Estimating & Costing

METHODS OF
BUILDING ESTIMATE

1

UNIT 01 - BUILDING ESTIMATE

LONG WALL SHORT WALL METHOD

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General

- For calculation of quantity purpose Building should be divided in to long and short walls.
- As the load bearing structures have symmetrical footing pattern center line of walls remains same for foundation, plinth and super structure.
- Mainly long walls are calculated out to out and short walls are calculated in to in.

LENGTH OF LONG WALL (OUT/OUT) = C/C LENGTH + 1 BREADTH

LENGTH OF SHORT WALL (IN/IN) = C/C LENGTH - 1 BREADTH

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CONCEPT

- Divide the building in Nos of wall according to their respective length
- Higher length – Long walls
- Shorter Length – Short walls

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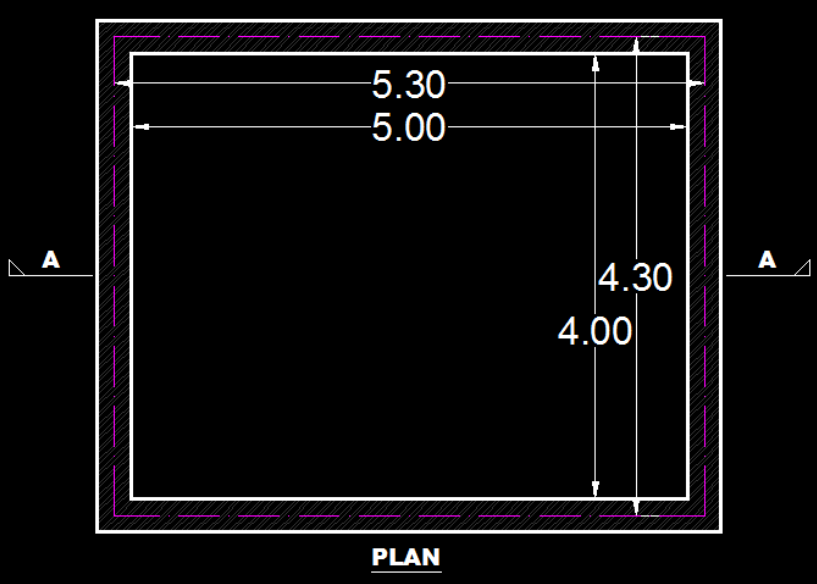
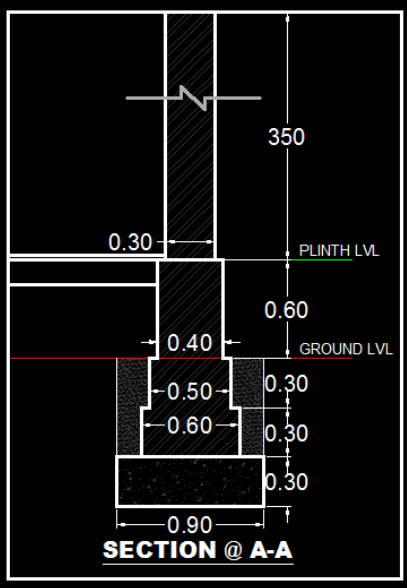
Numerical

- Calculate the detail estimate and prepare abstract for the following item of works of a building with single room of 5.0 x 4.0 mt, shown in figure.

1. Earth work in excavation in foundation – 350Rs/Cu.m.
2. Concrete in foundation - 220Rs/Cu.m.
3. Brickwork in foundation and plinth - 300Rs/Cu.m.
4. Brick work in super structure - 200Rs/Cu.m.

5





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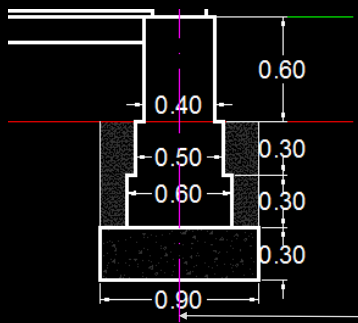
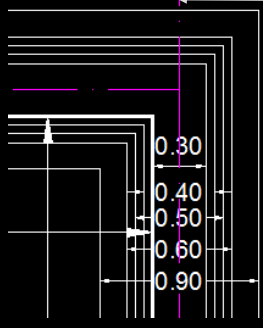
Why Center line length is considered ?



Section of footing along with wall

Centerline for Sub structure and Super structure remain same, so centerline length is considered throughout.



Plan showing lines of footing from 0.30 mt wall up to excavation pit of 0.90mt

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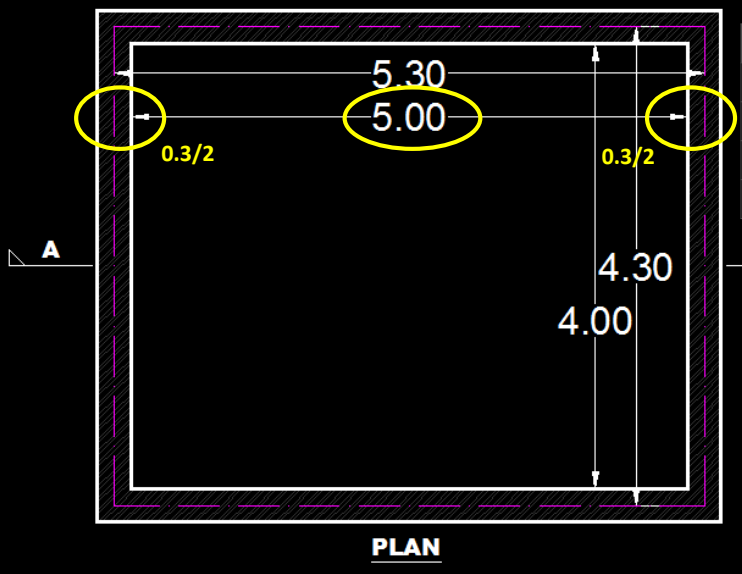
7

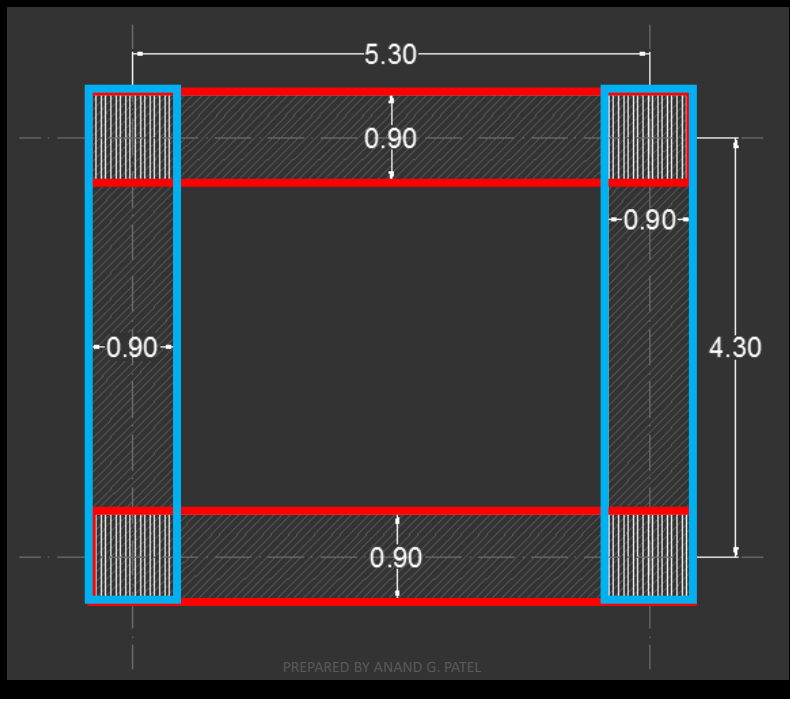
Centerline calculations



Centerline length	
Long wall c/c length	
5.0 + (0.3/2) + (0.3/2)	5.3 mt
Short wall c/c length	
4.0 + (0.3/2) + (0.3/2)	4.3 mt

8

Concept of overlapping



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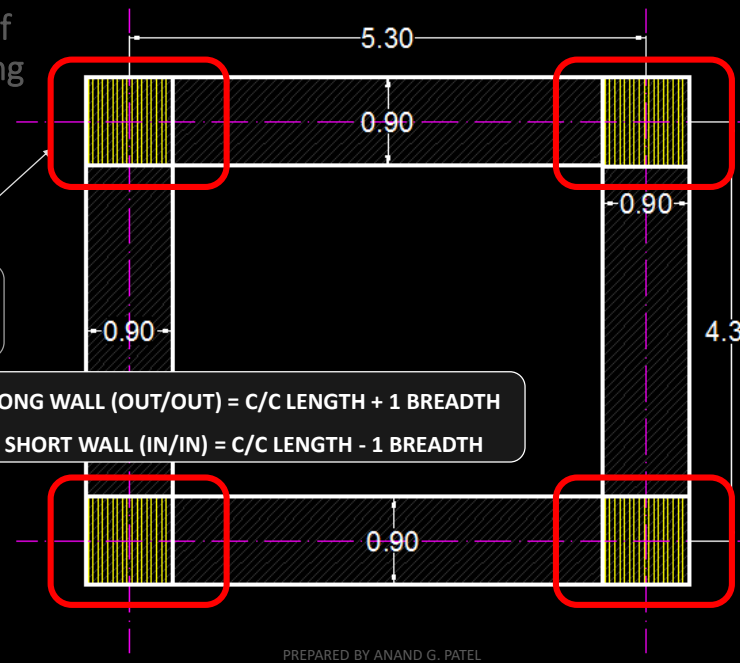
Concept of overlapping



Overlapping portion

LENGTH OF LONG WALL (OUT/OUT) = C/C LENGTH + 1 BREADTH

LENGTH OF SHORT WALL (IN/IN) = C/C LENGTH - 1 BREADTH

Overlapping portion is already considered in calculation of long wall.

So while calculation are made for short wall – that portion is deducted.

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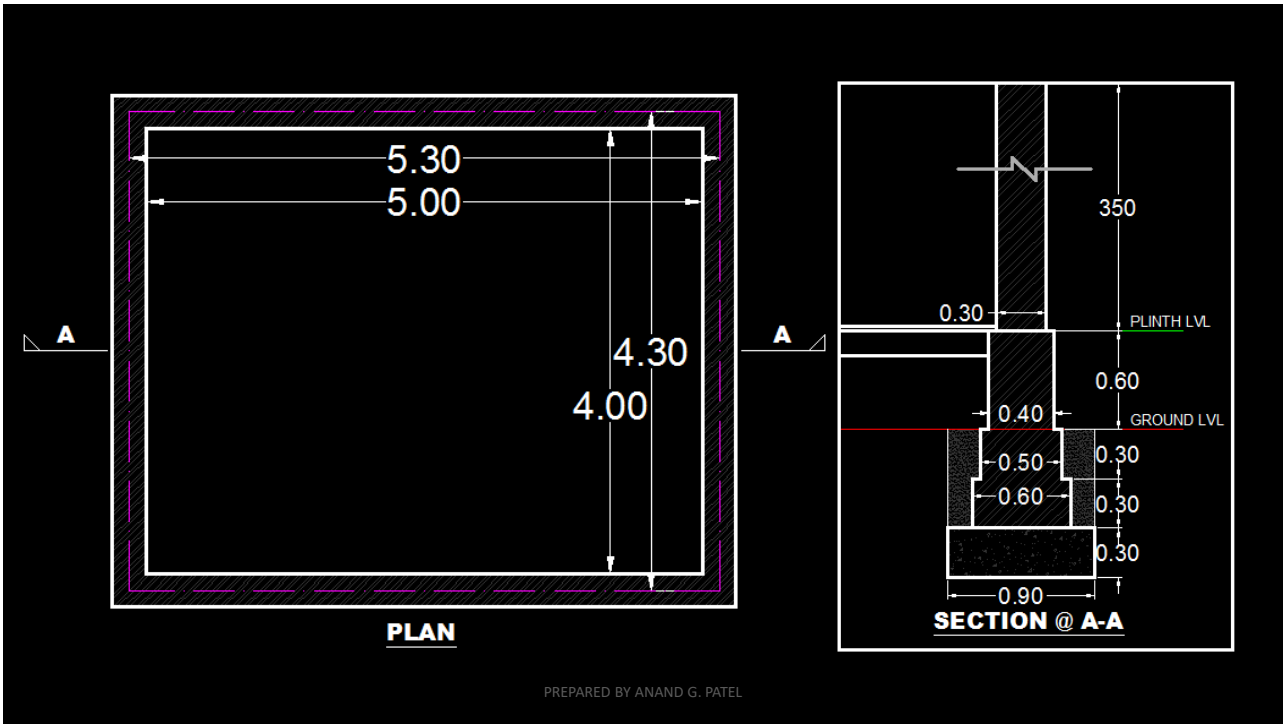

11

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
1	Earthwork in excavation in foundation						
	Long walls	2	6.20	0.90	0.90	10.04	(L = 5.30 + 0.90)
	Short walls	2	3.40	0.90	0.90	5.51	(L = 4.30 - 0.90)
				Total		15.55	Cu.mt.
2	Concrete in foundation						
	Long walls	2	6.20	0.90	0.30	3.35	(L = 5.30 + 0.90) Same as excavation
	Short walls	2	3.40	0.90	0.30	1.84	(L = 4.30 - 0.90)
				Total		5.19	Cu.mt.

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12

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
3	Brick work in foundation						
	Long wall - 1st Footing	2	5.90	0.60	0.30	2.13	(L = 5.30 + 0.60)
	2nd Footing	2	5.80	0.50	0.30	1.74	(L = 5.30 + 0.50)
	Plinth walls	2	5.70	0.40	0.60	2.74	(L = 5.30 + 0.40)
	Short wall - 1st Footing	2	3.70	0.60	0.30	1.33	(L = 4.30 - 0.60)
	2nd Footing	2	3.80	0.50	0.30	1.14	(L = 4.30 - 0.50)
	Plinth walls	2	3.90	0.40	0.60	1.87	(L = 4.30 - 0.40)
				Total		**10.97**	**Cu.mt.**

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13

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
4	Brick work in super structure						
	Long wall	2	5.60	0.30	3.50	11.76	(L = 5.30 + 0.30)
	Short wall	2	4.00	0.30	3.50	8.40	(L = 4.30 - 0.30)
				Total		**20.16**	**Cu.mt.**

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14

Abstract Estimate

SR NO	DESCRIPATION OF ITEM	UNIT	QUANTITY	RATE (Rs)	AMOUNT (Rs)
1	Earthwork in Excavation	m^3	15.55	350.0	5442.50
2	Lime Concrete in Foundation	m^3	5.19	220.0	1141.80
3	Brick work in foundation	m^3	10.97	300.0	3291.00
4	Brick work in super structure	m^3	20.16	200.0	4020.00
				Total (Rs)	13895.30
				Add 3% for contingencies (Rs)	416.86
				Add 2% for Work charge Establishments (Rs)	277.91
				Grand total (Rs)	14590.07

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15

NUMERICAL

- Calculate the detail estimate and prepare abstract for the following item of works of a building with two rooms, shown in figure.

1. Earth work in excavation in foundation
2. Concrete in foundation
3. Brickwork in foundation and plinth
4. Brick work in super structure

Schedule of openings	
D	1.20 x 2.10
W	1.00 x 1.50
S	1.00 x 1.50

Notes

- All walls have same footing section
- Lintels : 15 cm thk with 15cm bearings
- Lintels is to be considered on shelve too

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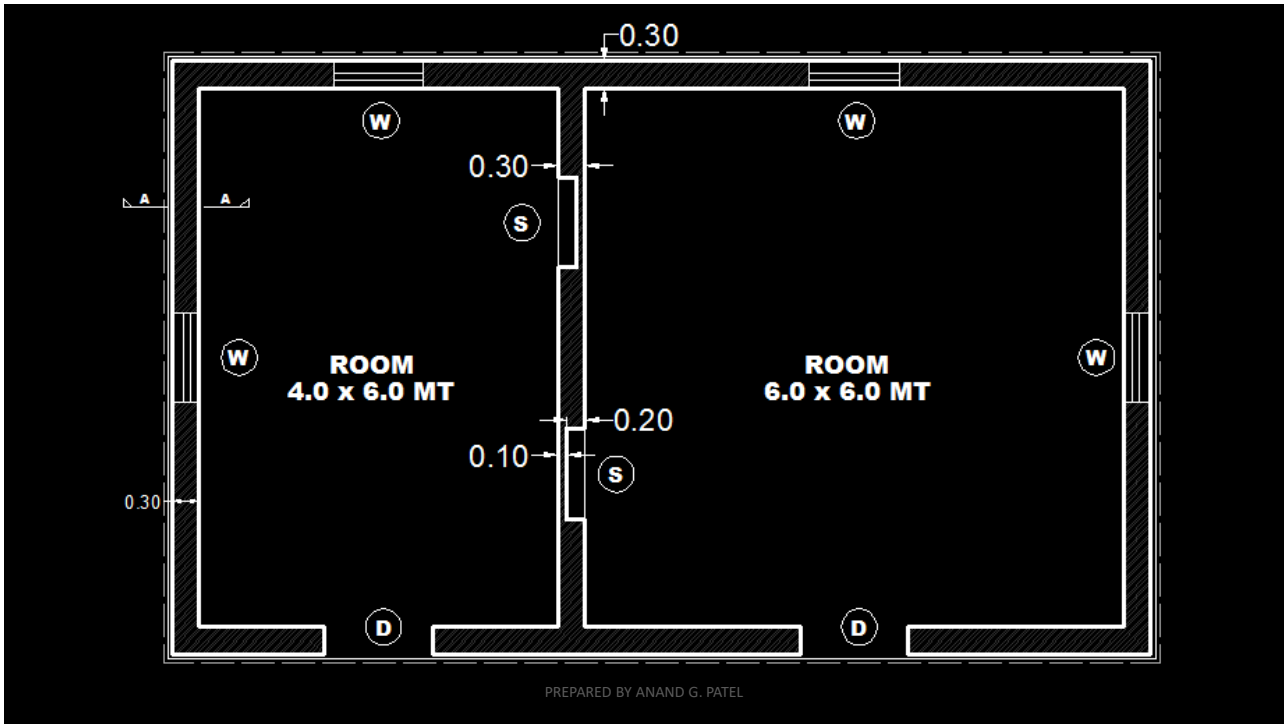
16


0.30
W
W
0.30
A
A
S
W
ROOM
4.0 x 6.0 MT
ROOM
6.0 x 6.0 MT
W
0.20
0.10
S
0.30
D
D
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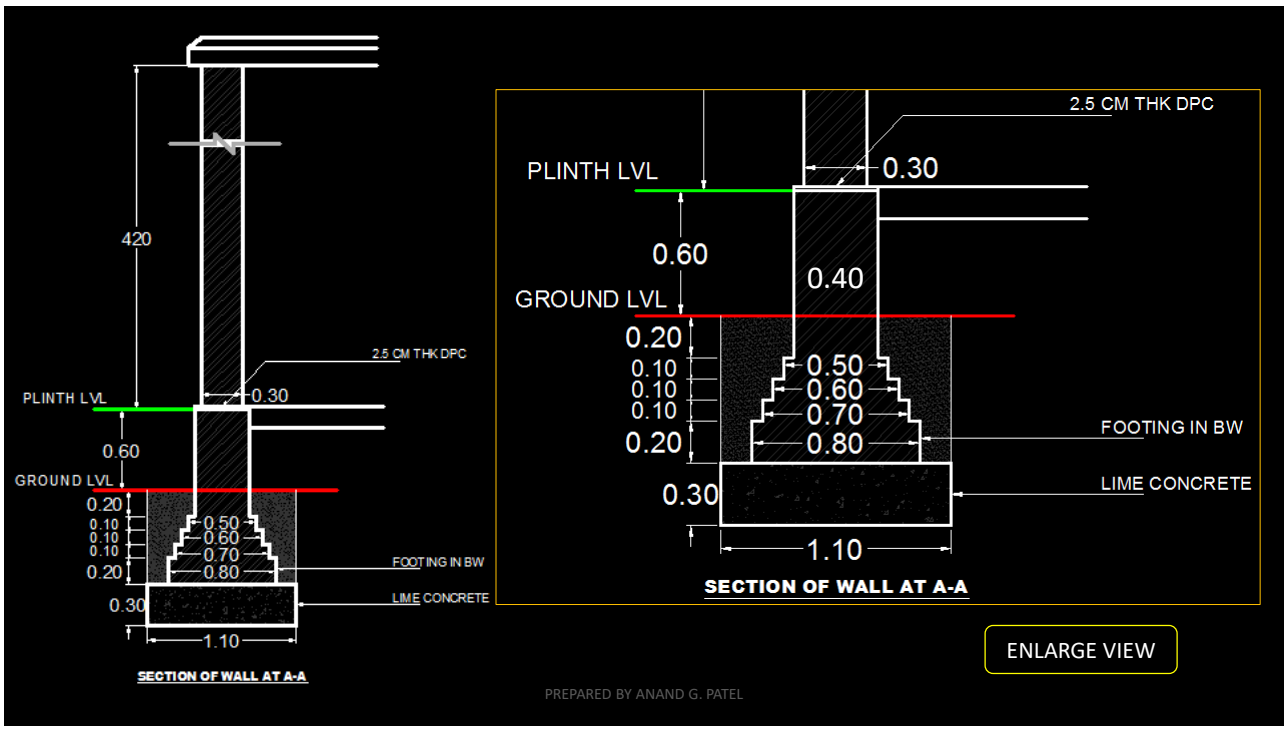
17


420
2.5 CM THK DPC
PLINTH LVL
0.30
0.60
GROUND LVL
0.20
0.10
0.10
0.10
0.20
0.30
0.50
0.60
0.70
0.80
FOOTING IN BW
LIME CONCRETE
1.10
SECTION OF WALL AT A-A
2.5 CM THK DPC
PLINTH LVL
0.30
0.60
0.40
GROUND LVL
0.20
0.10
0.10
0.10
0.20
0.30
0.50
0.60
0.70
0.80
FOOTING IN BW
LIME CONCRETE
1.10
SECTION OF WALL AT A-A
ENLARGE VIEW
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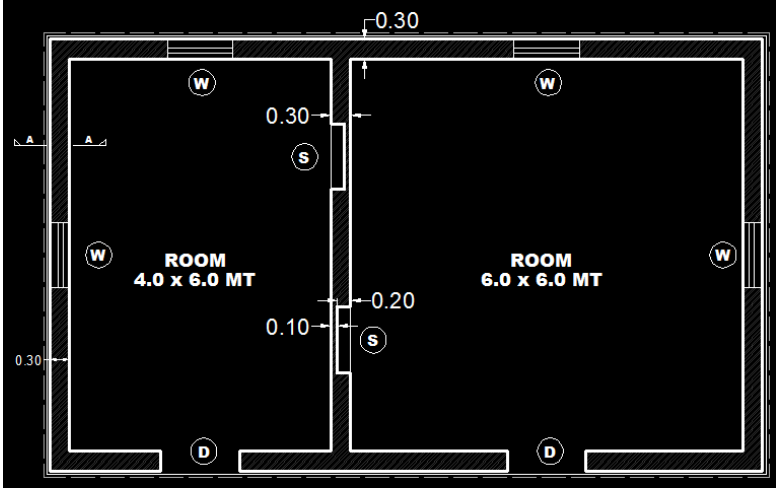
18



Centerline length	
Long wall c/c length	
(0.3/2) + 4.0 + 0.3 + 6.0 + (0.3/2)	10.6 mt
Short wall c/c length	
(0.3/2) + 6.0 + (0.3/2)	6.3 mt

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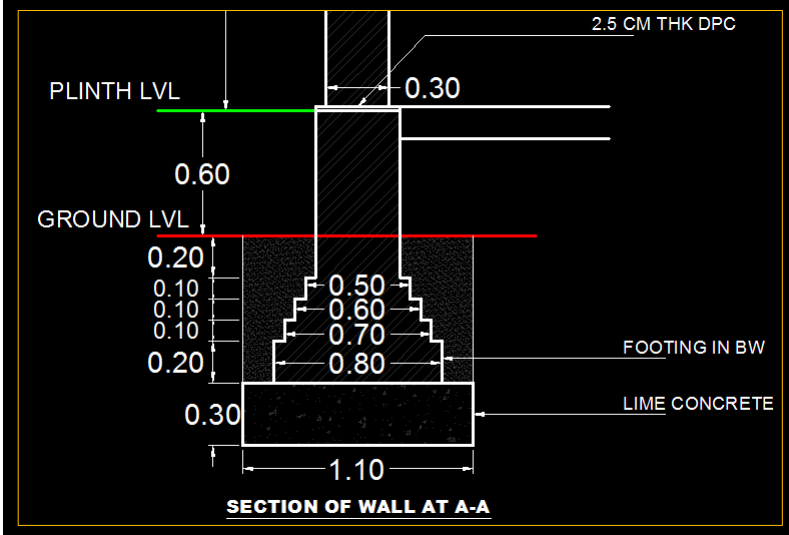
19



Centerline length	
Long wall c/c length	
(0.3/2) + 4.0 + 0.3 + 6.0 + (0.3/2)	10.6 mt
Short wall c/c length	
(0.3/2) + 6.0 + (0.3/2)	6.3 mt

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20

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
1	Earthwork in excavation in foundation						
	Long walls	2	11.70	1.10	1.00	25.74	(L = 10.60 + 1.10)
	Short walls	3	5.20	1.10	1.00	17.16	(L = 6.30 – 1.10)
				Total		**42.90**	**Cu.mt.**
2	Concrete in foundation						
	Long walls	2	11.70	1.10	0.30	7.72	L same as Excavation
	Short walls	3	5.20	1.10	0.30	5.15	L same as Excavation
				Total		**12.87**	**Cu.mt.**

21

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
3	Brick work in foundation						
	Long wall - 1st footing	2	11.40	0.80	0.20	3.65	(L = 10.60 + 0.80)
	2nd footing	2	11.30	0.70	0.10	1.58	(L = 10.60 + 0.70)
	3rd footing	2	11.20	0.60	0.10	1.34	(L = 10.60 + 0.60)
	4th footing	2	11.10	0.50	0.10	1.11	(L = 10.60 + 0.50)
	5th footing – Below GR	2	11.00	0.40	0.20	1.76	(L = 10.60 + 0.40)
	5th footing – Above GR	2	11.00	0.40	0.60	5.28	(L = 10.60 + 0.40)
				Total		14.72	Cu.mt.

22

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
3	Brick work in foundation						
	Short wall - 1st footing	3	5.50	0.80	0.20	2.64	(L = 6.30 - 0.80)
	2nd footing	3	5.60	0.70	0.10	1.18	(L = 6.30 - 0.70)
	3rd footing	3	5.70	0.60	0.10	1.03	(L = 6.30 - 0.60)
	4th footing	3	5.80	0.50	0.10	0.87	(L = 6.30 - 0.50)
	5th footing – Below GR	3	5.90	0.40	0.20	1.42	(L = 6.30 - 0.40)
	5th footing – Above GR	3	5.90	0.40	0.80	4.25	(L = 6.30 - 0.40)
				Total		**11.38**	**Cu.mt.**
				Total for LW-SW		**26.10**	**Cu.mt.**

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23

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
4	DPC of 2.5 cm Thick						
	Long walls	2	11.00	0.40	-	8.80	L same as Plinth wall
	Short walls	3	5.90	0.40	-	7.08	L same as Plinth wall
				Total		15.88	Sq.mt.
	Deduction for door sills						
	Long walls	2	1.20	0.40	-	0.96	
				Total		14.92	Sq.mt.

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24

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
5	Brick work in Super– stru.						
	Long wall	2	10.90	0.30	4.20	27.47	(L = 10.6 + 0.30)
	Short wall	3	6.00	0.30	4.20	22.68	(L = 6.30 - 0.30)
				Total		**50.15**	**Cu.mt.**
	Deductions Doors	2	1.20	0.30	2.10	1.51	
	Windows	4	1.00	0.30	1.50	1.80	
	Shelves	2	1.00	0.20	1.50	0.84	
				Total		**4.15**	**Cu.mt.**

25

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
5	Deductions Continues						
	Lintels over Doors	2	1.50	0.30	0.15	0.14	L = 1.20 + 0.15 + 0.15
	Windows	4	1.30	0.30	0.15	0.23	L = 1.00 + 0.15 + 0.15
	Shelves	2	1.30	0.30	0.15	0.08	L = 1.00 + 0.15 + 0.15
				Total		**0.49**	**Cu.mt.**
		Total B.W. after deductions				**45.51**	**Cu.mt.**
6	Filling: Excavation Trench						
		42.90 - 12.87 - 9.44 - 7.13				13.46	Cu.mt.

26

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
7	Filling : Plinth						
	Room 01	1	3.90	5.90	0.48	11.04	L = 4 - 0.10, B = 6 - 0.10
	Room 02	1	5.90	5.90	0.48	16.15	H = 0.6 - 0.120
				Total		26.73	Cu.mt.
8	12cm RCC Floor slab						
	Room 01	1	3.90	5.90	0.12	2.76	L same as of Plinth filling
	Room 02	1	5.90	5.90	0.12	4.18	
						6.94	Cu.mt.
9	Floor Finishing						
	Room 01	1	4.0	6.0	-	24.00	
	Room 02	1	6.0	6.0	-	36.00	
						60.00	Sq.mt.

27

PLASTERING AND POINTING DEDUCTION CRITERIA		
1	Opening with area up to 0.5 Sq.mt.	No Deductions
2	Opening with area 0.5 to 3.0 Sq.mt.	Deduction should be made for 1 face (Considering Plastering of Jambs and Soffits)
3	Opening with area more than 3.0 Sq.mt.	Deduction should be made for 2 face (Considering Plastering of Jambs and Soffits separately)

28

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
5	Inside Plaster						
	Room 01 Ceiling	1.00	4.00	6.00		24.00	
	Walls	1.00	20.00		4.08	81.60	H = 4.20 - 0.12
	Room 02 Ceiling	1.00	6.00	6.00		36.00	
	Walls	1.00	24.00		4.08	97.92	
				Total		239.52	
	Deductions doors	1.00	1.20		2.10	2.52	Considering Half due to jambs
	Windows	2.00	1.00		1.50	3.00	
						5.52	
	+ve Shelves-Sides	2.00	5.00		0.20	2.00	L = 5.0 mt.
				Total		**236.00**	**Sq.mt.**
				After Deduction			

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29

Detail Estimate

SR No	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
5	Out-side Plaster						
	Longer Side	2.00	10.90		4.80	104.64	H = 4.20 + 0.60
	Shorter Side	2.00	6.60		4.80	63.36	
						168.00	
	Deductions Doors	2.00	1.20		2.10	5.04	
	Windows	4.00	1.00		1.50	6.00	
							Sq.mt.
							Sq.mt.
				After Deduction			

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30

Estimating and Costing

UNIT 02

METHODS OF

BUILDING ESTIMATE

1

Numerical

- Estimate the quantities of the following items of work of building from the given plan and section, also prepare abstract sheet of the same.
  1. Earth work in excavation in foundation
  2. Lime Concrete in foundation
  3. 1st class Brickwork in cement mortar 1:6 in foundation and plinth
  4. 2.5 cm thk. DPC
  5. 1st class brickwork in cement mortar in super structure
  6. 12mm thick outside plaster
  7. 18 mm thick inside plaster

2

Schedule of openings

SCHEDULE OF OPENINGS - DOORS	
D1	120 x 210 CM
D2	100 x 200 CM
D3	75 x 180 CM

SCHEDULE OF OPENINGS - WINDOWS	
W1	100 x 150 CM
W2	200 x 150 CM
W3	75 x 120 CM
CW	75 x 60 CM

SCHEDULE OF OPENINGS - SHELVES	
S	100 x 150 CM

NOTES	
1	All walls have same footing section
2	Lintels : 15 cm thk with 15cm bearings
3	Lintels is to be considered on shelve too

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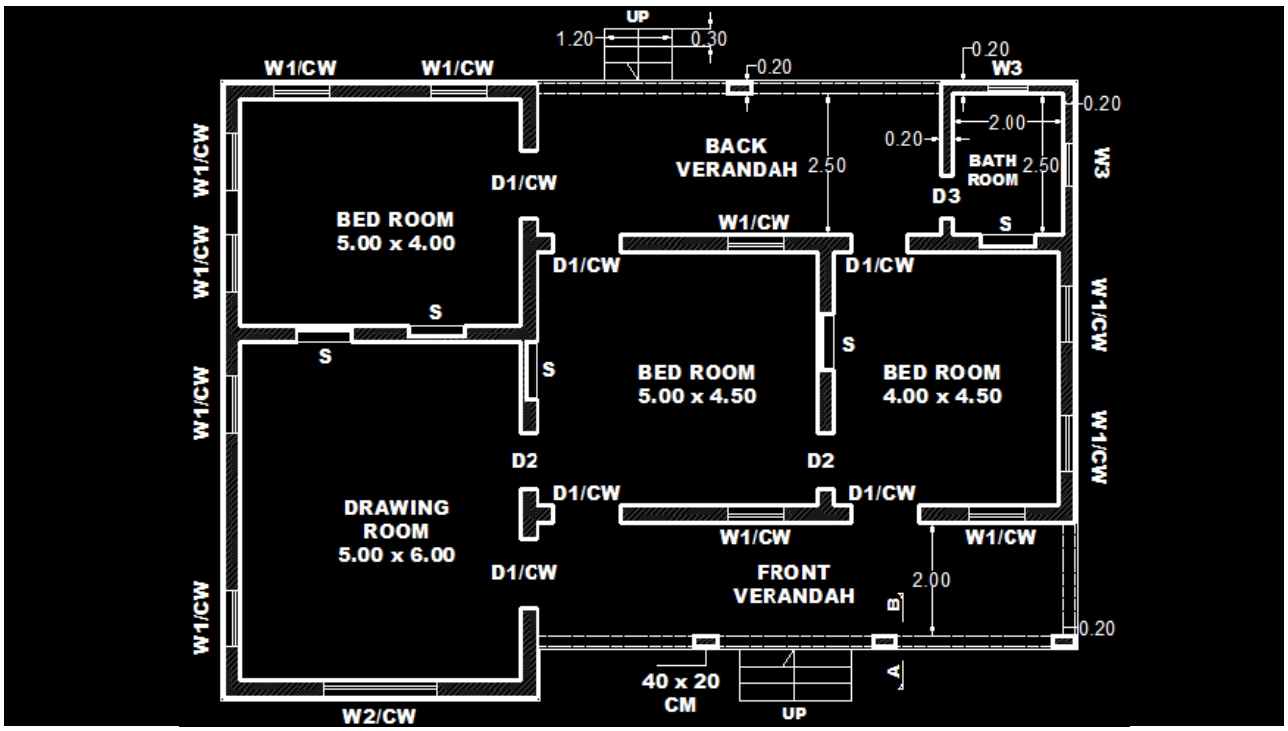

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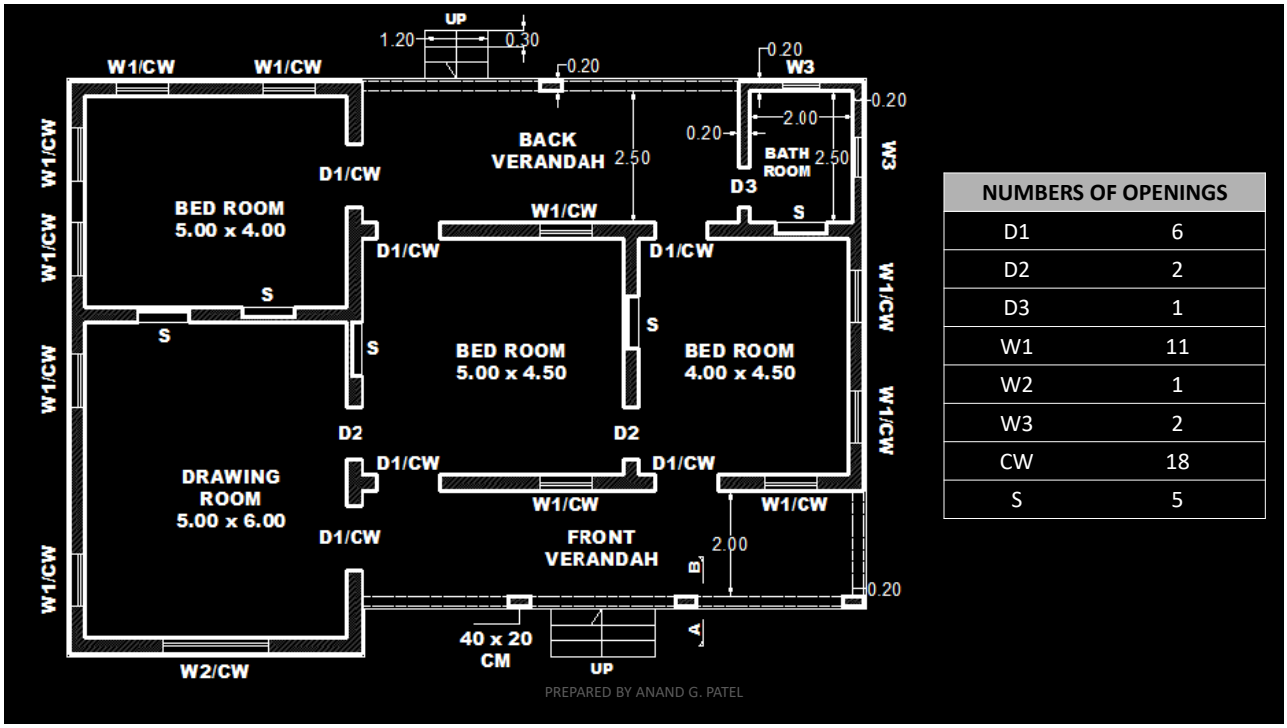
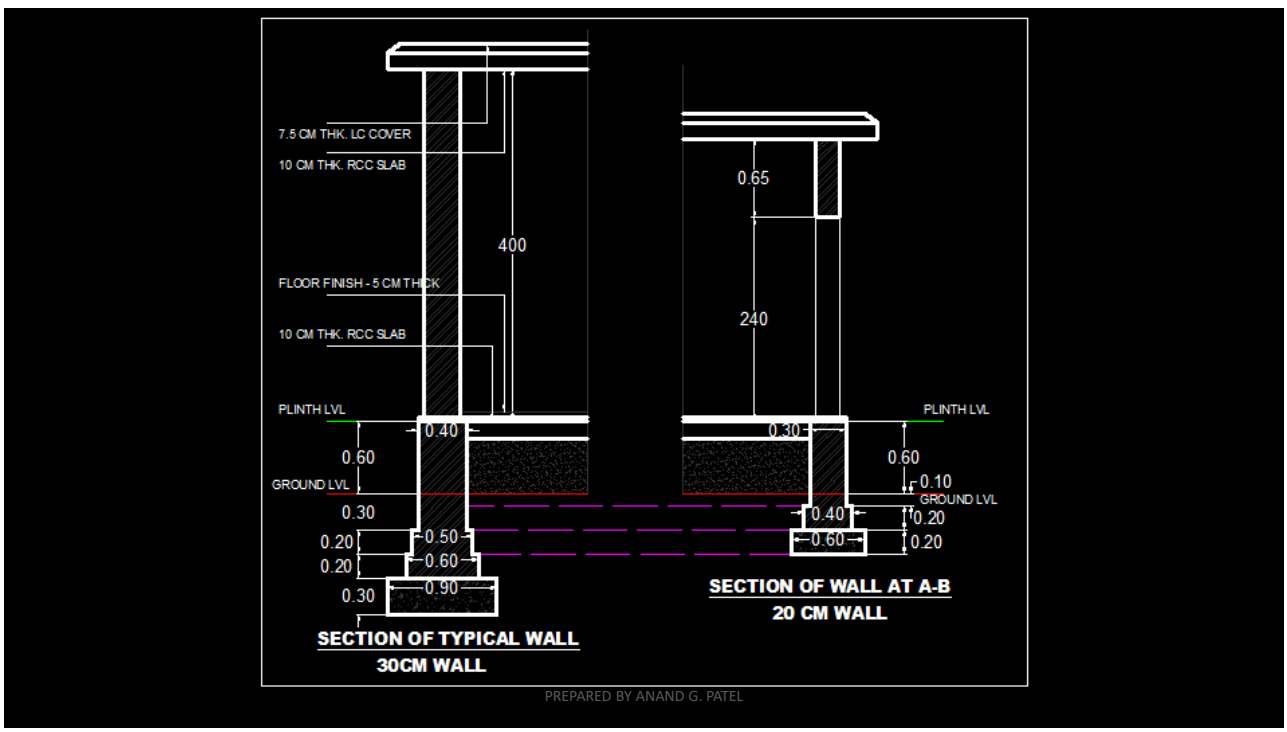


NUMBERS OF OPENINGS	
D1	6
D2	2
D3	1
W1	11
W2	1
W3	2
CW	18
S	5

5



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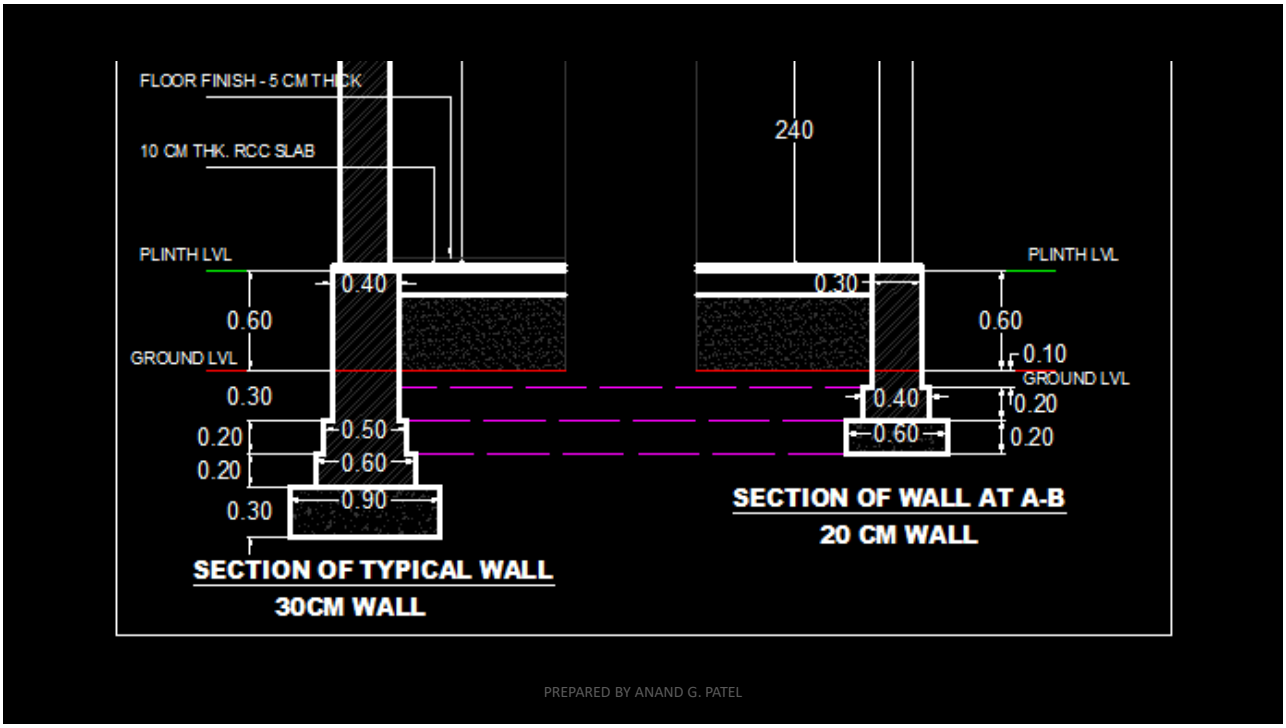

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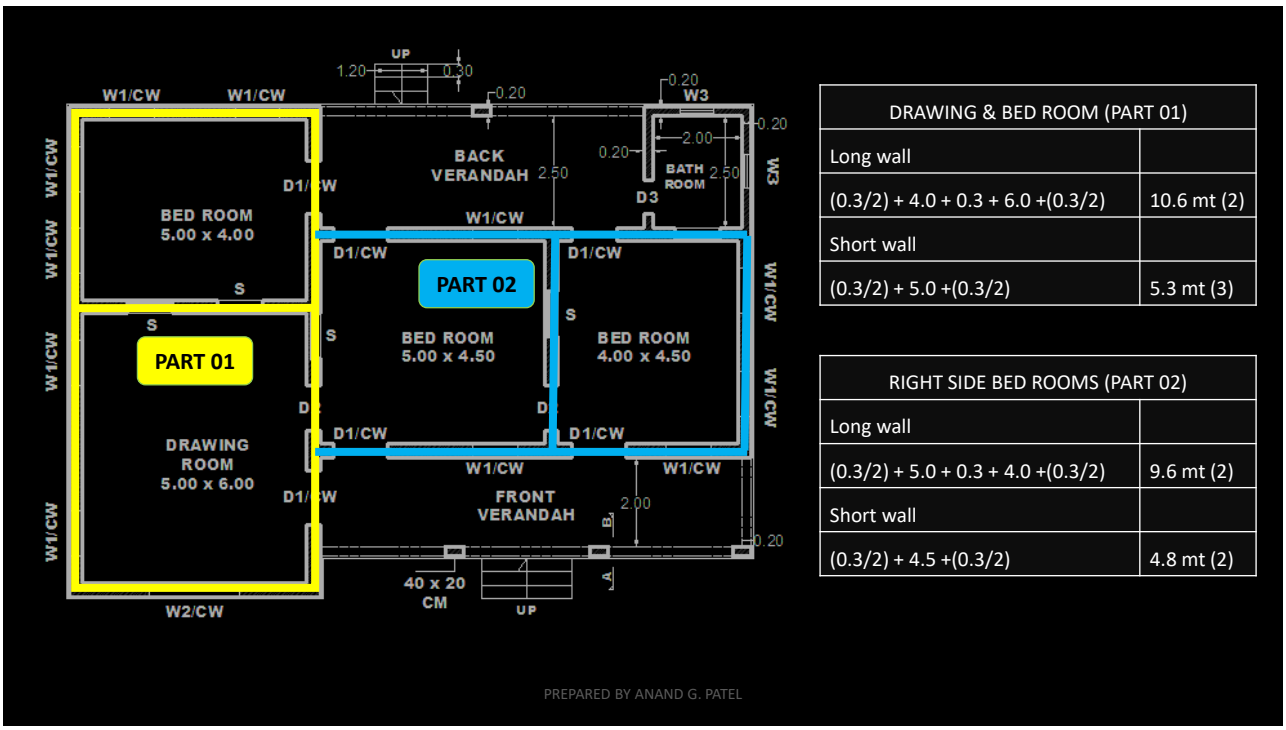
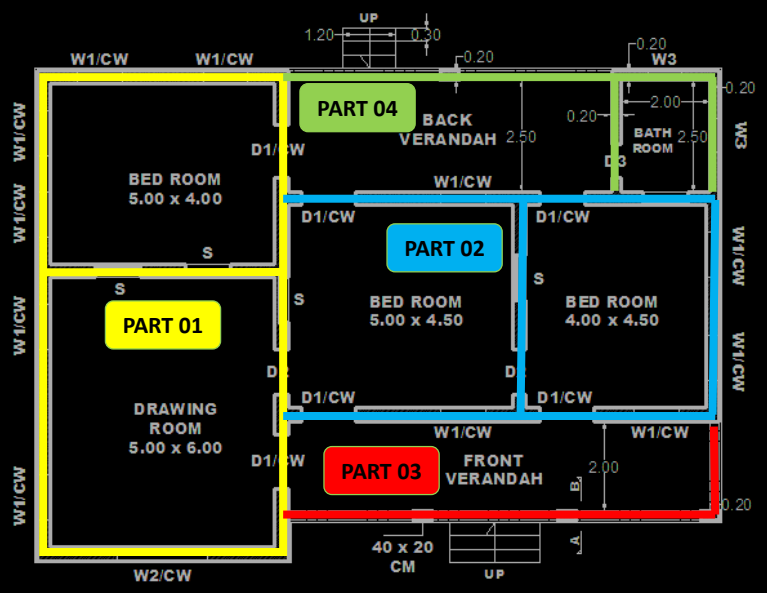


DRAWING & BED ROOM (PART 01)	
Long wall	
(0.3/2) + 4.0 + 0.3 + 6.0 +(0.3/2)	10.6 mt (2)
Short wall	
(0.3/2) + 5.0 +(0.3/2)	5.3 mt (3)

RIGHT SIDE BED ROOMS (PART 02)	
Long wall	
(0.3/2) + 5.0 + 0.3 + 4.0 +(0.3/2)	9.6 mt (2)
Short wall	
(0.3/2) + 4.5 +(0.3/2)	4.8 mt (2)

8



FRONT VERANDAH (PART 03)	
Long wall	
(0.3/2)+5.0+0.3+4.0+0.3–(0.2/2)	9.65 mt (1)
Short wall	
(0.3/2) + 2.0 +(0.2/2)	2.25 mt (1)

BACK VARANDAH (PART 04)	
Long wall	
Same as part -03 Long Wall	9.65 mt (1)
Short wall	
((0.3/2) + 2.5 +(0.2/2)	2.75 mt (2)

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9

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
1	Earthwork in excavation in foundation						
P-1	Long walls	2	11.50	0.90	1.00		(L = 10.60 + 0.90)
	Short walls	3	4.40	0.90	1.00		(L = 5.30 – 0.90)
P-2	Long walls	2	9.60	0.90	1.00		(L = 9.60 + 0.90/2 – 0.90/2)
	Short walls	2	3.90	0.90	1.00		(L = 4.80 – 0.90)
P-3	Long walls	1	9.50	0.60	0.50		(L = 9.65 - 0.90/2 + 0.60/2)
	Short walls	1	1.50	0.60	0.50		(L = 2.25 - 0.90/2 - 0.60/2)
P-4	Long walls	1	9.50	0.60	0.50		(L = 9.65 - 0.90/2 + 0.60/2)
	Short walls	2	2.00	0.60	0.50		(L = 2.75 - 0.90/2 - 0.60/2)
				Total			**Cu.mt.**

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10

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
2	Lime con. In Foundation						
P-1	Long walls	2	11.50	0.90	0.30		L Same as earthwork
	Short walls	3	4.40	0.90	0.30		L Same as earthwork
P-2	Long walls	2	9.60	0.90	0.30		L Same as earthwork
	Short walls	2	3.90	0.90	0.30		L Same as earthwork
P-3	Long walls	1	9.70	0.60	0.20		(L = 9.65 - 0.50/2 + 0.60/2)
	Short walls	1	1.70	0.60	0.20		(L = 2.25 - 0.50/2 - 0.60/2)
P-4	Long walls	1	9.70	0.60	0.20		(L = 9.65 - 0.50/2 + 0.60/2)
	Short walls	2	2.20	0.60	0.20		(L = 2.75 - 0.50/2 - 0.60/2)
				Total			**Cu.mt.**

11

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
3	Brick work in foundation						
P-1	**Long walls** 1st footing	2	11.20	0.60	0.20		(L = 10.60 + 0.60)
	2nd footing	2	11.10	0.50	0.20		(L = 10.60 + 0.50)
	Plinth wall above footing	2	11.00	0.40	0.90		(L =10.60 + 0.40)
	Short walls 1st footing	3	4.70	0.60	0.20		(L = 5.30 - 0.60)
	2nd footing	3	4.80	0.50	0.20		(L = 5.30 - 0.50)
	Plinth wall above footing	3	4.90	0.40	0.90		(L = 5.30 - 0.40)
				Total			**Cu.mt.**

12

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
3	Brick work in foundation						
P-2	**Long walls** 1st footing	2	9.60	0.60	0.20		(L = 9.60 - 0.60/2 + 0.60/2)
	2nd footing	2	9.60	0.50	0.20		(L = 9.60 - 0.50/2 + 0.50/2)
	Plinth wall above footing	2	9.60	0.40	0.90		(L = 9.60 - 0.40/2 + 0.40/2)
	Short walls 1st footing	2	4.20	0.60	0.20		(L = 4.80 - 0.60)
	2nd footing	2	4.30	0.50	0.20		(L = 4.80 - 0.50)
	Plinth wall above footing	2	4.40	0.40	0.90		(L = 4.80 - 0.40)
				Total			**Cu.mt.**

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13

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
3	Brick work in foundation						
P-3	**Long walls** footing	1	9.65	0.40	0.20		(L = 9.65 - 0.40/2 + 0.40/2)
	Plinth wall above footing	1	9.60	0.30	0.70		(L = 9.65 - 0.40/2 + 0.30/2)
	Short walls footing	1	1.85	0.40	0.20		(L = 2.25 - 0.40/2 - 0.40/2)
	Plinth wall above footing	1	1.90	0.30	0.70		(L = 2.25 - 0.40/2 - 0.30/2)
P-3	**Long walls** footing	1	9.65	0.40	0.20		L same as front verandah
	Plinth wall above footing	1	9.60	0.30	0.70		L same as front verandah
	Short walls footing	2	2.35	0.40	0.20		(L = 2.75 - 0.40/2 - 0.40/2)
	Plinth wall above footing	2	2.40	0.30	0.70		(L = 2.75 - 0.40/2 - 0.30/2)
				Total			**Cu.mt.**
				Grand Total			**Cu.mt.**

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14

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
4	2.5 cm Thick D.P.C.						
P-1	Long walls	2	11.00	0.40	-		L Same as plinth wall
	Short walls	3	4.90	0.40	-		L Same as plinth wall
P-2	Long walls	2	9.60	0.40	-		L Same as plinth wall
	Short walls	2	4.40	0.40	-		L Same as plinth wall
	Verandah pillars	4	0.50	0.30	-		5 cm extra on all side
	Bath room rear wall	1	2.50	0.30	-		L = 2.20 + 2x0.15
	Side and inner wall	2	2.40	0.30	-		L = 2.75 – 0.3/2 – 0.4/2
				Total			**Cu.mt.**
				Grand Total			**Cu.mt.**

15

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
5	1st Class BW in Super Structure						
P-1	Long walls	2	10.90	0.30	4.00		(L = 10.60 + 0.30)
	Short walls	3	5.00	0.30	4.00		(L = 5.30 – 0.30)
P-2	Long walls	2	9.60	0.30	4.00		(L = 9.60 + 0.30/2 – 0.30/2)
	Short walls	2	4.50	0.30	4.00		(L = 4.80 – 0.30)
P-3	Long walls	1	9.60	0.20	3.05		(L = 9.65 - 0.30/2 + 0.20/2)
	Short walls	1	2.00	0.20	3.05		(L = 2.25 - 0.30/2 + 0.20/2)
P-4	Long walls	1	9.60	0.20	3.05		L same as front verandah
	Short walls	2	2.50	0.20	3.05		(L = 2.75 - 0.30/2 – 0.20/2)
				Total			**Cu.mt.**

16

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
5	1st Class BW in Super Structure - Deductions						
	Doors D1	6	1.20	0.30	2.10		
	D2	2	1.00	0.30	2.00		
	D3	1	0.75	0.20	1.80		
	Windows W1	11	1.00	0.30	1.50		
	W2	1	2.00	0.30	1.50		
	W3	2	0.75	0.20	1.20		
	Clear storey window CW	18	0.75	0.30	0.60		
	Shelves	5	1.00	0.20	2.40		
				Total			**Cu.mt.**

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17

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
5	1st Class BW in Super Structure - Deductions						
	Front verandah opening between pillars	1	8.40	0.20	2.40		L= 9.60 – 3x0.40
	Side opening	1	2.00	0.20	2.40		
	Back verandah opening	1	6.80	0.20	2.40		L = 9.60 – 2.40 – 0.40
	Lintels over doors D1	6					15 cm bearing
	D2	2					15 cm bearing
	D3	1					10 cm bearing
				Total			**Cu.mt.**

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18

Detail Estimate

SR NO	DESCRIPATION OF ITEM	NOS.	L	B	H	Q	REMARKS
5	1st Class BW in Super Structure - Deductions						
	Lintels over windows W1	11					
	W2	1					
	W3	2					
	CW	18					
	Verandah lintels front	1					Either Bearings of 15 cm OR Full length of Lintel can be considered
	Side	1					
	Rear	1					
				Total Deductions			
				Total BW			**Cu.mt.**

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19