

DESIGN AND MODELLING OF ORPHAN HOME

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ABSTRACT:

The project **PLANNING AND MODELLING OF ORPHAN HOME(G+2)** by Autodesk REVIT software gives the overall view of the construction. Built for +8capture 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

In this project, it gives a clear design and modeling of a orphan home 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.

IndexTerms:Revit,Architectural modeling,Managing views,Presentation Tool

L.INTRODUCTION

A.REVIT

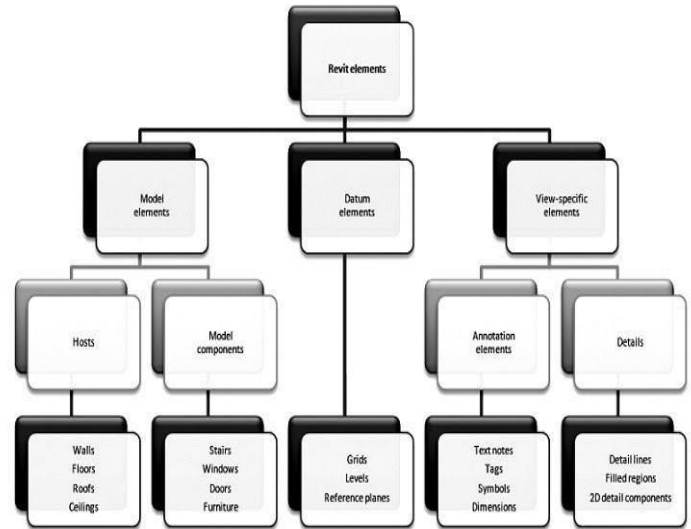
The Revit platform for building information modeling is a design and documentation system that supports the design, drawings, and schedules required for a building project. Building information modeling (BIM) delivers information about project design, scope, quantities, and phases when you need it. In 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.

1.REVIT ELEMENTS:

Revit Architecture uses three types of elements in a building model:



2.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:

(a)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.

(b)DATUM ELEMENTS:

They help to define project context. They are used as references.

For example, grids, levels, and reference planes are datum elements.

B. 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: are 2D items 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. Now, let's try the same classification with the following

II. DESIGN PROCESS

There are different ways to begin an architectural design in REVIT Architecture. But we adopted in the project is

Drawing a Layout:

If you 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.

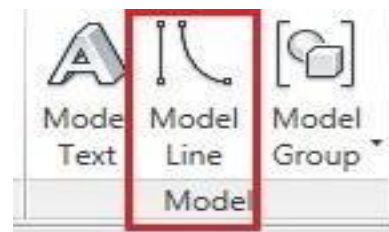
USING LINES:

Sketch your initial layout using 'Model Line' tool.

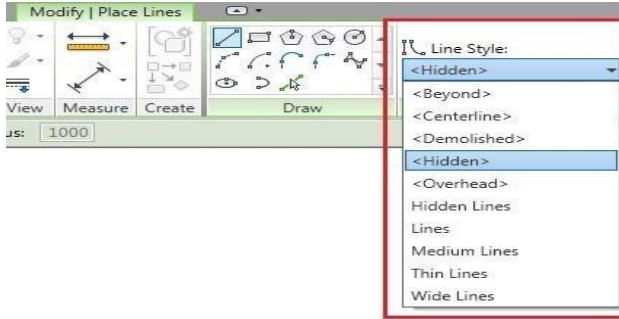
Model Lines are 2D lines which are visible in all views. This tool helps you sketch straight as well as different shapes of lines such as circles, arcs, polygons, etc.

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

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

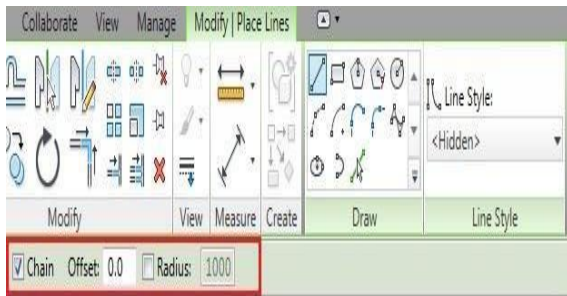


2. From the contextual tab named 'Place Line'; select the shape of line that you wish to draw



1. 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.

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



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

2. 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.

CREATING LEVELS:

Before beginning a Revit model, it is advisable to create the no of levels required in the project. Although, accuracy in the initial stage will help the project to shape better but it is not mandatory to be exact in your values. It is possible to modify the heights, add new levels or delete levels at a later stage also.

CREATING/ADDING NEW LEVELS:

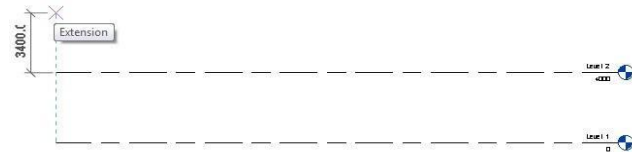
Go to Project Browser and double click on the section/elevation view to add levels.

1. Click Home tab → Datum panel → Level.
(Keyboard shortcut 'LL')



2. Place the cursor in the drawing area and click.

Note: As you place the cursor to create a level, if the cursor aligns to an existing level line, a temporary vertical dimension displays near the cursor.



Draw level lines by moving the cursor horizontally.

Click when the level line is of correct length. Option: On the Options Bar, Make Plan View is selected by default. As a result, each level you create is a story level and has an associated floor plan view and a reflected ceiling plan view. If you clear Make Plan View,

The Level is considered to be a non-story level or a reference level (ex. Demarcation of Plinth level, sill level, lintel level, etc.); no associated plan view is created.

You can also create the levels by using 'Offset' options tool. This will offset a Level from an existing level line.

1. Click Home tab → Datum panel → Level
2. Go to Place Level tab → Draw Panel → select Pick Line tool.



3. On the options bar, give required value

in the offset tool

4. Go to the drawing area and highlight the existing level line. You will see that the new level line is indicated as adopted line at an offset from the existing line. Direction of the offset depends on your mouse position. If your mouse is above the existing line, the offset will be on top of it.

Similarly, if you keep your cursor below the existing line, the offset will be considered negative

5. Click on the highlighted existing level. The new level line is created. This method is faster and simple way to create new level lines.

MODIFYING LEVELS:

To Change the elevation of the level line:
Click on the existing level line → Click on the elevation of the level displayed in blue color below the name → Write a new elevation value for the Level.

The position of the level will change according to the new dimension.



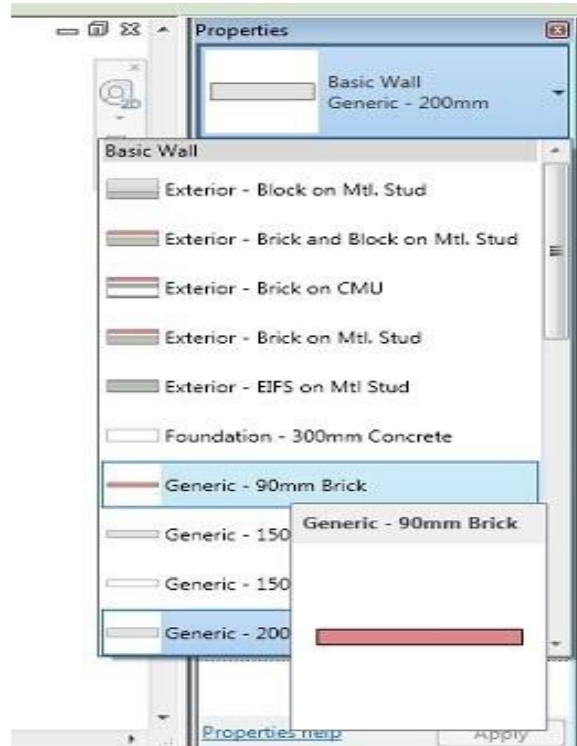
CREATING GRIDLINES

Use the Grid tool to place structural gridlines in the building design. You can then add columns/ structural components along the column grid lines.

III. ARCHITECTURAL MODELLING

CREATING WALLS:

1. In a floor plan view, click Home tab → Build panel → Wall. (Keyboard Shortcut 'WA')

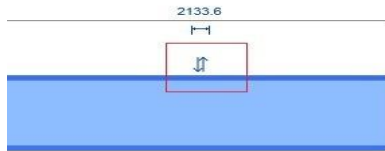


Click Place Wall tab → Element panel, and select the desired wall type from the Type Select or drop-down in the properties. Do not worry about customizing a wall type at this stage. Choose any wall type that you desire from the list available.

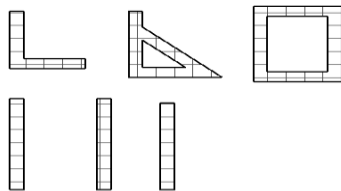
2. On the Options Bar, specify Height: Set the height of a wall to go up to a level. If you connect a wall's height to a level, REVIT Architecture will understand that when a level changes its height, the wall too needs to change. Thus, it will coordinate the wall's

Location Line: Specify the location line of the wall as Wall Centerline, Finish Face: Exterior or Finish Face: Interior. The choice of the Location line depends on whether you wish to align your dimensions to the wall's centre/ exterior face/ interior face. To flip the

orientation of the wall between exterior and interior, select the wall and click the blue flip arrows that are displayed near it. The flip arrows always are displayed on the side that Revit Architecture interprets as the exterior side.



2. Use the Chain option when placing a series of connected walls.
3. Walls automatically snap important snap points in the alignment of other walls/ components. The following illustrations show horizontal and vertical alignment lines, and endpoint and midpoint snaps.



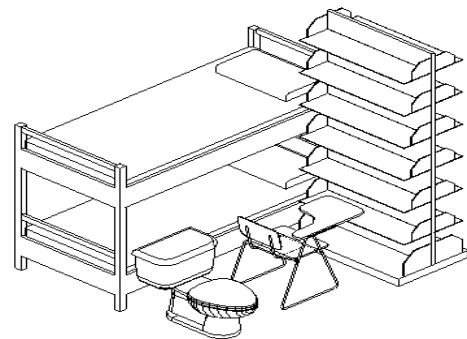
COMPONENTS

The Component command inserts free-standing components into a project. Such components can include furniture, site components, and plumbing supplies.



Procedure:

1. Click Home tab → Build panel → Component drop-down → Place a Component.
2. In the Type Selector at the top of the Properties palette, select the desired component type. If the desired component family has not yet been loaded in to the project, click Modify and PlaceComponent tab on the panel Load Family. Then navigate to the appropriate category folder in the Load Families dialog (For example, Furniture/ Lighting & Fixture/ Plumbing /Fixture folders), select the family, and click Open to add the family to the Type Selector.
3. In the drawing area, move the cursor until the preview image of the component is in the desired location. If you want to change the orientation of the component, press Spacebar to rotate the preview image through its available positioning options.



When the preview image is in the desired location and orientation, click to place the component

FLOORS

You create floors by sketching them, either by picking walls or by using the Line tool. Typically, you sketch a floor in a plan view, although you can use also a 3D view, if required.



Floors are based on a level. They are normally off set downward from the level on which they are sketched .Thus the floor's top aligns with the level

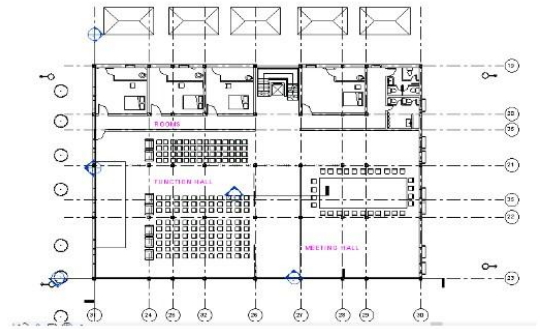
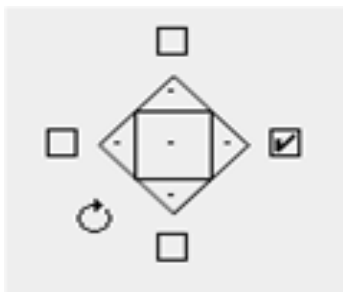
IV MANAGING VIEWS

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.



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

Creating New Elevations

Elevation views are part of the default template in REVIT Architecture. When you create a project with the template, for elevation views are included: north, south, east, and west. You can also create additional exterior elevation views and interior elevation views.

Procedure to create a new elevation:

1. Open a plan view.
2. Click View tab->Create panel->Elevation.
3. The cursor appears with the elevation symbol.



4. On the Options Bar, select a view scale.
5. Place the cursor near a wall, and click to place the elevation symbol.
6. To set different interior elevation views, highlight the square shape of the elevation symbol, and click.

7.The elevation symbol displays with check box options for creating views, as the image in here shows.

Tip: The rotation control is useful for a lining to angled elements in the plan.

8.Select the check boxes to indicate where you want to create elevation views.

9.Click away from the elevation symbol to hide the check boxes.

10.Highlight an arrow head on the symbol to select it.

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 modeling of orphan home . And also we have provided reinforcement for the structure by using Revit structure . we have done the scheduling for families .Revit is very useful and wonderful structure to work on our thoughts to create wonderful models of building with specifications.

In this project, it gives a clear design and modeling of a orphan home 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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