

# MODELLING OF THREE STAR HOTEL IN REVIT

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## ABSTRACT:

*The project DESIGN AND MODELLING OF THREE STAR HOTEL (G+5) by Autodesk REVIT software gives the overall view of the construction. Built for Building Information Modeling (BIM), Autodesk Revit Architecture helps to capture and analyze design concepts, and more accurately maintain your vision through design, documentation, and construction. Use the information-rich models that Autodesk Revit Architecture provides to make more informed design decisions to support sustainable design, clash detection, construction planning, and fabrication*

*Autodesk REVIT-2014 features a state-of-the-art user interface, visualization tools, powerful analysis and design engines with advanced finite element and dynamic analysis capabilities. From model generation, analysis and design to visualization and result verification.*

*In this paper, it gives a clear design and modeling of a residential building with the efficient structural and architectural plans. It provides the overall knowledge of material take off and schedule/quantities in the model of the building defined in the project. 3 D realistic view enables us to indicate the family and the components placed within the building model.*

**Index Terms**—Non linear time history analysis, ETABS, Tuned mass damper.

## 1.INTRODUCTION

### A.REVIT

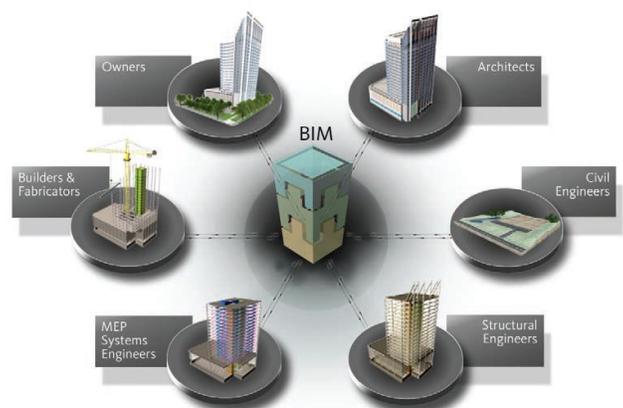
The Revit platform for building information modeling is a design and documentation system that supports the design, drawings, and schedules required for a building project. Building information modeling (BIM) delivers information about project

design, scope, quantities, and phases when you need it. In the Revit model, every drawing sheet, 2D and 3D view, and schedule is a presentation of information from the same underlying building model database. As you work in drawing and schedule views.

Revit Architecture collects information about the building project and coordinates this information across all other representations of the project. The Revit parametric change engine automatically coordinates changes made anywhere—in model views, drawing sheets, schedules, sections, and plans.

### B. BUILDING INFORMATION MODELING(BIM):

- Deliver projects faster, more economically, and with enhanced potential for reduced environmental impact.
- Autodesk Revit Architecture is purpose-built for BIM. BIM is an integrated process built on coordinated, reliable information about a project from design through construction and into operations.



**Fig: 1.1 BIM PROCESS**

## C.STARTING A PROJECT:

"Unlike any other WINDOWS application Or a CAD application, Revit Architecture does not use the term called 'FILE'. Instead, it uses 'PROJECT'."

The project contains all the information related to the building design, from concept to completion.

By using a single project file, Revit Architecture makes it easier to alter the design and have changes reflected in all associated views (plan views, elevation views, section views, schedules and so on). Having only one project file also makes it easier to manage the project (Although, increases the file size.)

### III Project In REVIT

#### 1.CREATING A PROJECT :

Click on Application Menu → New → Project.

In the New Project dialog, under Template File, browse to a template file (\*.rte.) , or select None to start the project from scratch.

Revit Architecture includes a default template called default.rte, which contains several default settings to help you begin the design process immediately.

we can open default.rte file as template, work in it. When you save your project, it is saved in (\*.rvt) format. (\*.rvt) indicates a project file.

You can also create your own template with the desired settings and standards. We'll learn to create a customized template in advance course later.

#### 2.SETTING UP PROJECT UNITS:

If we haven't started your project with a template, the Select Initial Units dialog displays. Select the type of measurement to use for the project: Imperial or Metric. Click OK.

If we have started your project with a template and you wish to change your units, follow the following procedure:

1. Go to Manage tab → Project Units OR type 'UN' at the keyboard.

2. Project units' dialog box displays. Click the value in the Format column to change the display value for that unit type
3. Set the precision by entering the desired value in Rounding tab
4. You can also add a unit symbol with the unit
5. Click OK.

#### 3.UNDERSTANDING BACKUPS: MAXIMUM BACKUPS:

When using Save As from the application menu, click 'Options' in the Save As dialog, and specify the following in the File Save Options dialog:

'Maximum backups' tool specifies the maximum number of backup files. By default, projects have 3 backups. Revit Architecture makes a backup copy of the previous version of the project (that is, the project file before the current save).

This backup copy has the name < project-name >.<number>.rvt , where <number> is a 4-digit number indicating how many times the file has been saved.

The backup file resides in the same folder as the project file. You can specify the maximum number of backup files that Revit Architecture saves.

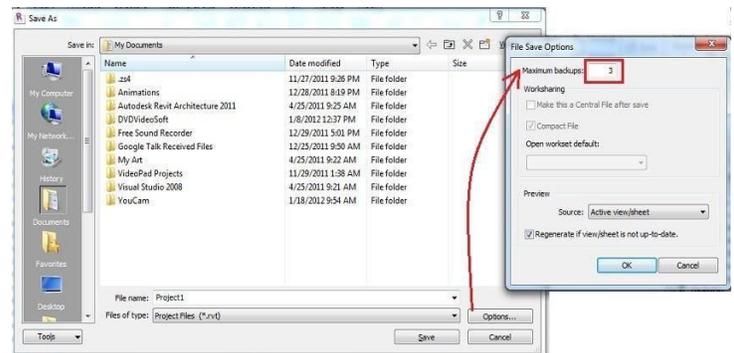


Fig: 2.1 BACK UP FILES Revit

Architecture uses three types of elements in a building model:

#### 4. Model Elements:

They represent the actual 3D geometry of the building. They are displayed in relevant views of the model. Model elements can further be divided into two categories:

1. Host Elements: These are the elements which make a core of a building or are built-in place on a construction site. For example: Walls, Roofs, Floors, etc.

#### 5. Datum Elements:

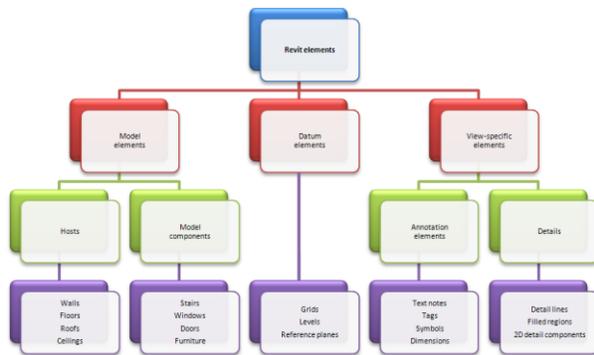


Fig 2.2 Datum Elements.

They help to define project context. They are used as references. For example, grids, levels, and reference planes are datum elements.

#### 6. View-Specific Elements:

They display only in the views in which they are placed. They help to describe or document the model. They are further divided into two categories:

Annotations: are 2D components that document the model and maintain scale on paper. For example, dimensions, tags and text are annotation elements.

Details: that provide details about the building model in a particular view. Examples include detail lines, filled regions (hatch) and 2D details.

To manage these above elements, REVIT Architecture classifies them further into

categories, families, types, and instances. These are few very important terms to understand the software's way of managing your project.

#### CATEGORY:

A category is a group of elements that you use to model or document a building design. For example, categories of model elements include walls and beams.

#### FAMILY:

Families are classes of elements in a category. A family groups elements with a common set of parameters (properties), identical use, and similar graphical representation. Different elements in a family may have different values for some or all properties, but the set of properties—their names and meaning—is the same. For example, 'colonial door' could be considered one of the families within the category of doors.

#### TYPE:

Each family can have different types. For example, a table may be available in several sizes. Each size table is a different type within the same family.

#### INSTANCE:

Instances are the actual items (individual elements) that are placed in the project and have specific locations in the building model. Each instance belongs to a family and, within that family, to a particular type.

### IV. BUILDING DIMENSIONS

#### A. Design Process:

There are different ways to begin an architectural design in REVIT Architecture.

### DRAWING A LAYOUT:

If we would like to design by sketching a layout (plan), 'Model lines/Detail lines' tools will be effective.

### BUILDING REVIT MODEL:

You can also begin to build a REVIT model with architectural components like walls, doors, windows, etc.

### B.USING LINES:

Sketch your initial layout using 'Model Line' tool.

Model Lines are 2D lines which are visible in all views. This tool helps you sketch straight as well as different shapes of lines such as circles, arcs, polygons, etc.

Follow the procedure below to understand "Model Line" tool.

1. Open HOME tab → Click on Model Line. (Keyboard Shortcut 'LI')

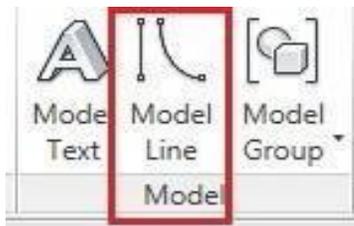


FIG 3.1HOME TAB

1. From the contextual tab named 'Place Line'; select the shape of line that you wish to draw.

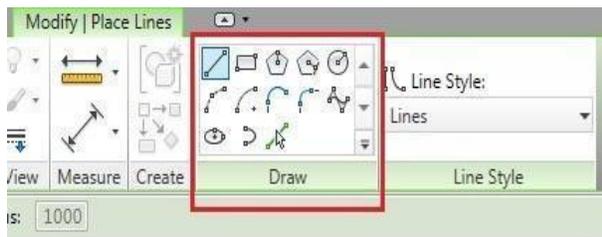


FIG 3.2 CONTEXTUAL TAB

Choose the type of line to draw from the Type Selector.

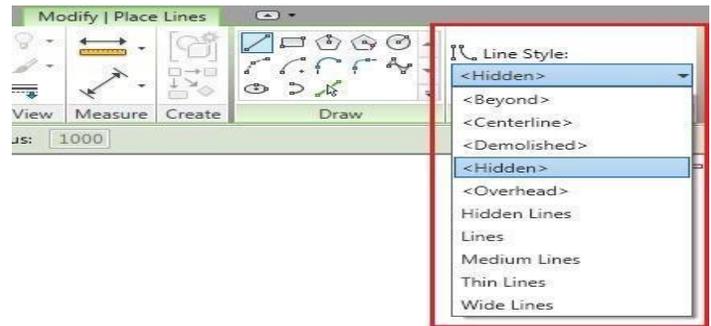


FIG 3.4 TYPE SELECTOR

3. Start to draw the line on the drawing area. As you create a model line, you can quickly set its length by typing a value on keyboard. This changes the length of the temporary dimension that appears with the line. Lines will also intelligently reference to each other automatically. The cursor will show the tool tip of its Snap position.

4. Check the 'CHAIN' option to draw multiple lines continuously.

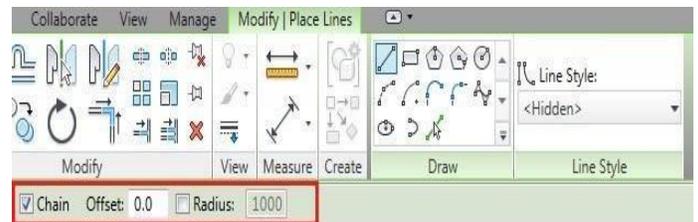


FIG 3.4 CHAIN OPTION

5. If you wish to draw a line as per the reference already present on your drawing, then choose "Pick Line" tool.

6. After selecting the tool, now select the reference that is present in your drawing. A model line with the length of the reference selected will be created.

## IV.MANAGING VIEWS

### A.Creating New Plans:

Floor plan views are created automatically as you add new levels to your project. Although, when you uncheck the mark of “make plan view” on the options bar while creating the levels, Revit will not generate a floor plan. Also, when you copy or array the levels, floor plans won't be generated. Thus, to create a floor plan from such levels, follow the following procedure:

#### PROCEDURE TO CREATE A NEW FLOOR PLAN:

1. Click View tab->Create panel->Plan Views drop-down->Floor Plan
2. From the New Plan dialog, select one or more levels for which you want to create a plan view.
3. If you want to create a plan view for a level that has an existing plan view clear, do not duplicate existing views.

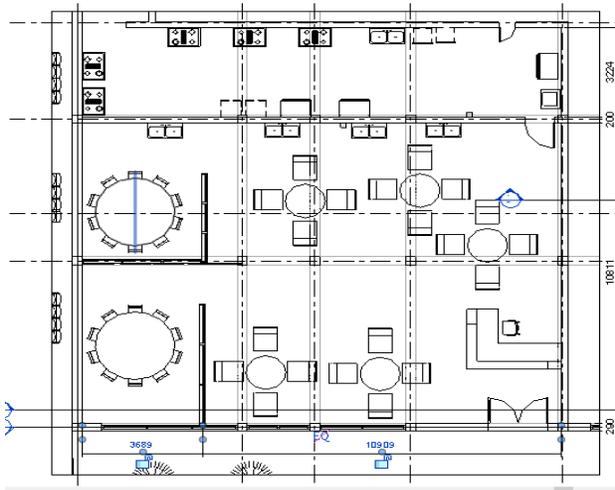


Fig 4.1 Creating New Plan

4. For Scale, select an appropriate view scale for the new view.
5. Click OK.

## B.DIMENSIONING

### 7.1 TEMPORARY DIMENSIONS:

After you place a component, REVIT Architecture displays the temporary dimensions. When you place another component, the temporary dimensions for the previous component disappear to reduce clutter. To view the temporary dimensions of a component, click Modify and select the component.

Remember, the temporary dimensions are to the nearest component, so the dimensions you see may be different from the original temporary dimensions. If there are dimensions you want to appear at all times, create permanent Dimensions

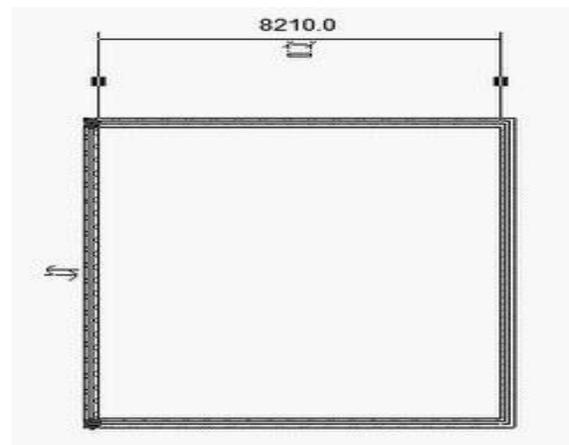


Fig 4.2 Temporary Dimensions  
Procedure To Specify Temporary

#### Dimensions Settings:-

we can specify the display and placement of temporary dimensions in the design. You can set temporary dimensions to:

- Measure from wall center-lines, wall faces ,center of core, or core faces
- Measure from door and window center-lines or door and window openings

#### To Specify Temporary Dimension Settings:

1. Click Manage tab->Settings button->Temporary Dimensions.

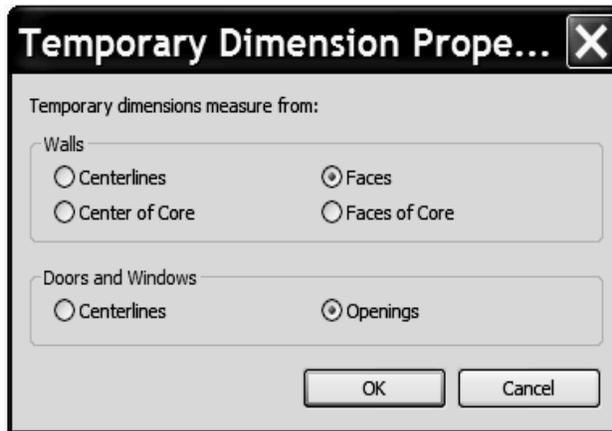


Fig 4.2 Temporary Dimension Property

## V. RESULTS

### SCHEDULES & QUANTITIES

<Door Schedule>		
A	B	C
Cost	Type	Count
2000.00	16" x 54" 2	15
2000.00: 15		
2200.00	36" x 80"	1
2200.00: 1		
2500.00		97
2500.00: 97		
3000.00		27
3000.00: 27		

Fig:5.1Door Schudule

#### PROCEDURE:

1. Click View tab -> Create panel -> Schedules drop-down -> Schedule/Quantities.
2. In the New Schedule dialog, select a component from the category list. A default name appears in the Name text box, which you can change as necessary.
3. Select Schedule building components.
4. Click OK.
5. The schedule view appears in the project browser.
6. After you have specified the desired type of schedule, you need to specify the information to include on the schedule and how the information

should appear. To access the editing dialog, right-click the schedule name in the Project Browser, and select Properties. Click Edit for any of the parameters in the other category

7. Click on the Fields tab to add/remove field names in the schedule. You can Move

Up/Down the sequence of the field name to adjust how they appear in the schedule columns.

8. On the Filter tab of the Schedule Properties dialog, you can create filters that limit the display of data in a schedule. You can create up to 4 filters, and all filters must be satisfied for the data to display. An example of how you might use a filter is in a door schedule that you want to filter by level. In the Filter tab, you can choose Level as your filtering parameter and set its value to Level 3. Only the doors that are on level 3 display in the schedule.

9. On the Sorting/Grouping tab of the Schedule Properties dialog, you can specify sorting options for rows in a schedule, and add headers, footers, and blank lines to sorted rows. You can also choose to show every instance of an element type, or collapse multiple instances onto a single row.

10. To change the formatting of each column, select Formatting tab. Select the field name and adjust their heading name, heading orientation, and alignment (displays the name either horizontal or vertical in the column during printing). You can also add column totals for a selected field. Check the 'calculate totals' box for the required fields. You can also check the 'hidden fields' for those columns which you do not wish to print. Click on Field format button to adjust the unit appearance of the particular field you have selected.

11. On Appearance tab of the Schedule Properties dialog, you can specify various formatting options, such as alignments, grid lines, borders, and font style.

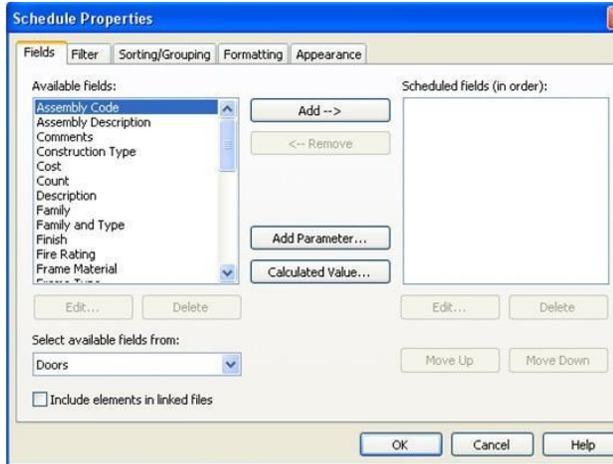


Fig 5.2 Schedule Properties

## V.CONCLUSION

This project gives realistic and accurate families ranging from furniture to lighting fixtures, as well as import existing models from other programs. We can get the approximate estimations also. By the application of revit we have done planning and modelling of 3 star hotel. And also we have provided reinforcement for the structure by using revit structure. we have done the scheduling for families.

A clear design and modeling of a residential building with the efficient structural and architectural plans. It provides the overall knowledge of material take off and schedule/quantities in the model of the building defined in the project. 3 D realistic view enables us to indicate the family and the components placed within the building model.

## VI.REFERENCES

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