Real3D Revit Link

User's Manual

Computations & Graphics, Inc.
5290 Windflower Lane
Highlands Ranch, CO 80130, USA

Email: info@cg-inc.com
Web: www.cg-inc.com

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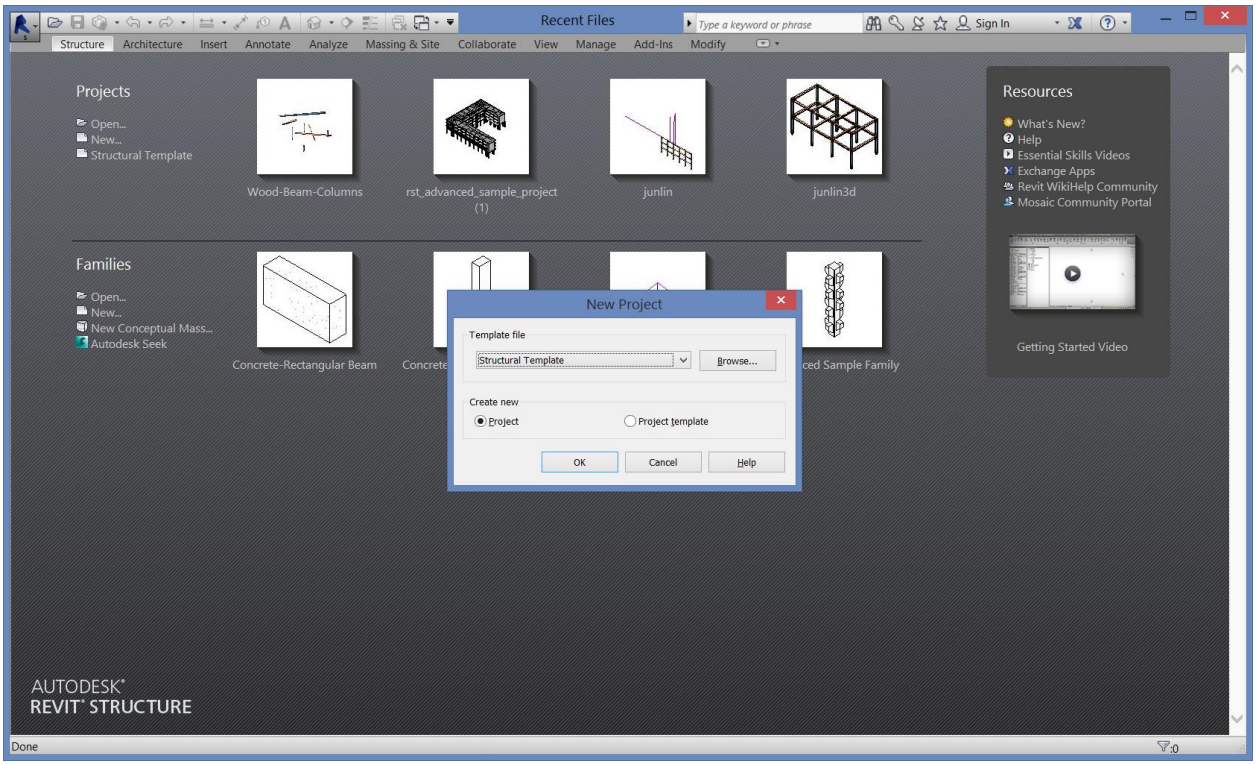
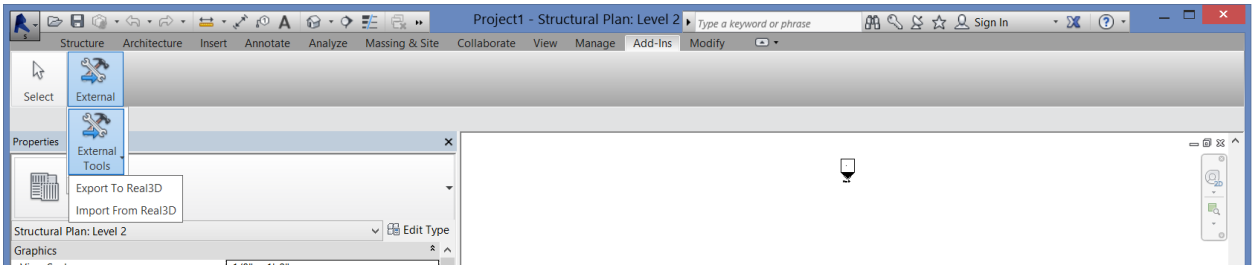
Introduction

Real3D Revit Link (Real3D-Revit Link hereafter) is an Add-In to Autodesk's Revit Structure that allows you to export Revit model to Real3D and to import Real3D model to Revit Structure. Currently, Real3D-Revit Link supports Revit Structure 2021 and 2022.

Real3D-Revit Link can be installed by downloading and running the Real3D-Revit Link installer from Computations & Graphics, Inc. company web site: http://www.cg-inc.com/download/download. In order to use Real3D-Revit Link, you must have supported version of Revit Structure installed on the same computer.

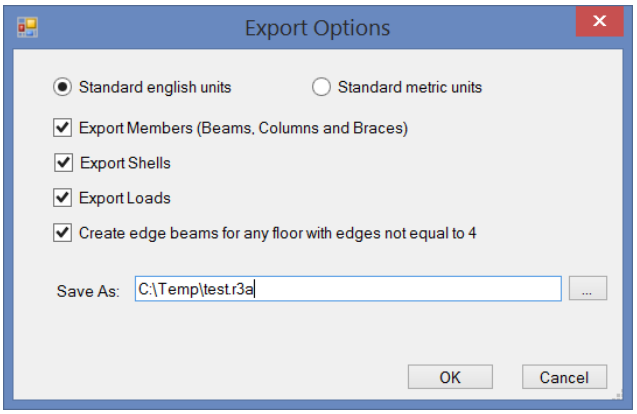


Real3D-Revit Link has two external commands under Revit Structure Add-Ins menu: "Export to Real3D" and "Import from Real3D".



Chapter 1: Exporting Revit Structure Model to Real3D

Revit Structure model can be exported to Real3D by running the Revit Structure external command "Export to Real3D". The following export options are available to you.



The table below shows the data transfer from Revit Structure to Real3D

Revit Structure	Real3D	Note
Level	Level	
Materials	Materials	Only materials that are used in structural members, walls and walls in Revit Structure are exported. Materials can be steel, concrete or generic.
Sections	Sections	Only sections that are used in structural members, walls and walls in Revit Structure are exported. The types of sections can be AISC steel sections, concrete rectangular, square/round/tee sections, wood (dimensional lumber, timber, glulam) sections. In addition, sections can be mapped in a file SectionMapping.txt that resides in Real3D-Revit Link installed folder.
Beams, Columns and Braces	Members	Member local rotation angles are transferred.
Walls	Shells	Only walls with four edges each in Revit Structure are exported. Local element angles are NOT considered.
Floors	Shells	Floors with four edges each in Revit Structure are exported. You have the option to create edge beams with the label "_FloorEdge" for floors with non-four edges each. Local element angles are NOT considered.
Single Footings	Supports	Single footings in Revit Structure are transferred

		to fixed supports in Real3D.
Boundary Conditions	Supports	Forced displacements or spring constants are not supported.
Point Loads	Nodal or Point Loads	Point loads in Revit Structure are transferred to Real3D as nodal or point loads depending on the load locations.
Line Loads	Line Loads	Only line forces in Revit Structure are exported. Line moments in Revit Structure are NOT exported.
Load Cases	Load Cases	Load natures Temperature, Accidental in Revit are mapped to Other in Real3D
Load Combinations	Load Combinations	Load combinations within a load combination in Revit Structure are not exported.

In addition to exporting standard sections in Revit Structure to Real3D, other sections can be mapped between section labels in Revit Structure and Real3D in a file called SectionMapping.txt. This file resides in the Real3D-Revit Link installation folder. The following is an example of SectionMapping.txt which you are free to modify.

```
////////////////////////////////////////////////////////////////////////////////////////////////////////////////
// This file is used to map sections when exporting from Revit Structure to Real3D
////////////////////////////////////////////////////////////////////////////////////////////////////////////////
// Revit_Section_Name, Real3D_Section_Name, Unit(in=inches or mm=millimeter)
// The following are the format for regular sections used by Real3D
// For Rectangular section, use "Rect" prefix, followed by section width x height
// For Circular section, use "Round" prefix, followed by diameter
// For Tee section, use "Tee" prefix, followed by flange width x depth x flange thickness x web thickness
// For Wide flange section, use "WideF" prefix, followed by flange width x depth x flange thickness x web thickness

450mm, Round450, mm
400x800mm, Rect400x800, mm
300x600mm, Rect300x600, mm
600x900, Rect600x800, mm
750mm, Round750, mm
20x30, Rect20x30, in
MyTee, Tee12x23x2x3, in
MyWideFlange, WideF12x23x2x3, in
```

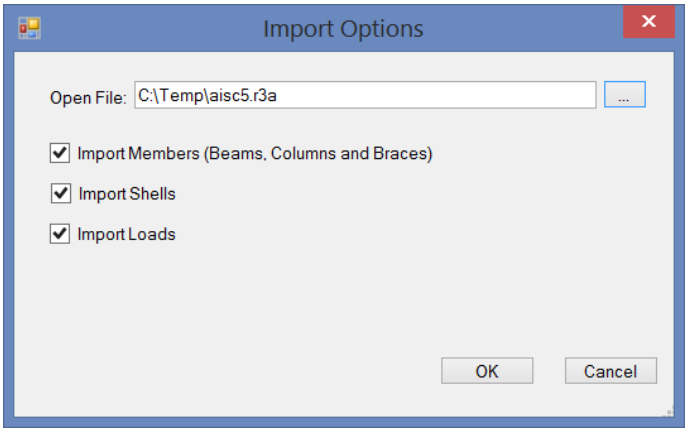
The lines starting with "//" are comments and are ignored by the program. Here these comments serve as instructions to create and modify the file.

Important Note:
Since the vertical axis in Revit Structure is global Z axis while the vertical axis in Real3D is global Y axis, Real3D-Revit Link will switch the Y and Z coordinates during the exporting. Loads in global Y and Z directions are also switched during the exporting. Only loads in global coordinate system in Revit Structure are exported to Real3D.

Analysis options are exported if the Revit file was created by importing a Real3D model.

Chapter 2: Importing Real3D Model to Revit Structure

Real3D model can be imported to Revit Structure by running the Revit Structure external command "Import from Real3D". Currently, Real3D-Revit Link does not support import update to Revit Structure model. The following import options are available to you.



The table below shows the data transfer from Real3D to Revit Structure

Revit Structure	**Real3D**	**Note**
Level	Level	
Materials	Materials	All materials are imported except for the materials with the same label already exist in Revit Structure.
Sections	Sections	AISC steel sections and wood (dimensional lumber and glulam) sections are imported to Revit Structure. Rectangular (square) and round sections are imported as concrete sections. If a section is not one of the sections above, a dummy 1x1 inch section is created.
Members	Beams, Columns and Braces	Horizontal members are imported to Revit Structure as beams. Vertical members are imported to Revit Structure as columns. Other members are imported to Revit Structure as braces. Member local angles are transferred.
Vertical Shells	Walls	Local element angles are NOT considered.
Horizotal Shells	Floors	Local element angles are NOT considered.
Supports	Boundary Conditions	Forced displacements are not imported into Revit Structure.
Nodal Loads	Point Loads	
Point Loads	Point Loads	
Line Loads	Line Loads	
Load Cases	Load Cases	Load nature are mapped between Real3D and Revit Structure.

Load Combinations	Load Combinations	Load combinations within a load combination in Revit Structure are not exported.

Important Note:

Since the vertical axis in Revit Structure is global Z axis while the vertical axis in Real3D is global Y axis, Real3D-Revit Link will switch the Y and Z coordinates during the importing. Loads in global Y and Z directions are also switched during the importing.

Only the loads in global coordinate system in Real3D are imported to Revit Structure. Since the loads in local coordinate systems in Real3D are not imported to Revit Structure, you should convert loads in local coordinate systems to global coordinate system before importing (by running the command Loads->Local Loads to Global Loads in Real3D).

Analysis options in Real3D are imported. Design data in Real3D are not imported into Revit model at this moment.