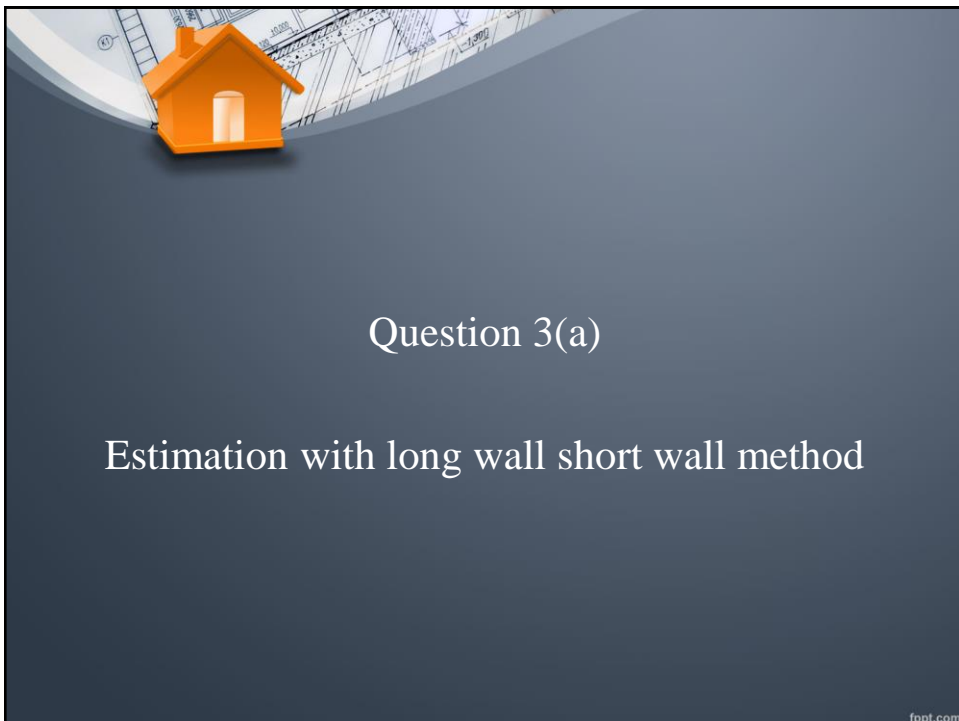


Methods of Building Estimate

Numerical Problems

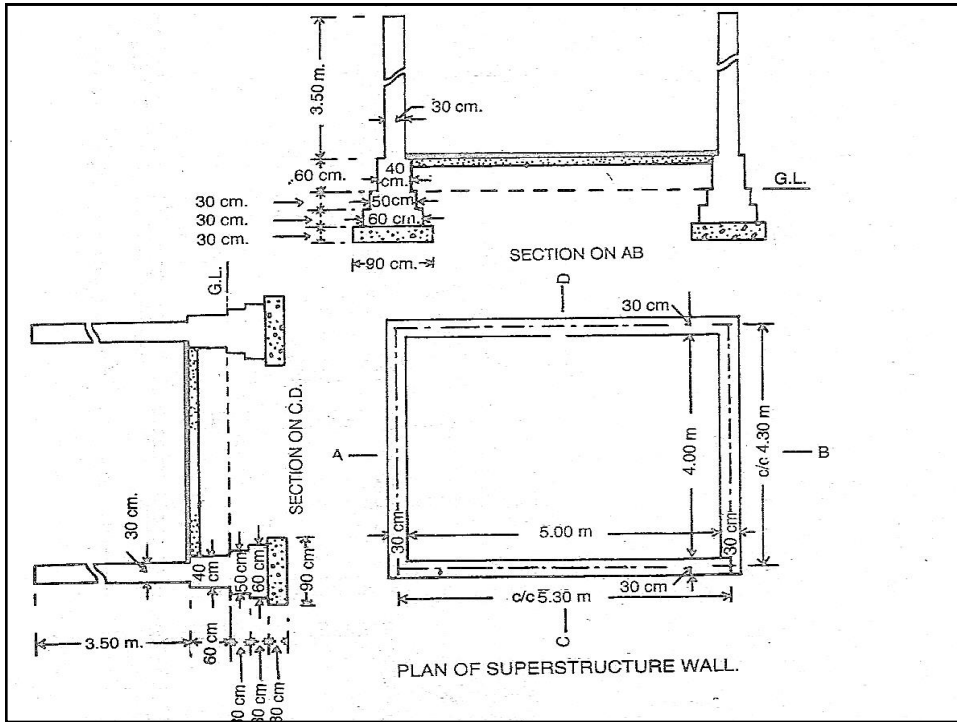
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Question 3(a)


Estimation with long wall short wall method

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DETAILS OF MEASUREMENT AND CALCULATION OF QUANTITIES (Ex. 3a)							
Item No.	Particulars of Items	No.	Length	Breadth	Height or Depth	Quantity	Explanatory note
1.	Earthwork in excavation in foundation —						
	Long walls ...	2	6.20 m	.90 m	.90 m	10.04	Length = 5.30 + .90 = 6.20 m Breadth = 4.30 - .90 = 3.40 m
	Short walls ...	2	3.40 m	.90 m	.90 m	5.51	
					Total	15.55 cu m	
2.	Concrete in foundation —						
	Long walls ...	2	6.20 m	.90 m	.30 m	3.35	Length same as for excavation Quantity = 1/3 of excavation
	Short walls ...	2	3.40 m	.90 m	.30 m	1.83	
					Total	5.18 cu m	
3.	Brickwork in foundation and plinth —						
	Long walls —						
	1st footing ...	2	5.90 m	.60 m	.30 m	2.13	Length = 5.30 + .60 = 5.90 m Length = 5.30 + .50 = 5.80 m Length = 5.30 + .40 = 5.70 m
	2nd footing ...	2	5.80 m	.50 m	.30 m	1.74	
	Plinth walls ...	2	5.70 m	.40 m	.60 m	2.74	
	Short walls —						
	1st footing ...	2	3.70 m	.60 m	.30 m	1.33	Length = 4.30 - .60 = 3.70 m Length = 4.30 - .50 = 3.80 m Length = 4.30 - .40 = 3.90 m
2nd footing ...	2	3.80 m	.50 m	.30 m	1.14		
Plinth walls ...	2	3.90 m	.40 m	.60 m	1.87		
					Total	10.95 cu m	
4.	Brickwork in superstructure						
	Long walls ...	2	5.60 m	.30 m	3.50 m	11.76	Length = 5.30 + .30 = 5.60 m Length = 4.30 - .30 = 4.00 m
	Short walls ...	2	4.00 m	.30 m	3.50 m	8.40	
					Total	20.16 cu m	

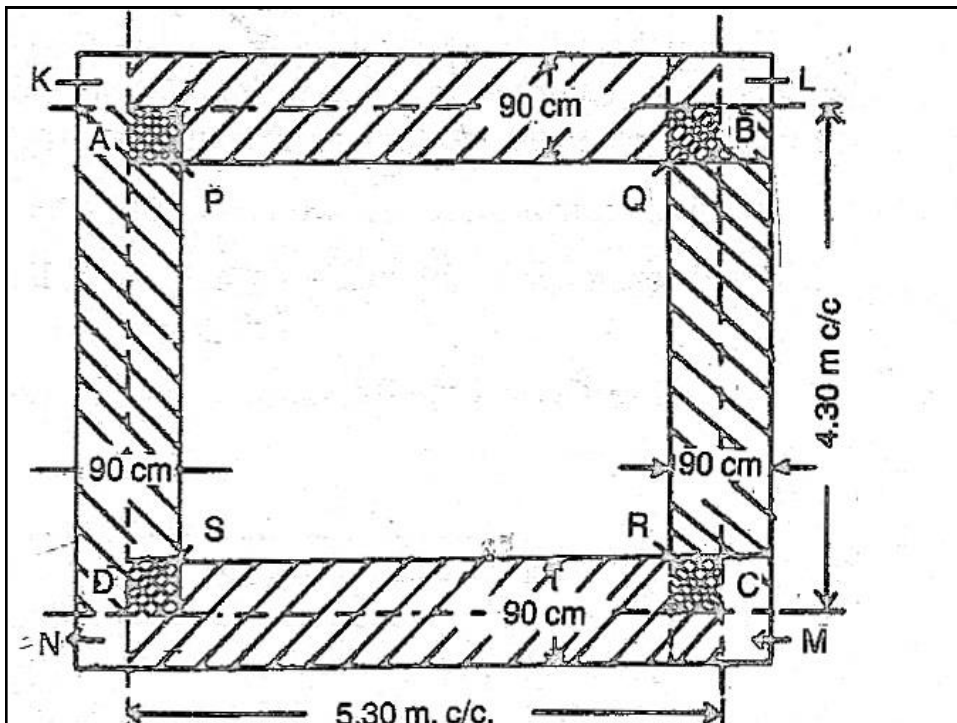
Note : The door openings, window openings, lintels, etc. shall have to be deducted from superstructure as usual.




Question 3(b)

Estimation with Centre line method

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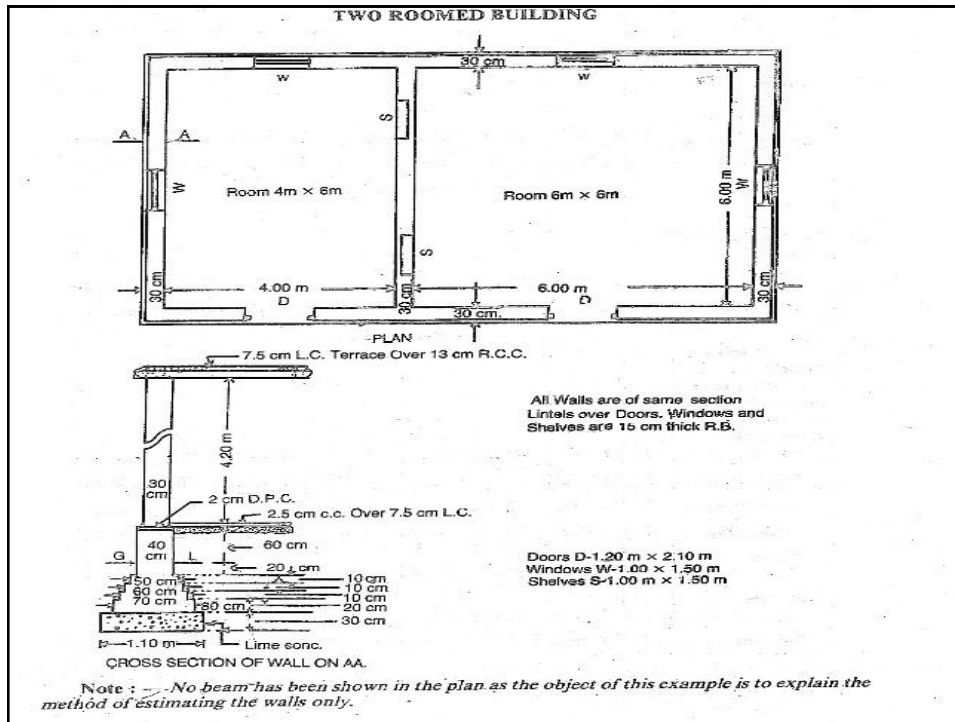
DETAILS OF MEASUREMENT AND CALCULATION OF QUANTITIES							
Item No.	Description of Items	No.	Length	Breadth	Height or Depth	Quantity	Explanatory notes
1.	Earthwork in excavation in foundation ...	1	19.20 m	.90 m	.90 m	15.55 cu m	Total centre length of all walls = 19.20 m
2.	Concrete in foundation ...	1	19.20 m	.90 m	.30 m	5.18 cu m	
3.	Brickwork in foundation and plinth						
	1st footing ...	1	19.20 m	.60 m	.30 m	3.46	
	2nd footing ...	1	19.20 m	.50 m	.30 m	2.88	
	Plinth wall ...	1	19.20 m	.40 m	.60 m	4.61	
					Total	10.95 cu m	
4.	Brickwork in super-structure ...	1	19.20 m	.30 m	3.50 m	20.16 cu m	Door and window openings, lintels, etc. to be deducted.



Question 4(a)

Estimation with long wall short wall method

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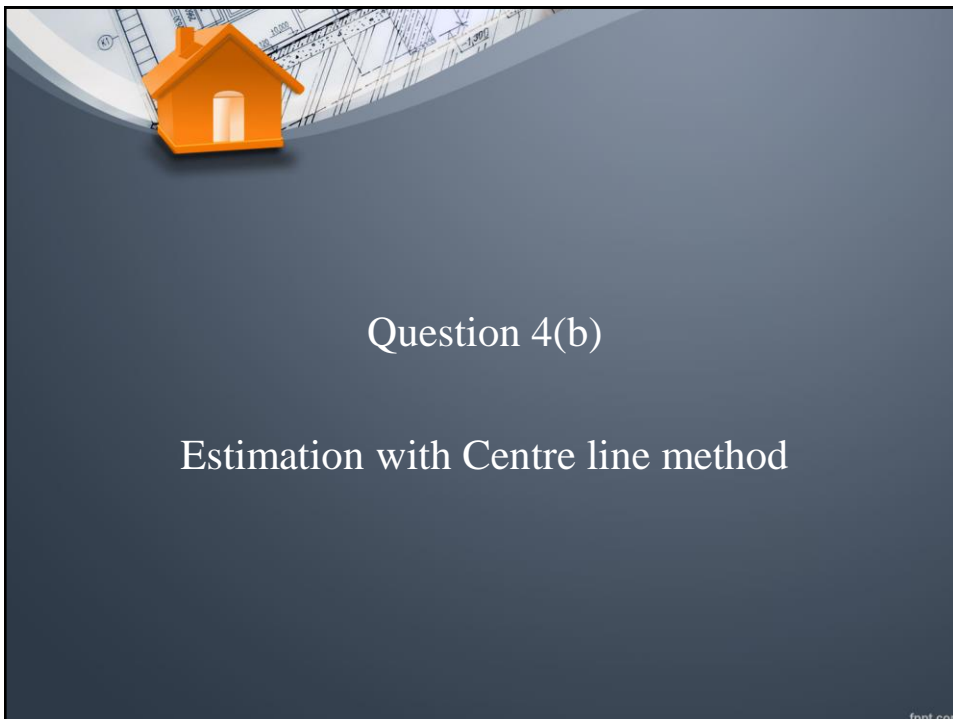
DETAILS OF MEASUREMENT AND CALCULATION OF QUANTITIES (Ex. 4a)

Item No.	Particulars of Items	No.	Length	Breadth	Height or Depth	Quantity	Explanatory note
1.	Earthwork in excavation in foundation —						Long wall, c/c. length = $4 + 6 + .30 + 2 \times \frac{.30}{2} = 10.60$ m
	Long walls ...	2	11.70 m	1.10 m	1.00 m	25.74	Short and inter walls, c/c. length = $6 + 2 \times \frac{.30}{2} = 6.30$ m
	Short walls ...	3	5.20 m	1.10 m	1.00 m	17.16	L = 10.60 + 1.10 = 11.70 m
					Total	42.90	L = 6.30 + 1.10 = 5.20 m
2.	Lime concrete in foundation —						
	Long walls ...	2	11.70 m	1.10 m	.30 m	7.72	Length same for excavation
	Short walls ...	3	5.20 m	1.10 m	.30 m	5.15	Quantity = 3/10 of excavation
					Total	12.87	
3.	1st class brickwork in 1 : 6 cement mortar in foundation and plinth —						
	Long walls —						
	1st footing ...	2	11.40 m	.80 m	.20 m	3.65	L = 10.60 + .80 = 11.40 m
	2nd footing ...	2	11.30 m	.70 m	.10 m	1.58	L = 10.60 + .70 = 11.30 m
	3rd footing ...	2	11.20 m	.60 m	.10 m	1.34	L = 10.60 + .60 = 11.20 m
	4th footing ...	2	11.10 m	.50 m	.10 m	1.11	L = 10.60 + .50 = 11.10 m
	Plinth wall above footing	2	11.00 m	.40 m	.80 m	7.04	L = 10.60 + .40 = 11.00 m
	Short walls —						
1st footing ...	3	5.50 m	.80 m	.20 m	2.64	L = 6.30 + .80 = 5.50 m	
2nd footing ...	3	5.60 m	.70 m	.10 m	1.18	L = 6.30 + .70 = 5.60 m	

Note : — Length of subsequent footings of long walls after 1st footing may be obtained simply by deducting 10 cm from first footing.

METHOD OF BUILDING ESTIMATE							
Item No.	Particulars of Items	No.	Length	Breadth	Height or Depth	Quantity	Explanatory note
	3rd footing ...	3	5.70 m	.60 m	.10 m	1.03	$L = 6.30 - .60 = 5.70 \text{ m}$
	4th footing ...	3	5.80 m	.50 m	.10 m	0.87	$L = 6.30 - .50 = 5.80 \text{ m}$
	Plinth wall above footing	3	5.90 m	.40 m	.80 m	5.66	$L = 6.30 - .40 = 5.90 \text{ m}$
					Total	26.10	cu m
4.	Damp proof course 2.5 cm thick c.c. —						
	Long walls ...	2	11.00 m	.40 m	—	8.80	Lengths same as for plinth wall in item 3.
	Short walls ...	3	5.90 m	.40 m	—	7.08	
					Total	15.88	
	Deduct door sills ...	2	1.20 m	.40 m	—	0.96	
				Net	Total	14.92	sq m
5.	1st class brick-work in lime mortar in superstructure						
	Long walls ...	2	10.90 m	.30 m	4.20 m	27.47	$L = 10.60 + .30 = 10.90 \text{ m}$
	Short walls ...	3	6.00 m	.30 m	4.20 m	22.68	$L = 6.30 - .30 = 6.00 \text{ m}$
					Total	50.15	cu m
	Deduct —						
	Door openings	2	1.20 m	.30 m	2.10 m	1.51	
	Window openings ...	4	1.00 m	.30 m	1.50 m	1.80	
	Shelves ...	2	1.00 m	.20 m	1.50 m	0.60	Back of shelves 10 cm thick wall.
	Lintels over doors ...	2	1.50 m	.30 m	.15 m	0.14	Bearing 15 cm
	Lintels over windows ...	4	1.30 m	.30 m	.15 m	0.23	Bearing 15 cm
	Lintels over shelves ...	2	1.30 m	.30 m	.15 m	0.12	Bearing 15 cm
				Total of deduction		4.40	cu m
				Net	Total	45.75	cu m

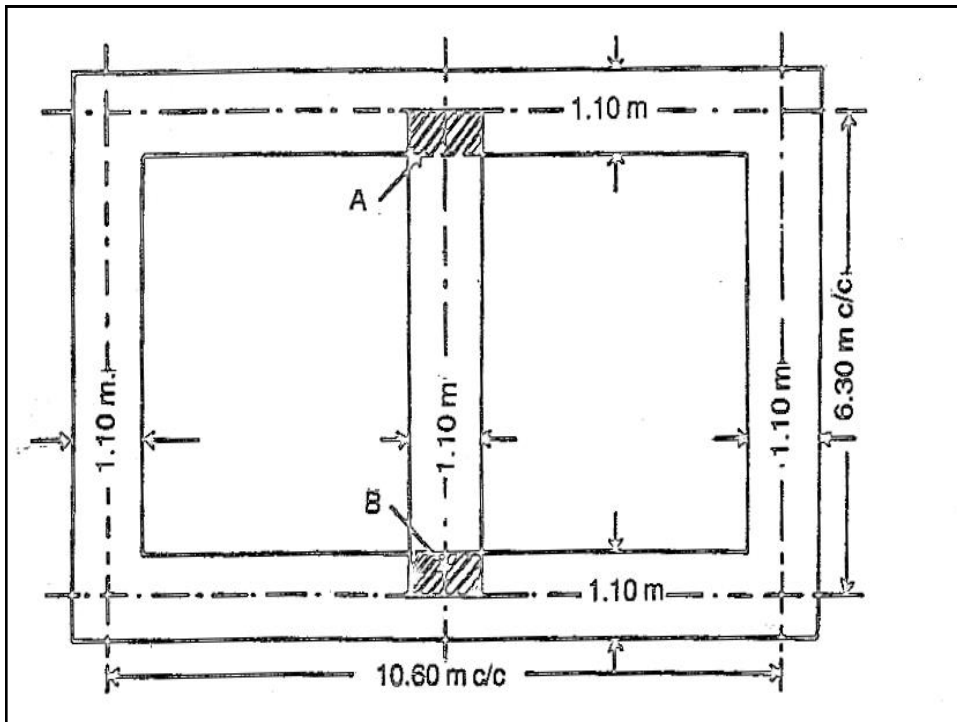
Note : — Length of subsequent footing of short walls after 1st footing may be obtained simply



Question 4(b)

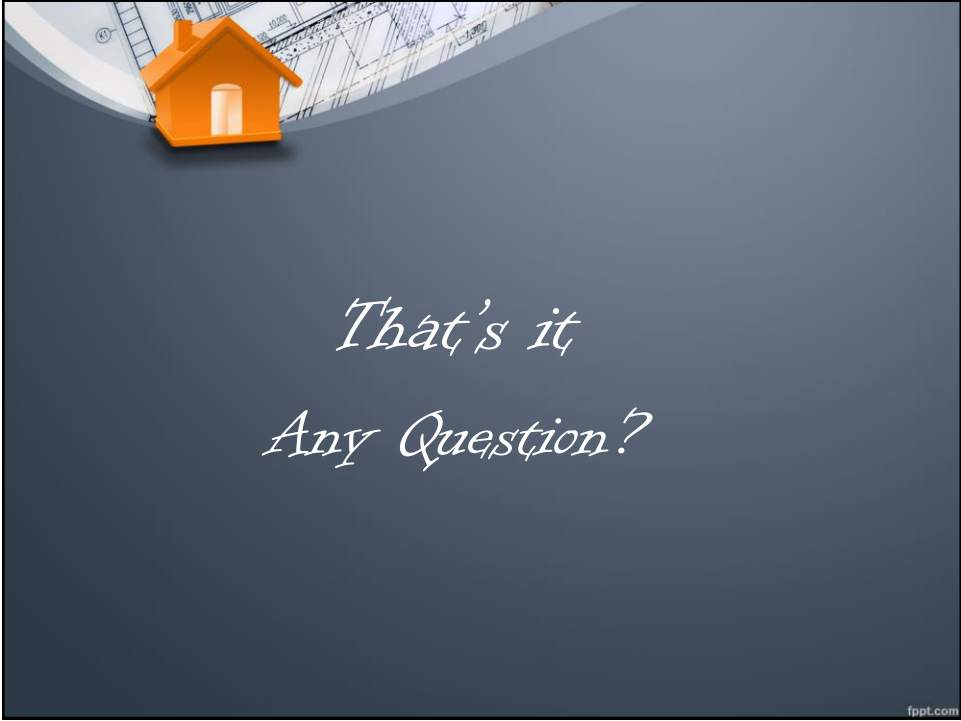
Estimation with Centre line method

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METHOD OF BUILDING ESTIMATE							
DETAILS OF MEASUREMENT AND CALCULATION OF QUANTITIES							
Item No.	Particulars of Items	No.	Length	Breadth	Height or Depth	Quantity	Explanatory notes
1.	Earthwork in excavation in foundation	1	39.00 m	1.10 m	1.00 m	$\frac{42.90}{30.70}$	Total centre length = 40.10 m $L = 40.10 - 2 \times \frac{1.10}{2} = 39.00 \text{ m}$
2.	Lime concrete in foundation	1	39.00 m	1.10 m	.30 m	12.87 cu m	L same as above.
3.	1st class brick-work in 1:6 cement mortar in foundation and plinth						
	1st footing	1	39.30 m	.80 m	.20 m	6.29	$L = 40.10 - 2 \times \frac{.80}{2} = 39.30 \text{ m}$
	2nd footing	1	39.40 m	.70 m	.10 m	2.76	$L = 40.10 - 2 \times \frac{.70}{2} = 39.40 \text{ m}$
	3rd footing	1	39.50 m	.60 m	.10 m	2.37	$L = 40.10 - 2 \times \frac{.60}{2} = 39.50 \text{ m}$
	4th footing	1	39.60 m	.50 m	.10 m	1.98	$L = 40.10 - 2 \times \frac{.50}{2} = 39.60 \text{ m}$
	Plinth wall above footing	1	39.70 m	.40 m	.30 m	12.70	$L = 40.10 - 2 \times \frac{.40}{2} = 39.70 \text{ m}$
					Total	26.10 cu m	
4.	Damp proof course 2.5 cm c.c.	1	39.70 m	.40 m	—	15.88	$L = 40.10 - 2 \times \frac{.40}{2} = 39.70 \text{ m}$
	Deduct door sill	2	1.20 m	.40 m	—	0.96	
					Net	14.92 cu m	
5.	1st class brick-work in lime mortar in superstructure	1	39.80 m	.30 m	4.20 m	50.15	$L = 40.10 - 2 \times \frac{.30}{2} = 39.80 \text{ m}$
	Deduct door, window, shelf openings and lintels	1	Same as per page 37	as per detail in		4.40	Deduction to be made as usual.
					Net	45.75 cu m	

Notes.— The length of 2nd footing can be obtained simply by adding 10 cm (i.e. $2 \times 5 \text{ cm}$) to the length of the 1st footing, the length of 3rd footing by adding 10 cm to the length of the 2nd footing and so on.



*That's it
Any Question?*

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