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# Comparative Structural Analysis of RC Buildings Using STAAD Pro and SAP2000

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**Abstract- The project titled: "PLANNING AND STRUCTURAL DETAILDED ESTIMATION COSTING OF G+5 BUILDING AND INTERIOR DESIGN" using "STADD PRO" software. The project gives the overview of planning, structural detailing and cost estimation of g+5 storey building and estimation of interior designing of a building. We know before starting the construction we need to know, how much amount is required for finishing of construction For that we need to go for cost estimation of the building for each and every component work which gives the brief or rough idea of cost the building to finish the construction. By using this estimation we can arrange the money and material according to the requirement and can know the cost of every work done in construction. Planning and structural detailing are the major parts in the building in which construction is progressed and proceeded based on the planning of building and orientation and also the structural detailing of the concrete and steel members. In this project we are dealing with the planning, structural detailing, cost estimation of building and interior designing for g+5 storey building. Planning of building is taken out according to the norms of town planning commission and structural detailing is taken out by following code book required for the designing of member and detailing of member and in the same way cost estimation of building and interior designing are done as per CPM-PERT and morth specification rate of Indian government. Here planning deals with selection of site, orientation of building and placing of rooms as per requirement. Structural detailing deals with the designing of beams columns, slabs and stair case of the building and also giving the structural detailing of steel required to place in concrete member during casting. Also cost estimation deals with the rates of each and every work and the component used in the construction work. In this project we have done every-thing by following the specification and got the accurate results and finished the project successfully.**

**Keywords— The project focuses on planning, structural detailing, and cost estimation of a G+5 building using STAAD.Pro, emphasizing site selection, building orientation, and functional layout as per planning norms. It includes structural design and detailing of beams, columns, slabs, and staircases following Indian code standards, along with quantity take-off and cost estimation based on CPM–PERT techniques and MORTH specifications. The study also covers interior design estimation, material planning, and budgeting to ensure efficient resource management and successful project execution.**

## I. INTRODUCTION

The term early estimate is used to describe the process of predicting a project's cost before the design of the project is completed (Sanders et al, 1992). The technique is used to estimate one characteristic of a system, usually its cost, from other physical and/or performance characteristics of the system (Rose, 1982). This technique involves life cycle costs, a detailed data base, and the application of multivariable correlation (Black, 1984).

Early cost estimating is considered as the most significant starting process to influence the fate of a new project. The accuracy of cost estimation

improves toward the end of the project due to detailed and precise information. The early or conceptual phase is the first phase of a project in which the need is examined, alternatives are assessed, the goals and objectives of the project are established and a sponsor is identified (Holm et al., 2005). At this stage, estimate accuracy is between ±25% and ±50% (Schexnayder et al., 2003) due to less defined project details.

Cost estimation of construction projects with high accuracy at the early phase of project development is crucial for planning and feasibility studies. Construction clients require early and accurate cost advice prior to site acquisition and commitment to build in order to enable them to take a right decision regarding the feasibility of proposed project. However, a number of difficulties arise when conducting cost estimation during the early phase. Major problems include lack of preliminary information, lack of database of works costs, lack of appropriate cost estimation methods, and the involvement of many environmental, political, social and external uncertainties. Given its significance, conventional tools such as regression analysis have been widely employed to tackle the problem.

## II. WORK METHODS AND PROBLEMS

**The Estimating Problem**

How does an estimator estimate the cost of a construction project? For those reader's not familiar with cost estimating, the process involved is complex. Learning about cost estimating will help non-cost-estimators understand what is involved and what limitations exist when reviewing cost data generated by cost estimators.

estimates attempting to hit the target, which is the actual cost. The subjective value chosen by each estimator was considered to represent the resources required by each firm to complete an example office-building project. We can see that the estimates are all scattered around the target of actual cost. Hitting the target is not a common occurrence and is an inbuilt problem of estimating.

Briefly, let us consider an estimator pricing a brickwork item.

What are the difficulties presented? They are as follows:

- Choice of work method.
- Output of crew (given the firm's unique efficiency).
- Cost of labor
- Cost of material and selection of an appropriate wastage allowance.
- Addition of overheads and profit

➢ **Problem 1 - Choice of work Method**

There may be many or only a few work methods available. For instance, should the estimator assume a three-man or a four-man crew, composed of two or three bricklayer with either one or two laborers? Will there be central mortar mixing or individual mixers for each crew? How will the brickwork be constructed? Will trestles or proper standing scaffolding be used? Where will work commence from? What restrictions will the other trades impose on the masonry work?

All possibilities must be investigated, and the most economical possibility should be chosen.

➢ **Problem 2- Output of crew**

The output chosen will be based on past performance, since the estimator will assume that this performance will be repeated in the future. As will be explained later, recording and properly documenting job site performance is helpful to the estimator when he or she considers future projects. Manipulation of these historical data may occur; for example, decreasing output to allow for restricted working condition. Whatever manipulation occurs, the estimator is faced with the difficulty of trying to assess what output will be achieved.

➢ **Problem 3- Cost of labor**

How much will the contractor be required to pay for labor? The estimator must predict this cost. The labor cost will vary depending on job location, availability of skilled labor, contract wage regulations, union or open shop labor requirements, general market conditions, and so on.

- **Problem 4- Cost of Material**

This can be predicted with a fair degree of accuracy if the material in question is in ready supply and is frequently purchased. The quantity of material required must be accurately measured from the drawing and is not dependent on the crew performance or work method adopted. Although the estimator must not only consider the finished in -place quantity of material, but also must allow for a wastage factor, this factor can vary dramatically and is highly dependent on the performance and work procedures adopted by the crew.

- **Problem 5 - Addition for overheads and profit**

This amount will depend on company policy, market condition, and many other variables that will be discussed later. It is, as you can imagine, very important to incorporate overhead and profit into the final estimate.

Problems 1-5 have been presented simply, but you can begin to imagine their complexity.

An estimator has to posses the skill and expertise to assemble the known facts and rationally solve the estimating equation. The estimator selects a range of most likely values and, after a process of fine tuning and "weighing up" of the situation, the estimator modifies his or her initial crude selection and finally selects a value that he or she considers to be 'most likely."

The thought process previously described and shown in fig.1.2 and 1.3 applies to our hypothetical brickwork example, but generally indicates how and estimator arrives at a solution for each separate item of the cost estimate. A total cost estimate consists of numerous line items and specific sections relating to various trades and specialists subcontractors. This thought process will usually be repeated on numerous occasions during the compilation of one single estimate or bills of quantity.

**Location**

Since a construction project's location affects the final cost, an estimator must understand what particular locational factors will be encountered and what considerations should be taken into account when formulating the estimate. Estimators are aware that costs in Boston are different that costs in Miami, but not everyone is aware that the locational variation within the Boston area or within the Miami area also influence construction costs. For example, the project location may be a restricted city center infill site or a remote country site, each having its own particular difficulties that the contractor must overcome.

Various locational difficulties are described:

- Remoteness
- Confined sites
- Labor availability
- Weather
- Design considerations (related to location).
- Vandalism and site security

**Remoteness**

A remote construction site, for example, a project site located high in the Blue Ridge Mountains of Virginia, poses a contracting organization with a difficult set of problems to cope with.

## III. ESTIMATION

Estimation of any construction work may be different as the process of calculating the quantities and costs of the various items required in connection with the work to a reasonable degree of accuracy.

For preparing an estimate, drawings consists of plan, sections through important points and elevation along with a detailed specification giving description of workmanship, properties and proportions of materials, are required.

The need for preparing and estimate for a work is:

- To know the quantities of different items of work, material, their source and labour.
- To decide whether the funds available being sufficient or not to complete the project.

- To obtain the administrative approval and technical section of estimate from the competent authority to release the funds.
- For sale or purchase of property.
- For registration of a property, to decide the stamp duties, estimation is required.

**Estimation methods**

There are two main estimating methods:

- Preliminary estimating - price per unit, price per unit area, price per unit volume, and assembly methods; used mostly at the feasibility stage
- Detailed estimating – far more accurate; used by most builders when complete drawings and specifications are available.

## IV. DETAILED ESTIMATE

- Detailed estimates are prepared by carefully and separately calculating in detail the costs of various items of the work that constitute the whole project from the detailed working drawings after the design has been finalized.
- The mistakes, if any, in the rough cost estimate are eliminated in the detailed estimate.
- Detailed estimates are submitted to the competent authorities for obtaining technical sanction.
- The whole project is sub-divided into different items of work or activities. The quantity for each item is then calculated separately from the drawings as accurately as possible. The procedure is known as "taking out of quantities".
- The quantities for each item may be estimated and shown in the pattern which is called "Bill of quantities."
- The unit, in which each item of the wok is to be calculated, should be according to the prevailing practice as followed in various departments of the country.
- Each item of the work is then multiplied by its estimated current rate calculated by a fixed procedure to find out cost of the item.
- At the end, a total of all items of the work are made to get the total estimated cost.
- The rates are usually as per Schedule of Rates for the locality plus a premium to allow for rise in labor and material rates over and above the schedule of rates.
- A percentage, usually 5% is also provided on the total estimated cost for the work to allow for the possible contingencies due to unforeseen items or expenditure or other causes, besides 2% establishment charges.
- Besides drawings and details of measurements and calculation of quantities (Bill of Quantities), the following documents are also usually submitted with the detailed estimate for obtaining Technical Sanction:
- A report explaining History, necessity, scope and main features of the project, its design, and estimate, etc.
- Specifications lying down the nature and class of work and material to be used in various parts of the work.
- The abstract of cost (priced Bill of Quantities) showing the total quantities under each sub-head, rate per unit of measurement, and cost.
- Calculation sheets showing calculations for important parts of the structure. In fact, in estimating the art and skill lies only in the computation of details without any omissions, of all parts of the building or work.

## V. METHODS OF DETAILED ESTIMATE

o The dimensions, length, breadth and height or depth are to be taken out from the working drawings (plan, elevation and section).

o Junctions of walls, corners and the meeting points of walls require special attention.

o For symmetrical footings, which is the usual case, earthwork in excavation in foundations, foundation concrete, brickwork in foundation and plinth, and brickwork in superstructure may be estimated by either of the two methods:

- Long Wall & Short Wall Method
- Center Line Method

**Long Wall & Short Wall Method**

- The walls running in one direction are termed as "long walls" and the walls running in the transverse direction, as "Short walls", without keeping in mind which wall is lesser in length and which wall is greater in length.
- Lengths of long walls are measured or found "Out-to out" and those of short walls as "In-to-in".
- Different quantities are calculated by multiplying the length by the breadth and the height of the wall.
- The same rule applies to the excavation in foundation, to concrete bed in foundation, D.P.C., masonry in foundation and super structure etc.
- For symmetrical footing on either side, the center line remains same for super structure, foundation and plinth. So, the simple method is to find out the centre-to-centre lengths of long walls and short walls from the plan.
- Long wall length out-to-out
- = Center to center length + half breadth on one Side + half breadth on other side.
- = Center to center length + one breadth
- Short wall length in-to-in = Center to Center length - one breadth.
- This method can also be worked out in a quicker way., as follows:

**For long walls**

- First of all, find the length of the foundation trench of the long wall "out-to-out" in the same manner as explained above.
- The length of the foundation concrete is the same.
- For the length of the first footing or first step of the brick wall, subtract two offsets (2x6"=12") in foundation concrete from the length of the trench or concrete.
- For the second footing subtract from the length of the 1st footing two offsets (2x2.25"= 4.5"), for 3rd footing subtract from the length of the 2nd footing 2 offsets (4.5") and in this way deal with the long walls up to the super-structure.

**For short walls**

- Follow the same method but instead of subtracting add two offsets to get the corresponding lengths in-to-in.

## VI. COST ESTIMATING

Cost estimating is a well-formulated prediction of the probable construction cost of a specific building project. A cost estimate can be an important management tool to library planners during the design phases of a project providing information about the facility and the project budget.

All projects begin with an idea and end by filling a need. Most projects at conceptual design require changes to present an acceptable workable solution. The conceptual cost estimate is becoming more important to owners, architects, and builders. It is a tool for determining required funding and to gauge the needs of a project. This tool continues to be refined during the design stages of the project.

The cost estimate accounts for all items that will generally be included in the general contractor'sbid. The cost estimate is prepared by breaking down the items of work using a standard format and determining the cost of each item from experience and a database of current construction cost information.

A cost estimate should not be confused with a project budget. A project budget will include the total of the cost estimate, and will also include what are known as "soft costs". These soft costs will specifically be excluded from the cost estimate and will typically include land acquisition, architectural and design fees, movable furniture and equipment, building permits and fees, fire and all risk insurance. The project budget will also include non-construction related costs such as fundraising and moving costs.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **TOTAL ABSTRACT DETAILED ESTIMATION FOR PROPOSED CONSTRUCTION OF BULIDING** | | | | | | | |
| | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| **STILT FLOOR** | | | | | | **17,48,700.00** | |
| | | | | | | | |
| | | | | | | | |
| **FIRST FLOOR** | | | | | | **33,83,700.00** | |
| | | | | | | | |
| | | | | | | | |
| **SECOND FLOOR** | | | | | | **33,83,700.00** | |
| | | | | | | | |
| | | | | | | | |
| **THIRD FLOOR** | | | | | | **33,83,700.00** | |
| | | | | | | | |
| | | | | | | | |
| **FIFTH FLOOR** | | | | | | **33,83,700.00** | |
| | | | | | | | |
| | | | | | | | |
| **MUNICIPAL** | | | | | | **1,30,000.00** | |
| | | | | | | | |
| | | | | | | | |
| **CONSULTANCY CHARGES** | | | | | | **95,000.00** | |
| | | | | | | | |
| | | | | | | | |
| **BORE AND MOTAR CHARGES** | | | | | | **1,50,000.00** | |
| | | | | | | | |
| | | | | **TOTAL** | | **156,58,500.00** | |
| | | | | | | | |
| | | | | | | | |
| **(RUPEES ONE CRORE FIFTY SIX LAKHS FIFTY EIGHT THOUSAND FIVE HUNDRED)** | | | | | | | |
| | | | | | | | |

| **DETAILED ABSTRACT ESTIMATION FOR PROPOSED CONSTRUCTION OF BUILDING** | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **STILT FLOOR** | | | | | |
| | | | | | |
| **S.No.** | **Description** | **Qty** | **Rate** | **Per** | **Amount** |
| | | | | | |
| 1 | Excavation | 3340.50 | 6.00 | Cft | 20,043.00 |
| 2 | P.C.C (1:4:8) | 183.73 | 55.00 | Cft | 10,105.15 |
| 3 | R.C.C (1:1.5:3) | | | | |
| | Footings | 865.87 | 195.00 | Cft | 1,68,844.65 |
| | Columns upto plinth beams | 79.59 | 180.00 | Cft | 14,326.20 |
| | Columns upto roof level | 224.44 | 185.00 | Cft | 41,521.40 |
| | Plinth Beams | 348.86 | 195.00 | Cft | 68,027.70 |
| | Roof Beams | 595.34 | 195.00 | Cft | 1,16,091.30 |
| | Roof slab | 887.07 | 195.00 | Cft | 1,72,978.65 |
| 4 | Back filling | 3758.25 | 6.00 | Cft | 22,549.50 |
| 5 | SS Railing | 97.92 | 555.00 | Sft | 54,345.60 |
| 6 | Steel (hysd bars) | 8596.21 | 55.00 | kgs | 4,72,791.55 |
| | | | | | |
| 7 | **Compound Wall** | | | | |
| 8 | Excavation | 1088.00 | 6.00 | Sft | 6,528.00 |
| 9 | P.C.C (1:4:8) | 181.70 | 55.00 | Sft | 9,993.28 |
| 10 | CRS Masonery | 952.00 | 90.00 | Sft | 85,680.00 |
| 11 | Brick work | 960.00 | 85.00 | Sft | 81,600.00 |
| 12 | Plastring | 1484.00 | 16.00 | Sft | 23,744.00 |
| 13 | Gate | 90.00 | 455.00 | Sft | 40,950.00 |
| | | | | **TOTAL** | **14,10,119.98** |
| | | | **Grand Total** | **SAY** | **14,10,200.00** |
| | Electrification 12% | | | | 1,69,224.00 |

| | | | | | |
|---|---|---|---|---|---|
| | Plumbing 12% | | | | 1,69,224.00 |
| | | | | | **17,48,648.00** |
| | | | | **SAY** | **17,48,700.00** |
| | | | | | |
| **RUPEES SEVENTEEN LAKHS FOURTY EIGHT THOUSAND AND SEVEN HUNDRED ONLY** | | | | | |

**DETAILED ABSTRACT ESTIMATION FOR PROPOSED CONSTRUCTION OF BULIDING**

**FIRST FLOOR**

| S.No. | Description | Qty | Rate | Per | Amount |
|---|---|---|---|---|---|
| 1 | R.C.C (1:1.5:3) | | | | |
| | Columns upto roof level | 123.19 | 185.00 | Cft | 22,790.15 |
| 2 | Roof Beams | 595.34 | 185.00 | Cft | 1,10,137.90 |
| 3 | Roof slab | 887.07 | 195.00 | Cft | 1,72,978.65 |
| 4 | Brick work | 2961.58 | 90.00 | Cft | 2,66,542.20 |
| 5 | Plastering | 11965.51 | 16.00 | Sft | 1,91,448.16 |
| 6 | lintels and sunsheds | 49.69 | 160.00 | Cft | 7,950.40 |
| 7 | ceramic Tiles | 887.50 | 145.00 | Sft | 1,28,687.50 |
| 8 | Italian Marble flooring | 1870.20 | 315.00 | Sft | 5,89,113.00 |
| 9 | Marble Skirting | 298.72 | 95.00 | Rft | 28,378.40 |
| 10 | teak wood Main doors | 49.00 | 725.00 | Sft | 35,525.00 |
| 11 | Teak wood | 318.50 | 695.00 | Sft | 2,21,357.50 |
| | Door Frames | | | | |
| 12 | Teak wood Windows | 127.75 | 858.00 | Sft | 1,09,609.50 |
| 13 | Painting (External) | 2145.14 | 12.00 | Sft | 25,741.68 |
| 14 | Painting (Internal) | 9197.67 | 12.00 | Sft | 1,10,372.04 |
| 15 | RCM Racks | 300.00 | 125.00 | Sft | 37,500.00 |
| 16 | RCC Chajjas | 60.00 | 125.00 | Sft | 7,500.00 |
| 17 | Kitchen platform | 40.00 | 250.00 | Sft | 10,000.00 |
| 18 | SS Railing | 97.92 | 555.00 | Sft | 54,345.60 |
| 19 | Steel (hysd bars) | 8596.21 | 55.00 | kgs | 4,72,791.55 |
| | | | | **TOTAL** | **26,02,769.23** |
| | | | **Grand Total** | **SAY** | **26,02,800.00** |
| 20 | Electrification 15% | | | | 3,90,420.00 |
| 21 | Plumbing 15% | | | | 3,90,420.00 |
| | | | | | **33,83,640.00** |
| | | | | **SAY** | **33,83,700.00** |
| | | | | | |
| | | | | | |
| **RUPEES THIRTY THREE LAKHS EIGHTY THREE THOUSAND SEVEN HUNDRED ONLY** | | | | | |

**DETAILED ESTIMATION FOR PROPOSED CONSTRUCTION OF BUILDING**

**GROUND FLOOR**

| S. No. | Description | Nos | L | B | D/H | Qty | Units |
|---|---|---|---|---|---|---|---|
| 1 | Earth work excavation & depositing | | | | | | |
| | in bank with initial lead and lift in | | | | | | |
| | all kinds of soil except in hard rock | | | | | | |
| | etc., complete for columns pits | | | | | | |
| | and walls | | | | | | |
| | for column pits | | | | | | |
| | C1 | 5 | 5.00 | 5.00 | 6.00 | 750.00 | cft |
| | C2 | 13 | 5.00 | 5.00 | 6.00 | 1950.00 | cft |
| | C3 | 3 | 5.50 | 5.50 | 6.00 | 544.50 | cft |
| | C4 | 1 | 4.00 | 4.00 | 6.00 | 96.00 | cft |
| | | | | | **Total** | **3340.50** | **cft** |
| 2 | Providing & laying of PCC bed (1:4:8) | | | | | | |
| | proportion with 40 mm ramming and all | | | | | | |
| | other operational & column pits and wall | | | | | | |
| | for column pits | | | | | | |
| | C1 | 5 | 5.00 | 5.00 | 0.33 | 41.25 | cft |
| | C2 | 13 | 5.00 | 5.00 | 0.33 | 107.25 | cft |
| | C3 | 3 | 5.50 | 5.50 | 0.33 | 29.95 | cft |
| | C4 | 1 | 4.00 | 4.00 | 0.33 | 5.28 | cft |
| | | | | | **Total** | **183.73** | **cft** |
| 3 | RCC work in (1:1.5:3) with 20 mm HBG metal | | | | | | |
| | including cost of conveyance | | | | | | |
| | of materials, labour charges etc., | | | | | | |
| | complete. | | | | | | |
| | a) Straight portion | | | | | | |
| | C1 | 5 | 5.00 | 5.00 | 1.00 | 125.00 | cft |
| | C2 | 13 | 5.00 | 5.00 | 1.23 | 399.75 | cft |
| | C3 | 3 | 5.50 | 5.50 | 1.23 | 111.62 | cft |
| | C4 | 1 | 4.00 | 4.00 | 0.75 | 12.00 | cft |
| | | | | | **Total** | **648.37** | **cft** |
| | b) Taper portion | | | | | | |
| | C1 | 5 | 2.75 | 3.00 | 1.00 | 41.25 | cft |
| | C2 | 13 | 2.75 | 3.00 | 1.23 | 131.92 | cft |
| | C3 | 3 | 3.00 | 3.38 | 1.23 | 37.36 | cft |
| | C4 | 1 | 2.75 | 3.38 | 0.75 | 6.97 | cft |
| | | | | | **TOTAL** | **865.87** | **cft** |
| | c) columns up to plinth beams level | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | C1 | 5 | 0.75 | 1.50 | 3.70 | 20.81 | cft |
| | C2 | 13 | 0.75 | 1.50 | 3.00 | 43.88 | cft |
| | C3 | 3 | 0.75 | 1.75 | 3.00 | 11.81 | cft |
| | C4 | 1 | 0.75 | 1.00 | 4.12 | 3.09 | cft |
| | | | | | **TOTAL** | **79.59** | **cft** |
| | | | | | | | |
| | d) columns up to roof level | | | | | | |
| | C1 | 5 | 0.75 | 1.50 | 9.00 | 50.63 | cft |
| | C2 | 13 | 0.75 | 1.50 | 9.00 | 131.63 | cft |
| | C3 | 3 | 0.75 | 1.75 | 9.00 | 35.44 | cft |
| | C4 | 1 | 0.75 | 1.00 | 9.00 | 6.75 | cft |
| | | | | | **TOTAL** | **224.44** | **cft** |
| | | | | | | | |
| | e) Plinth beams | | | | | | |
| | | 7 | 37.00 | 0.75 | 1.00 | 194.25 | cft |
| | | 3 | 66.38 | 0.75 | 1.00 | 149.36 | cft |
| | | 1 | 7.00 | 0.75 | 1.00 | 5.25 | cft |
| | | | | | **TOTAL** | **348.86** | **cft** |
| | f) Roof beams | | | | | | |
| | | 7 | 37.00 | 0.75 | 1.50 | 291.38 | cft |
| | | 4 | 66.38 | 0.75 | 1.50 | 298.71 | cft |
| | | 1 | 7.00 | 0.75 | 1.00 | 5.25 | cft |
| | | | | | **TOTAL** | **595.34** | **cft** |
| | g) roof slab | 1 | 37.00 | 66.38 | 0.38 | 933.30 | cft |
| | Dedecuct stair case | 1 | 12.38 | 7.00 | 0.38 | 32.93 | cft |
| | | 1 | 5.00 | 7.00 | 0.38 | 13.30 | cft |
| | | | | | **Total** | **887.07** | **cft** |
| 4 | Back fiiling with gravel and useful earth upto plinth beam level with compaction including cost of conveyance of materials, labour charges etc., complete. | | | | | | |
| | Columns pits | 5 | 5.00 | 5.00 | 3.00 | 375.00 | cft |
| | | 13 | 5.00 | 5.00 | 3.00 | 975.00 | cft |
| | | 3 | 5.50 | 5.50 | 3.00 | 272.25 | cft |
| | | 1 | 4.00 | 4.00 | 3.00 | 48.00 | cft |
| | Underflooring | 6 | 10.00 | 23.15 | 1.00 | 1389.00 | cft |
| | | 6 | 10.00 | 11.65 | 1.00 | 699.00 | cft |
| | | | | | **Total** | **3758.25** | **cft** |
| 5 | Supply & Fixing of SS Steel Staircase railing for | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | stpes including | | | | | | |
| | cost and conveance of all materials | | | | | | |
| | labour charges etc., complete. | | | | | | |
| | | 4 | 8.16 | 3.00 | ---- | **97.92** | **sft** |
| | | | | | | | |
| | | | | | | | |
| 6 | Providing & Fabrication of HYSD bars | | | | | | |
| | for footings, columns,beams & slabs including | | | | | | |
| | cost and conveance of all materials | | | | | | |
| | labour charges etc., complete. | | | | | | |
| | | 1 | 37.00 | 66.38 | 3.50 | **8596.21** | **Kgs** |
| 7 | **Compound wall** | | | | | | |
| | 1) Excavation | 2 | 50.00 | 2.00 | 2.00 | 400.00 | cft |
| | | 2 | 86.00 | 2.00 | 2.00 | 688.00 | cft |
| | | | | | **Total** | **1088.00** | **cft** |
| | 2) P.C.C bed | 2 | 50.00 | 2.00 | 0.33 | 66.8 | cft |
| | | 2 | 86.00 | 2.00 | 0.33 | 114.896 | cft |
| | | | | | **Total** | **181.696** | **cft** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 3) C.R.S. Masonery | 2 | 50.00 | 2.00 | 1.75 | 350 | cft |
| | | 2 | 86.00 | 2.00 | 1.75 | 602 | cft |
| | | | | | **Total** | **952** | **cft** |
| | 4) Brick work | 2 | 50.00 | 0.75 | 5.00 | 375 | cft |
| | | 2 | 86.00 | 0.75 | 5.00 | 645 | cft |
| | | | | | **Total** | **1020** | **cft** |
| | Deduction of gate | 1 | 16.00 | 0.75 | 5.00 | 60.00 | cft |
| | | | | | **Net Total** | **960.00** | **cft** |
| | 5) Plastering to walls | 2 | 50.00 | ---- | 5.75 | 575 | sft |
| | | 2 | 86.00 | ---- | 5.75 | 989 | sft |
| | | | | | **Total** | **1564** | **sft** |
| | Deduction of gate | 1 | 16.00 | ---- | 5.00 | 80.00 | sft |
| | | | | | **Net Total** | **1484.00** | **sft** |
| | 6) Supply & fixing of Gate and hold past | | | | | | |
| | with concrete bed | 1 | 18.00 | ---- | 5.00 | **90.00** | **sft** |
| | | | | | | | |

| **DETAILED ESTIMATION FOR PROPOSED CONSTRUCTION OF BULIDING** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| **FIRST FLOOR** | | | | | | | |
| | | | | | | | |

| S.No. | Description | Nos | L | B | D/H | Qty | Units |
|---|---|---|---|---|---|---|---|
| 1 | RCC work in (1:1.5:3) with 20 mm HBG metal | | | | | | |
| | including cost of conveyance | | | | | | |
| | of materials, labour charges etc., | | | | | | |
| | complete. | | | | | | |
| | columns up to roof level | | | | | | |
| | C1 | 3 | 0.75 | 1.50 | 9.00 | 30.38 | cft |
| | C2 | 5 | 0.75 | 1.50 | 9.00 | 50.63 | cft |
| | C3 | 3 | 0.75 | 1.75 | 9.00 | 35.44 | cft |
| | C4 | 1 | 0.75 | 1.00 | 9.00 | 6.75 | cft |
| | | | | | **TOTAL** | **123.19** | **cft** |
| | Roof beams | | | | | | |
| | | 7 | 37.00 | 0.75 | 1.50 | 291.38 | cft |
| | | 4 | 66.38 | 0.75 | 1.50 | 298.71 | cft |
| | | 1 | 7.00 | 0.75 | 1.00 | 5.25 | cft |
| | | | | | **TOTAL** | **595.34** | **cft** |
| | roof slab | 1 | 37.00 | 66.38 | 0.38 | 933.30 | cft |
| | Dedecuct stair case | 1 | 12.38 | 7.00 | 0.38 | 32.93 | cft |
| | | 1 | 5.00 | 7.00 | 0.38 | 13.30 | cft |
| | | | | | **Total** | **887.07** | **cft** |
| 2 | Superstructure in brick | | | | | | |
| | masonry in (1:6) for walls | | | | | | |
| | with best bricks locally available, | | | | | | |
| | including cost and conveyance | | | | | | |
| | of all materials & labour curing, | | | | | | |
| | scaffolding etc., as per ISI specifications. | | | | | | |
| | | 2 | 37.00 | 0.75 | 10.00 | 555.00 | Cft |
| | | 2 | 32.89 | 0.75 | 10.00 | 493.35 | Cft |
| | | 2 | 37.00 | 0.75 | 10.00 | 555.00 | Cft |
| | | 2 | 26.50 | 0.75 | 10.00 | 397.50 | Cft |
| | | 4 | 37.00 | 0.38 | 9.00 | 506.16 | Cft |
| | | 2 | 32.89 | 0.38 | 9.00 | 222.01 | Cft |
| | | 2 | 26.50 | 0.38 | 9.00 | 181.26 | Cft |
| | | 7 | 8.00 | 0.38 | 9.00 | 191.52 | Cft |
| | | 7 | 4.00 | 0.38 | 9.00 | 95.76 | Cft |
| | | 1 | 6.00 | 0.38 | 9.00 | 20.52 | Cft |
| | | | | | **Total** | **3218.08** | **Cft** |
| | Deductions (-) | | | | | | |
| | Doors | | | | | | |
| | M/D | 2 | 3.50 | 0.75 | 7.00 | 36.75 | Cft |
| | D | 6 | 3.00 | 0.38 | 7.00 | 47.25 | Cft |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | D1 | 11 | 2.50 | 0.38 | 7.00 | 72.19 | Cft |
| | Windows | | | | | | Cft |
| | W | 1 | 5.00 | 0.75 | 4.00 | 15.00 | Cft |
| | W1 | 4 | 4.00 | 0.75 | 4.00 | 48.00 | Cft |
| | W2 | 2 | 2.00 | 0.75 | 4.00 | 12.00 | Cft |
| | KW | 2 | 3.00 | 0.75 | 2.50 | 11.25 | Cft |
| | V | 5 | 2.50 | 0.75 | 1.5 | 14.06 | Cft |
| | | | | | **Total** | **256.50** | **Cft** |
| | | | | | **Net total** | **2961.58** | **Cft** |
| | | | | | | | |
| 3 | Plastering to brick masonery wall | | | | | | |
| | & ceiling in CM (1:5) of 15mm thick for | | | | | | |
| | first coat in CM (1:3) of 5mm thick for | | | | | | |
| | second coat, including cost and | | | | | | |
| | conveyance of all materials, labour | | | | | | |
| | charges curing, scaffolding etc., | | | | | | |
| | complete. | | | | | | |
| | A). Out side walls | 2 | 37.00 | ---- | 10.38 | 767.75 | Sft |
| | | 2 | 32.89 | ---- | 10.38 | 682.47 | Sft |
| | | 2 | 37.00 | ---- | 10.38 | 767.75 | Sft |
| | | 2 | 26.50 | ---- | 10.38 | 549.88 | Sft |
| | B). Inside plastering | | | | | | |
| | Dining | 4 | 10.10 | ---- | 10.00 | 404.00 | Sft |
| | | 4 | 8.38 | ---- | 10.00 | 335.20 | Sft |
| | hall | 4 | 15.10 | ---- | 10.00 | 604.00 | Sft |
| | | 4 | 10.00 | ---- | 10.00 | 400.00 | Sft |
| | Bed room 1 | 4 | 12.00 | ---- | 10.00 | 480.00 | Sft |
| | | 4 | 10.62 | ---- | 10.00 | 424.80 | Sft |
| | Bed room 2 | 4 | 12.00 | ---- | 10.00 | 480.00 | Sft |
| | | 4 | 10.00 | ---- | 10.00 | 400.00 | Sft |
| | Bed room 3 | 4 | 10.00 | ---- | 11.00 | 440.00 | Sft |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 4 | 10.00 | ---- | 12.00 | 480.00 | Sft |
| | Kitchen | 4 | 10.00 | ---- | 10.00 | 400.00 | Sft |
| | | 4 | 10.50 | ---- | 10.00 | 420.00 | Sft |
| | Drawing | 2 | 10.10 | ---- | 10.00 | 202.00 | Sft |
| | | 2 | 10.00 | ---- | 10.00 | 200.00 | Sft |
| | Balcony | 3 | 10.00 | ---- | 10.00 | 300.00 | Sft |
| | | 3 | 4.00 | ---- | 10.00 | 120.00 | Sft |
| | wash area | 2 | 3.50 | ---- | 10.00 | 70.00 | Sft |
| | | 2 | 7.00 | ---- | 10.00 | 140.00 | Sft |
| | storer room | 2 | 8.00 | ---- | 10.00 | 160.00 | Sft |
| | | 2 | 5.62 | ---- | 10.00 | 112.40 | Sft |
| | Toilet 1 | 8 | 7.00 | ---- | 11.00 | 616.00 | Sft |
| | | 8 | 4.50 | ---- | 12.00 | 432.00 | Sft |
| | Toilet 2 | 2 | 8.00 | ---- | 13.00 | 208.00 | Sft |
| | | 2 | 4.00 | ---- | 14.00 | 112.00 | Sft |
| | C). Plastering to ceiling | | | | | | |
| | Drawing | 1 | 10.00 | 10.00 | ---- | 100.00 | Sft |
| | Dining | 2 | 10.00 | 8.00 | ---- | 160.00 | Sft |
| | Living | 2 | 15.00 | 10.00 | ---- | 300.00 | Sft |
| | Bed room 1 | 2 | 12.00 | 10.62 | ---- | 254.88 | Sft |
| | Bed room 2 | 2 | 12.00 | 10.00 | ---- | 240.00 | Sft |
| | Bed room 3 | 2 | 10.00 | 10.00 | ---- | 200.00 | Sft |
| | Kitchen | 2 | 10.00 | 10.62 | ---- | 212.40 | Sft |
| | Toilet 1 | 2 | 7.00 | 4.50 | ---- | 63.00 | Sft |
| | Toilet 2 | 2 | 8.00 | 4.00 | ---- | 64.00 | Sft |
| | wash room | 2 | 3.00 | 10.00 | ---- | 60.00 | Sft |
| | storer room | 2 | 8.00 | 5.62 | ---- | 89.92 | Sft |
| | | | | | **Total** | **12452.44** | **Sft** |
| | Deductions (-) | | | | | | |
| | Doors | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | M/D | 2 | 3.50 | ---- | 7.00 | 49.00 | Sft |
| | D | 6 | 3.00 | ---- | 7.00 | 126.00 | Sft |
| | D1 | 11 | 2.50 | ---- | 7.00 | 192.50 | Sft |
| | Windows | | | | | 0.00 | |
| | W | 1 | 1.42 | ---- | 4.00 | 5.68 | Sft |
| | W1 | 4 | 4.00 | ---- | 4.00 | 64.00 | Sft |
| | W2 | 2 | 2.00 | ---- | 4.00 | 16.00 | Sft |
| | KW | 2 | 3.00 | ---- | 2.50 | 15.00 | Sft |
| | V | 5 | 2.50 | ---- | 1.50 | 18.75 | Sft |
| | | | | | **Total** | **486.93** | **Sft** |
| | | | | | **Net total** | **11965.51** | **Sft** |
| 4 | Providing of lintels and sunsheds (1:2:4) | | | | | | |
| | with 20 mm HBG metal including | | | | | | |
| | cost of conveyance of materials, | | | | | | |
| | labour charges etc.,complete. | | | | | | |
| | Lintels | | | | | | |
| | D1 | 17 | 3.00 | 0.75 | 0.50 | 19.13 | Cft |
| | W1 | 7 | 4.50 | 0.75 | 0.50 | 11.81 | Cft |
| | V | 5 | 3.00 | 0.75 | 0.50 | 5.63 | Cft |
| | | | | | **Total** | **36.56** | **Cft** |
| | Sunshedes | | | | | | |
| | W1 | 7 | 5.00 | 1.50 | 0.25 | 13.13 | Cft |
| | | | | | **Total** | **49.69** | **Cft** |
| 5 | Laying of ceramic Tiles in bathroom | | | | | | |
| | and kitchen walls and bathroom flooring | | | | | | |
| | including cost and conveyance of | | | | | | |
| | all materials & labour, curing etc., | | | | | | |
| | complete. | | | | | | |
| | Toilet (1) wall 1 | 8 | 7.00 | ---- | 7.00 | 392.00 | Sft |
| | Toilet (1) wall 2 | 8 | 4.50 | ---- | 7.00 | 252.00 | Sft |
| | Toilet (2) wall 1 | 2 | 8.00 | ---- | 7.00 | 112.00 | Sft |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Toilet (2) wall 2 | 2 | 4.00 | ---<br>- | 7.00 | 56.00 | Sft |
| | Toilet (1) Flooring | 4 | 7.00 | 4.50 | ---- | 126.00 | Sft |
| | Toilet (2) Flooring | 1 | 8.00 | 4.00 | ---- | 32.00 | Sft |
| | kitchen wall tiles | 2 | 10.00 | ---<br>- | 2.00 | 40.00 | Sft |
| | | | | | **Total** | **1010.00** | **Sft** |
| | Deductions (-) | | | | | | |
| | D1 | 7 | 2.50 | ---<br>- | 7.00 | 122.50 | Sft |
| | | | | | **Net total** | **887.50** | **Sft** |
| | | | | | | | |
| 6 | Laying Marble stone flooring over | | | | | | |
| | a bed of 12mm thick in CM (1:4) | | | | | | |
| | including cost and conveyance of | | | | | | |
| | all materials & labour, curing etc., | | | | | | |
| | complete. | | | | | | |
| | Drawing | 1 | 10.00 | 10.00 | ---- | 100.00 | Sft |
| | Dining | 2 | 10.00 | 8.00 | ---- | 160.00 | Sft |
| | Living | 2 | 15.00 | 10.00 | ---- | 300.00 | Sft |
| | Bed room 1 | 2 | 12.00 | 10.62 | ---- | 254.88 | Sft |
| | Bed room 2 | 2 | 12.00 | 10.00 | ---- | 240.00 | Sft |
| | Bed room 3 | 2 | 10.00 | 10.00 | ---- | 200.00 | Sft |
| | Kitchen | 2 | 10.00 | 10.62 | ---- | 212.40 | Sft |
| | Toilet 1 | 2 | 7.00 | 4.50 | ---- | 63.00 | Sft |
| | Toilet 2 | 2 | 8.00 | 4.00 | ---- | 64.00 | Sft |
| | wash room | 2 | 3.00 | 10.00 | ---- | 60.00 | Sft |
| | storer room | 2 | 8.00 | 5.62 | ---- | 89.92 | Sft |
| | balcony | 1 | 18.00 | 7.00 | ---- | 126.00 | Sft |
| | | | | | **Total** | **1870.20** | **Sft** |
| 7 | Laying Marble Skirting to walls | | | | | | |
| | with 12mm thick in CM (1:4) | | | | | | |
| | including cost and conveyance of | | | | | | |
| | all materials & labour, curing etc., | | | | | | |
| | complete. | | | | | | |
| | ToTal Skirting | 2 | 10.00 | 10.00 | ---- | 40.00 | Rft |
| | | 2 | 10.00 | 8.00 | ---- | 36.00 | Rft |
| | | 2 | 15.00 | 10.00 | ---- | 50.00 | Rft |
| | | 2 | 12.00 | 10.62 | ---- | 45.24 | Rft |
| | | 2 | 12.00 | 10.00 | ---- | 44.00 | Rft |
| | | 2 | 10.00 | 10.00 | ---- | 40.00 | Rft |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2 | 10.00 | 10.62 | ---- | 41.24 | Rft |
| | | 2 | 7.00 | 4.50 | ---- | 23.00 | Rft |
| | | 2 | 8.00 | 4.00 | ---- | 24.00 | Rft |
| | | 2 | 3.00 | 10.00 | ---- | 26.00 | Rft |
| | | 2 | 8.00 | 5.62 | ---- | 27.24 | Rft |
| | | | | | **Total** | **396.72** | **Rft** |
| | | | | | | | |
| | Skirting deductions(-) | | | | | | |
| | M/D | 2 | 3.50 | 0.00 | ---- | 7.00 | Rft |
| | D | 6 | 3.00 | 3.00 | ---- | 36.00 | Rft |
| | D1 | 11 | 2.50 | 2.50 | ---- | 55.00 | Rft |
| | | | | | **Total** | **98.00** | **Rft** |
| | | | | | **Total** | **298.72** | **Rft** |
| 8 | Supply & fixing of teak wood frames | | | | | | |
| | & teak wood shutters of section 4"x3" | | | | | | |
| | and necessary fittings, including cost of | | | | | | |
| | all materials & labour charges etc., | | | | | | |
| | complete. | 2 | 3.50 | ---- | 7.00 | **49.00** | **Sft** |
| | | | | | | | |
| 9 | Supply & fixing of teak wood frames | | | | | | |
| | & flush shutters of section 4"x2.5" | | | | | | |
| | and necessary fittings, including cost of | | | | | | |
| | all materials & labour charges etc., | | | | | | |
| | complete. | 6 | 3.00 | ---- | 7.00 | 126.00 | Sft |
| | | 11 | 2.50 | ---- | 7.00 | 192.50 | Sft |
| | | | | | **Total** | **318.50** | **Sft** |
| | | | | | | | |
| 10 | Supply & fixing of teak wood frames | | | | | | |
| | & with glazed teak shutters of section 4"x2.5" | | | | | | |
| | with safety MS grills and necessary fitting, | | | | | | |
| | including cost and conveyance of | | | | | | |
| | all materials & labour charges etc., complete. | | | | | | |
| | W | 1 | 1.50 | ---- | 4.00 | 6.00 | Sft |
| | W1 | 4 | 4.00 | ---- | 4.00 | 64.00 | Sft |
| | W2 | 2 | 3.00 | ---- | 4.00 | 24.00 | Sft |
| | KW | 2 | 3.00 | ---- | 2.50 | 15.00 | Sft |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | V | 5 | 2.50 | --- - | 1.50 | 18.75 | Sft |
| | | | | | **Total** | **127.75** | **Sft** |
| 11 | Painting to external walls, sunshades | | | | | | |
| | with cement based paint two costs | | | | | | |
| | over a primer, including cost of all | | | | | | |
| | materials & labour charges etc., complete. | | | | | | |
| | A). Out side walls | 2 | 66.38 | --- - | 10.38 | 1377.39 | Sft |
| | | 2 | 37.00 | --- - | 10.38 | 767.75 | Sft |
| | | | | | **Total** | **2145.14** | **Sft** |
| | | | | | | | |
| 12 | Applying two coats of lappum & | | | | | | |
| | painting to walls, ceiling, sunsheds/lofts, | | | | | | |
| | with primer, including cost and conveyance | | | | | | |
| | of all materials, labour charges etc., | | | | | | |
| | complete. | | | | | | |
| | a). Inside painting | | | | | | |
| | Dining | 4 | 10.10 | --- - | 10.00 | 404.00 | Sft |
| | | 4 | 8.38 | --- - | 10.00 | 335.20 | Sft |
| | hall | 4 | 15.10 | --- - | 10.00 | 604.00 | Sft |
| | | 4 | 10.00 | --- - | 10.00 | 400.00 | Sft |
| | Bed room 1 | 4 | 12.00 | --- - | 10.00 | 480.00 | Sft |
| | | 4 | 10.62 | --- - | 10.00 | 424.80 | Sft |
| | Bed room 2 | 4 | 12.00 | --- - | 10.00 | 480.00 | Sft |
| | | 4 | 10.00 | --- - | 10.00 | 400.00 | Sft |
| | Bed room 3 | 4 | 10.00 | --- - | 11.00 | 440.00 | Sft |
| | | 4 | 10.00 | --- - | 12.00 | 480.00 | Sft |
| | Kitchen | 4 | 10.00 | --- - | 10.00 | 400.00 | Sft |
| | | 4 | 10.50 | --- - | 10.00 | 420.00 | Sft |
| | Drawing | 2 | 10.10 | --- - | 10.00 | 202.00 | Sft |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2 | 10.00 | ---- | 10.00 | 200.00 | Sft |
| | Balcony | 3 | 10.00 | ---- | 10.00 | 300.00 | Sft |
| | | 3 | 4.00 | ---- | 10.00 | 120.00 | Sft |
| | wash area | 2 | 3.50 | ---- | 10.00 | 70.00 | Sft |
| | | 2 | 7.00 | ---- | 10.00 | 140.00 | Sft |
| | storer room | 2 | 8.00 | ---- | 10.00 | 160.00 | Sft |
| | | 2 | 5.62 | ---- | 10.00 | 112.40 | Sft |
| | Toilet 1 | 8 | 7.00 | ---- | 11.00 | 616.00 | Sft |
| | | 8 | 4.50 | ---- | 12.00 | 432.00 | Sft |
| | Toilet 2 | 2 | 8.00 | ---- | 13.00 | 208.00 | Sft |
| | | 2 | 4.00 | ---- | 14.00 | 112.00 | Sft |
| | C). Plastering to ceiling | | | | | | |
| | Drawing | 1 | 10.00 | 10.00 | ---- | 100.00 | Sft |
| | Dining | 2 | 10.00 | 8.00 | ---- | 160.00 | Sft |
| | Living | 2 | 15.00 | 10.00 | ---- | 300.00 | Sft |
| | Bed room 1 | 2 | 12.00 | 10.62 | ---- | 254.88 | Sft |
| | Bed room 2 | 2 | 12.00 | 10.00 | ---- | 240.00 | Sft |
| | Bed room 3 | 2 | 10.00 | 10.00 | ---- | 200.00 | Sft |
| | Kitchen | 2 | 10.00 | 10.62 | ---- | 212.40 | Sft |
| | Toilet 1 | 2 | 7.00 | 4.50 | ---- | 63.00 | Sft |
| | Toilet 2 | 2 | 8.00 | 4.00 | ---- | 64.00 | Sft |
| | wash room | 2 | 3.00 | 10.00 | ---- | 60.00 | Sft |
| | storer room | 2 | 8.00 | 5.62 | ---- | 89.92 | Sft |
| | | | | | **Total** | **9684.60** | **Sft** |
| | Deductions (-) | | | | | | |
| | Doors | | | | | | |
| | M/D | 2 | 3.50 | ---- | 7.00 | 49.00 | Sft |
| | D | 6 | 3.00 | ---- | 7.00 | 126.00 | Sft |
| | D1 | 11 | 2.50 | ---- | 7.00 | 192.50 | Sft |
| | Windows | | | | | 0.00 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | W | 1 | 1.42 | ---- | 4.00 | 5.68 | Sft |
| | W1 | 4 | 4.00 | ---- | 4.00 | 64.00 | Sft |
| | W2 | 2 | 2.00 | ---- | 4.00 | 16.00 | Sft |
| | KW | 2 | 3.00 | ---- | 2.50 | 15.00 | Sft |
| | V | 5 | 2.50 | ---- | 1.50 | 18.75 | Sft |
| | | | | | **Total** | **486.93** | **Sft** |
| | | | | | **Net total** | **9197.67** | **Sft** |
| 13 | Providing costing RCM racks for | | | | | | |
| | shelves, including sponge finishing | | | | | | |
| | inclusive of cost and convince of all | | | | | | |
| | materials & labour charges etc., | | | | | | |
| | complete. | 5 | 10.00 | 1.50 | ---- | 75.00 | Sft |
| | | 5 | 10.00 | 1.50 | ---- | 75.00 | Sft |
| | | 5 | 10.00 | 1.50 | ---- | 75.00 | Sft |
| | | 5 | 10.00 | 1.50 | ---- | 75.00 | Sft |
| | | | | | **Total** | **300.00** | **Sft** |
| | | | | | | | |
| 14 | Providing & costing RCC Chajjas over | | | | | | |
| | shelves, including sponge finishing | | | | | | |
| | inclusive of cost and convince of all | | | | | | |
| | materials & labour charges etc., | | | | | | |
| | complete. | 2 | 10.00 | 1.50 | ---- | 30.00 | Sft |
| | | 1 | 10.00 | 1.50 | ---- | 15.00 | Sft |
| | | 1 | 10.00 | 1.50 | ---- | 15.00 | Sft |
| | | | | | **Total** | **60.00** | **Sft** |
| | | | | | | | |
| 15 | providing cooking plat form counter | | | | | | |
| | with black granite stone, including | | | | | | |
| | cost and conveance of all materials | | | | | | |
| | labour charges etc,, complete | | | | | | |
| | | 2 | 10.00 | 2.00 | ---- | **40.00** | **Sft** |
| | | | | | | | |
| 16 | Supply & Fixing of SS Steel | | | | | | |
| | Staircase railing for stpes including | | | | | | |
| | cost and conveance of all materials | | | | | | |
| | labour charges etc., complete. | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 4 | 8.16 | 3.00 | ---- | **97.92** | **Sft** |
| | | | | | | | |
| 17 | Providing & Fabrication of HYSD bars | | | | | | |
| | for footings, columns,beams & slabs including | | | | | | |
| | cost and conveance of all materials | | | | | | |
| | labour charges etc., complete. | | | | | | |
| | | 1 | 37.00 | 66.38 | 3.50 | **8596.21** | **Kgs** |
| | | | | | | | |

| **DETAILED ABSTRACT ESTIMATION FOR PROPOSED INTERIOR WORK OF BUILDING** | | | |
|---|---|---|---|
| | | | |
| | | | |
| **FIRST FLOOR** | | | **21,69,300.00** |
| | | | |
| | | | |
| **SECOND FLOOR** | | | **21,69,300.00** |
| | | | |
| | | | |
| **THIRD FLOOR** | | | **21,69,300.00** |
| | | | |
| | | | |
| **FIFTH FLOOR** | | | **21,69,300.00** |
| | | | |
| | | | |
| | **TOTAL** | | **86,77,200.00** |
| | | | |
| | | | |
| **(RUPEES EIGHTY SIX LAKHS SEVENTY SEVEN THOUSAND TWO HUNDRED)** | | | |
| | | | |

| **DETAILED ABSTRACT ESTIMATION FOR PROPOSED INTERIOR WORK OF BUILDING** | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| **S. No.** | **Description** | **Qty** | **Rate** | **Per** | **Amount** |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| 1 | FALSE CEILING | 1254.88 | 125.00 | **Sft** | 1,56,860.00 |
| | | | | | |
| 2 | CUP BOARDS | | | | |
| | Designed & TV showcase | | | | |
| | | | | | |
| | Regular designed in drawing&kitchen | 598.50 | 950.00 | **Cft** | 5,68,575.00 |
| | | | | | |
| | Designed cabinet in drawing&dining hall | 234.00 | 1,350.00 | **Cft** | 3,15,900.00 |
| | | | | | |
| | Designed cabinet in master&bedroom room | 504.00 | 1,350.00 | **Cft** | 6,80,400.00 |
| | | | | | |
| | TV showcase in drqawing&master&bedroom | 279.00 | 1,350.00 | **Cft** | 3,76,650.00 |
| | | | | | |
| 3 | GRILS | 472.00 | 130.00 | **Sft** | 61,360.00 |
| | | | | | |
| | GRILS (Main door) | 56.00 | 170.00 | **Sft** | 9,520.00 |
| | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | **TOTAL** | **21,69,265.00** |
| | | | | | |
| | | | **Grand Total** | **SAY** | **21,69,300.00** |
| | | | | | |
| **RUPEES TWENTY ONE LAKHS SIXTY NINE THOUSAND THREE HUNDRED ONLY** | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

**DETAILED ESTIMATION FOR PROPOSED INTERIOR WORK OF BUIDING**

**FIRST FLOOR**

| **S. No.** | **Description** | **Nos** | **L** | **B** | **D/H** | **Qty** | **Units** |
|---|---|---|---|---|---|---|---|
| 1 | Supply and fixing of gypsum boards for | | | | | | |
| | the false ceiling for the roof including | | | | | | |
| | heavy gauge and cost and | | | | | | |
| | conveyence of all materials | | | | | | |
| | labour charges etc., | | | | | | |
| | Drawing | 1 | 10.00 | 10.00 | ---- | 100.00 | Sft |
| | Dining | 2 | 10.00 | 8.00 | ---- | 160.00 | Sft |
| | Living | 2 | 15.00 | 10.00 | ---- | 300.00 | Sft |
| | Bed room 1 | 2 | 12.00 | 10.62 | ---- | 254.88 | Sft |
| | Bed room 2 | 2 | 12.00 | 10.00 | ---- | 240.00 | Sft |
| | Bed room 3 | 2 | 10.00 | 10.00 | ---- | 200.00 | Sft |
| | | | | | **Total** | **1254.88** | **Sft** |
| | | | | | | | |
| 2 | Making and fixing of cupboards with | | | | | | |
| | quality plywood sheets and all necessary | | | | | | |
| | branded accessories including | | | | | | |
| | cost & conveyence of all | | | | | | |
| | materials & labour charges etc.,complete. | | | | | | |
| | a)Designed & TV Showcase | | | | | | |
| | | | | | | | |
| | Regular designe in drawing room | 4 | 4.00 | 9.00 | 1.75 | 252.00 | Cft |
| | Regular designe in kitchen | 4 | 4.00 | 9.00 | 1.75 | 252.00 | Cft |
| | | 2 | 9.00 | 3.00 | 1.75 | 94.50 | Cft |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | **Total** | **598.50** | **Cft** |
| | | | | | | | |
| | Designed cabinet in drawing room | 2 | 6.00 | 9.00 | 1.00 | 108.00 | Cft |
| | Designed cabinet in dining hall | 2 | 4.00 | 9.00 | 1.75 | 126.00 | Cft |
| | | | | | **Total** | **234.00** | **Cft** |
| | | | | | | | |
| | Designed cabinet in m.bedroom room | 2 | 8.00 | 9.00 | 1.75 | 252.00 | Cft |
| | Designed cabinet in child bedroom | 2 | 8.00 | 9.00 | 1.75 | 252.00 | Cft |
| | | | | | **Total** | **504.00** | **Cft** |
| | | | | | | | |
| | TV showcase in drqawing room | 2 | 5.50 | 9.00 | 1.00 | 99.00 | Cft |
| | TV showcase in m.bedroom | 2 | 5.00 | 9.00 | 1.00 | 90.00 | Cft |
| | TV showcase in child bedroom | 2 | 5.00 | 9.00 | 1.00 | 90.00 | Cft |
| | | | | | **Total** | **279.00** | **Cft** |
| | | | | | | | |
| 3 | Supply and fixing of M S grill 10 sq mm of rods which including cost and conveance of all materials labour charges etc., complete. | | | | | | |
| | Drawing /Dining | 4 | 5.00 | ---- | 4.00 | 80.00 | Sft |
| | M.Bed room | 2 | 4.00 | ---- | 4.00 | 32.00 | Sft |
| | Bed room | 4 | 4.00 | ---- | 4.00 | 64.00 | Sft |
| | Kitchen | 2 | 4.00 | ---- | 2.00 | 16.00 | Sft |
| | Bolcony 1 | 2 | 10.00 | ---- | 7.00 | 140.00 | Sft |
| | Bolcony 2 | 2 | 10.00 | ---- | 7.00 | 140.00 | Sft |
| | | | | | **Total** | **472.00** | **Sft** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Main Door grill | 2 | 4.00 | ---- | 7.00 | 56.00 | Sft |
| | | | | | **Total** | **56.00** | **Sft** |
| | | | | | | | |

## VII. CONCLUSION

The comparative structural analysis of reinforced concrete (RC) buildings using STAAD Pro and SAP2000 demonstrates that both software tools are highly effective for structural modeling, analysis, and design of multi-storey buildings. The study shows that both platforms provide reliable and accurate results in terms of displacement, bending moments, shear forces, and axial forces under various loading conditions such as dead load, live load, and seismic load.

STAAD Pro offers a user-friendly interface and is widely used for practical design applications in civil engineering projects due to its simple modeling process and integrated design features based on Indian Standard codes. On the other hand, SAP2000 provides more advanced analytical capabilities, better visualization of structural behavior, and efficient handling of complex structural systems, making it suitable for detailed research and advanced structural analysis.

The results indicate that the variation in structural response between the two software tools is minimal and falls within acceptable engineering limits. However, slight differences in displacement and internal force values are observed due to variations in modeling techniques, meshing methods, and solver algorithms used by the software. SAP2000 generally provides slightly refined results due to its advanced finite element formulation, whereas STAAD Pro is more practical for routine structural design and documentation.

Overall, both STAAD Pro and SAP2000 are reliable tools for RC building analysis and design. The selection of software depends on project requirements, complexity of the structure, user expertise, and availability of design codes. Future studies can focus on high-rise buildings, irregular structures, nonlinear analysis, and performance-based seismic design to further evaluate the efficiency of these software tools in modern structural engineering applications.

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