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"ANALYSISAND ESTIMATION OF A BANQUET HALL BY USING STAAD PRO AND EXCEL"

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Abstract: The growing of population had to deal with the community buildings to manage land requirement. The planning of storage building by using norms and measurement design structure of storage building with reference to the National Building Code. The main criteria for construction of a banquet hall is to ensure the safe and peaceful requirements for occasions and required social needs. The design is carried out by focusing on the safety of the structure. Storage building of design should be analysis done by the STAAD Pro, software for whole building of above structure and effectively way BM and SF be calculated mainly. Finite element analysis which includes the effect of dynamic load such as wind effect, earth quake effect and different types of loads are acting to building. As completion of storage building design main thing is analysis part by using different ways like manually or software's. Now-a-days most of the people are using softwares for analysis part because it consumes less time. This paper is brief on designing of the building in more effective way for analysis using a software STAAD Pro.In order to compete in the ever growing competent market it is very important for a structural engineer to save time. As a sequel to this an attempt is made to analyze and design a multistoried building and commercial buildings by using a software STAAD Pro.There are several methods for analysis of different frames like Kani's method, cantilever method, portal method, matrix method.
The present project deals with the analysis and estimation of banquet hall. The dead load, live load, seismic load, wind loads are applied and the design for beams, columns, footing is obtained.STAAD Pro with its new features surpassed its predecessors, and compotators with its data sharing capabilities with other major software like AutoCAD, and MS Excel.

Index Terms - STADD PRO, commercial building, multi storage building, wind effect.

I. INTRODUCTION

In every aspect of human civilization we needed structures to live to celebrate or to get what we needed. But it is not only building structures but to build efficient structures so that it can fulfil the main purpose for what it was made for. Here we comes the role of engineering and more precisely the role of analysis of structure.The structures related to civil engineering consists of various types and usage. One of the important structure which is used by civilians in their daily activities is a BANQUET HALL.BANQUET HALL is a room or building for the purpose of hosting any social events or ceremonies like marriage, reception, party etc., with accompanying food and beverages.Planning and designing of banquet hall as our project work consists of planning, analysing, estimation and preparation of essential drawing. For this study journals and books were referred for analysis of banquet hall to get an idea to know about banquet hall and estimation. Visited some banquet hall which are under construction and came to know the methods of recent development in construction and arrangement of room and planning the structural arrangement of room so that it makes easy to analyse and estimation. The building consists ground floor, first floor. All the design and drawings are done as per IS code.There are many classical methods to solve design problem, and with time new software's also coming into play. Here in this project work based on software named Staad pro has been used. Design and analysis is done using Staad pro.

II STAAD Pro SOFTWARE CAPABILITIES

- Check designs for cold-formed sections
- Comply with seismic requirements
- Create finite element meshes
- Design &analyse with finite element meshes, structural models
- Design beams, columns, walls and resisting frames

- Design to international design standards
- Loads and load combinations
- Integrate slab and foundation designs
- Model reinforced concrete, steel
- Structural design documentation

III. Objectives of Paper

- To analyze the structural analysis & designing of concrete & steel of a banquet hall.
- To Study of design of various elements of building.
- To the Planning of various components of a building with column positioning.
- This project aims for relearning of concept of structural design with the help of computer aids.
- To estimate the banquet hall for having minimum idea about its cost from beginning to ending of the construction.
- To know the quantities with detailed estimation.
- To know the cost of the building construction by abstract estimation.

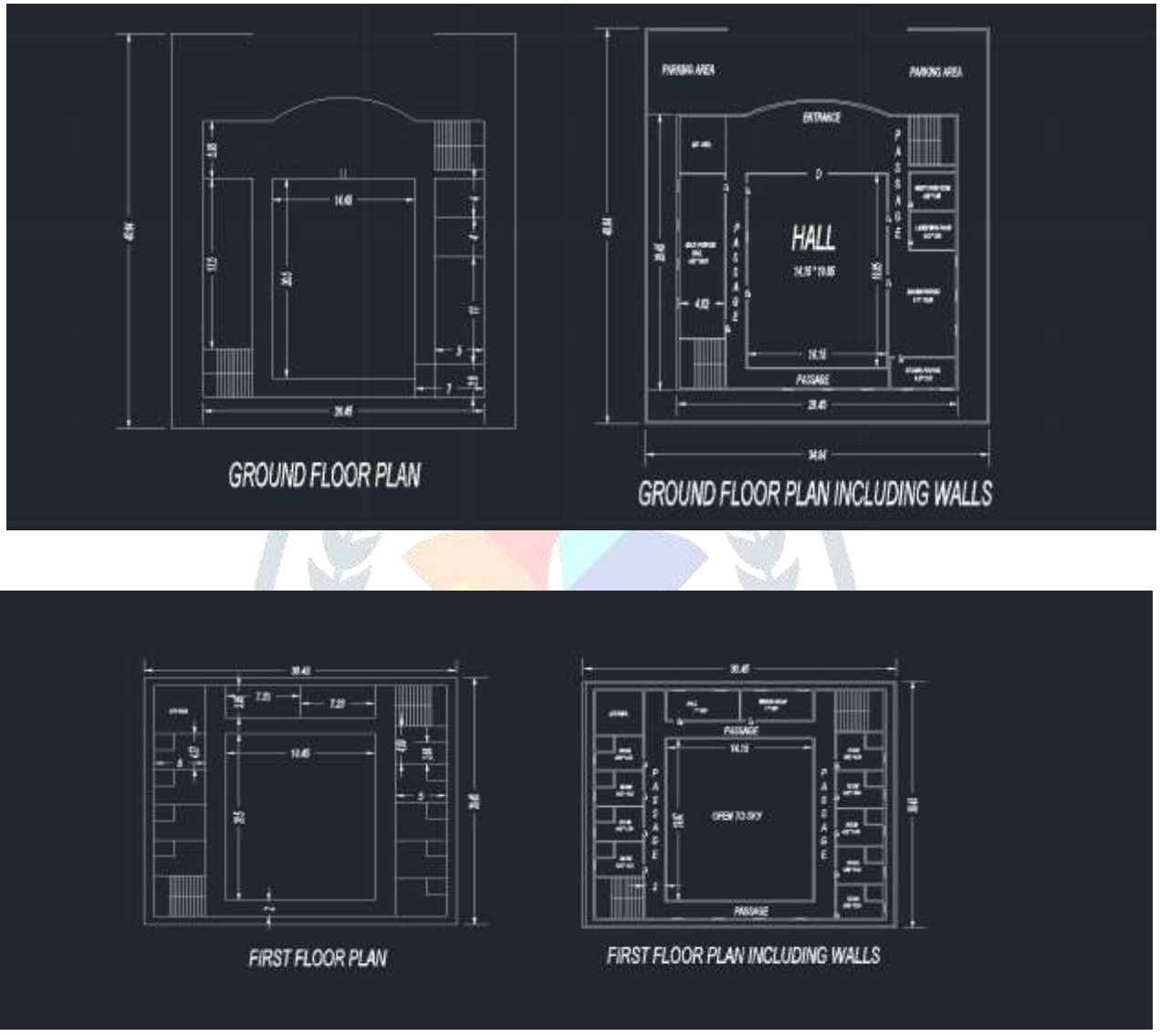

Fig – 1: Plan and elevation of proposed building

IV. ESTIMATION

TYPES OF ESTIMATION

Types of Cost Estimates in Construction

- Preliminary Cost Estimate.
- Plinth Area Cost Estimate.
- Cube Rate Cost Estimate.
- Approximate Quantity Method Cost Estimate.
- Detailed Cost Estimate.
- Revised Cost Estimate.
- Supplementary Cost Estimate.
- Annual Repair Cost Estimate.

Table-1Estimation Of Building

		LONG WALL - SHORT WALL METHOD				
SI.NO	DESCRICTION OF THE ITEM	NO.	LENGTH	BREADTH	DEPTH	QUANTITY
A.	SUB STRUCTURE					
******	EARTH WORK EXCAVATION					
1	HALL @ 0.15M WALL					
	LONG WALL	2	20	0.8	0.65	20.8
	SHORT WALL	2	13.5	0.8	0.65	14.04
2	GENTS WASHROOM					
	LONG WALL					
	0.15M WALL	1	3.97	0.8	0.65	2.064
	SHORT WALL					
	0.15M WALL	2	3.24	0.8	0.65	1.684
	0.23M WALL	1	4.04	0.8	0.65	2.1008
3	LADIES WASHROOM					
	LONG WALL					
	0.15M WALL	1	3.93	0.8	0.65	2.0436
	SHORT WALL					
	0.23M WALL	1	4.04	0.8	0.65	2.1008
	0.15M WALL	1	3.24	0.8	0.65	1.684
4	DINING					
	LONG WALL					
	0.23M WALL	1	11.24	0.8	0.65	5.8448
	0.15M WALL	1	10.44	0.8	0.65	5.428
	SHORT WALL					
	0.15M WALL	1	6.4	0.8	0.65	3.328
5	STORAGE PURPOSE					
	LONG WALL					
	0.23M WALL	1	6.77	0.8	0.65	3.5204
	SHORT WALL					
	0.23M WALL	1	3.31	0.8	0.65	1.7212
	0.15M WALL	1	2.51	0.8	0.65	1.39
6	GUESTROOM					
	LONG WALL					

	0.23M WALL	1	6.03	0.8	0.65	3.135
	0.15M WALL	1	5.23	0.8	0.65	2.719
	SHORT WALL					
	0.23M WALL	1	4.81	0.8	0.65	2.501
	0.15M WALL	1	4.01	0.8	0.65	2.085
7	**MULTIPURPOSE**					
	LONG WALL					
	0.23M WALL	1	17.04	0.8	0.65	8.86
	0.15M WALL	1	16.24	0.8	0.65	8.44
	SHORT WALL					
	0.15M WALL	1	3.97	0.8	0.65	2.064
8	**STEPS 1**					
	LONG WALL					
	0.23M WALL	1	5.19	0.8	0.65	2.698
	SHORT WALL					
	0.23M WALL	1	4.01	0.8	0.65	2.085
9	**STEPS 2**					
	LONG WALL					
	0.23M WALL	1	5.19	0.8	0.65	2.698
	0.15M WALL	1	4.39	0.8	0.65	2.282
	SHORT WALL					
	0.23M WALL	1	4.81	0.8	0.65	2.5
	0.15M WALL	1	4.01	0.8	0.65	2.085
10	**ENTRANCE**					
	LONG WALL					
	0.23M WALL	1	24.38	0.8	0.65	12.677
11	**PASSAGE**					
	LONG WALL					
	0.23M WALL	1	16.68	0.8	0.65	8.673
						133.2516 m^3
******	**C.C BED**					
1	**HALL**					
	LONG WALL	2	20	0.8	0.25	8
	SHORT WALL	2	13.5	0.8	0.25	5.4

2	**GENTS WASHROOM**					
	LONG WALL					
	0.15M WALL	1	3.97	0.8	0.25	1.588
	SHORT WALL					
	0.15M WALL	1	3.24	0.8	0.25	0.648
	0.23M WALL	1	4.04	0.8	0.25	0.808
3	**LADIES WASHROOM**					
	LONG WALL					
	0.15M WALL	1	3.93	0.8	0.25	0.786
	SHORT WALL					
	0.23M WALL	1	4.04	0.8	0.25	0.808
	0.15M WALL	1	3.24	0.8	0.25	0.648
4	**DINING**					
	LONG WALL					
	0.23M WALL	1	11.24	0.8	0.25	2.248
	0.15M WALL	1	10.44	0.8	0.25	2.088
	SHORT WALL					
	0.15M WALL	1	6.4	0.8	0.25	1.28
5	**STORAGE PURPOSE**					
	LONG WALL					
	0.23M WALL	1	6.77	0.8	0.25	1.354
	SHORT WALL					

P[-9=CONCLUSIONS:

- This project deals with the analysis and estimation of a banquet hall of G+1. The dead load, seismic load, live load, wind loads are applied and the design for beams, columns, footing is obtained.
- We conclude that STAAD Pro is a very helpful tool which can save time and give accurate in designing the structure. STAAD Pro is suitable for the design of any type of structures.
- Estimation is helpful to get an idea of the total project value and the material quantities. So it is very helpful to the builders to arrange and decide the project should be start or not.
- By estimation it is helpful to solve a problem quickly if only a rough answer needed. By this we conclude that estimation helps that to determine the project's budget, scheduling the work necessary and manage new resources.

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