

Chapter 1



Introduction to Autodesk Revit Architecture 2009

Learning Objectives

After completing this chapter, you will be able to:

- *Understand the basic concepts and principles of Revit Architecture 2009.*
- *Understand different terms used in Revit Architecture.*
- *Understand the parametric behavior of Revit Architecture.*
- *Start the Revit Architecture 2009 program.*
- *Learn about different components of the User Interface screen of Revit Architecture.*
- *Learn to access Revit Architecture 2009 Help and Tutorials.*

INTRODUCTION TO AUTODESK REVIT ARCHITECTURE

Welcome to the realm of Autodesk Revit Architecture, a powerful building modeler that has changed the building industry's outlook of computer aided design. Autodesk Revit Architecture is a design and documentation platform that enables you to use a single, integrated building information model to conceptualize, design, and finally document a project. Its integrated parametric modelling technology is used to create an information model of a project, collect, and coordinate information across all its representations. In Autodesk Revit Architecture, drawing sheets, 2D views, 3D views, and schedules are a direct representation of the same building information model. Using its parametric change engine, you can modify the design at any stage of the project. These modifications are automatically made and represented in all the views of a project, resulting in the development of better designs, along with an improved coordination. The use of Autodesk Revit Architecture provides a competitive advantage and a higher profitability to architects and the building industry professionals.

AUTODESK REVIT ARCHITECTURE AS A BUILDING INFORMATION MODELER

The history of computer aided design and documentation dates back to the early 1980s, when architects began using this technology for documenting their projects. Realizing its advantages, information sharing capabilities were developed, especially to share data with other consultants. This led to the development of object-based CAD systems in the early 1990s. Objects such as walls, doors, windows, and so on stored non-graphical data with the assigned graphics. These platforms arranged information logically, but were unable to optimize its usage in a building project. Realizing the advantages of the solid modelling tools, the mechanical and manufacturing industry professionals began using the information modelling CAD technology. Using this technology, the data could be extracted based on the relationship between the model elements.

In 1997, a group of mechanical CAD technologists began working on a new software for the building industry. The building information modelling (BIM) provided an alternative approach to building design, construction and management. This approach, however, required a suitable technology to implement and reap its benefits. The use of parametric technology with the building information modelling approach was envisaged as an ideal combination. They developed a software that was suitable for creating building projects. This software later came to be known as Autodesk Revit Building and has now has been changed to Revit Architecture.

Autodesk Revit Architecture is a building design and documentation platform, in which a digital building model is created using parametric elements such as walls, doors, windows, and so on. All the building elements have inherent relationship with each other, which is tracked, managed, and maintained by the computer.

BASIC CONCEPTS AND PRINCIPLES

Autodesk Revit Architecture enables you to envisage and develop a building model with actual 3D parametric building elements. It provides a new approach to the architectural

thought and implementation process. In a way, it replicates the way architects conceive a building. For example, 2D CAD platforms mostly use lines to represent all elements, as shown in Figure 1-1. But in Autodesk Revit Architecture, you can create a building model using 3D elements such as Walls, Floors, Doors, and Windows, as shown in Figure 1-2.

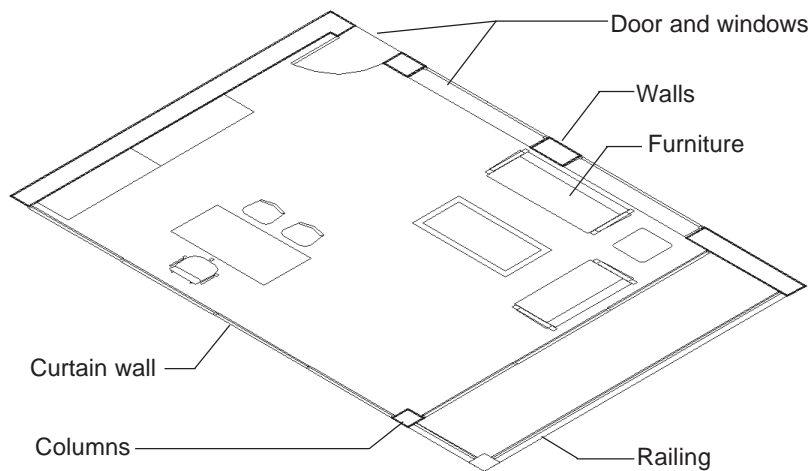


Figure 1-1 CAD project created using 2D lines and curves

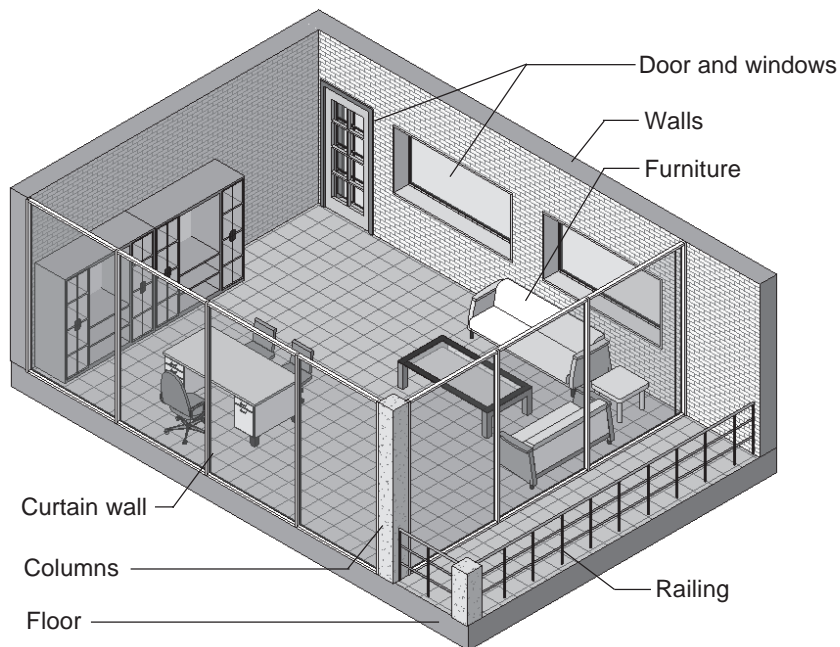


Figure 1-2 Autodesk Revit Architecture project created using parametric building model

Using these 3D elements, you can visualize the architectural or interior project with respect to its scale, volume, and proportions. This enables you to study design alternatives and develop superior quality design solutions. Autodesk Revit Architecture automates routine drafting and coordination tasks and assists in reducing errors in documentation. This, in turn, saves time, improves the speed of documentation, and lowers the cost for users.

Understanding the Parametric Building Modelling Technology

A project in Autodesk Revit Architecture is created using in-built parametric building elements. The term parametric refers to the relationship parameters between various building elements. Some relationships are created by Autodesk Revit Architecture itself, whereas others are created by the user. For example, doors, which have an inherent parametric relationship with walls cannot be created without first creating a host wall. The door always move with the host wall. Similarly, floors too are parametrically linked to the walls. When you move the walls, the floor extents are modified intuitively. Each building element has an in-built bidirectional associativity with many other elements in the project.

A building information model is created using different interdependent parametric building elements such as walls, floors, roof, ceiling, stairs, ramps, curtain walls, and so on. As they are bidirectionally associated, therefore any change in one element is automatically adopted by the others. The integrated building information model thus created, contains all the data for a project. You can then create project presentation views, such as plans, sections, elevations, and so on for documentation. As you modify the model while working in certain views, Autodesk Revit Architecture's parametric change engine automatically updates the other views. This capability is, therefore, the underlying concept in Autodesk Revit Architecture.

Autodesk Revit Architecture's parametric change engine empowers you to modify the design elements at any stage of the project development. As the changes are made immediately and automatically, it saves effort of coordinating them in all the other associated views, which, for most projects, is an inevitable part of the design process. Autodesk Revit Architecture's capability to coordinate between various aspects of the building design provides immense flexibility in the design development process along with an error-free documentation.

Autodesk Revit Architecture also provides a variety of in-built parametric element libraries, which can be selected and used to create the building model. Autodesk Revit Architecture also provides you with the flexibility of modifying the properties of these elements or create your own parametric elements, based on the project requirement.

Understanding Autodesk Revit Architecture Terms

Before using Autodesk Revit Architecture, it is important that you understand the basic terms used for creating a building model. Various terms in Autodesk Revit Architecture such as project, level, category, family, type, and instance are described next.

Autodesk Revit Architecture Project

The concept of a project in Autodesk Revit Architecture is similar to an actual architectural or interior project. As in an actual project, the entire documentation such as drawings, 3D views, specifications, schedules, cost estimates, and so on are inherently linked and read

together. Similarly, in Autodesk Revit Architecture, a project not only includes the digital 3D building model but also its parametrically associated documentation. Thus, all these components such as the building model, its standard views, architectural drawings, and schedules combine together to form a complete project. The project file contains all the project information, which consists of the building elements used in the project, drawing sheets, schedules, cost estimates, 3D views, renderings, walkthroughs, and so on. A project file also stores various settings such as environment, lighting, and so on. All the data is stored in the same file, so it becomes easier for Autodesk Revit Architecture to coordinate the entire database.

Levels in a Building Model

In Autodesk Revit Architecture, the building model is divided into different levels which may be understood as infinite horizontal planes, which act as hosts for different elements such as roof, floor, ceiling, and so on. The defined levels in a building model can, in most cases, relate to the different floor levels, or stories of the building project. Each element that you create belongs to a particular level.

Subdivisions of Elements into Categories and Subcategories

Apart from building elements, an Autodesk Revit Architecture project also contains other associated elements such as annotations, imported files, links, and so on. These elements have been divided into the following categories:

- Model Categories** : Consist of various building elements used in creating the building model such as wall, floor, ceiling, roof, door, window, furniture, stairs, curtain systems, ramps, and so on
- Annotation Categories** : Consists of annotations such as dimensions, text notes, tags, symbols, and so on
- Datum Categories** : Consists of datums such as levels, grids, reference planes, and so on
- View Categories** : Consists of interactive project views such as floor plans, ceiling plans, elevations, sections, 3D views, renderings, and walkthroughs

Apart from these four categories, the **Imported Categories**, **Workset Categories**, **Filter**, and **Revit Categories** are also available, in case, the project has imported files, enabled worksets, or linked Autodesk Revit Architecture projects, respectively.

Families in Autodesk Revit Architecture

Family, another powerful concept in Autodesk Revit Architecture, can be described as a set of elements of the same category that can be grouped together based on certain common parameters or characteristics. The elements of the same family may have different properties, but they all have common characteristics. For example, **Double Hung** is a single window family, but contains different sizes of double hung windows. The family files have a .rfa

extension. Additional building component families can be loaded from the libraries, provided with the Autodesk Revit Architecture software package.

Families are further divided into certain types. Types or family types, as they are called, is a specific size or style of a family. For example, **Double Hung : 36" x 48"** is a window type. All the usage of the same family type in a project have the same properties. Family and family types can also be used to create new families using the **Family Editor**.

Instances are the actual usage of model elements in a building model or annotations in a drawing sheet. A family type, created at a new location, is identified as an instance of the family type. All instances of the same family type have the same properties. Conversely, modifying properties of a family type, modifies the properties of all its instances. The family categorization of Revit elements is given below:

Model Category	: Wall
Family	: Basic Wall
Family type	: Brick on Mtl. Studs
Instance	: Particular usage of the family type

The hierarchy of building elements in Autodesk Revit Architecture plays an important role in generating the flexibility and ease of managing a change in the building model. Figure 1-3 shows the hierarchy of categories and families in a typical Autodesk Revit Architecture project. The following is another example of the terms described in this section.

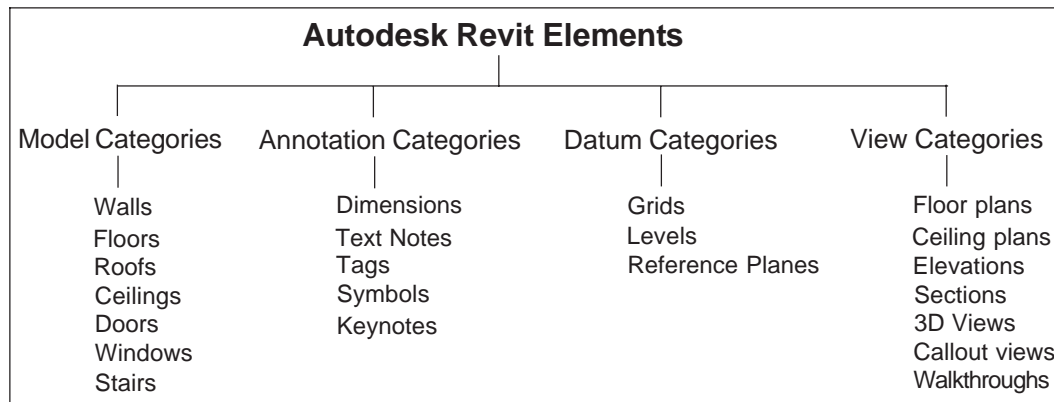


Figure 1-3 Hierarchy of Autodesk Revit Architecture categories and families

Creating a Building Model Using Parametric Building Elements

Another classification of categories of elements followed in Autodesk Revit Architecture is based on their usage. Autodesk Revit Architecture uses five classes of elements, host, component, annotation, view, and datum. Hosts are the element categories that form the basic structure of a building model and include model elements such as walls, floor, roof, and ceiling. Components are the elements that are added to the host elements or act as stand-alone elements such as doors, windows, and furniture. Annotations are the 2D, view-specific elements that add content to the project documentation such as dimensions, tags, text notes, and so on. Views are the representation of the building model from various orientations such as plans, elevations,

sections, 3D views, and so on. Datum refers to the reference elements that assist you in creating a building model, which include grids, levels, reference planes, and so on.

There is no specific methodology of creating a building model in Autodesk Revit. It provides you with the flexibility of generating the building geometry based on the project requirement, design complexity, and other factors. However, the following steps describe a general procedure that may be adopted for creating an architectural building model, using the built-in parametric elements provided in Autodesk Revit Architecture.

The first step is to create the exterior walls of the building in the predefined lowest level (level 1). Next, create the interior walls at that level and add components to the building model. Then, define the upper levels based on the story height of the building. You can also link the control height of the walls to the levels and extend the exterior walls to their full height. Next, create the floors and the roof using the defined levels. Add the site topography to the building model and then add site components to complete the building project. You can then create drawing sheets with the desired views for its presentation. Autodesk Revit Architecture also provides tools to create rendered 3D views and walkthroughs. Figure 1-4 shows an example of a building section with various building elements and annotations.

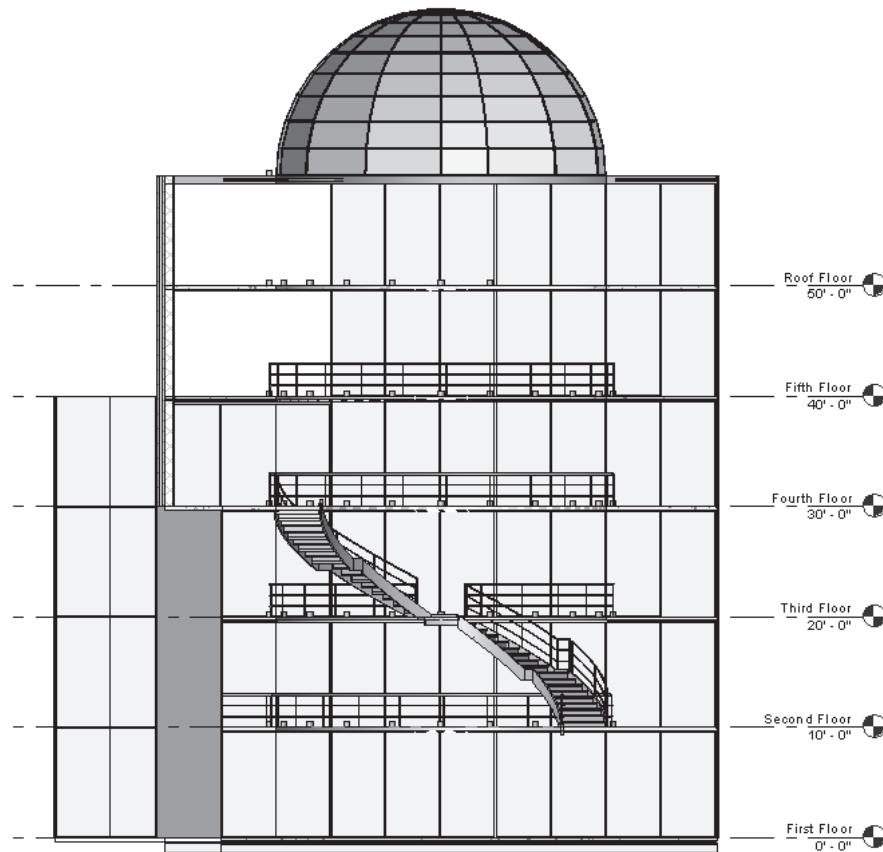


Figure 1-4 Building section showing building elements and levels

Visibility/Graphics Overrides, Scale, and Detail Level

Autodesk Revit Architecture enables you to control the display and graphic representation of a single element or the element category of various elements in the project views by using the visibility and graphics overrides tools. You can select the model category and modify its linetype and detail level. This can also be done for various annotation category elements and imported files. These settings can be done for each project view based on its desired representation. You can also hide an element or the element category in a view using the **Hide in View** and **Isolate** tools. You can override the graphic representation of an element or an element category in any view using the **Override Graphics in View** tool.

The scale is another important concept in an Autodesk Revit Architecture project. You can set the scale for each project view by selecting it from the available list of standard scales such as 1/16"=1'0", 1/4"=1'0", 1"=1'0", 1/2"=1'0", and so on. As you set a scale, Autodesk Revit Architecture intuitively sets the detail level appropriate for it. There are three detail levels provided in an Autodesk Revit Architecture project, **Coarse**, **Medium**, and **Fine**. You can also set the detail level manually for each project view. Each detail level has an associated linetype and detail lines associated with it. The size of annotations such as dimensions, tags, and so on are also defined by the selected scale.

Extracting Project Information

A single integrated building information is used in creating and representing the building project. You can extract the project information from the building model, and also create the area schemes, schedule, and cost estimates and add them to the project presentation.

Autodesk Revit Architecture also enables you to export the extracted database to the industry standard Open Database Connectivity (ODBC) compliant relational database tables. The usage of the building information model to extract database information eliminates the error-prone method of measuring the building spaces individually.

Creating an Architectural Drawing Set

After creating the building model, you can easily arrange the project views in drawing sheets that can be plotted as a hardcopy. The drawing sheets can also be organized in the project file based on the established CAD standards followed by the firm. In this manner, the project documentation can be easily transformed from the conceptual design stage to the design development stage and finally to the construction document stage. The project view on a drawing sheet is only a graphical representation of the building information model and therefore, any modification in it is immediately made in all the associated project views, keeping the drawings set always updated.

Creating an Unusual Building Geometry

Autodesk Revit Architecture also provides the flexibility to conceptualize a building project in terms of its volume, shape, and proportions before working with the actual building elements. This is possible by using the **Massing** tool, which enables you to create quick 3D models of buildings and conduct volumetric and proportion study on the overall masses. It also enables you to visualize and create an unusual building geometry. The same massing model can then be converted into a building model with individual parametric building

elements. This provides continuity in the generation of the building model right from sketch design to its development.

Flexibility of Creating Special Elements

Autodesk Revit Architecture provides a large variety of in-built family types of various model elements and annotations. Each parametric element has associated properties that can be modified based on the project requirement.

Autodesk Revit Architecture also empowers you to create elements that are designed specifically for a particular location. The in-built family editor enables you to create new elements using the family templates. This provides you with the flexibility of using in-built elements for creating your own elements. For example, using the furniture template, you can create a reception desk that is suitable for a particular location in the design.

Creating Structural Layouts

Autodesk Revit Architecture's structural tools enable you to add structural elements to the building model. An extensive in-built library of structural elements has been provided in Autodesk Revit Architecture. You can add structural columns, beams, walls, braces, and so on to the project. Thus, the structural consultants can also incorporate their elements in the basic architectural building model and check for the inconsistency, if any.

Working on Large Projects

In Autodesk Revit Architecture, you can work on large projects by linking different building projects together. For a large project consisting of a number of buildings, you can create individual buildings as separate projects and then link all of them into a single base file. The database recognizes the linked projects and includes them in the project representation of the base file.

For example, while working on a large educational institution campus, you can create separate project files for the academic building, administration area, gymnasium, cafeteria, computer centre, and so on, and then link them into the base site plan file. In this manner, large projects can be subdivided and worked upon simultaneously.

Working in Large Teams and Coordinating with Consultants

Worksets, in Autodesk Revit Architecture, enable the division of the building model into small editable set of elements. The worksets can then be assigned to different teams working on the same project and their work can be easily coordinated in the central file location. The effort required to coordinate, collaborate, and communicate the changes between various worksets is taken care of by the computer. Various consultants working on a project can be assigned a workset with a set of editable elements. They can then incorporate their services and modify the associated elements.

For example, a high rise commercial building project can be divided into different worksets with independent teams working on the exterior skin, interior walls, building core, toilet details, finishes, and so on. Structural consultants can be assigned the exterior skin and the

core workset, in which they can incorporate the structural elements. Similarly, the rest of the teams can work independently on different worksets.

STARTING AUTODESK REVIT ARCHITECTURE 2009

When you turn on your computer, the operating system is automatically loaded. You can start Autodesk Revit Architecture by double-clicking on the **Autodesk Revit Architecture 2009** icon on the desktop or from the windows taskbar by choosing the **Start** button available at the lower left corner of the screen (default position). Then, choose **All Programs > Autodesk > Revit Architecture 2009 > Revit Architecture 2009**, as shown in Figure 1-5.

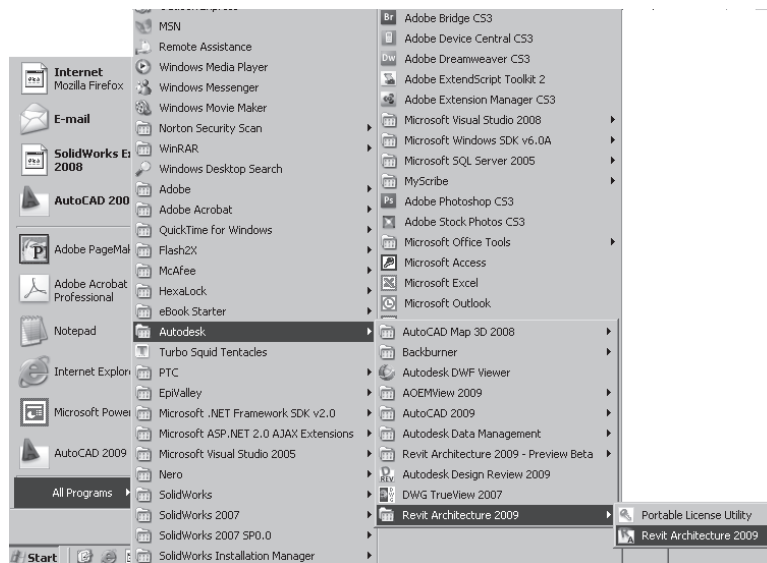


Figure 1-5 Starting Autodesk Revit Architecture 2009 using the taskbar shortcut menu

On doing so, the inactive interface screen with the **New Workshop Features** will be displayed. Select any of the required radio buttons from the window and choose the **OK** button; the **New Workshop Features** will be closed and the interface screen will be displayed, as shown in Figure 1-6. The screen has two sections, **Projects** and **Families**. The **Projects** section allows you to open a new or existing project, and the **Families** section allows you to open a new or existing family.

To open an existing project file, choose the **Browse** option from the **Projects** section; the **Open** dialog box will be displayed. Browse to the respected location in the dialog box and select the required file. Now, choose the **Open** button to open the file.

To open a new project file, choose the **New** option from the interface; the **New Project** dialog box will be displayed. Ensure that the **Project** radio button is selected and choose the **OK** button from the dialog box; the project file will open and the interface screen will be activated.

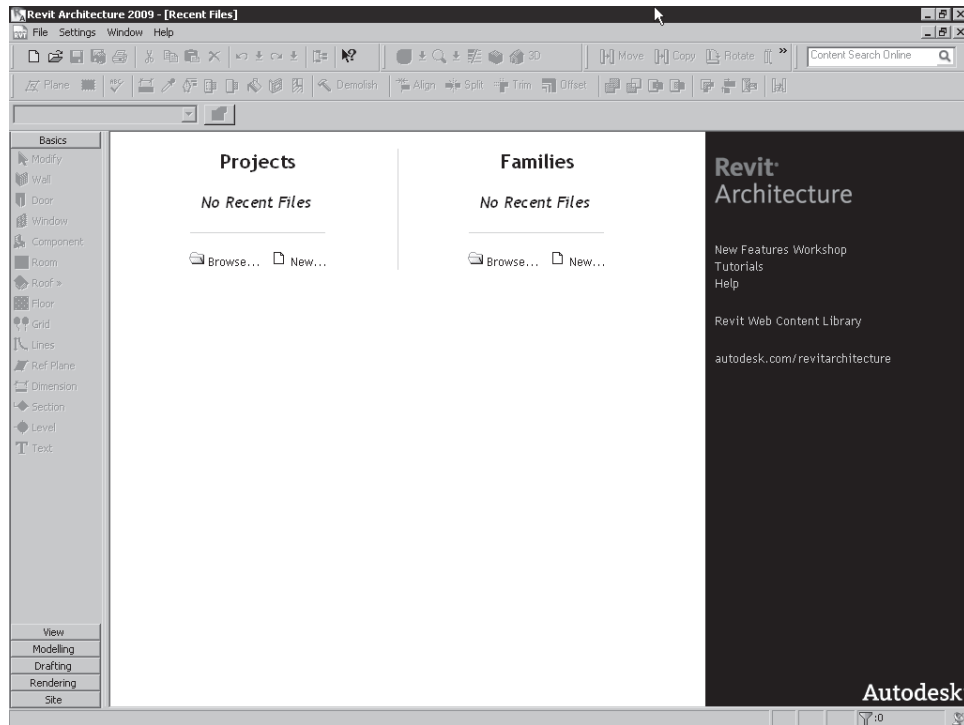


Figure 1-6 The inactive interface screen display of Autodesk Revit Architecture 2009

USER INTERFACE

Autodesk Revit Architecture's user interface screen is quite similar to the screen of many other Microsoft Windows based programs. Its main parts are the **Title bar**, **Menu bar**, **Toolbar**, **Design Bar**, **Type Selector Bar**, **Element Properties button**, **Options Bar**, **Project browser**, **Drawing window**, **Status bar**, and the **View Control bar**, as shown in Figure 1-7.

You can modify the overall look of the user interface screen to a certain extent. The **Toolbar**, **Project browser**, and tabs in the **Design Bar** can be hidden, if more work area is required.

Invoking Tools

To perform an operation, you can invoke the requisite tools by using any one of the following three options:

Menu Bar: You can access various tools from the drop-down menus in the menu bar.

Toolbar: Toolbars are provided to quickly access the commonly used tools. You can left-click on the appropriate button to invoke the corresponding tool.

Shortcut Keys: Some tools can also be invoked using the keys on the keyboard.

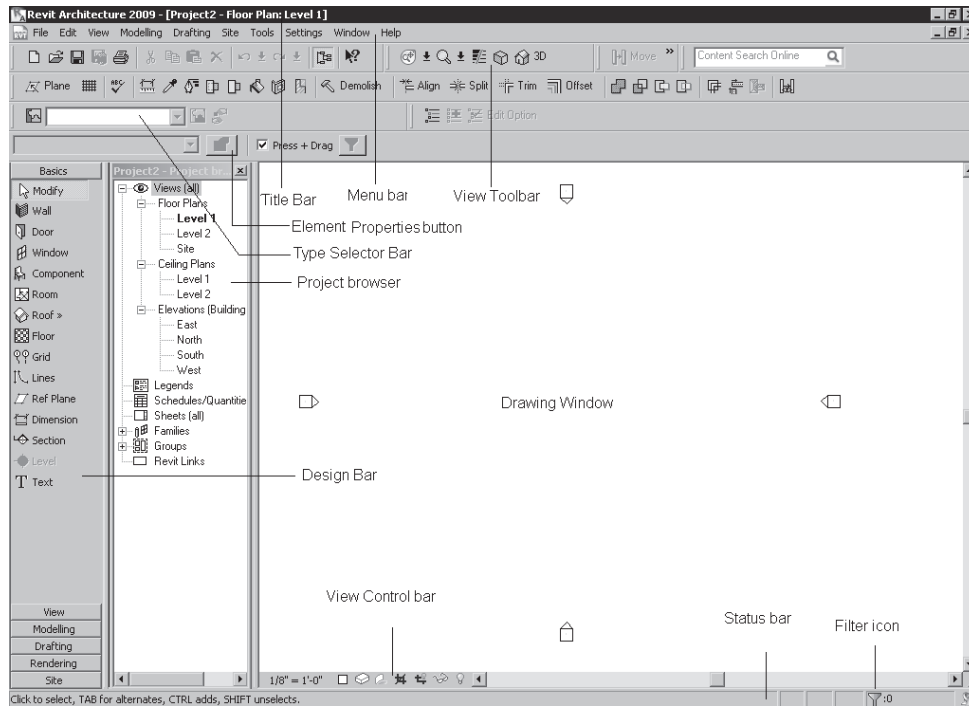


Figure 1-7 Autodesk Revit Architecture 2009 user interface screen

Title Bar

The Title bar, docked on the top portion of the user interface, displays the program's logo, program's name, name of the current project, and the view that is opened in the viewing area. **Project 2- Floor Plan: Level 1** is the default project and view.

Menu Bar

The Menu bar, docked permanently on the top of the Autodesk Revit Architecture interface, displays the entire array of tools under various self-explanatory headings, as shown in Figure 1-8. The headings indicate the type of tools available in its menu. For example, the **View** menu contains the commands related to viewing the project. You can choose the desired menu by clicking on the heading. The corresponding menus, also called the drop-down menu options, are displayed directly under the heading. You can invoke a tool from the drop-down menu by clicking on it.

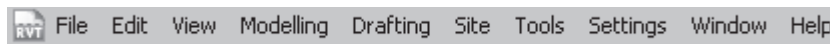


Figure 1-8 The Menu bar

Some of the menu items in the drop-down menu bear an arrow toward the right, which indicates that the menu item has a cascading menu containing various options to use the same tool.

For example, to zoom into a portion of the model, choose **View > Zoom > Zoom in Region** from the menu bar to activate the tool, as shown in Figure 1-9.

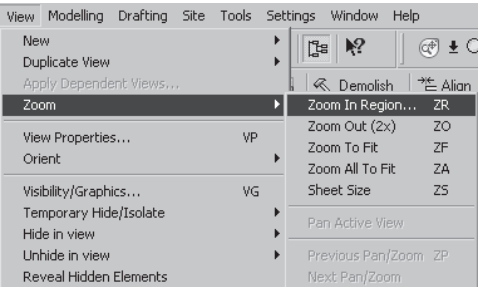


Figure 1-9 Using the cascading menu

Toolbar

The toolbar offers a quick way to access the commonly used tools in Autodesk Revit Architecture. Each design or editing tool, represented by a button bearing an icon or a symbol, can be invoked by clicking on the corresponding button in the toolbar. Toolbars are categorized on the basis of the type of tools they contain. There are six toolbars provided in Autodesk Revit Architecture, **Standard**, **View**, **Edit**, **Tools**, **Worksets**, and **Design Options**. You can activate or deactivate a toolbar by choosing **Window > Toolbar** from the menu bar, as shown in Figure 1-10. You can choose **Text Labels** to display the text labels, along with the tool icons in the toolbars. Various types of toolbars are discussed next.

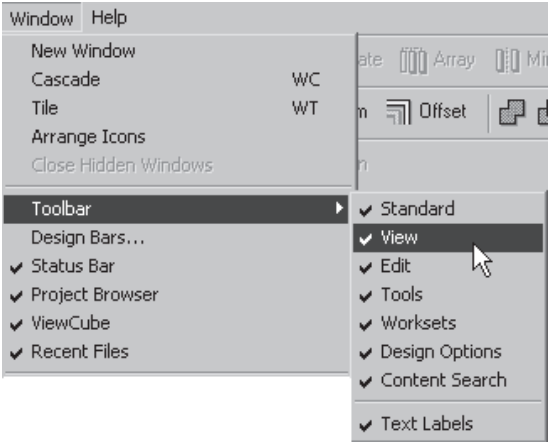


Figure 1-10 Cascading menu for controlling the visibility of toolbars



Note You can rearrange the toolbars and move them around, but they always remain at the top of the screen. All of them are automatically docked and so you cannot have floating toolbars.

Standard Toolbar

The **Standard** toolbar contains standard file management and other frequently used tools, as shown in Figure 1-11.

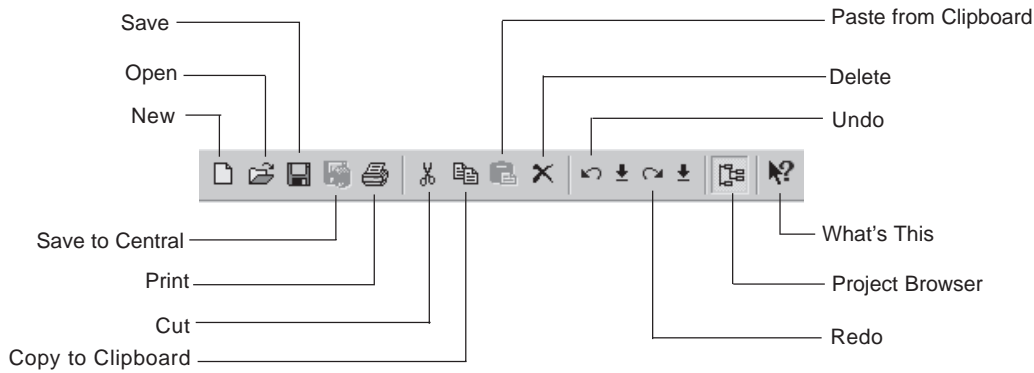


Figure 1-11 The **Standard** toolbar

View Toolbar

The **View** toolbar contains tools that help in navigating and viewing the project, as shown in Figure 1-12.

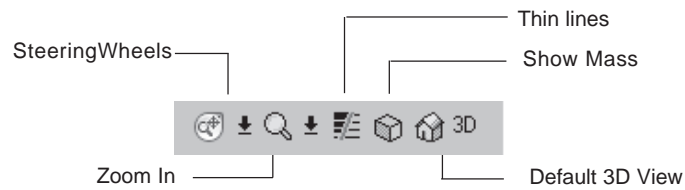


Figure 1-12 The **View** toolbar

Edit Toolbar

The **Edit** toolbar contains editing tools for modifying various project elements, as shown in Figure 1-13. Note that the text labels have been turned off.

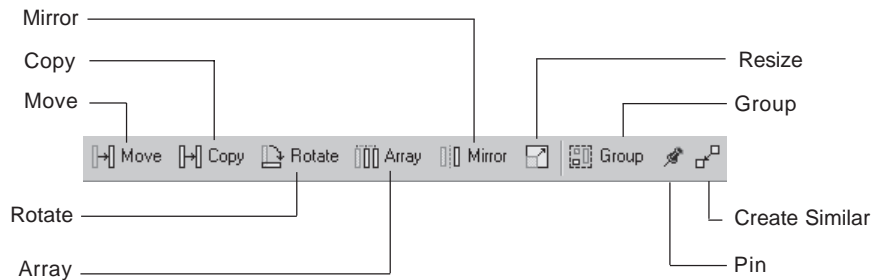


Figure 1-13 The **Edit** toolbar

Tools Toolbar

This toolbar provides the tools that are required to work with and modify various components of the project. The **Tools** toolbar, with the text labels turned off, is shown in Figure 1-14.

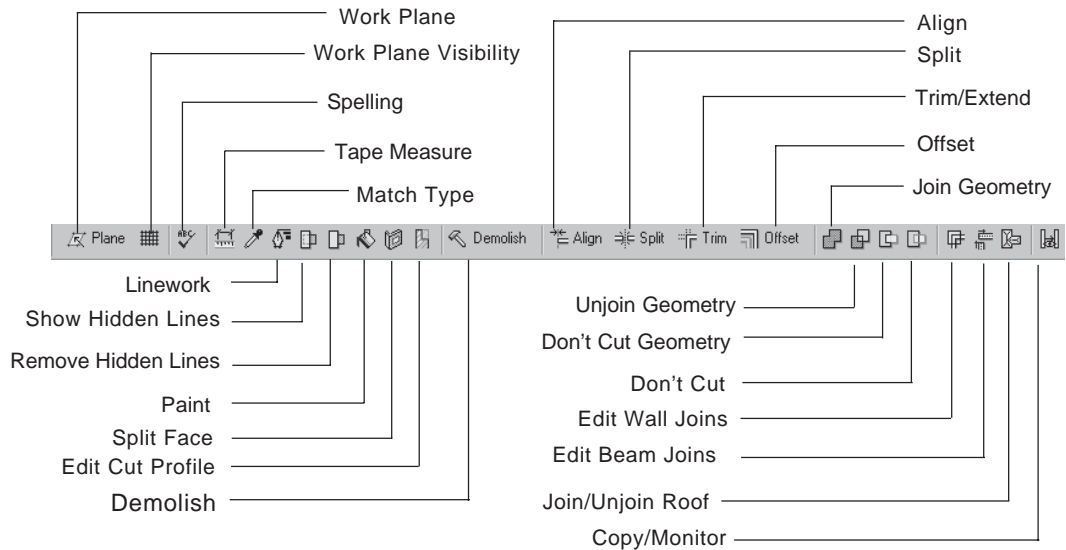


Figure 1-14 The *Tools* toolbar

Worksets Toolbar

Using the **Worksets** toolbar, as shown in Figure 1-15, you can access various tools associated with worksets.



Figure 1-15 The *Worksets* toolbar

Design Options Toolbar

The **Design Options** toolbar, as shown in Figure 1-16, provides easy access to the alternative design options created for the project.

Design Bar

The **Design Bar** is docked on the left of the Autodesk Revit Architecture user interface, as shown in Figure 1-17. It provides easy access to the several parametric building components. It consists of multiple tabs, which can be activated to access the tools within them. By default,

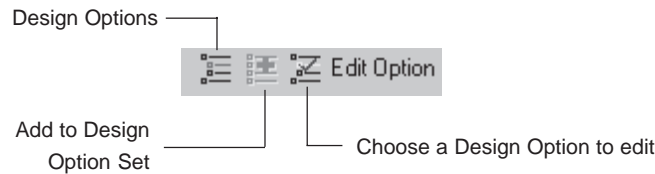


Figure 1-16 The Design Options toolbar

the **Basics**, **View**, **Modelling**, **Drafting**, **Rendering**, and **Site** tabs are available in the **Design Bar**. Other tabs such as **Massing**, **Structural**, **Room and Area**, and **Construction** can be activated by choosing **Window > Design Bar** from the menu bar, as and when required. The description of the ten tabs in the **Design Bar** is given in the table given next.

Basics	Consists of frequently used basic building components such as walls, windows, doors, and so on
View	Consists of tools for creating and displaying new views such as floor plan, elevation, section, and so on
Modelling	Contains a more exhaustive list of detailed building components such as stairs, railing, and so on
Drafting	Includes annotation symbols such as levels, grids, dimension, text, tag, and so on
Rendering	Includes tools for rendering 3D views and coloring 2D views
Site	Consists of common tools for site design such as toposurface, graded region, and so on
Massing	Includes massing related options
Room and Area	Contains area analysis tools such as area plan, color fill, and so on
Structural	Includes tools used for structural design such as structural columns, beams, and so on
Construction	Consists of tools related to site construction such as creating schedule, phases, and so on

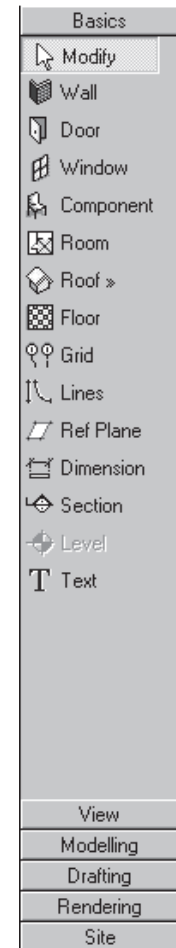
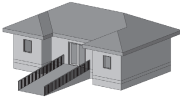


Figure 1-17 The Design Bar



Tip: The **Design Bar** settings are saved and preserved after you exit Revit. All tools in the **Design Bar** are also available in the menu bar. On getting familiar with the Autodesk Revit Architecture software, you might find it easier to access the various design based tools from the **Design Bar**, instead of browsing through the menu bar.

Type Selector Bar

The **Type Selector Bar** is placed above the **Design Bar**. It has a drop-down list of various in-built component types that are already loaded in Revit. Each component family has different types that can be selected from the **Type Selector** drop-down list.

For example, to select a wall type from the list of in-built Revit wall types, invoke the **Wall** tool from the **Design Bar**. Notice that the **Type Selector Bar** is enabled. Click on the down arrow to display Autodesk Revit Architecture's library of the wall types. Click on the appropriate option to select the specific wall type, as shown in Figure 1-18.

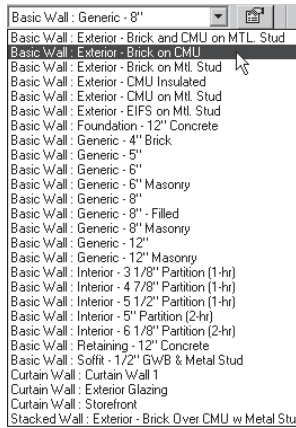


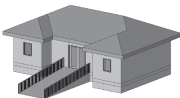
Figure 1-18 The drop-down list of the **Type Selector Bar**



Note
The **Type Selector Bar** gets initialized only after you select a building component. Otherwise, it is not available.

Element Properties Button

After selecting the component type, you can view or modify various properties associated with it. Choose the **Element Properties** button adjacent to the **Type Selector Bar**. This displays the **Element Properties** dialog box, in which you can view or modify various properties of the selected component type.



Tip: You can also create your own component type. Once created, the new components are added to the list of types of that component.

Options Bar

The **Options Bar** provides information about the common parameters of the component type and also the options to create or edit it. It changes appearance according to the type of component selected or being created. You can also modify the properties of the component by entering a new value in the edit box for the corresponding parameter in the **Options Bar**. For example, the **Options Bar** for the **Wall** tool displays the sketching tools to create the wall, as shown in Figure 1-19.



Figure 1-19 The **Options Bar** with different options to create a wall

Drawing window

The **Drawing window** is the actual modelling area, where you create and view the building model. It covers the major portion of the interface screen. You can draw various building components in this area using the pointing device. The position of the pointing device is represented by the cursor. The **Drawing window** also has the standard Microsoft Windows functions and buttons such as close, minimize, maximize, scroll bar, and so on. These buttons have the same function as on any other Microsoft Windows-based program.



Tip: You can open a number of views at the same time. The **Tile** and **Cascade** options in the **Window** menu are used to arrange the views.

Project browser

The **Project browser** is located next to the **Design Bar** and displays the project views, schedules, sheets, families, and groups in a logical, tree-like structure, as shown in Figure 1-20. You can open and manage them using the **Project browser**. To open a view, double-click on the name of the view or drag and drop the name in the drawing window. You can close the **Project browser** or dock it anywhere you like. The **Project browser** can be organized to group the views and sheets based on the project requirement. For example, while working on a large project with a number of sheets, you can organize the **Project browser** to view and access specific sheets.



Note

You can expand or contract the view listing by choosing the '+' or '-' sign, respectively. The current view in the drawing window is highlighted in bold letters. The default project file has a set of preloaded views.

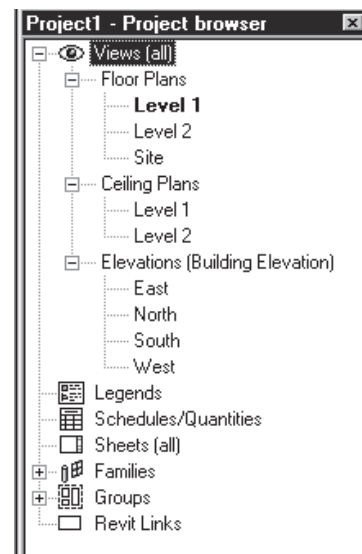


Figure 1-20 The **Project browser**

Status Bar

The **Status Bar** is located at the bottom of the interface screen. When the cursor is placed over the button, the **Status Bar** displays a short summary of the corresponding button or tools. It also displays prompts and messages to help you in using these tools.

View Control Bar

Autodesk Revit Architecture 2009 provides the **View Control** bar at the lower left corner of the drawing window, as shown in Figure 1-21. It can be used to access various view-related tools. The **Scale** button shows the scale of the current view. You can choose it to display the pull-up menu containing the standard drawing scales. You can then select the scale for the current view opened in the drawing window. The **Detail Level** button can be used to set the detail level for the view. You can choose the detail level from the three options, **Coarse**, **Medium**, and **Fine**. Similarly, the **Model Graphics Style** button enables you to set the display style, the options for which are **Wireframe**, **Hidden Line**, **Shading**, and **Shading with Edges**. You can access the **Shadows**, **Crop Region**, and **Hide/Isolate** tools directly from the **View Control** bar or from the **View** menu in the menu bar.

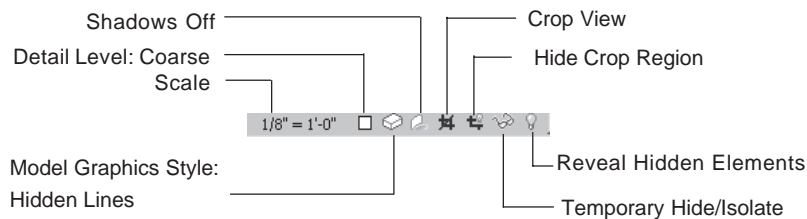


Figure 1-21 The View Control bar

Keyboard Accelerators

In Autodesk Revit Architecture, accelerator keys have been assigned to some of the frequently used tools. The accelerator keys are shortcuts, which you can type through keyboard to invoke the corresponding tool. Accelerator keys corresponding to a tool appear on the right side of the respective tool in the drop-down menus of the menu bar.

For example, the **Open** tool has an accelerator key of Ctrl+O, as shown in Figure 1-22. This means that to invoke the **Open** tool, you can either choose **File > Open** from the menu bar or press and hold the CTRL key and then press the O key on the keyboard. You will learn more about the keyboard accelerators, while learning the respective tools.

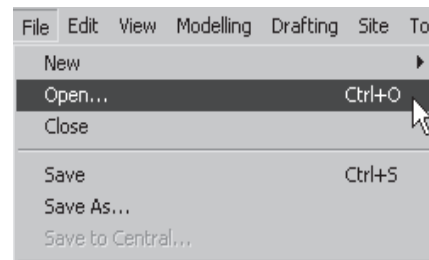
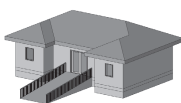


Figure 1-22 Keyboard shortcuts



Tip: As you become accustomed to using Autodesk Revit Architecture, you will find these **Keyboard Accelerators** quite useful because they save the effort of browsing through the menus.

DIALOG BOXES

Certain Autodesk Revit Architecture tools, when invoked, display a dialog box. The dialog box, is a convenient method of accessing and modifying parameters related to that tool. Some options in the drop-down menus of the menu bar display the [...] symbol along with their names. These tools, when invoked, display a dialog box. For example, when you invoke the **Save As** tool from the **File** menu of the menu bar, as shown in Figure 1-23, it displays the **Save As** dialog box, as shown in Figure 1-24.

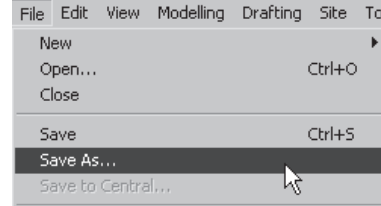


Figure 1-23 Invoking the **Save As** dialog box

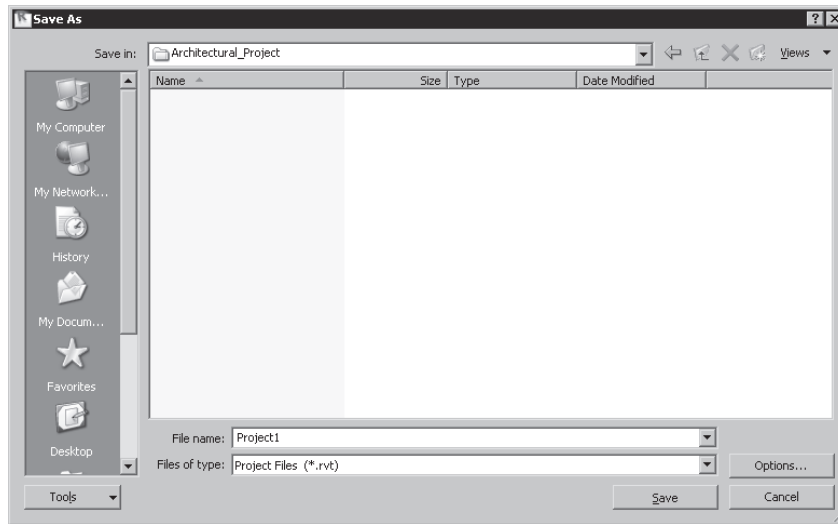
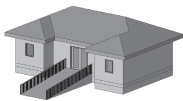


Figure 1-24 The **Save As** dialog box

A dialog box consists of various parts such as the dialog label, radio buttons, text or edit boxes, check boxes, slider bars, image box, and tool buttons, which are similar to the other windows-based programs. Some dialog boxes contain the [...] button, which displays another related dialog box. There are certain tool buttons such as **OK**, **Cancel**, and **Help**, which appear at the bottom of most of the dialog boxes. The names of the buttons imply their respective function. The button with a dark border is the default button.



Tip: The **Help** and '?' buttons can be used to provide assistance related to the contents of the dialog box.

MULTIPLE DOCUMENT ENVIRONMENT

This feature, which allows you to open more than one project at a time in a single Autodesk Revit Architecture session, is very useful when you want to work on different projects simultaneously, and make changes with reference to each other.

Sometimes, you may need to incorporate certain features from one project into another. With the help of multiple project environments, you can open both the projects and then use the **Cut/Copy** and **Paste** tools from the **Edit** menu to transfer certain components from one project to another. These editing tools can also be invoked using the CTRL+C and CTRL+V keyboard shortcuts.

To access the opened projects, left-click on the project name in the **Window** menu, as shown in Figure 1-25. Like other Microsoft Windows-based programs, you can select and view the opened projects using the **Cascade** and **Tile** options from the **Window** menu in the menu bar. The cascaded view of the projects is shown in Figure 1-26.

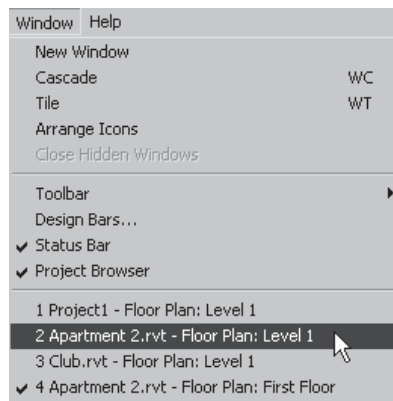


Figure 1-25 Accessing the opened project using the **Window** menu

INTEROPERABILITY OF REVIT ARCHITECTURE

The models or geometries created in Revit Architecture can be easily exported to AutoCAD based programs such as 3ds Max and VIZ in DWG file format. This enables you to visualize and create photo realistic exterior and interior renderings for your project designs. You can also transfer your drawings from Revit Architecture to Google SketchUp to visualize your projects in a better way. Revit Architecture 2009 comes with Google Earth plugin for publishing Revit models to it.

Revit Architecture 2009 supports a wide range of industry standards and CAD file formats such as DWF, DGN, DWG, DGN, IFC, SKP, and SAT. For the image files, it supports JPG, TIFF, BMP, PNG, AVI, PAN, IVR, and TGA formats. Besides these, the formats that are supported by Revit Architecture include ODBC, HTML, TXT, gbXML, XLS, and MDB. Revit Architecture is compatible with any CAD system that supports the DWG, DXF, or DGN file formats.

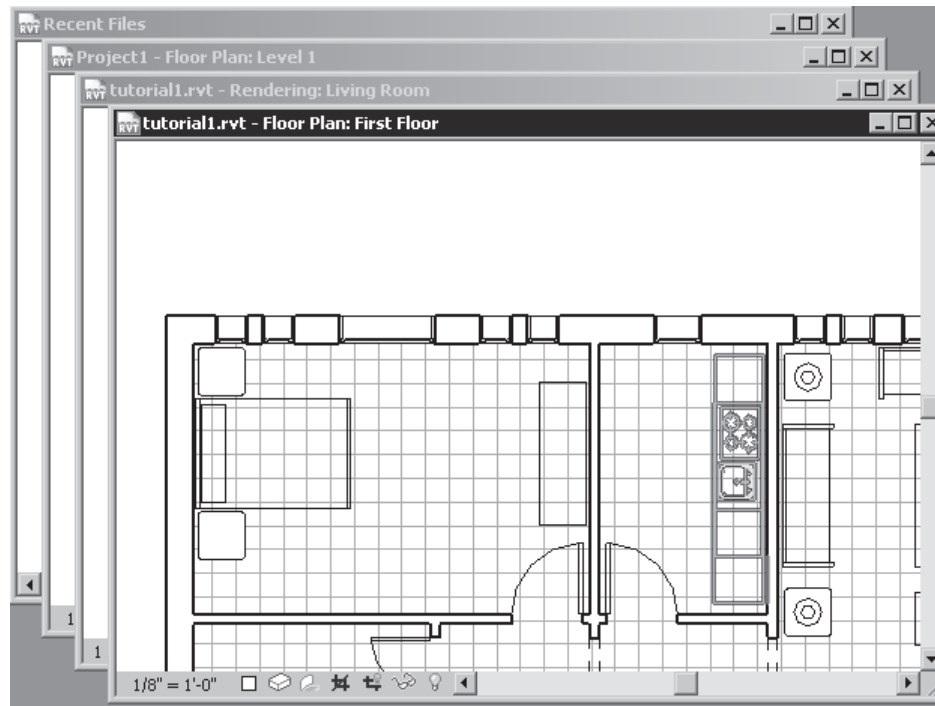


Figure 1-26 Cascading view of active projects

Revit Architecture can import the models and geometries as ACIS solids. This enables the designers to import the models from AutoCAD Architecture and AutoCAD MEP (Mechanical, Electrical, and Plumbing) software and also to link and import 3D information to Revit Architecture thereby making Revit Architecture 2009 an efficient, user-friendly, and a compatible software.

BUILDING INFORMATION MODELLING AND REVIT ARCHITECTURE 2009

Building Information Modelling (BIM) is defined as a design technology that involves creation and use of coordinated, internally consistent, and computable information about the building project in design and construction. BIM covers the spatial relationships, geographic information, quantities, and properties of building components. Using this technology, you can demonstrate the entire lifecycle of a building starting from the process of construction, facility operation, and information about quantities and shared properties of the elements. BIM enables the circulation of the virtual information model from the design team to the contractors and then to the owner thereby adding changes and their knowledge to update the model at each stage of transfer. The ability to keep the information up-to-date and available in an integrated digital environment enables the architects, owners, builders, and engineers to have clear overall vision of the project before the actual construction. This enables them to

make better and faster decisions as well as improve the quality and profitability of the projects. Autodesk Revit Architecture 2009 is a specially designed platform based on BIM. Revit Architecture 2009 is the best example of the BIM tool. Revit Architecture's parametric model represents a building as an integrated database of coordinated information. In Revit, change anywhere is change everywhere. Any change made in your project at any stage is reflected in the entire project and due to the parametric behavior of elements, the project is updated automatically according to the changes made anywhere in the project. Also, the integration of Revit Architecture with the in-built available commercial tools such as solar studies, material takeoffs, and so on greatly simplifies and reduces the time consumed by these analysis, thereby enabling faster decisions.

AUTODESK REVIT ARCHITECTURE HELP

Autodesk Revit Architecture provides help on its various tools and method of their usage. Choose the **Help** menu in the menu bar to display the drop-down menu of the help options, as shown in Figure 1-27. The help options are discussed next.

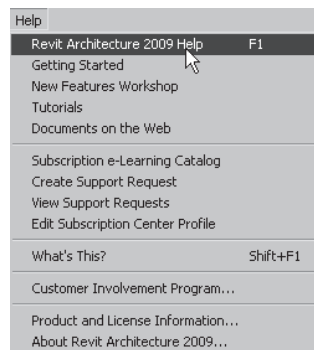


Figure 1-27 Accessing the **Help** menu

Revit Architecture 2009 Help

On choosing **Help > Revit Architecture 2009 Help** from the menu bar; the **Revit Architecture Help** dialog box will be displayed, as shown in Figure 1-28. You can access help on various tools and other aspects of the program in a number of ways by using the F1 key. The four tabs provided in this dialog box to facilitate your search are discussed next.

Contents Tab

The **Contents** tab is the default tab and it displays the help topics, organized by titles, pertaining to different sections of Autodesk Revit Architecture such as **Using Help**, **Getting Started**, **Projects**, and so on, as shown in Figure 1-29. To select a title, click on the corresponding book icon or choose the plus sign on the left. The icon becomes an open book with a '-' sign and a list of topics associated with that category is displayed. Click on the '+' sign to expand the subheadings, until you reach the help topic that has a question mark '?' displayed in it. Select the topic to display information about it in the display window present on the right side of the dialog box.

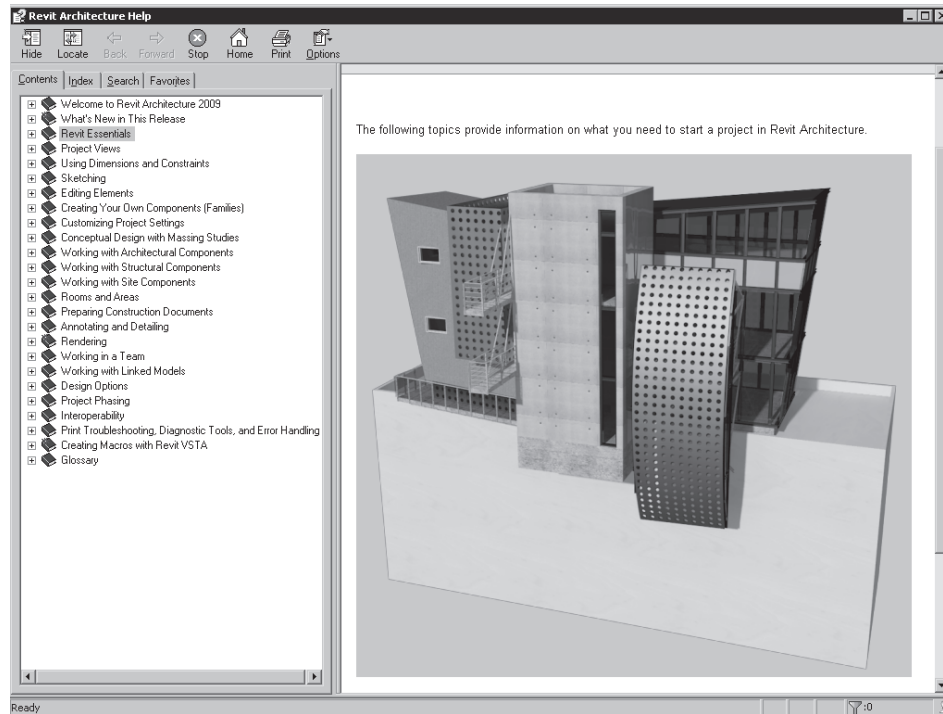


Figure 1-28 The Revit Architecture Help dialog box activated

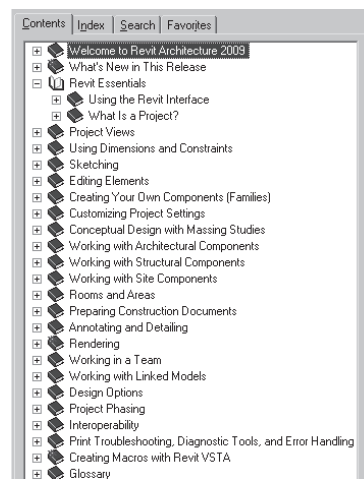


Figure 1-29 The Contents tab

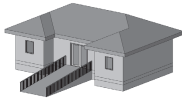
Index Tab

The **Index** tab displays the complete index of tools and options of Autodesk Revit Architecture in an alphabetical order. To search information about a tool or option, type the tool name or any related word in the edit box. As you type the letters for the search, the listing in the list

area keeps on changing, displaying the possible topics with those initials. If Autodesk Revit Architecture finds any reference to the word entered, it automatically highlights it in the list area. You can choose the **Display** button below the list area to view information on a specific subject.

Search Tab

You can access the help files related to certain keywords using the **Search** tab. Three check boxes, **Search previous results**, **Match similar words**, and **Search titles only** have been provided to narrow-down the search to a specific topic. On typing the keyword in the edit box, you can select one or more of these options and then choose the **List Topics** button. A list of help files related to the entered keyword appears. Choose the topic from the **Select Topic** list and then choose the **Display** button to view its help. The listed topics for the typed word appear with ranks in the select topic list. A search is ranked according to the number of matching words in that topic.



Tip: You can also search for a topic using wildcards (*, ?) and boolean characters (AND, OR, NEAR, NOT). These boolean characters can be accessed by choosing the right arrow next to the edit box.

Favorites Tab

Using the **Favorites** tab, you can create a list of the topics that you need to access frequently. The **Current Topic** edit box displays the topic that you last viewed in any other tab of Autodesk Revit Architecture Help. Use the **Add** button to include that title to your list of favorite topics. Similarly, you can add other topics to this list and create an information database. You can remove a topic from the list by using the **Remove** button. You can also choose the **Display** button to view the help files related to each topic.



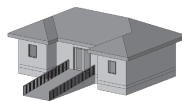
Note

The list of favorite topics created by you is saved at the time of quitting the Autodesk Revit Architecture session and becomes available in the future sessions for your reference.

Context Sensitive Help

If you require help specific to a selected tool option or a dialog box, Autodesk Revit Architecture provides several options to access the relevant information. Many dialog boxes contain the **Help** button that can be used to view help on that dialog box and related topics. If there is no **Help** button, you can press the F1 key, while the dialog box is open, to access the related information.

To inquire about a menu option or a tool button, choose the **What's This** button from the **Standard** toolbar. A '?' symbol gets attached to the cursor. Click on the option or button on which you want help. You can also press the SHIFT+F1 keys to access this symbol.



Tip: Tooltips appear when you rest the cursor over any tool icon in the toolbar. The name of the tool appears in the box, assisting you to identify each tool icon.

Getting Started

To take a quick lesson of how Autodesk Revit Architecture works, choose **Help > Getting Started** from the menu bar. This opens a PDF file that takes you through a simple exercise to help you understand how the basic tools work in Autodesk Revit Architecture. It provides quick assistance on how to open a project and use some of the common tools. It also displays a preview of various concepts and components used in the program.

Tutorials

The tutorials in this book help you understand the basic tools and options used in Autodesk Revit Architecture 2009. The imperial tutorial exercises and datasets are available on the Autodesk website. To access them, you need to download the tutorial files and datasets from the website. To do so, choose **Help > Tutorials** from the **Help** menu. The **Revit Architecture Imperial Tutorial** window will be displayed, as shown in Figure 1-30. Follow the instructions displayed in the window to access the Revit tutorials and datasets. Once you have downloaded the tutorials and datasets from the website, the **Revit Architecture 2009 Imperial Tutorial** window will be displayed every time you access the tutorials. **Revit Architecture 2009 Imperial Tutorial** window has many topics such as **Getting Started**, **Developing Your Designs**, **Documenting Your Projects**, and so on. It has three tabs: **Context**, **Search**, and **Favorites** to help you access the relevant information. These tabs have functions similar to the **Revit Architecture Help** dialog box tabs.

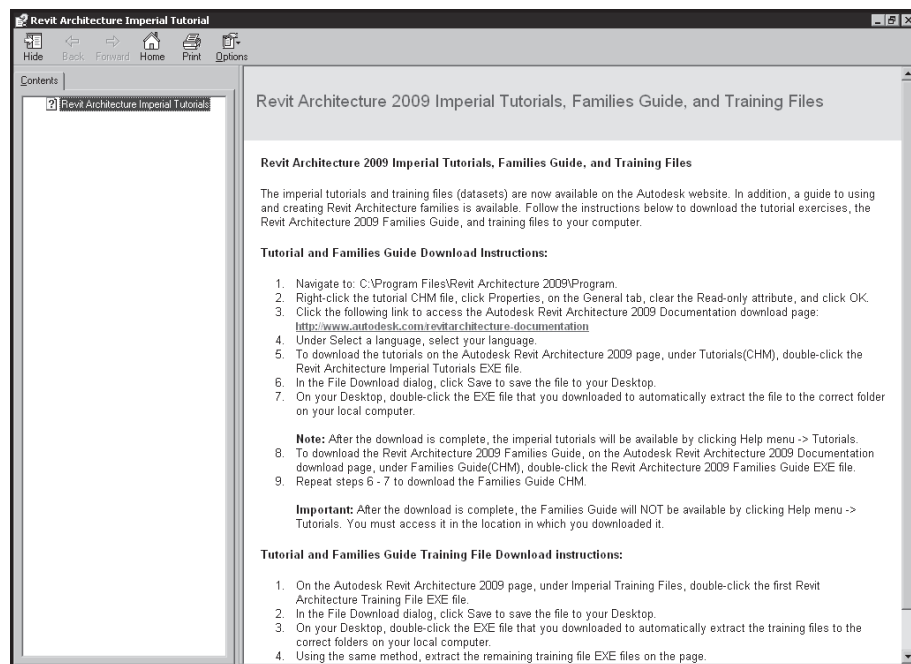


Figure 1-30 The Revit Architecture Imperial Tutorial window