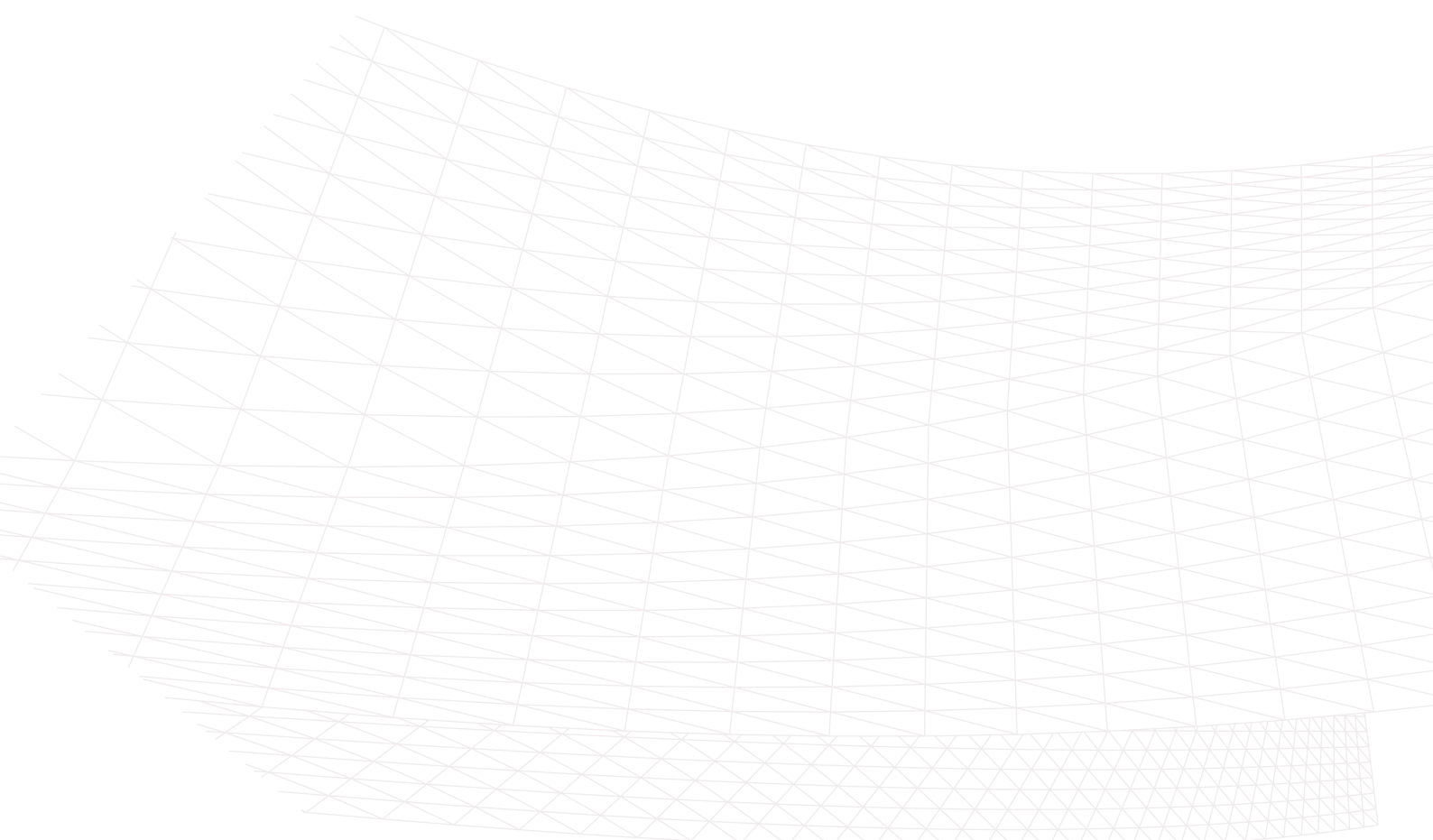


RFA & RVT Geometry Exchange Add-On for Archicad 24



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RFA & RVT Geometry Exchange Add-On for Archicad 24

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RFA & RVT Geometry Exchange Add-On for Archicad 24

INTRODUCTION

Use the RFA & RVT Geometry Exchange Add-on to import and export 3D models via native Revit file formats: .RVT and .RFA.

Note: This feature is released as part of a stand-alone Archicad 24 add-on. The Archicad Action Center will notify you when the add-on becomes available.

- Import and export elements via Revit RVT files, with their precise geometry and parameters (as non-editable content), for coordination and model referencing purposes.
- Import Revit Families (RFA; mostly manufacturer content) to Archicad as Objects, Doors and Windows. The generated Archicad library items have the same precise geometry and all parameters (in non-editable mode) as those stored in RFA.
- RVT files can be accessed locally or via BIMcloud, using Hotlink or Publish functions.

Archicad uses the ODA Teigha BIM Engine, which imports RFA file versions 2015-2020.

The three Revit Exchange functions are described below:

[Import RFA as GDL Object](#)

[Hotlink 3D RVT Model](#)

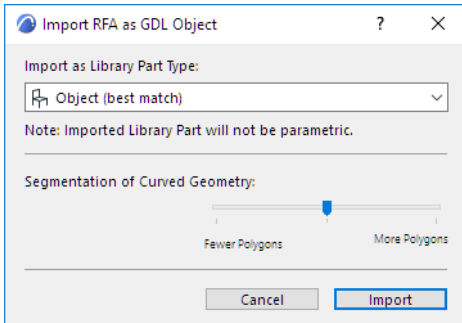
[Export 3D Model as Revit 3D Geometry](#)

Import RFA as GDL Object

This command imports a Revit Family (RFA) object (mostly manufacturer content) and generates a GDL Object, Door or Window having the same precise geometry and all parameters.

The resulting object will lose its editable parametric capabilities.

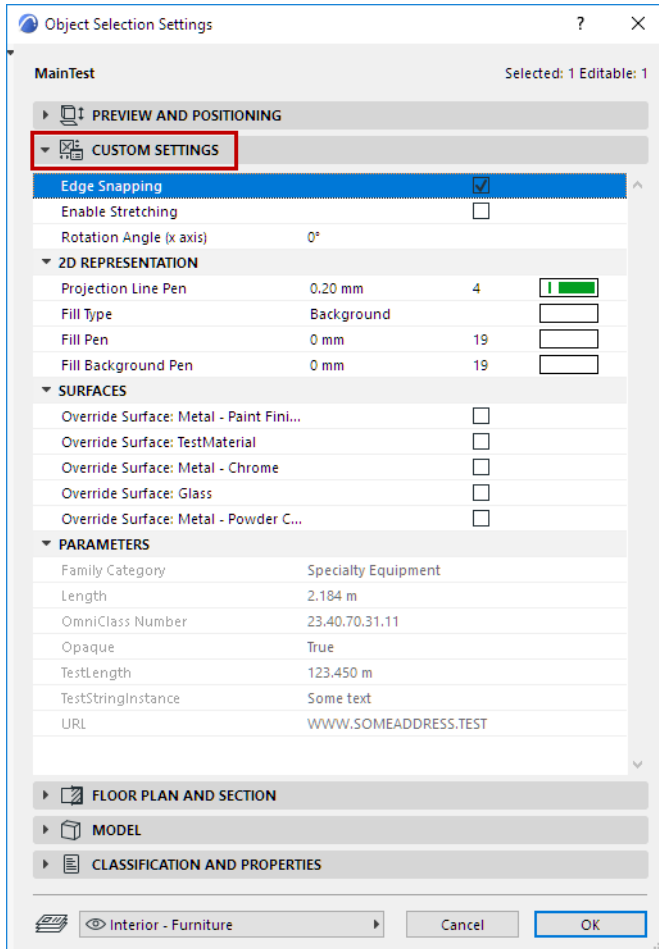
1. Use **File > Libraries and Objects > Import RFA as GDL Object**.
2. Browse for an RFA file to import, then click **Open**.
3. In the appearing **Import RFA as GDL Object** dialog, customize the import options:



- **Import as Library Part Type:** Based on the Revit Family Category and Host Object Category, the Library Part type will automatically select the best match: Object, Door or Window. You may override the type here.
 - **Segmentation of Curved Geometry:** Use the slider to set the level of geometric detail (polygon segmentation) at one of three levels. The more polygons, the larger the resulting object. It is recommended to keep this setting in the middle. If the object is too large, use Fewer Polygons. If the result is too segmented and rough, then use More Polygons. To check the Polygon count, download and install the Polycount add-on which is part of the Goodies package available at <http://www.graphisoft.com/downloads/goodies/index.html>
4. Click **Import**.
 - The imported family object is converted to a GDL Object, Door or Window in the Archicad project from which you issued the Import command.
 - The generated GDL Object, Door or Window is placed into the project's Embedded Library. Use the Object, Door or Window tool to place it into the project.

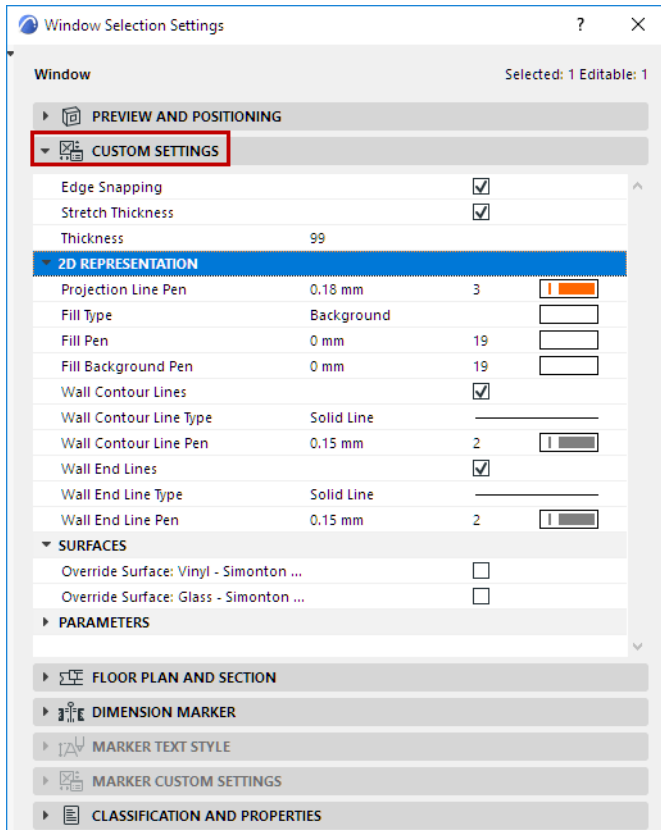
Imported Object: Custom Parameters in Archicad

With the “Import as Object” option, the following parameters are created:



- Edge Snapping, on or off.
- Enable Stretching: When on, Dimension 1, 2 and Height become enabled in the Preview and Positioning panel and can be graphically edited in the model. Stretching will distort the geometry.
- Rotation Angle (x axis): Rotate the object 0/90/180/270 degrees or a custom angle around the x axis.
- 2D Representation: Projection Line Pen, Fill Type and Fill Pens on Floor Plan.
- Surfaces: Allows override of individual embedded Surfaces.
- Parts Visibility by Category: Control the visibility of parts of the Object as defined by its RFA Categories
- Parameters: data as defined in the RFA file. This data is locked as read-only, and has no effect on the object's geometry.

Imported Door or Window: Custom Parameters in Archicad



- Edge Snapping, on or off.
- Stretch Thickness: When on, enables you to modify the Thickness of the Door/Window (will stretch the geometry).
- 2D Representation: Projection Line Pen, Fill Type and Fill Pens on Floor Plan; Wall Contour Lines: can be turned on or off and set line type and pen; Wall End Lines can be turned on or off and set line type and pen.
- Surfaces: Allows override of individual embedded Surfaces.
- Parts Visibility by Category: Control the visibility of parts of the Door/Window based on their Revit Category. This option only appears if there are multiple Categories defined in the RFA.
- Parameters: Data as defined in the RFA file. This data is locked as read-only, and has no effect on the object's geometry.

Note: The 'Host Object' will be automatically filtered out during Import.

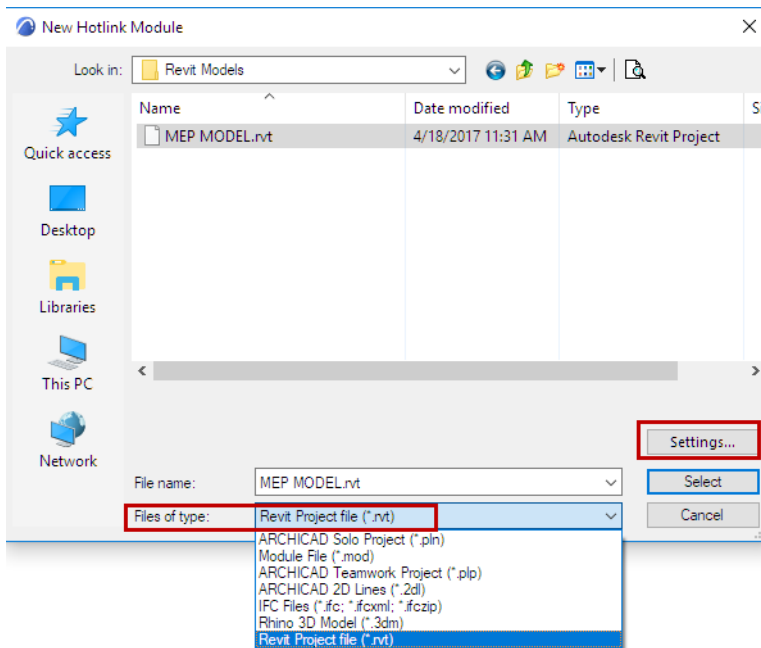
Hotlink 3D RVT Model

Use this workflow to import 3D model elements from Revit RVT files, placing them as a Hotlink in Archicad. The resulting GDL objects use the precise geometries and properties, including true surface colors, of the imported elements.

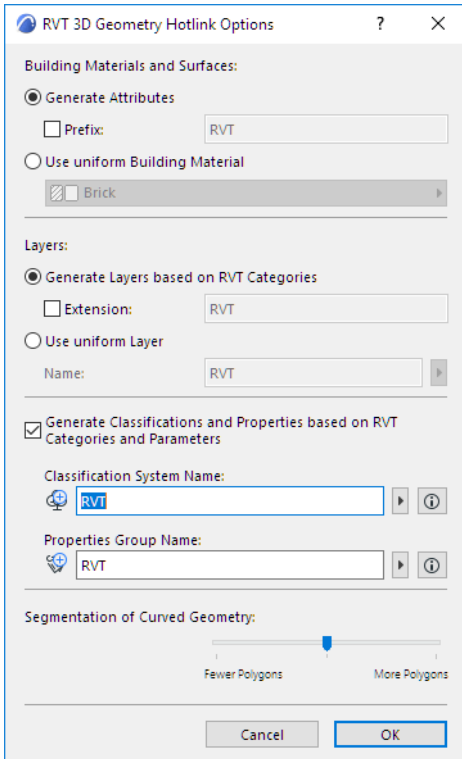
Use the same workflow to place an RVT Hotlink as any other hotlink in Archicad.

When placing a new RVT Module, make sure to click the Settings button (from the New Hotlink Module dialog) to define how to handle the attributes and properties of the hotlinked RVT file. These options are detailed below.

1. Use **File > External Content > Place Hotlink**.
2. In the appearing Place Hotlink dialog box, click **Select Module**.
3. From the **New Module** pop-up button, click **From File**.
4. The **New Hotlink Module** dialog appears: browse for an RVT type file.
5. Click **Settings**.



6. The **RVT 3D Geometry Hotlink Options** dialog appears. Here, customize the import options:



Building Materials and Surfaces

Choose one of these two options for handling imported Revit Building Materials and Surfaces.

- **Generate Attributes:** Adds each Revit surface and material to the Archicad project as Surface and Building Material attributes, with an optional prefix to distinguish them in the Archicad attribute lists.
- **Use uniform Building Material:** Converts all Revit surfaces and materials to a single Building Material in Archicad. In this case, click the pop-up to choose a Building Material from the Archicad project. All generated Library Parts will use the selected Building Material. (Choose this if you want to avoid increasing the number of Archicad project Attributes.)

Layers

Choose one of these options for creating Layers for imported Revit Objects:

- **Generate Layers based on RVT Categories:** Places Objects onto Archicad Layers that correspond to Revit Categories. Use an optional extension to distinguish these Layers in the Archicad Layer list.
- **Use uniform Layer:** Places all imported Objects onto a single Archicad Layer. Enter a Layer name in the field. (If such a Layer already exists in the project, that Layer will be used; otherwise, a new Layer is created.)

Classifications and Properties

Check the box if you want to **Generate Classifications and Properties based on RVT Categories and Parameters**.

Revit Parameters (textual, numeric, and True/False only) are imported as Archicad Properties, in a Property Group using the name you define below.

- **Classification System Name:** Revit Categories are imported to Archicad as a Classification System, using the name you define here. (All Categories of the Revit project are recreated in Archicad - not just the ones assigned to the hotlinked content.)

The Classification System name will also use the Properties Group name you define below (e.g. RVT). Its Version is the version number of the RVT file format you have placed. (After import, you can see this data in Archicad's Classification Manager.)

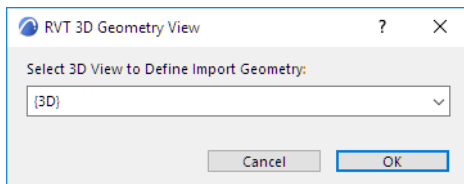
- **Properties Group Name:** The imported parameters will be added to the Archicad project as a Property Group, using the Properties Group name you enter here (e.g. RVT). (After import, you can see this data in Archicad's Property Manager.)

Note: After hotlink, it is recommended to merge the newly added Classification System and its Properties into the Archicad host file.

Segmentation of Curved Geometry

Use the slider to set the level of geometric detail (polygon segmentation) at one of three levels. The more polygons, the larger the resulting object. It is recommended to keep this setting in the middle. If the object is too large, use Fewer Polygons. If the result is too segmented and rough, use More Polygons.

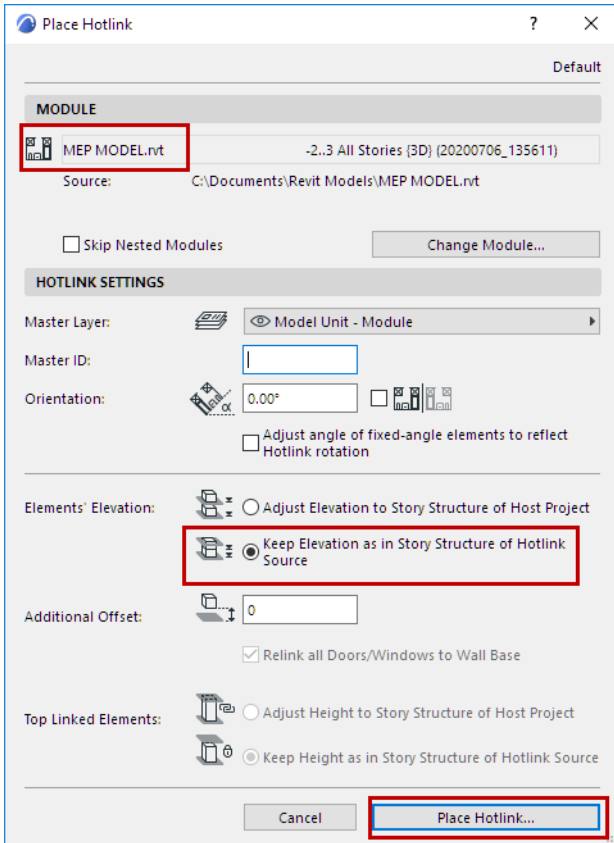
1. Click **OK** to return to the New Hotlink Module, then click **Select**.
2. The RVT 3D Geometry View dialog appears.



Choose a Revit 3D view (if there is more than one) from which to import the model elements. Archicad will create GDL objects based on the content of the selected view. Only Revit objects created in a 3D view of Revit can be imported to Archicad.

3. Click **Select** to return to the Place Hotlink dialog. The RVT file you selected is shown as the module to be placed.

- For the Elements' Elevation option, make sure you choose **Keep Elevation as in Story Structure of Hotlink Source** (as shown below). Otherwise, the imported model may “fall apart” when its elements are placed in a different story structure.



- Click **Place Hotlink**.

- Elements of the imported Revit 3D view are converted to GDL Objects in the Archicad project.
- The objects are placed into the project's Embedded Library.

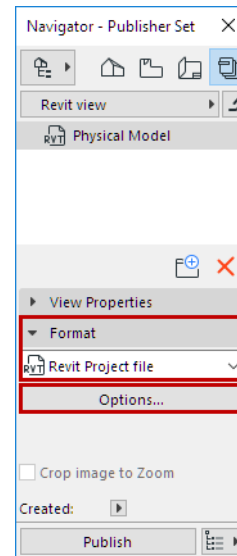
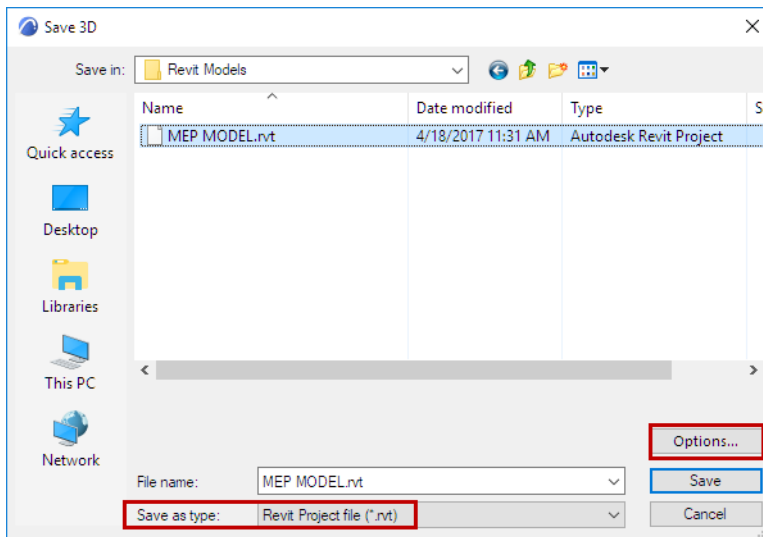
Hint: To view the RVT model file on its own, hotlink the file into an empty Archicad project.

For general information on managing Hotlinks in Archicad, see [Hotlink Module Manager](#).

Export 3D Model as Revit 3D Geometry

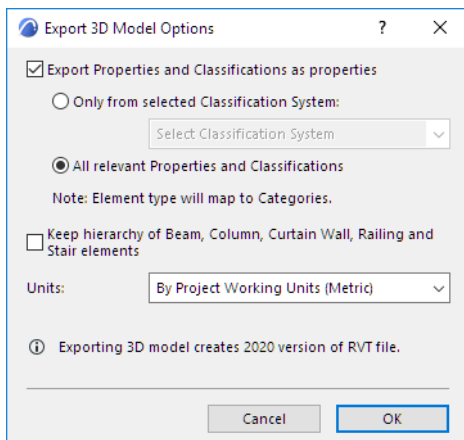
This command exports Archicad 3D model content to Revit, generating RVT objects with precise geometries (including true colors) and properties, in RVT file version 2020.

1. In Archicad, open the 3D window containing the view to export. The View Settings, including Partial Structure Display, affect the content of the exported object. Graphic Overrides are ignored.
2. Do one of the following:
 - Use **File > Save As**, and choose the RVT file format.
 - Add the 3D View to a Publisher Set and set its format to Revit Project file.



Save the file as RVT, or Publish the view in RVT format

3. Click **Options** to bring up the **Export 3D Model Options** dialog.



- **Export Properties and Classifications as properties:** Check this to include Classification and Properties data in the exported model. Since Revit does not support multiple classifications, use the options below to determine which properties (or classifications) to export.

- **Only from selected Classification System:** Choose one Classification System to export its Properties with exported elements. Properties from other Classification Systems will not be exported.
- **All relevant Properties and Classifications:** All Properties in the exported elements will be included. All Classification Systems from the exported elements will also be included, but handled as properties in Revit.

Note: Exported elements are mapped to Categories in Revit, based on their Archicad Element type.

- **Keep hierarchy of Beam, Column, Curtain Wall, Railing and Stair elements:** Check this to export these element types as single elements. Uncheck it to export them as hierarchical sets of elements (for example: an exported Curtain Wall will include separate Frame and Panel elements).
- **Units:** Choose **By Project Working Units** to automatically determine Metric or Imperial for the exported model elements, or manually set the units.

Notes:

- 2D data such as Drawings and Layouts are not exported.
- Parameters of GDL objects are not exported
- Archicad Project and Story data are not exported.
- Interference Checking (collision detection) in Revit can be applied to the exported RVT file.
- Archicad Zones are exported with their 3D representation only; therefore Revit Rooms are not generated from them automatically.
- The elements are exported as so-called Revit DirectShape (interoperability) elements. They can be used as reference model elements. Therefore, an exported Archicad Wall is not a Wall with full native functionality - it is just a referenced Wall element.
- Exported geometries are frozen and locked; they cannot be modified.
- The DirectShape elements do not contain materials in Revit, they have only colors (including transparency); therefore, only Archicad Surfaces are exported (Building Materials are not).