)

For example, in case of stair room (using data from item no.13

$$Quantity = 1 \times 2(7.67 + 11.67) \times (0.5 + 0.5 + 0.33) = 4522.94 \text{ sft}$$

Calculation for Item No. 24:

Quantity = (No. × Length × Breadth) sft

Use clear dimensions.

Calculation for Item No. 25:

Quantity = (No. × Length × Breadth) sft

Use clear dimensions.

Calculation for Item No. 26,27:

Use quantity found in item no. 7

Table: Abstract of Estimated Cost

Item No.	Particulars of Items of Work	Quantity	Unit	Rate (BDT)	Per	Amount (BDT)
1	Earthwork in foundation	6019.94	cft	5.00	cft	30100.00
2	Brick Soling under foundation	992.1	sft	33.00	sft	32740.00
3	Cement Concrete in foundation (1:3:6)	248.03	cft	179.00	cft	44398.00
4	1st class brickwork in foundation	3634.07	cft	151.00	cft	548745.00
5	DPC	363.27	sft	93.00	sft	33785.00
6	Lime concrete under CC floor	328.02	cft	300.00	cft	98406.00
7	CC flooring	1233.77	sft	31.00	sft	38247.00
8	Brickwork in Superstructure (Ground floor)	2225.84	cft	170.00	cft	378393.00
9	Brickwork in Superstructure (1st floor)	2618.29	cft	300.00	cft	785487.00
10	Brickwork in Roof	302.5	cft	430.00	cft	130075.00
11	RCC (1:2:4) in ground floor	137.37	cft	220.00	cft	30222.00
12	RCC (1:2:4) in 1st floor	763.08	cft	302.00	cft	230451.00
13	RCC (1:2:4) in Roof and stair room	667.66	cft	384.00	cft	256382.00
14	Lime concrete roof terracing	577.17	cft	340.00	cft	196238.00
15	Plastering in Ground floor	5753.5	sft	20.00	sft	115070.00
16	Plastering in 1st floor	5758.67	sft	31.00	sft	178519.00
17	Plastering in stair room	496.56	sft	42.00	sft	20856.00
18	Mild Steel bars @1% of total RCC work	3496.89	kg	80.00	kg	279752.00
19	Sal Wood Works for Chowkath	17.8	cft	3457.00	cft	61535.00
20	Kathal wood Door leaf/Shutter	182.35	sft	635.00	sft	115793.00
21	Aluminum sliding window (SS color)	130.5	sft	570.00	sft	74385.00
22	White Wash 3 coats	11230.64	sft	1.75	sft	19654.00
23	Color Washing	4522.94	sft	2.00	sft	9046.00
24	M.S. Grill in Verandah	129.57	sft	200.00	sft	25914.00
25	M.S. Gate	41.36	sft	534.00	sft	22087.00
26	Glaze tiles in ground floor	1233.77	sft	135.00	sft	166559.00
27	Glaze tiles in 1st floor	1233.77	sft	143.00	sft	176430.00
Total						4099269.00
Add 3% for contingencies						122979.00
Add 2% for workcharged establishment						81986.00
Grand Total						4304234.00

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