International Journal of Advanced Research in Education and TechnologY(IJARETY)

| ISSN: 2394-2975 | www.ijarety.in| | Impact Factor: 8.152| A Bi-Monthly, Double-Blind Peer Reviewed & Refereed Journal |

|| Volume 12, Issue 3, May - June 2025 ||

DOI:10.15680/IJARETY.2025.1203099

Modelling and Layout of G+2 Building using Revit Software

Y. Shivaraju[a], V.Satheesh[a], V.Ganesh[a] , Dr.Raghuveer Narsing[b]

U.G. Student, Department of Civil Engineering, Guru Nanak Institutions Technical Campus, Ibrahimpatnam, Telangana, India[a]

Associate Professor, Department of Civil Engineering, Guru Nanak Institutions Technical Campus, Ibrahimpatnam, Telangana, India[b]

ABSTRACT: With the advancement of technology, the use of software to solve numerous problem in every technical discipline that formerly took a long time has become quite common. As a result, the use of software technology in the field of civil engineering to analyze, design and predict the behaviour of civil engineering structures before their life span has increased dramatically over the last decade. The project were explained about the design and modeling of G+2 residential building by using Autodesk Revit architecture as it gives clear vision via design , construction and documentation.

KEYWORDS: Components, Levels, R.C.C Elements, Plan, Section and 3D Model

I. INTRODUCTION

Autodesk Revit is a software which help the create the modeling and layout of the tree dimensional building information modeling software for architects, landscape architects, structural engineering ,layout engineers, designers and contractors developed by Autodesk. It allows users to design a building and structure and shape of the 3d model by defaults furniture setup and its components in 3D, annotate the model with 2D drafting elements, and access building information from the building model's database. Revit is 4D BIM capable with tools to plan and track various stages in the building's lifecycle, from concept to construction and later maintenance and/or demolition

Revit can be used as a very powerful collaboration tool between different disciplines in the building design sphere. The different disciplines that use Revit approach the program from unique perspectives. Each of these perspectives is focused on completing that discipline's task. Companies that adopt the software first examine the existing work flow process to determine if such an elaborate collaboration tool is required

FEATURES OF REVIT

Parametric components, work sharing, design options, set schedules, documentation, phasing of project, interoperability, linked file, performance, work in perspective view, improved integration between Revit and structural analysis software. Revit helps designers to design, simulate visualise and collaborate in order to capitalize on the advantages of the interconnected data within BIM Model. One can quickly create and modify multi-story buildings by connecting stairs to the levels in your project.

II. LITERATURE REVIEW

1. **V. S. Nagasai et al. (2019),** "Planning, Analysis and Design of Residential Building (G+5) By using STAAD Pro." This paper deals with Frame analysis, which was done by STAAD.pro. Slab and beams were designed as per IS code 456-2000. The properties such as shear, deflection, development, torsions are defined by the IS code provisions.
2. **Falak Vats (2019), "**Review paper on design and analysis of multi-storey building by the use of Stadd.Pro," He concluded that Stadd.Pro provides a much faster approach to structural analysis and design with a chances of minimum errors. There has been several research conducted comparing the results from Stadd.Pro to the manually calculated results, which all support the use of Stadd.Pro over manual the one. Stadd.Pro is a much better way to analyse complicated load combinations and is quite versatile.
3. **Sowrav Saha, et al. (2021),** "Design and Analysis of Multistorey (G+14) Residential Building Using Staad.Pro & Autocad" The aim of their project was to bring an idea to plan, through analysis and design of a multi-storeyed,

| ISSN: 2394-2975 | www.ijarety.in| | Impact Factor: 8.152| A Bi-Monthly, Double-Blind Peer Reviewed & Refereed Journal |

|| Volume 12, Issue 3, May - June 2025 ||

DOI:10.15680/IJARETY.2025.1203099

earthquake resistant residential building. They were unsuccessful in fully completing the project in a successful and efficient manner by considering all the relevant features given.

4. R. S. Bute, et al. (2018), – "Design a detailed 3D model of a building With the comparison of manual and Software estimates on Autodesk revit", they concluded for the uses of scheduling and cost estimating in Autodesk Revit respectively, and provided a case study to show how Autodesk Revit can work for Architects, Engineers and contractors. As well as comparing Autodesk Revit Estimate with Manual Estimate.

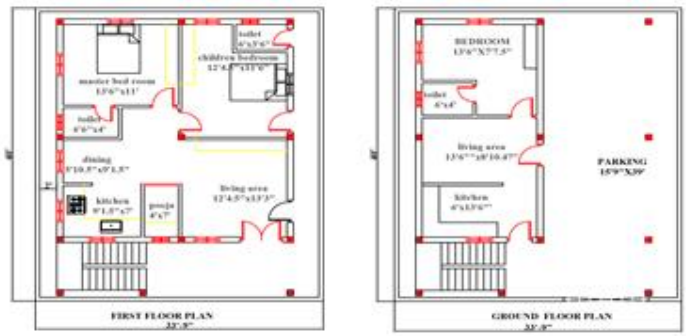
5. Amar Hugar et al. (2016), has been discussed that the Computer Aided Design of Residential Building involves scrutiny of building using STAAD.Pro and a physical design of the structure. Traditional method of study show tedious calculations, and such tests are time consuming task. Analysis is made quickly by using software. This project completely deals with scrutiny of the building using the software STAAD.Pro. Finally, the results are compared with physical calculations. The elements are created as per IS:456-2000.

6. Bandipati Anup et al. (2016), this paper deals with evaluating and planing a multi-storeyed building [G + 2 (3-dimensional frame)] adopting STAAD Pro. The technique used in STAAD.Pro is limit state technique. Initially they have created 2-D frames and cross checked with manual calculations. They tested and created a G + 2 storey building [2-D Frame] instantly for all feasible load combinations. The work has been finished with some more multi-storyed 2Dimensional and 3- Dimensional frames beneath various load combinations.

III. METHODOLOGY

Gathering client requirements, site analysis, and initial layout sketching are the first steps in modelling a G+2 residential building with REVIT. Create 2D floor designs for the ground floor using REVIT, making sure that all sections and elevations meet to local construction rules and specifications for dimensions and operation. Use Rendering to apply realistic materials and textures, adjust lighting and surroundings, and generate excellent graphics. Present the design for remarks and final 3D visuals for construction and presentation.

OVERVIEW OF EXPERIMENTAL RESULT



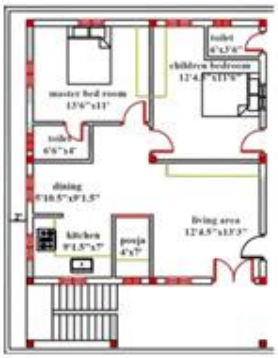


FIG: SECOND FLOOR PLAN

ELEVATION

East:

International Journal of Advanced Research in Education and TechnologY(IJARETY)

| ISSN: 2394-2975 | www.ijarety.in| | Impact Factor: 8.152| A Bi-Monthly, Double-Blind Peer Reviewed & Refereed Journal |

|| Volume 12, Issue 3, May - June 2025 ||

DOI:10.15680/IJARETY.2025.1203099

West:

North:

South:

IV. CONCLUSION

| ISSN: 2394-2975 | www.ijarety.in| | Impact Factor: 8.152| A Bi-Monthly, Double-Blind Peer Reviewed & Refereed Journal |

|| Volume 12, Issue 3, May - June 2025 ||

DOI:10.15680/IJARETY.2025.1203099

This project gives clear realistic modelling of building. we can get approximate estimation of building using autodesk revit architecture. in this project we have done the planning and modelling of the ground floor of selected g+2 building. we have made use of families such as wall, door, window floor celling etc. in architecture template.

To conclude, revit will ensure you waste less time dealing with the little manual tasks that so often delay project. you cut down on paper work which makes your project more sustainable and cost effective. there is also no reputation plus revit provides you with all the tools you need to create sustainable structure. A clear design and modelling of a commercial building with the efficient structural and architectural plans. 3 d realistic view gives the clear picture about the family and the components placed with in the building model also to provide over all knowledge of material take off and schedule/quantities in the model of the building. support for the software grows constantly as well. as bim becomes more popular, so too will revit. if you start using it now, you'll be ahead of the curve.

REFERENCES

1. Pranav Bhagwat, Rahul Shinde "Autodesk Revit: Implementation in practice", October–December 2003.
2. Analysis of Multistoried Building considering Hybrid Structure - Tanha B. Shah, International Journal of innovative research volume1 issue 2. (PP. 81-180)(May 2005)
Sergey P. Zotkina, "The Organization Of Autodesk Revit Software Interactions with Applications for Structural aqnalysis" In 2016.
3. Linomaia, "BIM Methodology, a new approach case study of structural elements creation" In 2015.
Rakesh Reddy "Design & modeling of G+5 commercial building by Autodesk Revit Architecture" In 2019.
4. Menglin Wang, "Building Information Modeling (BIM) Site building interperability method" In 2011 .
R. S. Bute, "Design & Detail of 3D model of building with comparision of Manual & Software estimate on Autodesk Revit" In 2018.
5. Xinan Jiang, "Development in cost estimating & scheduling in Autodesk Revit" In 2008.
6. Sreehna KS, "Structural Analysis & design of B+G+4 storied apartment building" In 2016.