

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 6, June 2016

# **Estimating and Costing of Individual Villa**

B.Lavanya<sup>1</sup>

Assistant Professor, Department of Civil Engineering, Vignan Institute of Technology and Science, Vignan hills,

Deshmukhi, (V), Pochampally(M), Nalgonda(D), India

**ABSTRACT:** Estimating is the technique of calculating/computing the various quantities and the expected expenditure to be incurred on a particular work/ project. For all engineering works it is required to know beforehand the probable cost of construction known as the estimated cost. Necessary for preparing an estimate are drawings like plan, elevation and sections of important point's, detailed specifications about workmanship& properties of materials, Standard schedule of rates of the current year. Estimate is required to invite the tenders and Quotations and to arrange contract, also required to control the expenditure during the execution of work. Estimate decides whether the proposed plan matches the funds available or not.

In this project we estimate the quantities required for the construction of the individual villa and later calculate the cost by preparing the abstract of cost.

**KEYWORDS**: Estimate, standard schedule, abstract estimate, specifications, lumpsum, carpet area, quotations etc.

#### **I.INTRODUCTION**

"What is the purpose and necessity of studying this subject?" This is the first question which arises in mind. The answer lies in the following questions:-Has one got enough money to spend on the construction?

Has one got ample time that one can wait for the completion of the construction?

Has one got resources that one can arrange any amount of desired material to be used in construction ?

If the answer is YES, then the study of this subject is useless. But if the answer is

*NO*, then the question arises, "which are the factors necessitating the study of this subject." Any person indulged in the Civil Engineering profession can clearly think of these factors i.e. set amount of funds, costly labor (skilled and unskilled), difficulty in getting good building materials, particularly cement and day to day rising cost of steel, bricks, timber etc. Also *economy* and *standard* of the construction are two important things required. Standard of construction can be achieved by careful supervision and selecting proper specifications whereas for Economy, planning is a must. The total quantity of various materials used in construction, if known before hand, can help the planning towards economy.

#### **TYPES OF ESTIMATES**

The estimates may be divided in to the following categories:-

- Preliminary or Approximate estimate.
- Rough cost estimate based on plinth area.
- Rough cost estimate based on cubic contents.
- > Detailed estimate.
- > Annual repair estimate.
- Special repair estimate.
- Revised estimate
- Supplementary estimate.



(An ISO 3297: 2007 Certified Organization)

#### Vol. 5, Issue 6, June 2016

### **II.RELATED WORK**

#### **METHODS OF TAKING OUT QUANTITIES:**

The quantities like earth work, foundation concrete, brickwork in plinth and super structure etc., can be workout by any of following two methods:

- Long wall short wall method
- Centre line method.
- Partly centre line and short wall method
- a) Long wall-short wall method:

In this method, the wall along the length of room is considered to be long wall while the wall perpendicular to long wall is said to be short wall. To get the length of long wall or short wall, calculate first the centre line lengths of individual walls. Then the length of long wall, (out to out) may be calculated after adding half breadth at each end to its centre line length. Thus the length of short wall measured into in and may be found by deducting half breadth from its centre line length at each end. The length of long wall usually decreases from earth work to brick work in super structure while the short wall increases. These lengths are multiplied by breadth and depth to get quantities.

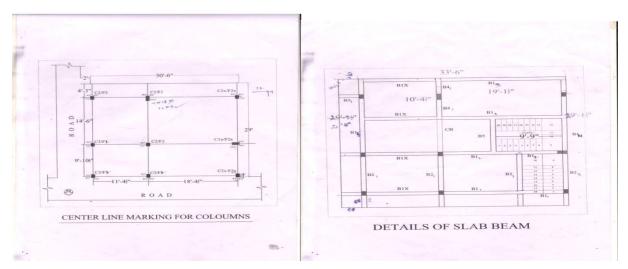
#### b) Centre line method:

This method is suitable for walls of similar cross sections. Here the total centre line length is multiplied by breadth and depth of respective item to get the total quantity at a time. When cross walls or partitions or verandah walls join with main wall, the centre line length gets reduced by half of breadth for each junction. Such junction or joints are studied carefully while calculating total centre line length. The estimates prepared by this method are most accurate and quick.

#### c) Partly centre line and partly cross wall method:

This method is adopted when external (i.e., all round the building) wall is of one thickness and the internal walls having different thicknesses. In such cases, centre line method is applied to external walls and long wall-short wall method is used to internal walls. This method suits for different thicknesses walls and different level of foundations. Because of this reason, all Engineering departments are practicing this method

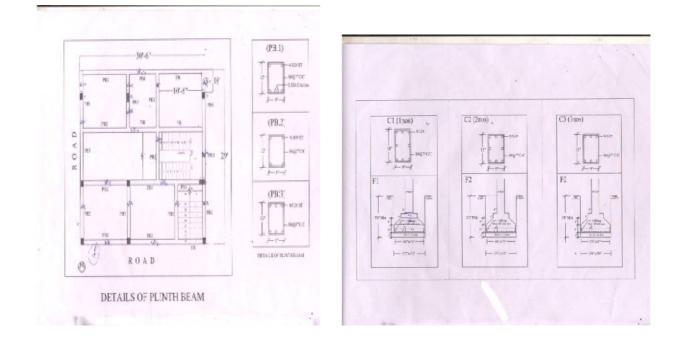
#### VILLA DETAILS:





(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 6, June 2016



### **III.DETAILS OF MEASUREMENT AND CALCULATION OF QUANTITIES**

The measurements and calculations were made by Long wall-short wall method:

In this method, the wall along the length of room is considered to be long wall while the wall perpendicular to long wall is said to be short wall. To get the length of long wall or short wall, calculate first the centre line lengths of individual walls. Then the length of long wall, (out to out) may be calculated after adding half breadth at each end to its centre line length. Thus the length of short wall measured into in and may be found by deducting half breadth from its centre line length at each end. The length of long wall usually decreases from earth work to brick work in super structure while the short wall increases. These lengths are multiplied by breadth and depth to get quantities.

| S.N | DESCRIPTION     | NO | LENGTH(m) | BREADTH(m) | DEPTH(     | QUANTITY   | NET QUANTITY |
|-----|-----------------|----|-----------|------------|------------|------------|--------------|
| 0   | OF WORK         |    |           |            | <b>m</b> ) |            |              |
| 1   | EXCAVATION      | 3  | 1.524m    | 1.524m     | 1.524m     | 3.5396cu.m | 10.6188cu.m  |
| 2   | FOUNDATION-V1F1 | 1  | 1.376m    | 1.3716m    | 0.3048m    | 0.5734cu.m |              |
|     | V2F1            | 1  | 1.0033m   | 1.3716m    | 0.2286m    | 0.3145cu.m |              |
|     | V3F1            | 1  | 0.5334m   | 0.5334m    | 0.1524m    | 0.0433cu.m |              |
|     | V1F2            | 1  | 1.376m    | 1.376m     | 0.3048m    | 0.5734cu.m |              |
|     | V2F2            | 1  | 1.0033m   | 1.3716m    | 0.2286m    | 0.3145cu.m |              |
|     | V3F2            | 1  | 0.5334m   | 0.5334m    | 0.1524m    | 0.0433cu.m |              |
|     | TOTAL           |    |           |            |            |            |              |
|     | FOUNDATION      | 9  |           |            |            | 0.9312cu.m | 9.9312cu.m   |
| 3   | PCC             | 9  | 1.3716m   | 1.3716m    | 0.1524m    | 0.2867cu.m | 2.5803cu.m   |



(An ISO 3297: 2007 Certified Organization)

### Vol. 5, Issue 6, June 2016

| 4         COLUMNS-C1         2         10.3584m         0.4572m         0.2286m         1.0826cu.m         2.16522cum           C3         3         10.3584m         0.3048m         0.2286m         0.7217cum         2.8855cum           5         PLINTH BEAM         1         3.2385m         0.0348m         0.2286m         0.7217cum         2.895cum           7         PB1         1         3.2385m         0.0348m         0.2286m         0.3544cum         7.21982cu.m           7         PB4         1         3.2385m         0.3048m         0.2286m         0.3344vum         7.21982cu.m           9         PB5         1         2.6289m         0.3048m         0.2286m         0.18317cum           9         PB6         1         2.6289m         0.3048m         0.2286m         0.18317cum           9         PB7         1         1.7511m         0.3048m         0.2286m         0.1848cu.m           9         PB1         1         5.3721m         0.3048m         0.2286m         0.6141cum           9         PB11         1         8.8138m         0.3048m         0.2286m         0.6141cum           9         PB14         1         2.2757m         <   | 4 | COLUBRIC CI |   | 10.0501  | 0.4570  | 0.0001  | 1.0026      | 0.16500      |
|---|---|-------------|---|----------|---------|---------|-------------|--------------|
| C3         3         10.3584m         0.3048m         0.2286m         0.7217cu.m         2.1651cu.m           5         PLINTH BEAM<br>PB1         1         3.2385m         0.0348m         0.2286m         0.3246um         0.7217cu.m         7.21982cu.m           5         PB2         1         5.0922m         0.3048m         0.2286m         0.33449cu.m           PB3         1         3.2385m         0.3048m         0.2286m         0.83149cu.m           PB5         1         2.6289m         0.3048m         0.2286m         0.18317cu.m           PB6         1         2.6289m         0.3048m         0.2286m         0.18317cu.m           PB7         1         2.7813m         0.3048m         0.2286m         0.18317cu.m           PB8         1         4.1148m         0.3048m         0.2286m         0.6141cu.m           PB10         5.3721m         0.3048m         0.2286m         0.6141cu.m           PB11         1         8.8138m         0.3048m         0.2286m         0.6141cu.m           PB14         1         2.2479m         0.3048m         0.2286m         0.6141cu.m           PB14         1         5.2478m         0.4191m         0.2286m         0.6  | 4 | COLUMNS-C1  | 2 | 10.3584m | 0.4572m | 0.2286m | 1.0826cu.m  | 2.16522cu.m  |
| Image: style in the s |   |             |   |          |         |         |             |              |
| 5         PLINTH BEAM<br>PB1         1         3.2385m         0.0348m         0.2286m         0.2256cu.m           PB2         1         5.0292m         0.3048m         0.2286m         0.3504cu.m           PB3         1         4.8006m         0.3048m         0.2286m         0.35449cu.m           PB4         1         3.2385m         0.3048m         0.2286m         0.33449cu.m           PB5         1         2.6289m         0.3048m         0.2286m         0.18317cu.m           PB6         1         2.6289m         0.3048m         0.2286m         0.18317cu.m           PB7         1         2.7501m         0.3048m         0.2286m         0.1847cu.m           PB8         1         2.7501m         0.3048m         0.2286m         0.6141cu.m           PB10         1         5.3721m         0.3048m         0.2286m         0.6141cu.m           PB13         1         8.8138m         0.3048m         0.2286m         0.6287cu.m           PB14         1         2.2479m         0.3048m         0.2286m         0.60822cu.m           PB14         1         5.292m         0.4191m         0.2286m         0.6387cu.m           B1-3         2 <td< td=""><td></td><td>C3</td><td>3</td><td>10.3584m</td><td>0.3048m</td><td>0.2286m</td><td>0.7217cu.m</td><td></td></td<>  |   | C3          | 3 | 10.3584m | 0.3048m | 0.2286m | 0.7217cu.m  |              |
| PB1         1         3.2385m         0.0348m         0.2286m         0.23504cum           PB2         1         5.0292m         0.3048m         0.2286m         0.35449cum           PB3         1         4.8006m         0.3048m         0.2286m         0.23449cum           PB4         1         3.2385m         0.3048m         0.2286m         0.18317cum           PB5         1         2.6289m         0.3048m         0.2286m         0.18317cum           PB6         1         2.6289m         0.3048m         0.2286m         0.18317cum           PB7         1         2.7501m         0.3048m         0.2286m         0.1848cum           PB8         1         2.7501m         0.3048m         0.2286m         0.6141cum           PB11         1         5.871m         0.3048m         0.2286m         0.6141cum           PB13         1         8.8138m         0.3048m         0.2286m         0.6141cum           PB14         1         2.2479m         0.3048m         0.2286m         0.08229cum           PB14         1         5.292m         0.4191m         0.2286m         0.6347cum           B1-3         2         5.4286m         0.4191m   |   |             |   |          |         |         |             | 7.21982cu.m  |
| PB1         1         3.2385m         0.0348m         0.2286m         0.23504cum           PB2         1         5.0292m         0.3048m         0.2286m         0.35449cum           PB3         1         4.8006m         0.3048m         0.2286m         0.23449cum           PB4         1         3.2385m         0.3048m         0.2286m         0.18317cum           PB5         1         2.6289m         0.3048m         0.2286m         0.18317cum           PB6         1         2.6289m         0.3048m         0.2286m         0.18317cum           PB7         1         2.7501m         0.3048m         0.2286m         0.1848cum           PB8         1         2.7501m         0.3048m         0.2286m         0.6141cum           PB11         1         5.871m         0.3048m         0.2286m         0.6141cum           PB13         1         8.8138m         0.3048m         0.2286m         0.6141cum           PB14         1         2.2479m         0.3048m         0.2286m         0.08229cum           PB14         1         5.292m         0.4191m         0.2286m         0.6347cum           B1-3         2         5.4286m         0.4191m   | 5 | PLINTH BEAM | 1 |          |         |         |             |              |
| PB3         1         4.8006m         0.3048m         0.2286m         0.3249cu.m           PB4         1         3.2385m         0.3048m         0.2286m         0.2256cu.m           PB5         1         2.6289m         0.3048m         0.2286m         0.18317cu.m           PB6         1         2.6289m         0.3048m         0.2286m         0.18317cu.m           PB6         1         2.7501m         0.3048m         0.2286m         0.1837cu.m           PB8         1         2.7501m         0.3048m         0.2286m         0.1848cu.m           PB1         1         5.3721m         0.3048m         0.2286m         0.6141cu.m           PB11         1         8.8138m         0.3048m         0.2286m         0.6141cu.m           PB13         1         8.8138m         0.3048m         0.2286m         0.6141cu.m           PB14         1         2.2479m         0.3048m         0.2286m         0.608229cu.m         4.38178cu.m           6         SLAB BEAM-BI-1         1         5.2578m         0.4191m         0.2286m         0.5037cu.m           B1-2         1         5.292m         0.4191m         0.2286m         0.5037cu.m           B1-2  |   | PB1         | 1 | 3.2385m  | 0.0348m | 0.2286m | 0.2256cu.m  |              |
| PB4         1         3.2385m         0.3048m         0.2286m         0.2286m         0.2286m         0.18317cum           PB5         1         2.6289m         0.3048m         0.2286m         0.18317cum           PB7         1         2.7813m         0.3048m         0.2286m         0.19379cum           PB7         1         2.7501m         0.3048m         0.2286m         0.18317cum           PB8         1         2.7501m         0.3048m         0.2286m         0.18348cum           PB10         1         4.1148m         0.3048m         0.2286m         0.3287cum           PB11         1         8.8138m         0.3048m         0.2286m         0.6141cum           PB12         1         4.1148m         0.3048m         0.2286m         0.68229cum           PB13         1         8.8138m         0.3048m         0.2286m         0.603220cum           PB14         1         5.2578m         0.4191m         0.2286m         0.4812cum           B1-3         2         5.4286m         0.4191m         0.2286m         0.4317cum           B1-4         1         5.5041m         0.4191m         0.2286m         0.3029cum           B1-3         2 <td></td> <td>PB2</td> <td>1</td> <td>5.0292m</td> <td>0.3048m</td> <td>0.2286m</td> <td>0.3504cu.m</td> <td></td>  |   | PB2         | 1 | 5.0292m  | 0.3048m | 0.2286m | 0.3504cu.m  |              |
| PB5         1         2.6289m         0.3048m         0.2286m         0.18317cum           PB6         1         2.6289m         0.3048m         0.2286m         0.18317cum           PB7         1         2.7813m         0.3048m         0.2286m         0.19379cum           PB8         1         2.7501m         0.3048m         0.2286m         0.2847cum           PB9         1         4.1148m         0.3048m         0.2286m         0.3743cum           PB11         1         5.3721m         0.3048m         0.2286m         0.6141cum           PB12         1         4.1148m         0.3048m         0.2286m         0.6141cum           PB13         1         8.8138m         0.3048m         0.2286m         0.6141cum           PB14         1         2.2479m         0.3048m         0.2286m         0.608229cum           PB15         1         1.1811m         0.3048m         0.2286m         0.4082cum           PB15         1         5.2578m         0.4191m         0.2286m         0.4173cum           B1-2         1         5.25278m         0.4191m         0.2286m         0.4173cum           B1-2         5.42580m         0.4191m         0.228  |   | PB3         | 1 | 4.8006m  | 0.3048m | 0.2286m | 0.33449cu.m |              |
| PB6         1         2.6289m         0.3048m         0.2286m         0.18317cu.m           PB7         1         2.7813m         0.3048m         0.2286m         0.18379cu.m           PB9         1         4.1148m         0.3048m         0.2286m         0.18374cu.m           PB9         1         4.1148m         0.3048m         0.2286m         0.3743cu.m           PB10         1         5.3721m         0.3048m         0.2286m         0.6141cu.m           PB11         1         8.8138m         0.3048m         0.2286m         0.6141cu.m           PB13         1         8.8138m         0.3048m         0.2286m         0.6141cu.m           PB14         1         2.2479m         0.3048m         0.2286m         0.68229cu.m           PB15         1         1.1811m         0.3048m         0.2286m         0.68229cu.m           B1-2         1         5.292m         0.4191m         0.2286m         0.5037cu.m           B1-3         2         5.4286m         0.4191m         0.2286m         0.4302cu.m           B1-3         2         5.4286m         0.4191m         0.2286m         0.4302cu.m           B1-4         1         4.3561m         0  |   | PB4         | 1 | 3.2385m  | 0.3048m | 0.2286m | 0.2256cu.m  |              |
| PB7         1         2.7813m         0.3048m         0.2286m         0.19379cu.m           PB8         1         2.7501m         0.3048m         0.2286m         0.1884scu.m           PB9         1         4.1148n         0.3048m         0.2286m         0.3884scu.m           PB10         1         5.3721m         0.3048m         0.2286m         0.3743cu.m           PB11         1         8.8138m         0.3048m         0.2286m         0.6141cu.m           PB12         1         4.1148n         0.3048m         0.2286m         0.6141cu.m           PB13         1         8.8138m         0.3048m         0.2286m         0.6126cu.m           PB14         1         2.2479m         0.3048m         0.2286m         0.608229cu.m           PB15         1         1.1811m         0.3048m         0.2286m         0.48182cu.m           B1-2         5         5.2578m         0.4191m         0.2286m         0.48182cu.m           B1-3         2         5.4266m         0.4191m         0.2286m         0.48182cu.m           B1-3         1         5.0419m         0.4191m         0.2286m         0.3029cu.m           B1-4         1         2.7051m   |   | PB5         | 1 | 2.6289m  | 0.3048m | 0.2286m | 0.18317cu.m |              |
| PB8         1         2.7501m         0.3048m         0.2286m         0.18848cu.m           PB9         1         4.1148m         0.3048m         0.2286m         0.2867cu.m           PB10         1         5.3721m         0.3048m         0.2286m         0.3743cu.m           PB11         1         8.8138m         0.3048m         0.2286m         0.6141cu.m           PB12         1         4.1148m         0.3048m         0.2286m         0.6141cu.m           PB13         1         8.8138m         0.3048m         0.2286m         0.6141cu.m           PB14         1         2.2479m         0.3048m         0.2286m         0.6126cu.m           PB15         1         1.1811m         0.3048m         0.2286m         0.08229cu.m           B1-3         2         5.2578m         0.4191m         0.2286m         0.48182cu.m           B1-3         2         5.4286m         0.4191m         0.2286m         0.4518cu.m           B1-3         2         5.4286m         0.4191m         0.2286m         0.4518cu.m           B1-4         1         4.3623m         0.4191m         0.2286m         0.2518cu.m           B1-5         1         5.0419m   |   | PB6         | 1 | 2.6289m  | 0.3048m | 0.2286m | 0.18317cu.m |              |
| PB9         1         4.1148m         0.3048m         0.2286m         0.2867cu.m           PB10         1         5.3721m         0.3048m         0.2286m         0.3743cu.m           PB11         1         8.8138m         0.3048m         0.2286m         0.6141cu.m           PB12         1         4.1148m         0.3048m         0.2286m         0.6141cu.m           PB13         1         8.8138m         0.3048m         0.2286m         0.6141cu.m           PB14         1         2.2479m         0.3048m         0.2286m         0.6161cu.m           PB15         1         1.1811m         0.3048m         0.2286m         0.08229cu.m           B1-3         2         5.4286m         0.4191m         0.2286m         0.4812cu.m           B1-3         2         5.4286m         0.4191m         0.2286m         0.4813cu.m           B1-4         1         4.3561m         0.4191m         0.2286m         0.4813cu.m           B1-5         1         5.0419m         0.4191m         0.2286m         0.4813cu.m           B1-4         1         6.23771m         0.4191m         0.2286m         0.25916cu.m           B1-5         1         2.7051m <td< td=""><td></td><td>PB7</td><td>1</td><td>2.7813m</td><td>0.3048m</td><td>0.2286m</td><td>0.19379cu.m</td><td></td></td<>  |   | PB7         | 1 | 2.7813m  | 0.3048m | 0.2286m | 0.19379cu.m |              |
| PB10         1         5.3721m         0.3048m         0.2286m         0.3743cu.m           PB11         1         8.8138m         0.3048m         0.2286m         0.6141cu.m           PB12         1         4.1148m         0.3048m         0.2286m         0.6141cu.m           PB13         1         8.8138m         0.3048m         0.2286m         0.6141cu.m           PB14         1         2.2479m         0.3048m         0.2286m         0.08229cu.m           PB15         1         1.1811m         0.3048m         0.2286m         0.08229cu.m           B1-2         1         5.2578m         0.4191m         0.2286m         0.08229cu.m           B1-3         2         5.4286m         0.4191m         0.2286m         0.48182cu.m           B1-4         4         4.35178cu.m         0.4191m         0.2286m         0.4130cu.m           B1-5         1         5.0419m         0.4191m         0.2286m         0.4300cu.m           B1-4         1         4.3623m         0.4191m         0.2286m         0.3029cu.m           B1-5         1         5.0419m         0.4191m         0.2286m         0.2518cu.m           B2-1         2         2.6289m  |   | PB8         | 1 | 2.7501m  | 0.3048m | 0.2286m | 0.18848cu.m |              |
| PB11         1         8.8138m         0.3048m         0.2286m         0.6141cu.m           PB12         1         4.1148m         0.3048m         0.2286m         0.6141cu.m           PB13         1         2.2479m         0.3048m         0.2286m         0.6141cu.m           PB14         1         2.2479m         0.3048m         0.2286m         0.08229cu.m           PB15         1         1.1811m         0.3048m         0.2286m         0.08229cu.m           B1-2         1         5.2578m         0.4191m         0.2286m         0.5037cu.m           B1-3         2         5.2578m         0.4191m         0.2286m         0.5037cu.m           B1-3         2         5.4286m         0.4191m         0.2286m         0.5037cu.m           B1-4         1         4.3561m         0.4191m         0.2286m         0.4173cu.m           B1-5         1         5.0419m         0.4191m         0.2286m         0.4173cu.m           B2-1         2         2.6289m         0.4191m         0.2286m         0.25916cu.m           B2-1         2.7051m         0.4191m         0.2286m         0.25916cu.m           B2-1         2.7051m         0.4191m         0.2286m <td></td> <td>PB9</td> <td>1</td> <td>4.1148m</td> <td>0.3048m</td> <td>0.2286m</td> <td>0.2867cu.m</td> <td></td>   |   | PB9         | 1 | 4.1148m  | 0.3048m | 0.2286m | 0.2867cu.m  |              |
| PB12<br>PB13         1         4.1148m         0.3048m         0.2286m         0.2867cu.m         0.6141cu.m           PB13         1         8.8138m         0.3048m         0.2286m         0.6141cu.m         0.6141cu.m           PB14         1         2.2479m         0.3048m         0.2286m         0.08229cu.m         0.8229cu.m           PB15         1         1.1811m         0.3048m         0.2286m         0.08229cu.m         4.38178cu.m           6         SLAB BEAM-B1-1         1         5.2578m         0.4191m         0.2286m         0.5037cu.m         4.38178cu.m           B1-2         1         5.292m         0.4191m         0.2286m         0.4173cu.m         6.525cu.m           B1-4         1         4.3617m         0.4191m         0.2286m         0.4173cu.m         6.3029cu.m           B1-5         1         5.0419m         0.4191m         0.2286m         0.3029cu.m         6.3029cu.m           B2-1         2         2.6289m         0.4191m         0.2286m         0.25916cu.m         6.34774cu.m           B2-3         1         2.7051m         0.4191m         0.2286m         0.25916cu.m         6.34774cu.m           R5         1         2.4384m         0.4191m </td <td></td> <td>PB10</td> <td>1</td> <td>5.3721m</td> <td>0.3048m</td> <td>0.2286m</td> <td>0.3743cu.m</td> <td></td>   |   | PB10        | 1 | 5.3721m  | 0.3048m | 0.2286m | 0.3743cu.m  |              |
| PB13<br>PB14         1         8.8138m         0.3048m         0.2286m         0.6141cu.m         8.8178m           PB15         1         1.811m         0.3048m         0.2286m         0.6129cu.m         0.08229cu.m           6         SLAB BEAM-B1-1         1         5.2578m         0.4191m         0.2286m         0.608229cu.m         4.38178cu.m           6         B1-2         1         5.2578m         0.4191m         0.2286m         0.48182cu.m           B1-3         2         5.4286m         0.4191m         0.2286m         0.44182cu.m           B1-4         1         4.3561m         0.4191m         0.2286m         0.44182cu.m           B1-4         1         5.0419m         0.4191m         0.2286m         0.4173cu.m           B1-4         1         5.0419m         0.4191m         0.2286m         0.3029cu.m           B2-1         2         2.6289m         0.4191m         0.2286m         0.25916cu.m           B2-1         2         7051m         0.4191m         0.2286m         0.25916cu.m           B2-1         2.7051m         0.4191m         0.2286m         0.25916cu.m           B5-1         1         0.9144m         0.4191m         0.2286m   |   | PB11        | 1 | 8.8138m  | 0.3048m | 0.2286m |             |              |
| PB14<br>PB15         1         2.2479m<br>1.1811m         0.3048m<br>0.3048m         0.2286m<br>0.2286m         0.1566cu.m<br>0.08229cu.m         4.38178cu.m           6         SLAB BEAM-B1-1<br>B1-2         1         5.2578m         0.4191m         0.2286m         0.5037cu.m         4.38178cu.m           6         B1-2         1         5.292m         0.4191m         0.2286m         0.5037cu.m         4.38178cu.m           81-2         2         5.4286m         0.4191m         0.2286m         0.48182cu.m         4.38178cu.m           81-4         1         4.3561m         0.4191m         0.2286m         0.473cu.m         5255cu.m           B1-5         1         5.0419m         0.4191m         0.2286m         0.4830cu.m         0.4830cu.m           B1-X         4         3.1623m         0.4191m         0.2286m         0.2518cu.m         0.2564ccu.m           B2-1         2         2.6289m         0.4191m         0.2286m         0.25916cu.m         0.25916cu.m           B2-1         2.7051m         0.4191m         0.2286m         0.25916cu.m         0.634774cu.m           B5-1         1         2.4384m         0.4191m         0.2286m         0.0876cu.m         6.34774cu.m           7         SLAB  |   | PB12        | 1 | 4.1148m  | 0.3048m | 0.2286m | 0.2867cu.m  |              |
| PB15         1         1.1811m         0.3048m         0.2286m         0.08229cu.m         4.38178cu.m           6         SLAB BEAM-BI-1         1         5.2578m         0.4191m         0.2286m         0.5037cu.m         0.8178cu.m           6         SLAB BEAM-BI-1         1         5.2578m         0.4191m         0.2286m         0.5037cu.m         0.41818cu.m           B1-2         1         5.292m         0.4191m         0.2286m         0.41818cu.m           B1-3         2         5.4286m         0.4191m         0.2286m         0.4173cu.m           B1-4         1         4.3561m         0.4191m         0.2286m         0.4173cu.m           B1-5         1         5.0419m         0.4191m         0.2286m         0.3029cu.m           B1-5         1         2.6289m         0.4191m         0.2286m         0.2518cu.m           B2-1         2         2.6289m         0.4191m         0.2286m         0.25916cu.m           B2-1         2         7051m         0.4191m         0.2286m         0.25916cu.m           B5-1         1         2.4384m         0.4191m         0.2286m         0.0876cu.m           B5-1         1         0.9144m         0.4191m  |   | PB13        | 1 | 8.8138m  | 0.3048m | 0.2286m | 0.6141cu.m  |              |
| Image: state of the s |   | PB14        | 1 | 2.2479m  | 0.3048m | 0.2286m | 0.1566cu.m  |              |
| d         d <thd>d         d         d         d &lt;</thd>   |   | PB15        | 1 | 1.1811m  |         | 0.2286m | 0.08229cu.m |              |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$  |   |             | 1 | 1.1811m  | 0.3048m | 0.2286m | 0.08229cu.m | 4.38178cu.m  |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$  |   |             |   |          |         |         |             |              |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$  | 6 |             |   |          | 0.4191m |         |             |              |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$  |   |             |   |          | 0.4191m |         |             |              |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$  |   |             | 2 |          |         |         |             |              |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$  |   |             |   |          |         |         |             |              |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$  |   |             |   |          |         |         |             |              |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$  |   |             |   |          |         |         |             |              |
| B2-3         1         2.705 lm         0.419 lm         0.2286m         0.25916cu.m           B4-1         1         2.705 lm         0.419 lm         0.2286m         0.25916cu.m           B5         1         2.4384m         0.419 lm         0.2286m         0.2336cu.m           B5-1         1         0.9144m         0.419 lm         0.2286m         0.0876cu.m           CB         1         2.4384m         0.1143m         0.2286m         0.0637cu.m           7         SLAB         1         10.2108m         9.7336m         0.15m         14.9081cu.m           8         PLINTH BEAM<br>SLAB         1         9.1964m         8.8392m         0.3048m         25.0463cu.m           9         WALLS-W1         1         8.9154m         3.048m         0.2286m         6.1589cu.m           W2         1         8.8392m         3.048m         0.2286m         5.5217cu.m           W4         1         5.1054m         3.048m         0.2286m         3.5573cu.m           W3         1         7.9248m         3.048m         0.2286m         3.6369cu.m           W5         1         5.2197m         3.048m         0.2286m         3.6369cu.m           W6   |   |             |   |          |         |         |             |              |
| B4-1         1         2.7051m         0.4191m         0.2286m         0.25916cu.m           B5         1         2.4384m         0.4191m         0.2286m         0.2336cu.m         0.2336cu.m           B5-1         1         0.9144m         0.4191m         0.2286m         0.0876cu.m         0.0876cu.m           CB         1         2.4384m         0.1143m         0.2286m         0.0637cu.m         6.34774cu.m           7         SLAB         1         10.2108m         9.7336m         0.15m         14.9081cu.m         6.34774cu.m           8         PLINTH BEAM<br>SLAB         1         9.1964m         8.8392m         0.3048m         25.0463cu.m         6.34774cu.m           9         WALLS-W1         1         8.9154m         3.048m         0.2286m         6.2120cu.m           W2         1         8.8392m         3.048m         0.2286m         5.5217cu.m           W3         1         7.9248m         3.048m         0.2286m         3.5573cu.m           W5         1         5.2197m         3.048m         0.2286m         3.6369cu.m           W5         1         5.2197m         3.048m         0.2286m         5.8403cu.m           W6         1  |   |             |   |          |         |         |             |              |
| B5       1       2.4384m       0.4191m       0.2286m       0.2336cu.m       0.876cu.m         CB       1       2.4384m       0.1143m       0.2286m       0.0876cu.m       0.637cu.m         7       SLAB       1       10.2108m       9.7336m       0.15m       14.9081cu.m         8       PLINTH BEAM<br>SLAB       1       9.1964m       8.8392m       0.3048m       25.0463cu.m         9       WALLS-W1       1       8.9154m       3.048m       0.2286m       6.2120cu.m         W2       1       8.8392m       3.048m       0.2286m       6.1589cu.m         W3       1       7.9248m       3.048m       0.2286m       5.5217cu.m         W4       1       5.1054m       3.048m       0.2286m       3.6369cu.m         W5       1       5.2197m       3.048m       0.2286m       3.6369cu.m         W5       1       5.2197m       3.048m       0.2286m       5.5217cu.m         W6       1       8.382m       3.048m       0.2286m       5.6403cu.m         W6       1       8.382m       3.048m       0.2286m       5.8403cu.m         W7       1       8.6106m       3.048m       0.2286m       5.9996cu.m  |   |             |   |          |         |         |             |              |
| B5-1<br>CB       1       0.9144m<br>2.4384m       0.4191m<br>0.1143m       0.2286m       0.0876cu.m<br>0.0637cu.m       Amount<br>6.34774cu.m         7       SLAB       1       10.2108m       9.7336m       0.15m       14.9081cu.m       6.34774cu.m         8       PLINTH BEAM<br>SLAB       1       9.1964m       8.8392m       0.3048m       25.0463cu.m       6.34774cu.m         9       WALLS-W1       1       8.9154m       3.048m       0.2286m       6.2120cu.m       6.34774cu.m         9       WALLS-W1       1       8.9154m       3.048m       0.2286m       6.2120cu.m       6.1589cu.m         W2       1       8.8392m       3.048m       0.2286m       5.5217cu.m       6.1589cu.m         W3       1       7.9248m       3.048m       0.2286m       3.5573cu.m       6.36369cu.m         W4       1       5.1054m       3.048m       0.2286m       3.6369cu.m       6.4369cu.m         W5       1       5.2197m       3.048m       0.2286m       5.8403cu.m       7.44600000000000000000000000000000000000   |   |             |   |          |         |         |             |              |
| CB12.4384m0.1143m0.2286m0.0637cu.m6.34774cu.m7SLAB110.2108m9.7336m0.15m14.9081cu.m8PLINTH BEAM<br>SLAB19.1964m8.8392m0.3048m25.0463cu.m9WALLS-W118.9154m3.048m0.2286m6.2120cu.mW218.8392m3.048m0.2286m6.1589cu.mW317.9248m3.048m0.2286m5.5217cu.mW415.1054m3.048m0.2286m3.5573cu.mW515.2197m3.048m0.2286m3.6369cu.mW618.382m3.048m0.2286m5.8403cu.mW718.6106m3.048m0.2286m5.9996cu.mW712.7051m3.048m0.1143m0.9424cu.mW912.7813m3.048m0.1143m0.9689cu.m  |   |             |   |          |         |         |             |              |
| Image: second  |   |             |   |          |         |         |             |              |
| 7         SLAB         1         10.2108m         9.7336m         0.15m         14.9081cu.m           8         PLINTH BEAM<br>SLAB         1         9.1964m         8.8392m         0.3048m         25.0463cu.m           9         WALLS-W1         1         8.9154m         3.048m         0.2286m         6.2120cu.m           W2         1         8.8392m         3.048m         0.2286m         6.1589cu.m           W3         1         7.9248m         3.048m         0.2286m         5.5217cu.m           W4         1         5.1054m         3.048m         0.2286m         3.5573cu.m           W5         1         5.2197m         3.048m         0.2286m         3.6369cu.m           W5         1         5.2197m         3.048m         0.2286m         3.6369cu.m           W6         1         8.382m         3.048m         0.2286m         5.8403cu.m           W7         1         8.6106m         3.048m         0.2286m         5.9996cu.m           W8         1         2.7051m         3.048m         0.1143m         0.9424cu.m           W9         1         2.7813m         3.048m         0.1143m         0.9689cu.m         119.3412cu.m   |   | СВ          | 1 | 2.4384m  | 0.1143m | 0.2286m | 0.0637cu.m  |              |
| B         PLINTH BEAM<br>SLAB         1         9.1964m         8.8392m         0.3048m         25.0463cu.m           9         WALLS-W1         1         8.9154m         3.048m         0.2286m         6.2120cu.m           W2         1         8.8392m         3.048m         0.2286m         6.1589cu.m           W3         1         7.9248m         3.048m         0.2286m         5.5217cu.m           W4         1         5.1054m         3.048m         0.2286m         3.6369cu.m           W5         1         5.2197m         3.048m         0.2286m         3.6369cu.m           W6         1         8.382m         3.048m         0.2286m         5.8403cu.m           W7         1         8.6106m         3.048m         0.2286m         5.9996cu.m           W8         1         2.7051m         3.048m         0.1143m         0.9424cu.m           W9         1         2.7813m         3.048m         0.1143m         0.9689cu.m         119.3412cu.m  |   |             |   | 10.0100  | 0.500 - | 0.15    | 14.0021     | 6.34774cu.m  |
| SLAB         I         8.9154m         3.048m         0.2286m         6.2120cu.m           9         WALLS-W1         1         8.9154m         3.048m         0.2286m         6.1589cu.m           W2         1         8.8392m         3.048m         0.2286m         6.1589cu.m           W3         1         7.9248m         3.048m         0.2286m         5.5217cu.m           W4         1         5.1054m         3.048m         0.2286m         3.5573cu.m           W5         1         5.2197m         3.048m         0.2286m         3.6369cu.m           W5         1         5.2197m         3.048m         0.2286m         5.8403cu.m           W6         1         8.382m         3.048m         0.2286m         5.9996cu.m           W7         1         8.6106m         3.048m         0.2286m         5.9996cu.m           W8         1         2.7051m         3.048m         0.1143m         0.9424cu.m           W9         1         2.7813m         3.048m         0.1143m         0.9689cu.m         119.3412cu.m  | 7 | SLAB        | 1 | 10.2108m | 9.7336m | 0.15m   | 14.9081cu.m |              |
| SLAB         I         8.9154m         3.048m         0.2286m         6.2120cu.m           9         WALLS-W1         1         8.9154m         3.048m         0.2286m         6.1589cu.m           W2         1         8.8392m         3.048m         0.2286m         6.1589cu.m           W3         1         7.9248m         3.048m         0.2286m         5.5217cu.m           W4         1         5.1054m         3.048m         0.2286m         3.5573cu.m           W5         1         5.2197m         3.048m         0.2286m         3.6369cu.m           W5         1         5.2197m         3.048m         0.2286m         5.8403cu.m           W6         1         8.382m         3.048m         0.2286m         5.9996cu.m           W7         1         8.6106m         3.048m         0.2286m         5.9996cu.m           W8         1         2.7051m         3.048m         0.1143m         0.9424cu.m           W9         1         2.7813m         3.048m         0.1143m         0.9689cu.m         119.3412cu.m  | 8 | PLINTH BEAM | 1 | 9.1964m  | 8.8392m | 0.3048m | 25.0463cu.m |              |
| W218.8392m3.048m0.2286m6.1589cu.mW317.9248m3.048m0.2286m5.5217cu.mW415.1054m3.048m0.2286m3.5573cu.mW515.2197m3.048m0.2286m3.6369cu.mW618.382m3.048m0.2286m5.8403cu.mW718.6106m3.048m0.2286m5.9996cu.mW812.7051m3.048m0.1143m0.9424cu.mW912.7813m3.048m0.1143m0.9689cu.m   |   | SLAB        |   |          |         | -       |             |              |
| W317.9248m3.048m0.2286m5.5217cu.mW415.1054m3.048m0.2286m3.5573cu.mW515.2197m3.048m0.2286m3.6369cu.mW618.382m3.048m0.2286m5.8403cu.mW718.6106m3.048m0.2286m5.9996cu.mW812.7051m3.048m0.1143m0.9424cu.mW912.7813m3.048m0.1143m0.9689cu.m  | 9 | WALLS-W1    | 1 | 8.9154m  | 3.048m  | 0.2286m | 6.2120cu.m  |              |
| W415.1054m3.048m0.2286m3.5573cu.mW515.2197m3.048m0.2286m3.6369cu.mW618.382m3.048m0.2286m5.8403cu.mW718.6106m3.048m0.2286m5.9996cu.mW812.7051m3.048m0.1143m0.9424cu.mW912.7813m3.048m0.1143m0.9689cu.m   |   | W2          | 1 | 8.8392m  | 3.048m  | 0.2286m | 6.1589cu.m  |              |
| W515.2197m3.048m0.2286m3.6369cu.mW618.382m3.048m0.2286m5.8403cu.mW718.6106m3.048m0.2286m5.9996cu.mW812.7051m3.048m0.1143m0.9424cu.mW912.7813m3.048m0.1143m0.9689cu.m  |   | W3          | 1 | 7.9248m  | 3.048m  | 0.2286m |             |              |
| W618.382m3.048m0.2286m5.8403cu.mW718.6106m3.048m0.2286m5.9996cu.mW812.7051m3.048m0.1143m0.9424cu.mW912.7813m3.048m0.1143m0.9689cu.m119.3412cu.m   |   | W4          | 1 | 5.1054m  | 3.048m  | 0.2286m | 3.5573cu.m  |              |
| W718.6106m3.048m0.2286m5.9996cu.mW812.7051m3.048m0.1143m0.9424cu.mW912.7813m3.048m0.1143m0.9689cu.m119.3412cu.m   |   | W5          | 1 | 5.2197m  | 3.048m  | 0.2286m | 3.6369cu.m  |              |
| W812.7051m3.048m0.1143m0.9424cu.mW912.7813m3.048m0.1143m0.9689cu.m119.3412cu.m  |   | W6          | 1 | 8.382m   | 3.048m  | 0.2286m | 5.8403cu.m  |              |
| W9         1         2.7813m         3.048m         0.1143m         0.9689cu.m         119.3412cu.m   |   | W7          | 1 | 8.6106m  | 3.048m  | 0.2286m | 5.9996cu.m  |              |
|   |   | W8          | 1 | 2.7051m  | 3.048m  | 0.1143m | 0.9424cu.m  |              |
|   |   | W9          | 1 | 2.7813m  | 3.048m  | 0.1143m | 0.9689cu.m  | 119.3412cu.m |
|   |   |             | 3 |          |         |         |             |              |



(An ISO 3297: 2007 Certified Organization)

### Vol. 5, Issue 6, June 2016

| 10       DEDUCTIONS<br>Door1       4       1.8288m       0.9144m       0.2286m       0.38227cu.m         Door2       4       1.8288m       0.7620m       0.2286m       0.3185cu.m         Window1       5       0.9144m       0.4572m       0.2286m       0.0955cu.m         Window2       2       0.4572m       0.3048m       0.2286m       0.03185cu.m         11       PLASTERING<br>OF WALL       0.4572m       0.3048m       0.016m       2.9840cu.m         C1       1       61.1886m       3.048m       0.004m       0.7460cu.m         C2       1       61.1886m       3.048m       0.004m       0.7460cu.m         12       COMPOUND       1       36.928m       2.1336m       0.2286m       18.011cu.m         13       PLASTERING<br>OF COMPUND       1       36.928m       2.1336m       0.0016m       1.2606cu.m         WALL       1       36.928m       2.1336m       0.0016m       0.315156cu.m         14       FLOORING(8"*12")<br>GF       1       -       -       -       2139.06sq.m   |  |
|---|--|
| Door2         4         1.8288m         0.7620m         0.2286m         0.3185cu.m           Window1         5         0.9144m         0.4572m         0.2286m         0.0955cu.m           Window2         2         0.4572m         0.3048m         0.2286m         0.03185cu.m           11         PLASTERING         0         0.4572m         0.3048m         0.2286m         0.03185cu.m           11         PLASTERING         0         0         0.2286m         0.03185cu.m         2.48436cu.m           11         PLASTERING         0         0         0.2286m         0.016m         2.9840cu.m           C1         1         61.1886m         3.048m         0.004m         0.7460cu.m           12         COMPOUND         1         36.928m         2.1336m         0.2286m         18.011cu.m           13         PLASTERING         VALL         1         36.928m         2.1336m         0.0016m         1.2606cu.m           C2         1         36.928m         2.1336m         0.0016m         0.315156cu.m           14         FLOORING(8"*12")         4         4         4         4         4   |  |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$   |  |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$   |  |
| t.v of deduction         3         2.48436cu.m           11         PLASTERING<br>OF WALL         2.48436cu.m         2.48436cu.m           C1         1         61.1886m         3.048m         0.016m         2.9840cu.m           C2         1         61.1886m         3.048m         0.004m         0.7460cu.m           12         COMPOUND         1         36.928m         2.1336m         0.2286m         18.011cu.m           13         PLASTERING<br>OF COMPUND         1         36.928m         2.1336m         0.0016m         1.2606cu.m           13         PLASTERING<br>OF COMPUND         1         36.928m         2.1336m         0.0016m         1.2606cu.m           14         FLOORING(8"*12")         1         36.928m         2.1336m         0.004m         0.315156cu.m  |  |
| 11       PLASTERING<br>OF WALL       1       61.1886m       3.048m       0.016m       2.9840cu.m         C1       1       61.1886m       3.048m       0.004m       0.7460cu.m         12       COMPOUND       1       36.928m       2.1336m       0.2286m       18.011cu.m         13       PLASTERING<br>OF COMPUND       1       36.928m       2.1336m       0.0016m       1.2606cu.m         13       PLASTERING<br>OF COMPUND       1       36.928m       2.1336m       0.0016m       1.2606cu.m         14       FLOORING(8"*12")       1       36.928m       2.1336m       0.004m       0.315156cu.m  |  |
| OF WALL         1         61.1886m         3.048m         0.016m         2.9840cu.m           C2         1         61.1886m         3.048m         0.004m         0.7460cu.m           12         COMPOUND         1         36.928m         2.1336m         0.2286m         18.011cu.m           13         PLASTERING         0         0F COMPUND         1         36.928m         2.1336m         0.0016m         1.2606cu.m           C1         1         36.928m         2.1336m         0.0016m         1.2606cu.m         1.2606cu.m           VALL         1         36.928m         2.1336m         0.0016m         1.2606cu.m         1.2606cu.m           VALL         1         36.928m         2.1336m         0.004m         0.315156cu.m         1.12606cu.m           14         FLOORING(8"*12")         I         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII   |  |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$   |  |
| C2       1       61.1886m       3.048m       0.004m       0.7460cu.m         12       COMPOUND       1       36.928m       2.1336m       0.2286m       18.011cu.m         13       PLASTERING   |  |
| 12       COMPOUND       1       36.928m       2.1336m       0.2286m       18.011cu.m         13       PLASTERING<br>OF COMPUND<br>WALL<br>C1       1       36.928m       2.1336m       0.0016m       1.2606cu.m         14       FLOORING(8"*12")       1       36.928m       2.1336m       0.0014m       0.315156cu.m  |  |
| WALL         Image: Mail of the state |  |
| WALL         Image: Mail of the state |  |
| OF COMPUND<br>WALL         1         36.928m         2.1336m         0.0016m         1.2606cu.m           C1         1         36.928m         2.1336m         0.004m         0.315156cu.m           14         FLOORING(8"*12")         Image: Comparison of the second secon  |  |
| WALL<br>C1<br>C2         1         36.928m<br>36.928m         2.1336m<br>2.1336m         0.0016m<br>0.004m         1.2606cu.m<br>0.315156cu.m           14         FLOORING(8"*12")         Image: Comparison of the second sec  |  |
| C1         1         36.928m         2.1336m         0.0016m         1.2606cu.m           C2         1         36.928m         2.1336m         0.004m         0.315156cu.m           14         FLOORING(8"*12")  |  |
| C2         1         36.928m         2.1336m         0.004m         0.315156cu.m           14         FLOORING(8"*12")  |  |
| 14         FLOORING(8"*12")   |  |
| 14         FLOORING(8"*12")   |  |
|   |  |
| GE 1 - 2139.06sg m  |  |
| 01 1 2137.003q.111  |  |
| FF 1 2446.30sq.m  |  |
| SF 1 2446.30sq.m  |  |
| 15         LINTELS         8         1.1176m         0.1016m         -         4.47sq.m         35.76sq.m   |  |
|   |  |
| 16. STAIRCASE FF,SF   |  |
| Waist slab         4         2.7127m         0.1143m         0.9144m         0.2835cu.m         1.134cu.m   |  |
| Steps         18         0.15875m         0.2540m         0.9144m         0.0184cu.m         0.3318cu.m   |  |
| Landing of steps         1         0.6604m         1.8288m         0.1143m         0.13804cu.m         0.13804cu.m  |  |
| GF  |  |
| Waist slab         2         2.6008m         0.1143m         0.9144m         0.271825cu.m         0.54365cu.m   |  |
| Steps         20         0.24765m         0.1651m         0.9144m         0.01870cu.m         0.373872cu.m  |  |
| Landing of 1 0.6604m 0.1524m 0.1143m 0.13804cu.m 0.13804cu.m  |  |
| steps   |  |



(An ISO 3297: 2007 Certified Organization)

| L           | LATERAL TIES/STIRRUPS: Vol. 5, Issue 6, June 2016                                       |                             |                      |  |  |  |  |
|-------------|---|-----------------------------|----------------------|--|--|--|--|
| S<br>N<br>O | DESCRIPTION OF<br>WORK  | DIAMETE<br>R OF BAR<br>(mm) | NO<br>OF<br>BARS     | LENGTH                                   | TOTAL<br>LENGTH                            | WEIGHT OF<br>BAR                       | NET WEIGHT   |
| 1           | FOOTING<br>F1<br>X direction<br>Y direction<br>F2<br>X direction<br>Y direction<br>8 f2 | 10<br>10<br>10<br>10        | 11<br>11<br>10<br>10 | 1.6256m<br>1.6256m<br>1.6256m<br>1.6256m | 17.8816m<br>17.8816m<br>16.256m<br>16.256m | 22.048012kgs<br>20.043648kgs           | <u>180.397196kgs@10</u><br>mm  |
| 2           | COLUMN<br>C1<br>Lateral ties<br>Long bars<br>2c1<br>C2                                  | 8<br>12                     | 60<br>8              | 1.3124m<br>10.3584m                      | 78.744m<br>82.8672m                        | 31.064508kgs<br>73.5612kgs             | <u>62.129016kgs@8m</u><br><u>m</u><br><u>147.1224kgs@12m</u><br><u>m</u>             |
|             | Lateral ties<br>Long bars1<br>Long bars<br>4c2<br>C3                                    | 8<br>12<br>12               | 60<br>8<br>6         | 1m<br>5.1792m<br>5.1792m                 | 60m<br>41.4336m<br>31.0752m<br>72.5088m    | 23.67kgs<br>64.36606kgs                | 165.69kgs@8mm<br>257.4642kgs@12m<br>m<br>71.07kgs@8mm                                |
|             | Lateral ties<br>Long bars<br>3c3  | 8<br>12                     | 60<br>6              | 1m<br>10.3584m                           | 60m<br>62.1504m                            | 23.67kgs<br>55.1709kgs                 | 15.5127kgs@12mm  |
| 3.          | PLINTH BEAM<br>PB1<br>Stirrups  | 0                           | 22                   |  | 22   | 12 01051                               |  |
|             | Long bars<br>Continuous<br>Crancked<br>4PB1   | 8<br>12<br>12               | 33<br>4<br>2         | 1m<br>5.6007m<br>5.60574m                | 33m<br>22.4028m<br>11.21148m               | 13.0185kgs<br>19.88696kgs<br>9.9524kgs | <u>52.074kgs@8mm</u><br><u>79.54584kgs@12m</u><br><u>m</u><br><u>39.8096kgs@12mm</u> |
|             | PB2<br>Stirrups<br>Long bars<br>10PB2   | 8<br>10                     | 21<br>4              | 1m<br>3.4671m                            | 21m<br>13.8684m                            | 8.2845kgs<br>8.54986kgs                | 82.845kgs@8mm<br>85.4986kgs@10mm<br>31.56@8mm<br>71.0254kgs@12mm                     |
|             | PB3<br>Stirrups<br>Long bars<br>5PB3  | 8<br>12                     | 16<br>6              | 1m<br>2.667m                             | 16m<br>16.002m                             | 6.312kgs<br>14.2049kgs                 |  |



(An ISO 3297: 2007 Certified Organization)

### Vol. 5, Issue 6, June 2016

|   |                     | 1  |    | 1         |             |              |                         |
|---|---------------------|----|----|-----------|-------------|--------------|-------------------------|
| 4 | SLAB BEAM           |    |    | 1.00.00   | 44.075      | 10 501 5     |                         |
| • | B1- Stirrups        | 8  | 38 | 1.2362m   | 46.975m     | 18.5316kgs   | <u>333.5688kgs@8mm</u>  |
|   | Long bar            | 16 | 4  | 5.6007m   | 22.4028m    | 35.35609kgs  | <u>636.4095kgs@16m</u>  |
|   | Continuous          | 16 | 2  | 5.60742m  | 11.21484m   | 17.69926kgs  | <u>m</u>                |
|   | Crancked            |    |    |           |             |              | <u>318.58668kgs@16m</u> |
|   | 18B1                | 8  | 15 | 1.2362m   | 18.543m     | 7.3152kgs    | <u>m</u>                |
|   | B2- Stirrups        |    |    |           |             |              | 87.7524kgs@8mm          |
|   | Long bars           | 12 | 4  | 2.7813m   | 11.1252m    | 9.8758kgs    | 118.5096@12mm           |
|   | Continuous Crancked | 12 | 1  | 2.78634m  | 2.78634m    | 2.4734kgs    | 29.6808@12mm            |
|   | 12B2                |    |    |           |             | -            | 105.3384kgs@8mm         |
|   | B1X-Stirrups        | 8  | 18 | 1.2362m   | 22.2516m    | 8.7782kgs    | 262.6452kgs@16m         |
|   | Long bars           | 16 | 4  | 3.4671m   | 13.8684m    | 13.8684kgs   | m                       |
|   | 12B1x               | 8  | 25 | 1.2362m   | 29.2979m    | 11.5580kgs   | 34.674kgs@8mm           |
|   | B4- Stirrups        | 16 | 4  | 3.0099m   | 12.0396m    | 19.0008kgs   | 57.024kgs@16mm          |
|   | Long bars           | 12 | 4  | 3.0099m   | 12.0396m    | 10.6875kgs   | 32.6025kgs@12mm         |
|   | 3B4                 |    |    |           |             | Č            | 24.8715kgs@8mm          |
|   | B5-1-Stirrups       | 8  | 17 | 1.2362m   | 21.0154m    | 8.2905kgs    | 25.9746kgs@12mm         |
|   | Long bars           | 12 | 4  | 2.4384m   | 9.7536m     | 8.6582kgs    |                         |
|   | 3B5-1               | 8  | 7  | 1.2362m   | 8.6534m     | 3.4137kgs    | 71.6877kgs@8mm          |
|   | B5-2- Stirrups      | 12 | 4  | 0.9144m   | 3.6576m     | 3.2468kgs    | 68.1828kgs@12mm         |
|   | Long bars           |    |    |           |             |              |                         |
|   | 21B5-2              |    |    |           |             |              |                         |
| 5 | SLAB                |    |    |           |             |              |                         |
|   | X-direction         |    |    |           |             |              |                         |
|   | Continuous          | 8  | 24 | 10.2108m  | 245.059m    |              |                         |
|   | Crancked            | 8  | 25 | 10.21416  | 255.354m    |              | 245.7887kgs@8mm         |
|   | Extra               | 8  | 48 | m         | 122.6256m   |              |                         |
|   | Y-direction         |    |    | 2.5547m   | 623.0386m   | 245.7887kgs  |                         |
|   | Continuous          |    |    |           |             | 2            | 244.40879kgs@8m         |
|   | Crancked            | 8  | 25 |           | 243.84m     |              | m                       |
|   | Extra               | 8  | 26 | 9.7536m   | 253.68096m  |              |                         |
|   | 2000                | 8  | 50 | 9.75696m  | 122.02m     |              |                         |
|   |                     |    |    | 2.4404m   | 619.54096m  | 244.4089kgs  |                         |
| 6 | STAIR CASE          |    |    | 2         | 51712 1070m | _ 1111007Kg5 |                         |
|   | X-direction         |    |    |           |             |              |                         |
|   | Continuous          | 10 | 4  | 2.6008m   | 10.4032m    |              |                         |
|   | Crancked            | 10 | 4  | 2.605m    | 10.4052m    |              |                         |
|   | Extra               | 10 | 8  | 0.6552m   | 5.2176m     |              | 96.324kgs@10mm          |
|   | 6sc                 | 10 |    | 5.0552m   | 26.0408m    | 16.054kgs    | 2 0.02 mgs e romm       |
|   | Y-direction         |    |    |           | 20.0 10011  | 10.05 1855   |                         |
|   | Continuous          | 10 | 7  | 0.9144m   | 5.4864m     |              |                         |
|   | Crancked            | 10 | 6  | 0.9144m   | 6.4302m     |              |                         |
|   | Extra               | 10 | 14 | 0.9144m   | 2.7672m     |              | 54.315kgs@10mm          |
|   | 6sc                 | 10 | 14 | 0.9144111 | 14.6838m    | 9.0525kgs    | <u>57.515Kgs@100000</u> |
|   | 050                 | l  |    |           | 14.0030111  | 7.0525Kgs    |                         |



(An ISO 3297: 2007 Certified Organization)

### Vol. 5, Issue 6, June 2016

### **IV.RESULTS**

| MATH | ERIAL DETAILS:                 |                            |              |              |                |
|------|--------------------------------|----------------------------|--------------|--------------|----------------|
| S.NO | DESCRIPCTION OF<br>WORK        | VOLUME                     | CEMENT(bags) | SAND(kgs)    | AGGREGATE(kgs) |
| 1.   | FOUNDATION                     | 9.9312cu.m                 | 75           | 5551         | 11103          |
| 2.   | PCC                            | 2.5803cu.m                 | 9            | 1710         | 3420           |
| 3.   | COLUMNS                        | 7.21982cu.m                | 66           | 4781         | 9562           |
| 4.   | PLINTH BEAM                    | 4.38178cu.m                | 39           | 2903         | 5805           |
| 5.   | SLAB BEAM                      | 6.34774cu.m                | 57           | 4205         | 8409           |
| 6.   | SLAB                           | 14.9081cu.m                | 297          | 29626        | 59251          |
| 7.   | PLINTH BEAM SLAB               | 25.0463cu.m                | 222          | 16591        | 33181          |
| 8.   | WALLS                          | 116.85684cu.m              | 113          | 33656        | -              |
| 9.   | PLASTERING OF WALL             | 2.9840cu.m<br>0.7460cu.m   | 15<br>8      | 4297<br>1074 | -              |
| 10.  | COMPOUND WALL                  | 18.011cu.m                 | 18           | 5187         | -              |
| 12.  | PLASTERING OF<br>COMPOUND WALL | 1.2606cu.m<br>0.315156cu.m | 6<br>3       | 1815<br>454  | -              |
| 13.  | LINTEL                         | 35.76sq.m                  | 1            | 129          | -              |
| 14.  | SUNSHADE                       | 0.48447cu.m                | 7            | 322          | 644            |
| 15.  | STAIR CASE                     | 2.659402cu.m               | 28           | 2073         | 4146           |
| 16.  | TOTAL                          |                            | 964          | 114374       | 135521         |

#### **STEEL CALCULATION:**

Steel calculations

- Requirements for steel calculations:
  - 1.Diameter of bar
  - 2.Length of bar
- Based on this two we can calculate the amount of steel that will be used.

1.For 1m steel the weight = area\*density of steel

Area is based on diameter.

- 2. Hooked bar length= L+18 d3. Crancked bar length= L+0.84d4. Overlapped bar length= L+50d
- 4. Overlapped bar length = L+50d
- 5.Development length  $= 16d \ge 18$  inches
- Standard covers for reinforcement
  - 1.<= 0.3m l or b 1inch cover
  - 2. 0.4 to 0.5m l or b 2inch cover 3.>= 0.6m l or b - 4inch cover



(An ISO 3297: 2007 Certified Organization)

| _    | Vol. 5, Issue 6, June 2016 |                  |                |  |  |  |
|------|----------------------------|------------------|----------------|--|--|--|
| S.NO | DIAMETER                   | WEIGHT PER METER | MEIGHT PER 12M |  |  |  |
|      |                            |                  |                |  |  |  |
| 1.   | 6                          | 0.2219kgs        | 2.6633kgs      |  |  |  |
| 2.   | 8                          | 0.3945kgs        | 4.734kgs       |  |  |  |
| 3.   | 10                         | 0.6165kgs        | 7.398kgs       |  |  |  |
| 4    | 12                         | 0.8877kgs        | 10.625kgs      |  |  |  |
| 5    | 16                         | 1.5782kgs        | 18.93kgs       |  |  |  |
| 6.   | 20                         | 2.4660kgs        | 29.59kgs       |  |  |  |
| 7.   | 22                         | 2.983kgs         | 35.79kgs       |  |  |  |
| 8.   | 25                         | 3.853kgs         | 49.236kgs      |  |  |  |
| 9.   | 30                         | 5.5487kgs        | 66.584kgs      |  |  |  |
| 10   | 32                         | 6.3131kgs        | 75.75kgs       |  |  |  |
| 11.  | 40                         | 9.8643kgs        | 113.37kgs      |  |  |  |

**BRICKS:** NO OF BRICKS = (VOLUME OF WALL+VOLUME OF COMPOUND WALL)/0.00176 =(116.85684+18.011)/0.0017 =6742 **PAINT:** ASIAN PAINTS

For 12sq.m 1 liter of paint is required. So,For 265.289sq.m the amount of paint = 265.289/12= 23 liters MARBLES:GFNO OF MARBLES= CARPET AREA/MARBLE AREA

FF, SF NO OF MARBLES = 2139.06/2.4384 = 888= 2 (CARPET AREA/MARBLE AREA)= 2 (2446.30/2.4384) = 2896

THEREFORE, THE TOTAL NO OF MARBLES ARE **3784** MARBLES

### ABSTRACT COST:

| MATE | ERIAL COSTING |               |                     |                   |
|------|---------------|---------------|---------------------|-------------------|
| S.NO | MATERIAL      | QUANTITY      | RATE PER UNIT(Rs/-) | AMOUNT            |
|      |               | -             |                     | (Rs/-)            |
| 1.   | Cement        | 964kgs        | 350                 | 337400            |
| 2.   | Sand          | 114.374tonnes | 1091                | 124782.034        |
| 3.   | Aggregates    | 135521kgs     | 1                   | 135521            |
| 4.   | Steel         | 4191.5786kgs  | 37                  | 155088.4082       |
| 5.   | Bricks        | 67420 no      | 5                   | 337100            |
| 6.   | Paint         | 2907 sq.f     | 30                  | 87210             |
| 7.   | Marbles       | 3784 no       | 14                  | 52976             |
| 8.   | Doors         | 8 no          | 1500                | 12000             |
| 9.   | Window        | 7 no          | 4710                | 32970             |
| 10.  | Window grill  | 0.14          | 78500               | 10990             |
| 11.  | Excavation    | 95.5692cu.m   | 567                 | 54187.7364        |
| 12.  | Total amount  |               |                     | Rs.1340225.1786/- |



(An ISO 3297: 2007 Certified Organization)

### Vol. 5, Issue 6, June 2016

| ADDITIONAL CHARGES |                              |           |                     |  |  |  |
|--------------------|------------------------------|-----------|---------------------|--|--|--|
| S.NO               | WORK                         | % OF COST | AMOUNT(Rs/-)        |  |  |  |
| 1.                 | Contractors profit           | 30        | 402067.55358        |  |  |  |
| 2.                 | Electrical works             | 8         | 107218.014288       |  |  |  |
| 3.                 | Plumbing works               | 8         | 107218.014288       |  |  |  |
| 4.                 | Labour costs                 | 25        | 335056.29465        |  |  |  |
| 5.                 | Water cost                   | 1.5       | 20103.377679        |  |  |  |
| 6.                 | Designer and planner charges | 20        | 268045.03572        |  |  |  |
|                    |                              |           |                     |  |  |  |
| 7.                 | Total amount                 |           | Rs.1239708.290216/- |  |  |  |

Therefore, total cost of project = material cost + additional charges

= 1340225.1786+1239708.290216

= 2579933.468816

~= Rs.2579934/-

TOTAL ESTIMATED COST OF THE INDIVIDUAL VILLA = Rs.2579934/-Add contingencies and work establishment charges – 5% of T.C

Therefore,

TOTAL COST = Rs.2708931/-

#### **V.CONCLUSION**

- 1. The detailed measurement and calculation of quantities, which includes different items of work involved in construction such as excavation, concreting, brick work etc of a villa are done, followed by the preparation of abstract of cost estimated.
- 2. Abstract of estimated cost includes cost of each item of various works, which is calculated from quantities computed in detailed estimation. Thus estimation of budget is made.
- 3. Hence, we have prepared a detailed estimation of material and the cost estimated for the construction of the individual villa (just basic construction).
- 4. With the help of this project work we can conclude that the detailed estimation is very much accomplished and reliable method of estimation as we will take each and every aspect into consideration.

#### REFERENCES

- [1] B.N. Suresh "Estimating & Consting" (for the course of construction technology), Editor: B. HARINATH REDDY, First Edition: 2006.
- [2] B. N. Dutta "Esimationand Costing in civil engineering" (theory and practice), UBS Publishers, distributors Pvt. Ltd.
- [3] MA Al-Mohsin- Modeling of Construction Cost of Villas in Oman, Buraimi, Oman
- [4] S. Mahaboob basha -"Quatity survey ",Standard publications.

**B.LAVANYA** 

- [5] G.S. Birdie-Text book for Estimation and Costing(civil engineering) ,Dhanpat Rai Publishing Company.
- [6] D.C. Mahajan-"Estimation and Costing, civil engineering." by UBS Publishers & Distributors.

[7]

### BIOGRAPHY



The Author has received her B.Tech Civil Engineering from CMR Institute of Technology ,M.Tech inStructural Engineering from DRK College of Engineering &Technology. She is presently working as a Assistant Professor of Civil Department inVIGNAN INSTITUTE OF TECHNOLOGY & SCIENCE.