STUDY OF BUILDING INFORMATION MODELING PROCESS

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ABSTRACT- *These days creation stakeholders don't care how fancy a constructing information version (BIM) is, they care approximately having buildings accomplished on time with minimized overruns or errors. Traditionally, BIM has been used as a design tool to give structure, engineering, and construction (AEC) professionals a perception of the layout and creation of homes and infrastructure. This thesis has cited the integration of the extraordinary software. In this thesis it is easy to study the BIM procedure via the use of software like AutoCAD for 2nd Plans or Drafting, then Revit is used for the 3-d modeling, Microsoft project for Scheduling and planning then inside the ultimate Navis paintings for 4Dth measurement with the 3D version Simulation.*

i.

KEYWORDS: AutoCad, Revit, Naviswork, Microsoft Project

INTRODUCTION

What is BIM? Building data modeling is one of the most promising trends in the architecture, engineering, and production fields. It's miles converting the way contractors and engineers do business, however, its software continues to be relatively new and there is a great deal to examine. One manner to study is by watching how other agencies are the use constructing statistics. Modeling and their trials and tribulations alongside the manner. Constructing records Modelling changed added over a decade ago especially to differentiate the records-wealthy architectural three-D modeling from the traditional second drawing. It's miles being acclaimed by using its advocates as a lifesaver for complex initiatives because of its capacity to accurate errors early within the layout degree and correctly agenda construction.

ii.
iii.

2.   2D PLANS, 3D MODEL, SCHEDULE, AND SIMULATION

2.1 2 DIMENSION PLANS (2D PLANS)

AutoCAD is an industrial software (CAD) and drafting software application. Advanced and advertised through Autodesk. AutoCAD was first launched in December 1982 as a computer app strolling on microcomputers with internal graphics controllers. Before AutoCAD becomes delivered most commercial CAD applications ran on mainframe computers or minicomputers, with every CAD operator (person) engaging at a separate pix terminal. AutoCAD is likewise to be had as mobile and net apps. AutoCAD is used in industry, employing architects, challenge managers, engineers, photograph designers, town planners, and other specialists. It had been supported by way of 750 training centers worldwide in 1994

2.1.1 FILE EXTENSIONS

Drawing Template files.Dwt: New. Dwg is created from a. Dwt record. Even though the default template record is acad.Dwt for AutoCAD and.Dwt for AutoCAD LT, custom .Dwt documents may be created to include foundational configurations inclusive of drawing gadgets and layers Drawing requirements file .Dws the use of the CAD standards feature of AutoCAD, a Drawing standards document can be associated with any. Dwg or. Dwt record to implement graphical standards.

Drawing Interchange format .Dxf. the Dxf layout is an ASCII illustration of a. Dwg document and is used to switch records among diverse programs.
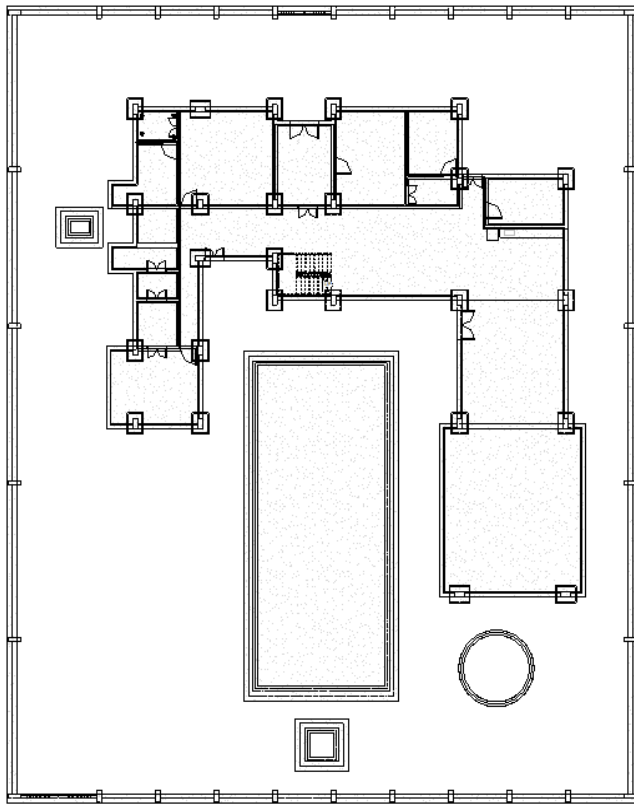
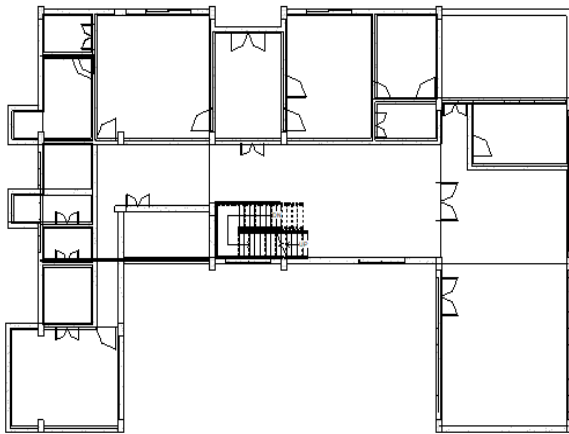Fig.no. 1 2D Ground Floor Plan

Fig.no. 2. 2D First Floor Plan

2.2. 3 DIMENSION MODELING (3D MODEL)

3-D represents the 3-dimensional geographical systems of a building – this is the X-axis, the Y-axis, and the Z-axis of a building. Three-D BIM entails the creation of graphical and non-graphical building data for the sole purpose of sharing it in a common statistics surroundings (CDE). BIM 3-D fashions are employed for schematic designs, layout development and documentation, creation documentation, and record drawings. Via the usage of three-D BIM, you may be capable of keeping your employees up to date on the modern-day layout traits

2.2.1 FILE EXTENSION

RTE (template) files and RVT (task) documents are real Revit projects. The distinction between the two is that the template is used to start a new undertaking. When you click on the store, you will now not be allowed to overwrite the template file, however, you'll be precipitated for a brand new report name and area. RFA (family) documents and RFT (own family template) documents are own family files that could either be loaded right into a venture or saved externally. Circle of relative template documents is used to begin a brand new circle of relatives from scratch and own family documents are typically used to alternate households among projects

Revit supports a wide range of industry standards and file formats, including:

    i.   Revit native formats: RVT, RFA, RTE, RFT.

    ii.   CAD formats: DGN, DWF, DWG, DXF, IFC, SAT, and SKP

    iii.   Image formats: BMP, PNG, JPG, JPEG, and TIF.

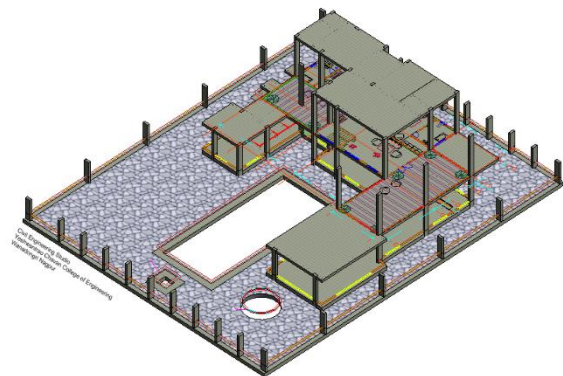   iv.   Other formats: ODBC, HTML, TXT, and gb XML
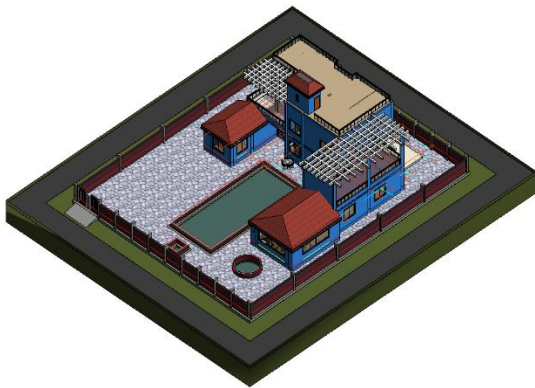

Fig. no. 3 3D Frame Structure

Fig. no. 4. Complete 3D Model

Fig. no. 5. Rendered Image of the Complete 3D Model

Fig. no. 6. Rendered Image of a Bedroom

3.3 SCHEDULING

The 4th dimension in a BIM model shows the period of an undertaking. The inclusion of a timeline and scheduling statistics in the BIM version helps display how the project will evolve over the years. This visualization of this data is extraordinarily beneficial in early-stage conflict detection. Using a 4D version will help improve website planning and scheduling optimization. It's going to also increase the preparedness of stakeholders by way of better speaking the subsequent steps at some point of each stage of production

3.3.1 FILE EXTENSION

MPP is the extension associated with the Microsoft project facts file, developed through Microsoft employer. Microsoft's mission is the challenge control software for organizing, monitoring, and preserving project plans, utilized by challenge managers, stakeholders, and those inside the challenge crew. It is miles designed for human beings, teams, and agencies of all sizes to offer assignment control assets and tools, in addition to related systems for collaboration. Microsoft mission is often used alongside Microsoft project Server to unify mission management by imparting web-based collaboration equipment for reporting, enterprise instances, and prolonged interoperability

Name	Actual Start	Actual End	Planned Start	Planned End	Task Type	Attached	Animation Behavior	Material Cost
PCC	05-01-2022 11:00	08-01-2022 19:00	05-01-2022 09:00	07-01-2022 17:00	Construct	Explicit Selection	Scale	10000
Footing	06-01-2022 11:00	16-01-2022 17:00	07-01-2022 09:00	15-01-2022 17:00	Construct	Explicit Selection	Scale	20000
Stub Column	07-01-2022 11:00	21-01-2022 17:00	15-01-2022 09:00	20-01-2022 17:00	Construct	Explicit Selection	Scale	20000
Plinth Beam	08-01-2022 11:00	05-02-2022 17:00	20-01-2022 09:00	04-02-2022 17:00	Construct	Explicit Selection	Scale	18000
Plinth lvl Floor	09-01-2022 11:00	08-02-2022 17:00	04-02-2022 09:00	07-02-2022 17:00	Construct	Explicit Selection	Scale	25000
Column Ground Floor to Fir	10-01-2022 11:00	21-02-2022 17:00	07-02-2022 09:00	21-02-2022 17:00	Construct	Explicit Selection	Scale	20000
Beam Second Floor	11-01-2022 11:00	07-03-2022 17:00	21-02-2022 09:00	05-03-2022 17:00	Construct	Explicit Selection	Scale	18000
Slab Second Floor	12-01-2022 11:00	21-03-2022 17:00	07-03-2022 09:00	20-03-2022 17:00	Construct	Explicit Selection	Scale	25000
Column Second Floor to Ter	13-01-2022 11:00	05-04-2022 17:00	20-03-2022 09:00	04-04-2022 17:00	Construct	Explicit Selection	Scale	20000
Terrace-Beam	14-01-2022 11:00	17-04-2022 17:00	04-04-2022 09:00	17-04-2022 17:00	Construct	Explicit Selection	Scale	18000
Terrace Slab	15-01-2022 11:00	01-05-2022 17:00	17-04-2022 09:00	01-05-2022 17:00	Construct	Explicit Selection	Scale	25000
BrickWork Ground lvl							Scale	
External Wall	04-04-2022 09:00	15-04-2022 17:00	04-04-2022 09:00	15-04-2022 17:00	Construct	Explicit Selection	Scale	70000
Internal Wall	05-04-2022 09:00	16-04-2022 17:00	04-04-2022 09:00	15-04-2022 17:00	Construct	Explicit Selection	Scale	50000
Brickwork in Second Floor							Scale	
External Wall	16-04-2022 09:00	27-04-2022 17:00	16-04-2022 09:00	27-04-2022 17:00	Construct	Explicit Selection	Scale	70000
Internal Wall	17-04-2022 09:00	28-04-2022 17:00	16-04-2022 09:00	27-04-2022 17:00	Construct	Explicit Selection	Scale	50000
Brickwork in Terrace &	27-04-2022 09:00	28-04-2022 17:00	27-04-2022 09:00	28-04-2022 17:00	Construct	Explicit Selection	Scale	30000
Flooring in Plinth	29-04-2022 09:00	13-05-2022 17:00	28-04-2022 09:00	12-05-2022 17:00	Construct	Explicit Selection	Scale	35000
Flooring in Second Floor	30-04-2022 09:00	14-05-2022 17:00	28-04-2022 09:00	12-05-2022 17:00	Construct	Explicit Selection	Scale	30000
Terrace Flooring	09-05-2022 09:00	28-05-2022 17:00	08-05-2022 09:00	27-05-2022 17:00	Construct	Explicit Selection	Scale	25000
Windows	16-04-2022 09:00	27-04-2022 17:00	16-04-2022 09:00	27-04-2022 17:00	Construct	Explicit Selection	Scale	60000
Doors	27-04-2022 09:00	08-05-2022 17:00	27-04-2022 09:00	08-05-2022 17:00	Construct	Explicit Selection	Scale	150000
Development							Scale	
Swimming Pool	08-05-2022 09:00	08-06-2022 17:00	08-05-2022 09:00	07-06-2022 17:00	Construct	Explicit Selection	Scale	200000
Coumpound Wall Foundati	20-05-2022 09:00	10-06-2022 17:00	20-05-2022 09:00	10-06-2022 17:00	Construct	Explicit Selection	Scale	18000
Compound Wall Columns	10-06-2022 09:00	25-06-2022 17:00	10-06-2022 09:00	25-06-2022 17:00	Construct	Explicit Selection	Scale	25000
Compound Wall	23-06-2022 09:00	13-07-2022 17:00	25-06-2022 09:00	14-07-2022 17:00	Construct	Explicit Selection	Scale	45000
Well	14-06-2022 09:00	03-07-2022 17:00	14-06-2022 09:00	03-07-2022 17:00	Construct	Explicit Selection	Scale	25000
Rainwater Storage	17-06-2022 09:00	01-07-2022 17:00	17-06-2022 09:00	01-07-2022 17:00	Construct	Explicit Selection	Scale	15000
Septic Tank	18-06-2022 09:00	05-07-2022 17:00	18-06-2022 09:00	02-07-2022 17:00	Construct	Explicit Selection	Scale	15000
Compound Flooring	03-07-2022 09:00	25-07-2022 17:00	03-07-2022 09:00	23-07-2022 17:00	Construct	Explicit Selection	Scale	50000
Gutters	13-08-2022 09:00	16-08-2022 17:00	13-08-2022 09:00	16-08-2022 17:00	Construct	Explicit Selection	Scale	30000
Roofs	02-08-2022 09:00	13-08-2022 17:00	02-08-2022 09:00	13-08-2022 17:00	Construct	Explicit Selection	Scale	60000
Railings	23-07-2022 09:00	13-08-2022 17:00	23-07-2022 09:00	13-08-2022 17:00	Construct	Explicit Selection	Scale	40000
Ramp	14-08-2022 09:00	16-08-2022 17:00	14-08-2022 09:00	16-08-2022 17:00	Construct	Explicit Selection	Scale	15000

Fig.no. 7. Schedule Plan

3.4. SIMULATION

Autodesk Navisworks control is pleasantly described as a version aggregator that is designed to convey collectively 3-d fashions and their related design information into a single running surrounding for layout assessment, coordination evaluation, simulation, and presentation.
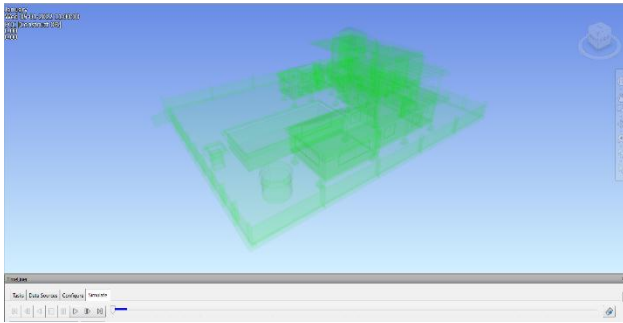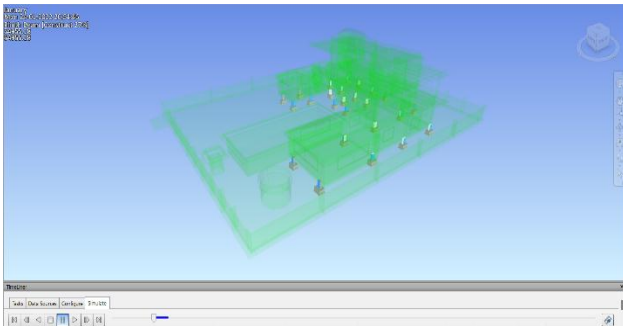
Fig. no. 8. Simulation 1

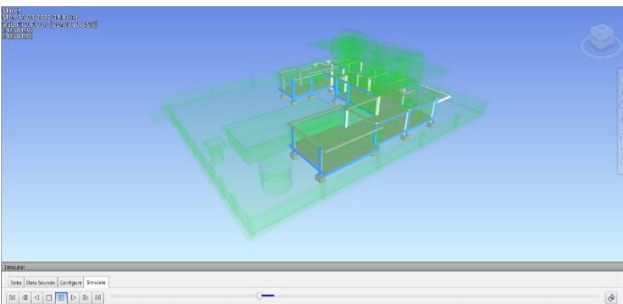Fig. no. 9. Simulation of PCC, Footing, Stub Column

Fig. no. 10. Simulation of Plinth Beam, Plinth Floor, Ground level Columns and, Ground Floor Beam
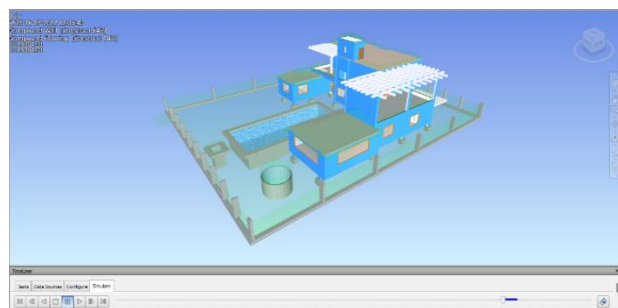

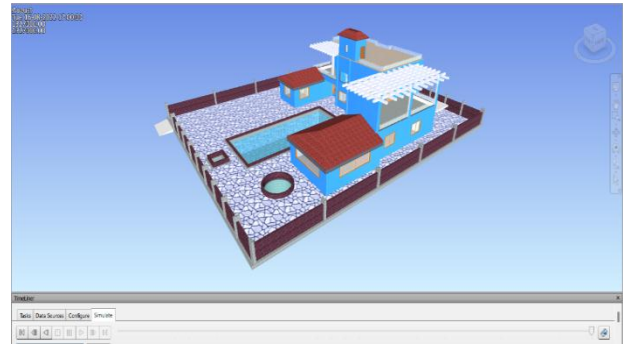Fig. no. 11. Simulation of Walls, Fist Floor Columns and, Terrace Slab

Fig. no. 12. Final Simulation

4. PROBLEM STATEMENT:

To study the Building Information Modeling process (BIM). I studied the different stages of the BIM process and learned about the software involved in this process.

5. METHODOLOGY:

In this study paintings. I made a hypothetical 2d plan in AutoCAD 2d and taking that plan as a reference I made a 3-D model inside the software called Revit structure. Then I Scheduled every activity with the aid of giving the pastime a begin date and cease Date in Microsoft assignment, the software program used for Scheduling. After that, I exported the Revit model into the software program Naviswork control for a 3-d simulation of the designed three-D version. Additionally inserted the agenda plan into this software

6. RESULT:

The result of this venture is that it made the entire production procedure quite less difficult. BIM is a whole technique that every mission stakeholders take whilst planning, building, and dealing with a new task. The use of BIM gives a couple of blessings to everybody involved in the task. And, ultimately, it results in better effect

7. CONCLUSION:

Using BIM and BIM-conscious gear which include those defined in the challenge can provide you with early information on what the scale, website online, and constructing situations are and what the cost of a project is. The use of BIM, and the technology that assist its various makes to uses, help tell the mission crew and streamline approaches. You could use web page evaluation equipment to recognize multiple websites and speak capability advantages and disadvantages of

each without leaving your table. As a layout version modifications at some stage in the route of an undertaking, you may use the BIM as a device to coordinate takeoff and fees. The use of this indicates of estimating creates a proactive design-to-budget technique with the architect and engineering team, instead of handling a reactive response to fee engineering situations later. The usage of BIM entails the usage of both evaluation tools and modeling equipment, and each is important to a systemic BIM process. Expertise that there may be a distinction between the 2 tools will clarify destiny responsibilities and applications. This e-book indicates which equipment (and identifies similar tools) are relevant to each challenge, a method for how it can be achieved, and the ability to quantify the time and effort it takes to perform those tasks for destiny reference.

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