

Questions & Answers

Autodesk® Revit® Structure software uses a single intelligent model to coordinate all the tasks structural engineers and drafters need to complete during the building design process—from preliminary and schematic design, to structural design and analysis, to final construction documentation.

Autodesk Revit Structure includes many features to help you work more efficiently, improve accuracy and increase design flexibility.

With Autodesk Revit Structure, production of structural documentation is dramatically accelerated: every drawing sheet, every 2D and 3D view, every detail, and every schedule is a direct presentation of information from the same underlying building database.

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1 General Product Information

1.1 What is the Autodesk Revit platform?

Autodesk® Revit® software is Autodesk’s platform for building information modeling. Applications such as Autodesk® Revit® Structure built on the Revit platform are complete, discipline-specific building design and documentation systems supporting all phases of design and construction documentation. From preliminary design through the most detailed construction drawings and schedules, applications built on Revit help provide immediate competitive advantage, better coordination and accuracy, and can contribute to higher profitability for structural engineering firms and the rest of the building team.

At the heart of the Revit platform is the Revit parametric change engine, which automatically coordinates changes made anywhere—in model views or drawing sheets, schedules, sections, plans...you name it.

1.2 What is Autodesk Revit Structure 4?

Autodesk Revit Structure 4 is a multi-material structural modeling and drafting software system that offers concurrent physical and analytical modeling for design, coordination, and documentation—and bidirectional linking to industry-leading analysis applications.

Revit Structure software integrates a physical model—for layout, coordination, and documentation—with an independently editable analytical model for multiple analyses. You can model from scratch or over 2D CAD files from the architect. Or, for even more powerful coordination, you can link directly to intelligent 3D architectural models from Autodesk® Architectural Desktop or Autodesk® Revit® Building software products. Bidirectional linking to industry-leading analysis software means analysis results update your Revit Structure model accurately—while proven parametric change management technology coordinates those updates everywhere in your design and documentation. The bottom line: Integrated modeling increases efficiency, improves accuracy, and streamlines coordination with your design team.

1.3 What is Autodesk AutoCAD Revit Series—Structure 4?

Autodesk® AutoCAD® Revit® Series—Structure 4 is a software bundle including Revit Structure 4 and AutoCAD®2007 software applications shipped on two separate CD/DVDs, with a single serial number and a single activation code permitting use of both products on a non-concurrent basis.

With AutoCAD Revit Series—Structure 4, users get the most powerful parametric structural modeler with Revit Structure plus the most widely used drafting software in

the industry with AutoCAD. This bundle enables users to migrate to building information modeling at their own pace.

1.4 What is building information modeling, how does it apply to Autodesk Revit Structure?

Building information modeling is an innovative building design and documentation methodology that relies on the creation and collection of interrelated computable information about a building project so that reliable, coordinated, and internally consistent digital representations of the building are available for design decision making, production of high-quality construction documents, construction planning, and predicting performance in various ways.

The ability to keep this information up to date and accessible in an integrated digital environment gives engineers, architects, builders, and owners a clear overall vision of their projects and contributes to the ability to make better decisions faster—helping raise the quality and increase the profitability of projects.

Autodesk Revit is Autodesk's platform for building information modeling. Applications such as Autodesk Revit Structure built on the Revit platform are complete, discipline-specific structural engineering, design and documentation systems supporting all phases of structural modeling, analysis (with third-party software), and construction documentation.

For more information about building information modeling and Autodesk's strategy for the application of information technology to the building industry, see the white papers and other information at www.autodesk.com/bim.

1.5 Are there any other industry-specific applications built on Autodesk Revit?

Yes. In addition to Autodesk Revit Structure, the Autodesk Revit Building software is a complete architectural design and documentation system supporting all phases of design and all the architectural drawings and schedules required for a building project. Autodesk Revit Systems is the application for mechanical, electrical, and plumbing (MEP) engineering built on the Revit platform.

1.6 Who will benefit from Autodesk Revit Structure?

Structural engineers, especially those who use multiple analysis software products, will find Revit Structure a terrific improvement over how they are working today, with better change management and coordination tools. Structural drafters benefit by speeding up the production of construction drawings by virtually eliminating tedious rework caused by design changes. Clients and construction teams will also benefit from sharing unambiguous 3D models.

1.7 Does Autodesk Revit Structure do steel detailing?

No, however Revit Structure can export CIS/2 files to be used by steel detailing applications, and structural engineers and drafters can create typical details in Revit Structure using detail components for construction documents.

1.8 What are the advantages of modeling in Autodesk Revit Structure instead of within the analysis programs?

Instead of learning multiple systems (research has shown that structural engineers use an average of more than three different analysis/design programs), Revit Structure can be used as a common structural modeling tool to link with the analysis software. This enables structural engineers to spend more time engineering and less time learning multiple modeling tools. Another advantage of Revit Structure is the engineering insight available during the modeling process. For example, unsupported structural elements, global and local instabilities, and framing anomalies are automatically detected by Revit Structure before sending the model to analysis software.

Revit Structure models can also be created externally using models from certain analysis programs. This enables the ability to create, view and use Revit Structure models of projects that have been started in the analysis program or projects that have already been constructed.

1.9 Who builds the model in Autodesk Revit Structure -- the engineers or drafters?

Revit Structure supports different ways of working. In one case, structural drafters can create the model and engineers can complete the model with loads and load combinations, release conditions, and material properties before performing analyses. In another case, structural engineers can build the physical model themselves, and continue the analysis process while the drafters complete the construction documents. Revit Structure simplifies the creation of structural drawings by automatically generating drawings and schedules directly from the physical model. This enables the drafters to focus on detail views, annotations, and other details required for construction.

2 About Autodesk Revit Structure

2.1 What are the important features in Autodesk Revit Structure?

- Use of multiple structural materials—including steel, precast concrete, cast-in-place concrete, masonry, and wood—all within the same building model
- Full creation of required construction documentation
- State of the art Analytical model created simultaneously and coordinated with the physical model
- Bidirectional links with multiple analysis programs
- Bidirectional associativity between the model, the views, the drawings and details, and the schedules
- Multiple design options can be maintained within the same model
- Multiple users can work on the model at the same time
- Import and export DWG™, DXF™, DGN, IFC, and SAT files
- Export and import 3D intelligent building objects for structural elements native to Autodesk Architectural Desktop and Autodesk® Building Systems products
- Full interoperability with Revit Building (from interference checking to coordination monitoring) and Revit Systems
- Smart relationships between structural members which adjust when conditions between structural elements are modified (For example, if a column is moved, the beams framing into that column will adjust automatically)
- Templates to generate specific structural families using the family editor

Download the detailed brochure for Autodesk Revit Structure at www.autodesk.com/structure

2.2 What's new in Revit Structure 4?

Revit Structure 4 is compatible with Revit Building 9.1, the latest Revit-based architectural design and documentation system, as well as Revit Systems 2 for mechanical/electrical/plumbing design and documentation. New features include tools for improved modeling, such as single-click beam system creation and the *TrussWizard* for subscription customers, enhanced concrete design capabilities with improvements to concrete drawings and reinforcement elements, as well as new analytical tools.

Download the complete feature list for Autodesk Revit Structure at www.autodesk.com/structure

2.3 Can I use Revit Structure just for drafting?

You can work entirely in Autodesk Revit Structure to generate your construction documentation. AutoCAD software is not required. Revit Structure includes all necessary drafting tools such as dimensions, annotations, symbols, detail components, detail lines, etc., to complete drawings and structural details, as well as schedules and revision tools. You can also reuse your existing typical details from AutoCAD via the DWG import. All construction documents created in Revit Structure can be exported to DWG format for other consultants to use.

2.4 How does Autodesk Revit Structure handle concurrent users on the same project?

Autodesk Revit Worksharing distributes the power of the Autodesk Revit parametric building modeler across the structural engineering team. Worksharing provides a complete range of collaboration modes, from on-the-fly simultaneous access to the shared

model, through the formal division of the project into defined systems, to complete separation of discrete project parts (such as wings or separate buildings) into individually managed linked models. Worksharing enables structural team members to choose the best way to collaborate and interact based on workflow and project requirements. For example, after enabling worksharing on a structural model, while the structural engineer is performing structural analysis and design in another application, the structural drafter can simultaneously prepare all the model views, drawings, details, and schedules for documentation. When the drafter loads the latest file saved by the engineer, all design changes made to the model by the engineer will automatically update the corresponding information into the drafter's work.

2.5 How does Autodesk Revit Structure support finite element analysis and building code design?

Revit Structure integrates with several popular third-party analysis applications through the Revit Application Programming Interface (API).

See www.autodesk.com/structure for up-to-date information on Revit Structure partner products or contact your local authorized Autodesk channel partner.

Users can also link their in-house spreadsheets or in-house analysis and design software through the API.

2.6 What types of structural elements are supported out of the box?

Libraries of all standard walls, columns, beams, floor systems, braces, trusses, and open web joists are provided. Special foundations, precast concrete elements, and other useful structural libraries are also supported. Structural boundary conditions, load cases and load types are also included and can be exported to analysis and design software along with the other structural elements.

2.7 What types of structural materials does Autodesk Revit Structure support?

Autodesk Revit Structure supports steel, precast concrete, cast-in-place concrete, wood, and masonry.

3 Interoperability

3.1 How does Autodesk Revit Structure work with AutoCAD or other 2D software?

Autodesk Revit Structure can produce DWG deliverables just as AutoCAD software can. Revit Structure provides industry-leading DWG compatibility using the Autodesk® RealDWG™ developer's toolkit. And because these DWG deliverables were created in a modeler, they are well structured and easy to change.

Autodesk Revit Structure supports the process most engineering firms use with their clients by producing well-organized and layered DWG files using any layering standard the user wants. With Revit Structure nothing in an exported DWG file ends up on the wrong layer, easing client interactions and helping speed the design and construction process.

Autodesk Revit Structure provides features that help integrate your work with clients. You can import or link DWG files directly into Revit Structure to use as reference geometry or as the starting point for a new design. Any CAD system that supports the DWG, DGN, IFC, or DXF file format can work effectively with Revit Structure.

3.2 How does Autodesk Revit Structure work with Autodesk Architectural Desktop?

Revit Structure can import designs as building objects from Autodesk Architectural Desktop as a basis for the structural model or to compare to the structural model. For those structural objects that Architectural Desktop supports, Revit Structure exports structural components as intelligent building objects native to Architectural Desktop 2007. Structural components in Revit Structure which are not of a type supported in Architectural Desktop (and walls with structural characteristics) are exported to Architectural Desktop as mass elements. So a complete structural model created in

Revit Structure can be shared directly with an architect using Architectural Desktop 2007.

3.3 How does Autodesk Revit Structure work with Autodesk Revit Building?

Revit Structure is built on the same Revit technology platform as Revit Building. If the architect and the structural engineer both have access to the same network, they can in fact work directly on a fully shared, combined architectural and structural model. If both the structural engineer and the architect are using Revit-based applications but are in separate organizations they can exchange and cross-link RVT files so both have access to the information from the other discipline as they work. Working on the same Revit platform allows engineers and architects to perform interference check between structural and architectural elements. It also offers automatic coordination monitor tools so that each discipline can get electronic notifications each time the other makes a change on levels, grids, columns, walls, and/or floors.

3.4 How does Autodesk Revit Structure work with Autodesk Building Systems?

Revit Structure can import ACIS® geometry and building objects generated by Autodesk Building Systems, allowing structural engineers to view the geometry of the building environmental systems within the structural model. Revit Structure can also export structural members as intelligent building objects native to Autodesk Building Systems 2007, as described above in question 3.2. When exported, these can be used directly in Autodesk Building Systems 2007 for clash-detection between the structural elements and the building environmental systems.

3.5 How does Autodesk Revit Structure work with Autodesk Revit Systems?

Structural engineers who are working with MEP engineers using Autodesk® Revit® Systems can take full advantage of building information modeling to share the same underlying building database. Similar to the coordination between Revit Structure and Revit Building, interference checking is available in all Revit-based applications for better coordination. For instance, structural engineers can check for interferences between ductwork and structural elements, as well as gaining a better overall understanding of the entire structure by linking the Revit models together.

3.6 What about data compatibility between MicroStation and Autodesk Revit Structure?

Autodesk Revit Structure provides several important interoperability capabilities for AutoCAD and MicroStation® software users. First, Autodesk Revit can import, export, and link DWG and DGN (V7) format files. You can draw on imported files to create Revit Structure parametric model geometry. Revit Structure can manage imported or linked files so that detail libraries in either DWG or DGN file format can be placed on sheets and all callouts are automatically managed. Further, Revit can map a specific DWG layer on input to a specific DGN level number on output or vice versa in any combination.

With Revit Structure, nothing in an exported DWG or DGN file ends up on the wrong layer or level, easing consultant interactions and speeding the design and construction process.

3.7 How do I use Autodesk Buzzsaw with Autodesk Revit Structure?

The Autodesk® Buzzsaw® online collaboration service is independent of the software used for building structure design and documentation. Autodesk Revit Structure streamlines the process of uploading exported files from your project directly to predefined Buzzsaw project locations. It automatically saves your project to either DWG or DWF™ file format. Model files (RVT files) can be posted to Buzzsaw for sharing with the project team just like any other file. A read-only copy of Autodesk Revit enables users to print and export models that have not been edited, serving as a robust viewer and file translator for team members who receive Revit models but who are not using the software themselves. And because Revit also publishes directly to other industry-standard file formats, team members can share sets of deliverables on Autodesk Buzzsaw in this way as well.

3.8 Can I use Autodesk Design Review markup functionality with Autodesk Revit Structure?

Yes, Revit Structure supports round-trip export and import of DWF markups for an all-digital review, markup, and editing process.

3.9 Is there an application programming interface (API) or are there other third-party development tools for Autodesk Revit Structure?

Yes. Autodesk Revit Structure ships with a structural API development toolkit.

Software partners who had already linked their applications to Autodesk Revit Structure include the following:

Computers and Structures, Inc.

CSI Inc. is the developer of SAP[®] 2000 – general purpose structural analysis and design – and ETABS[®] – building analysis and design – software. Find out more at www.csiberkeley.com/revit

RISA Technologies

RISA Technologies is the developer of RISA-3D – general purpose analysis and design software and other design tools such as RISAFloor – for building design and analysis. Find out more at www.risatech.com

Robobat

Robobat is the developer of ROBOT Millennium software for structural analysis and design. Find out more at www.revit.robobat.com

RAM International

RAM International is the developer of RAM Structural System - building analysis and design – software. Find out more at www.ramint.com/support/downloads_revit

CSC (UK) Ltd.

CSC is the developer of Fastrak Building Designer – a comprehensive steel building design package. Find out more at www.cscworld.com/fastrak

Graitec

Graitec is the developer of Arche, software for structural analysis and design, and Advanse – Steel, software for steel construction. Find out more at www.graitec.com

Ace Hellas

Ace Hellas is the developer of Scada Pro, software for static and dynamic analysis. Find out more at www.ace-hellas.gr

ADAPT

ADAPT is the developer of ADAPT-Builder Platform - a comprehensive suite of integrated design software for concrete floor systems, beams, frames, mat, and slab-on-grade foundations, reinforced or post-tensioned. Find out more at www.adaptsoft.com

MIDAS Information Technology

MIDAS is the developer of MIDAS/Gen – an integrated design system for building and general structures. Find out more at www.midasuser.com

For up-to-date information on third-party analysis software partners, visit the Revit Structure page at www.autodesk.com/structure or contact your local authorized Autodesk channel partner.

4 Parametric Modeling

4.1 What is parametric and how does the parametric change engine keep everything updated when I make changes? Why is the concept important?

The term parametric in this context refers to the relationships among and between all elements of the model that enable the coordination and change management that Autodesk Revit Structure provides. These relationships are created either automatically by the software or deliberately by the user as the user works.

A fundamental characteristic of a building information modeling application is the ability to coordinate changes and maintain consistency at all times. The user does not have to intervene to update drawings or links.

At the heart of Autodesk Revit Structure is technology that is new to building design, engineering, and documentation systems: a parametric change engine. Revit Structure is built from the ground up using this technology. The Revit parametric change engine uses the information captured as you work to build a network of relationships between elements. When you change something, Revit Structure immediately applies that change to any affected elements.

This concept is important because it is this capability that delivers the fundamental coordination and productivity benefits of Autodesk Revit Structure: Change anything at any time anywhere in the project and Autodesk Revit Structure coordinates that change through the entire project. This change management is also one of the fundamental characteristics of a building information modeling solution.

4.2 How do I get sections or schedules from the model? What if I want to work in the section?

In Autodesk Revit Structure a section or a schedule is just another live view of the model and presents itself instantly when you create it. Create a section in Revit Structure and then move the section line. Watch as the section immediately updates where it cuts through the building automatically. You can also work (add or edit components) in the section view without restrictions.

Schedules are created using the same principle. They are simply another type of view. So they are also live and update dynamically as you change the model. In fact, you can change things in the schedule and Autodesk Revit Structure updates the model and drawings.

5 Licensing Autodesk Revit Structure

5.1 Can I use the product in trial mode or demonstration mode?

You can use the software in trial mode for a 30-day trial period without an activation code. You can also use the product in demonstration mode, which enables all features except save, plot, and export.

5.2 Does Autodesk Revit Structure use the Network Installation Wizard like AutoCAD–based products for network deployment?

No, Autodesk Revit Structure uses a different network installation technology and process from the AutoCAD-based products. The Network Installation wizard is designed to work only with AutoCAD software–based products.

5.3 What should I do if I need help in installing the FLEX/*m*[®] license server or getting my single-user copy authorized?

As with all other products, contact your reseller first for help with installation and licensing problems. Resellers can then escalate problems that cannot be easily resolved to Autodesk Revit Client Services. Subscription members can email Autodesk directly for help with installation issues.

The beauty of Autodesk Revit Structure is that you work in the view that makes sense for your project. You can make your changes in section, elevation, or schedule and Revit Structure propagates the changes throughout the model.

5.4 Will the License Borrow feature introduced for the network version of AutoCAD software–based products work with Autodesk Revit Structure?

Yes, network users of Autodesk Revit Structure can use the License Borrow feature for laptop users.

6 Consulting, Training, and Support

6.1 What consulting services are available for Autodesk Revit Structure?

Check with your local Autodesk Authorized Reseller for consulting services that they offer.

Autodesk Consulting also provides consulting offerings for project assessments, process audits, and a range of Autodesk Revit Structure implementation services. Custom consulting offerings are also available to meet your specific needs. For more information on Autodesk Consulting, contact your local Autodesk Authorized Reseller or Autodesk Account Executive, or visit www.autodesk.com/consulting.

6.2 Where can I find training courses for Autodesk Revit Structure?

Training courses are available from Autodesk Authorized Resellers, Autodesk Consulting, and Autodesk® Authorized Training Center (ATC®) sites. Check with your local Autodesk Authorized Reseller for a schedule of training classes.

You can enroll in instructor-led training at Autodesk Authorized Training Centers around the world. These training centers use Autodesk Official Training Courseware (AOTC) to deliver comprehensive courses for new and intermediate Revit users. To learn more, visit www.autodesk.com/atc.

Training courses through Autodesk Consulting include Autodesk Classroom Training (onsite or at Autodesk), Autodesk Revit Distance Learning Seminars (online or instructor-led), or custom training to match your specific needs. For more information, or to register for a course, go to www.autodesk.com/revit-training.

For more information about Autodesk's training services for Autodesk Revit Structure, send an email to RevitEducation@autodesk.com.

6.3 How can I get technical support information?

Technical support information is available from several sources. First, Autodesk Authorized Resellers offer technical support information to their customers. Second, you may locate the answers to frequently asked technical questions in the support knowledge base on www.autodesk.com/revit-support. Third, you can ask questions and read information about the use of Autodesk products in the peer-to-peer discussion groups on www.autodesk.com/discussion.

Autodesk® Subscription members receive personalized web support from Autodesk technical experts. For complete information, visit www.autodesk.com/subscription or contact your Autodesk Authorized Reseller.

Autodesk Authorized Resellers also provide telephone support services for Autodesk Revit Building, and all other Autodesk products. In the United States and Canada, call 800-964-6432 to locate a reseller near you, or visit www.autodesk.com/reseller.

Find a complete list of support options on the Autodesk website at www.autodesk.com/revit-support.

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