



## **Planning, Drawing and Estimation of G+1 Residential Building Using Revit- A Review**

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### **ABSTRACT**

Before the launch of design software, engineering drawings were made on sheets of paper using drawing boards. Multiple pieces of equipment were required to complete a given drawing and If any kind of mistakes are happened in plan it was difficult to correct them. But after launching of designing Software, it Improve the speed of production. Improve the quality of drawn information. Reduce development costs. Generate visualization during the design process to help decision making.

From early years, the structures are constructed with basic requirements but, now a day's lifestyle has been changed as every person needs a luxurious life. So, by considering such various view in detailed planning has become necessary. Normally all buildings are constructed according to drawings and specifications prepared by architects, each city has prescribed building byelaws to which buildings must conform.

The design communication is gradually being changed from 2D based to integrated 3D digital interface. REVIT is a model-based design concept, in which buildings will be built virtually before they get built out in the field, where data models organized for complete integration of all relevant factors in the building lifecycle which also manages the information exchange between the AEC (Architects, Engineers, Contractors) professionals, to strengthen the interaction between the design team. In this project planning of residential building (G+1) is done by Revit software. The 2D and 3D planning of proposed building is done by using Revit Architecture Software. The principal objective of this project is to be planning and estimation of Residential Building. Estimation includes finding the quantities of materials required for the development of the structure and requirements of labour etc.,

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Keywords: REVIT, Foundation, Layout, Cost & Estimation, 3D Modelling, Design, Visualization

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### **INTRODUCTION**

Residential building means a building in which sleeping accommodation is provided for normal residential purposes, with or without cooking or dining facilities, and includes one or more family dwellings, lodging or boarding houses, hostels, dormitories, apartment houses, flats and private garages of such buildings.

The Residential Building Plan was drafted by AutoCAD software which is useful to easily draw a column layout and followed as per limit state method.

Any construction project to begin with start with the layout of building or followed by design of structure which is succeeded by cost estimation and planning for the said project. This project involves the layout, design, planning and cost estimation of g+1 residential building.

The aim of our project is used to design prepare drawing, and estimation of residential building. The methodology used in this project is easy and less time consuming it mainly depend on the software AutoCAD and Revit.

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## Literature Review

J Vinoth Kumar: - In India 49% of the respondent use Revit as measure Revit tool. The AUTOCAD AND REVIT is new & promising approaching India, which is gradually gaining acceptance by the owners, Architects, Engineers & Builders. AUTOCAD AND REVIT is in field to better communicate & integrate construction information.

Mehmet F Hergunsel: - The project studied six AUTOCAD AND REVIT utilization activities: visualization, 3D coordination, cost estimation, prefabrication, construction planning and monitoring, and record model. The visualization is generally the simplest use of a Building Information Model such as renderings. As soon as the Building Information Model are produced, the quantity takeoffs can be generated to provide cost estimations on a construction project.

Saeed Reza Mohandas: - Due to numerous steps of construction industry and its complicated and extensive structure, errors and reworks often might happen in this section. As such, AUTOCAD AND REVIT (Building Information Modeling) is regarded as a beneficial tool in minimizing the waste and improving the efficiency of building construction. This paper reviews and summarizes a substantial amount of requisite information relating to AUTOCAD AND REVIT from the literature reviews between 2005 and 2012. It has discussed the concept, explained the history, planning and implementation process and the benefits of using AUTOCAD AND REVIT in construction industry. Furthermore, the application of AUTOCAD AND REVIT in construction process of two specific projects has been explained.

F.Lazzali, S.Bedaoui:- performance of masonry building in Algeria. The authors have categorized data of numbers and types of house construction to draw the plan for AUTOCAD software. To drafting the high rise building for (g+6). Light weight construction materials, standard workmanship, interior quality of mortar used to construct the building.

Azidah Ziden, Fatariah Zakaria & Ahmad Nizam Othman (University Sains Malaysia, Penang, Malaysia) 2012:-This study shows how AutoCAD can be an effective tool in increasing the performance of students of various levels. It helps in proper visualisation of the project to be undertaken and thus help students in learning Engineering Design better. The study also shows how AutoCAD increases the efficiency of the student/designer.

B.N Dutta: has focused on various methods of estimating and costing of quantities. It emphasizes on the calculations of quantities of materials, tools, equipment, labors etc. and cost associated with them. It consists of numerous examples of estimation of residential buildings, RCC works, culverts, bridges, etc. Method of preparing preliminary estimates, analysis of rates, specification, methods of measurements have been dealt in detail with illustration. Many technical data have been included. In Design and Estimation of a reinforced building: A Case Study (IOSR Journal of Mechanical and Civil Engineering), the cost of various structures of the administrative block of the building are worked out and the design part is done with the help of IS Code 457:2000.

Tsai et al., (2010):- estimated the time taken in a live project by recording the 2D data and simulating it into 3D by Autodesk Revit software, MS Project, and AUTOCAD AND REVIT application and created 3D and 4D models. These techniques allowed the stakeholders and builders to determine the human resource requirements as well as the time cost of the construction project. Using these tools also increase the understanding of their application procedure

Allbaban H. Khalid:- "Utilization of Revit Application as Preliminary Shop Drawing to Improve Construction processes". This conducted in relation to the benefits of AutoCAD and Revit Software coordination needs to develop a successful and green design. Autodesk Revit Software used to translate the existing 2D drawing into a 3D model along with the information associated with the 3D model.

Xinan Jiang:- "Developments in cost estimating and scheduling in Autodesk Revit", 2008. The model or project is a frame structure consists of a one residential building. In Revit first 3D model and then get directly 2D drawing with material quantity and many more which is essential to manage construction of building. In the present work it is created 3D model and able to get 2D drawing as shown below and material quantity as per the requirement. The building consists of the scheduling and estimating of foundation, column, beam, floor and walls is tabulated.

Kyuman Choet . al (2010):- Several efforts have been made by many researchers to develop a model for schedule and cost integration in construction project , it is difficult to integrate and manage schedule and cost model developed in the study enable the planning and control of repetitive construction process and can be used by a project manager in an actual site .

Tsai et al . (2010) :-Estimated the time taken in alive project by recording the 2D and simulating into 3D by autodesk revit software . This technique allowed the stack holders and builders to determine the humans resource requirements as well as the cost of construction using this tool can increase the understanding of their application procedure.

Daegu Cho et . al (2013):- Cost, schedule, and performance control are three major functions in the project execution phase. Along with their individual importance, cost-schedule integration has been a major challenge over the past five decades in the construction industry. While much effort has been exerted to propose an ideal integration system, a distributed approach has prevailed.

Hexu Liu et al., (2014):- presented detailed cost estimation and construction project scheduling using an integrated framework based on This work was achieved by developing a product model using Autodesk Revit software.

Ning Gu and Kerry London (2010):- have consider a current state of AutoCAD AND Revit in the Architecture, Engineering and Construction (AEC) industry and a re-assessment of its role and potential contribution in the near future.

Emad Elbeltagi et al(2014) :- Presented a model in revit and autocad which provides vital data to the construction practitioner for visualizing the cost and comparing it with the budget at various stages along with the appropriate corrective actions in case of any deviation from the budget. The model/approach simplifies the monitoring process in construction activities.

S. S. Pimplikar et al (2012) :- Introduced various revit software to increase the sustainability of the building . The comparison showed how the building consumed resources, environment impact and its performances

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