

Revit[®] Architecture 2009 Feature Summary

This Revit[®] Architecture 2009 Feature Summary provides an overview of the new functionality.

Here are the main themes with some of the new features and enhancements that were made in the Revit Architecture 2009 software:

Improved Design and Visualization Tools

- Rendering Enhancements
- Swept Blend
- Curved Edges in Sloped Slabs
- Mass Floor Area and Volume

Better Control and Flexibility

- Room Enhancements
- Dimension Enhancements
- Revision Enhancements
- Phasing Graphic Override

Improved User Interaction

- Recent Files Window
- View Navigation Tools
- Warning Enhancements
- Granular View Templates

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Improved Design and Visualization Tools

Rendering Enhancements

In Revit Architecture 2009, the AccuRender® rendering engine has been replaced with the mental ray® rendering engine. With this change, Revit Architecture 2009 provides an overall higher quality of rendering, with improved lighting effects and more accurate render appearances for materials.

Rendering Workflow Enhancements

The user interface for rendering images has been redesigned. Fewer dialogs, a simplified workflow, and intelligent defaults make it easy for an inexperienced user to generate presentation-quality images with a reduced effort. For more experienced users, Revit Architecture 2009 offers control over several advanced settings to refine a rendered image and achieve the desired effects.

Render Appearance Enhancements for Materials

All materials that ship with the Revit Architecture 2009 software have been assigned new render appearances, which are more accurate and realistic. Material definitions are stored as part of the project file. Render appearances are stored in a local, read-only library.

Lighting Enhancements

Lighting fixtures are now photometric and can be described by IES files, which many manufacturers currently provide. When you render an image, Revit Architecture 2009 uses information in the IES file about the geometric shape of the light source. This technique provides more accurate, realistic lighting in the image.

Plant and Entourage Enhancements

Revit Architecture 2009 provides a greatly enlarged library of RPC (Rich Photorealistic Content) files from ArchVision®.

The library has been expanded to include the following:

- Over 100 trees and plants
- More ArchVision® realpeople™, as well as updates to realpeople that were shipped with previous releases
- Additional office fixtures, furnishings, and other entourage

The new RPC content offers more realistic render appearances. It is stored in a local, read-only library. The user interface for RPC content is simplified to improve workflow.

Swept Blend

A Swept Blend is a new tool for creating Solid and Void Forms. It shares qualities of both a Sweep and a Blend, and facilitates the creation of additional complex shapes in Revit Architecture 2009.

- Similar to a Sweep, the Swept Blend path can contain a non-linear element, such as an arc or spline.
- Similar to a Blend, a Swept Blend allows two separately-defined profiles at each end of the path.

Sloped Pad

Revit Architecture 2009 will allow a pad to be sloped using a slope arrow.

Curved Edges in Sloped Slabs

Sloped and warped slabs support non-linear edges in their boundary sketches. Arcs, ellipses, and splines may be used, and the correct geometry will be created in the shape-edited slab.

Mass Floor Area and Volume

The ability to create mass floors from masses has been enhanced to enable analysis of conceptual designs. When you create mass floors, Revit Architecture 2009 now calculates the area and perimeter of each mass floor and the exterior surface area and volume of the slice of space above it. Mass floors can be tagged individually and scheduled.

Better Control and Flexibility

Room Volume Calculations

Calculation height set by level type

Room calculation height is a property of the Level type rather than a project-wide setting. Multiple Level types can be used in a project, allowing adjustment for specific building conditions.

Volume calculation always to finish face

Volume calculation is always made to the finish face of room-bounding elements. It will correspond to the outline and color fill displayed when a room is selected.

Room bounding property always effects both 2D and 3D calculation

When an element is set as room-bounding, it is used to determine the 2D perimeter, area, and volume of rooms.

Rooms can extend down as well as up

The room volume calculation engine looks down as well as up from the measurement height. Rooms have a Base Offset parameter, defining the limit of the lower boundary. This can be used to limit the extent of rooms with no floor, or prevent rooms from leaking through floor openings.

Select Rooms in Sections and Elevations

Rooms can be selected in section and elevation views that cut through them. Once selected, their properties can be modified.

Room Graphics in Section and Elevation views

Accurate boundary display

The boundary of rooms selected in section or elevation views represents the boundary being used for volume calculation. If the measurement height is set to a value other than Automatic, a dashed line will indicate the measurement height.

Easier control of vertical extents for rooms

When a room is selected in a section or elevation view, the top and bottom limits are displayed as lines if they are beyond the geometric extent of the room. The limits can be modified graphically with drag controls or by specific numeric input into temporary dimensions.

Color fill rooms in section and elevation views

As in plan views, rooms can be colored in section and elevation views by assigning a color scheme to the view. The color fill will extend to the boundary shown when the room is selected. Color scheme legends can be placed in section/elevation views. Color schemes are project-based, so the same scheme can be used for plan views and section views.

Additional Room-Bounding Elements

Building pads can now be marked as Room Bounding, in addition to walls, roofs, curtain systems, and columns.

Rooms Can Be Bound by Elements in Linked Models

Geometry from linked models can be used to define rooms by setting the link's room bounding property. If set on, all room bounding elements in the link will be room bounding in the host project. If a bounding link is unloaded or not found, the rooms it defines will continue to exist as unenclosed rooms until the link returns.

Rooms Can Be “Unplaced”

When a room is deleted from a model view, it will not be deleted from the project. It will remain as an unplaced room. The room continues to display in schedules and is available when rooms are placed. Its area will show as Not Placed and its volume as Not Computed until it is once again placed in the model. To remove the room completely, delete it from the schedule.

Tag All Not Tagged for Rooms and Areas

The Tag All Not Tagged command is available for rooms and areas in any 2D view.

Move Room Tags in All Views after a Room Is Moved

When a room is moved, room tags may be left outside their rooms in many views. In Revit Architecture 2009, the system will offer to move room tags for that room in all views.

Enhanced Revision Numbering and Schedules

- Revisions can now be numbered alphabetically, numerically, or as a combination of both.
- Revisions can build a table from the bottom-up, not just top-down.
- Revision schedules can be rotated on a sheet.

Dimension Overrides

Dimensions can be overridden with text (but not with another dimension value). Also, users can add text strings above, below, before and after the dimensions.

Dimension to Intersections

Dimensions can now be drawn to the intersection of lines, references, and walls.

Dimension to Circle, Arc, or Ellipse Centers

Linear dimensions can now be created referencing circle, arc or ellipse centers.

Dimension Text Formatting

Dimension text has the same formatting options as other text. It is now possible to adjust the width factor and set the text as underlined, italicized, and bold.

Baseline Dimensions

Revit Architecture 2009 provides a new dimension style to allow for the automatic stacking of a dimension string.

Ordinate Dimensions

Revit Architecture 2009 provides a new dimension style for a string of dimensions to report the distance from a single origin.

Ability to Tag Railings

Railings can now be tagged with a tag set to the category Railing. Behavior is similar to pre-existing tag functionality for doors, windows, or walls.

Unit Formatting Enhancements

- A new value “Currency” has been added to the Units drop-down, where a currency symbol can be specified for Number and Cost fields.

- The previous “Decimal symbol” drop-down in the Project Units dialog has been replaced with a new combo box named “Digit/decimal format.” This will show a preview of possible digit grouping and unit delimiters.
- The "Suppress spaces" option has been added to the Format dialog. Select this option to remove all spaces around the dash from length strings.
- The "Suppress trailing 0's" option has been added to the Format dialog.

Slope Unit

A new unit format has been created to report slope. A slope is defined as the angle to a horizontal plane, and it can be reported in several different formats, including angle, ratio, and percentage.

Gaps in Grids

Grids have a new type parameter titled "Center Segment" with three possible values: "Continuous", "None", and "Custom". This parameter controls whether the grid line is displayed as a single line segment, two segments with a gap, or three segments.

Grid Bubble Default Placement

Two parameters “Symbol At End 1” and “Symbol At End 2” have been renamed to “Plan View Symbols At End 1” and “Plan View Symbols At End 2”, to clarify that they only apply to the default placement of grid bubbles in horizontal views.

A new type parameter titled "Non-Plan View Symbols" has been added to grids. This parameter has four possible values ("Top", "Bottom", "Both", and "None"), which control the default placement of grid bubbles in elevation views.

All parameters specify defaults and can be overridden for each instance.

Linked Views in Section, Elevation, and 3D

Prior to 2009, Revit Architecture only supported the ability to control the display of linked views in plan views. This functionality has been expanded to work in section, elevation, and 3D views.

Phase Mapping Between Linked Projects

For correct view generation and room definition in multi-phase projects, each phase of the host model should match a specific phase in links. To align phases, each link has a Phase Map as a type property. By default, Revit Architecture attempts to map phases based on name matching, then on chronology. When names are inconsistent or the number of phases in the link is different than the host, the mapping can be changed to define the desired relationship.

Phasing Graphic Overrides Improvements

Phasing graphic overrides now use an interface consistent with other functionality, like Visibility/Graphics and View Filters. It is now possible to override:

- Line styles: color, weight, pattern (for both cut/projection)
- Fill patterns: visibility, color, style (for both cut/surface)

Material now affects ONLY render appearance and transparency.

Linework Additional Edge Types

Linework now supports the following:

- Edges in linked Revit files, when displayed “By Host”
- Polylines (generally from imports)
- Projection edges caused by plan regions

View Scale Enhancements

New hard-coded view scales have been added. Imperial templates now have 1”=0’-1” and 1”=100’-0”. Metric templates have 1:1.

The choice “Custom” has been enhanced. Revit Architecture 2009 enables users with the ability to activate a user-defined custom display name for custom ratios.

Cut at the View Depth Plane

Plans, sections, and elevation views can now be cut at the view depth (plans) or far clipping plane (sections and elevations). There is an option to show a line at the cut location.

Mirror Project

Revit Architecture 2009 provides the ability to mirror a project. This command will mirror not only the model geometry, but the annotation in views as well.

Surface Patterns on Additional Surfaces

A restriction limiting fill patterns to planes and cylinders has been removed.

Multi-Parameter Labels

All labels have been improved to allow a single label to report the value of several parameters. This provides greater flexibility in the creation of tags.

Beam Joins

The symbolic representation of steel, timber, and precast beams has been improved when multiple beams form an end join. The symbolic representation will show one of the beams not cutting back. An editor has also been provided to give greater flexibility over the end join.

Beam Join Elevation Control

When you select multiple beams that share an end control, a new elevation text control allows the end elevations of all the beams to be modified at one time.

Structural Framing Tag Family Improvements

Structural framing tag families have a new family parameter that changes the way the tag is attached to the beam/brace. These tags have the ability to follow the attachment point. The attachment points are defined as Start, Middle and End of the beam/brace.

Structure Tagging Enhancements

Many structural elements allow you to specify whether the created element is tagged on creation from the Options Bar.

Truss and beam systems have a new parameter “Tag New members in view,” which can be set to an eligible view or “None” to prevent new members from being tagged.

Foundation Creation Improvements

There is an option to create multiple isolated foundations by selecting intersecting grids, or by picking structural columns. Similarly, unconnected walls can be selected to add wall foundations.

Wall Foundation End Controls

Controls are available at the end of wall foundations. These allow dragging wall foundations past wall ends and adjusting joins to other wall foundations.

Spot Elevation Improvements for Structural Framing

Improvements allow the placement of spot elevations on beams in a coarse level of detail. The spot elevation points to the end of the symbolic representation while reporting the end of the location line (or working point).

Spot Elevation Improvements

Improvements allow the reporting of the top and bottom elevations of the element where the spot elevation has been placed. Additional control has been provided to the alignment of the text with respect to the leader. Control has been given to turn on or off the shoulder of the leader. Also, the spot elevation has the ability to rotate with any component that is defined with a location line.

Spot Coordinate Improvements

The spot coordinate has been improved to allow the reporting of the elevation, along with its coordinate location.

Concrete Modeling and Drawings Enhancements

Improvements in concrete modeling and drawing make construction documents easier and faster to create.

Improved Concrete Beam Joins

Improvements have been made to the methods used to join concrete beams to one another. More realistic geometry will be created for a majority of the standard join configurations. Common join configurations (2-, 3-, or 4-way) and common profiles of concrete members are supported, and more realistic geometry will be created automatically.

Automatic Joins

Concrete beams and columns will now automatically join to walls and foundations when their geometries overlap. Foundation elements will also automatically join to walls and other foundations.

Hidden Lines Improvements

When using the Structural discipline, additional edges will appear in hidden line mode. For the most part, edges of joined elements, such as the end of a shallow beam framing into a deeper beam, will show as hidden. More cases of beam edges hidden by the beam itself will also display as hidden.

Publish to DWFx

Revit Architecture 2009 publishes to DWFx.

DWF files published to the XPS specification can be automatically opened and viewed using the Microsoft® XPS Viewer built into Windows® Vista, without any plug-ins or other downloads.

For Windows® XP users, this same DWFx support can be achieved via a download of the Microsoft XPS Viewer (<http://www.microsoft.com/whdc/xps/viewxps.mspx>).

Improved User Interaction

Recent Files Window

Upon start-up Revit Architecture 2009 displays a graphical list of recently edited files and families, and links to Help, Tutorials, and content. The new start-up process provides quick access to the items of high importance. Clicking an image will open the associated file.

File Navigation Dialogs

File Open and Save dialogs have been redesigned to use a common layout and to be more consistent with other Autodesk products. To achieve this, some workflows, such as specifying family types on load, have been redesigned to be more task-focused.

View Navigation Tools

ViewCube™

Located in the upper-right corner of the screen, Autodesk's patent-pending ViewCube™ helps users switch between different viewpoints without confusion.

The ViewCube provides the following benefits:

- Simple way to view desired areas without direct manipulation of the 3D camera.
- A Home button that enables quick return to a recognizable viewpoint.
- An intuitive interface that helps users understand 3D objects and 3D space, making Autodesk 3D applications more approachable

SteeringWheels™

Based on Autodesk's patent-pending Tracking Menus technology, SteeringWheels™ technology enables users to navigate safely and smoothly around objects and within interior and exterior spaces. SteeringWheels technology brings together a specific set of commands that remain conveniently close to the user's cursor.

- Convenient, intuitive pans, zooms, tumbles, and more, without the need for unwieldy menus.
- Easy, safe navigation controls for novice 3D users. No more getting lost in 3D space.
- Object detection and limited zoom keep users in control.
- Advanced users quickly master walk-throughs for better project planning and client reviews.
- Mini Wheels offer advanced navigation with a small visual footprint, which is the size of a cursor.
- Rewind tool enables easy viewing of a compressed thumbnail history of your navigation. Dynamically retrace your movement history.

Keynote Legend Re-Categorization

Keynote legends are now considered to be another type of legend view and display under the Legend branch of the Project Browser. The View > New menu was also re-organized to group similar items, such as Legends and Keynote Legends.

Snap Overrides in Context Menu

Snap overrides are now listed under a "Snap Overrides" menu, accessible from the right-click context menu during element creation.

Close Snap Override

A new snap override has been created to provide an ability to snap to the beginning of a chain of two or more lines. The snap is titled “Close” and displayed in the new context menu. It can also be invoked using the SZ key shortcut when an eligible chain of two or more segments is created or detected.

Show Warnings Related to Element

When an element that is associated with a warning (such as overlapping walls or duplicates in same location), the element will display a small warning icon on the Options Bar. Click the icon to invoke the Review Warnings dialog, where detail about the warning can be reviewed and associated elements listed.

Export Reviewable Warnings

The Review Warnings dialog (Tools menu > Review Warnings) has a new Export command. This command will export an HTML file containing the project name, date/timestamp, and a list of all reviewable warnings and associated elements with their IDs.

Selection Count

The filter dialog has been enhanced to list the number of elements in each category, as well as a total element count. This dialog is also now resizable. The total element count can also be viewed from outside the Filter dialog in the status area next to the filter icon. The filter icon doubles as a shortcut to the Filter dialog.

Granular View Templates

View properties can now be applied selectively using view templates.

Screen Sized Temporary Graphics

Temporary graphics are now drawn relative to the screen, not the model, so they appear the same at all zoom factors.

Graphical Representation while Shape-Editing Sloped Slabs

While editing sloped and warped slabs, the graphical representation of points and edges has been modified to be more refined and usable. New controls appear when the slab is selected, or while in the Sub-Element tools.



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