

Revit® Structure 2009 Feature Summary

This Revit® Structure 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 on Revit Structure 2009 software:

Enhance structural modeling capabilities

- Concrete reinforcement
- Beam cutbacks
- Foundation improvements
- Sloped slab enhancement

Automate drafting tasks for construction documents

- Concrete drawings
- Beam tags
- Graphical column schedule
- Dimension improvements

Improve usability and product experience

- 3D navigation
- Visibility tools
- Selection count
- Publish to DWFx

Improved Documentation

Revit Structure 2009 software includes an improved New Features Workshop which is an interactive animation that combines simple text, graphics and animations to help you learn the software more quickly and effectively. This release also includes an online Getting Started Guide that now includes several new animations providing each user with the ability to watch each exercise being performed for a different learning experience.

The tutorials have been updated with a new Express Workshop tutorial that provides the user with more concise, easy to follow exercises to quickly learn Revit Structure. Also, many new exercises have been added to demonstrate the latest features such as; reinforcement modeling, improved beam tags and spot dimensions, graphical column schedule improvements, creating a custom rebar shape, and the ability to create a warped structural concrete slab on a curved surface.

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Enhance structural modeling capabilities

Reinforcement Modeling

Improvements in reinforcement modeling make rebar modeling easier to perform and manage.

Rebar Shapes

Rebar now take on specific shape characteristics. Using actual shape definitions provided by the local codes, with the ability to create custom definitions using loadable families, allows for easier communication with reinforcement fabrication and installation. The shapes are fully parameterized giving the ability to modify the shape with onscreen controls.

Rebar Placement

Rebar placement editors have been modified to help make placing the new shapes easier. Graphical rebar shape browser has been provided to reduce the need to memorize shape names. Rebar shapes will auto expand to rebar cover references on placement.

Rebar Cover

Rebar cover has been added to concrete elements. These cover references provide a boundary that the rebar will attach with. Modification of this boundary will force the rebar to adjust to maintain the attachment. Rebar cover references can be adjusted on a preface level using the rebar cover editor. The references are visible during placement and in the rebar cover editor.

Rebar Improvements

Rebar can now be viewed as a solid shape in 3D views, allowing for visual collision detection and rebar connection presentations.

Rebar hook definitions have been improved to allow better scheduling.

Area and Path Reinforcement Improvements

Area and Path Reinforcement have been improved to understand Rebar Cover.

Area Reinforcement now contains two new instance parameters: Additional Top/Exterior Offset, Additional Bottom/Interior Offset. Such parameters provide an additional offset from the rebar cover to allow placing multiple rebar elements together in different layers.

Path Reinforcement now contains a new instance parameter: Additional Offset. Such parameter provides an additional offset from the rebar cover to allow placing multiple rebar elements together in different layers

Beam Joins

Steel, timber, and precast beam's symbolic representation has been improved when multiple beams form an end join. Now 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 multiple beams are selected that share an end control, a new elevation text control will be provided

allowing the end elevations of all the beams to be modified at one time.

Foundation Creation Improvements

There is now an option to create 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 now available at the end of wall foundations. These allow dragging wall foundations past wall ends and for adjusting joins to other wall foundations.

Metal Deck in Sloped Slabs

Slabs with Metal Deck will now be correctly shown in Section and Elevation if the slab is sloping or warping.

Curved Edges in Sloped Slabs

Sloped and Warped Slabs now support non-linear edges in their boundary sketch. Arcs, Ellipses and Splines may be used and the correct geometry will be created in the shape-edited slab. Control over the Curved Edge Condition has also been added to support a variety of conditions.

Graphical Representation while Shape-Editing Sloped Slabs

While editing Sloped and Warped Slabs, the graphical 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.

Model Text

Model Text feature is now accessible in "Architectural" Design Bar and "Modelling" Menu Bar.

Swept Blend

The interface for this new command is similar to Sweep except user can define two profiles rather than one. Profiles are fixed to the ends and can't be dragged as can be done with regular sweeps.

Site Tool - Sloped Pad

Revit Structure now allows the Site tool - Pad to be sloped using a slope arrow.

Automate drafting tasks for construction documents

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, 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 slabs, walls, and foundations when their geometries overlap. Foundation elements will also automatically join to slabs, walls, and other foundations.

Hidden Lines Improvements

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.

Structural Framing Tag Family Improvements

Structural Framing Tags Families have been given a new family parameter that changes the way the tag is attached to the beam/brace. These tags now have the ability to follow its attachment point. The attachment points are defined as Start, Middle and End of the beam/brace.

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 Annotation Tool

This new tool will speed the annotation of framing plans. It builds off the Tag-All-Not-Tagged framework by providing a specific tool for beams in Plan views. The tool will place structural framing tags and spot elevations on beams.

Spot Elevation Improvements for Structural Framing

Improvements allow the placement of Spot Elevations on beams in 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 that the Spot Elevation has been placed on. 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 and 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.

Structural Elements Tagging Enhancements

Many structural elements now allow user to specify if the created element is tagged on creation from the option 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.

Graphical Column Schedule Improvements

Columns that are not centered on a grid intersection are now included in the Graphical Column Schedule. These can be shown or hidden using an instance parameter of the Graphical Column Schedule View.

Graphical Column Schedule levels elevation values now respect and match the Elevation/Section view Level Type “Elevation Base” setting. (Note: The new behavior will not affect existing drawings and will occur only when generating a new Graphical Column Schedule in Revit Structure 2009.)

Baseline Dimensions

New dimension style to allow for the automatic stacking of a dimension string.

Ordinate Dimensions

New dimension style for a string of dimensions to report the distance from a single origin.

Dimension Overrides

Dimension strings can now be overridden with descriptive text, not a numeric value.

Dimension to Intersections

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

Dimension to Circle, Arc or Ellipse Centers

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

Dimension Text Formatting Enhancements

Width Factor, Underline, Italic and Bold can now be applied to text of all dimension styles.

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 report in several different formats including angle, ratio and percentage.

Enhanced Revision Numbering and Schedules

Revision sequences can now be either a numeric or alphabetic and can build a table from bottom-up, not just top-down. Revision Schedule can be rotated on the sheet.

Gaps in Grids

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

Grid Bubble Default Placement

Two parameters “Symbol at End 1” and “Symbol at End 2” have been renamed to “Plan View Symbols End 1” and “Plan View Symbols End 2”, to clarify that they only apply to horizontal views - controlling the default placement for the type.

A new type parameter drop down titled "Non-Plan View Symbols" has been added to grids. This parameter controls the default placement of grid bubbles in elevation views.

Improve usability and product experience

Apply Line Load by picking Host on Curved Beam

Curved Beams can now be used as host for Line Load.

Create Line Boundary Conditions on Curved Beam

Line Boundary Conditions can now be used on Curved Beams.

View Navigation Tools

ViewCube™

ViewCube™ tool helps users switch between different viewpoints and easily manipulate the point of view in a 3D scene.

SteeringWheels™

SteeringWheels™ tool enables users to navigate safely and smoothly around objects and within interior and exterior spaces.

Linked Views in Section, Elevation, and 3D

Linked views functionality has been expanded to work in section, elevation, and 3D views.

Linework on additional edge types

Linework now supports: Edges in linked rvt files, when displayed "By Host", polylines, generally from imports, and projection edges caused by plan regions.

Phase mapping between linked projects

For correct view generation in multi phase projects, each phase of the host model should match a specific phase in links. To align phases, each link has a new "Phase Mapping" parameter in Type Properties.

Phasing Graphic Overrides

Graphic overrides for Phasing can optionally be turned off. For each phase, "No Override" can be selected that prevents elements with the associated phase parameter to appear with graphics defined in other sources (i.e. Visibility/Graphics or Object Styles).

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.

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.

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 “Decimal symbol/digit grouping:” This will show a preview of possible digit grouping and unit delimiters.

A new checkbox "Suppress spaces" has been added to the Format dialog. Checking this will remove all spaces around the dash from length strings.

A new checkbox "Suppress trailing 0's" has been added to the Format dialog.

View Scale Enhancements

New hard coded scales have been added. Imperial templates now have 1"=0'-1" and 1"=100'-0". Metric templates have 1:1.

At the View Control Bar, the choice “Custom” has been enhanced. The custom ratio can now display imperial formatting or any user-defined custom display name when placing on a sheet.

Granular View Templates

View properties can now be applied selectively using view templates.

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 reorganized to group like 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” or shortcut key (SZ) and displayed in the new context menu.

Show warnings related to Element

When an element that is associated with a warning (i.e. overlapping walls or duplicates in same location) the element will display a small warning icon in the option bar. Pressing this will 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 > 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.

Mirror Project

Revit Structure now provides the ability to mirror a project under Tools Menu Bar > Project Position/Orientation. This command will mirror not only the model geometry but the annotation in views as well.

Screen Sized Temporary Graphics

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

Surface patterns on additional surfaces

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

Recent Files Window

Revit will no longer open a default template on launch but instead display images of recently accessed projects, families and links to help, tutorials, and content. Clicking an image will open the associated file.

File navigation dialogs

All File Open and Save dialogs have been redesigned to use a common layout and be more consistent with other Autodesk products.

Mass Floor Area and Volume

Now Floor Area Faces have been renamed Mass Floors and can be tagged individually, scheduled, and have new and useful properties representing the slice of the mass above the Mass Floor including: Floor Area, Floor Perimeter, Floor Volume, Surface Area, Usage, and additional properties from the associated Mass.

Publish to DWFx

Revit Structure 2009 can now publish 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 DWF support can be achieved via a download.

New Rendering Engine mental ray®

Rendering Enhancements

In Revit Structure 2009, the AccuRender® rendering engine has been replaced with the mental ray® rendering engine. This change provides an overall higher quality of rendering, with improved lighting effects and more accurate render appearances for materials. For rendered images of a similar quality, the mental ray engine produces faster results than the previous rendering engine.

Rendering Workflow Enhancements

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

Render Appearance Enhancements for Materials

All materials that ship with the Revit software have been assigned new render appearances. Material

definitions are stored as part of the project file. Render appearances are stored in a local, read-only library. If users make any changes to render appearances for materials, the changes are stored as part of the project.



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