Rhinoceros-GDL Converter

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Rhinoceros-GDL Converter

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Rhino models for LCF workflow provided by Nikken Sekkei Ltd.

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Introduction to Rhinoceros-GDL Converter

This plug-in for Rhino 5 and add-on for ARCHICAD 20 enables you to export a model created in Rhino, and then import it to ARCHICAD.

Depending on the size of the Rhino model, you will choose one of two import methods:

GSM Import, for small-sized single objects or groups of small objects:

1. In Rhino, save a model or its selected parts as one or more GSM format files (objects).
2. In ARCHICAD, add the objects to the Embedded Library, then place them into the ARCHICAD 20 project.

LCF Import, for importing a large group of objects as a reference model:

1. In Rhino, save a model or its selected parts as an LCF format file (Library Container File). A single LCF contains many GSM object files.
2. In ARCHICAD, add the LCF file as a Linked Library.
3. Use LCF Observer to place all objects from the LCF files, and/or to update any placed instances as needed.

Key Benefits

- Imports geometric information only
- Adjust object attributes and edge smoothing in ARCHICAD
- With LCF Import: place or update all objects from the LCF container file in one step

Install the Rhinoceros-GDL Converter Add-On

Launch the installer on your computer. Two programs are available for installation:

- **GSM-LCF exporter for Rhino 5**. This lets you save/export Rhino models in either .gsm format or .lcf format.
- Install the **Rhino LCF Observer 20.** This add-on is required if you plan to import Rhino models saved as LCF files. It places the objects of the LCF container in ARCHICAD, while retaining their original positioning and IDs. It also lets you track and update imported/placed instances of these objects.

Import Rhino Model as GSM

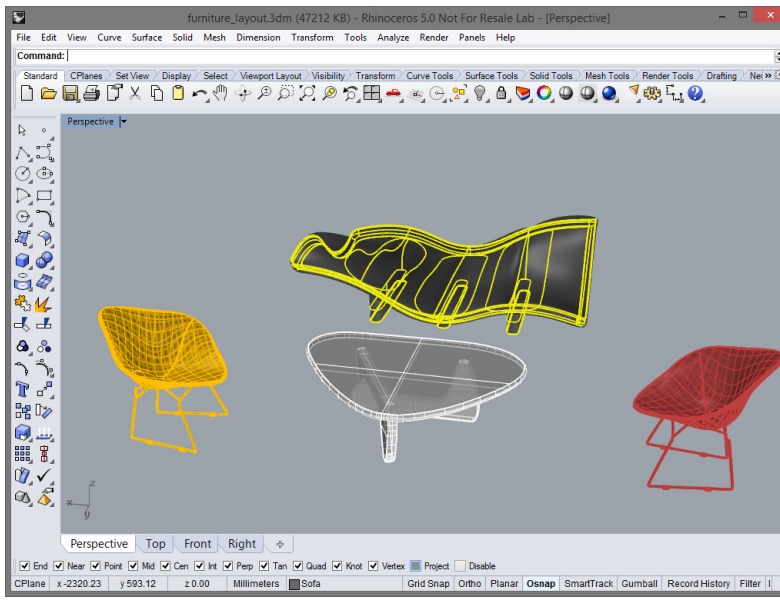
Use this workflow to import small-sized single objects or groups of small objects saved in GSM format to ARCHICAD.

- In Rhino, save a model or its selected parts as one or more GSM format files (objects).
- In ARCHICAD, add the objects to the Embedded Library, then place them into the ARCHICAD 20 project.

These steps are described in the following sections.

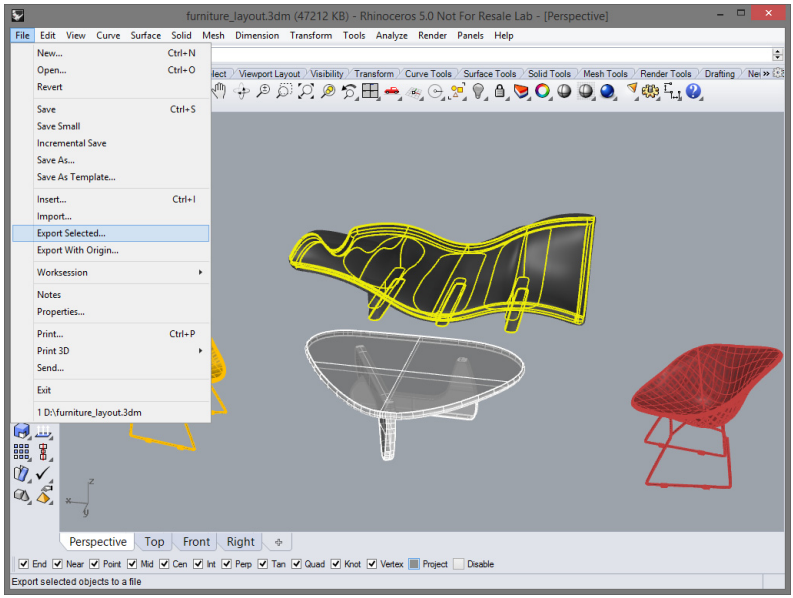
Save Model Elements as Simple GSM Object File in Rhino

1. Select the objects you want to export.



Model provided by flyingarchitecture.com

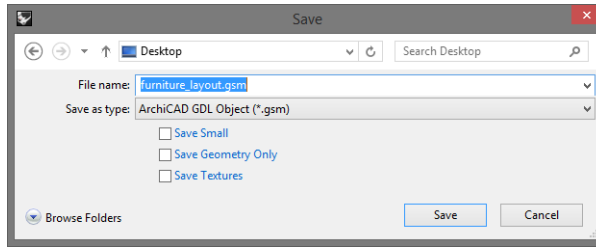
2. Use **File > Save** or **File > Export Selected**.



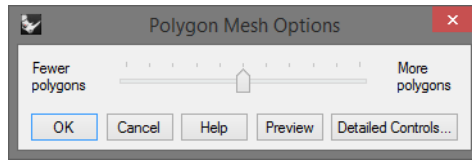
Model provided by flyingarchitecture.com

Note on Model Selection: If you are exporting a complex building model, it is recommended to select and export the different parts/layers of the model as several objects, rather than exporting the entire model as a single object.

3. In the upcoming **Export** dialog box:
   - Browse for and select a target folder
   - Choose the “ARCHICAD GDL Object” file type (extension .gsm)
   - Give a name to the file and click **Save**



4. The **Polygon Mesh Options** dialog box appears. Set the preferred level of polygon detail for this object file, and click OK.



See the Rhino program’s Help file for more details on these options.

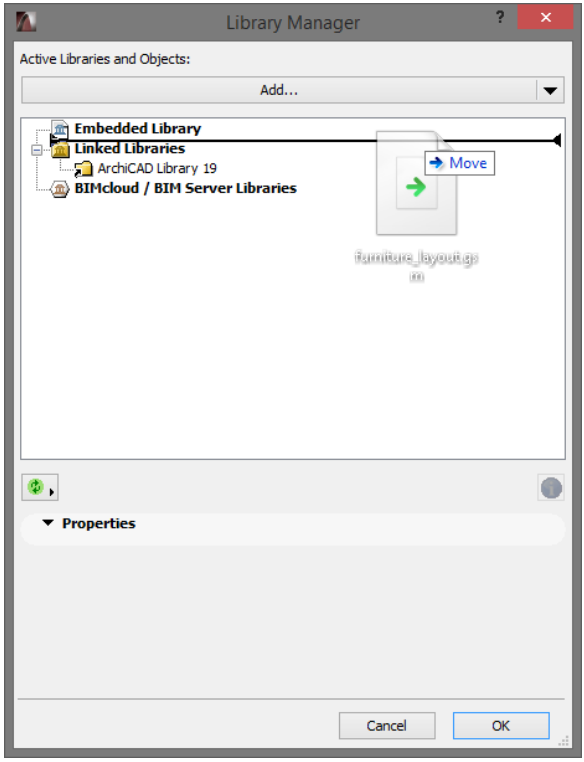
5. The Rhino model selection is saved as a GSM object file to the folder you specified.
6. Repeat this process to select and save as many object files as needed from the Rhino model.

Place GSM Object File in ARCHICAD 20

1. Add the saved GSM object files to your project's Embedded Library.

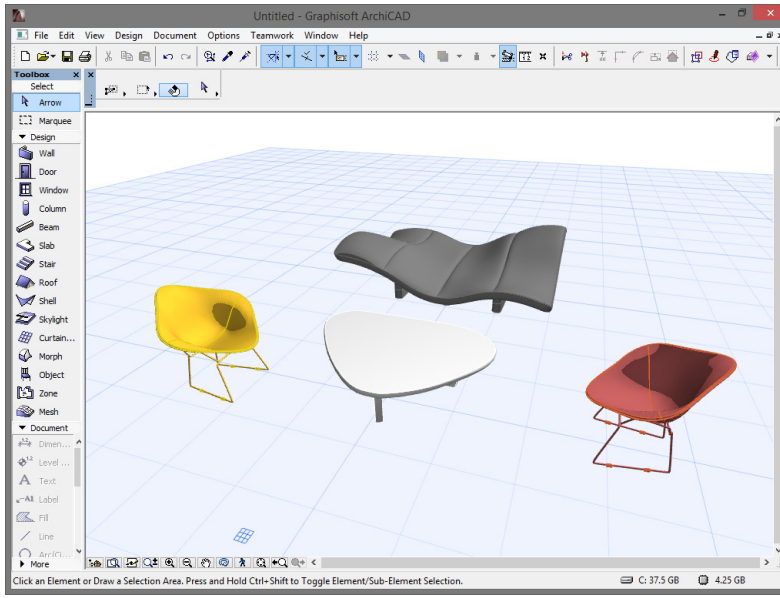
   To do this, go to Library Manager. Use the **Add** command to browse for the folder containing the GSMs, or else drag and drop the GSM files into the Embedded Library.

   Alternatively, simply drag and drop the GSM file onto the floor plan. It will be placed in the project and also added to the Embedded Library.



2. Use the Object Tool to place the objects from the Embedded Library into the ARCHICAD project.

   IMPORTANT: To ensure correct alignment of the separately saved parts of a large Rhino model, make sure you place each object at the same point.



Model provided by flyingarchitecture.com

Import Rhino Model as LCF

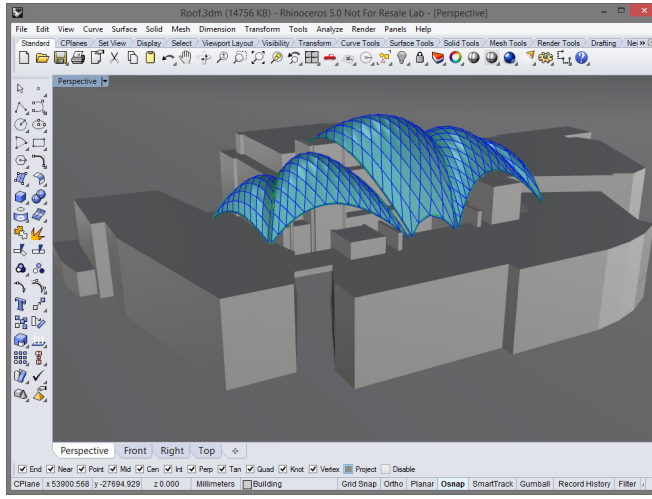
Use this workflow to import a large group of objects as a reference model to ARCHICAD.

1. In Rhino, save a model or its selected parts as an LCF format file (Library Container File). A single LCF contains many GSM object files.
2. In ARCHICAD, add the LCF file as a Linked Library.
3. Use LCF Observer to place all objects from the LCF files, and/or to update any placed instances as needed.

These steps are described in the following sections.

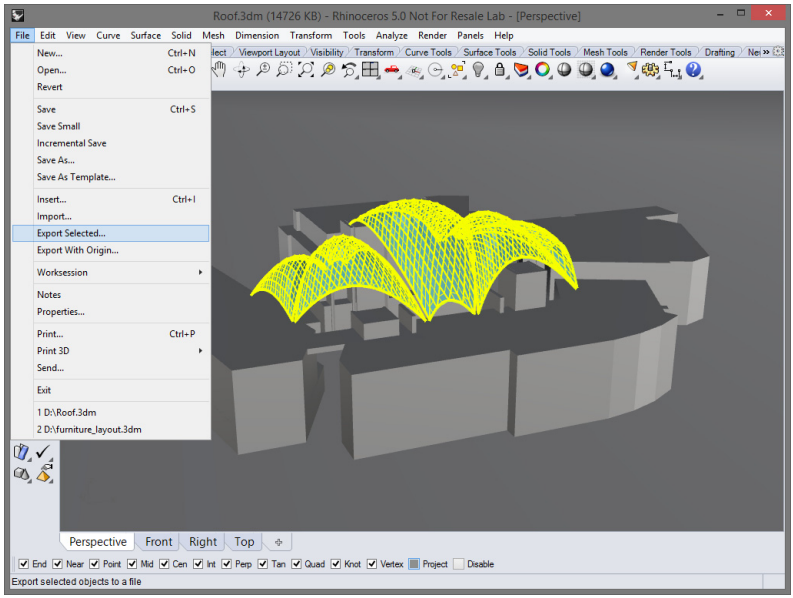
Save Model Elements as LCF Container File in Rhino

1. Select the object(s) you want to export as a reference model to ARCHICAD.



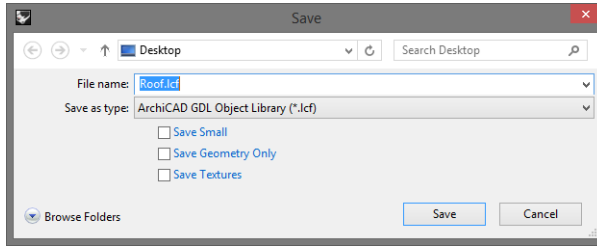
Concept design model provided by Nikken Sekkei Ltd.

2. Use **File > Save** or **File > Export Selected**.

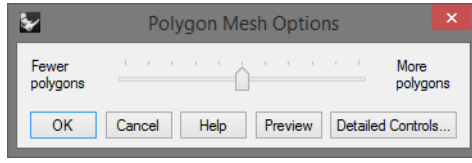


Concept design model provided by Nikken Sekkei Ltd.

3. In the upcoming **Export** dialog box:
   - Browse for and select a target folder
   - Choose the “ARCHICAD GDL Object Library” file type (extension .lcf)
   - Give a name to the file and click **Save**



4. The **Polygon Mesh Options** dialog box appears. Set the preferred level of polygon detail for this object file, and click OK.



See the Rhino program’s Help file for more details on these options.

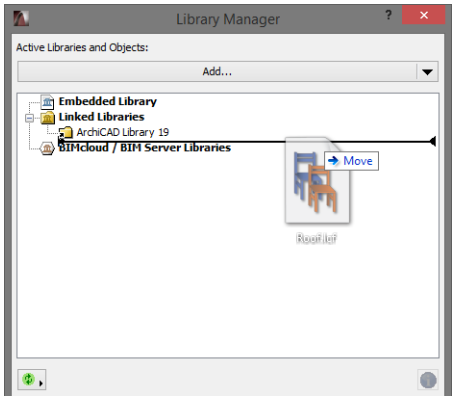
5. The Rhino model selection is saved as an LCF container file to the folder you specified.

See also Place/Update Function for more information on the structure of this LCF file.

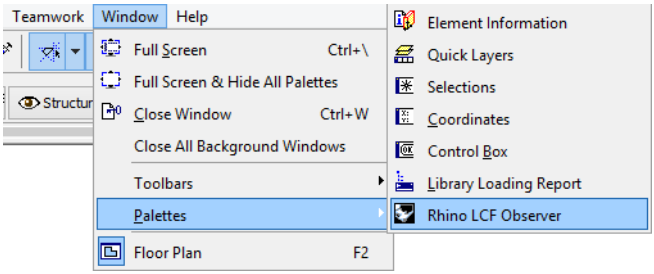
Place LCF Model in ARCHICAD 20

1. Add the LCF file to your project's Linked Libraries.

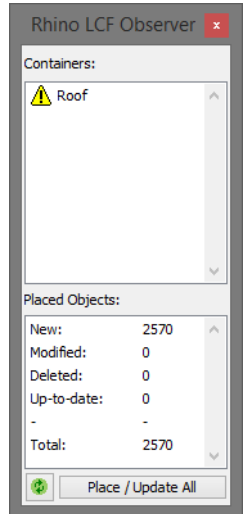
   (To do this, go to Library Manager. Use the **Add** command to browse for the folder containing the LCF, or else drag and drop the LCF file to the Linked Libraries.)



2. Open the LCF Observer from **Windows > Palettes**.

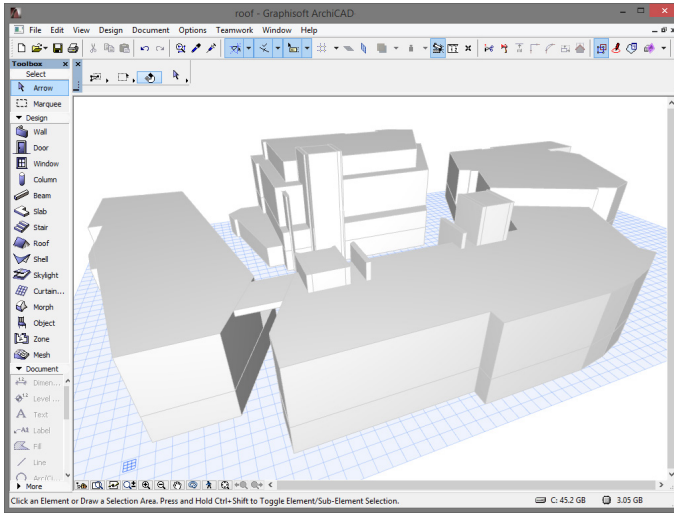


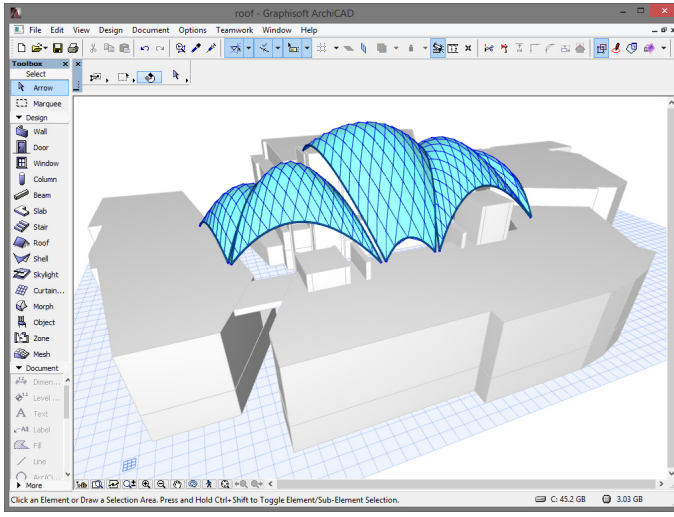
The **Containers** section lists the Rhino-based LCF file you have added to the project. The yellow warning triangle means that the contents of the file have not yet been placed in ARCHICAD.



Note: If you don't see the LCF file you expect, click the Refresh button at the bottom of the palette.

3. Click **Place/Update All** to add the objects from the LCF container file(s) to your project. When placed in ARCHICAD, the objects' relative positions will recreate their positions in the Rhino model.

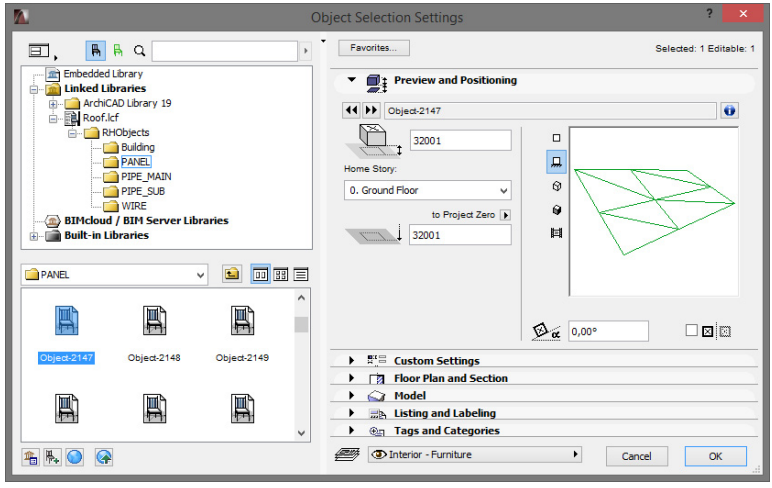




Concept design model provided by Nikken Sekkei Ltd.

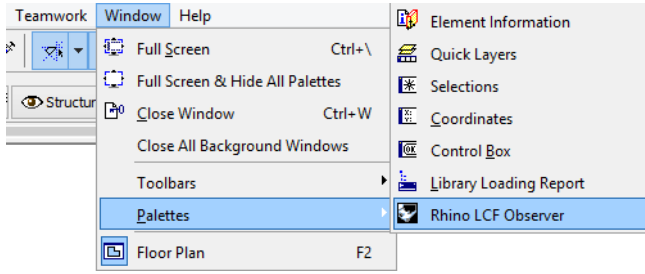
See also Place/Update Function.

After you have placed the objects, you can see in the Object Settings that the objects contained in the LCF file correspond in name and number to the Rhino model elements. The LCF file arranges these objects in a folder structure that corresponds to Rhino's layer structure, and also recreates the element groups.



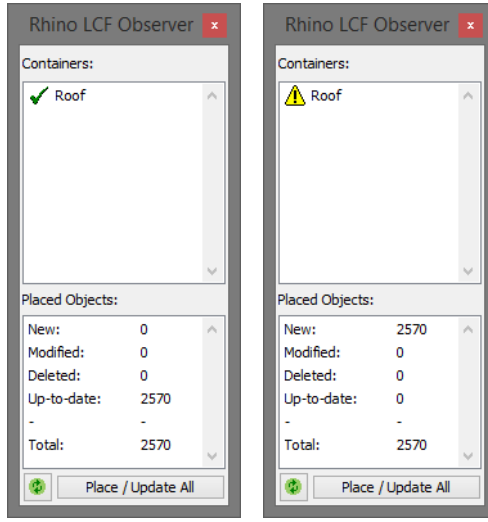
Manage Imported Model with LCF Observer

Open the LCF Observer from **Windows > Palettes**.



Containers

This section lists the LCF files that originate from a Rhino model and have been added to your Library Manager.



For each such LCF, the status is indicated:

- Green checkmark: Up to date (as compared with the Rhino reference model).
- Yellow warning sign:
  - This LCF is outdated and requires an update, because the Rhino model has changed, or
  - This LCF's contents have not yet been placed in the project (either because the LCF has just been added to the project, or the LCF has just been re-saved/updated).

At any time, click the green **Refresh** button to update the status of the Containers section.

Objects

This section lists all objects contained in all the LCF files shown in the Containers section, by status.

- Up-to-date.
- **New** (available in the LCF, but not yet placed in the project).
- **Modified:** These objects are present in both the LCF folder and in the project, but their versions differ.

  Note: Every time you update an LCF folder, all of its objects will have the status of "modified".
- **Deleted:** These are no longer present in the LCF folder, but are still placed in the ARCHICAD project.

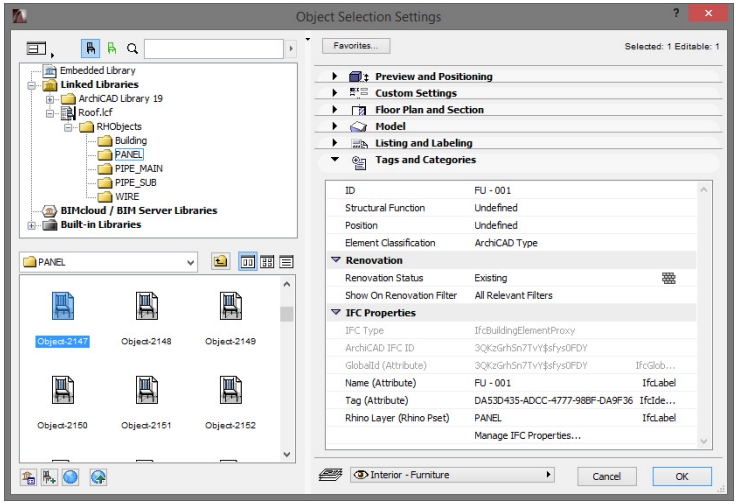
Place/Update Function

Clicking **Place/Update All** from the Rhino LCF Observer Palette will place or update all objects from all listed LCF files, depending on their status.

- All **new** objects will be placed into the project, at the same position relative to the origin as in the Rhino model. The

newly placed objects will use the same parameters as those in your project's Object Default Settings.

Exception: Each object placed in ARCHICAD from a Rhino-based LCF is assigned an IFC Property known as Rhino Layer, displaying the object's layer name as originating from Rhino.



- **Deleted** objects will be deleted from the ARCHICAD project.
- **Modified** objects will be updated based on the object's current status (position, layer, group) as it exists in the LCF file. (Other parameters that are editable in ARCHICAD will not be updated.)

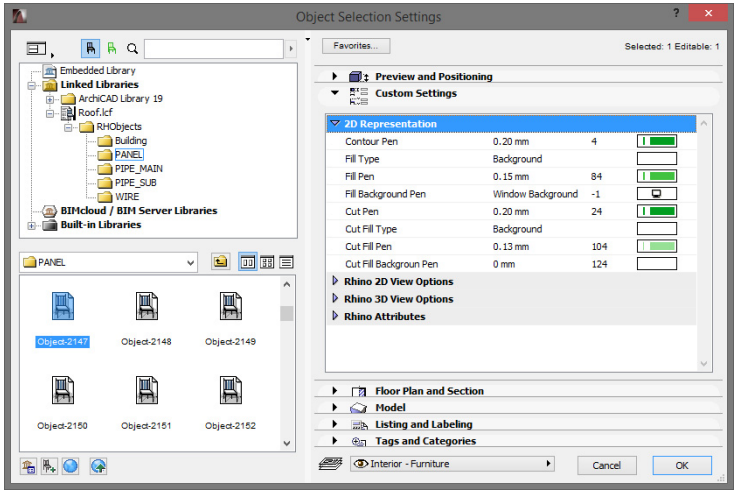
If any of the objects is not editable (e.g. it is locked, or is not reserved in Teamwork), the update cannot take place.

Using LCF Observer in Teamwork

- To link an LCF reference model to the project, you need the same permissions/reservations as with any other linked library.
- To be able to use the Rhino LCF Observer in Teamwork, you need the Design Tool Elements permission.
- In update the model, you need to reserve all placed instances of the affected Library Parts.
    - By default, all reservations for the placed objects automatically belong to the person who first used Place/ Update All in the project.

Rhino Object Settings in ARCHICAD

Like other ARCHICAD objects, an object imported from a Rhino model has adjustable parameters available from its Object Settings dialog box:

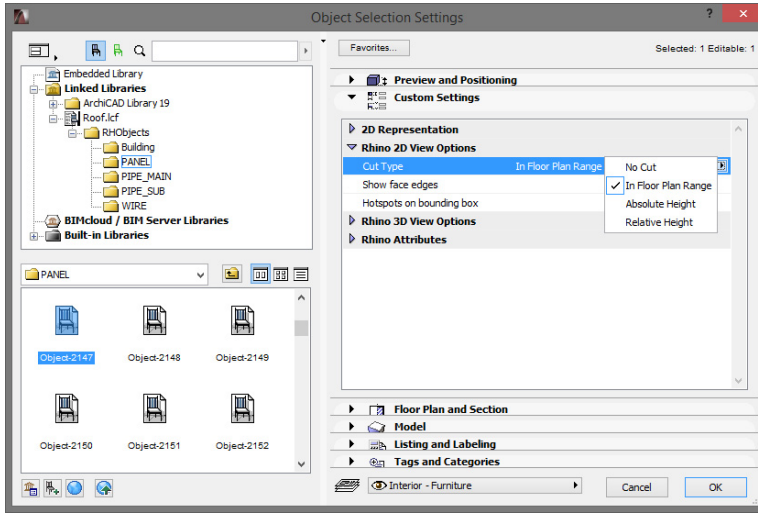


2D Representation

Use these parameters to set fills and pens for the object's 2D appearance in ARCHICAD.

Rhino 2D View Options

- **Cut Type:** These options define where the object is cut for display in 2D views:



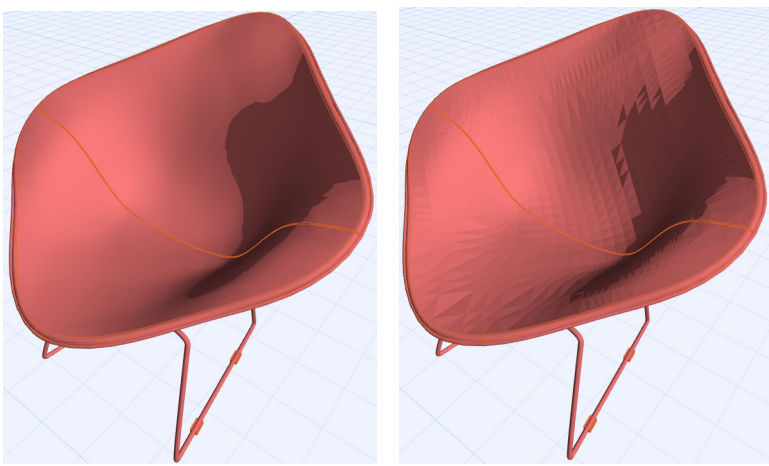
- **No Cut:** The object is displayed uncut (as a top view).
- **In Floor Plan Range:** The object is cut at the level defined in the ARCHICAD project's Floor Plan Cut Plane settings (at Document > Floor Plan Cut Plane).
- **Absolute Height:** If you choose this option, the Absolute Cut Height parameter appears. Enter a number to define the height (measured from the project origin) at which the object is cut.
- **Relative Height:** If you choose this option, the Relative Cut Height parameter appears. Enter a number to define the height (measured from the bottom of the current story) at which the object is cut.

- **Show/Hide face edges:** Show them if you want to select and edit edges.
- **Hotspots on bounding box:** Turn this on if you want to see additional hotspots on Rhino objects in 2D. This can be useful, for example, for dimensioning an orthogonal object such as a curtain wall.

Rhino 3D View Options

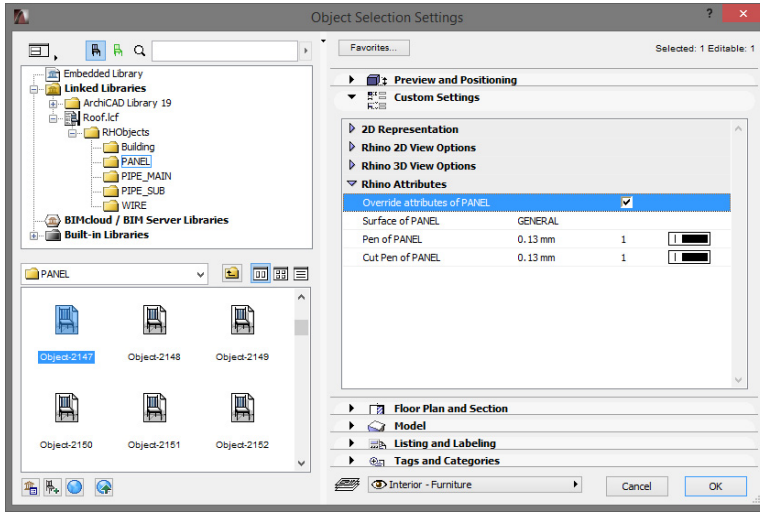
Use these checkboxes to fine-tune the object appearance in 3D:

- **Show/Hide face edges** (show them if you want to select and edit edges)
- **Show/Hide Hotlines** (you can snap to hotlines to facilitate selection)
- **Smooth edges:** Use this option to vary the shading effect of objects in OpenGL views.



Smooth Edges On (left) and Off (Right)
Model provided by flyingarchitecture.com

Rhino Attributes

By default, objects imported from Rhino will use the same surfaces and pens as in Rhino.

To override any of these surfaces and pen colors individually, use the Rhino Surfaces parameters as needed.