Design and Analysis of G+5 Residential Building with Manually and Use of Staad Pro Software

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Abstract –Structural design and analysis is an art and science of designing with economy and elegance, serviceable and durable structure. The entire process of structural planning and design requires not only imagination and conceptual thinking but also knowledge of structural code, bylaws, and most important experience. In this research work, we have compared the various manually conventional methods of structural design with Staad pro software and try to get a conclusion depends on the variation of results.

I. INTRODUCTION

As the Staad pro software gives more value of steel in structure, we have to try tounderstand the difference in results are occur between manually methods and software with an example of G+5 residential building.

Some following Points are:

- Design of Slab, beam, column & footing
- Manually method: Moment distribution
- Software: Staad Pro V8i
- IS 456:2000

II. SYSTEM MODEL

Our research is on the find out what are variations occur in the result when we design a large structure in software and with manual method. So we have done a manual calculation and now we are comparing it with various software starting from Staad pro V8isoftware.

III. PREVIOUS WORK

Analysis and design of G+5 building are done and we have attached it in references but I was just an analysis and design in E-tabs software, we are trying to compare the work of manual and software calculation.

IV. PROPOSED METHODOLOGY

The manual method used in research is the moment distribution method of structural design which has the use of IS 456:2000 and SP 16. Software used in the project is Bently Staad Pro V8i.

V. SIMULATION/EXPERIMENTAL RESULTS

Here we provide the data of steel we get from the manual calculation and from software in which we can see the difference.

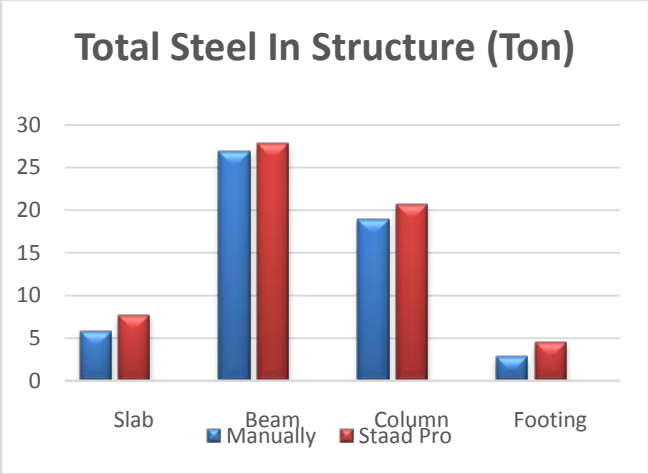

Fig.1. Chart of Steel in structure (ton).

In above chart we can see that the in horizontal axis the various structure member is given and in vertical axis the value of steel is denoted in ton, blue column indicates the value of steel by manual method and blue column denote the value of steel in Staad pro software, so from graph we can say that the value of steel is higher compared to the manual method.

VI. CONCLUSION

12% cost can be decreasedfromthe structure's total cost by some manual calculations.

VII. FUTURE SCOPES

After that, we are planning to compare the manual design with E-tabs software.

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AUTHOR'S PROFILE

Hiren Talatihas received his Bachelorof Engineering degree in civil engineering from Birla Vishwakarma Mahavidhyalay V.V. Nagar, Anand and Masterdegree in Structure Engineering from the same institute. At present, he is working as Head of the department at Dr. Jivraj Mehta Institute of Technology, Anand. His areas of interest are Structure, estimation, construction, software, and teaching.

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