

Architectural BIM e-Submission Template

for ARCHICAD 19

Building and Construction Authority

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Building and Construction  Authority

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INTRODUCTION

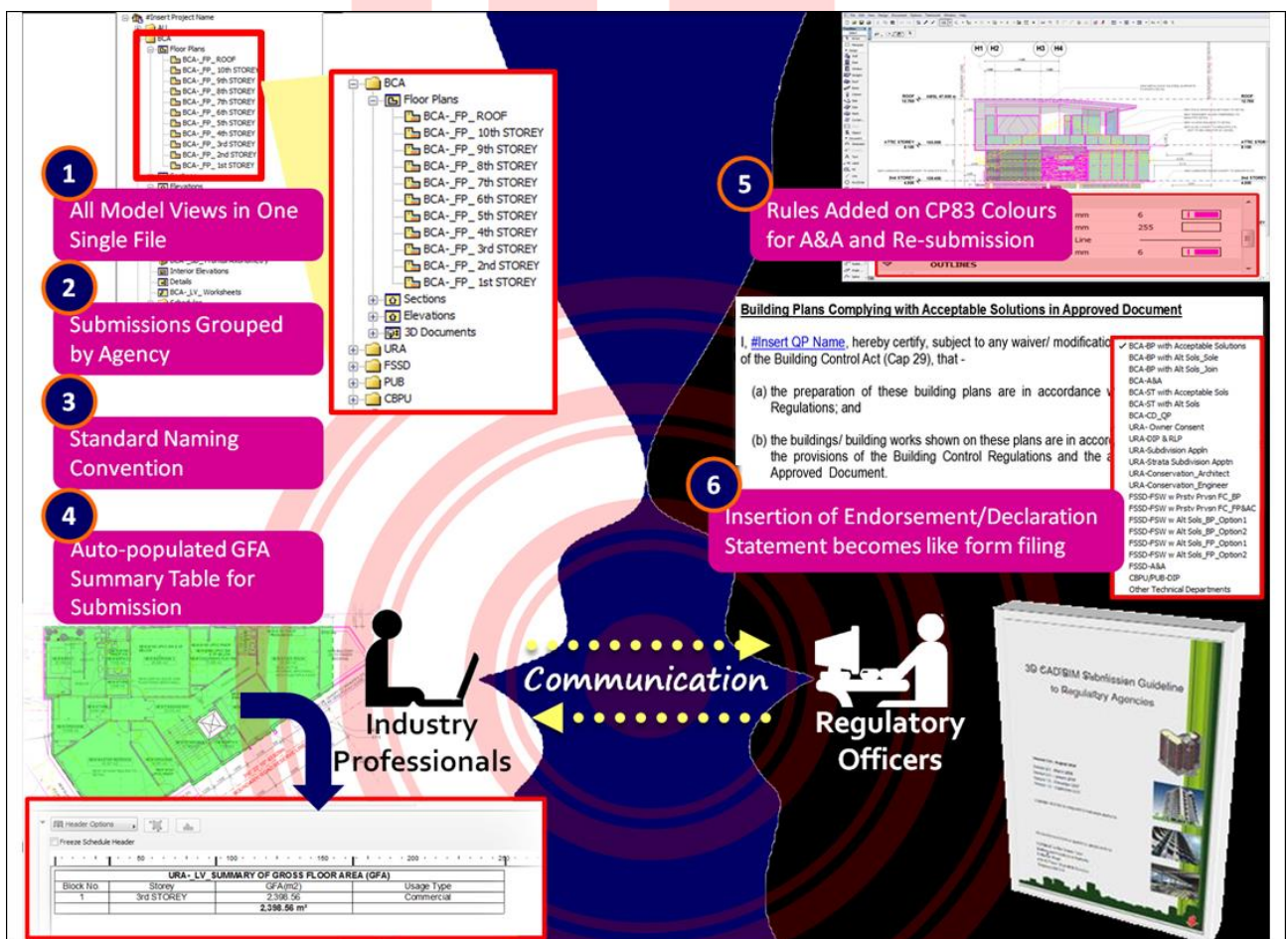
The objective of this document is to assist qualified persons (QPs) in developing BIM models to meet new requirements of the Building Information Model (BIM) submission.

It describes the features of the Architectural BIM e-Submission Template for ARCHICAD 19 and provides a step-by-step guide to apply them into the project. The template creates a basic structure to assist the QPs in preparing the BIM models for regulatory approval according to the Architectural BIM e-Submission Guideline. It is by no means an exhaustive template and QPs are allowed/required to edit/change it accordingly to suit their needs.

For any additional requirements that require customizations to a certain extent, QPs are also advised to make reference to the training materials distributed or to consult the respective software vendor for any enquiries on the application.

If there are contradictions between this submission guideline and vendor's instructions, BCA BIM team shall be contacted for clarification. Please note that any BIM Submission Guideline and its template shall be collected from the BCA BIM team.

This training material is to serve as a reference for GRAPHISOFT ARCHICAD 19 users only. The diagram below summarizes the most important features available in the submission template.

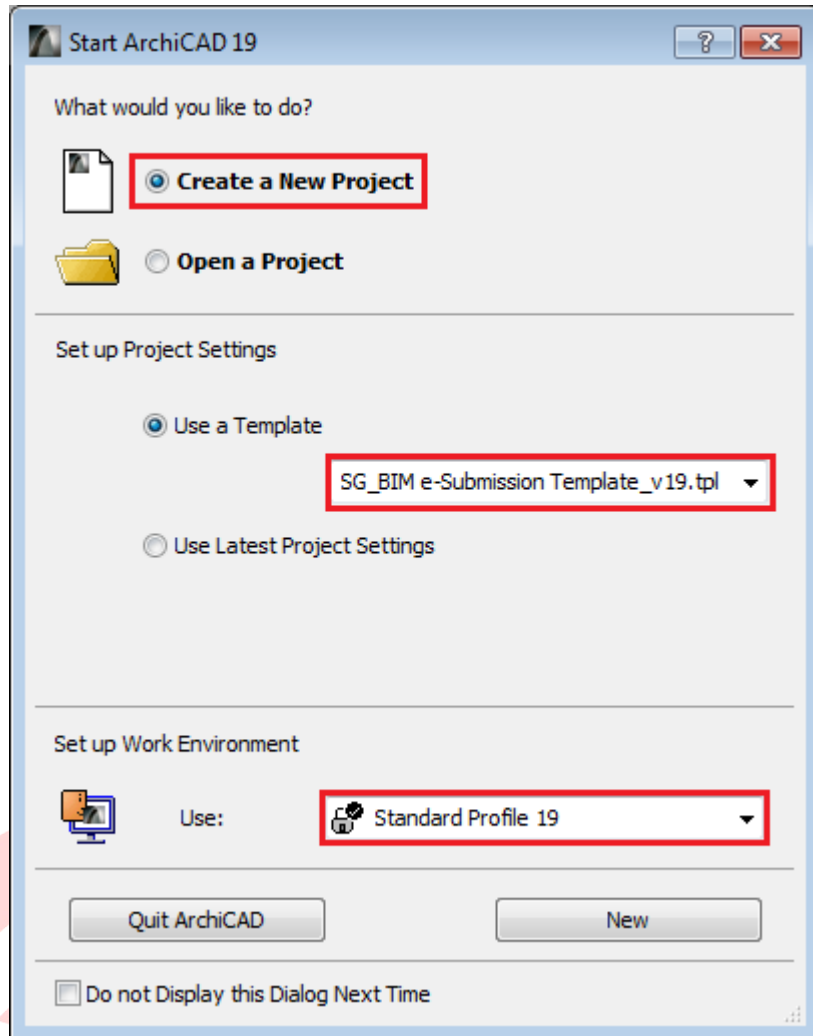


PART I - Getting Started

- 1 Launch **GRAPHISOFT ARCHICAD 19** using the desktop shortcuts.



- 2 The Start ARCHICAD 19 dialog appears, choose **Create a New Project** and select **Use a Template**. Click into the dropdown list and use the **Browse Template...** option to locate the **SG_BIM e-Submission Template_v19.tpl** template file.
- 3 Choose the **Standard Profile 19** Work Environment and click **New**.

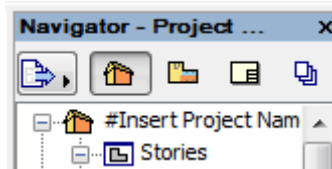


Note: To ensure the authenticity of the template file, make sure you obtain it from the [CORENET BIM Support Team](#) »».

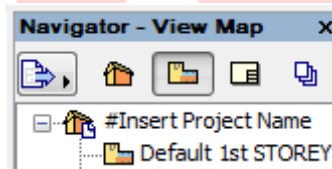
PART II - The ARCHICAD Navigator

The Navigator palette is displayed on the right side of the interface, containing the following tabs/selectors:

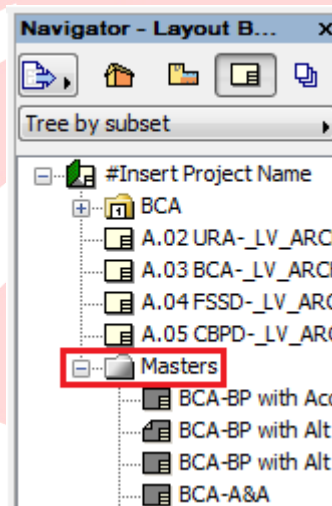
- **Project Map** - the entire model structure and the different viewpoints of the project.



- **View Map** - model views filtered for different purposes. The folder structure here is organized for BIM submission by different authorities and departments.



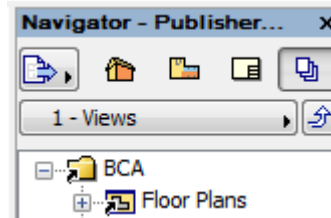
- **Layout Book** - predefined layouts and master layouts are collected here. Expand the **Masters section** and double-click a master layout to open it. The title blocks on the right can be customized to meet your company standards. Feel free to customize the title blocks for the different authorities and departments.



Note #1: Avoid changing other parts of the master layout unless you are sure that the AutoText fields (fields containing # marks) are kept intact, otherwise some texts might not appear correctly on the final layouts.

Note #2: Updating the master layouts is a one-time setting. To update the original template use **File/Save as...** menu option and override the existing template file. From now on the new template file can be used for new projects.

- **Publisher Sets** - collection of items referring to elements of the View Map and the Layout Book set for simplified and repeated document output. The most necessary formats are set as guidance, new publisher sets can be created with combined formats within the same publisher set.



NEW in the ARCHICAD 19 Template:

- pre-opened tabs for better performance and background processing
- default Schedules and Project Indexes imported from the ARCHICAD 19 INT Template
- default View Settings saved (Default 1st STOREY (GF) View)
- complete layout subset for BCA submission
- preset publisher sets for PDF, DWF and DWG output

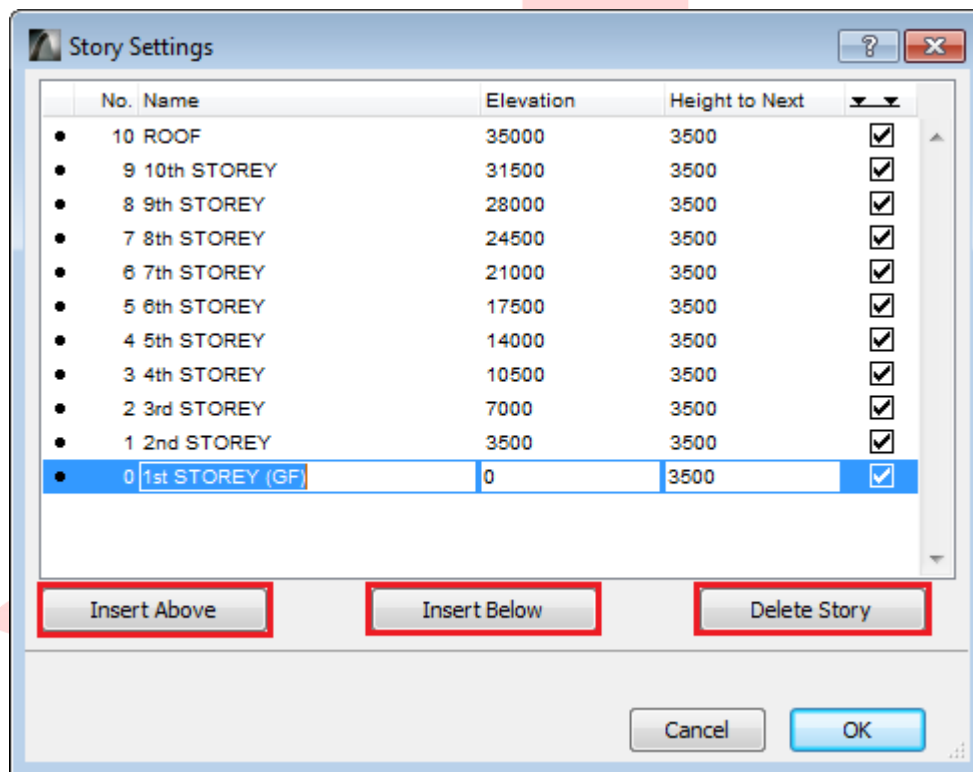
The BIM submission template serves as a basic platform to help you preparing your model for regulatory approval. It is not mandatory and you are free to edit it according to your needs as long as the final results presented to the authorities meet the requirements specified in the BIM e-Submission Guideline.

PART III - Story Settings and Reference Levels

By default the template contains 10+1 storeys (generic and roof). To edit the Story Settings use the **Design/Story Settings...** menu command or **CTRL/CMD+7** hotkeys (WIN/MAC).

All storeys have a consistent floor-to-floor height of 3500 mms which can be edited for the requirements of the specific projects. Major changes in the story settings, such as the number of storeys and heights should be carried out before starting the project.

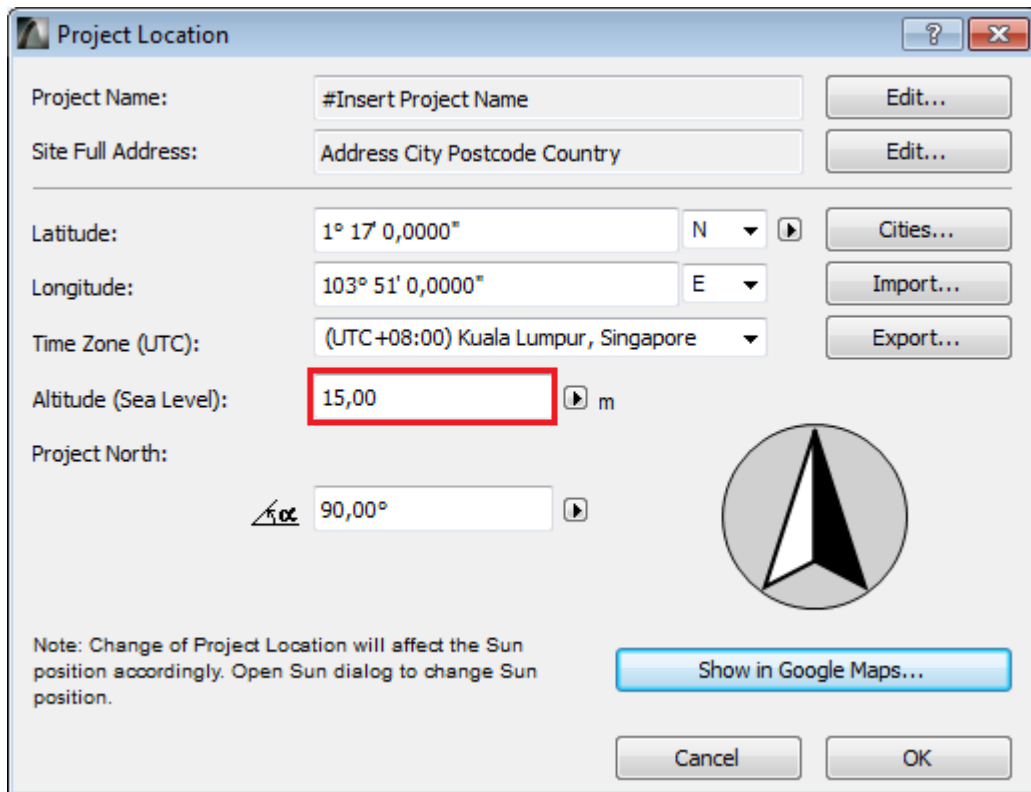
- 1 If your project has less storeys than in the template, select the unneeded storeys and click **Delete Story**. If you want to add storeys select an existing story and use the **Insert Above/Insert Below** buttons respectively.



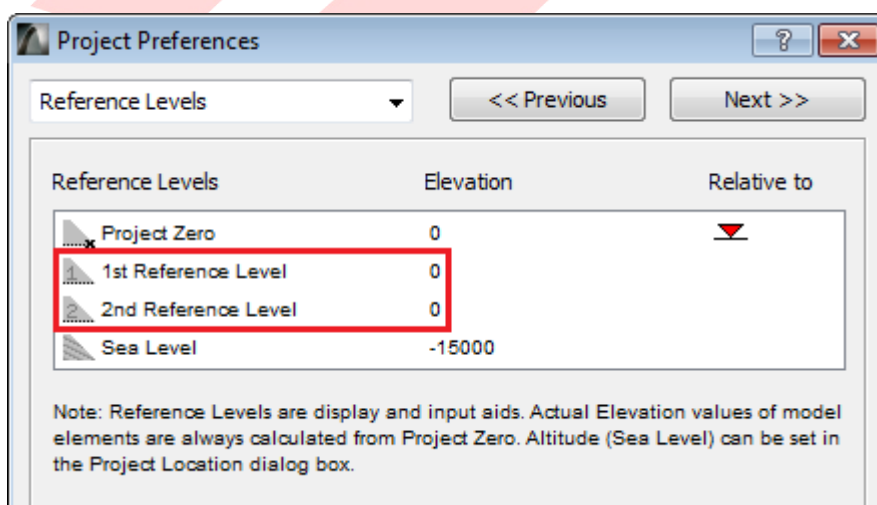
The current template uses the Project Zero as the height reference when displaying elevation dimensions meaning that all elevation heights will be measured from $\pm 0,00$.

Altitude (AMSL, or Sea Level) is set for a default of +15.00 meters for Singapore. To change the sea level reference:

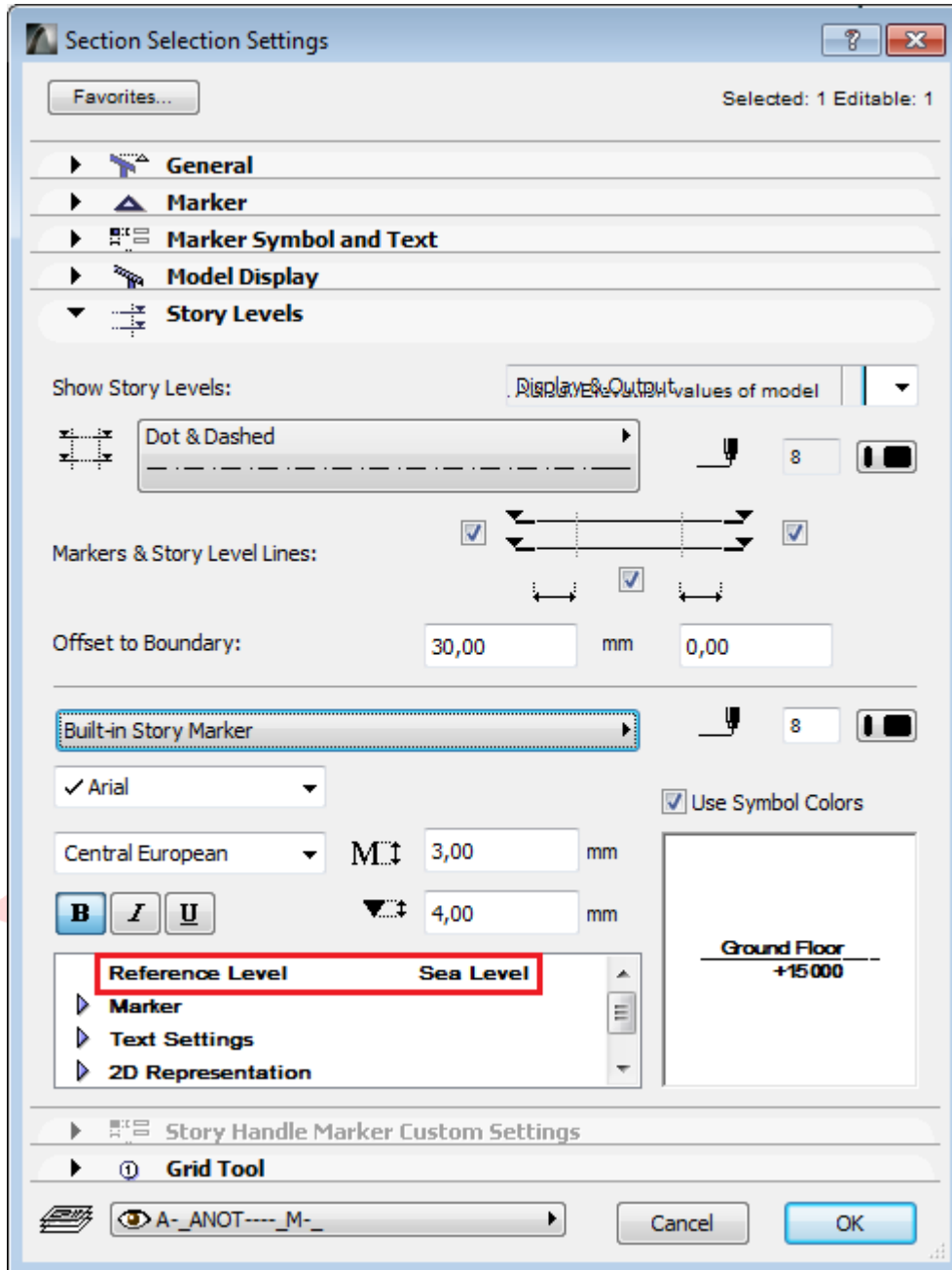
- 1 Go to **Options/Project Preferences/Project Location...** and change the **Altitude (Sea Level)** value (also change Time Zone (UTC) if settings differ from Singapore time zone).

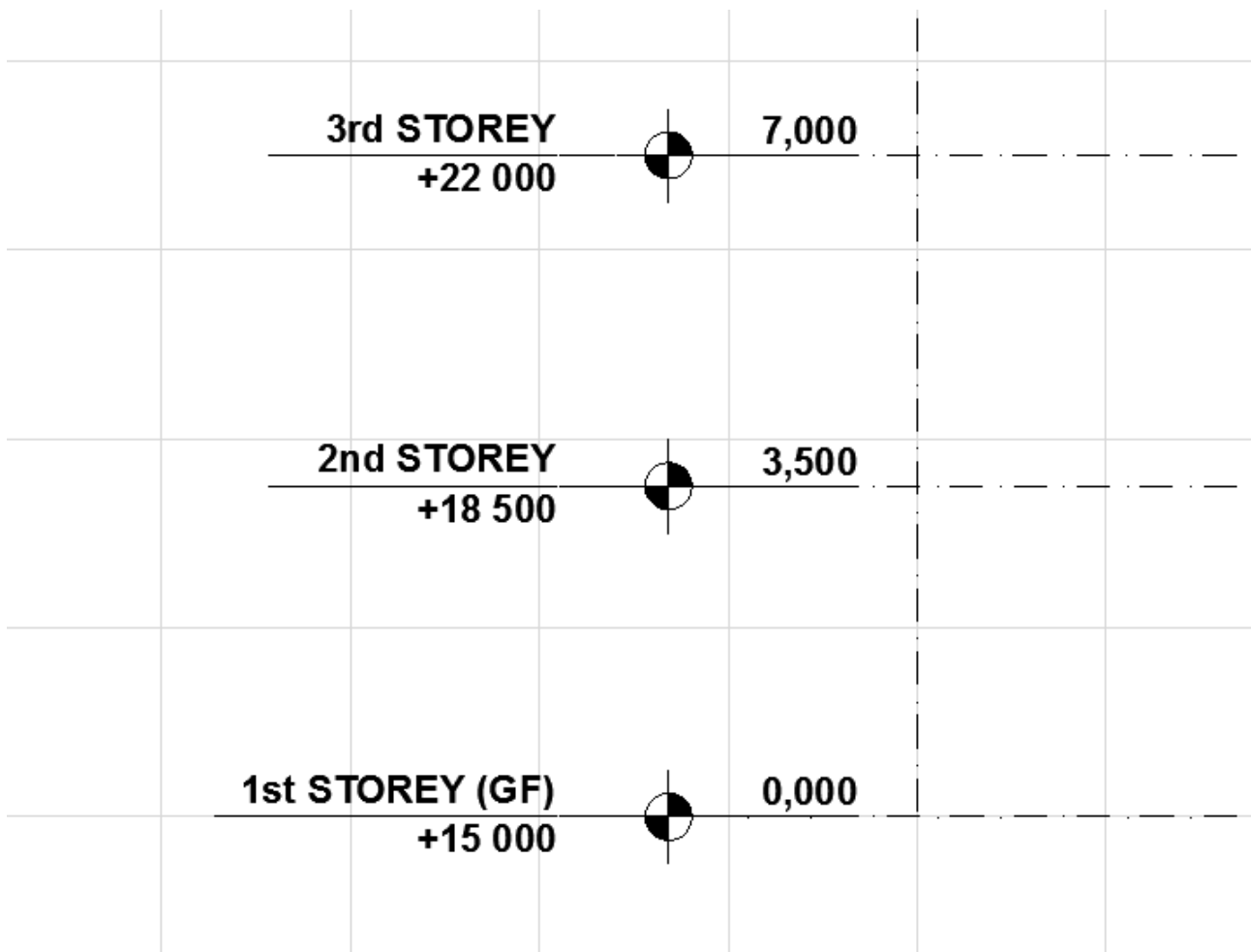


- 2 This will result in a negative value if the *Relative to* marker next to the Project Zero entry is kept at the **Options/Project Preferences/Reference Levels...** dialog. To add new reference levels change the values of **1st/2nd Reference Level**. The units of the values follow the working unit settings, millimeters by default.



- 3 To apply the new reference level, open the **Settings dialog** of an elevation/section viewpoint from the Project Map by right-clicking it and choosing **Section/Elevation Settings...** respectively. On the **Story Levels panel** choose the reference level you set (**Sea Level**). Repeat this with all viewpoints that require the same reference level.

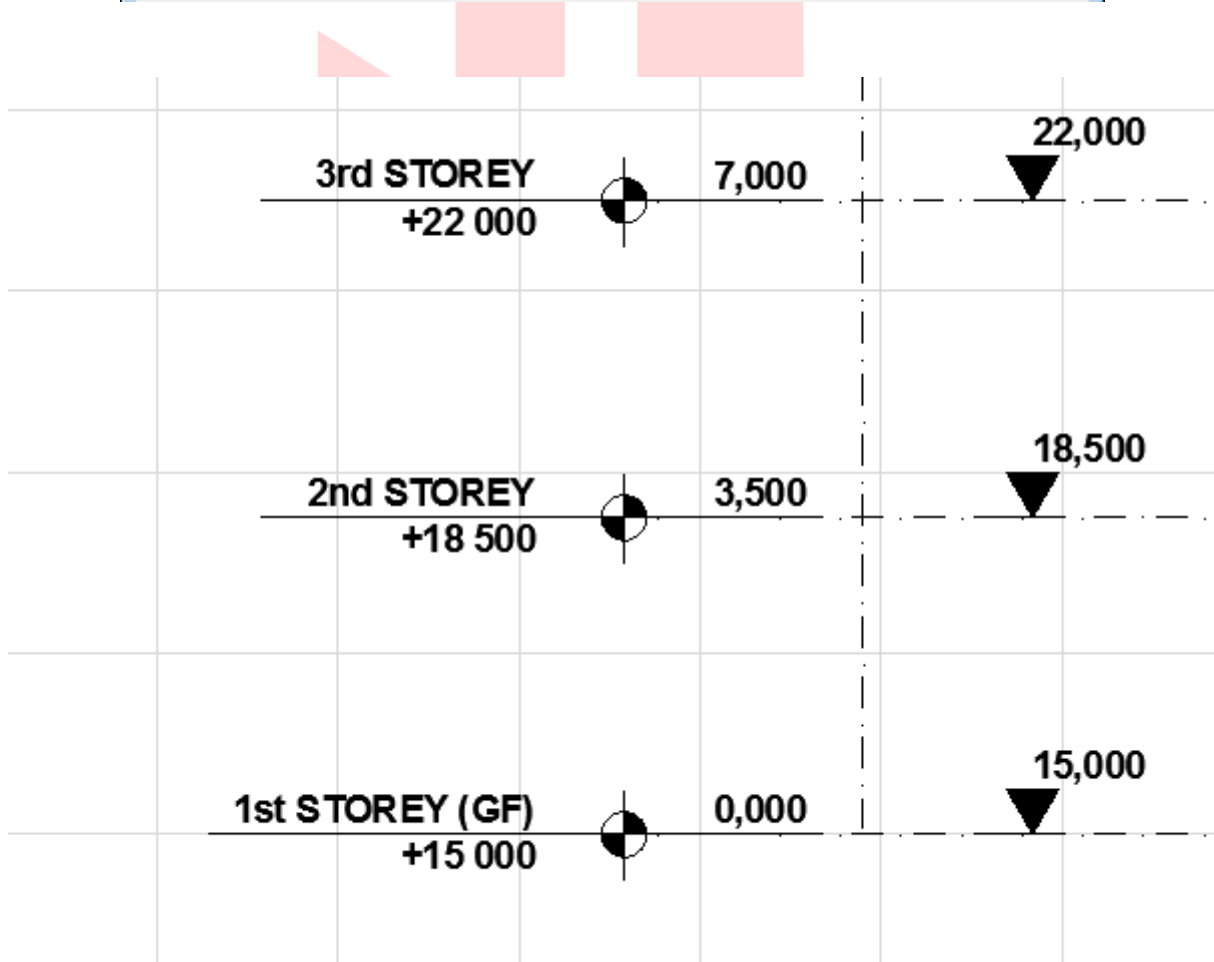
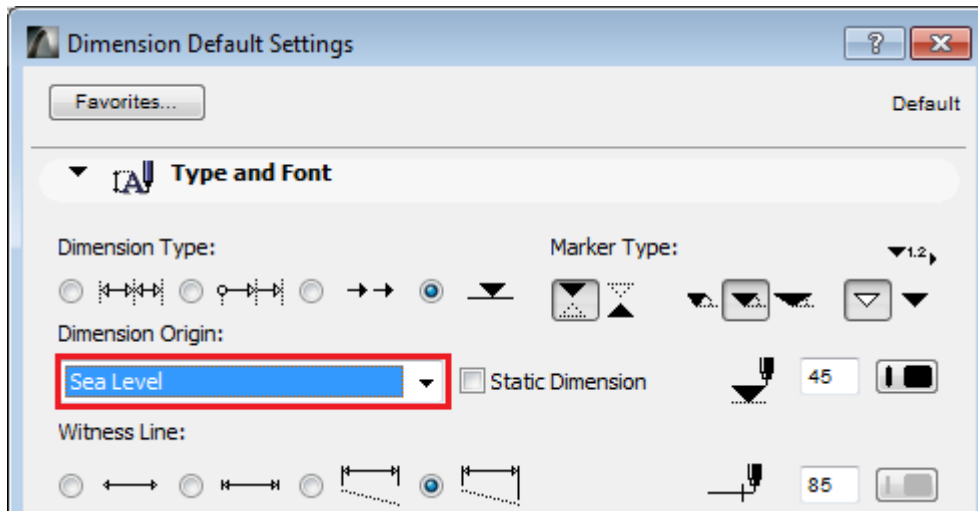




NEW in the ARCHICAD 19 Template:

- new story heights
- associative elevation markers
- reference levels in accordance with ARCHICAD 19 INT Template

When adding elevation dimensions to the sections/elevations with the new elevation reference, adjust the Elevation Dimension settings as well to the new reference level.



Find more information on the Story Settings
at the [GRAPHISOFT Help Center here >>>](#)

PART IV - Site, Terrain and Surroundings

Surroundings can be exported in many different formats, such as 2D DWGs, text files or Point Clouds.

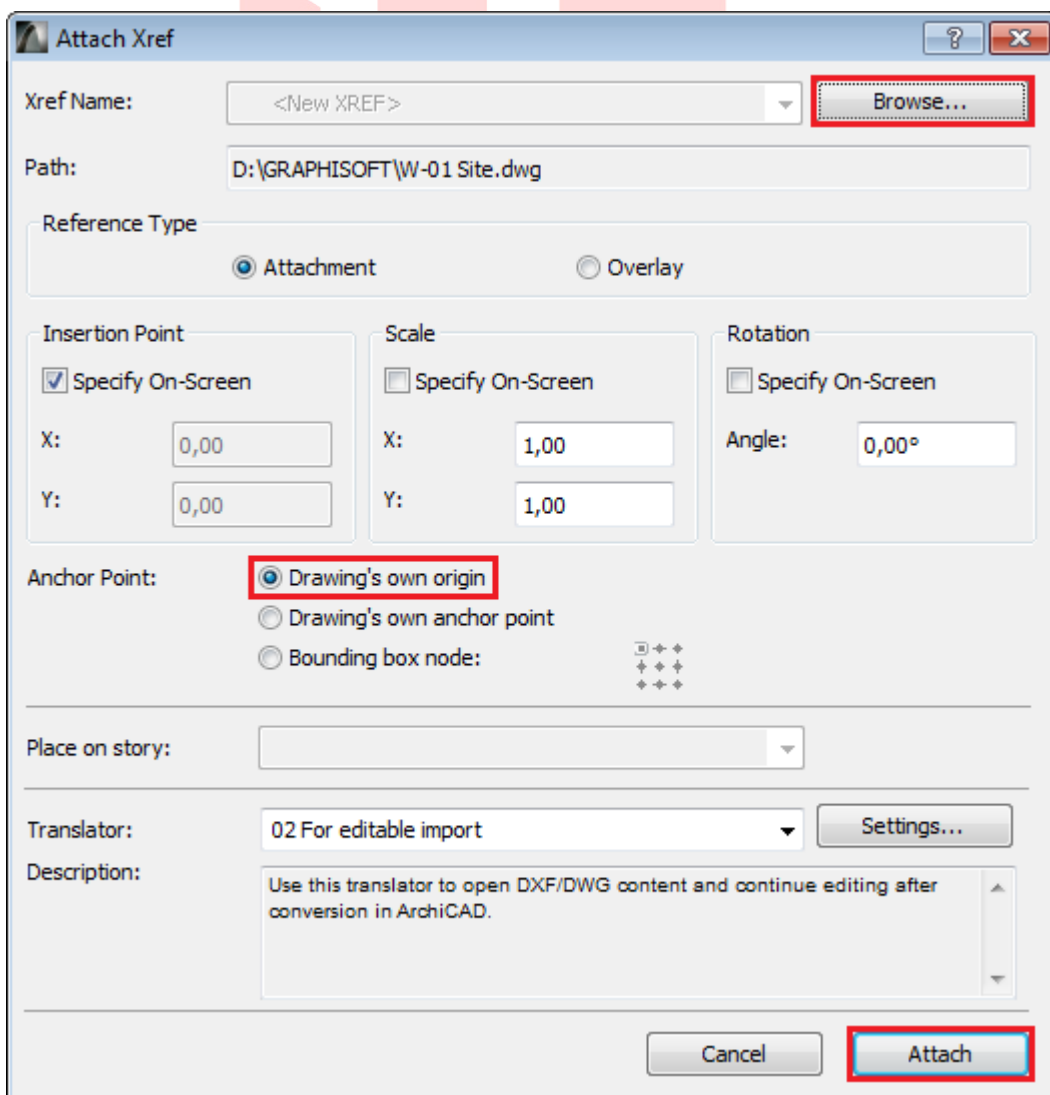
DWG

To import a topography map provided by a surveyor in DWG format:

- 1 Go to **File/External Content/Attach Xref...**

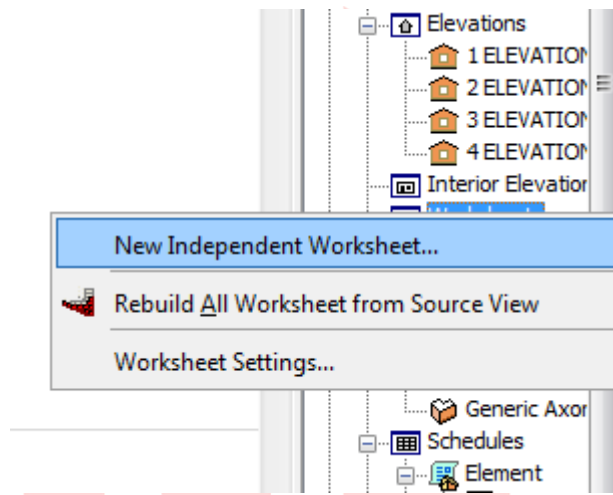
Note: Set the scale to 1:1000 for both X and Y in the Attach Xref dialog if your ARCHICAD working unit (mm) is different from the units used for the CAD topography map (meters).

- 1 Browse for the file and make sure the **Drawing's own origin** is selected as an Anchor Point and click **Attach**.

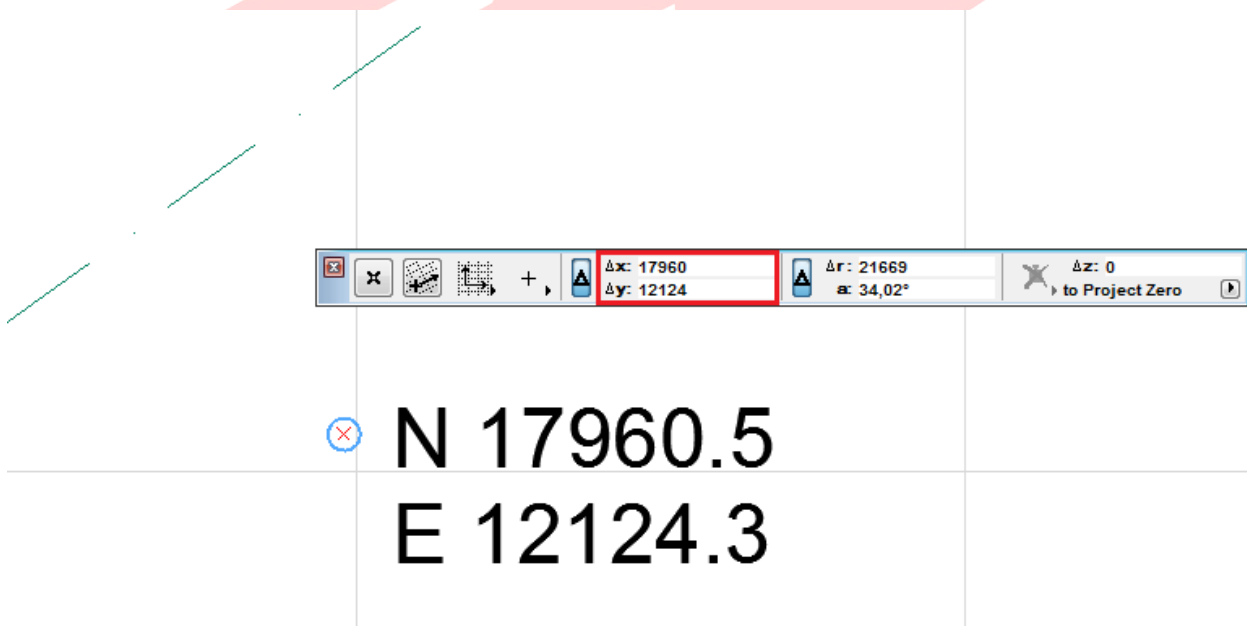


- 2 If prompted for the location of SHX font and shape files click **Skip All** unless you have the specified font substitution in you translator. Click a spot to define the origin point of the topography map.

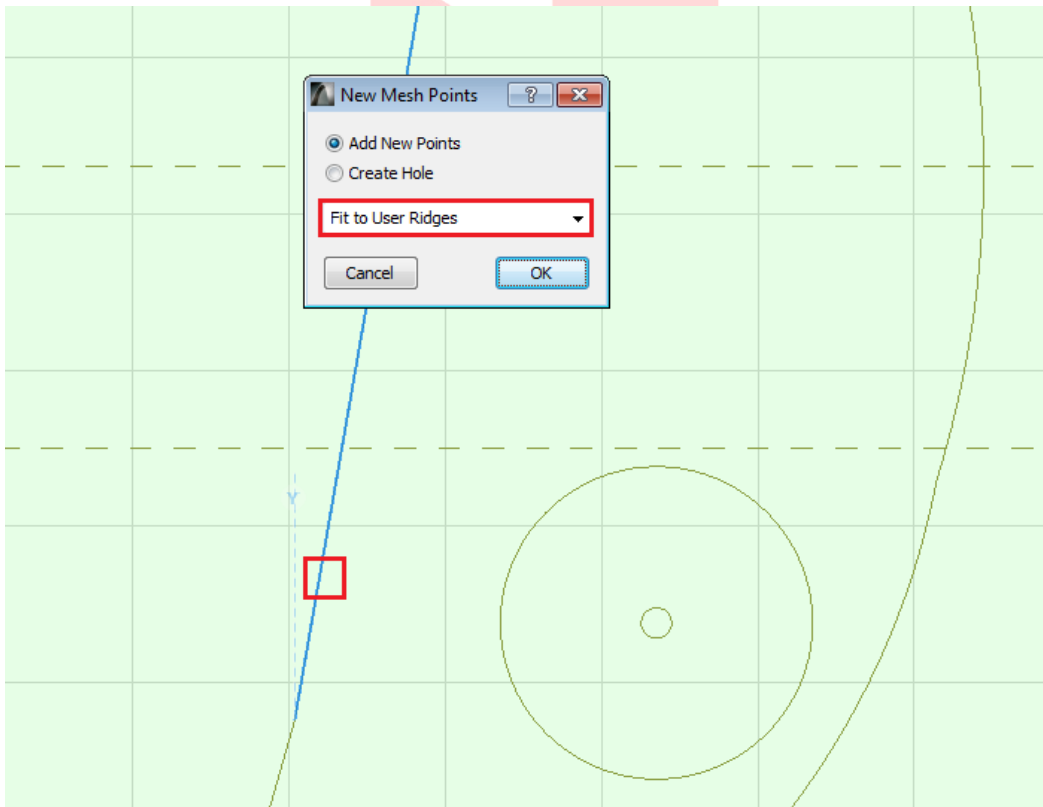
Note #1: For easier referencing external drawings are best placed onto independent Worksheets. Create new worksheets for the different items by right-clicking the **Worksheets** entry in the Project Map and choose **New Independent Worksheet...** Use the Trace and Reference function from the viewpoints where you want to create the model based on the referenced drawings (Show as Trace Reference on the Worksheet entries).



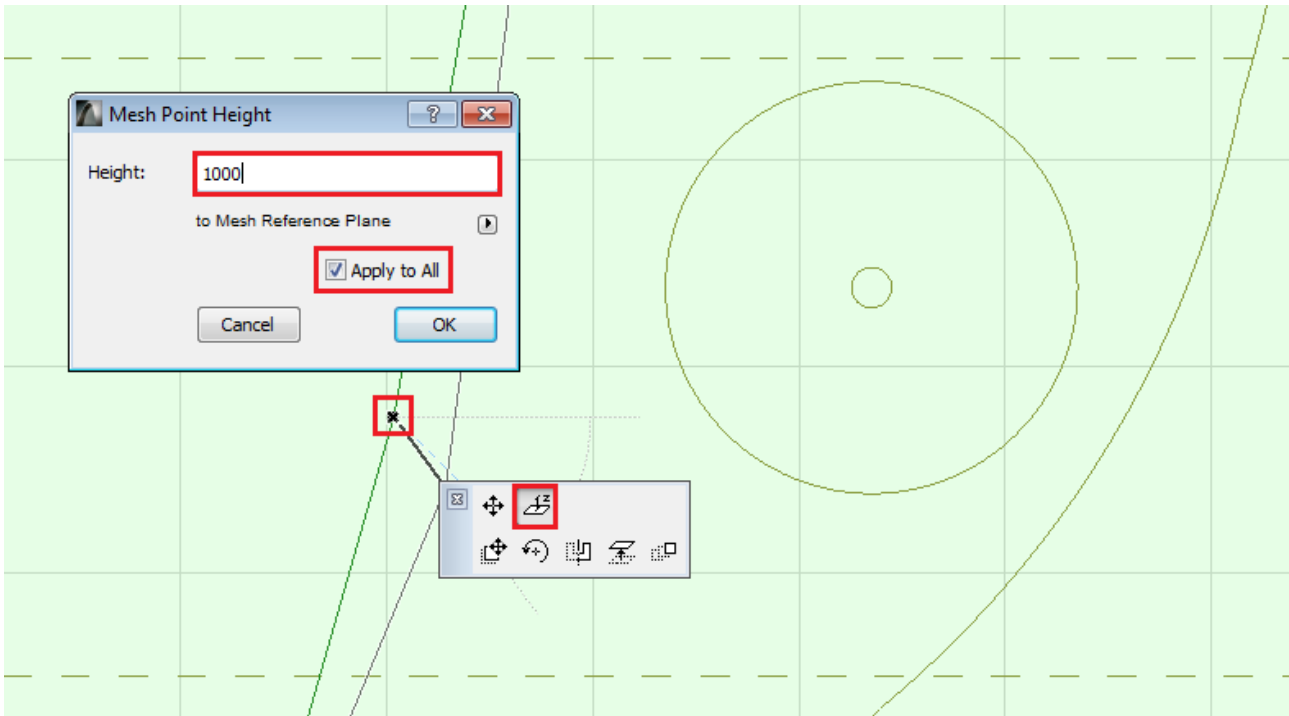
Note #2: To double check that your model shares the same coordinate system as the topography map enable the Coordinates palette below **Window/Palettes/Coordinates** and move the cursor above a reference point of the map to verify its coordinates.



- 3 Select the elevation and section markers and adjust them to the topography map. Similarly you will need to move the markers and the boundary lines appearing on the elevation and section viewpoints as well.
- 4 To create a model of the terrain use the **Mesh tool** in the Toolbox. Draw the boundaries of the terrain.
- 5 Recreate continuous mesh ridges by first selecting the **mesh** and activating the **Mesh tool** in the Toolbox.
- 6 Press and hold the **SPACEBAR** and click on the ridges of the DWG reference.
- 7 Keep **Fit to User Ridges** selected in the upcoming dialog and click **OK**. Create the remaining ridges similarly.



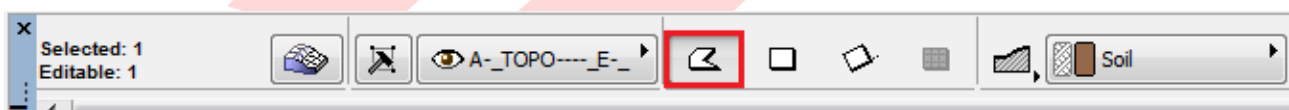
- When done creating the ridges make sure that the mesh is selected and the Mesh tool is still activated. Click on a **node** of a ridge and choose the **Elevate Mesh Point...** command of the Pet palette. Check the **Apply to All** checkbox to raise all nodes of the ridge and choose the appropriate reference plane. Elevate the remaining ridges similarly.



- As a last step adjust the corner nodes of the mesh (**uncheck Apply to All**).

In case the imported drawing contains only surveying point locations, but no ridges, you can still add and elevate the points as follows.

- Select the **mesh** and **activate the Mesh tool**. Choose the **Polygonal geometry method** in the Info Box.

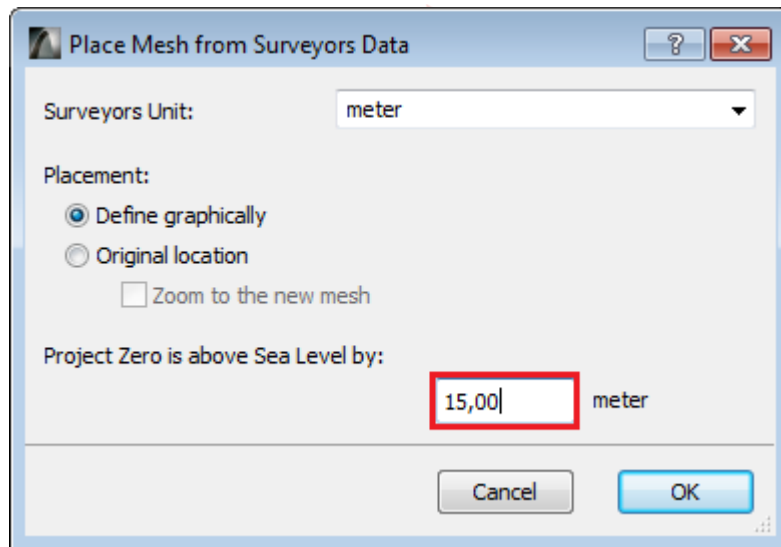


- Double click the referenced surveyor points to create them. Click **OK** with the **Fit to User Ridges** option selected in the upcoming dialog. Create the remaining points similarly.
- Elevate the points one-by-one using the **Elevate Mesh Point...** command (similarly to the ridges).

Surveyors' Data File

The land surveyor can also provide a topographic file in TXT or XYZ format which are easier to visualize and model in ARCHICAD.

- 1 Go to **Design/Place Mesh from Surveyors Data....**
- 2 Choose a surveyor data file to open, a dialog will pop up for configuration settings for placement and altitude. Set the latter according to the project location settings.

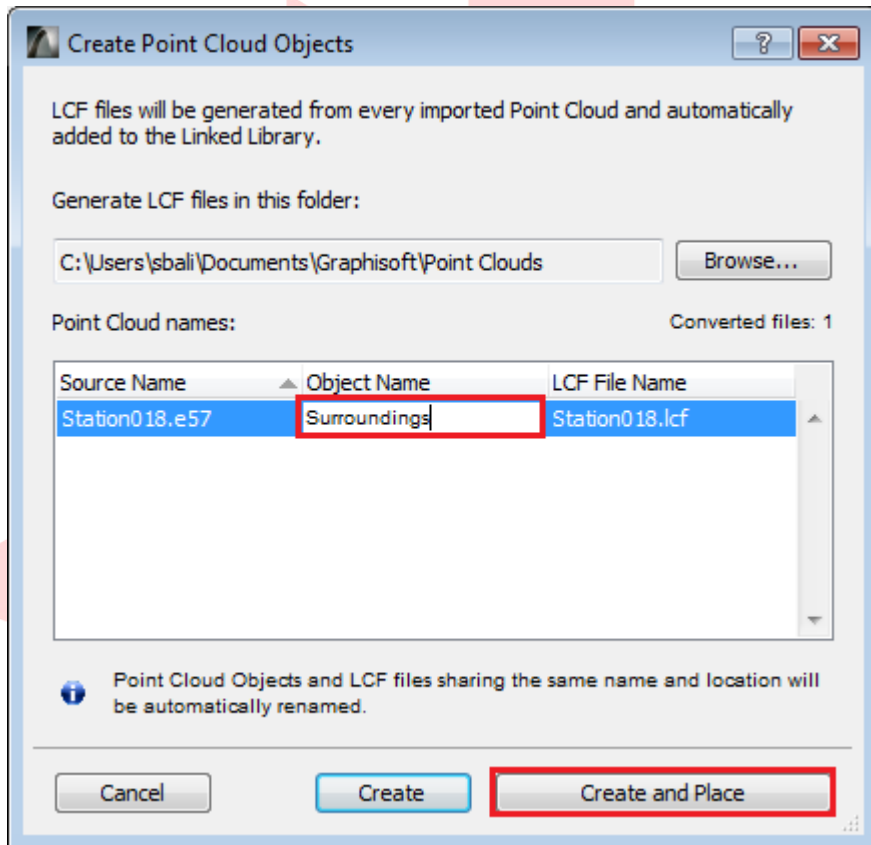


Note: The topographic files of both TXT and XYZ format must be saved with ANSI encoding prior importing them into ARCHICAD to be shown in the model space.

Point Clouds

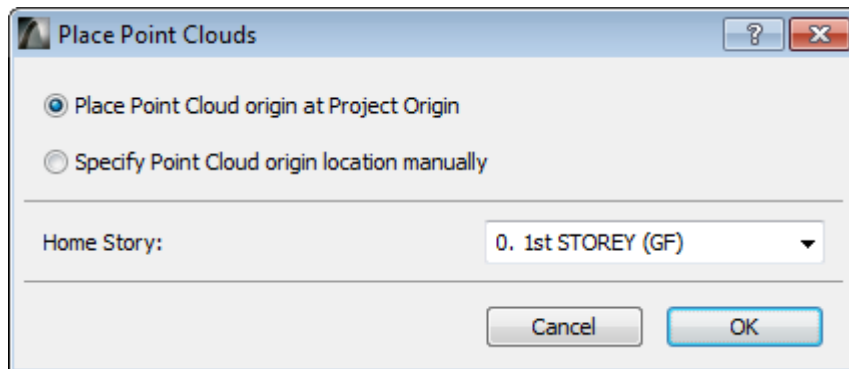
ARCHICAD natively supports the industry standard E57 and XYZ Point Cloud file formats which can be imported and used to model existing buildings before renovations, surroundings or as-built structures.

- 1 Open **File/File Special/Import Point Clouds...** from a floor plan viewpoint.
- 2 Select the desired Point Cloud file and click **Open**. The Format Conversion dialog will appear if importing an XYZ format Point Cloud file.
- 3 In case of E57 format you only need to specify the name of the object the point cloud will be converted to.

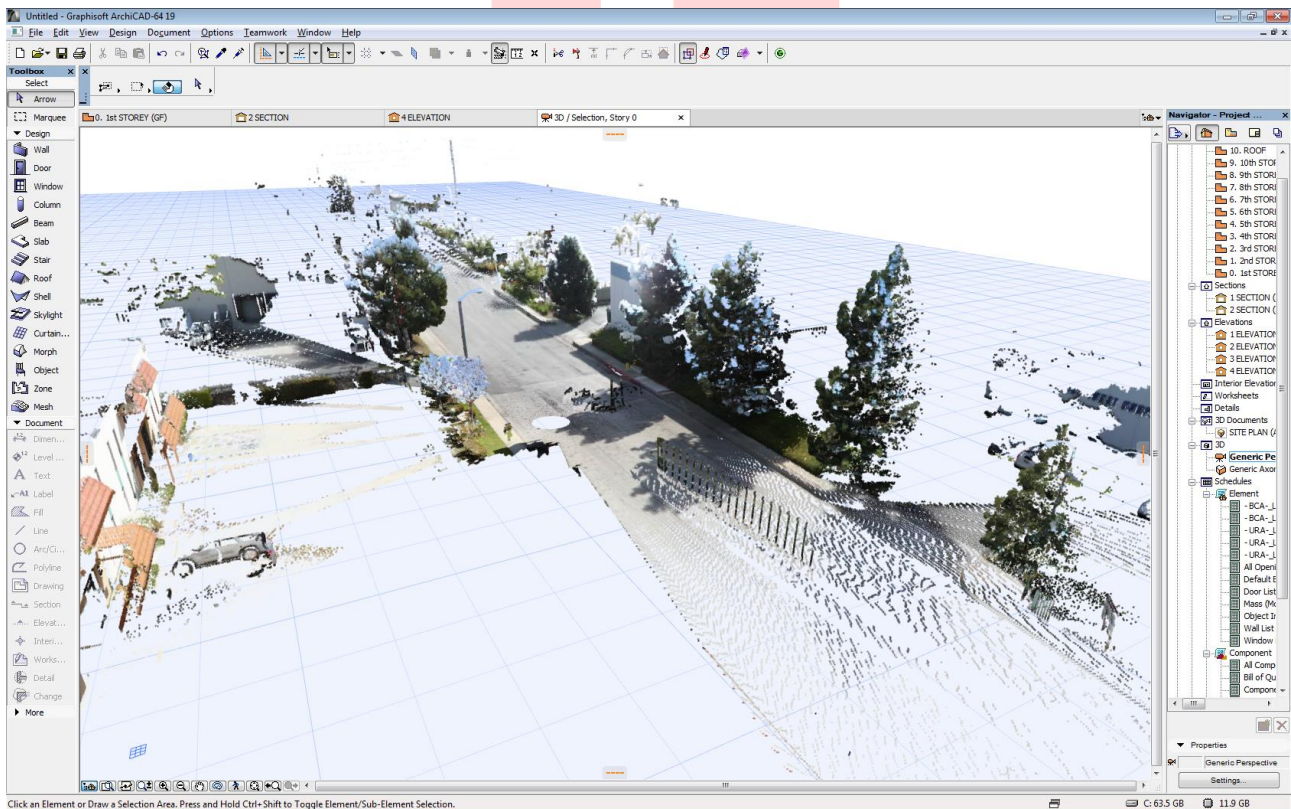


- 4 Specify the name of the object that will be created after the import in the Create Point Cloud Objects dialog and click **Create and Place**.

- The Place Point Clouds dialog will prompt for the placement location of the generated object. Set the position and click **OK**, the object will be placed into the floor plan.



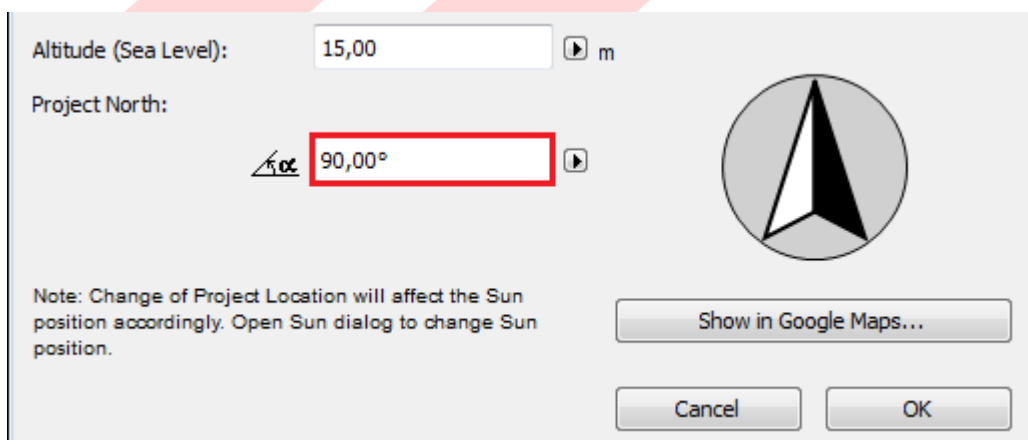
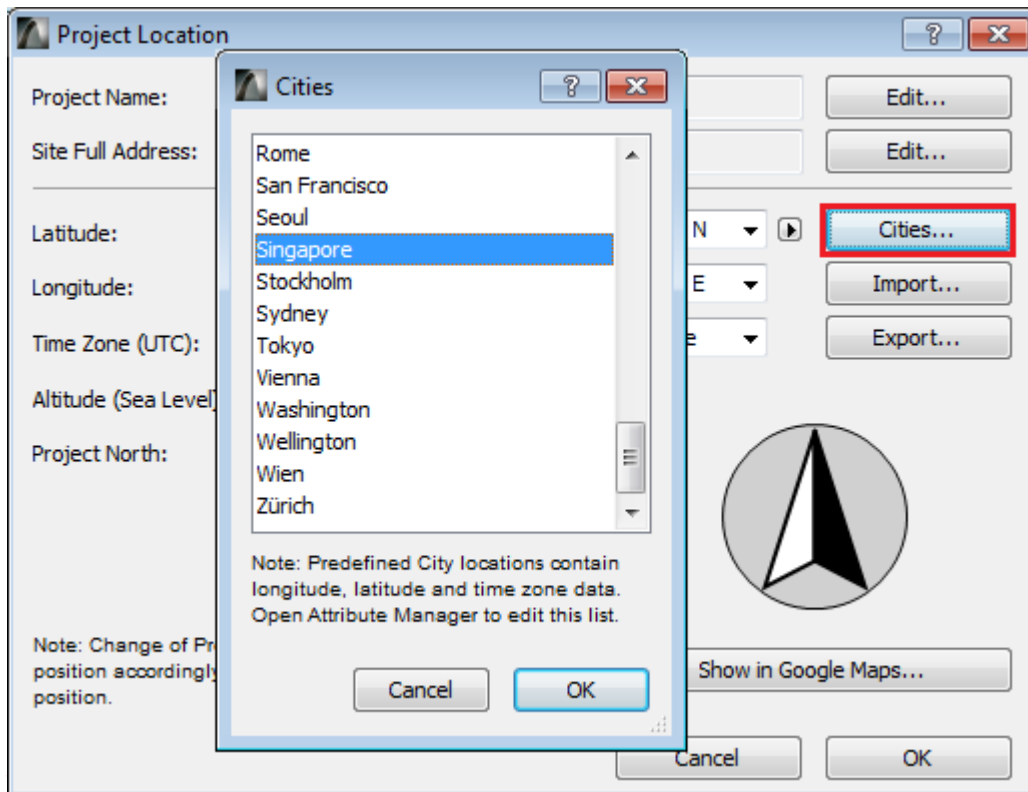
Note: the recommended use of imported Point Clouds is referencing only, these objects cannot be used for visualizations.



PART V - Project Location and Orientation to True North

To change the project orientation to True North and the location

- 1 Go to **Options/Project Preferences/Project Location...**
- 2 Click **Cities...** to define a different location than Singapore and set Project North to the true orientation of the project.

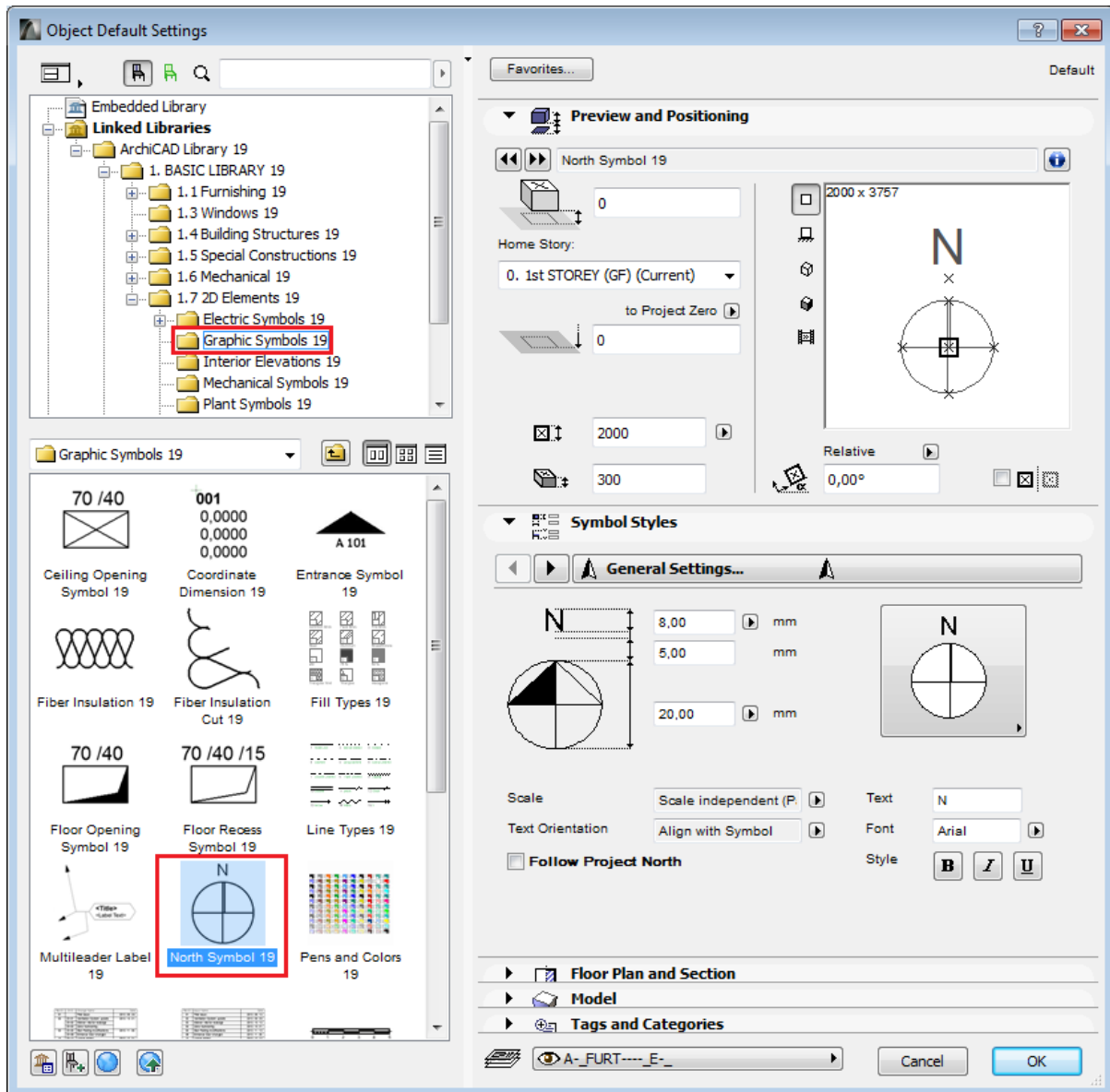


Note: The ARCHICAD term *Project North* is equal to True North.

NEW in the ARCHICAD 19 Template:

- Singapore set as default location (latitude, longitude, altitude)

To place the north symbol on the floor plan, use the **Object tool** and locate the **Linked Libraries/ArchiCAD Library 19/1. BASIC LIBRARY 19/1.7 2D Elements 19/Graphic Symbols 19/North Symbol 19** or type **north** into the search field at the top of the settings dialog.

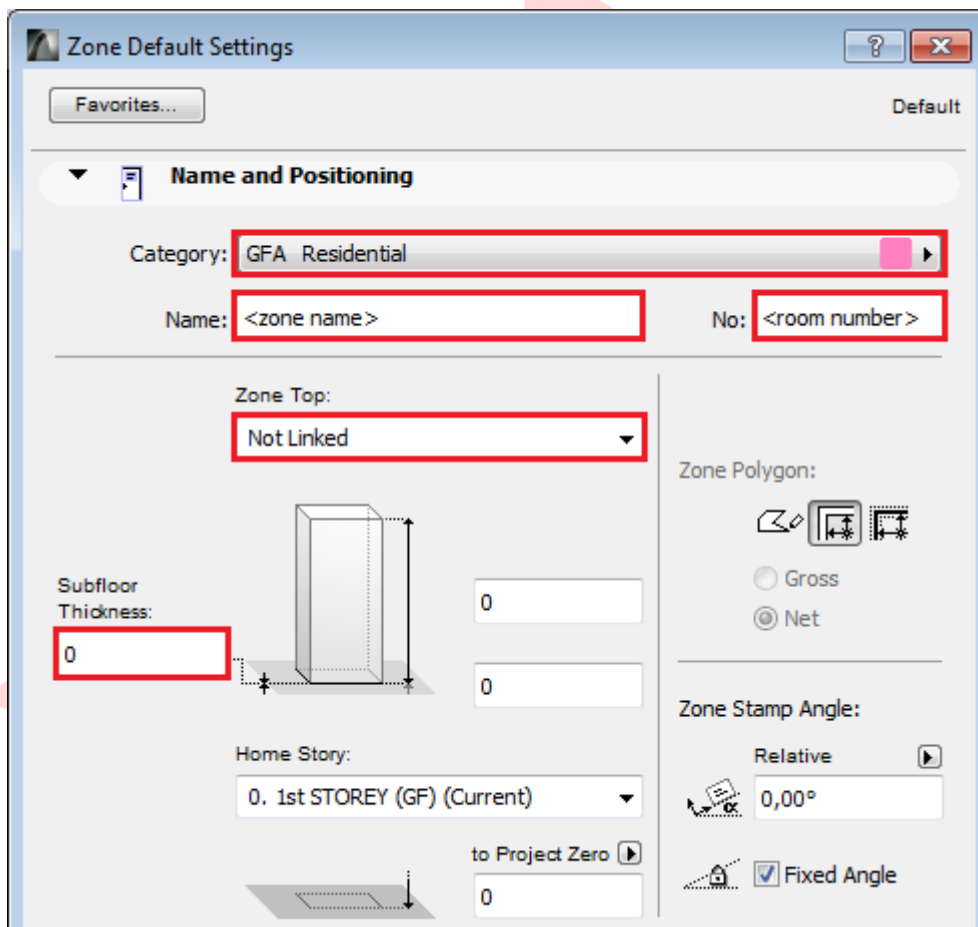


Note: the North symbol will only rotate automatically if the orientation is set correctly.

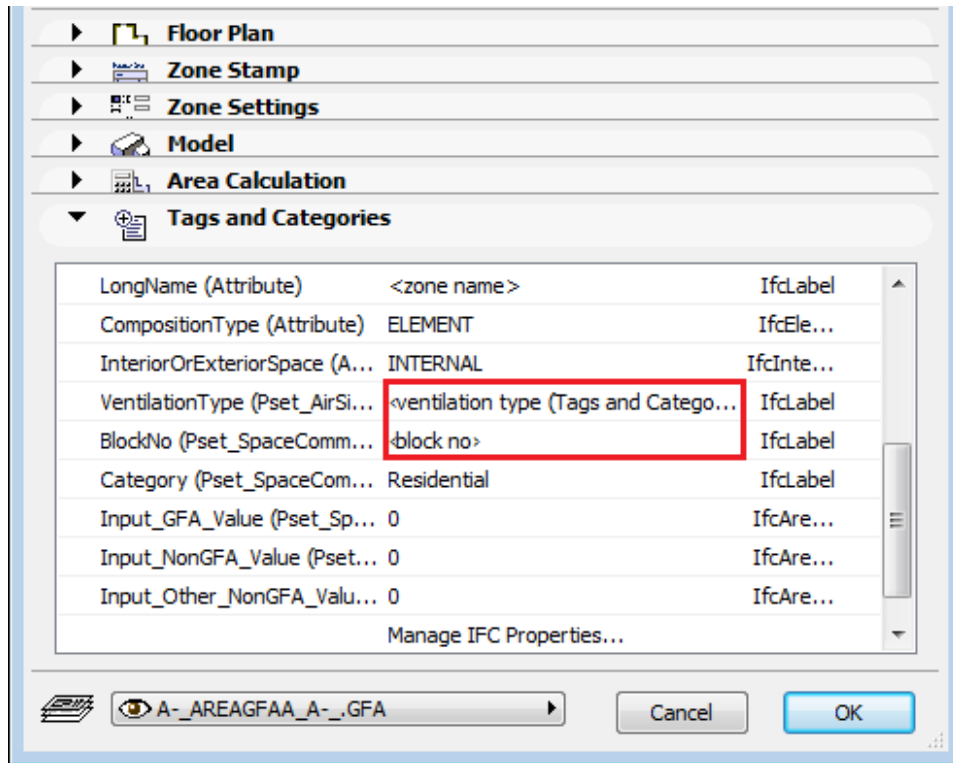
Find more information on the Project Location and True North
at the [GRAPHISOFT Help Center here >>>](#)

PART VI - GFA Tabulation (for URA)

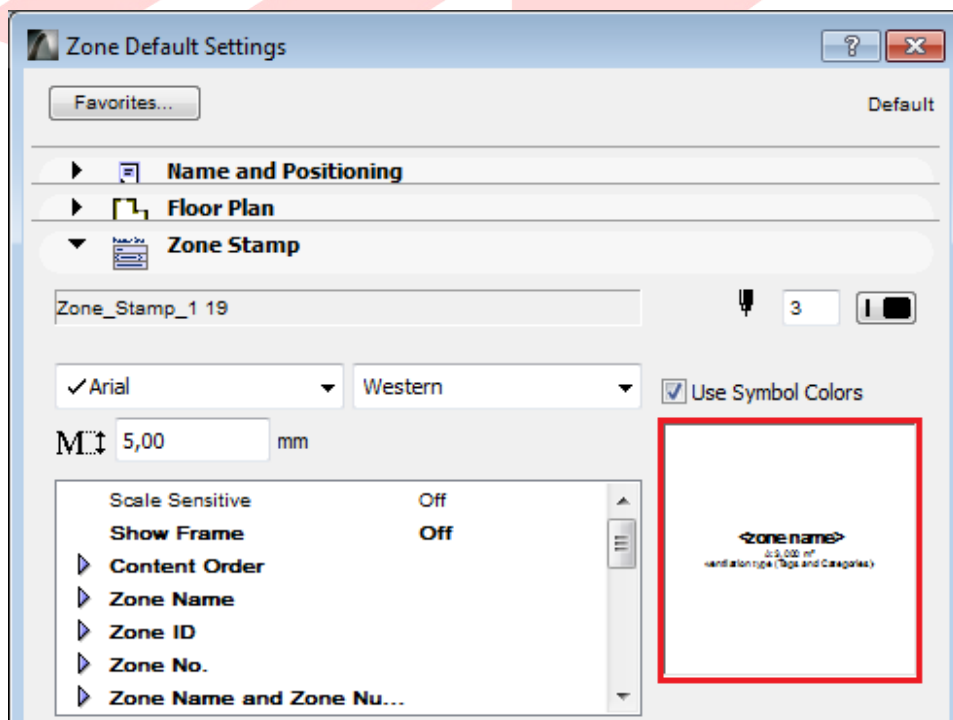
- 1 Open a **floor plan** viewpoint from the Navigator.
- 2 Activate the **Zone tool** and open its settings. Select the appropriate **Zone Category** and insert a **Zone Name**. Always set the **Zone Top** according to the actual story heights considering top offsets as well when linked to a storey above. The top of the zones should always touch the bottom surface of the element(s) above. Subfloor Thickness also has to comply with the actual composite settings (finishing skins) of the bottom construction.



- In the **Tags and Categories** panel, fill the **VentilationType (Pset_AirSideSystemInformation)** property to define the type of ventilation. This will be displayed in the Zone Stamp. Also fill the **BlockNo (Pset_SpaceCommon)** property if necessary.



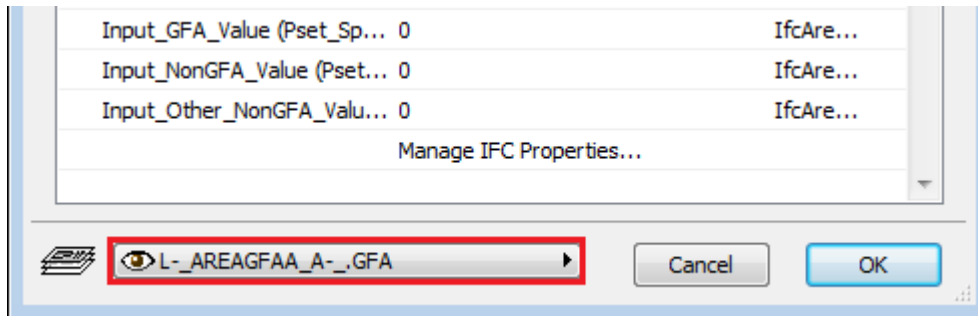
- Check the appearance of the **Zone Stamp** on the corresponding panel, Zone Name, Measured Area and Ventilation Type should be displayed.



Note: To turn on/off the display of the Ventilation Type parameter (or other properties from the Tags and Categories panel) go to **Zone Stamp panel, Additional Tags section/1. Row** and change the value to **None** or select one from the available parameters.

To turn off the display of all Additional Tags in general go to the **Zone Settings panel/Content Order section** and click the **(-) button** besides the Additional Tags row.

- 5 Select the **L_AREAGFAA_A-.GFA** layer and create the zone polygon of the floor plan. Click with the hammer icon to place the Zone Stamp.



NEW in the ARCHICAD 19 Template:

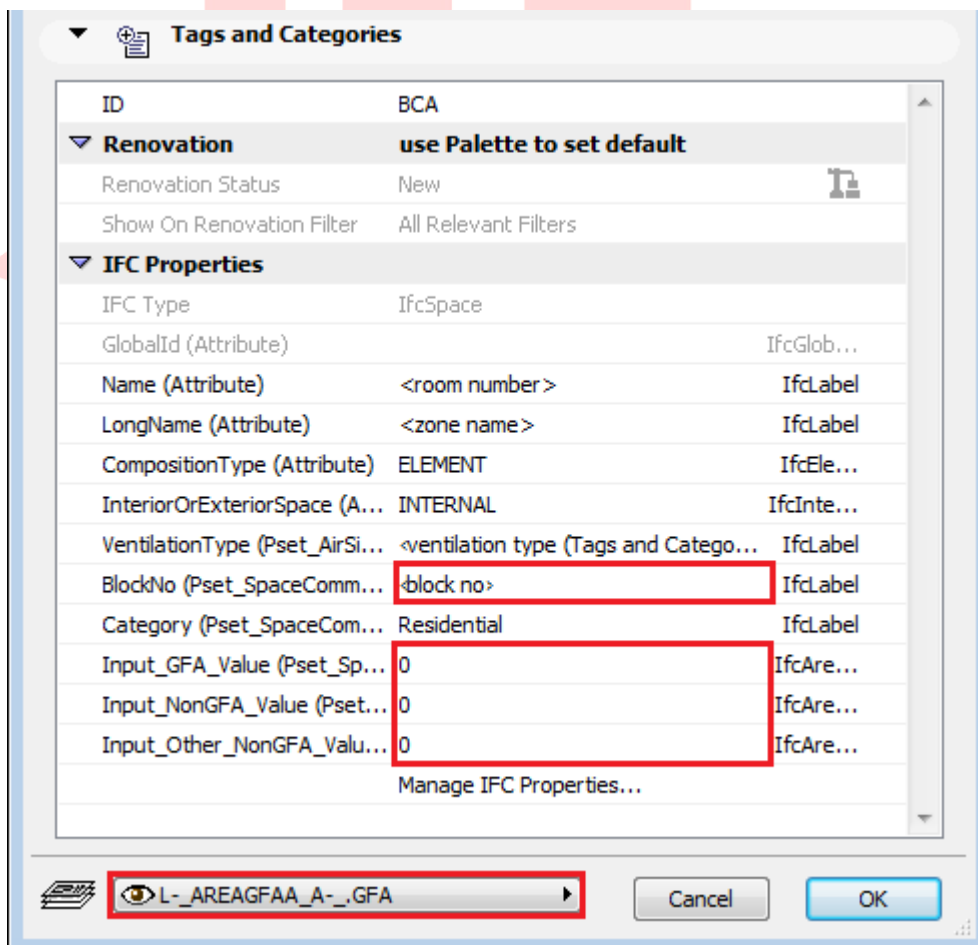
- Zone Stamp using the ARCHICAD 19 default tool (no additional embedded elements in the template)
- 6 Double-click to open the **- URA-_LV_ SUM OF GROSS FLOOR AREA (GFA) ver1** under the **Schedules** folder.
 - 7 To learn more and configure the settings of other tables click the **Scheme Settings button...** at the top right.

PART VII - SGFA Tabulation (for BCA)

Schedules SUM OF STATISTICAL GROSS FLOOR AREA (SGFA) and SUM OF OTHER AREAS OF OTHER AREAS NOT INCLUDED IN GFA COMPUTATION can be viewed under the **BCA/Schedules folder** of the **View Map**.

To generate the SGFA table for areas NOT calculated as GFA automatically:

- 1 Activate the **Zone tool** and open its settings. Select the appropriate **Zone Category** and insert a **Zone Name**.
- 2 Check the appearance of the **Zone Stamp** on the corresponding panel, Zone Name, Measured Area and Ventilation Type should be displayed.
- 3 Select the **A- AREAGFAD A- .NonGFA** layer and create the zone polygon of the floor plan. Click with the hammer icon to place the Zone Stamp.
- 4 Once placed, in the Tags and Categories panel of the Zone settings, fill the **BlockNo (Pset_SpaceCommon)** property and the **Input_GFA_Value (Pset_SpaceCommon)** or **Input_NonGFA_Value (Pset_SpaceCommon)** so that these values will also be reflected in the schedules.

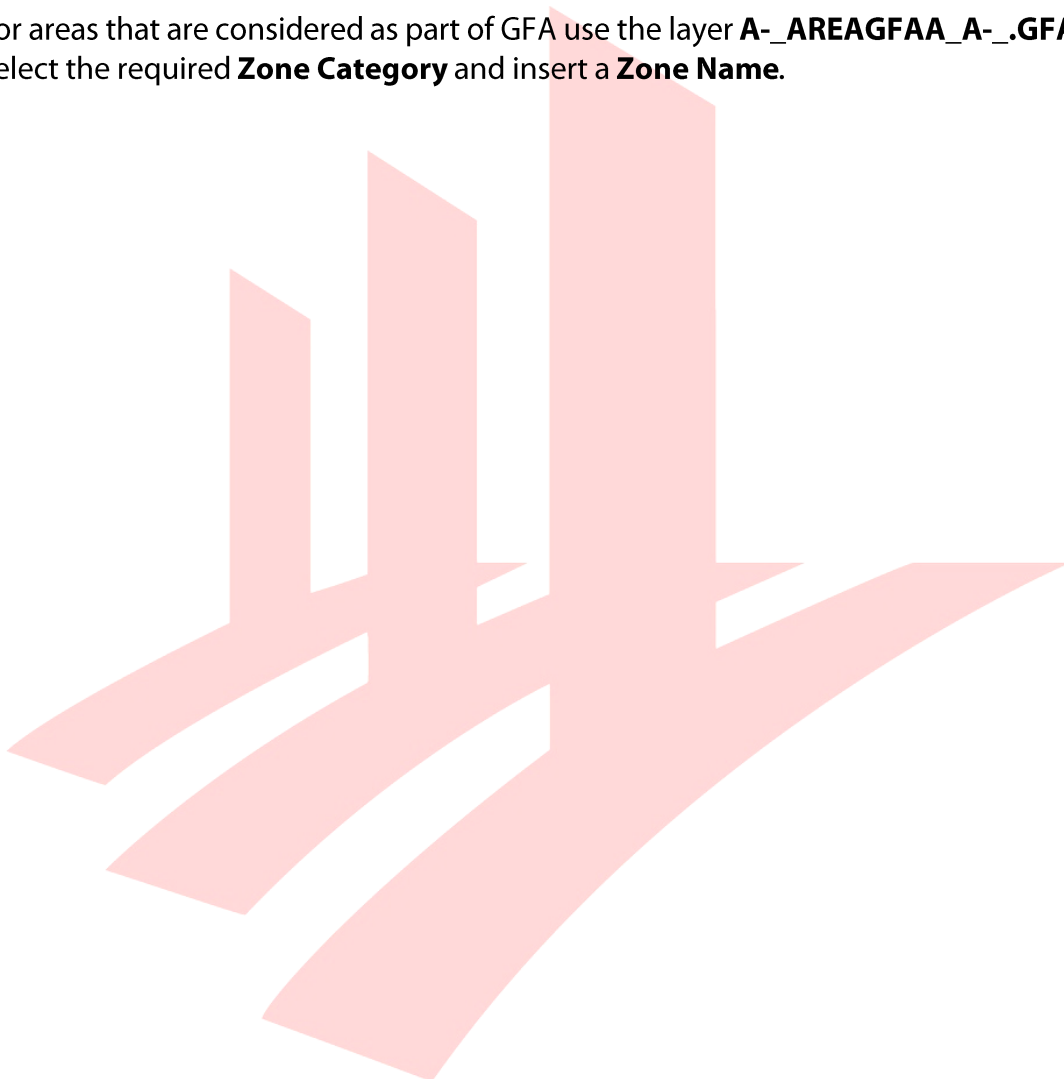


- 5 Double click to open the respective schedules under the **BCA/Schedules** folder of the View Map.

Note #1: Always check the Scheme Settings of each schedule before using and make sure you understand its Criteria and Fields.

Note #2: - BCA-_LV_SUM OF OTHER AREAS NOT INCLUDED IN GFA COMPUTATION will automatically generate the same NonGFA values generated from the - BCA-_LV_SUM OF STATISTICAL GROSS FLOOR AREA (SGFA) provided you use the same Layer for the Zones.

- 6 For areas that are considered as part of GFA use the layer **A-_AREAGFAA_A-_.GFA**. Select the required **Zone Category** and insert a **Zone Name**.

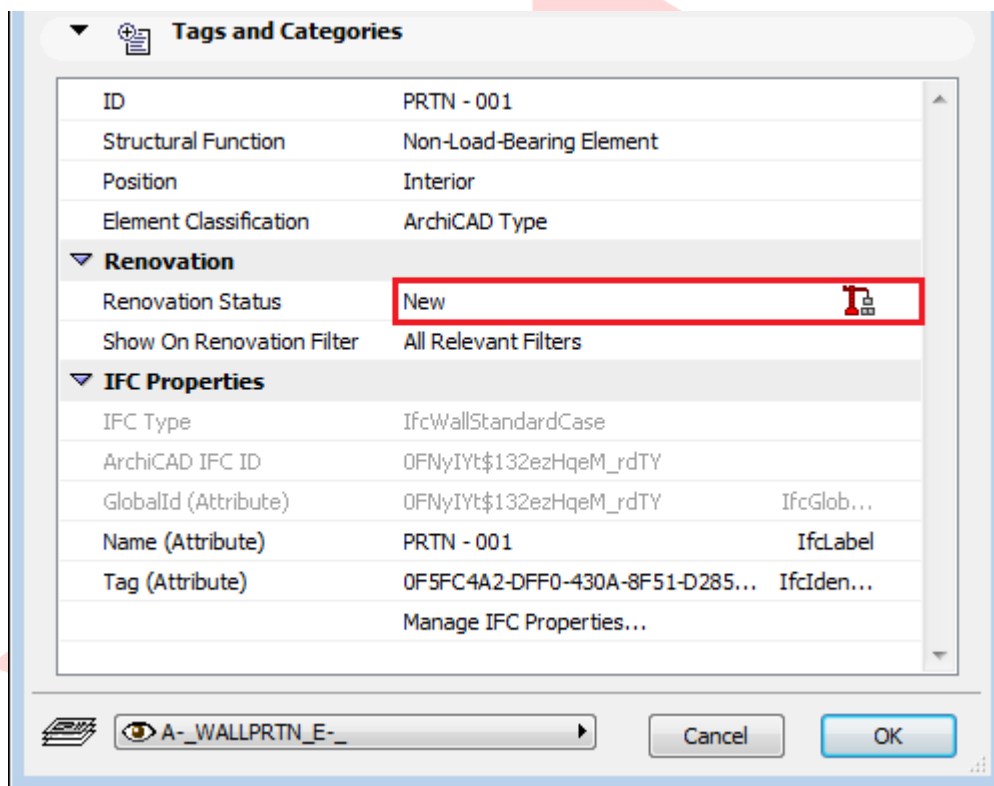


PART VIII - A&A Works, Re-submission (URA) and Amendments

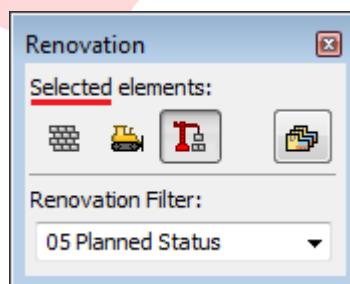
The elements/objects available will all be defined as *New*. Renovation Filter colors are based on the CP83 color coding as specified in the Architectural BIM e-Submission Guideline.

To change or assign a different renovation status:

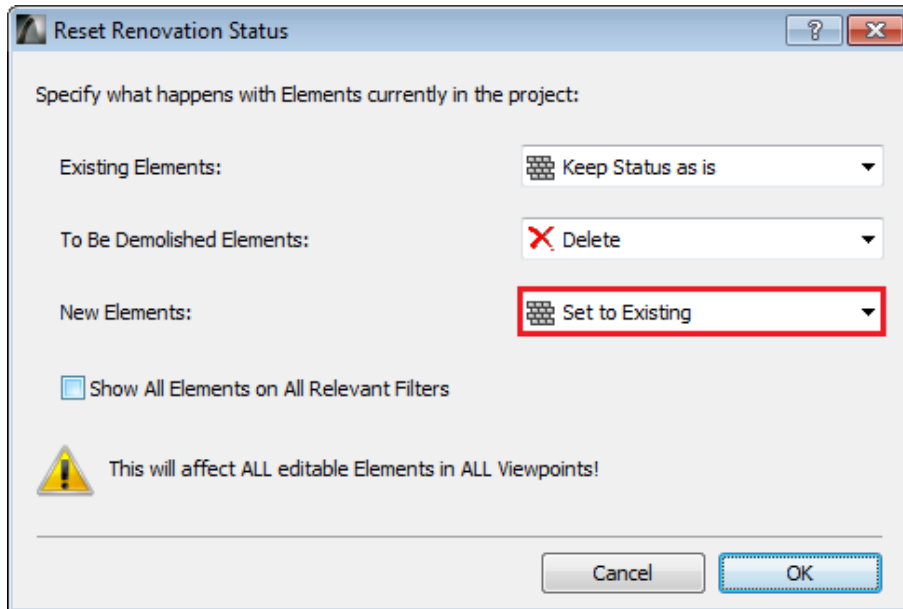
- 1 Open the settings of the specific elements/objects.
- 2 Go to **Tags and Categories panel/Renovation section** and select another renovation status.



Use the Renovation palette (**Windows/Palettes/Renovation**) to change the default renovation status of elements or change the current renovation status of multiple selected elements.

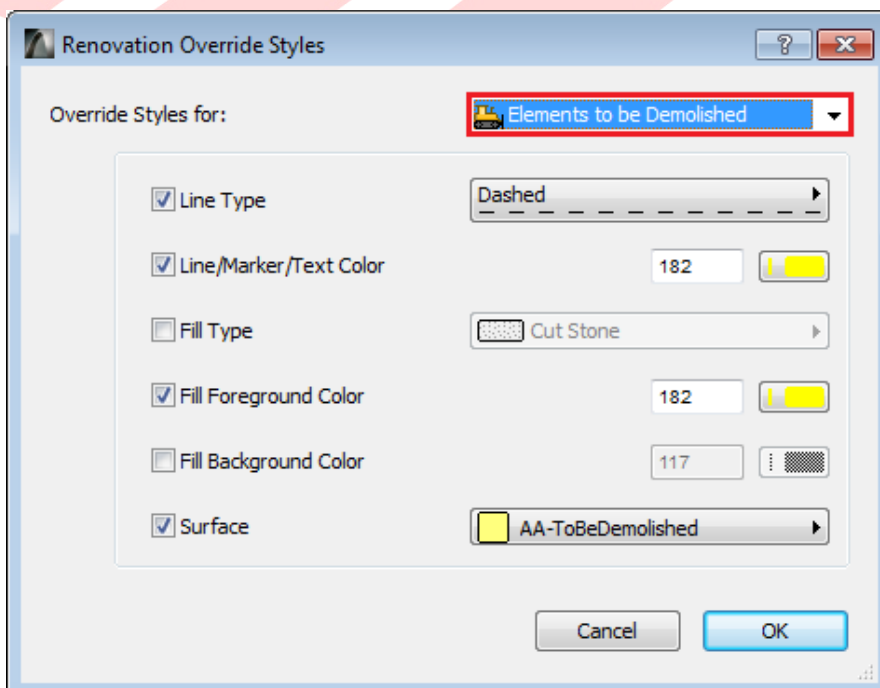


To change all the Renovation Statuses of all the elements (for example change all *New* elements to *Existing* after finishing a phase) use the **Document/Renovation/Reset Renovation Status...** menu command and the upcoming dialog.



For additional filtering options:

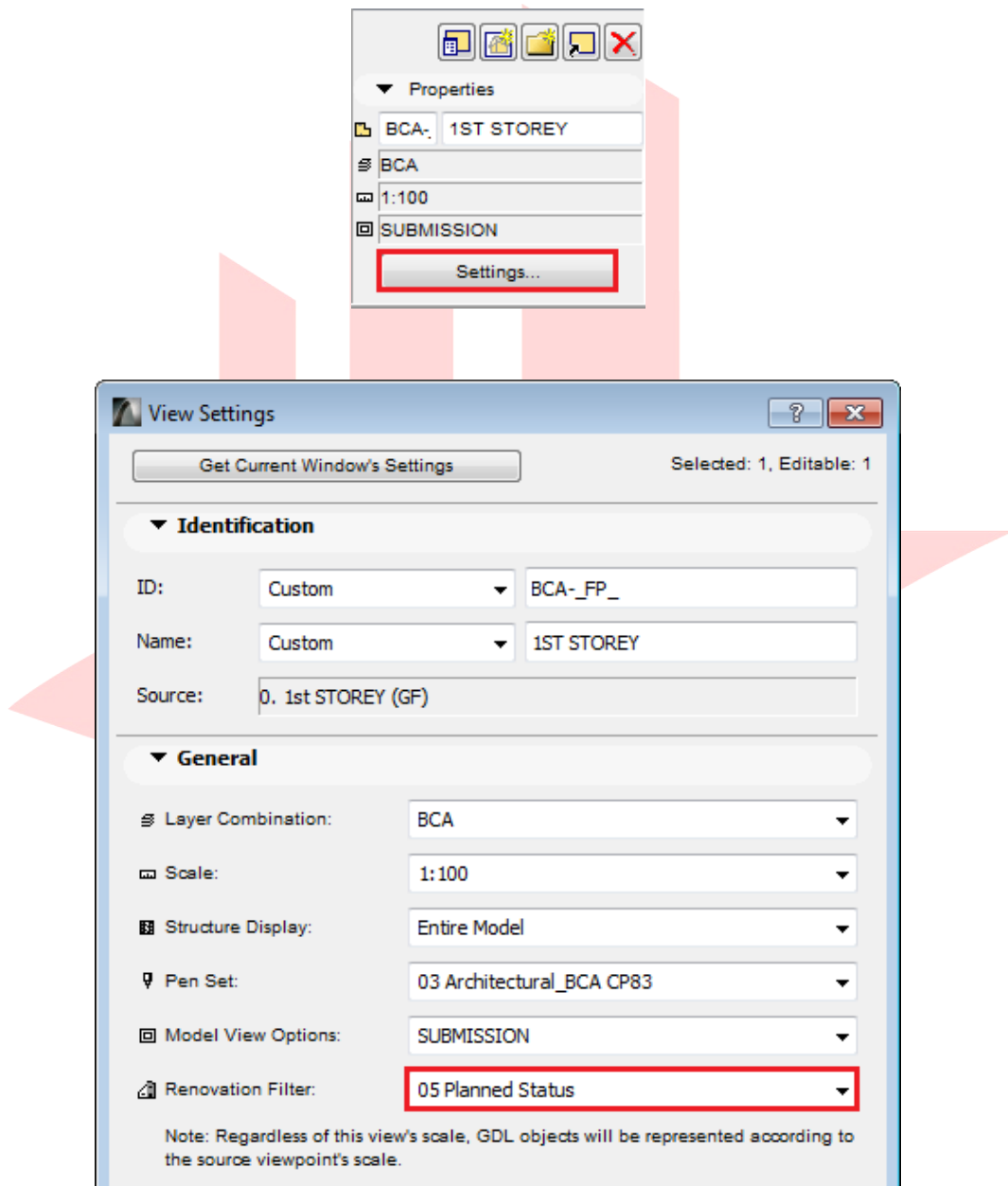
- 1 Go to **Document/Renovation/Renovation Filter Options...**
- 2 Under Filter Settings, display options can be changed. To edit the appearance of the elements with different statuses use the **Renovation Override Styles...** button. Select the status you want to override at the top right and use the checkboxes to modify the 2D/3D representations.



NEW in the ARCHICAD 19 Template:

- all elements set as New by default
- saved views using 05 Planned Status or A-A Works Renovation Filters (URA views)

Note: To change the Renovation Filter for specific views, select the view in the **View Map** and click **Settings...** in the bottom of the Navigator. Change the **Renovation Filter** in the appearing dialog and click **OK**.

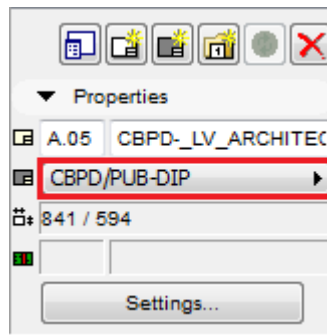


Find more information on the Renovation feature
at the [GRAPHISOFT Help Center here >>>](#)

PART IX - Endorsements and Data Information

The Layout Book contains a sample subset of layouts and individual layouts for endorsement statements.

Select a layout and change its *Master Layout* in the **Properties** panel of the Navigator according to the regulatory authority you are submitting to.



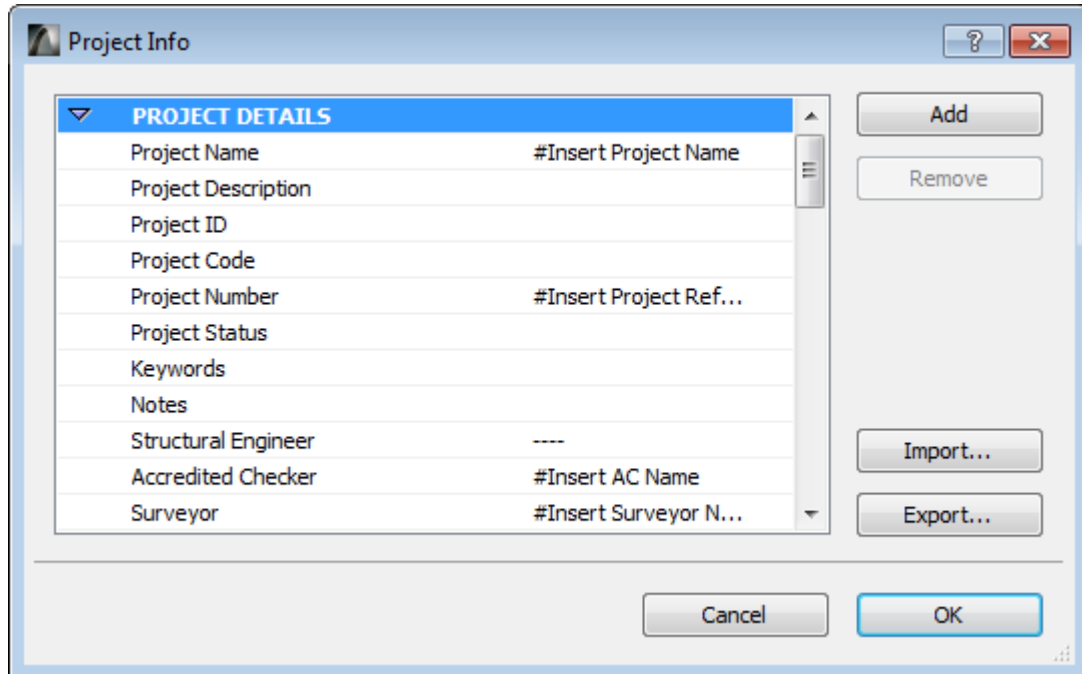
Select the appropriate one matching your submission - refer to Appendix A of the BIM e-Submission Guideline.

Note: Each sheet can contain one endorsement statement only. If you have more than one endorsement statements to submit, create more layouts in the Layout Book. Remember to rename the layout/view according to the naming convention as specified in the Architectural BIM e-Submission Guideline.

NEW in the ARCHICAD 19 Template:

- sample BCA layout subset including all views

- 1 To insert basic project information and QP's name into the title block and the endorsement statements without repetition, right-click the **Layout Book** icon and choose **Project Info...** or open **File/Info/Project Info...**



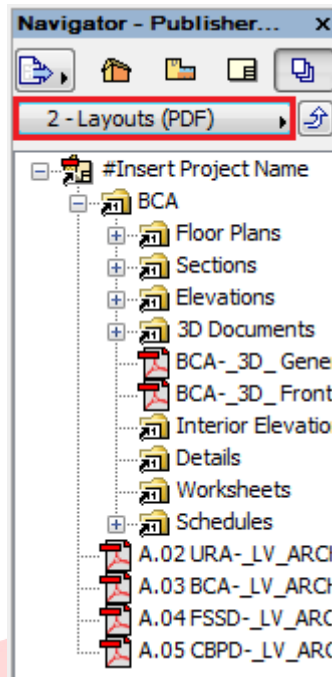
- 2 Insert all the necessary information of your project in the Project Info dialog and click **OK**. If some fields were not provided with *AutoTexts*, these can be filled out using the **Text tool** from the Toolbox.

Besides endorsement statements and title blocks, the sheets can also contain data information like schedules. Drag and drop your schedules into the sheet. Alternatively, you can retain your schedules in the Floor Plans or in the Schedules folder.

PART X - Publishing in PDF Format

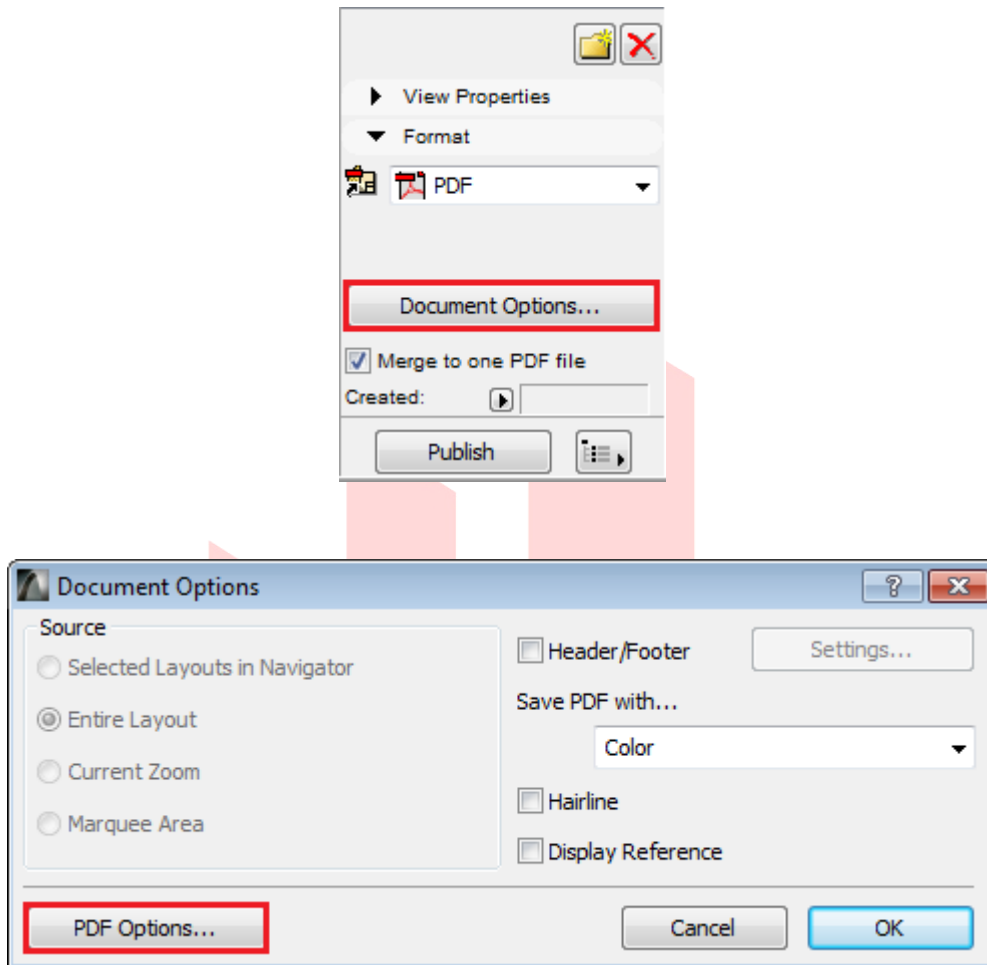
Using the Publisher, you can save *Publisher Sets* or one or more Publisher items (views or layouts), in PDF format. Different Publisher Sets are set to different formats by default.

- 1 Switch to the **Publisher** and select the **2 - Layouts (PDF)** Publisher Set. Double click to open it, or select it from the drop-down list.



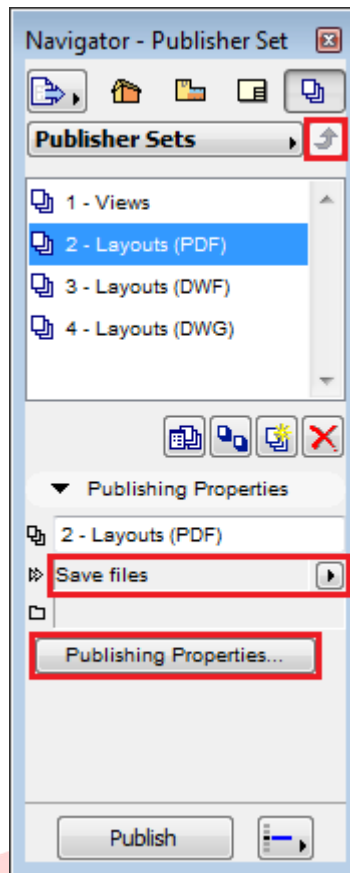
Note: A checkbox gives you the option to **Merge to one PDF file**. (Make sure you select the topmost item in the Navigator.) If you leave this checkbox unmarked, you will publish each file in the folder as a separate PDF file.

- 2 At the bottom left of the **Document Options** dialog box, click **PDF Options** and set the options as desired.



- 3 Click **Publish** in the Navigator if all settings are specified.

Note: If you want to change existing Publisher Sets make sure that **Save files** publishing method is set in **Publishing Properties...** or in the Navigator directly.



Choose the entries within the Publisher Set you want to publish and set their format to **PDF** in the **Format panel** at the bottom of the Navigator.

Find more information on the Publisher feature
at the [GRAPHISOFT Help Center here >>>](#)

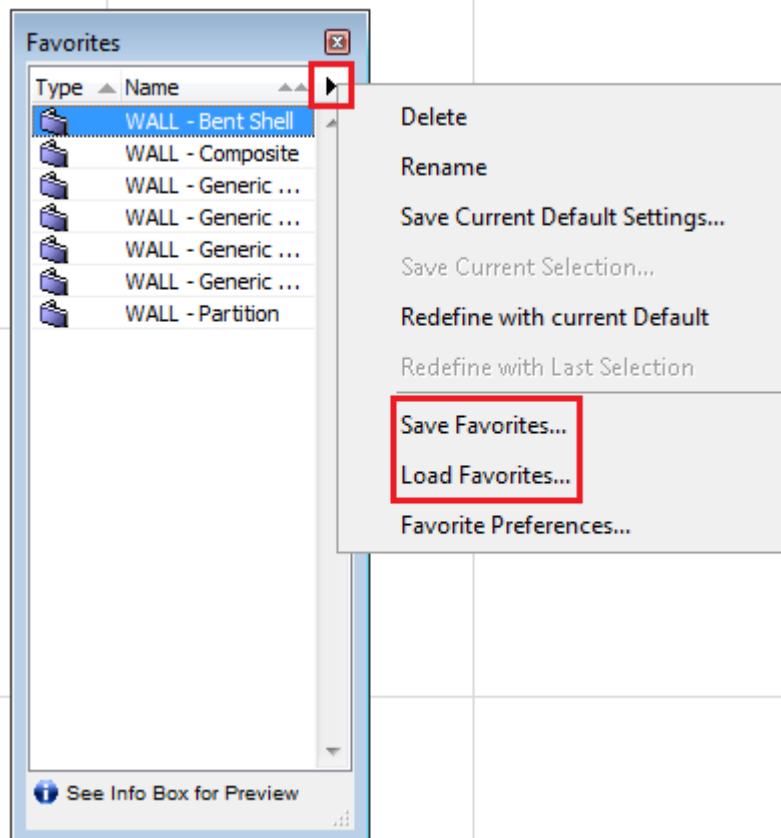
PART XI - Merging the Template into an Existing Company Template

The current version of the template contains most of the default settings that are shipped with the ARCHICAD 19 INT version and the additional customizations to comply with the BIM e-Submission requirements. These template settings can be migrated into your company templates as follows.

Favorites

The template contains many pre-saved favorites. To migrate these

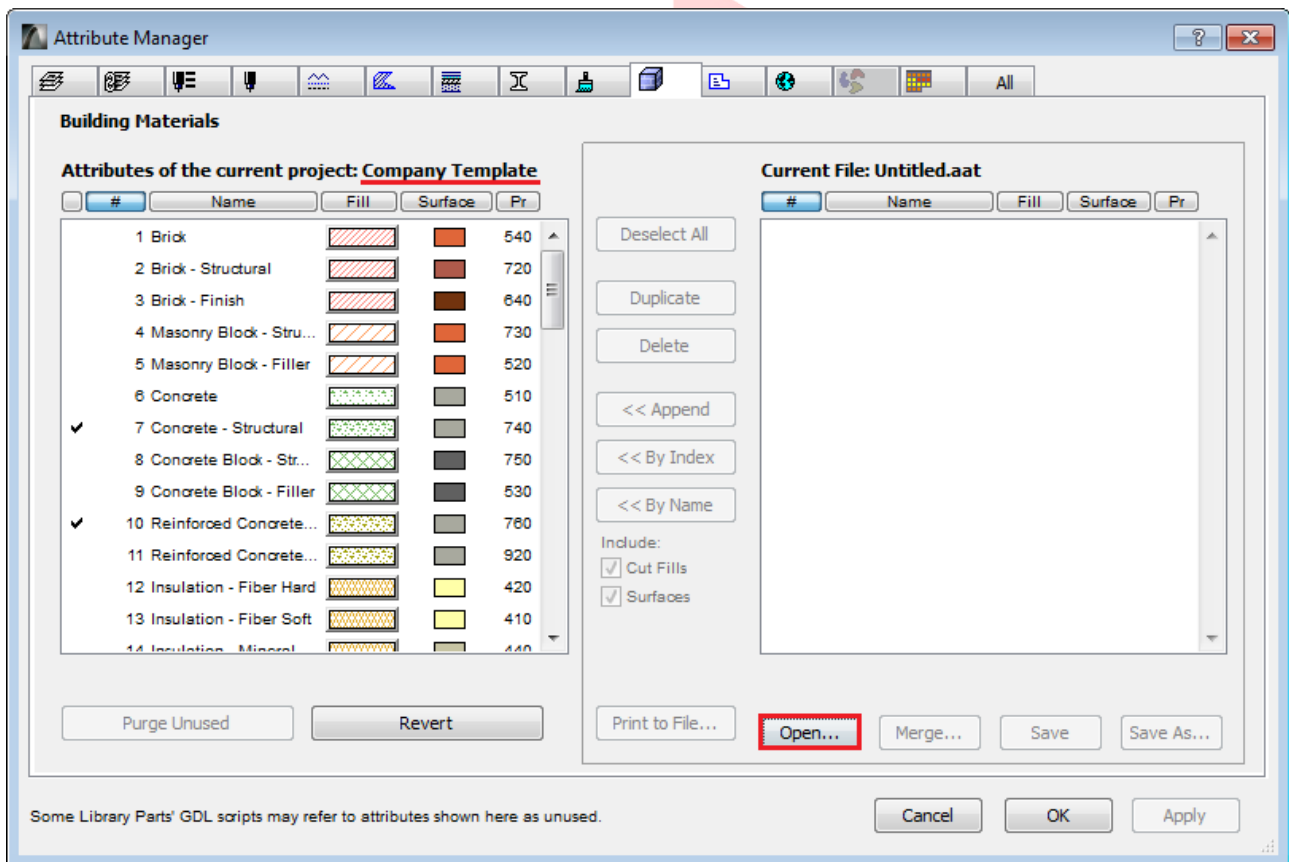
- 1 Open the **Window/Palettes/Favorites** of the BIM e-Submission Template.
- 2 Click the arrow at the top right and choose **Save Favorites...**
- 3 Similarly, use the **Load Favorites...** command in the company template file.



Attributes

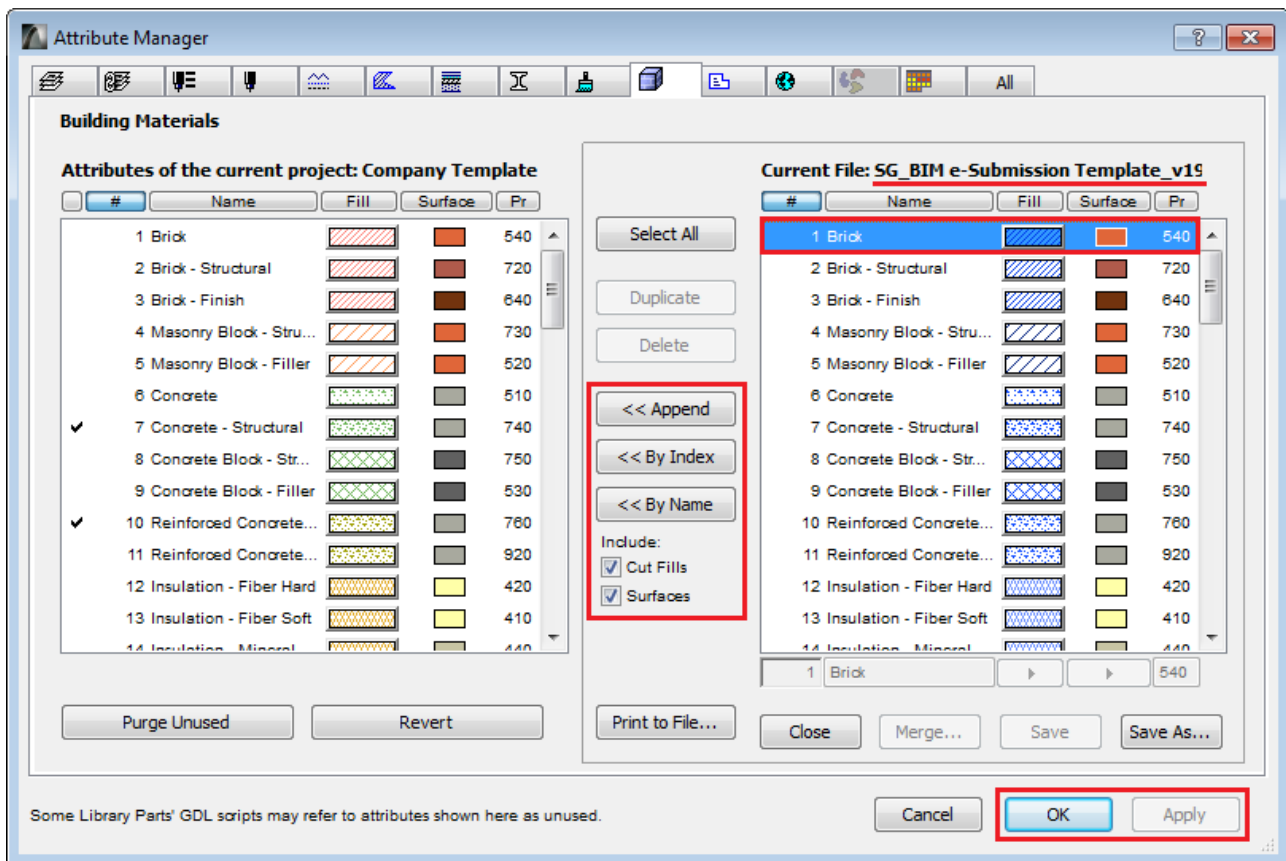
Attributes include Layers, Layer Combinations, Pens and Pen Sets, Lines, Fills, Composites, Complex Profiles, Surfaces, Building Materials.

- 1 Open **Options/Element Attributes/Attribute Manager...** of the **company template file**.
- 2 On the right side of the Attribute Manager you can load the BIM e-Submission Template file and its attributes by clicking **Open....**



- 3 Once opened, select the different types of attributes using the selector tabs on the top of the dialog.
- 4 Select the attributes to be migrated on the right and choose **Append »/By Index »/By Name »** to add them to the current project.
- 5 Click **OK/Apply**, a dialog will prompt summarizing the changes.

Note: Some attributes have sub-attributes assigned to them (for example Building Materials have Surfaces and Fills as well), these might be duplicated if an already existing sub-attribute is added to the project again by checking the checkboxes incorrectly. Once imported, these attributes will be created even if settings are reverted in the dialog using the **Revert** button. This case the only way to undo the changes is to click **Cancel**.



Note: The representation of the fills on both sides depends on the actual Pen Set being used by the host file (company template in this example).

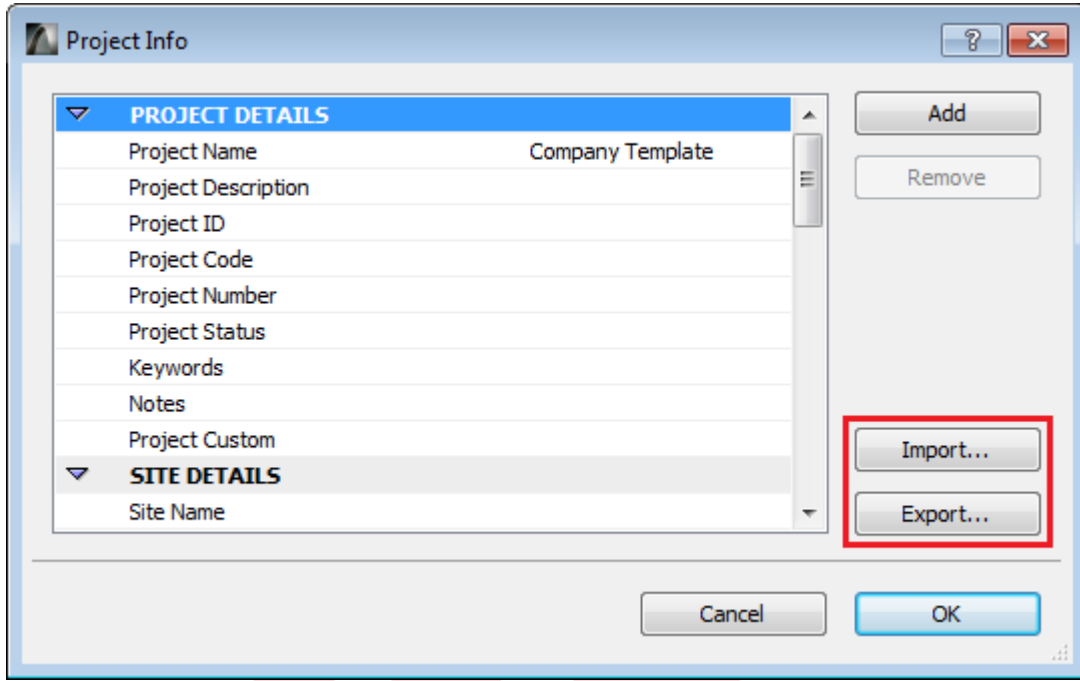
NEW in the ARCHICAD 19 Template:

- new Fill Type: Insulation 03
- new Composites naming convention, new composites: stud partitions, partition walls, floor types
- predefined Tags and Categories for several Favorites
- new Building Materials: Render - Sand Cement, Screed, Mortar
- Zones using built-in Zone Stamps
- Model View Options containing ARCHICAD 19 defaults

Find more information on the Attribute Manager
at the [GRAPHISOFT Help Center here >>>](#)

Project Info

Use the **Export.../Import...** buttons of the **File/Info/Project Info...** dialog to transfer project info in between projects.



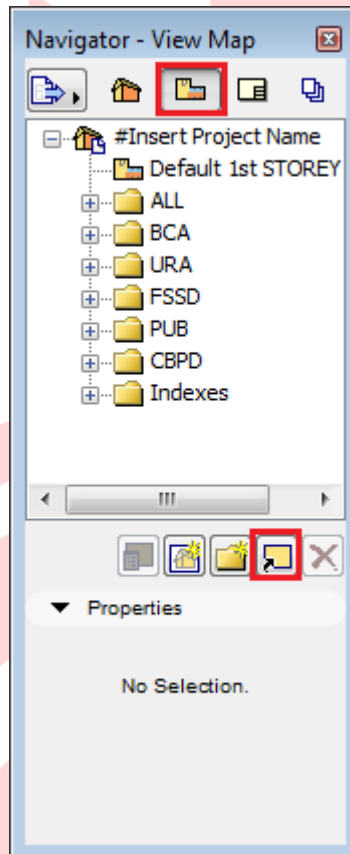
Views, Layouts and Master Layouts

Views, Layouts (and Layout Subsets) and Master Layouts cannot be exported directly. The contents of the Master Layouts however can be copied manually.

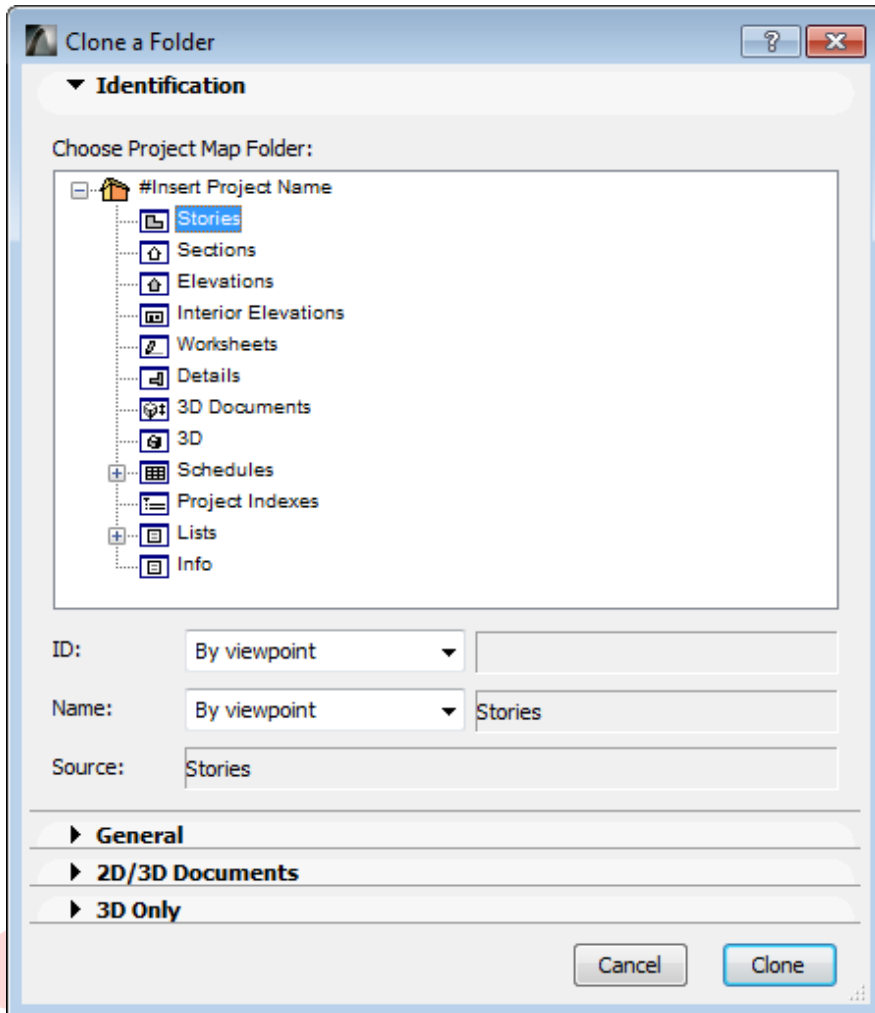
- 1 **Select all elements** of the Master Layout and use the **copy** command.
- 2 **Paste** the elements into an empty Master Layout in the company file.

The View Map folders are using the cloning function in most of the cases. To create cloned content:

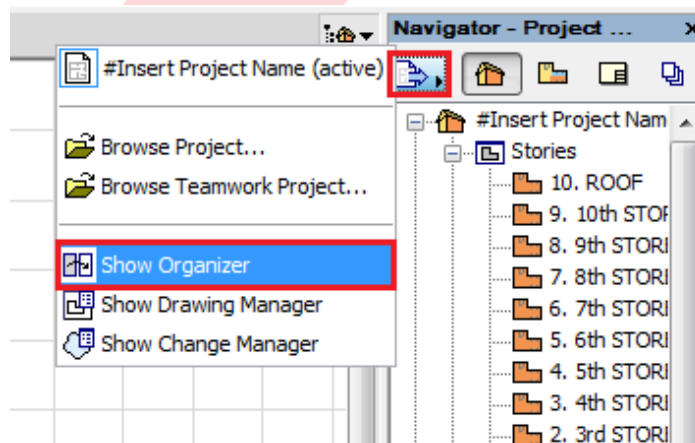
- 1 Use the **Clone a folder...** button.



- 2 Select the **folder** you want to clone and click **OK**, this way if there is a new viewpoint created in the Project Map, the respective Views will be automatically created in the View Map.

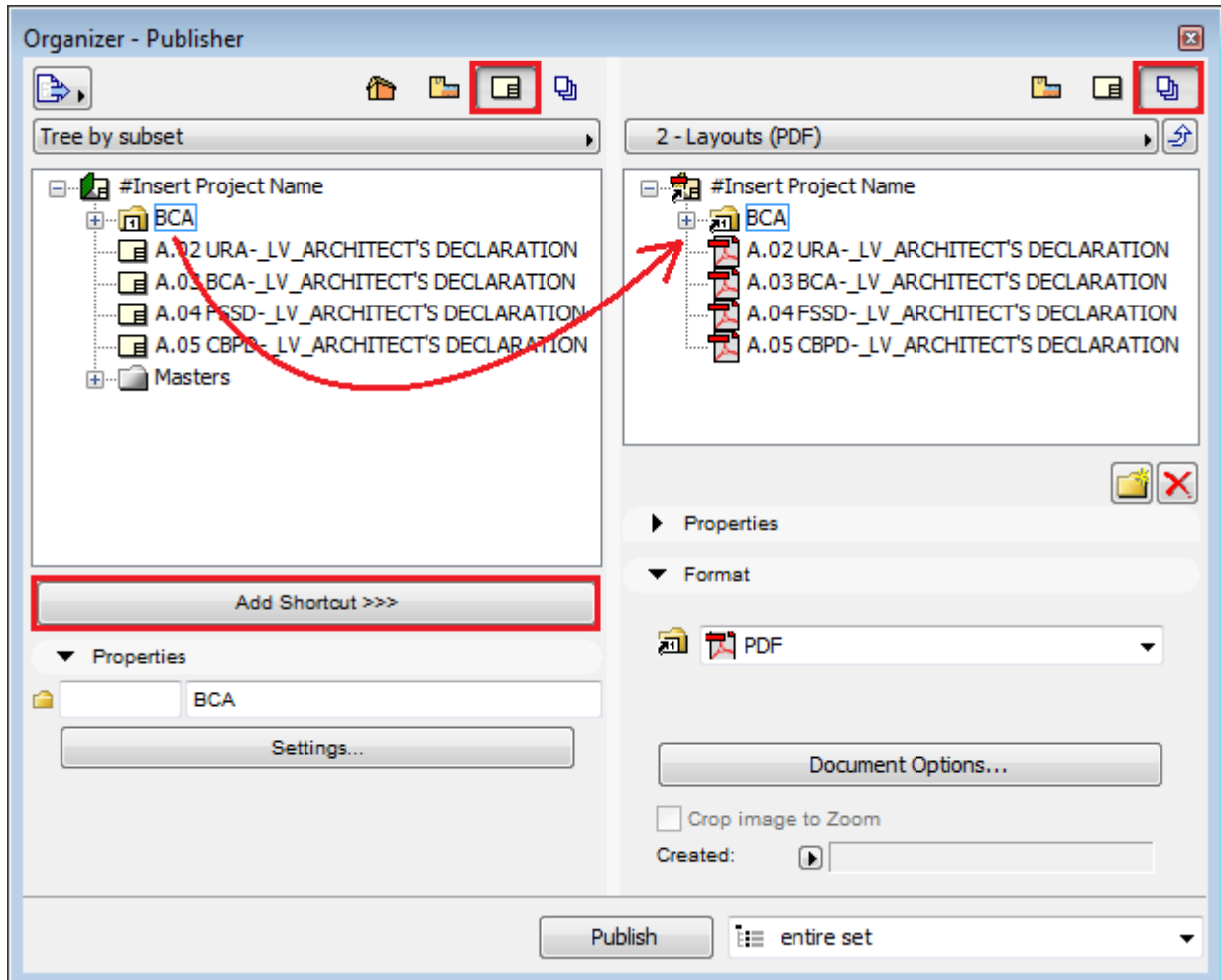


- 3 **Drag** the content of the cloned folders or the folders themselves **from the View Map to the Layout Book** in the **Organizer** manually to ensure that the View Map and the Layout Book are synchronized.



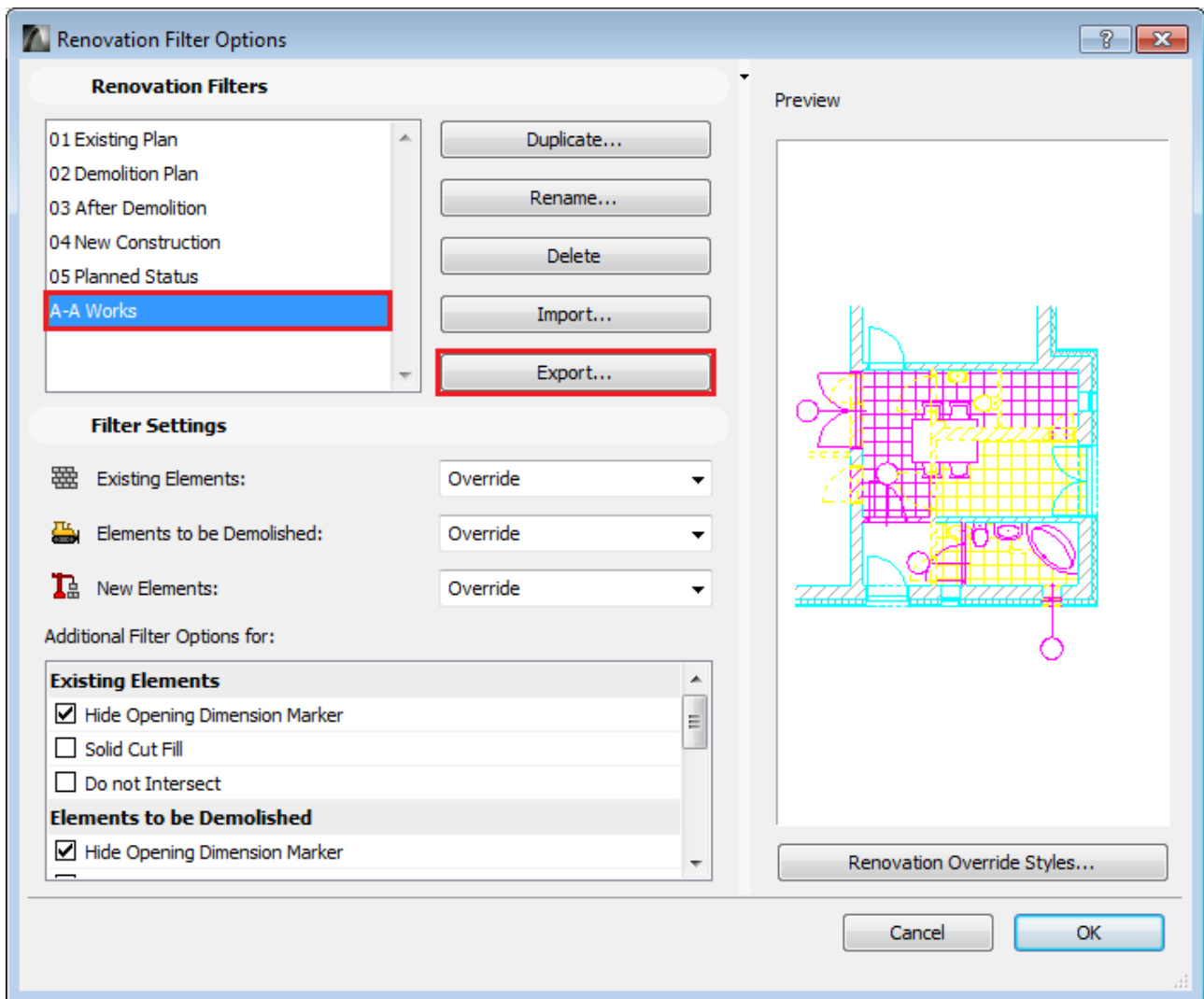
Publisher Sets

Publisher Sets have to be recreated manually in the company template file. Once the Layout Book subsets are created, use the **Add Shortcut** »» button in the Organizer to create continuously updated content within the Publisher Sets.



Renovation Filters

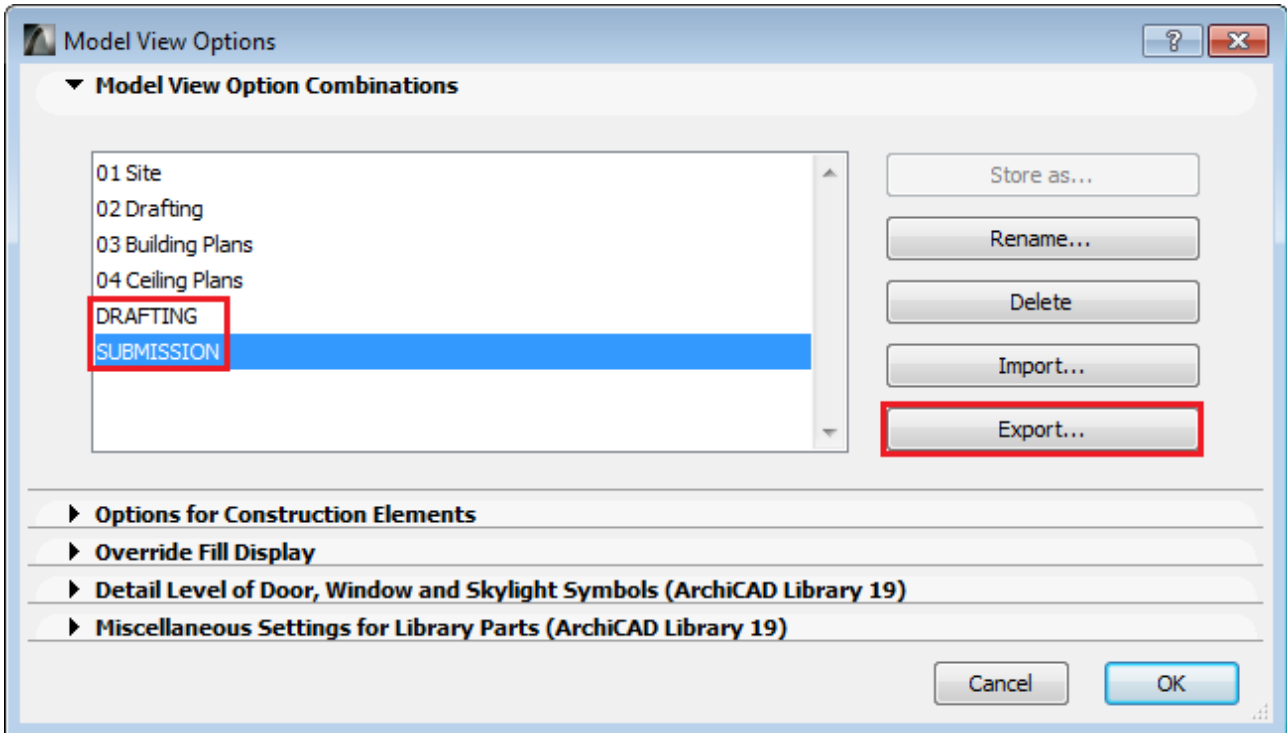
- 1 Open **Document/Renovation/Renovation Filter Options...** in the **BIM e-Submission Template**.
- 2 Select the **A-A Works** renovation filter on the left and click **Export...**



- 3 Similarly use the **Import...** button in the **company template file**.

Model View Options

- 1 Open **Document/Set Model View/Model View Options....**
- 2 Select the **Model View Option** you want to export on the left and click **Export....**



- 3 Similarly use the **Import...** button in the **company template file**.

PART XII – General Requirements of the Deliverables

Based on the currently applied BIM e-Submission Guideline (as of July, 2015) the deliverables have to be submitted in the following formats. For actual requirements always check the latest version of the BIM e-Submission Template.

URA:

- PLA (archive format of ARCHICAD) or
- DWF or PDF, both including navigable 3D views - see PART XIII for details on creating 3D PDFs

BCA, CBPD, PUB, FSSD, NParks, LTA, HDB, JTC:

- DWF or PDF, both including navigable 3D views

All drawing views below should be compiled in a single file:

- plans, elevations, sections, layout views or sheets
- 3D model

All BIM e-Submission through the CORENET e-Submission System is limited to not more than 100 MB per file per submission. If the file size is larger than that QPs are requested to deliver using CD-ROMs/DVDs to the respective agencies.

PART XIII – Creating Navigable 3D PDFs of ARCHICAD Models

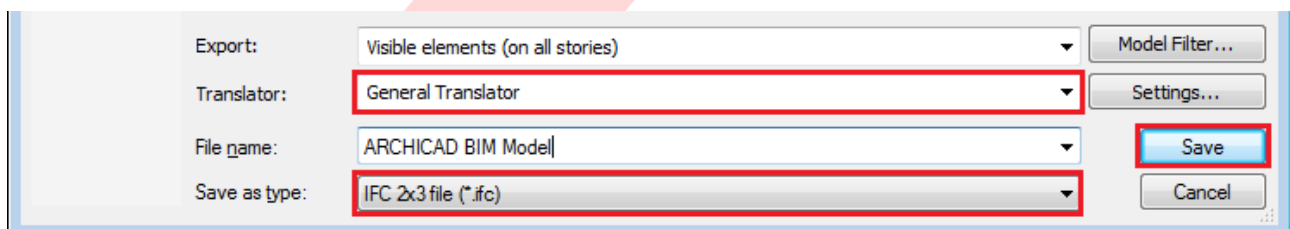
ARCHICAD is able to save 3D views into the standard U3D format which can be converted into navigable PDFs. However, this format is only suggested for very small projects as the navigability of models is hindered even at a small file sizes (50-100 MB). Additionally, common project file sizes might not pass e-Submission size requirements either, therefore it is **highly recommended to use the IFC format for creating 3D PDFs**.

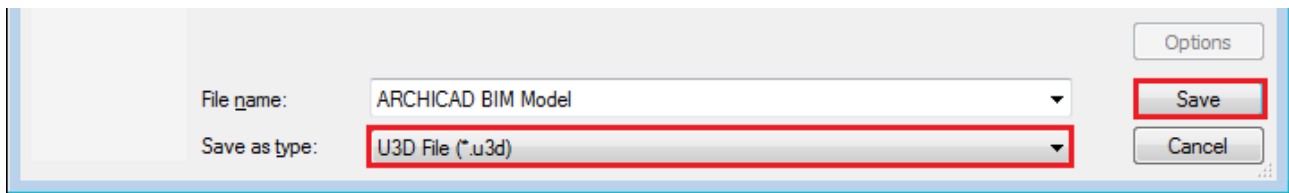
Find more information on 3D PDF Layout Publishing directly from ARCHICAD at the [GRAPHISOFT Help Center here »»](#)

- 1 To be able to set up the final layouts for the navigable 3D content, first create an empty Layout from the Publisher or the Layout Book with the **File/Save as...** command.
- 2 Further on, the suggested workflow of embedding navigable 3D PDFs requires the following simple steps:
 - save the BIM model in IFC or U3D formats
 - open/import the IFC model/U3D file onto the empty layout in a PDF creator application
 - save the file as PDF

Saving the BIM model in IFC/U3D format

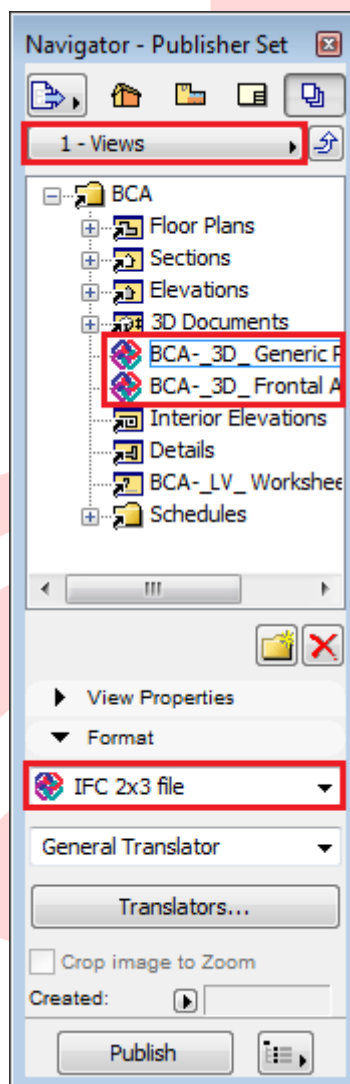
- 1 Open a 3D viewpoint from the **Project Map**. Make sure that all elements you want to export are visible – check Layer settings, Renovation Filters and Partial Structure Display.
- 2 Choose **File/Save as...** from the menu.
- 3 Select the **IFC 2x3 file** format and use the **General Translator** and click **Save** OR select the **U3D File** format and click **Save**.





Note #1: An ARCHICAD file of ~250 MB will be saved as a ~50 MB IFC file or a ~350 MB U3D file.

Note #2: The Publisher can also create IFC format as output (but not U3D). In case you have an already saved View of a 3D viewpoint you can change the output format to **IFC**. This only works if the elements of the list in the Publisher are using Views as sources, not Layouts. The **1 - Views** Publisher Set in the template is set up in that manner.

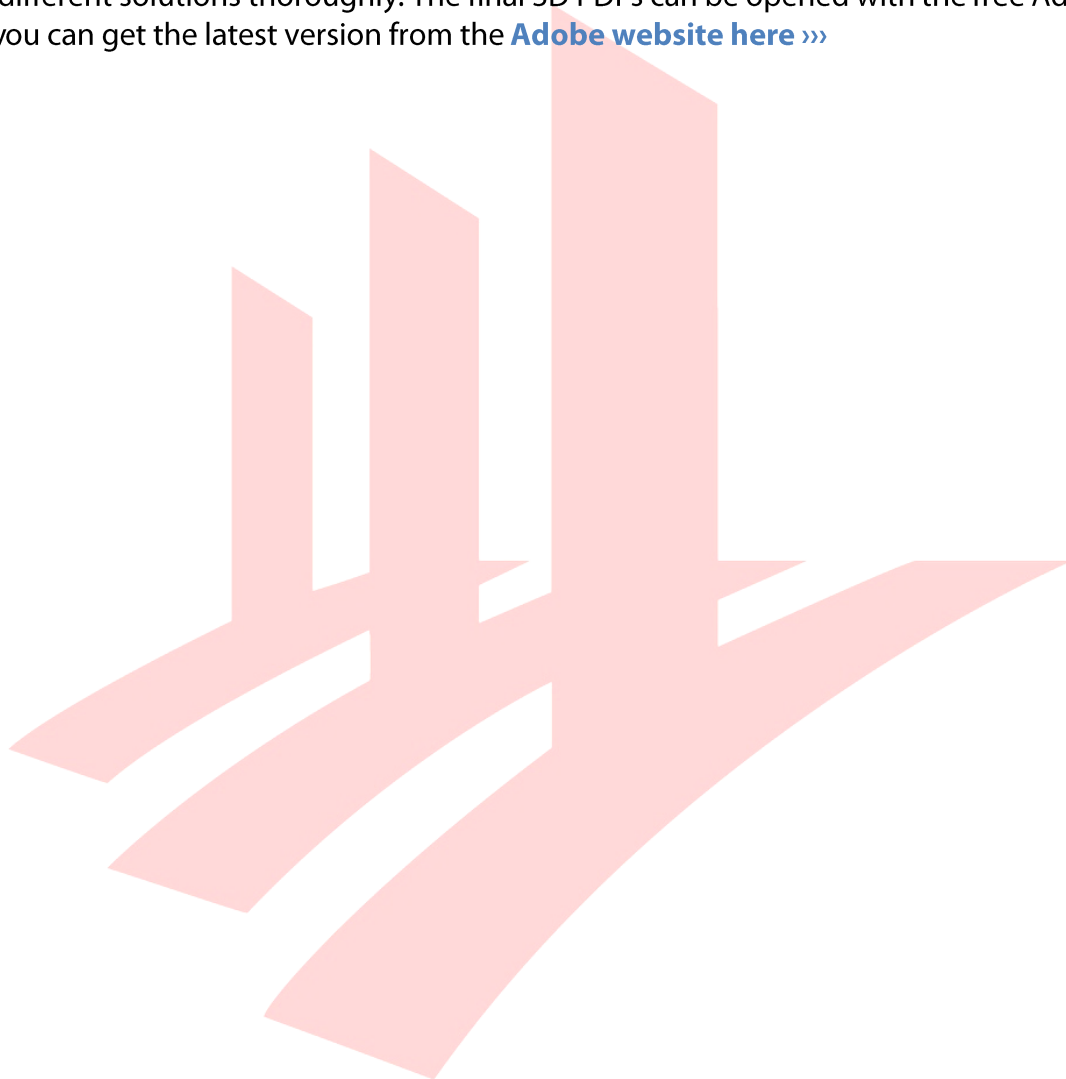


Importing the IFC model/U3D file into a PDF creator

The most widely used PDF reader/creators that can save navigable 3D PDFs are:

- Adobe Acrobat X Pro/XI Pro/DC Pro – standalone application, U3D import only
- Adobe Acrobat 9 Pro Extended – standalone application, officially discontinued
- Tetra4D 3D PDF Converter – as a plug-in for Adobe Acrobat X Pro/XI Pro
- Bluebeam Revu CAD – standalone application

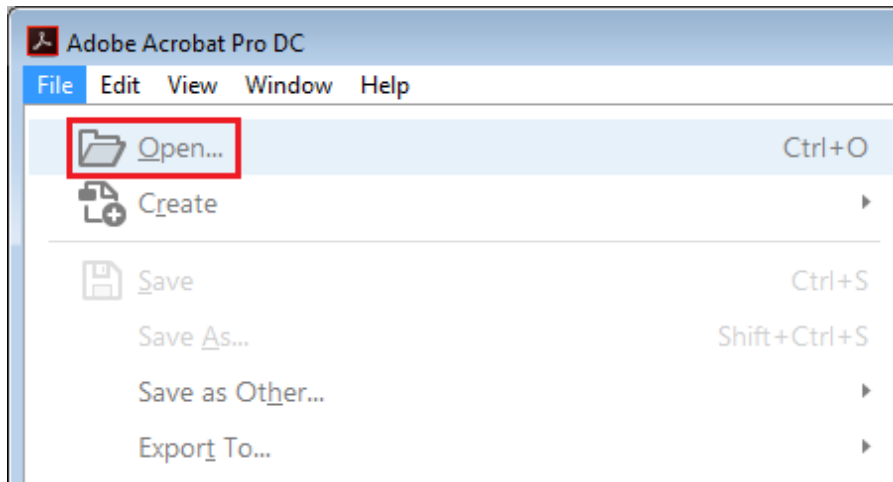
Test the different solutions thoroughly. The final 3D PDFs can be opened with the free Adobe Reader, you can get the latest version from the [Adobe website here »»](#)



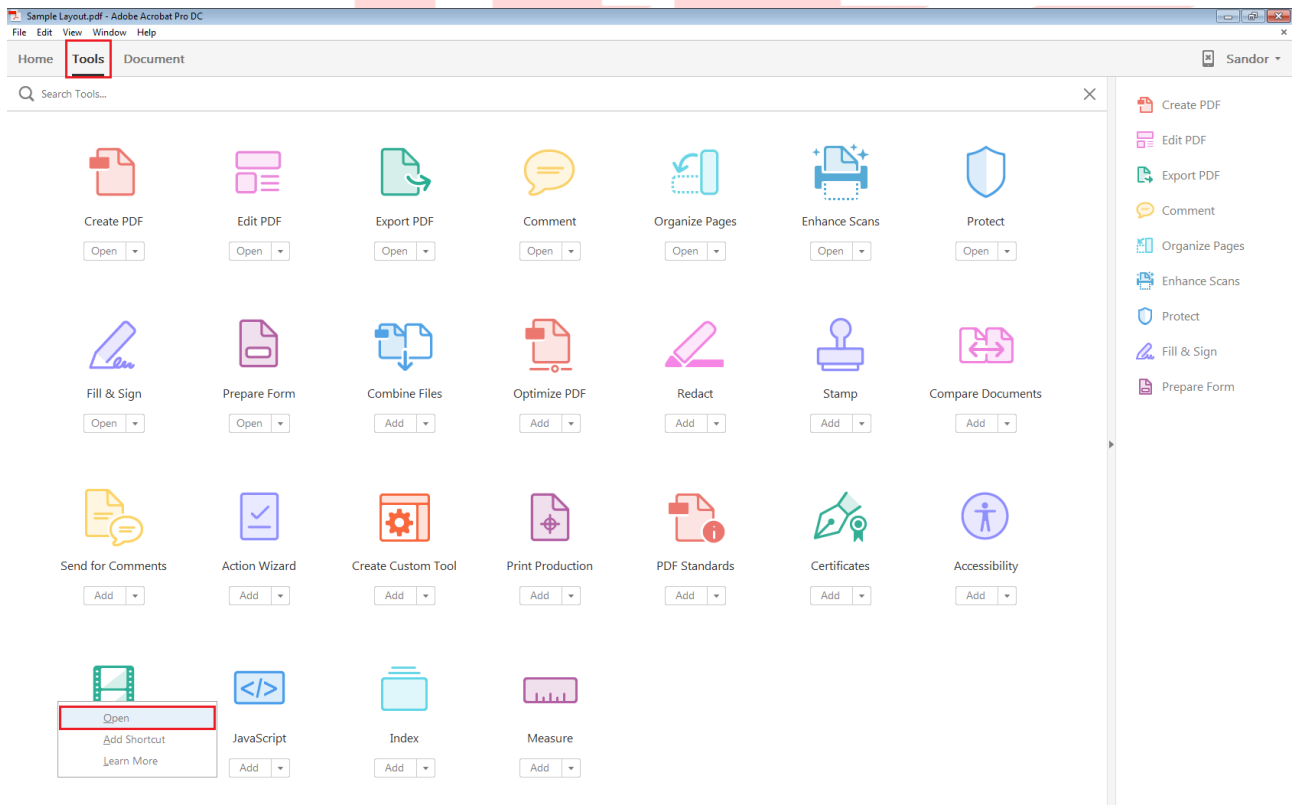
Adobe Acrobat X Pro/XI Pro/DC Pro (U3D import only):

You can get the latest versions from the [Adobe website here >>>](#)

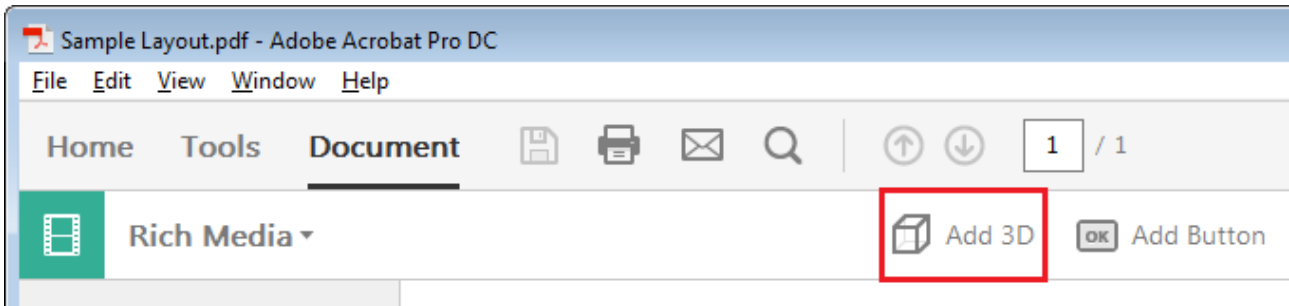
- 1 Launch **Adobe Acrobat DC Pro** and select the **File/Open...** menu command.



- 2 Select and open the **empty layout PDF**.
- 3 Once opened, use the **Tools** tab page and launch the **Rich Media** module by clicking **Open** in its dropdown list.



4 Click **Add 3D**.

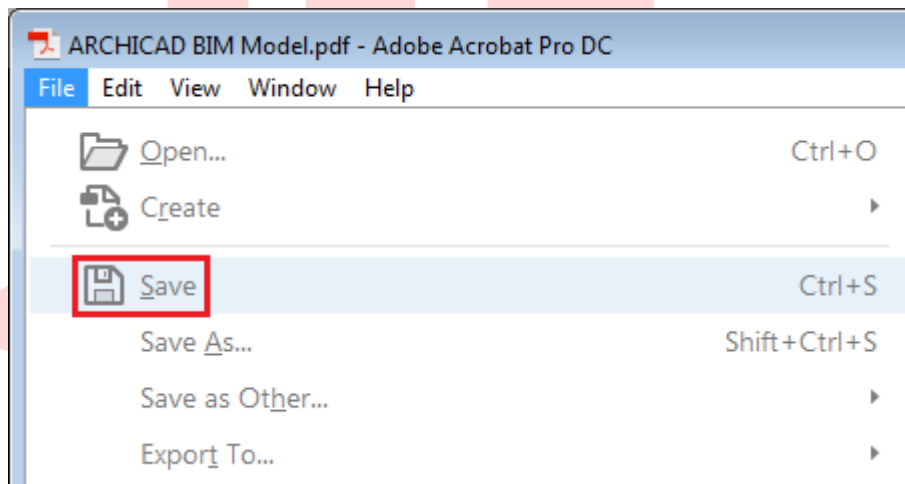


5 Use the appearing crosshair to define a rectangular area on the layout into which you will paste the 3D content.

6 In the upcoming dialog browse for the **U3D file** you saved with ARCHICAD. Click **Open**. Click **OK** in the Insert 3D dialog to proceed.

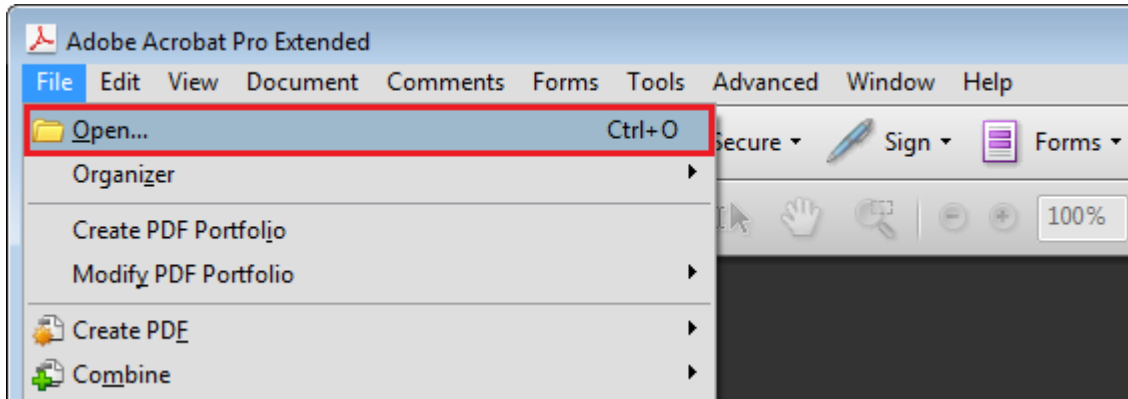
Note: U3D files above 50-100 MB cannot be imported smoothly.

7 Save the file as **PDF** using the **File/Save** menu command.



Adobe Acrobat 9 Pro Extended:

- 1 Launch **Adobe Acrobat 9 Pro** and select the **File/Open...** menu command.

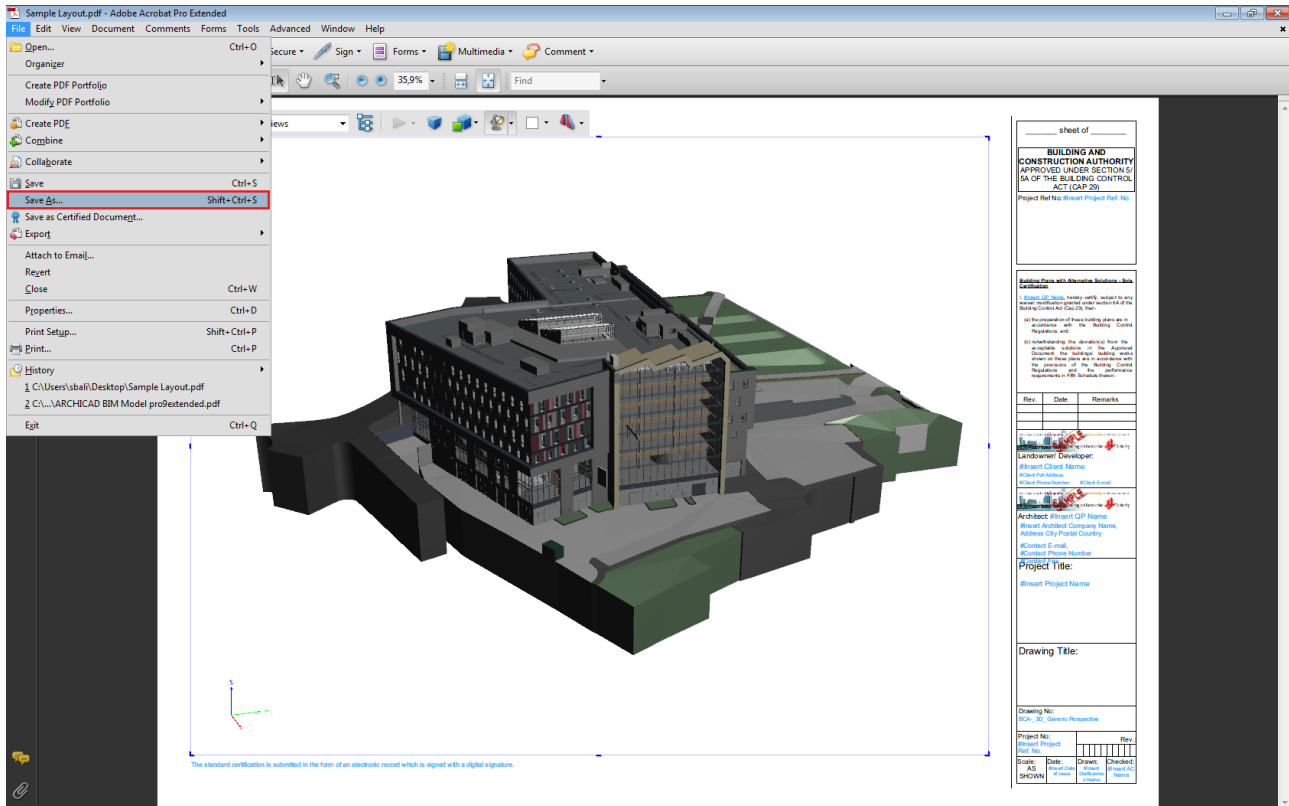


- 2 Select and open the **empty layout PDF**.
- 3 Once opened, use the **3D Tool** option from the **Multimedia** section.



- 4 Use the appearing crosshair to define a rectangular area on the layout into which you will paste the 3D content.
- 5 In the upcoming dialog browse for the **IFC/U3D file** you saved with ARCHICAD. Click **OK**. Set settings and click **OK** in the Acrobat 3D Conversion dialog to proceed. Click **OK** in the prompt dialog notification about the conversion time.

6 Save the file as **PDF** using the **File/Save As...** menu command.



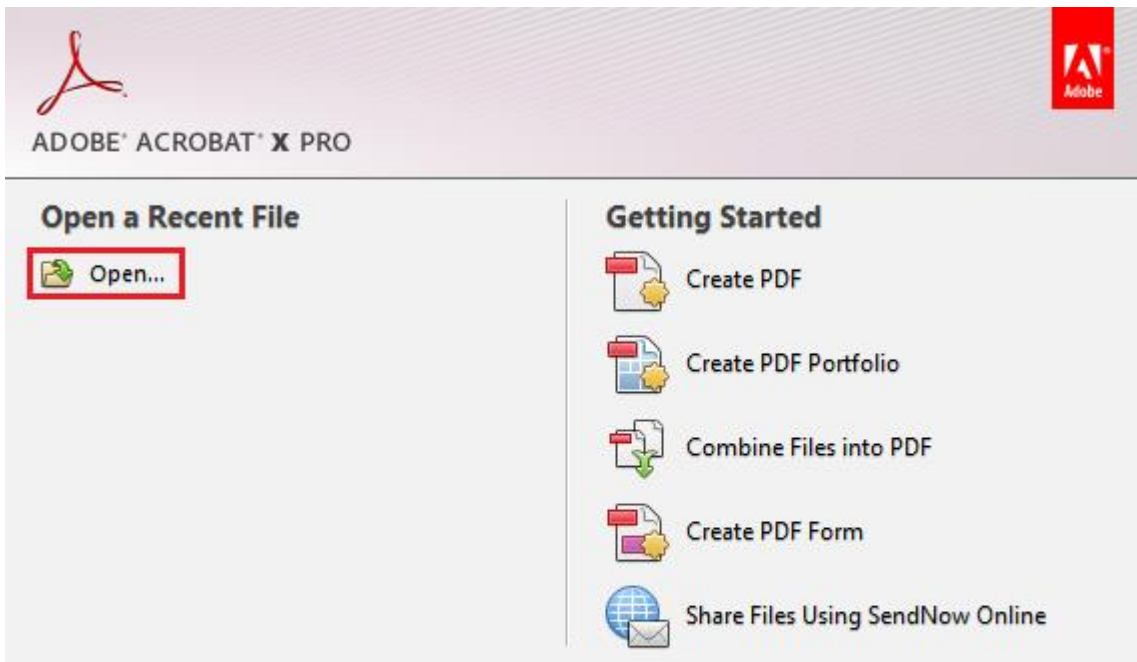
Note #1: The final PDF will be saved as a ~6 MB file (using a ~50 MB IFC model).

Note #2: To create 3D PDFs without the layouts you can simply open the IFC/U3D files directly instead of pasting them into the layout PDF.

Tetra4D 3D PDF Converter (for Adobe Acrobat X Pro/XI Pro):

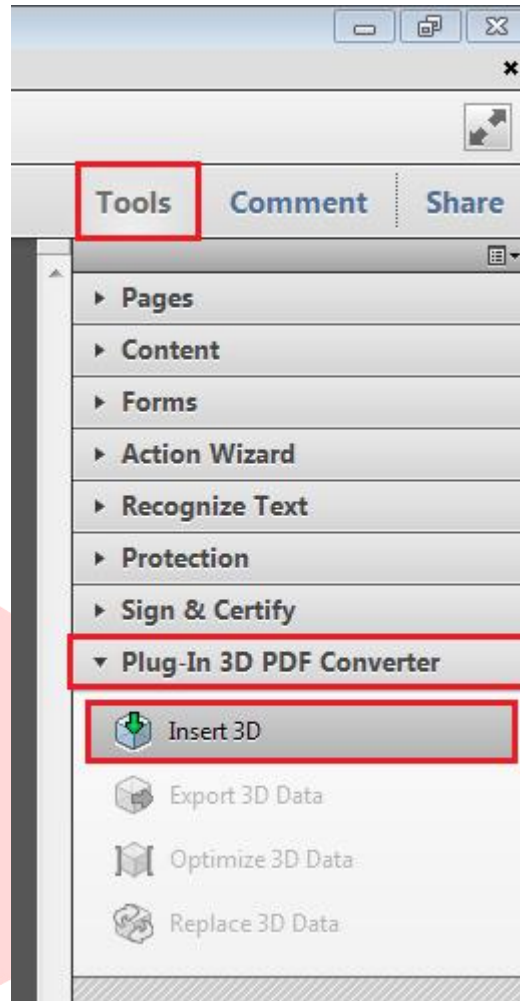
You can get the latest version from the [Tetra4D website here >>>](#). Make sure you have Adobe Acrobat X Pro or later installed already.

- 1 Launch **Adobe Acrobat X Pro** and click **Open...** from the floating menu.



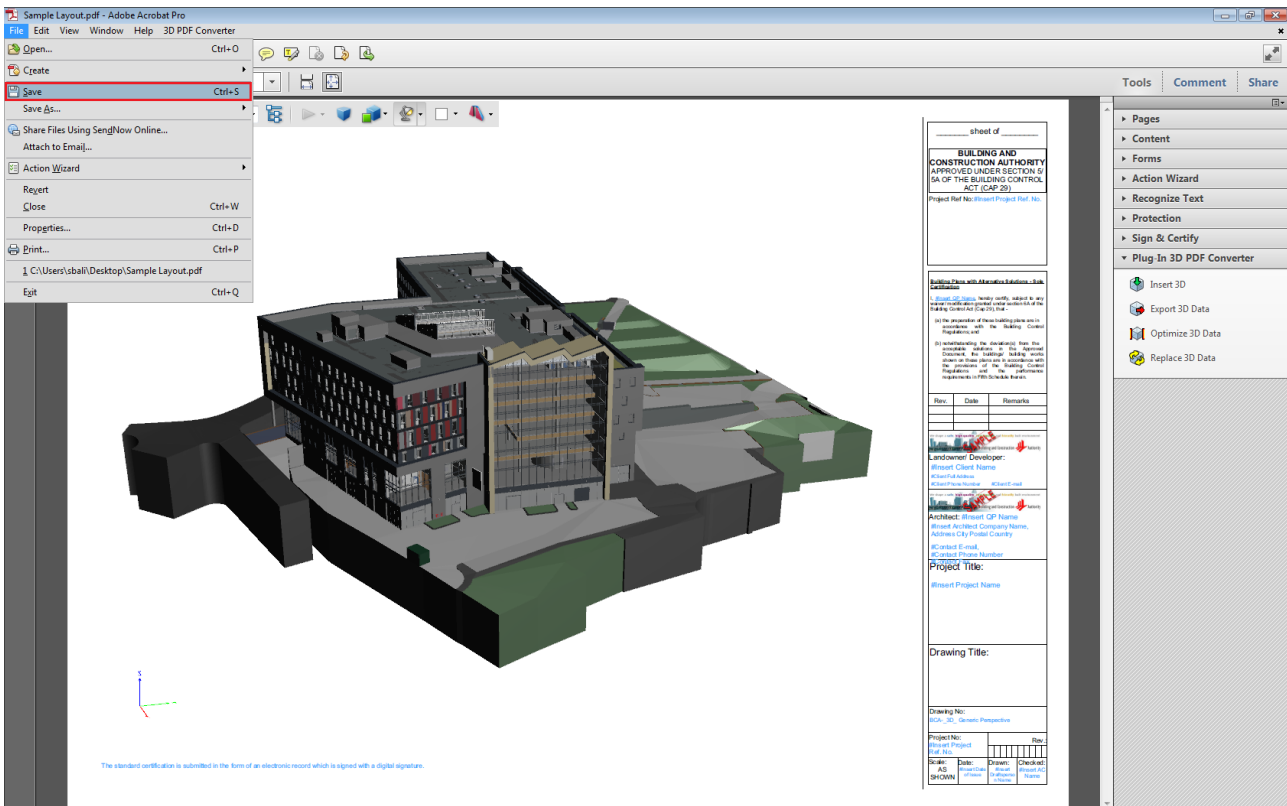
- 2 Select and open the **empty layout PDF**.

- 3 Open the **Tools** pane and roll down the **Plug-In 3D PDF Converter** tools. Click **Insert 3D**.



- 4 Use the appearing crosshair to define a rectangular area on the layout into which you will paste the 3D content.
- 5 Once done, an Open dialog will pop-up, select the **IFC/U3D file** you saved with ARCHICAD. Click **Open**. Set settings and click **OK** in the 3D PDF Converter dialog to proceed. Click **OK** in the prompt dialog notification about the conversion time.

- 6 Conversion takes a few minutes. Once done save the file as **PDF** using the **File/Save** menu command.



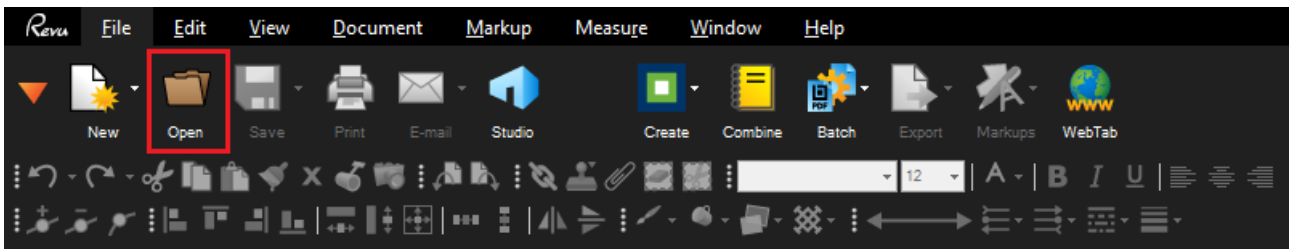
Note #1: The final PDF will be saved as a ~5 MB file (using a ~50 MB IFC model).

Note #2: To create 3D PDFs without the layouts you can simply open the IFC/U3D files directly instead of pasting them into the layout PDF.

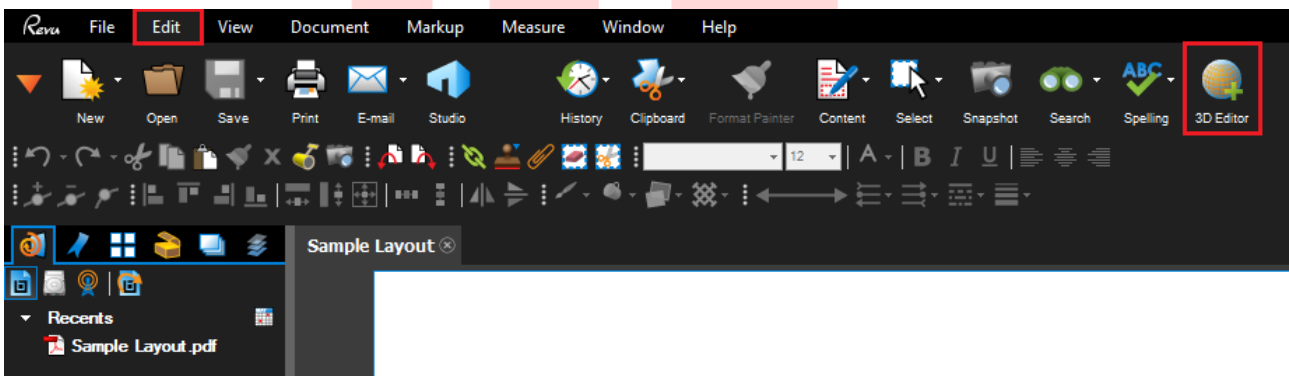
Bluebeam Revu CAD:

You can get the latest version from the [Bluebeam website here](#) »» (scroll down to activate Trial and Buy Now options at the header).

- 1 Launch **Bluebeam Revu CAD** and click the **Open** icon at the menubar.

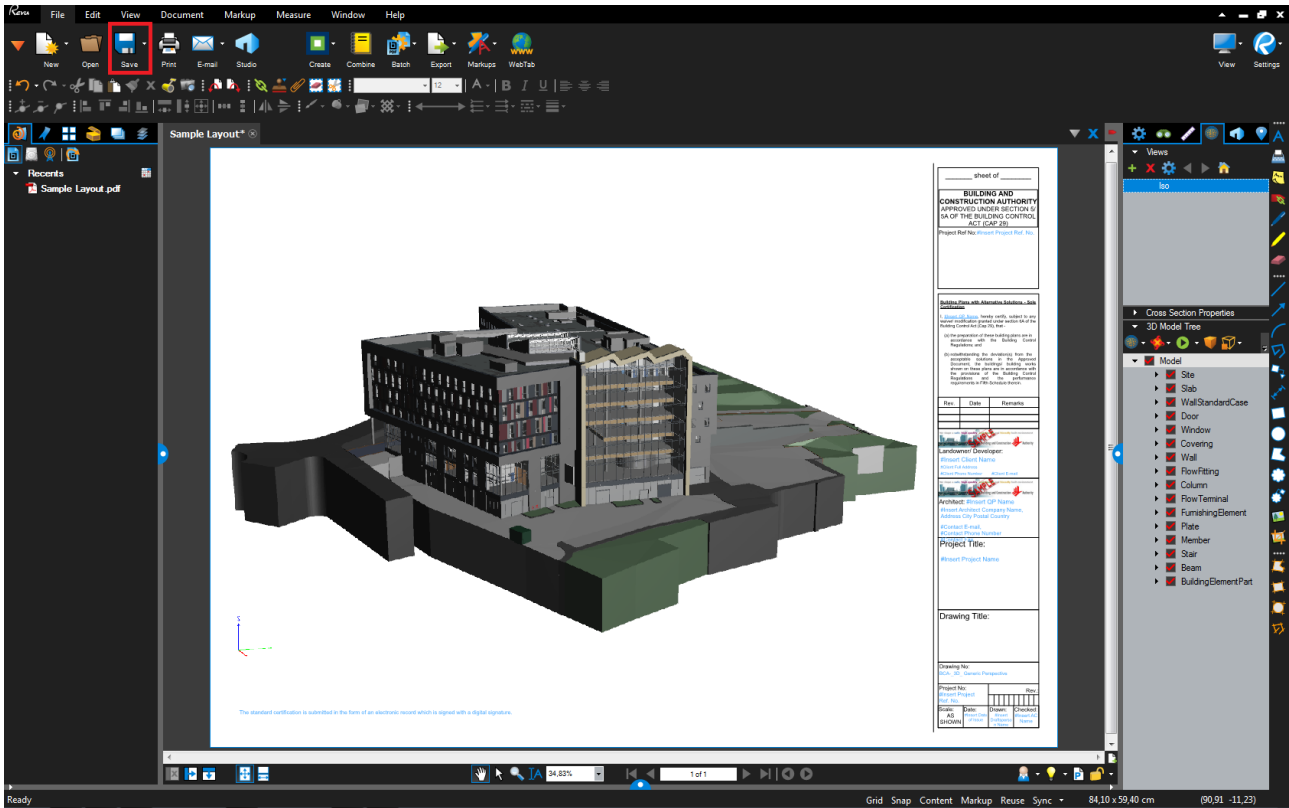


- 2 Select and open the **empty layout PDF**.
- 3 Select the **Edit** tab page on top and click **3D Editor** on the right.



- 4 Use the appearing crosshair to define a rectangular area into which you will paste the 3D content.
- 5 Once done, an Open dialog will pop-up, select the **IFC/U3D file** you saved with ARCHICAD. Click **Open**. Set basic settings in the Add 3D Content dialog and click **OK**.
- 6 Conversion takes some time, be patient. Once done, the New 3D PDF dialog will open with format and view option settings. Click **OK** if set.

7 Save the file as **PDF** using the **Save** icon.



Note #1: The final PDF will be saved as a ~3.5 MB file (using a ~50 MB IFC model).

Note #2: To create 3D PDFs without the layouts you can simply open the IFC/U3D files directly instead of pasting them into the layout PDF.

ACKNOWLEDGEMENT

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