

# **MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE**

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

Gwalior, Madhya Pradesh - 474005



A MINOR-PROJECT REPORT

ON

**“PLANNING OF BUILDING, ESTIMATING”**

Submitted by

- |                     |              |
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**Department of Civil Engineering**

**Madhav Institute of Technology & Science**

2022

# CERTIFICATE

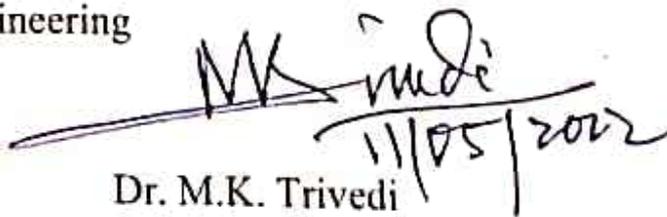


Madhav Institute of Technology & Science  
Gwalior

This is to certify that the project entitled "**Planning of Building , Estimating**" presented by the student of group-17 in complete satisfaction of the necessity of the recompense of Bachelor of Technology degree in Civil Engineering at Madhav Institute of Technology & Science, Gwalior is a genuine work completed by the students under my watch and direction.

To the best of my insight, the matter epitomized in the theory has not been submitted to any other college/Institute for the recompense of any Degree or Diploma

Under the Guidance of   
Prof. Anil Kumar Dwivedi  
Project Guide  
Department of Civil Engineering

  
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Department of Civil Engineering

Date: 10/05/2022

# ACKNOWLEDGEMENT

It offers us a great pleasure to thank and offer appreciation to each and every one of those people who have specifically or by implication helped us through the course of this study. This undertaking would have never been finished without the commitment of those individuals.

Unfortunately, the long list of acknowledgement, regardless of how extensive is constantly fragmented and lacking. To be sure this page of notice should never have the capacity to touch the generousness of the individuals who tendered their assistance to us.

As a matter of first importance I wish to express my profound feeling of appreciation and obligation to **Prof. A.K. Dwivedi**, Department of Civil Engineering – MITS, Gwalior for appointing me the undertaking "**PLANNING OF BUILDING, ESTIMATING**" and for his motivating direction, helpful feedback and significant proposal all through this venture. We also want to extend our appreciation to every one of our companions and senior understudies who have constantly empowered and bolstered us in doing this work. We want to thank all the individuals from Department of Civil Engineering who have dependably been agreeable with us.

Last however not the slightest we want to thank the writers of different examination articles and books that we alluded throughout this undertaking.

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# 1. INTRODUCTION

The basic need of human existences are food, clothing's & shelter from times immemorial man has been making efforts in improving their standard of living. The point of his efforts has been to provide an economic and efficient shelter. The possession of shelter besides being a basic, used, gives a feeling of security, responsibility and shown the social status of man.

Every human being has an inherent liking for a peaceful environmental needed for his pleasant living this object is achieved by having a place of living situated at the safe and convenient location, such a place for comfortable and pleasant living requires considered and kept in view.

- A peaceful environment.
- Safety from all natural source & climate conditions
- General facilities for community of his residential area

The engineers has to be kept in mind the municipal conditions, building bye laws, environment, financial capacity, water supply, sewage arrangement, provision of future, aeration, ventilation etc., in suggestion a particular type of plan to any client.

## **2.1 AIM OF THE PROJECT**

The aim of the project is to planning and Estimating of a residential building

## **2.2 DEMAND OF HOUSES**

The house is the first unit of the society and it is the primary unit of human habitation. The house is built to grant the protection against wind, weather, and to give insurance against physical insecurity of all kinds.

The special features of the demand for housing consists. of in its unique nature and depend on the following factors;

- Availability of cheap finance.
- Availability of skilled labours.
- Availability of transport facility.
- Cost of labours & material of construction.
- Predictions of future demand.
- Rate of interest on investing e.g., low rates of interest with facilities of long term payment may facilities investment in housing.
- Rate of population growth and urbanization.
- Supply of development plots at reasonable prices.
- Taxation policy on real estates.
- Town planning & environment conditions.

## **2.3 CLASSIFICATION OF BUILDING BASED ON OCCUPANCY**

As we know that, a building may be classified based on different parameters like occupancy, load transfer in a structure, materials used, degree of fire resistance, etc.

### **2.3.1 RESIDENTIAL BUILDINGS**

These building include any building in which sleeping accommodation provide for normal residential purposes, with or without cooking and dining facilities. it includes single or multifamily dwellings, apartment houses, lodgings or rooming houses, restaurants, hostels, dormitories and residential hostels.

## **2.4 SELECTION OF PLOT AND STUDY**

Selection of plot is very important for buildings a house. Site should be in good place where there community but service is convenient but not so closed that becomes a source of inconvenience or noisy.

The factor to be considered while selecting the building site are as follows:-

- 1** Access to park & playground.
- 2** Availability of public utility services, especially water, electricity & sewage disposal.
- 3** Distance from places of work.
- 4** Ease of drainage.
- 5** Location with respect to school, college & public buildings.
- 6** Transport facilities.
- 7** Wind velocity and direction.

## **2.5 SURVEY OF THE SITE FOR PROPOSED BUILDING**

- Reconnaissance survey: the following has been observed during reconnaissance survey of the site.
- Site is located nearby.
- The site is very clear planned without ably dry grass and other throne plats over the entire area.
- No levelling is require since the land is must uniformly level.
- The ground is soft.
- Labour available near by the site.
- Houses are located near by the site.
- Detailed survey: the detailed survey has been done to determine the boundaries of the required areas of the site with the help of theodolite and compass.

## **2.6 ARRANGEMENT OF ROOMS**

- LIVING ROOM
- KITCHEN
- BED ROOM
- BATH &W.C
- DINING ROOM
- STAIRCASE

### **2.6.1 LIVING ROOM**

This is the area is for general use. Hence the living & drawing room should be planned near the entrance south east aspects. During summer sunshine it the northern side & entry of sunrays from southern or south-east aspects do not arise.

### **2.6.2 KITCHEN**

Kitchen is a very important room in a house. Health, comfort and happiness of the family directly depends upon the kitchen. The minimum area for kitchen is 5.5 m<sup>2</sup>. For kitchen having separate store 4.5 m<sup>2</sup>. may be minimum area. Eastern aspects to admit morning sun to refresh and purity of air.

## **2.6.3 BEDROOM**

They are the most important room in a house as one spends more than 1/3<sup>rd</sup> of his life at rest, in sleep here. Two persons are commonly supposed to occupy one room. While designing bedrooms a minimum of 10 m<sup>3</sup> space for an adult and about 6 m<sup>3</sup> of space for every child under 10 should be made available. Bed may also be provided with attached toilets.

## **2.6.4 BATH & W.C**

Bath and W.C. are usually combined in one room & attached to the bedroom and should be well finished. This should be fitted with bath tub, shower, wash-hand basin, W.C., shelves, towels, racks, brackets, etc., all of white glazed tiles. Floor should be mosaic or white glazed tiles.

## **2.6.5 DINING ROOM**

Dining rooms are one of the most important rooms in a house. A room where technology is non-existent & families come together to eat and catch up on each other's days. It's simple manners to not use your phone at the dining table which turns it into one of the only places that people are forced to step away from social media & into the 'real world'.

## **2.7 SANITATION PROVISION**

It deals with providing sufficient natural light, ventilation and sanitary conveniences in the building.

### **2.7.1 LIGHT:**

All the rooms should have proper natural light in the day and artificial light in the night. The sunlight also kills the disease germs, prevents dampness in the buildings and also prevents breeding of insects etc. the light should be uniformly distributed in the rooms.

### **2.7.2 VENTILATION:**

Ventilation may be defined as the system of supplying or removing air by natural or mechanical mean or from any enclosed space to create and maintain comfortable conditions. Operation of building and location to windows help in providing proper ventilation.

### **2.7.3 SANITARY CONVENIENCES:**

The rooms and other parts of the buildings should remain in clean condition. The responsibility lies with the occopants. But water reaching in the building at proper pressure, water and sanitary fitting of number of fittings, etc are the primary requirements during the planning and designing of the buildings.

## 2.8 RESIDENTIAL BUILDING DETAILS

An estimate is a calculation of the quantities of various items of work, and the expenses likely to be incurred there on.

The total probable expenses to be incurred on the work is known as estimated cost of the work.

<b>Location:</b>	Gwalior (M.P.)
<b>Area:</b>	845 Sqft.
<b>Concrete:</b>	m20
<b>Steel:</b>	TMT Fe515
<b>Ceiling Height:</b>	3m
<b>Plinth:</b>	0.9m
<b>Slab thickness:</b>	0.11m
<b>Wall thickness:</b>	0.27m

# DRAWINGS

## 1. SITE PLAN

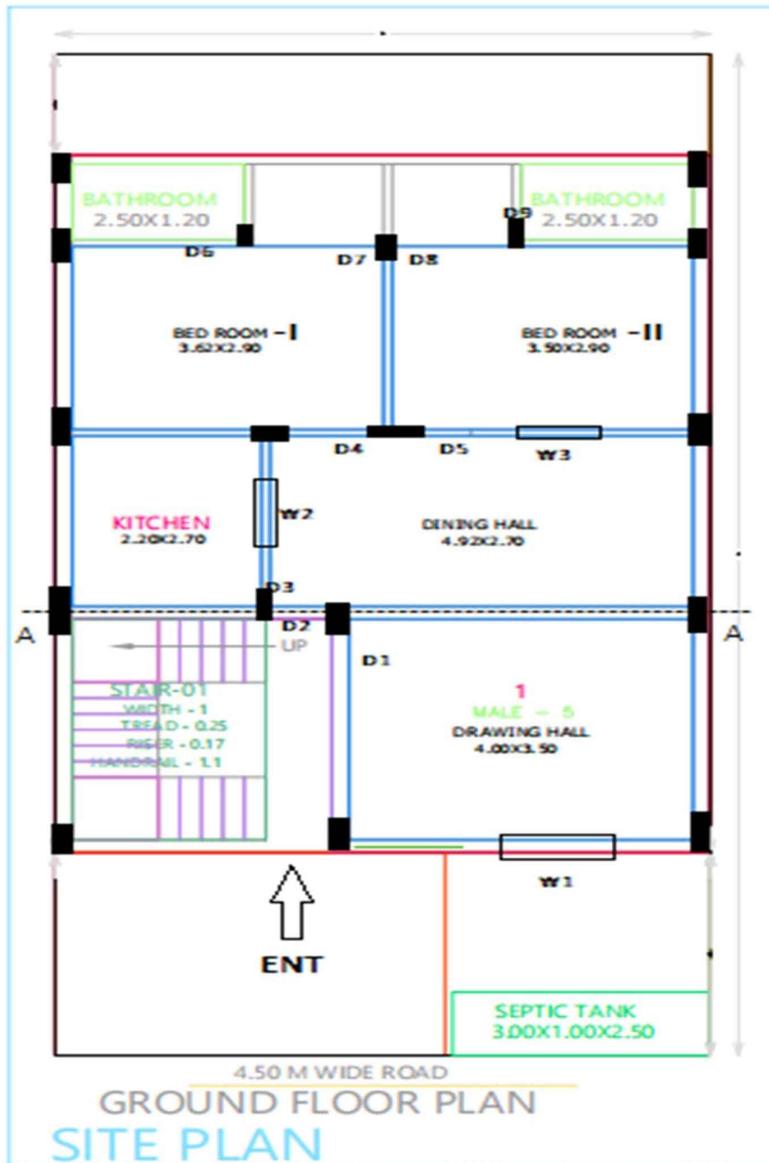
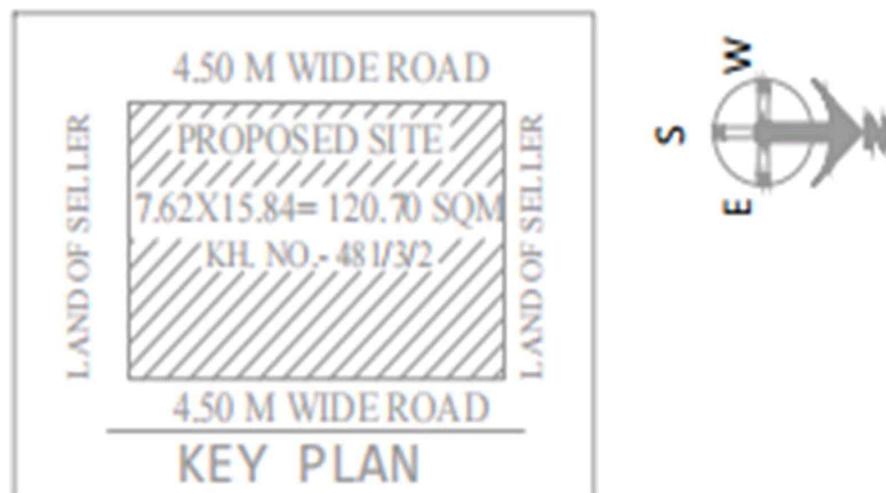


Fig.-01

## 2. KEY PLAN



**Fig.-02**

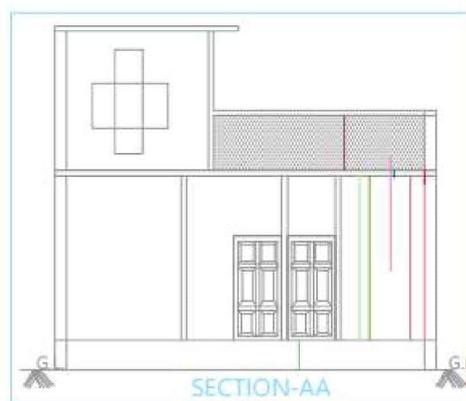


## 4. ELEVATION



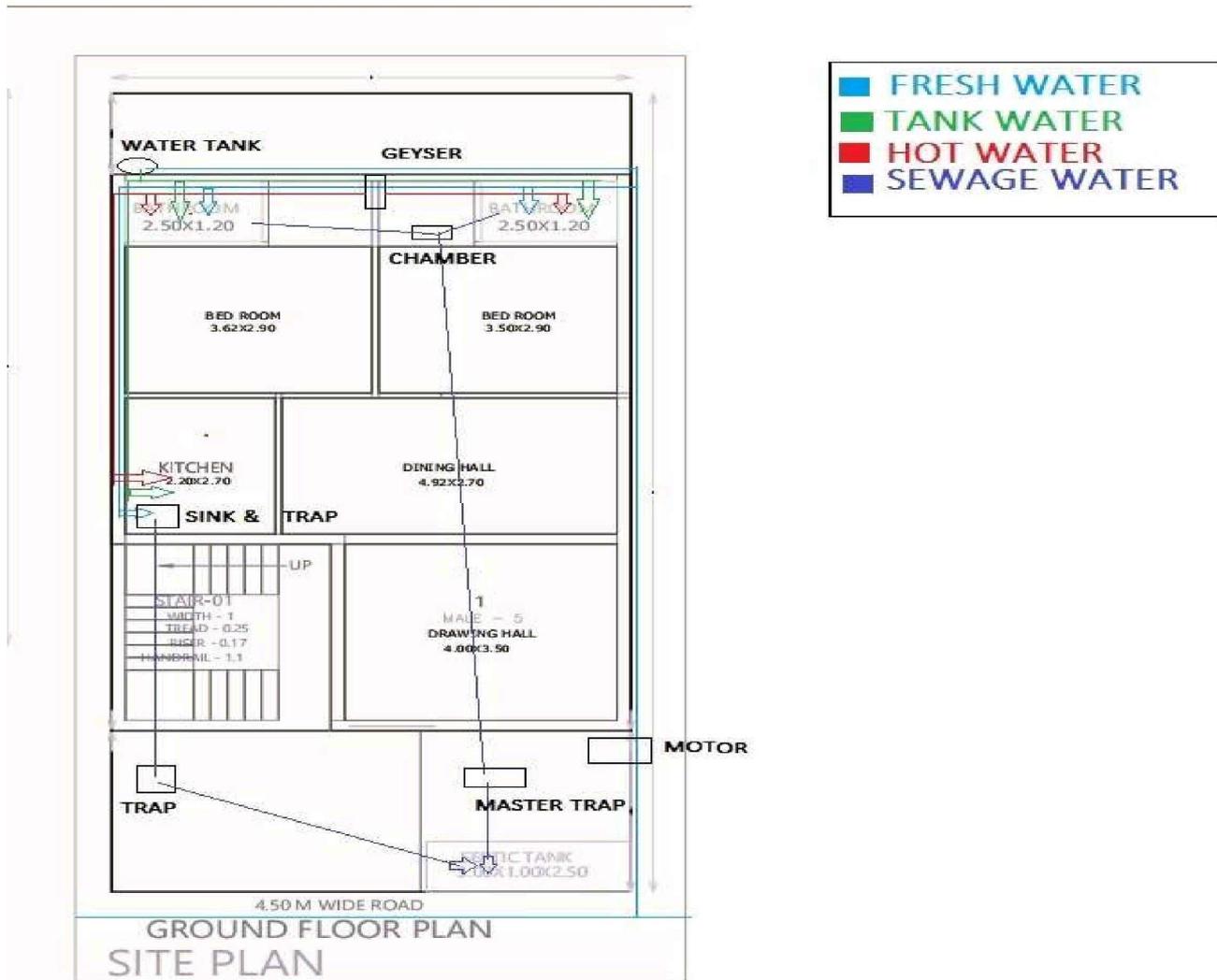
**Fig.-04**

## 5. SECTION VIEW



**Fig.-05**

## 6. WATER & SEWAGE PIPELINE PLAN



**Fig.-06**

## 4. ESTIMATION AND COSTING

### QUANTITY SHEET

Item No.	Item Description	No.	Length (m)	Width (m)	Height (m)	Quantity	
1	Excavation for Foundation	17	1.5	1.5	1.76	67.32	cu.m
2	PCC at Foundation	17	1.5	1.5	0.076	3.00	cu.m
	Thickness = 0.076 m						
3	Footing Rectangular Portion	17	1.22	1.22	0.23	5.81	cu.m
	Thickness = 0.23 m						
3	Column Concrete up to Plinth						
	Column (0.22x0.30) m <sup>2</sup>	17	0.22	0.30	2.4	2.70	cu.m
4	Brick Work in Foundation						
	1 <sup>st</sup> Step For 0.6m breadth	17	1.5	0.6	0.3	4.59	cu.m
	2 <sup>nd</sup> step For 0.5m breadth	17	1.22	0.5	0.3	3.11	c.m
	3 <sup>rd</sup> step For 0.4m breadth	17	1.22	0.4	0.3	2.48	c.m
						10.18	c.m
4	Earth Filling in Plinth						
	Stair and Varandah	1	3.12	3.5	0.9	9.98	cu.m
	Drawing Hall	1	4	3.5	0.9	12.79	cu.m
	Dinining Hall	1	4.92	2.7	0.9	11.95	cu.m
	Kitchen	1	2.2	2.70	0.9	5.34	cu.m

	Bedroom-I	1	3.62	2.9	0.9	9.44	cu.m
	Bedroom-II	1	3.5	2.9	0.9	9.13	cu.m
	Bathroom	2	2.5	1.2	0.9	5.48	cu.m
	Passage	1	2.12	1.20	0.9	2.28	cu.m
						66.39	cu.m
5	Flooring						
	Varandah	1	3.1	3.5		10.87	sq.m.
	Drawing Hall	1	4	3.5		13.99	sq.m.
	Dining Hall	1	4.92	2.7		13.28	sq.m.
	Kitchen	1	2.2	2.7		5.93	sq.m.
	Bedroom-I	1	3.6	2.9		10.49	sq.m.
	Bedroom-II	1	3.5	2.9		10.12	sq.m.
	Bathroom	2	2.5	1.2		6.00	sq.m.
	Passage	1	2.1	1.2		2.54	sq.m.
						73.32	sq.m.
6	Skirting						
	Varandah	1	8.13			8.13	m.
	Drawing Hall	1	13.7			13.7	m.
	Dinng Hall	1	12.19			12.19	m.
	Kitchen	1	8.8			8.8	m.
	Bedroom-I	1	10.14			10.14	m.
	Bedroom-II	1	10.66			10.66	m.

	Bathroom	2	12.97			25.94	m.
	Passage	1	3.44			3.44	m.
						93.33	m

7	Brick work in Superstructure						
	Long Wall	2	10.35	0.25	3.04	15.72	cu.m.
	Short Wall	2	7.12	0.25	3.04	10.82	cu.m.
	Short Wall Bath + Toilet	2	1.2	0.12	2.13	0.60	cu.m.
	Horizonal	3	7.12	0.12	3.04	7.77	cu.m.
	Vertical	1	9.09	0.12	3.04	3.31	cu.m.
						38.22	cu.m.
	Deduction:						
	Main Door (10'24"x10')	1	3.12	0.25	3.04	2.37	Cu.m.
	Door(3'5"x7')	5	1.06	0.11	2.13	1.24	Cu.m.
	Window(3'x4')	3	0.91	0.22	1.21	0.72	Cu.m.
	Door (3'x7')	4	0.91	0.11	2.13	0.85	Cu.m.
	Ventilation (1.5'x1.5')	6	0.45	0.22	0.45	0.26	Cu.m.
						5.44	Cu.m.
	Actual Brick Work	1	38.22	Minus	5.44	32.78	cu.m.
	500 Bricks in 1 Cu. m.	1	30.07	@	500	15000.00	Nos.
8	Slab Concrete	1	7.62	10.75	0.10	8.19	cu.m.
	Steel in Slab @ 118 kg/cu.m.	1	8.19	@	118	966.45	Kg

## Abstract of cost-as per M.P. P.W.D. SOR 01/12/2020

Item No.	Item Description	Unit	Qty.	Rate (Rs)	Amount (in Rs)	Item Reference
1.	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5m in width as well as 10 sqm on plan) including dressing of sides and ramming of bottom disposal of excavated earth.	cum	67.32	129	8684.28	2.6/13
2.	P.C.C. M-15-Grade concrete. Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work upto plinth level	cum	3.00	4471	13413.00	4.1.1.3/38

3.	Structural steel work using M.S. flats, angles, channels I-section, H-section etc. riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	Kg	966.45	69	66685.05	10.2/278
4.	Brick masonry in Cement mortar 1:6 Brick work with well burnt chimney bricks in bulls pattern trench kiln manufactured by ghol process, crushing strength not less than 40kg /cm <sup>2</sup> .	cum	10.18	5626	57322.00	6.1.2/108

5.	Filling foundation With hard muram having CBR >12 % at under floors including watering, ramming and compacting (minimum compaction 95% of MDD) in layers not exceeding 20cm in thickness and dressing complete.	cum	66.39	300	19917.00	2.27.1/19
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### Super Structure

Item no.	Item Description	Unit	Qty.	Rate (Rs)	Amount (Rs)	Item Reference
6.	P.C.C. M.15 Beneath staircase. Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level	cum	2.70	4471.0	12071.00	4.1.1.3/38

7.	R.C.C M-20 Reinforced cement concrete work (with 20 mm nominal size graded stone aggregate) in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, posts and struts etc.	cum	8.81	5865.0	51670.65	5.2.1/175
8.	Brick masonry in cement mortar 1:6 Brick work with well burnt chimney bricks in bulls patent trench kiln manufactured by ghol process, crushing strength not less than 40kg /cm <sup>2</sup> .	Cu.m	32.8	5821.0	190928.00	6.2.2/108
9.	12 mm cement plaster of mix. Cement mortar 1:6	Sq.m	32.8	138.0	4416.00	13.1.2/397
10.	6 mm cement plaster of mix : 1:3, Ceiling Plaster	Sq.m	32.8	96.0	3148.80	13.8/397

11.	Kota stone slab flooring over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and	Sq.m	73.32	930.0	68187.60	13.35/318
12	Door frame double rebate Providing and fixing pressed steel door frames made of 1.6 mm thick steel profile conforming to IS: 4351 Profile E of 1.60mm thick double rebate of size 115mmx50mm	m	5.44	472.0	2567.68	10.12.3.1/1281
13.	Door frame single rebate Providing and fixing pressed steel door frames made of 1.6 mm thick steel profile conforming to IS: 4351	m	30	402.0	12060.00	10.12.1/281

14.	Aluminum glazed window	Sq.m	5.04	2674.0	13476.96	8.2/159
15.	Lime wash 3 coating White washing with lime to give an even shade: New work (three or more coats)	Sq.m	700.0	11.0	7700.00	13.43/403
16.	For kitchen platform Granite fine grained dark crystal of other colors and various patterns	Sq.m	3.8	2356.0	8952.80	11.22.2/314
17.	PVC Pipe for water supply Internal work - Exposed on wall 4050 (50 mm) pipe thick diameter.	m	15.84	679.0	10755.36	18.1.1.6/514



**GRAND TOTAL VALUE = 6,86,543.244**

**(Round off) = Rs 7,00,000.00/-**

**In Words: Seven lakh rupees only**

## **CONCLUSION**

We can conclude that there is a difference between the theoretical and practical work done. As the scope of understanding will be much more when practical work is done. As we get more knowledge in such a situation where we have great experience doing the practical work. knowing the loads we have designed the slabs depending upon the ratio of longer to shorter span of panel.

## REFERENCE

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**THANK YOU**

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