PLANING ANALYSIS AND DESIGN OF TWO STORIED BUILDING BY STADD PRO. V8i

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ABSTRACT

The aim of the project is to design a two storied building of G+ 1 floors, at Toranagallu about 17 km from bellary. The design is done by taking in to account the requirements and standards recommended by IS code, Kerala building rules and national building rules.

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the practicality to help the drawing , analyzing and planning of structures with most precisions, example includes AutoCAD, Stadd.Pro, ETABS, Prokon, revit structure, etc. such software can also take into thought environmental masses like from earth quakes and wind.

Planning is done using the 3D modelling software Revit 2011 with the help of Auto CAD 2014. The structure analysis and design is done using STAAD.PRO.V8i and a cross check is done for selected members using limit state method of design as per IS 456-2000. STAAD. professional uses a search language based mostly input format, which might be created through associate editor referred to as the editor file, the powerful stadd rpo graphic input generator or through CAD based input generators like AutoCAD. Output generated bu stadd pro consists of detailed numerical results for analysis and design.

Keyword: - *twostoried, planning, analysis, design, staddpro*

1. INTRODUCTION

Buildings are an important indicator of social progress of the country. A building frame is a three dimensional structure or space structure consist of column, beams and slabs. Nowadays, high rise buildings are in high demand due to the world population boom. Earlier, modelling and structural analysis of buildings were carried out using hand calculation method based on simplified assumptions and understanding the whole behavior of the structure .But it seems to be time consuming and complicated for high rise buildings .At present ,computer hardware's and software's for modeling and analysis of structure is widely available. We need to know how the knowledge secured in the class room are applied in these practical side of work. When we got this project, we come into practical field to collect construction techniques and to meet the various difficulties in the construction. Also it is necessary to have sufficient knowledge regarding the various softwares currently used in planning analysis and design of structure.

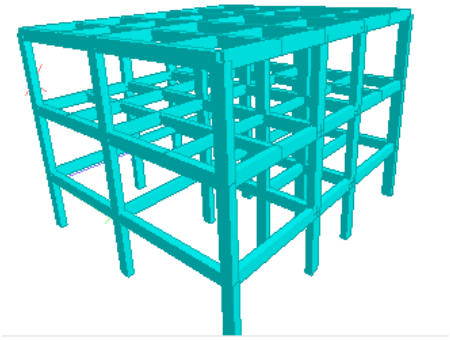

Figure1: Three dimensional rendered view of the building from Staad pro

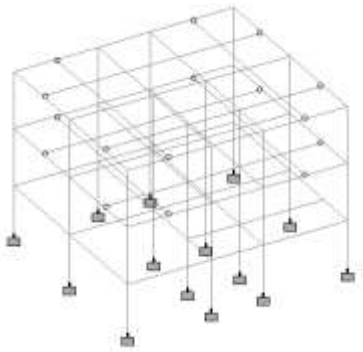

Figure2: Three dimensional line diagram of the building with fixed support

2. LITERATURE SURVEY

High rise buildings ar in high demand attributable to the globe population boom and development of technology throughout past decades. Numerous structural forms and construction materials were developed beside a various assemblage of structural and non structural elements .the real performance of the high rise structures depends greatly on the integrated interaction of structure and non structural elements. This makes the behaviour of high rise structures difficult.

In current style follow, the lateral load resisting system of a high rise building is taken into account important to the entire structure. it's unremarkably recognized by engineers that the load resisting system of a multi storied building could be a system as well as chiefly structural elements like columns, beams, and shear walls. In facts through, non structural elements additionally contribute to the lateral performance of high rise building. discernible gaps exist between the $64000 performance of buildings and also the behavior foretold advisedly theory. in follow, buildings performs as Associate in Nursing integrated system of structural and nonstructural elements however the nonfunctional elements are thought of non load bearing and aren't enclosed throughout the look method of the first structure. Since the Nineteen Nineties specialist computer code has become obtainable to help within the style of structure with the practicality to help the drawing , analyzing and planning of structures with most precisions, example includes AutoCAD, Stadd.Pro, ETABS, Prokon, revit structure, etc. such software can also take into thought environmental masses like from earth quakes and wind.

3. L-BUILDING DATA FOR ANALYSIS

1	Type of building	Two storey flat building
2	Number of stories	G+1 (2 storey's)
3	Floor height	3.5m
4	Material	Concrete (M20)and Reinforcement (FE415)
5	Size of column	.4mX.5m
6	Size of column	.4mX.5m
7	Dead load	Self weight : -1 Member load:-14KN/m Floor load :.4KN/mm^2
8	Live load	3KN/m^2
9	Size of wall	20cm thick

4. ANALYSIS AND DESIGN OF BUILDING

Step - 1 Creation of nodal points- Based on the column positioning of set up we have a tendency to entered the node points into the STAAD file

Step - 2 illustration of beams and columns-By exploitation add beam command we have a tendency to had drawn the beams and columns between the corresponding node points.

Step – 3. : 3D read of structure- Here we've used the transformation repeat command in Y direction to urge the 3D readof structure.

Step - 4: Supports and property assigning- After the creation of structure the supports at the base of structure are specified as fixed. Also the Materials were specified and cross section of beams and columns members was assigned.

Step - 5: 3D rendering view- After assigning the property the 3d rendering view of the structure can be shown

Step - 6: Assigning of seismic loads- In order to assign Seismic loads firstly we have defined the seismic loads according to the code **IS1893:2002** with proper floor weights. Loads are added in load case details in +X,-X, +Z,-Z directions with specified seismic factor.

Step - 7: Assigning of wind loads- Wind loads are defined as per **IS 875 PART 3** based on intensity calculated and exposure factor. Then loads are added in load case details in +X,-X, +Z,-Z directions.

Step - 8: Assigning of dead loads- Dead loads are calculated as per **IS 875 PART 1** for external walls, internal walls, parapet wall Including self-weight of structure.

Step - 9: Assigning of live loads- Live loads are assigned for every floor as 3KN/m2 based on **IS 875 PART 2**.

Step - 10: Adding of load combinations- After assigning all the loads, the load combinations are given with suitable factor of safety as per **IS 875 PART 5.**

Step - 11: Analysis- After the completion of all the above steps we have performed the analysis and checked for errors.

Step - 12: Design- Finally concrete design is performed as per **IS 456: 2000** by defining suitable design commands for different structural components. After the assigning of commands again we performed analysis for any errors.

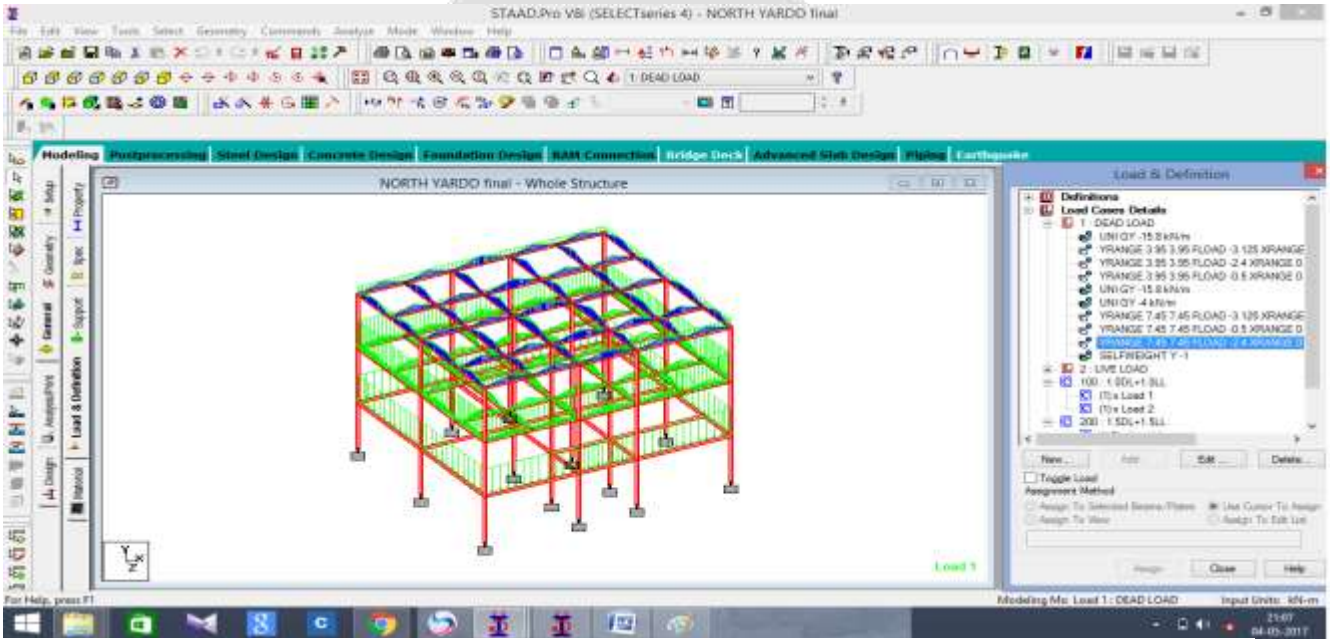

Figure 3: When dead load is applied

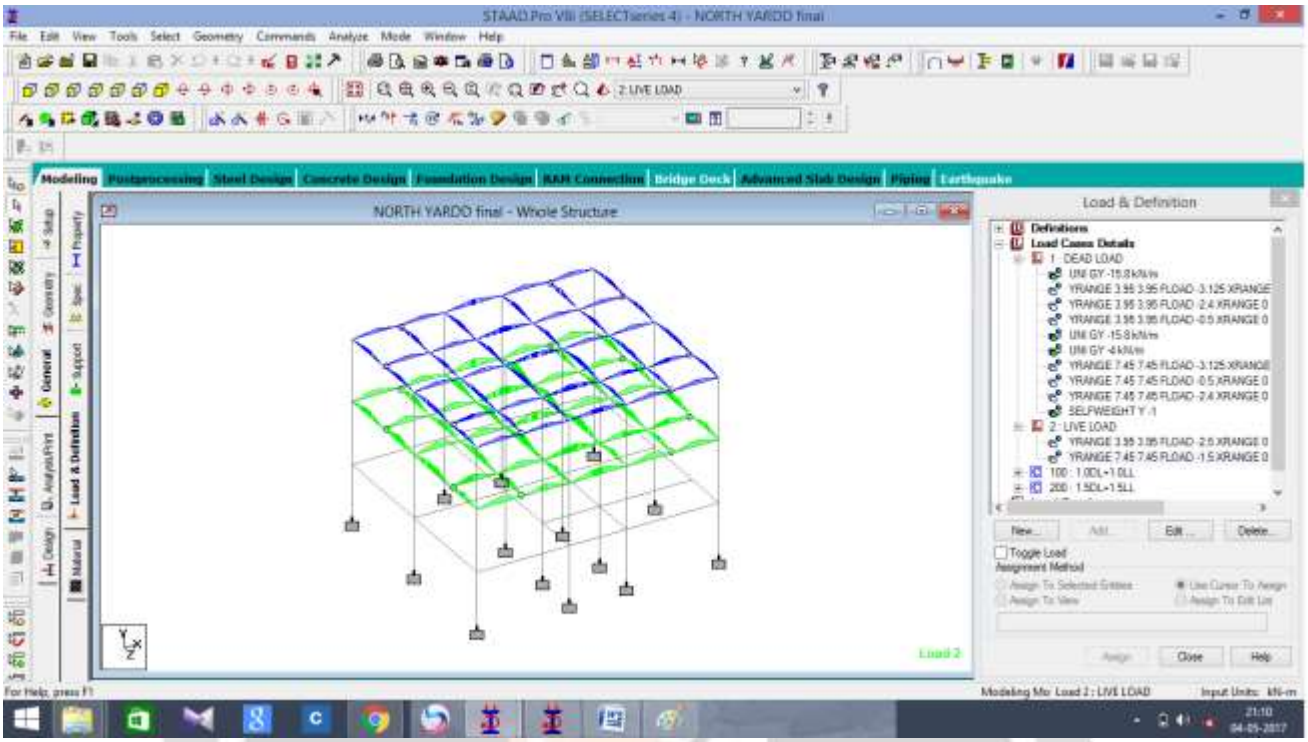

Figure 4: When live load is applied

5. CONCLUSIONS

STAAD.Pro graphical input generation facility permits generation of structural models diagrammatically. a robust pure mathematics generation formula facilities generation and viewing of structural models each second and 3D things. All alternative specifications like section properties, material constants, support load, analysis and style necessities, printing, plotting facilities area unit out there. a flexible "query" facility permits generation of made-to-order reports. Powerful icons based mostly graphics tools offer extraordinarily easy navigation and manipulation capabilities

6. RESULTS

Member	L/C	Axial (kN)	Major (kNm)	Minor (kNm)	Design Axis	As Req. (mm^2)	Total Bars	As Prov. (mm^2)
M1	C200	323.676	9.441	3.974	Biaxl maj	1810	16T12	1810
M2	C200	768.481	30.456	41.697	Biaxl min	1810	16T12	1810
M3	C200	981.233	2.478	58.205	Biaxl min	1810	16T12	1810
M4	C200	951.676	0.419	59.364	Biaxl min	1810	16T12	1810
M5	C200	951.016	0.516	59.395	Biaxl min	1810	16T12	1810
M6	C200	983.620	2.441	58.730	Biaxl min	1810	16T12	1810
M7	C200	777.475	30.376	43.883	Biaxl min	1810	16T12	1810
M8	C200	326.029	9.453	3.005	Biaxl maj	1810	16T12	1810
M9	C200	413.396	11.446	8.433	Biaxl maj	1810	16T12	1810
M10	C200	1062.476	30.722	48.384	Biaxl min	1810	16T12	1810
M11	C200	1357.400	1.324	66.633	Biaxl min	1810	16T12	1810
M12	C200	1311.761	0.557	67.809	Biaxl min	1810	16T12	1810
M13	C200	1309.517	0.665	67.832	Biaxl min	1810	16T12	1810
M14	C200	1364.278	1.281	67.181	Biaxl min	1810	16T12	1810
M15	C200	1194.670	31.080	50.740	Biaxl min	1810	16T12	1810
M16	C200	422.476	11.985	8.232	Biaxl maj	1810	16T12	1810
M17	C200	196.278	8.776	156.866	Biaxl min	2262	20T12	2262
M18	C200	569.564	37.107	259.528	Biaxl min	4825	24T16	4825
M19	C200	729.555	16.780	335.396	Biaxl min	5890	12T25	5890
M20	C200	702.765	16.164	338.128	Biaxl min	5890	12T25	5890
M21	C200	731.845	16.832	337.837	Biaxl min	5890	12T25	5890
M22	C200	578.328	37.266	269.376	Biaxl min	4825	24T16	4825
M23	C200	198.457	8.748	161.274	Biaxl min	2413	12T16	2413
M24	C200	702.082	16.148	338.178	Biaxl min	5890	12T25	5890
M25	C200	252.164	12.132	162.575	Biaxl min	2262	20T12	2262
M26	C200	836.152	49.449	237.338	Biaxl min	3927	8T25	3927
M27	C200	1075.817	24.744	311.245	Biaxl min	5630	28T16	5630
M28	C200	1032.142	23.739	318.563	Biaxl min	5630	28T16	5630

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