

Architectural Native BIM Submission Template

for ARCHICAD 20

Building and Construction Authority

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www.bca.gov.sg

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INTRODUCTION

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

The document describes the features of the Architectural Native BIM Submission Template for ARCHICAD 20 and provides a step-by-step guide to apply them in projects. 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 Guidelines and templates shall be collected from the BCA BIM team.

This training material is to serve as a reference for GRAPHISOFT ARCHICAD 20 users only.

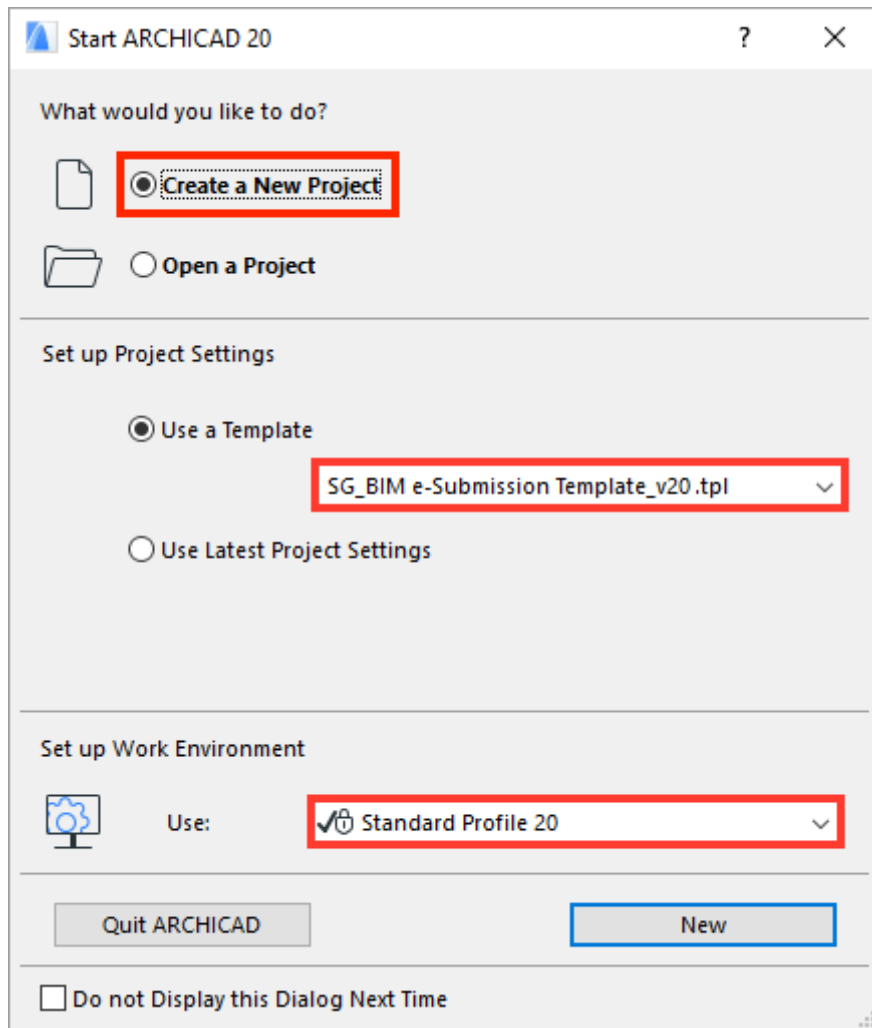
PART I - GETTING STARTED

Once you have downloaded and unpacked the ZIP file from the CORENET website, do the following preparations before using the template for the first time.

- 1 Place the **SG_BIM e-Submission Template_v20.tpl** file to the default settings folder of ARCHICAD (within the folder ARCHICAD was installed to), usually located at **C:/Program Files/GRAPHISOFT/ARCHICAD 20/Defaults/ARCHICAD**.
- 2 Place the **SG BIM Submission 20.lcf** library container file into a folder where it will not be modified, moved or deleted, for example any folders which you already use for storing libraries or the **C:/Program Files/GRAPHISOFT/ARCHICAD 20** installation folder.
- 3 Launch **GRAPHISOFT ARCHICAD 20** using the desktop shortcuts.

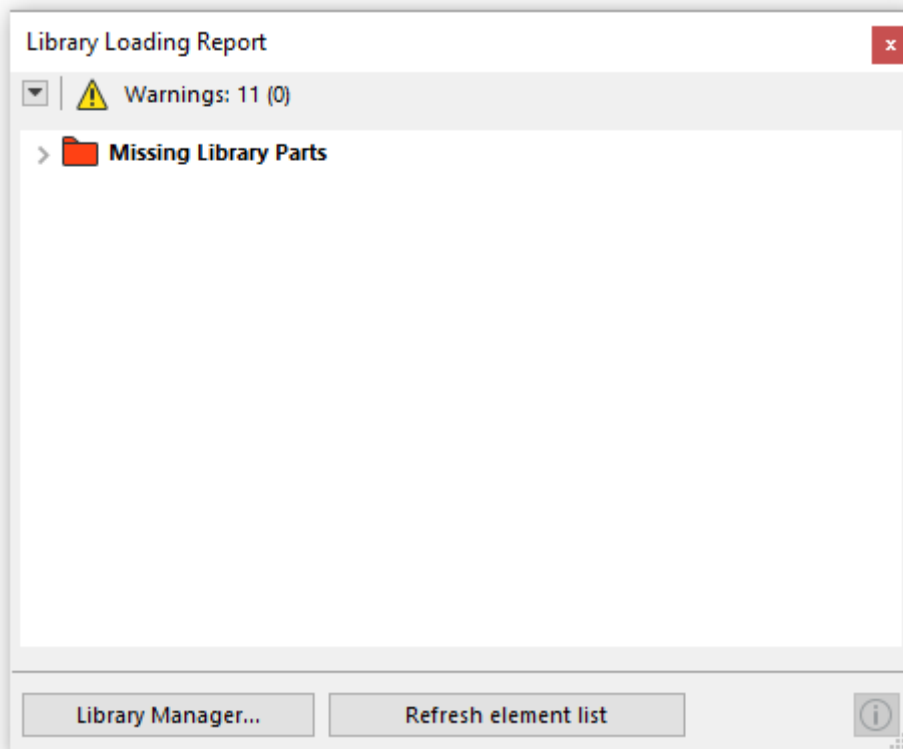


- 4 The Start ARCHICAD 20 dialog appears, choose **Create a New Project** and select **Use a Template**. Click into the dropdown list and use the **Browse Template...** option to locate the **SG_BIM e-Submission Template_v20.tpl** template file.
- 5 Choose the **Standard Profile 20** Work Environment and click **New**.

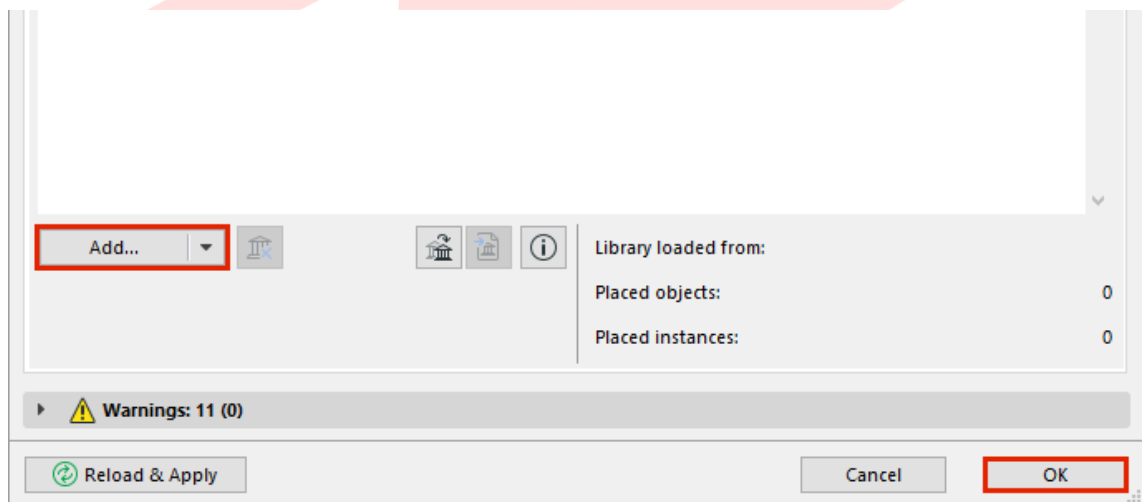


Note: To ensure the authenticity of the downloaded template file, make sure you obtain it from the CORENET BIM Support Team here:
[https://corenet.gov.sg/general/building-information-modeling-\(bim\)-e-submission.aspx](https://corenet.gov.sg/general/building-information-modeling-(bim)-e-submission.aspx)

- 6 Once ARCHICAD 20 is launched, it will prompt for missing elements of the LCF file. Click **Library Manager....**

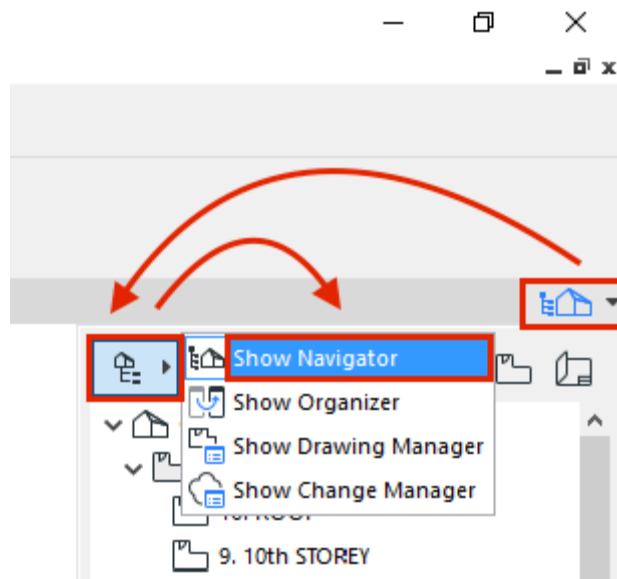


- 7 Click **Add....** Locate the LCF file and click **Open.**



- 8 Click **OK** to close the Library Manager and load the libraries.

- 9 Use the **Pop-up Navigator** button at the top right to show the Navigator and use the **Project Chooser/Show Navigator** command to make the palette permanently displayed as in previous ARCHICAD versions.

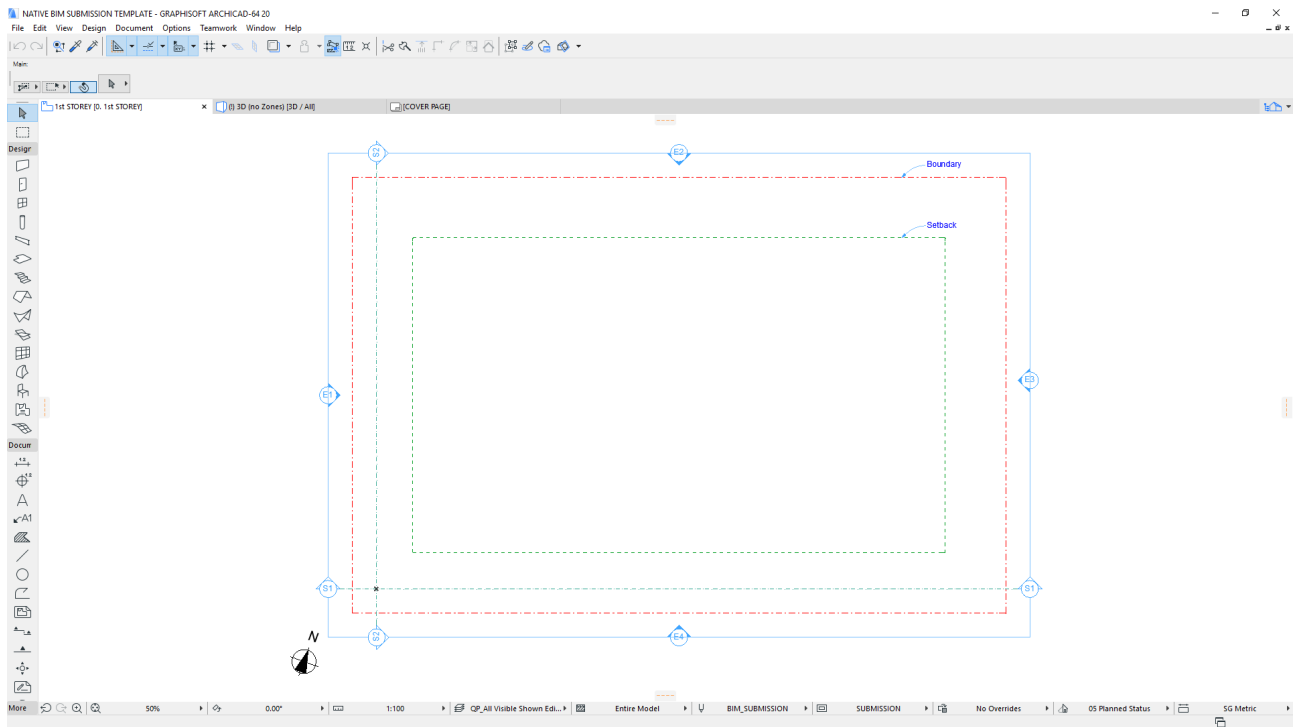


Find more information on the Pop-up Navigator
at the GRAPHISOFT Help Center here:

http://helpcenter.graphisoft.com/guides/archicad-20/archicad-20-reference-guide/interaction/navigation/pop-up_navigator/

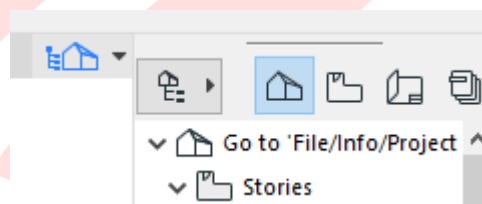
PART II - THE ARCHICAD NAVIGATOR

ARCHICAD 20 has a brand new, though familiar interface. By default the Navigator palette is not shown (see previous chapter).

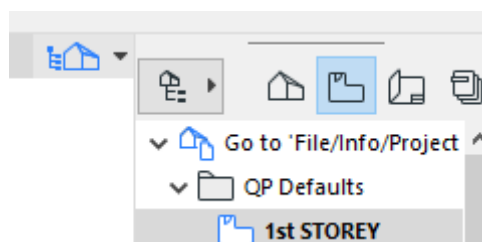


Once turned on, the Navigator palette is displayed on the right side of the interface, containing the following tabs/selectors:

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

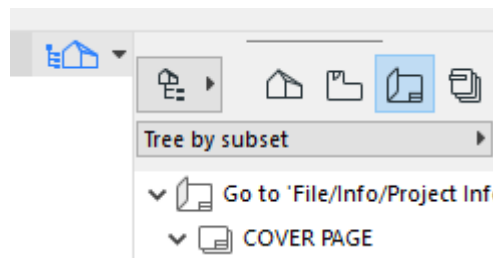


- **View Map** - model views filtered for different purposes. The folder structure here is organized for the native BIM submission.



- **Layout Book** - predefined layouts and master layouts are collected here, however the native submission process does not require the use of layouts except a single cover page.

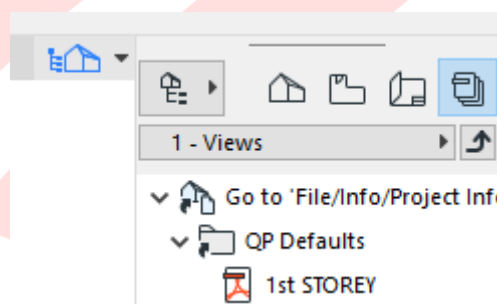
For CP83 submission or project phases after the submission you will still want traditional 2D format deliverables. Expand the **Masters** section and double-click a master layout to open it. The title blocks on the right can be customized to meet your company standards. Feel free to customize the title blocks for the different authorities and departments if not submitting a native ARCHICAD file.



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 procedure. To update the original template use **File/Save as...** menu option and override the existing template file using **ARCHICAD Project Template (*.tpl)** file type setting. 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 and new publisher sets can be created with combined formats within the same publisher set.



NEW in the ARCHICAD 20 Template:

- Default worksheets for Endorsements and User Guide
- Revised Site Plan 3D Document
- Predefined views for 2D plans and 3D floor-by-floor views
- Predefined views for Schedules
- Preset Cover Page
- Revised Master Layouts for traditional 2D output formats
- Boundary line and Setback line using the Grid tool
- North Symbol

The BIM submission template serves as a basic platform to help you in preparing your model for regulatory approval. Submitting native files is not mandatory and you are free to submit your projects in the traditional way and edit the template according to your needs as long as the final results presented to the authorities meet the requirements specified in the Code of Practice for BIM Submission documents.

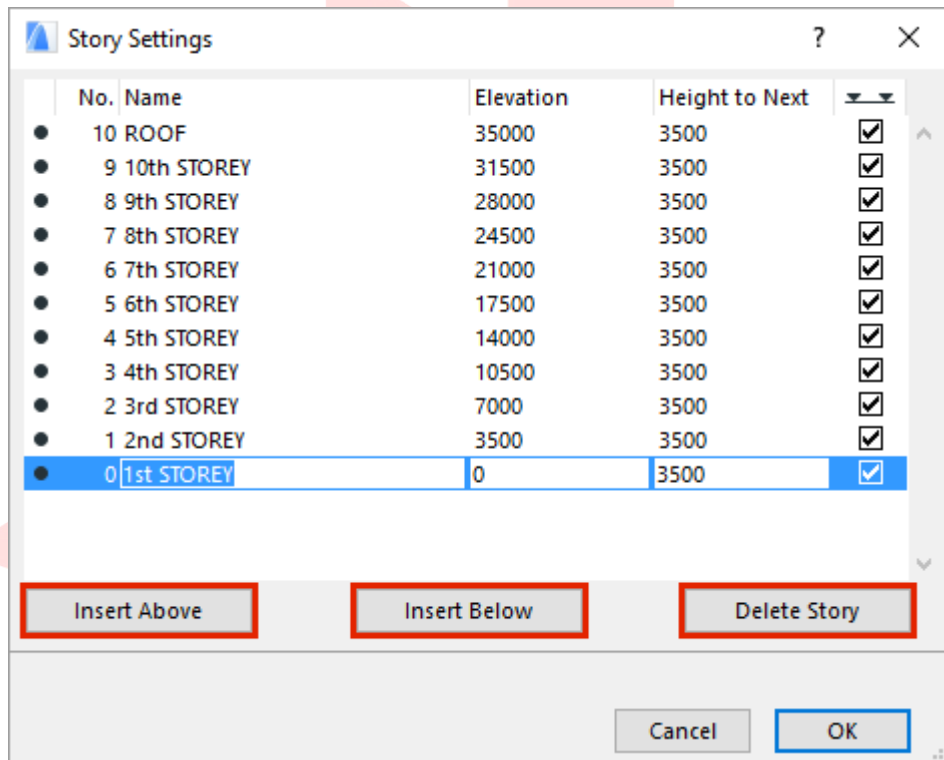
Note: Traditional submission formats are still accepted, but not supported or recommended by BCA, nor GRAPHISOFT Singapore as the creator of this template from July 2016 onwards.

PART III - STOREYS, PROJECT LOCATION 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.

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 unwanted storeys and click **Delete Story**. If you want to add storeys select an existing story and use the **Insert Above/Insert Below** buttons respectively.



Find more information on the Story Settings
at the GRAPHISOFT Help Center here:

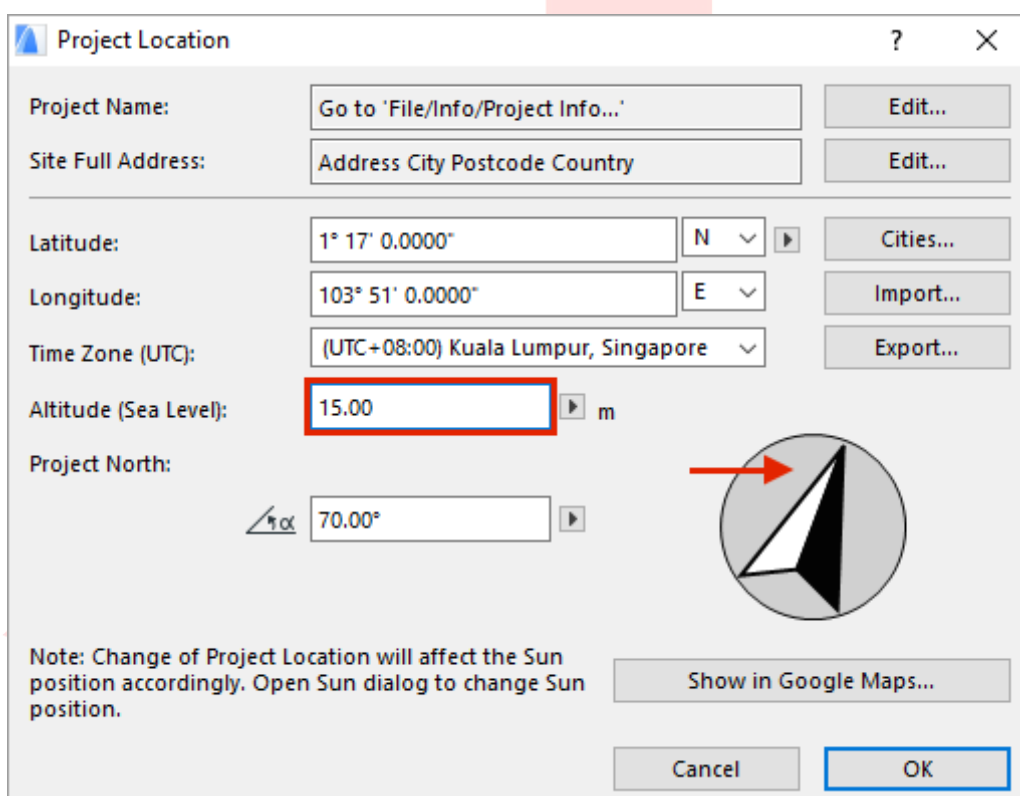
<http://helpcenter.graphisoft.com/guides/archicad-19-int-reference-guide/views-of-the-virtual-building-3/archicad-model-views/stories/>

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

Section and Elevation story levels are referenced to the *Sea Level*, by default showing an altitude of +15.000 for Project Zero.

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 Additionally you can also set Project North either by typing the value or simply clicking on the symbol and rotating it within the dialog.

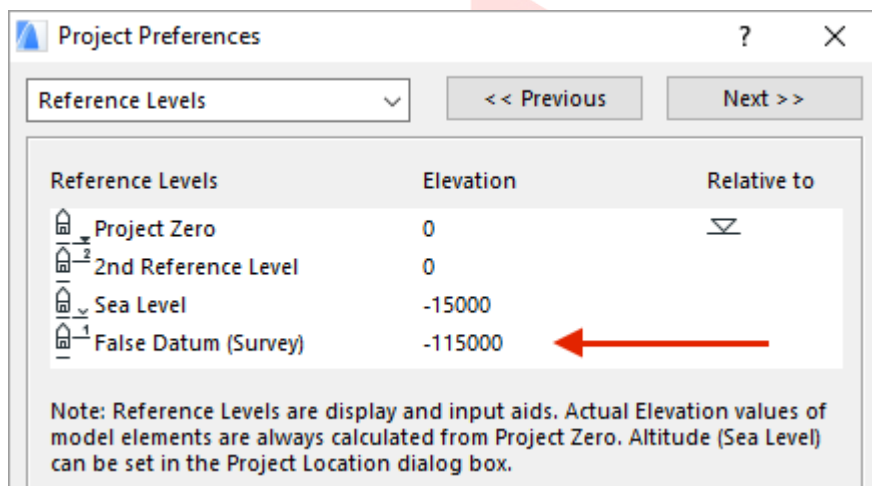
Note: The ARCHICAD term *Project North* is equal to True North.

Find more information on Project Location and True North settings
at the GRAPHISOFT Help Center here:

<http://helpcenter.graphisoft.com/guides/archicad-18-int-reference-guide/configuration/project-location-and-project-north/>

Depending on the project you may want to edit existing reference levels or create new reference levels:

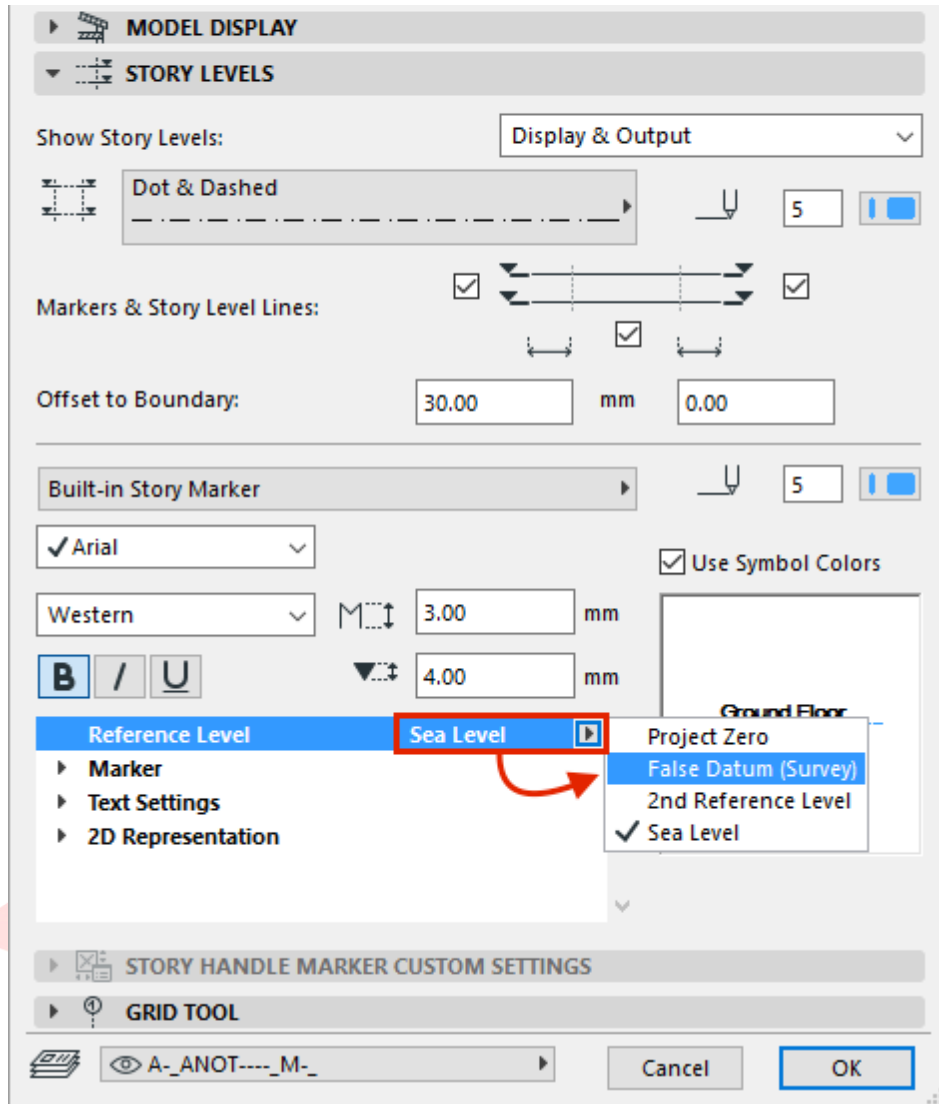
- 1 Go to **Options/Project Preferences/Reference Levels...** dialog and change the values of the **2nd Reference Level**. The units of the values follow the working unit settings, millimeters by default. The 1st Reference Level has been altered to display *False Datum*. By choosing that option when placing your elevation dimensions, level dimensions or adding height value inputs for mesh points, the exact values provided by the land surveyors (+100.... metres) can be used while keeping the real altitude values above the sea level.



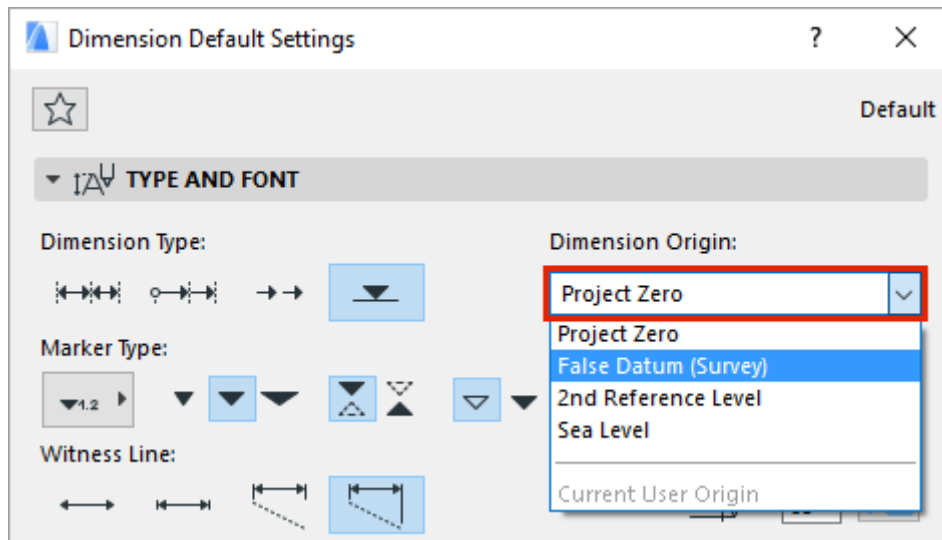
Find more information on the Reference Levels
at the GRAPHISOFT Help Center here:

http://helpcenter.graphisoft.com/guides/archicad-20/archicad-20-reference-guide/user_interface_reference/dialog_boxes/project_preferences_dialog_boxes/reference_levels_preferences/

- 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 (by default Sea Level). Repeat this with all viewpoints that require the same reference levels.



- 3 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.



NEW in the ARCHICAD 20 Template:

- Sea Level as a default setting for Section/Elevation Story Levels
- Elevation Dimensions for Story Levels with Project Zero reference
- False Datum reference level set
- North Symbol automatically following Project North

PART IV - SITE AND SURROUNDINGS FROM EXTERNAL CONTENT

Surroundings can be imported and created from many different formats, such as 2D DWGs, tabulated text files or Point Clouds.

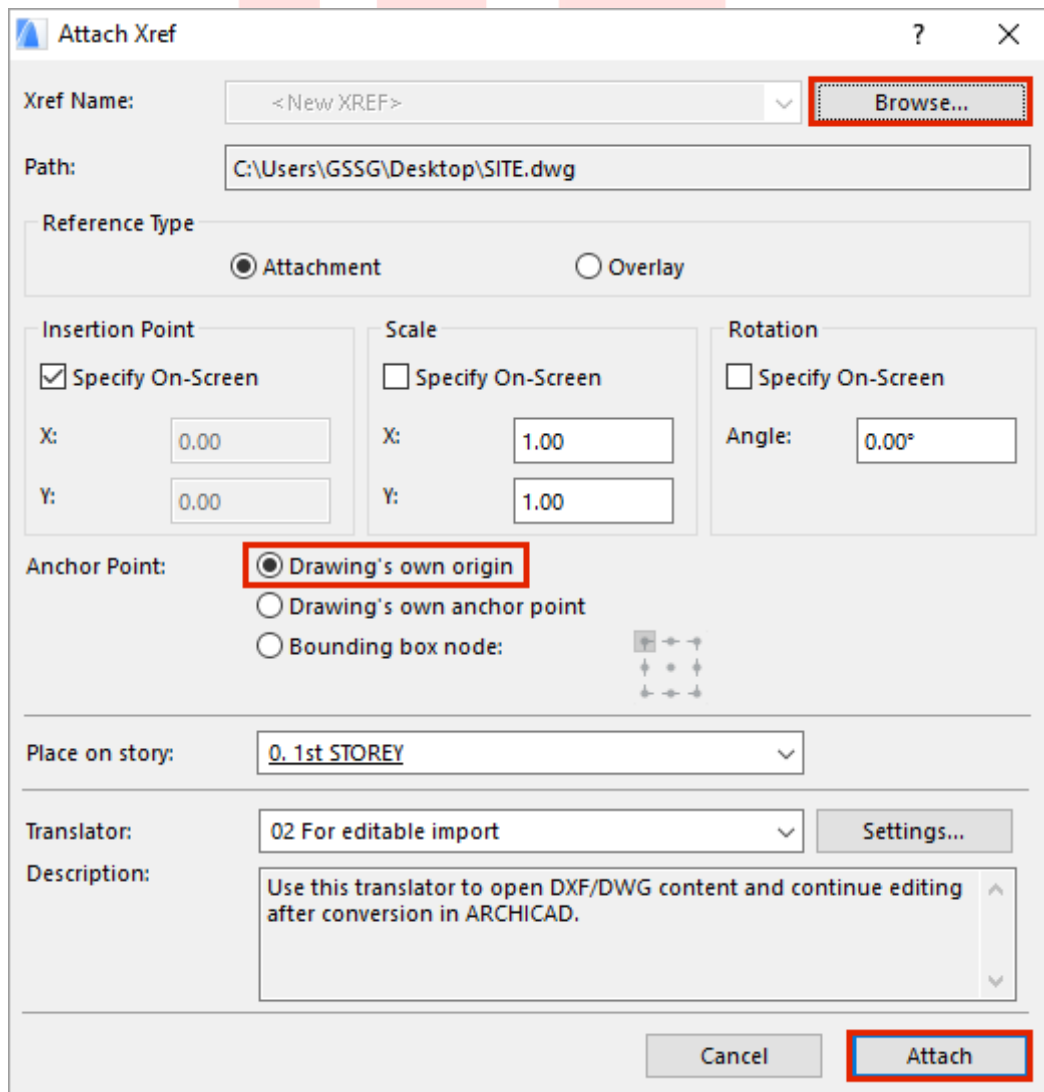
DWG

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

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

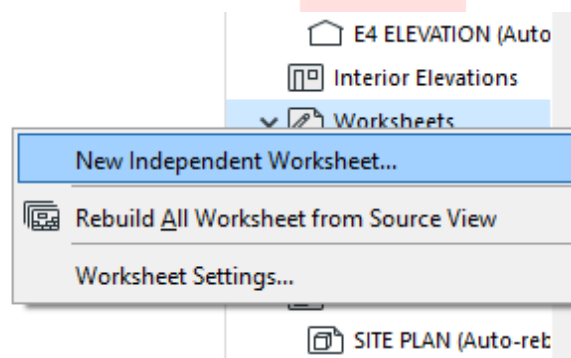
Note: Set the scale to 1:1000 for both X and Y in the Attach Xref dialog if your ARCHICAD working unit (mm) is different from the units used for the CAD topography map (meters).

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



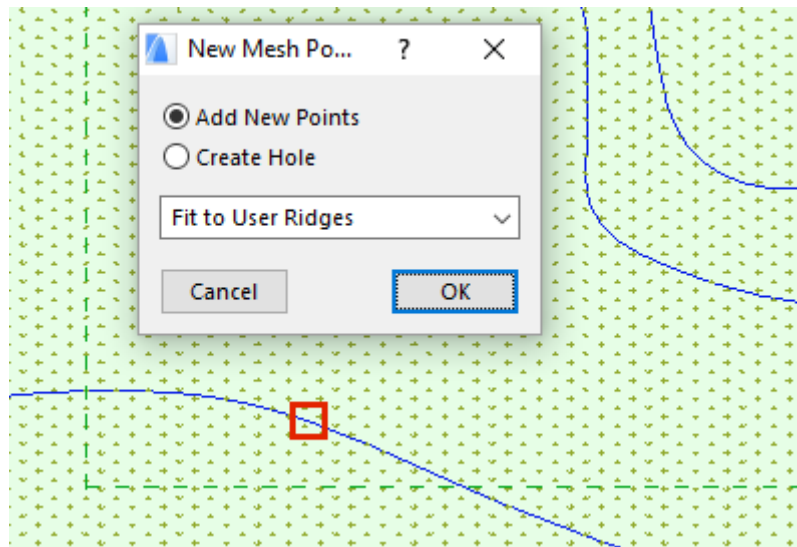
- 3 Choose the layers you want to import into ARCHICAD and click **OK**.
- 4 If prompted for the location of SHX font and shape files click **Skip All** unless you have the specified font substitution in your translator. Click a spot to define the origin point of the topography map.

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 (use **Show as Trace Reference** on the Worksheet entries).

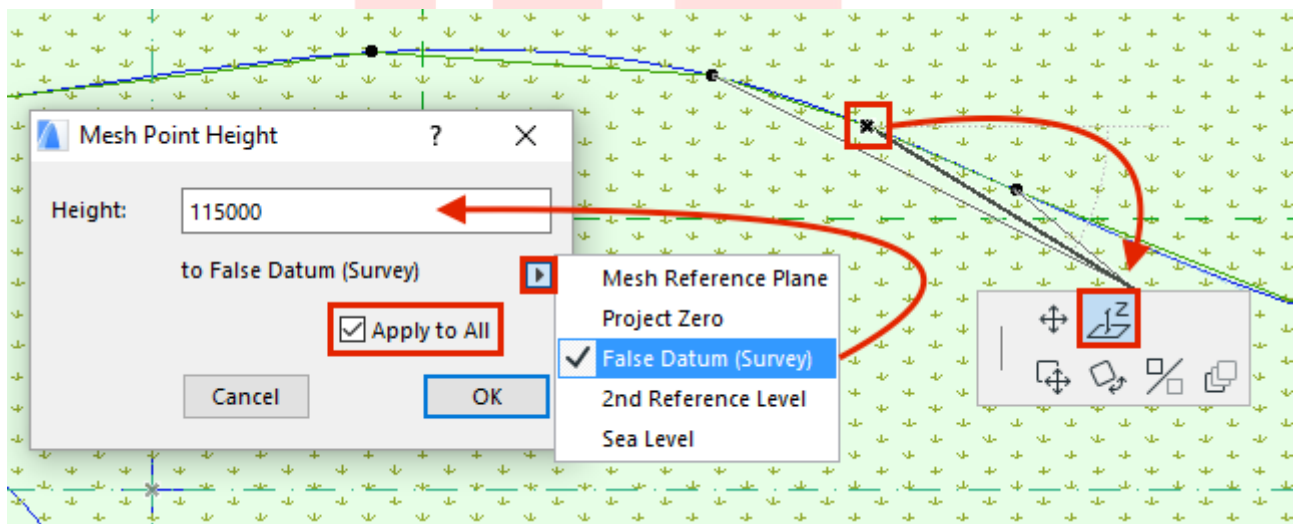


- 5 Select the elevation and section markers and adjust them to the topography map. Similarly you will need to move the boundary lines and the setback lines. These lines will be automatically updated on the elevation and section viewpoints.
- 6 To create a model of the terrain use the **Mesh tool** in the Toolbox. Draw the boundaries of the terrain.
- 7 Recreate continuous mesh ridges by first selecting the **mesh** in the model space, then activating the **Mesh tool** in the Toolbox.
- 8 Press and hold the **SPACEBAR** and click on the ridges of the DWG reference.

- 9 Keep **Fit to User Ridges** selected in the upcoming dialog and click **OK**. Create the remaining ridges similarly.



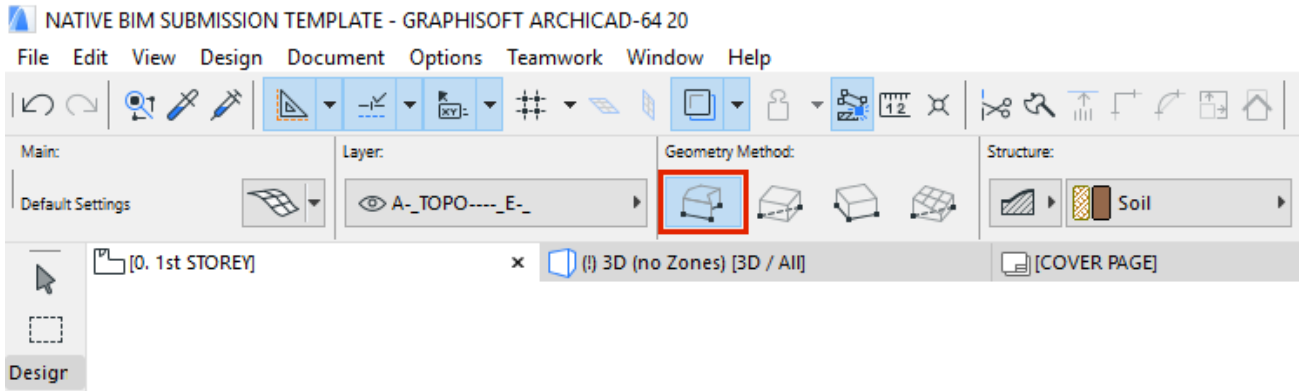
- 10 When done creating the ridges make sure that the mesh is selected and the Mesh tool is still activated. Click on a **node** of a ridge and choose the **Elevate Mesh Point...** command of the Pet palette. Check the **Apply to All** checkbox to raise all nodes of the ridge and choose the appropriate reference plane, for example the False Datum. This way you can enter the same values as on the surveyor's plan. Elevate the remaining ridges similarly.



- 11 As a last step adjust the corner nodes of the mesh (**uncheck Apply to All**) manually in 3D or 2D.

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

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

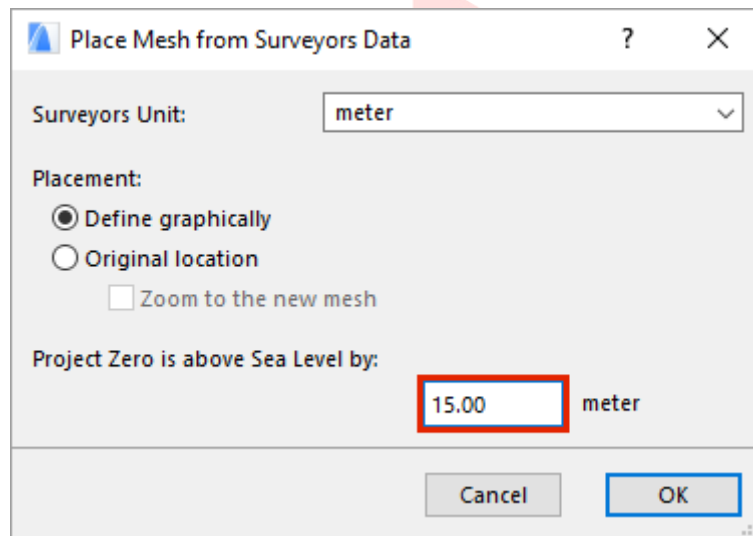


- 2 Double-click the referenced surveyor points to create them. Click **OK** with the **Fit to User Ridges** option selected in the upcoming dialog. Create the remaining points similarly.
- 3 Elevate the points one-by-one using the **Elevate Mesh Point...** command (similarly to the ridges).

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 **File/Interoperability/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.



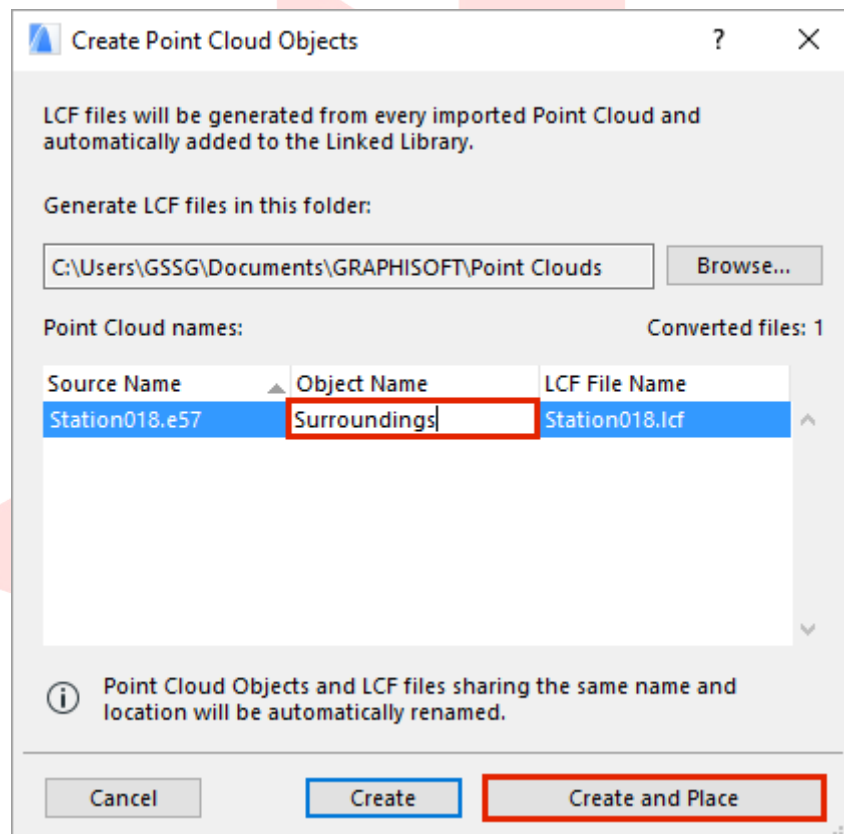
- 3 Click **OK** and **click into the workspace** to place the mesh generated from the text data.

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

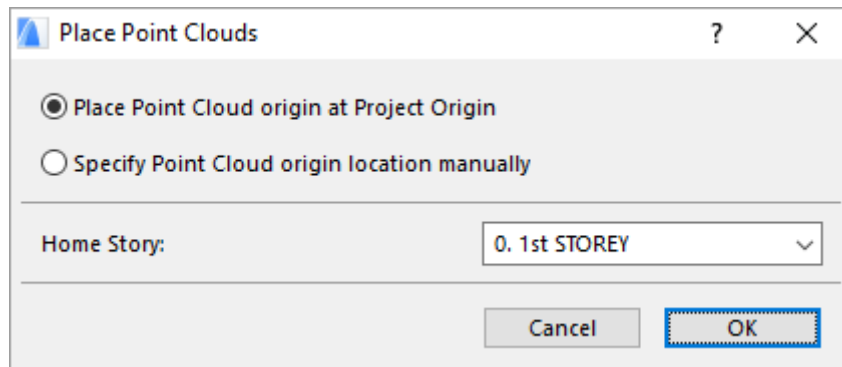
ARCHICAD natively supports the industry standard E57 and XYZ point cloud file formats which can be imported and used to model existing buildings before renovations, surroundings or as-built structures.

- 1 Open **File/Interoperability/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.

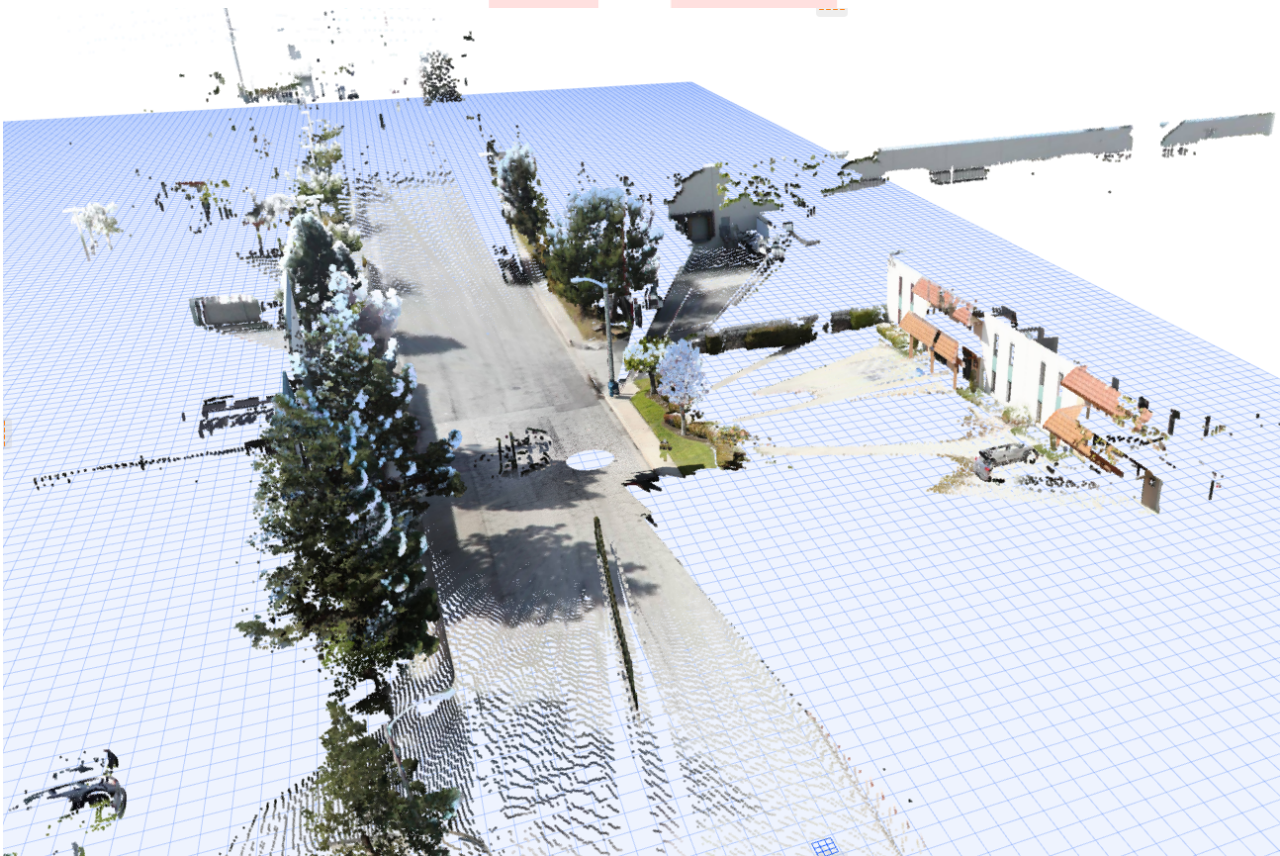


- 4 Specify the name of the object that will be created after the import in the Create Point Cloud Objects dialog and click **Create and Place**.

- 5 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.



Find more information on Point Clouds
at the GRAPHISOFT Help Center here:

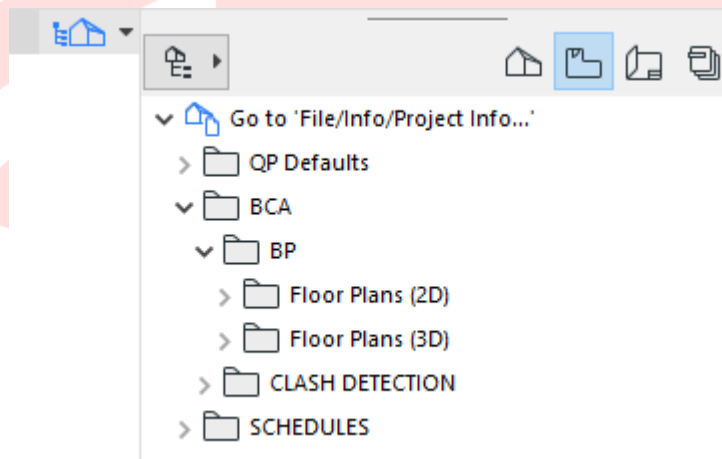
http://helpcenter.graphisoft.com/guides/archicad-20/archicad-20-reference-guide/interoperability/file_handling_and_exchange/working_with_point_clouds/import_point_clouds/

PART V - BIM SUBMISSION TOOLS AND INTERFACE

View Map Overview

The Navigator - View Map contains predefined views, which can be used as-is for the submission:

- The **QP DEFAULTS** folder contains views to help the QPs with modeling, by storing default settings in which all elements are visible and editable.
- The **BCA/BP** folder contains folders and views that the officers will check upon submission. The views contain both 2D and 3D views and legacy views for CP83 submission as well.
 - The **2D PLANS** folder is to be checked primarily while views in **3D PLANS** will be used for the same purpose and to clarify issues which are not visible from the 2D plans. The latter might need manual adjustments, depending on the architectural design and the level/slab positions.
- The **BCA/CP83** folder contains views that can be used for traditional submission. This is optional.
- The views in the **SCHEDULES** folder will also be checked by the officers to ensure that the model complies with the regulations. The QPs can use them for data input as well.

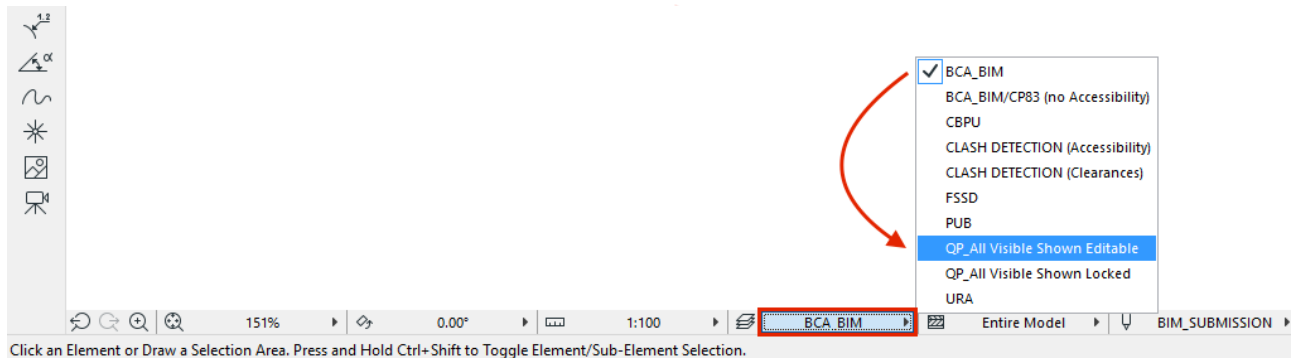


- The **CLASH DETECTION** folder is to be used by the QPs to verify the model against collisions in between the accessibility routes/opening clearances and the elements. This is optional, not a requirement for the submission.
- The **COVER PAGE** folder is purely to collect views that are part of the submission cover page.

Quick Options

When adding the data to your model you may already want to use the previously mentioned views. However to edit them you need to change the Layer Combinations, since the stored views do not allow modifications.

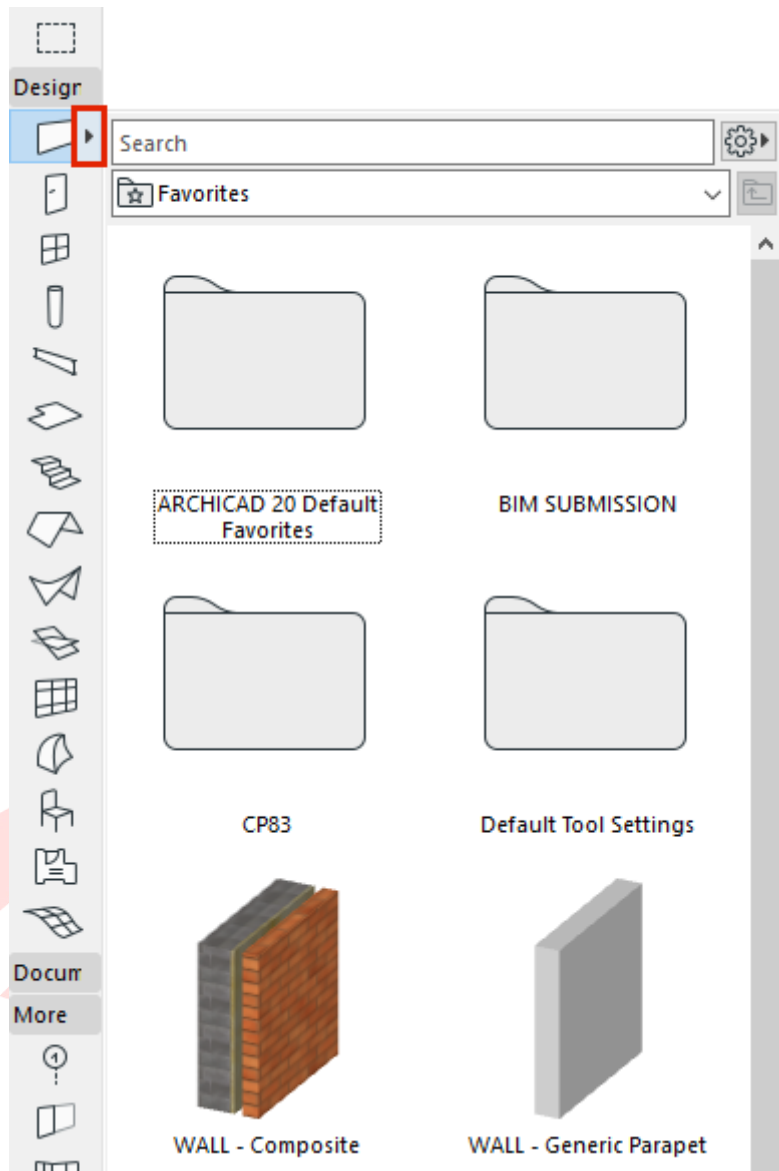
ARCHICAD 20 has the *Quick Options* at hand at the bottom of the screen on a bar. Click the layer setting selector and switch to the **QP_All Visible Shown Editable** layer combination.



When working with schedules the Quick Options bar is not visible, but all schedules are still editable. As an alternative for generic editing, you can always show the Quick Options palette by launching the **Window/Palettes/Quick Options** menu command as in previous releases of ARCHICAD.

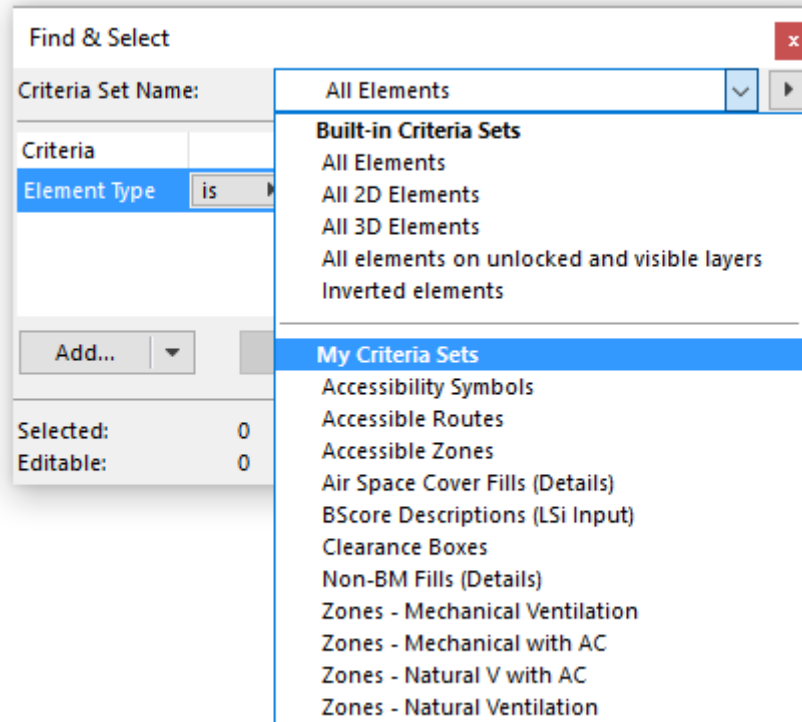
Favorites

The current version of the template contains many predefined favorites for the QPs' convenience. These can be easily accessed by hovering the cursor of your mouse over the tools of the Toolbox and clicking the little arrows. The favorites are organized into folders.



Find & Select Criteria Sets

To quickly select elements with specific criterion, use the **My Criteria Sets** of Find & Select (**Edit/Find & Select** or **CTRL+F**).



When opening the element settings of the selection set (**CTRL+T**), the settings of the last selected element will be visible. To change to a specific element, first deselect it, then select it again to make its settings appear.

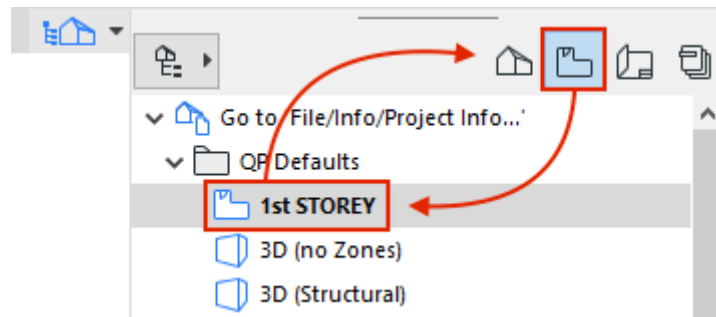
NEW in the ARCHICAD 20 Template:

- Predefined 2D/3D and Schedule views for submission
- Refined Layer Combinations/Pen Sets
- Graphic Override Combinations for highlighting elements by criteria
- QP prefix for easier adoption
- Find & Select Criteria Sets for data input and bulk editing (accessibility, ventilation, BScore, detailing)

Editing in general

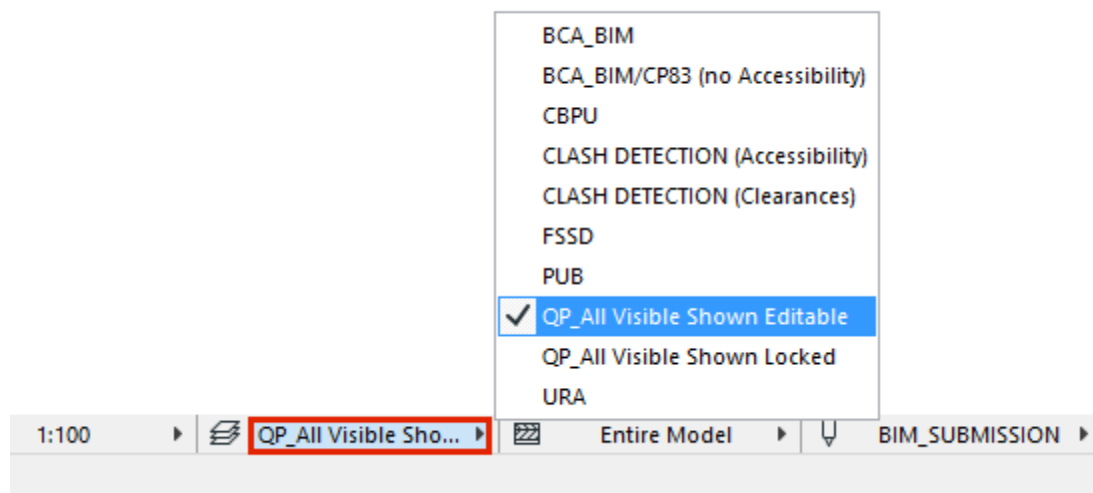
In general, one of the steps below has to be followed every time if editing is locked/not available due to the layer combination settings.

- A Open the **QP Defaults/1st STOREY** view from the **View Map** to gain access to all editing functions, then **choose the viewpoint you want to work on** in the **Project Map**



OR

- B Simply switch to the **QP_All Visible Shown Editable** layer combination from the **Quick Options** bar/palette.



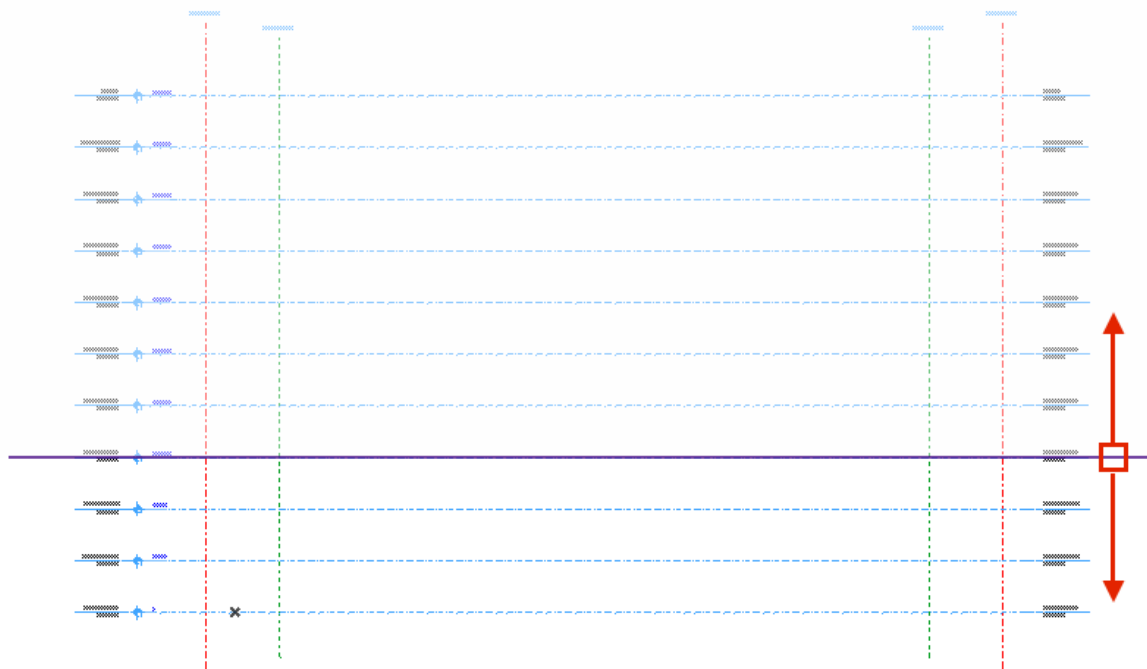
Note: Schedules are editable in all views by default.

PART VI - PREPARING THE FILE FOR SUBMISSION

3D Floor-by-Floor views

As part of the preparation process the QPs need to set/refine the 3D views of the different stories. Since the slab positioning and levels may vary significantly there is a high chance that some manual adjustments are needed to the preset 3D views.

The preset views use the 3D Cutaway function to limit the vertical range of the 3D view. Once the view is opened from the View Map, you can adjust the **Cutaway plane** by clicking on it and dragging it or simply switch to the **Project Map** in the Navigator and open a section/elevation to see the plane. If needed click on the purple line and drag it to the desired height.

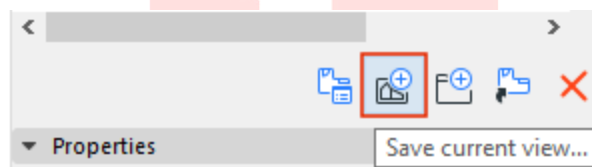


Creating/modifying Floor-by-Floor 3D Views (3D Cutaway Planes)

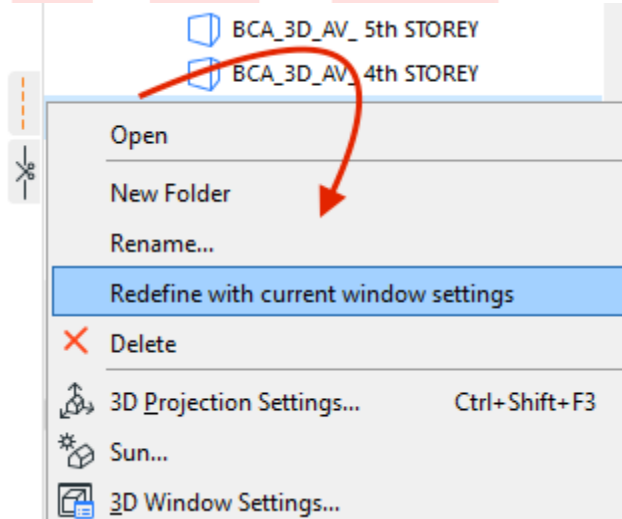
- 1 Open any of the views of the **BCA/BP/3D PLANS** folder in the View Map.
- 2 Use the **3D Cutaway Plane** function of the Standard Toolbar to set the trimming.



- 3 Click **Finalize** when done.
- 4 Save the View using the **Save Current View...** button at the bottom of the Navigator - View Map.



- 5 To change an existing view just right-click on the view you modified and choose **Redefine with current window settings** from the context menu.



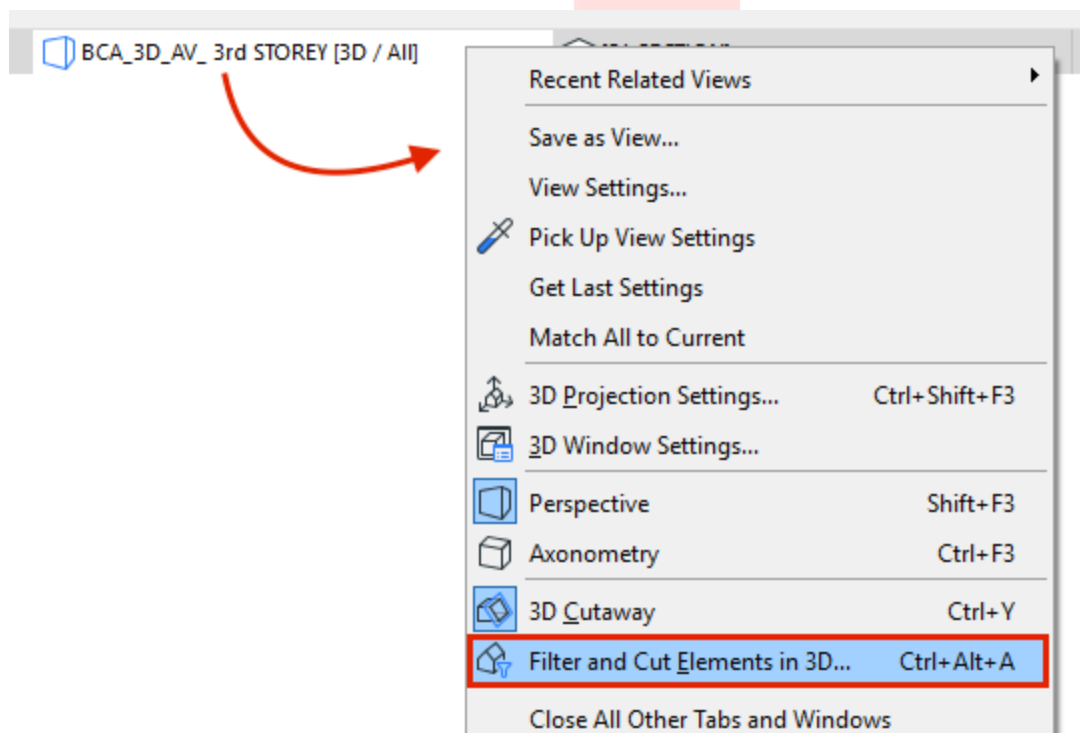
Note: When changing story heights (**Design/Story Settings...**) the elevation of Cutaway Planes must be readjusted.

Creating/modifying Floor-by-Floor 3D Views (Filter and Cut Elements in 3D)

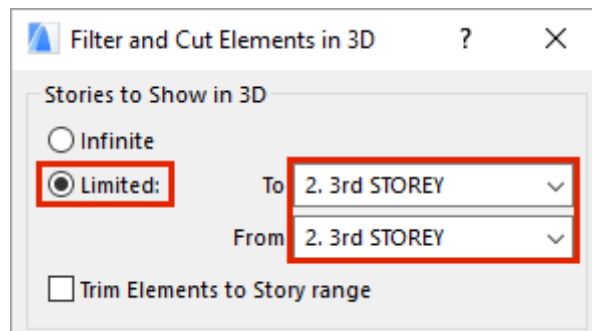
- 1 Open any of the views of the **BCA/BP/3D PLANS** folder in the View Map.
- 2 **Turn off** the Cutaway Planes, the full 3D model will be shown.



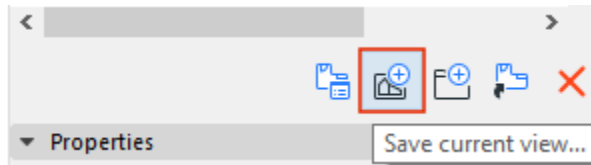
- 3 Right-click the Tab of the opened view on the Tab bar and choose **Filter and Cut Elements in 3D...**



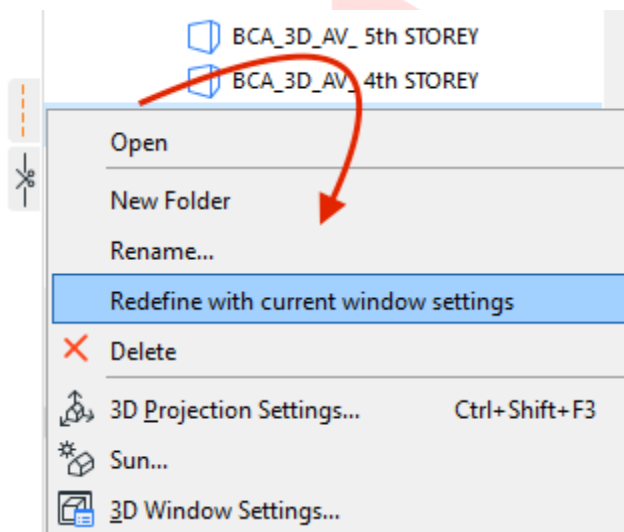
- 4 Set Stories to Show in 3D to **Limited**.
- 5 To/From: **Select the story for both options** for which you want to create the 3D floor plan and click **OK**.



- 6 Save the View using the **Save Current View...** button at the bottom of the Navigator - View Map.



- 7 To change an existing view just right-click on the view you modified and choose **Redefine with current window settings** from the context menu.



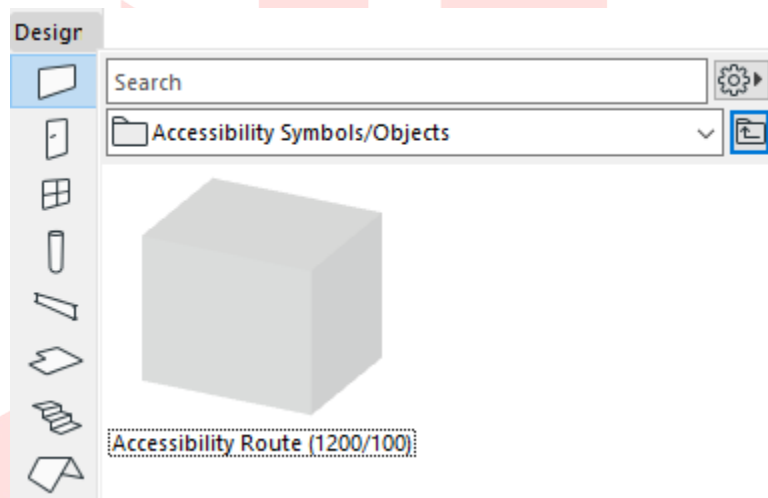
PART VII - ACCESSIBILITY & VENTILATION

Accessibility and *Modes of Ventilation* has to be marked by adding accessibility routes, clearance boxes, accessibility objects (symbols) and by setting the properties of zones regarding both. This part summarizes ventilation and accessibility in general, the use of the accessibility related objects will be introduced in later parts of this document.

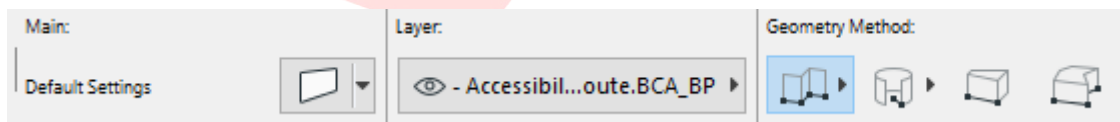
Accessibility Routes

Accessibility routing is using the Wall tool.

- 1 To place it use the **Wall** graphical favorite **Accessibility Route (1200/100)** under the **BIM SUBMISSION/Accessibility Symbols/Objects** folder.



- 2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.
- 3 Create the wall using the **Chained geometry method**. When reaching doors, **make sure the route is not intersecting with the frames or leaves**.



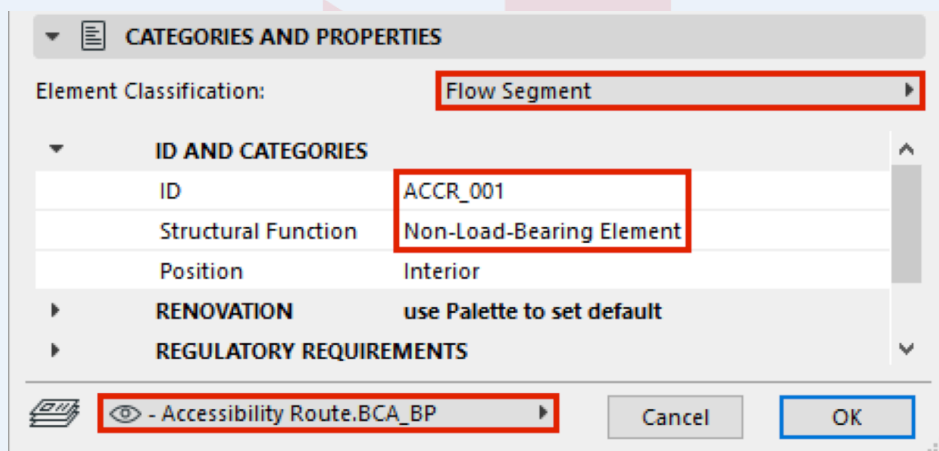
Note: The Bottom offset of the wall is set to **0 by default**. Always make sure that the **accessibility route is located on the top surface of your actual slabs** to avoid clashes.

IMPORTANT SETTINGS (Accessibility Route):**Geometry:**

- **Bottom offset and slab top surface location**

Categories and Properties:

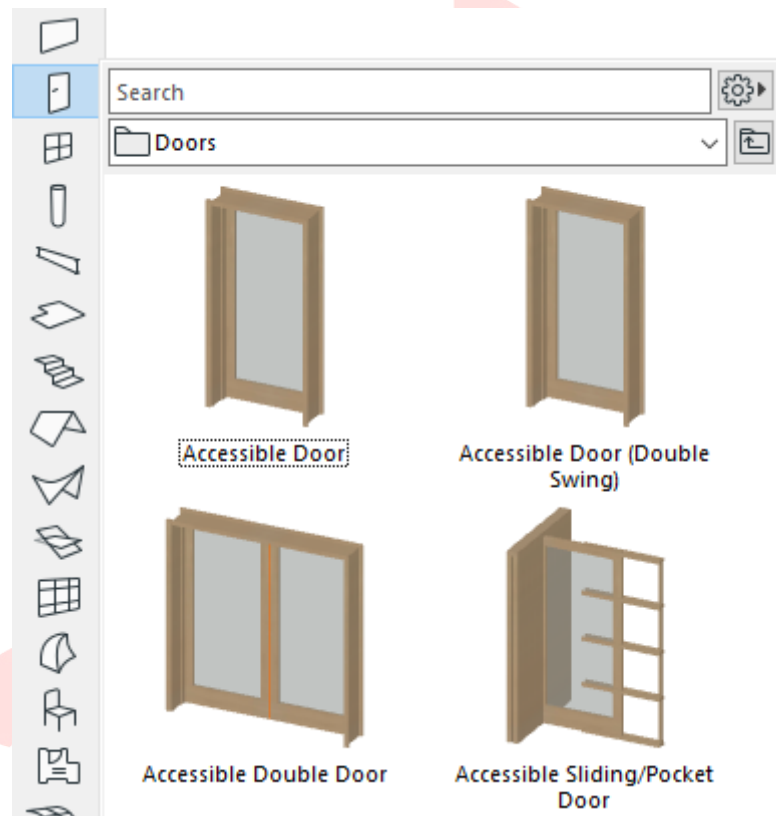
- Element Classification: **Flow Segment**
- ID: **according to your naming standards**
- Structural Function: **Non-Load-Bearing Element**
- Layer: - **Accessibility Route.BCA_BP**



Accessible Doors

Accessible doors have to be placed wherever access to an accessible zone/room is required. The only difference between regular and accessible doors is that the latter have their minimal spaces defined and shown automatically on accessibility related plan views.

- 1 To place one use any of the **Door** graphical favorites named **Accessible Door/Door (Double Swing)/Double Door/Sliding/Pocket Door** under the **BIM SUBMISSION/Doors** folder.



- 2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.
- 3 Insert the doors.

Note: To insert regular doors, use the favorites within the same folder that do not have the 'Accessible' prefix in their names.

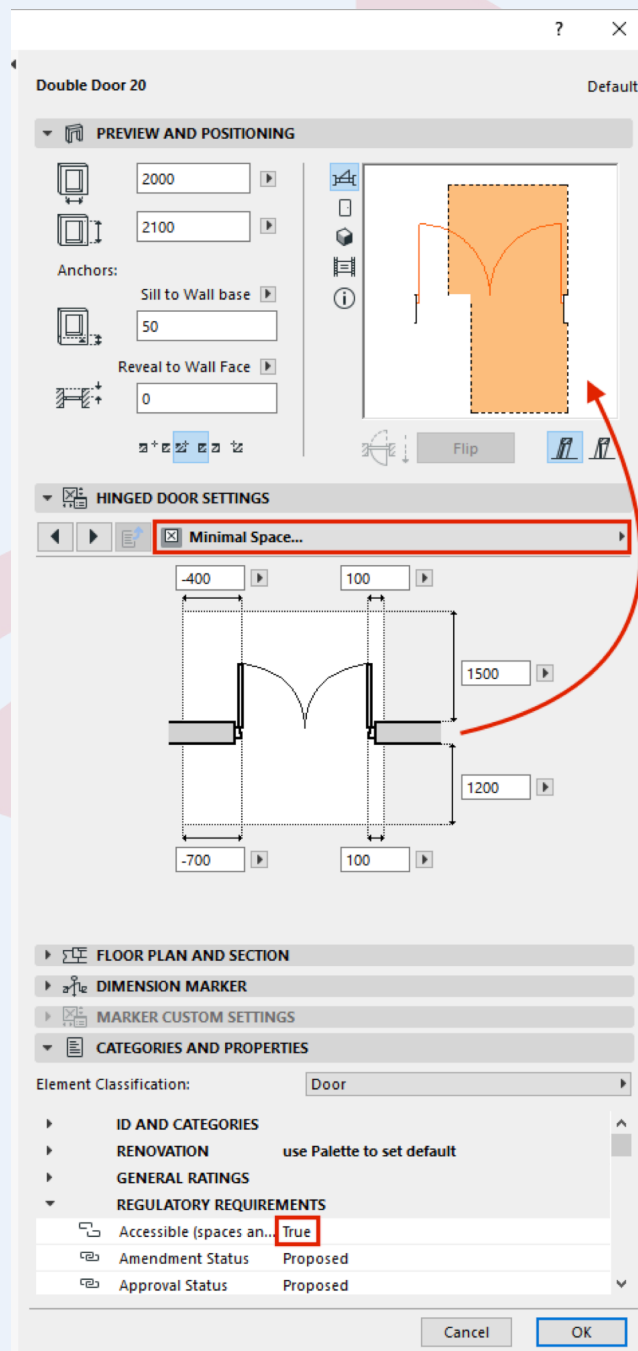
IMPORTANT SETTINGS (Accessible Doors):

Door Settings:

- **Sizes of the minimal spaces and regulatory requirements** (only one leaf is to be accessible for double doors)

Categories and Properties:

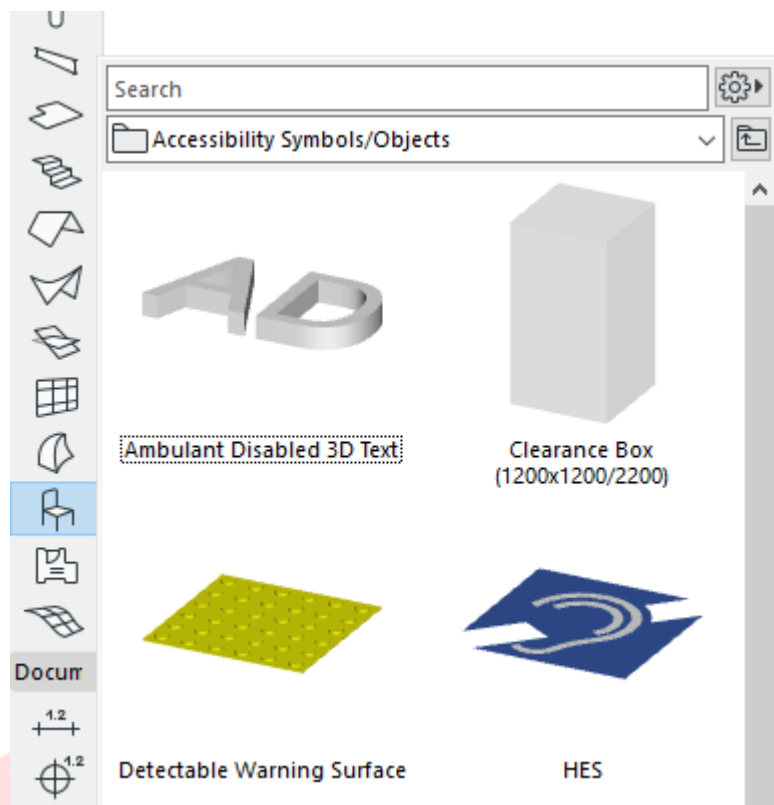
- Accessible: **True**



Clearance Boxes

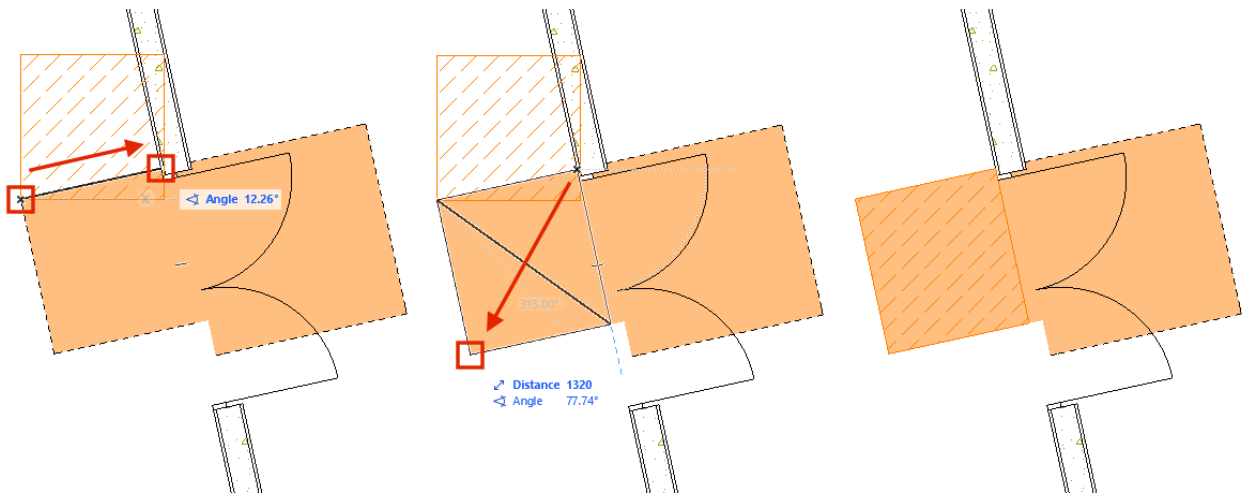
Clearance boxes are only to be placed for accessible doors which have their minimal spaces defined and shown.

- 1 To place it use the **Object** graphical favorite **Clearance Box (1200x1200/2200)** under the **BIM SUBMISSION/Accessibility Symbols/Objects** folder.



- 2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.

- 3 Create the box using the **Rotated Diagonal geometry method**, this way you can easily snap to the corner points of the 2D minimal space (even for non-orthogonal elements).



Note: The final clearance has to show both the 2D (solid color fill) and 3D clearance (dashed fill in 2D, box in 3D).

IMPORTANT SETTINGS (Clearance Boxes):**Geometry:**

- **Bottom offset and slab top surface location**
- **Box height in accordance with door height**

Categories and Properties:

- Element Classification: **Building Element Proxy**
- ID: **according to your naming standards**
- Structural Function: **Non-Load-Bearing Element**
- Accessible: **True**
- Layer: - **Clearance Boxes.BCA_BP**

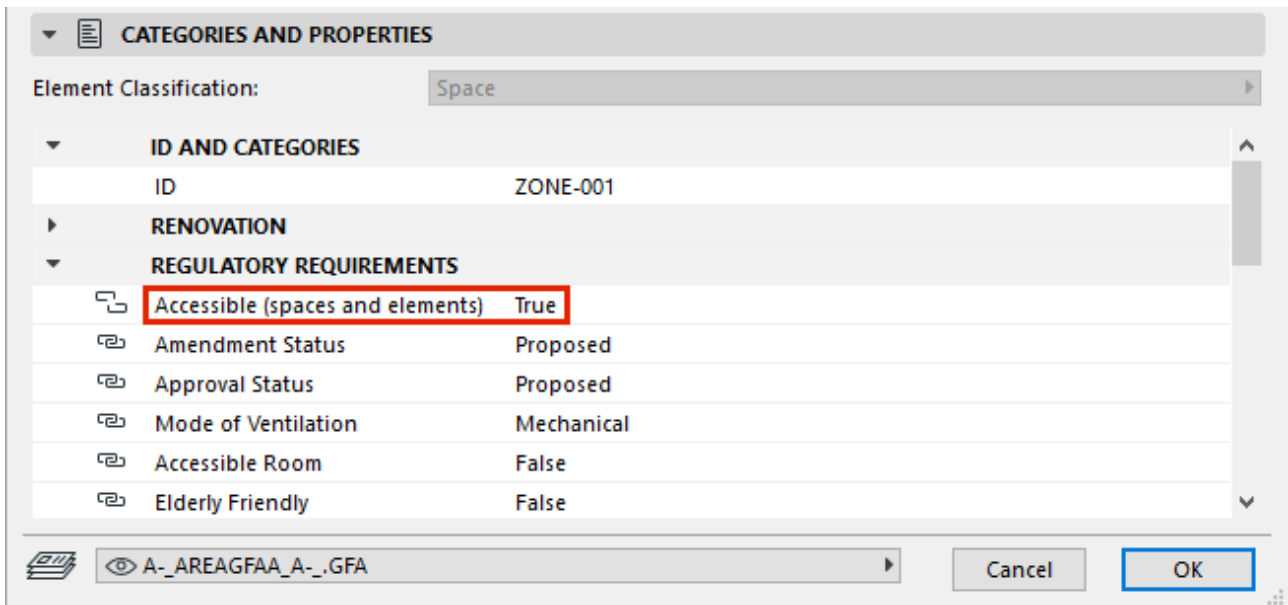
The screenshot shows the 'CATEGORIES AND PROPERTIES' dialog box. The 'Element Classification' is set to 'Building Element Proxy'. Under 'ID AND CATEGORIES', the 'ID' is 'CBOX_001' and the 'Structural Function' is 'Non-Load-Bearing Element'. Under 'REGULATORY REQUIREMENTS', the 'Accessible (spaces an...)' is set to 'True'. The 'Amendment Status' is 'Proposed'. At the bottom, the layer is set to '- Clearance Boxes.BCA_BP'. The 'Cancel' and 'OK' buttons are visible at the bottom right.

CATEGORIES AND PROPERTIES	
Element Classification:	Building Element Proxy
ID AND CATEGORIES	
ID	CBOX_001
Structural Function	Non-Load-Bearing Element
Position	Undefined
RENOVATION	use Palette to set default
REGULATORY REQUIREMENTS	
Accessible (spaces an...)	True
Amendment Status	Proposed
- Clearance Boxes.BCA_BP	

Zone Accessibility

Accessibility of Zones needs to be set if the accessibility route goes through the zone or is reaching it via an accessible opening.

- 1 Open the Zone settings **CATEGORIES AND PROPERTIES** panel and set the **Accessible (spaces and elements)** property value to **True** under **REGULATORY REQUIREMENTS**.



Note: The Zone favorites include stored information about accessibility.

As an alternative data input method you can also use the schedules once the Zones are placed but their accessibility has not been defined yet.

- 1 Open the **BCA_BP_ROOMS (All)** schedule from the **Project Map** or **View Map**.
- 2 **Click into any of the checkboxes** of the **Accessible (space)** column to change the accessibility of the Zones.

Mode of Ventilation	Area	Accessible (space)	Hotels, guesthouses, dormitories, etc.	
			Accessible Room	Elderly Friendly Room
Mechanical and Air-Conditioned	14.38	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical	24.64	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical	29.85	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical	30.98	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical	36.86	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical	62.78	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical	104.97	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical and Air-Conditioned	15.06	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural	14.46	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural	15.07	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural and Air-Conditioned	16.63	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	365.68 m²			

Note #1: *Accessible Room* and *Elderly Friendly Room* checkboxes refer to hospitality spaces only, where the room provides better accessibility and more space.

Note #2: The default accessibility property value is *False* therefore non-accessible Zones do not need the settings above.

Modes of Ventilation

Setting the Mode of Ventilation for the Zones follows the exact same method as accessibility described above:

- A Open the Zone settings **CATEGORIES AND PROPERTIES** panel and set the **Mode of Ventilation** property value to the required one under **REGULATORY REQUIREMENTS**.

OR

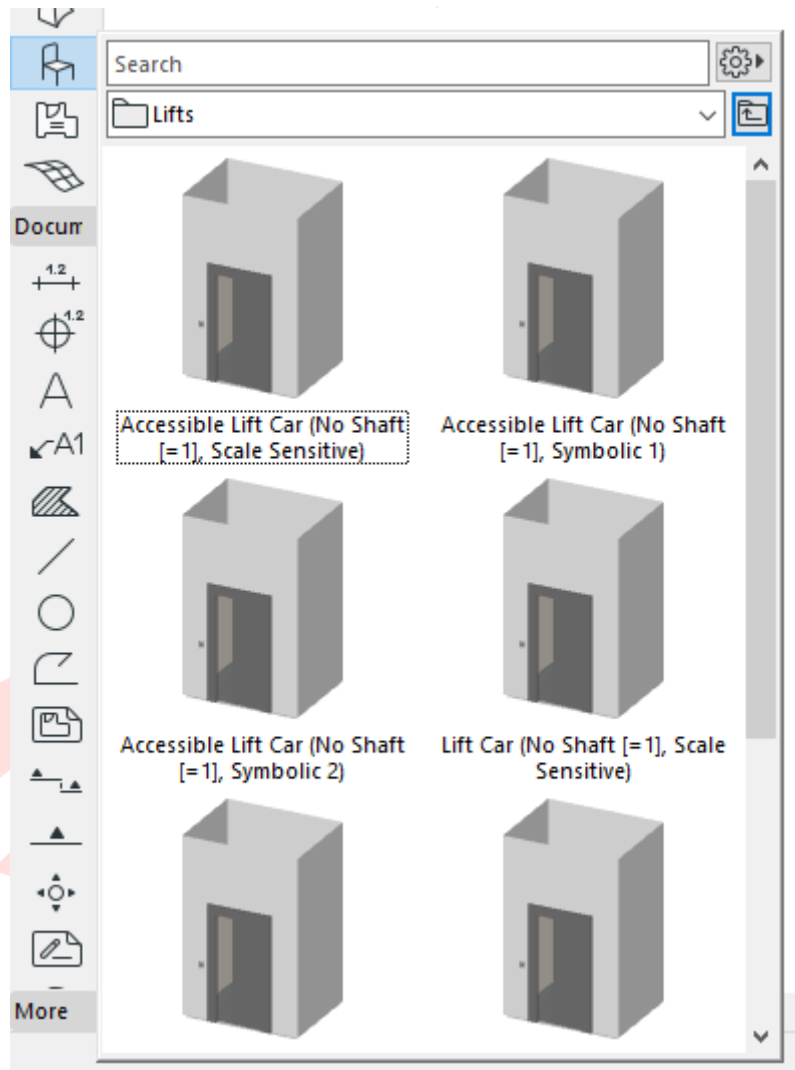
- B **Click into any of the cells** of the **Mode of Ventilation** column within the **BCA_BP_ROOMS (All)** schedule and choose a value from the option list.

Note: The default Mode of Ventilation property value is *Mechanical*.

Lifts

Accessible lifts have to be set according to the accessibility code and will be highlighted on plans. For actual requirements please refer to the relevant codes.

- 1 To place the required lift objects use the **Object** graphical favorite **Lift Car** or **Accessible Lift Car** under the **BIM SUBMISSION/Lifts** folder. Choose a version based on the required graphical appearance on plans (Symbolic 1/Symbolic 2/Scale Sensitive).

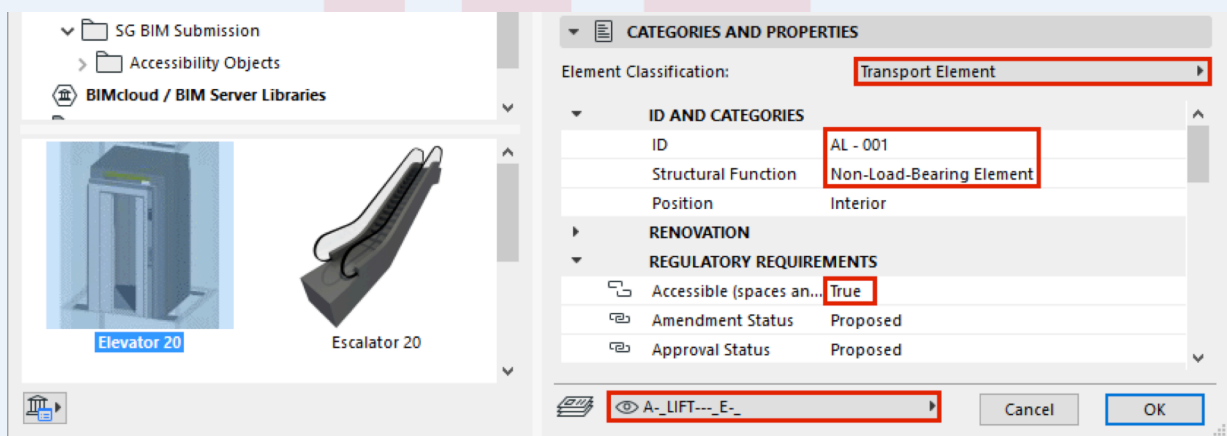
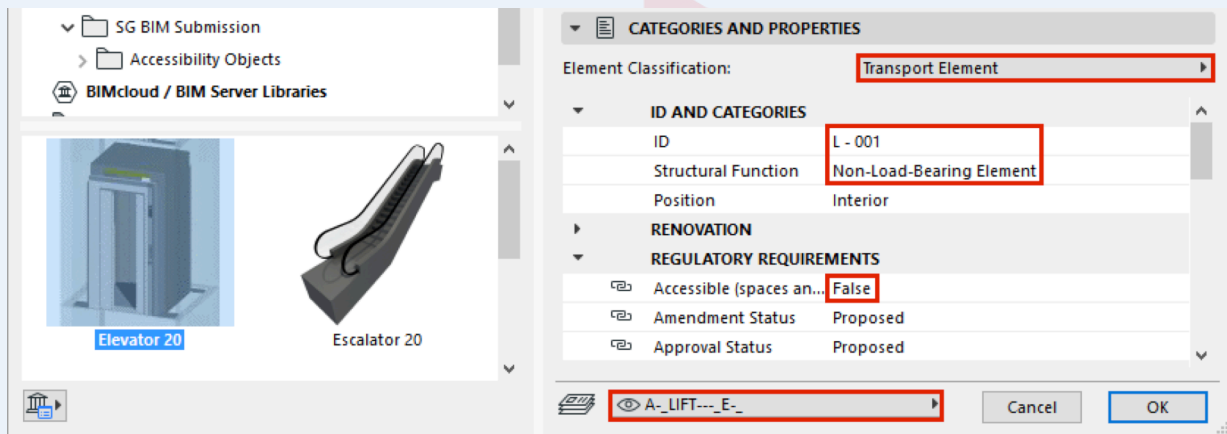


Note: The stored favorites include shaft for the lifts with the minimal thickness of 1mm only. This is only necessary to make the lifts visible in their full heights when highlighted for accessibility. Actual shafts are to be built using the **Wall tool** and an additional **Empty opening** (Door tool).

- 2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.
- 3 Place the necessary number of elements.

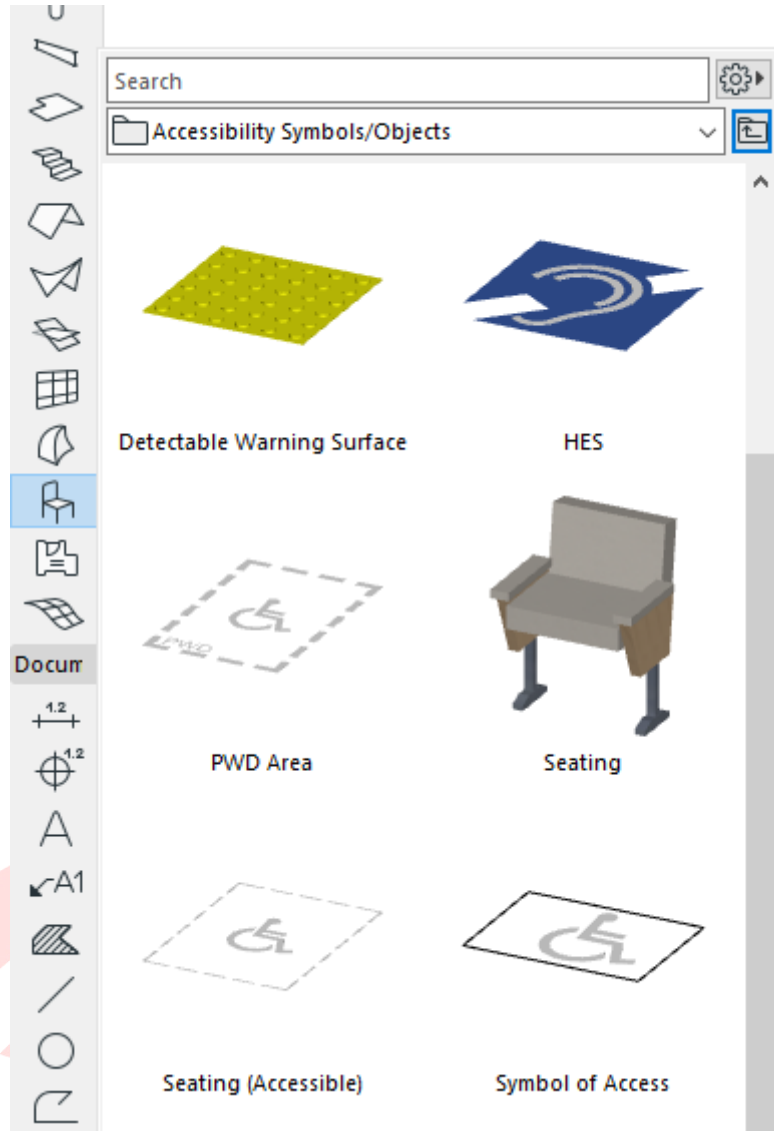
IMPORTANT SETTINGS (Lifts/Accessible Lifts):**Categories and Properties:**

- Element Classification: **Transport Element**
- ID: **according to your naming standards**
- Structural Function: **Non-Load-Bearing Element**
- Accessible: **False/True**
- Layer: **A-_LIFT---_E-_**

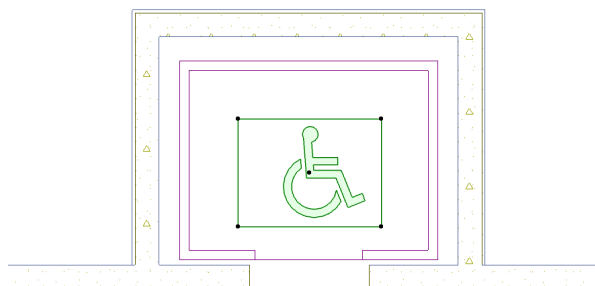


Add the 2D symbol for accessibility to mark the elevators on plans as well.

- 1 To place the required symbol objects use the **Object** graphical favorite **Symbol of Access** under the **BIM SUBMISSION/Accessibility Symbols/Objects** folder.

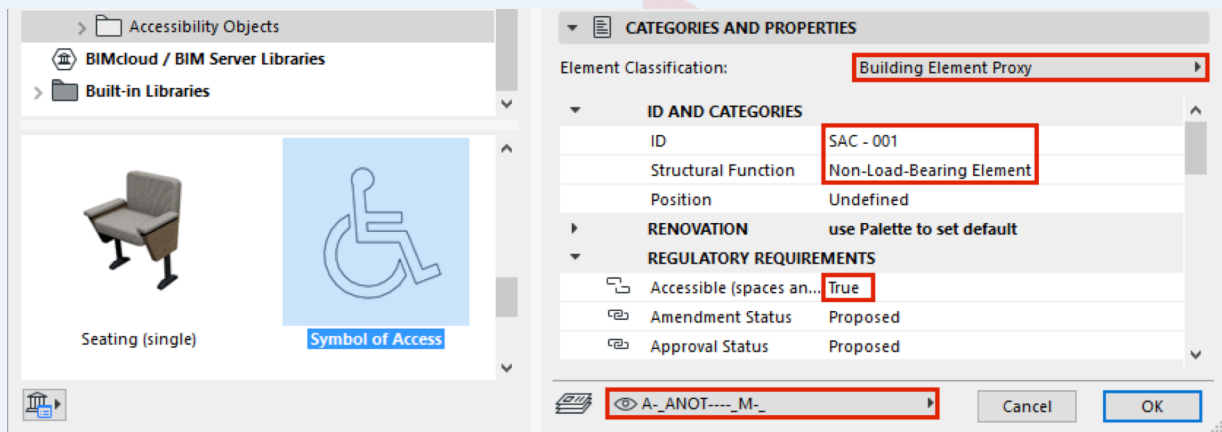


- 2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.
- 3 Place the necessary number of elements into the lifts which are to be marked accessible.



IMPORTANT SETTINGS (Symbol of Access):**Categories and Properties:**

- Element Classification: **Building Element Proxy**
- ID: **according to your naming standards**
- Structural Function: **Non-Load-Bearing Element**
- Accessible: **True**
- Layer: **A-_ANOT---_M-_**



- 4 Open the **Schedules/Element/QP_Lifts** schedule in the **Project Map** to check the results and make the necessary changes if needed.

LIFTS						
Accessible	ID	Car Inner Dimensions			Quantity	Remarks
		Clear Opening Width	Width	Depth		
<input checked="" type="checkbox"/>	AL - 001	900	2,000	1,500	1	
					1	
<input type="checkbox"/>	L - 001	900	2,000	1,500	1	
<input type="checkbox"/>	L - 002	900	2,000	1,500	1	
					2	
					3	

Toilets

Accessible toilets have to be set according to the accessibility code and will be highlighted on plans. For actual requirements please refer to the relevant codes.

Note: There is a difference between individual toilets and toilet compartments. If you want to add compartments to your model you may decide whether to **use the Commercial Bathroom Stall objects** with or without the stall separators **or built walls with single WC elements**. **Mixing the different types is not recommended.**

- 1 To place the required objects use the **Object** graphical favorites under the **BIM SUBMISSION/Toilets, Basins, Urinals** folder.



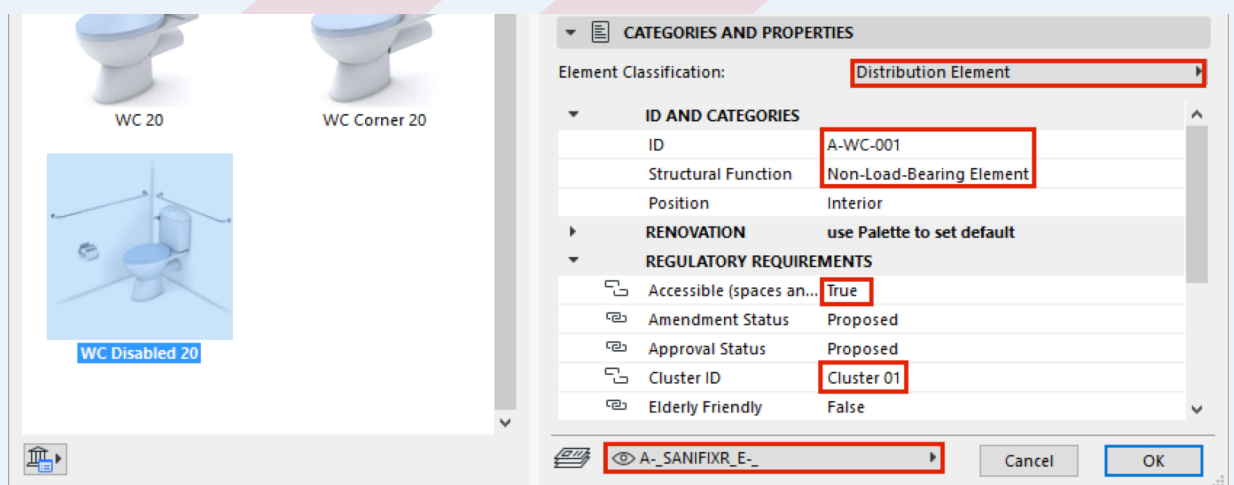
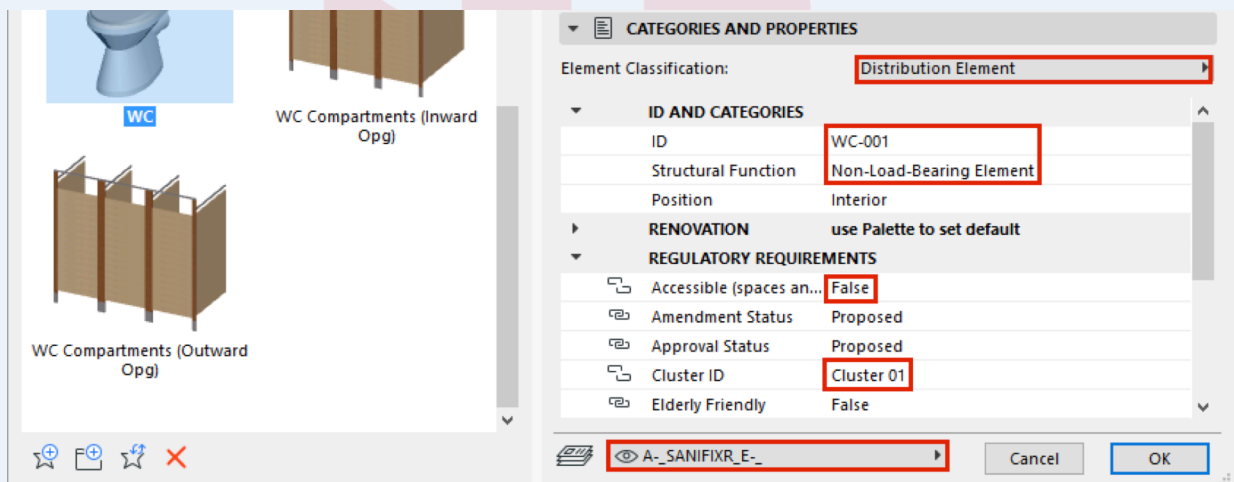
Note: A default Cluster ID property is stored with the Favorites, therefore it has to be changed manually.

- 2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.
- 3 Place the necessary number of elements.

IMPORTANT SETTINGS (Toilets, etc./Accessible Toilets, etc.):

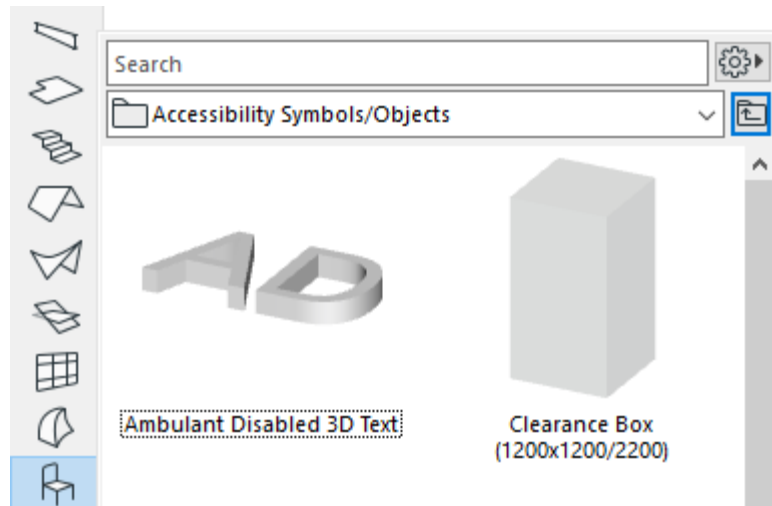
Categories and Properties:

- Element Classification: **Distribution Element**
- ID: **according to your naming standards**
- Structural Function: **Non-Load-Bearing Element**
- Accessible: **False/True**
- Cluster ID: **according to your naming standards**
- Layer: **A-_SANIFXR_E-**



Add the 2D symbol for accessibility to mark the accessible and ambulant disabled toilets on plans as well.

- 1 To place the required symbol objects use the **Object** graphical favorites **Ambulant Disabled 3D Text** and/or **WC Clearance (d=1000)** under the **BIM SUBMISSION/Accessibility Symbols/Objects** folder.

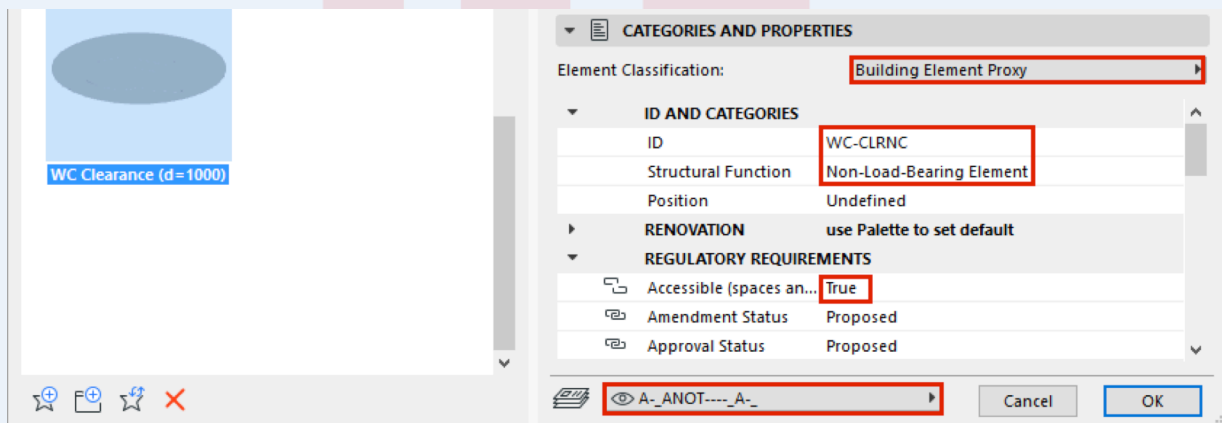
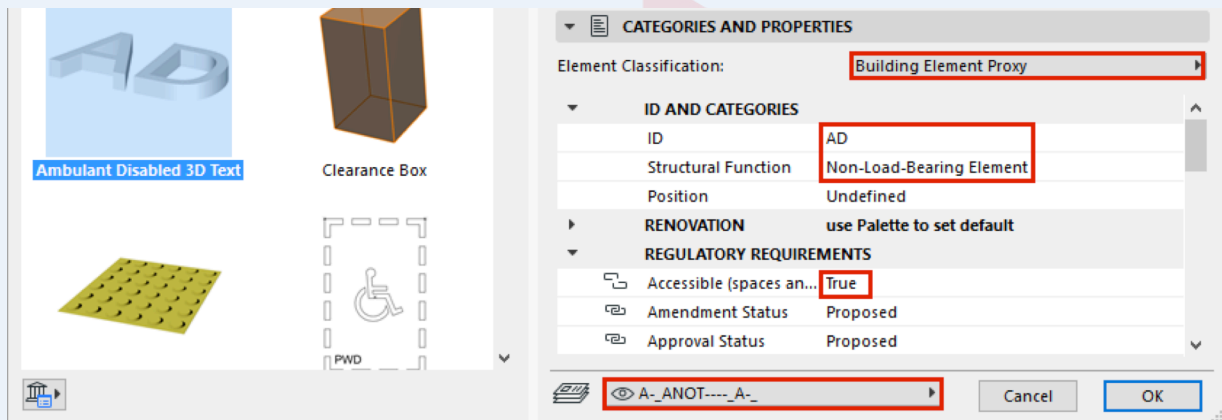


- 4 Once found, **double-click the preview** to activate the tool with the settings of the favorite.
- 5 Place the necessary number of elements next to the toilets which are to be marked accessible to highlight the function and the clearances.

IMPORTANT SETTINGS (Ambulant Disabled Text and WC Clearance Symbols):

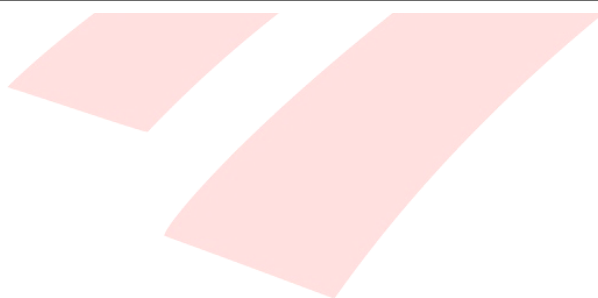
Categories and Properties:

- Element Classification: **Building Element Proxy**
- ID: **according to your naming standards**
- Structural Function: **Non-Load-Bearing Element**
- Accessible: **True**
- Layer: **A-_ANOT----_A-_**



- 6 Open the **Schedules/Element/Toilets** schedule in the **Project Map** to check the results and make the necessary changes if needed.

TOILETS				
Home Story	Accessible	Type	Quantity	Remarks
1st STOREY, Cluster 01				
	<input type="checkbox"/>	Urinal 20	3	
	<input type="checkbox"/>	WC 20	6	
	<input checked="" type="checkbox"/>	Urinal 20	1	
	<input checked="" type="checkbox"/>	WC Disabled 20	1	
			11	
1st STOREY, Cluster 02				
	<input type="checkbox"/>	Urinal 20	2	
	<input type="checkbox"/>	WC 20	4	
	<input checked="" type="checkbox"/>	Urinal 20	1	
	<input checked="" type="checkbox"/>	WC Disabled 20	1	
			8	
2nd STOREY, Cluster 03				
	<input type="checkbox"/>	Squatting Toilet 20	4	
	<input type="checkbox"/>	Urinal 20	3	
	<input type="checkbox"/>	WC 20	2	
	<input checked="" type="checkbox"/>	Urinal 20	1	
	<input checked="" type="checkbox"/>	WC Disabled 20	1	
			11	
			30	

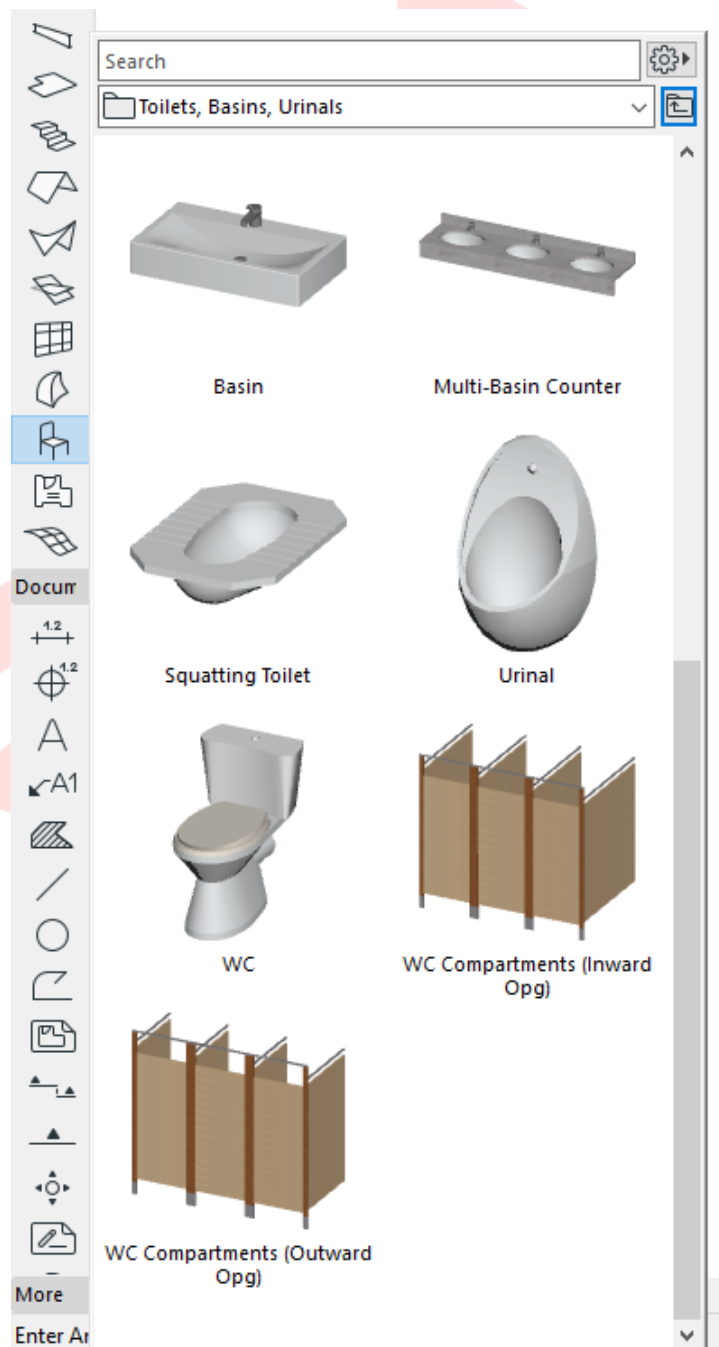


Toilet Compartments

Accessible toilets have to be set according to the accessibility code and will be highlighted on plans. For actual requirements please refer to the relevant codes.

Note: There is a separate schedule for single bathroom objects. **Mixing different types is not recommended.**

- 1 To place the required objects use the **Object** graphical favorites under the **BIM SUBMISSION/Toilets, Basins, Urinals** folder.



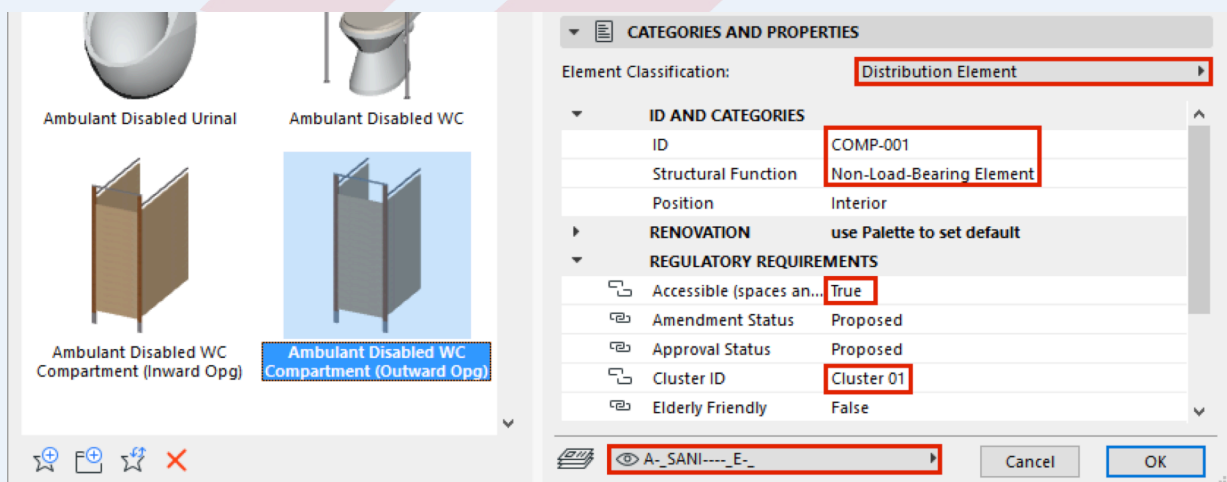
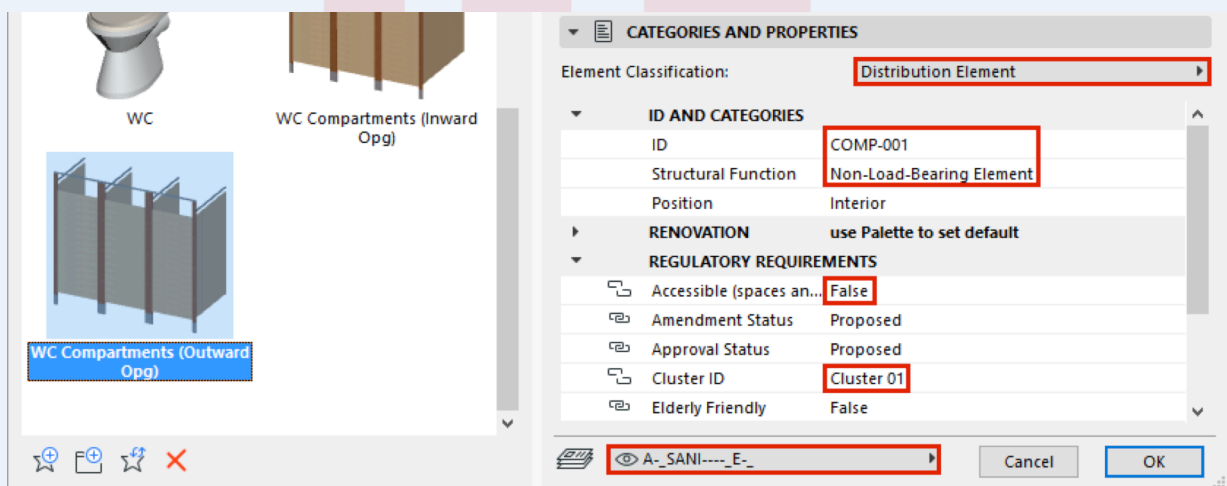
Note: Cluster ID property is not stored with the Favorites, therefore has to be set manually.

- 2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.
- 3 Place the necessary number of elements.

IMPORTANT SETTINGS (Toilet Compartments/Accessible Toilet Compartments):

Categories and Properties:

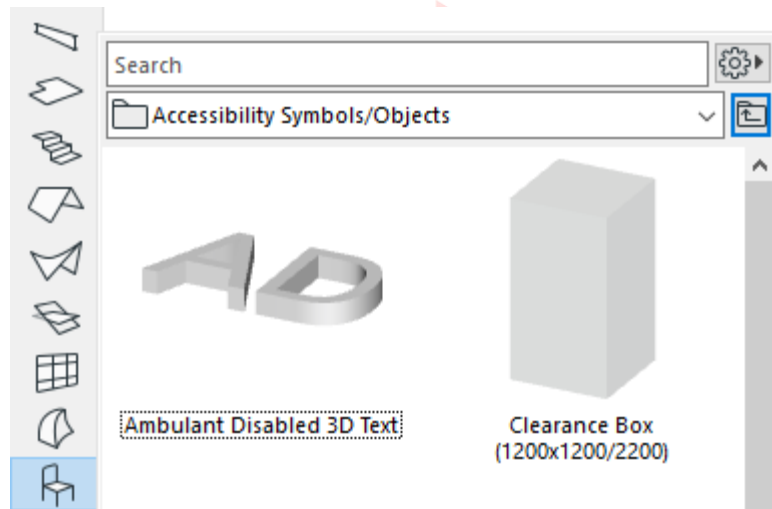
- Element Classification: **Distribution Element**
- ID: **according to your naming standards**
- Structural Function: **Non-Load-Bearing Element**
- Accessible: **False/True**
- Cluster ID: **according to your naming standards**
- Layer: **A-_SANIFXR_E_**



Add the 2D symbol for accessibility to mark the accessible and ambulant disabled toilets on plans as well.

Note: The 2D linework of the compartment objects is very limited. Grab bars, toilet paper dispensers, etc. have to be added manually.

- 1 To place the required symbol objects use the **Object** graphical favorites **Ambulant Disabled 3D Text** and/or **WC Clearance (d=1000)** under the **BIM SUBMISSION/Accessibility Symbols/Objects** folder.

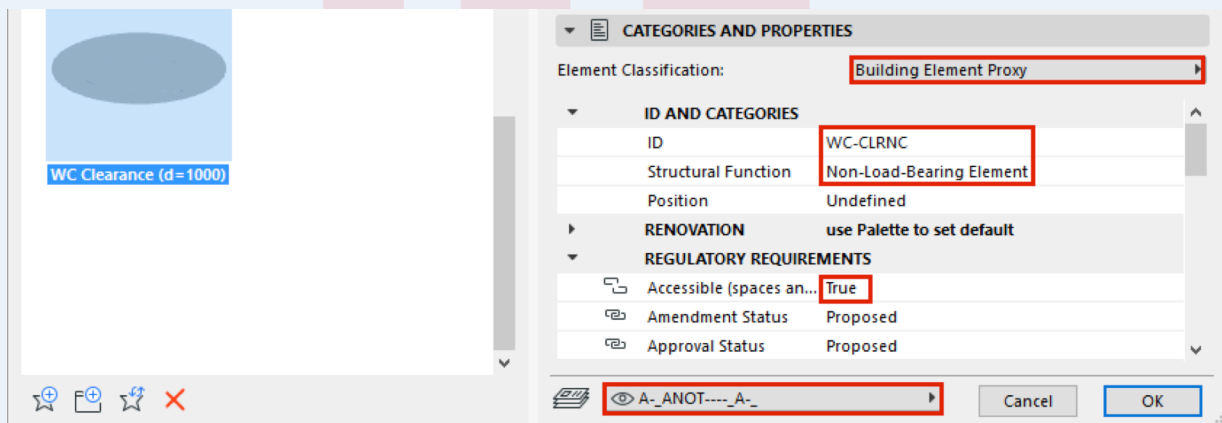
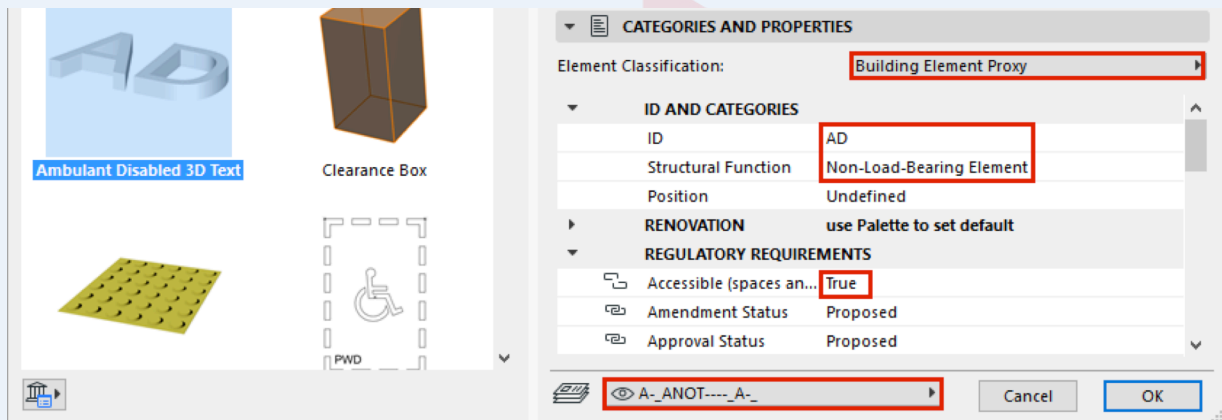


- 2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.
- 3 Place the necessary number of elements next to the toilets which are to be marked accessible.

IMPORTANT SETTINGS (Ambulant Disabled Text and WC Clearance Symbols):

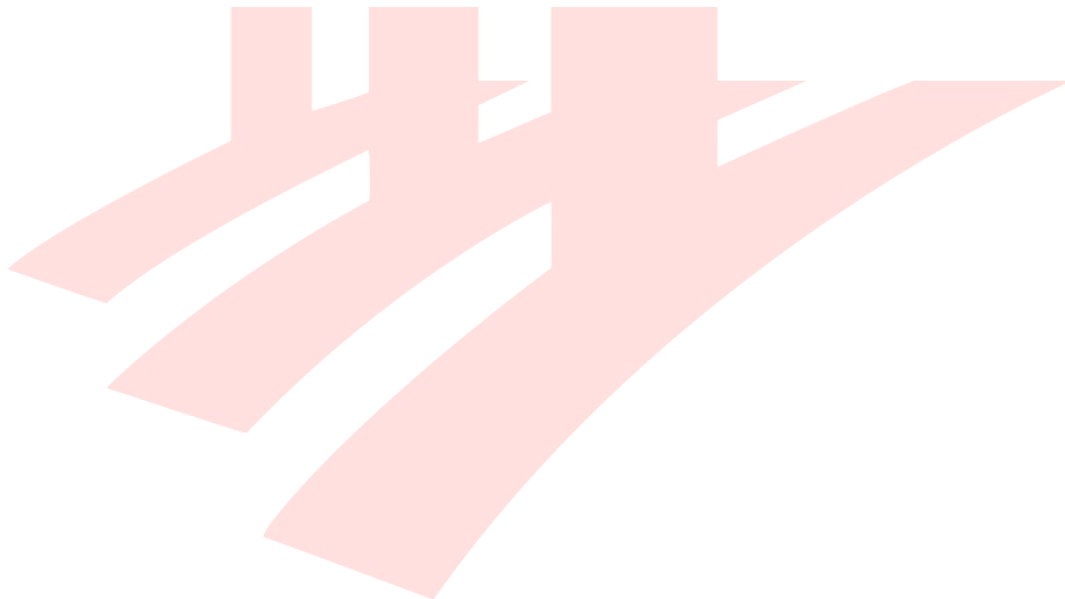
Categories and Properties:

- Element Classification: **Building Element Proxy**
- ID: **according to your naming standards**
- Structural Function: **Non-Load-Bearing Element**
- Accessible: **True**
- Layer: **A-_ANOT----_A-_**



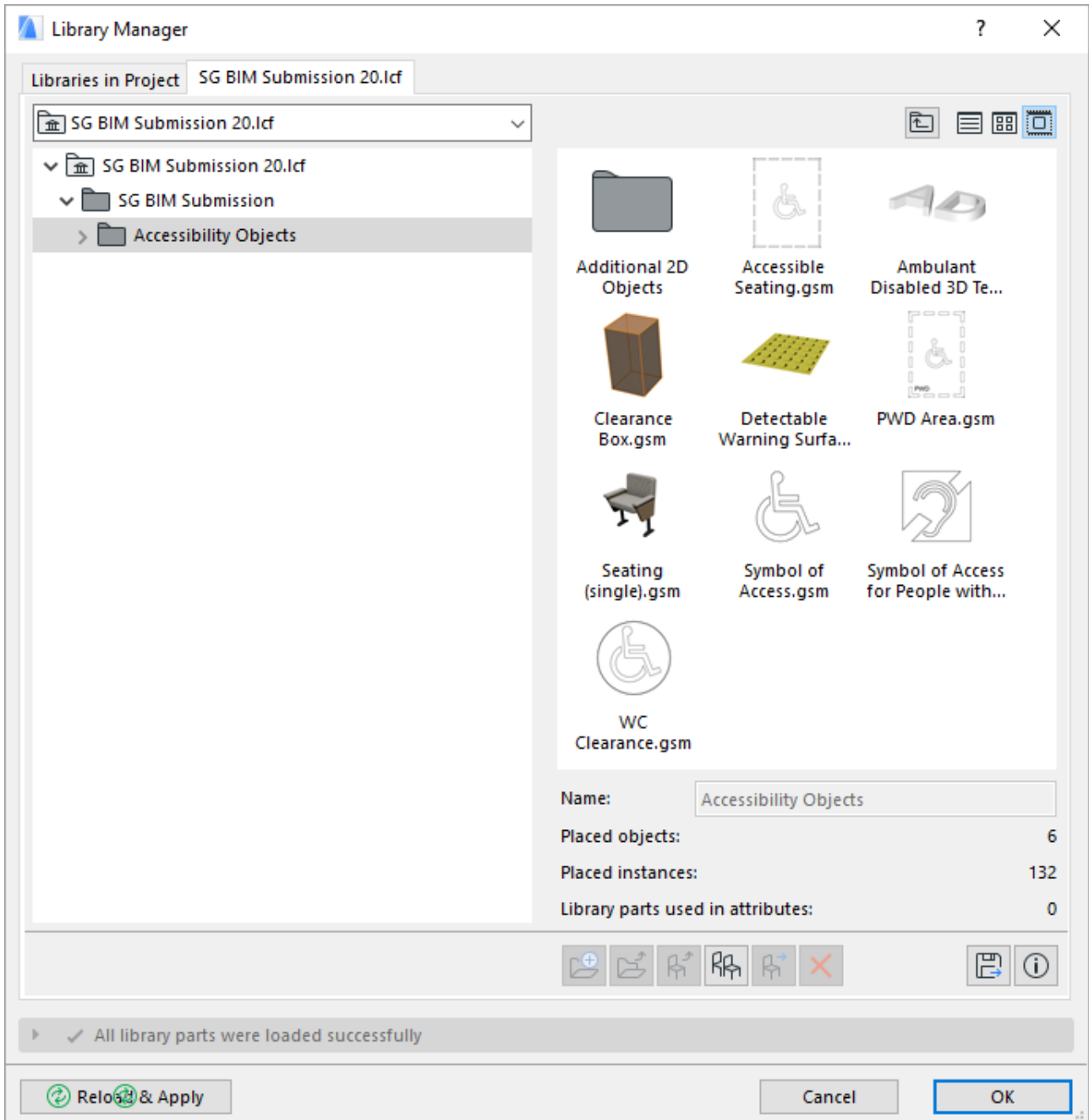
- 4 Open the **Schedules/Element/Toilets (Compartments)** schedule in the **Project Map** to check the results and make the necessary changes if needed.

TOILETS (Compartments)			
Home Story	Accessible	Number of Stalls (toilets)	Remarks
1st STOREY, Cluster 01			
	<input type="checkbox"/>	3	
	<input checked="" type="checkbox"/>	1	
		4	
2nd STOREY, Cluster 02			
	<input type="checkbox"/>	3	
	<input checked="" type="checkbox"/>	1	
		4	
		8	



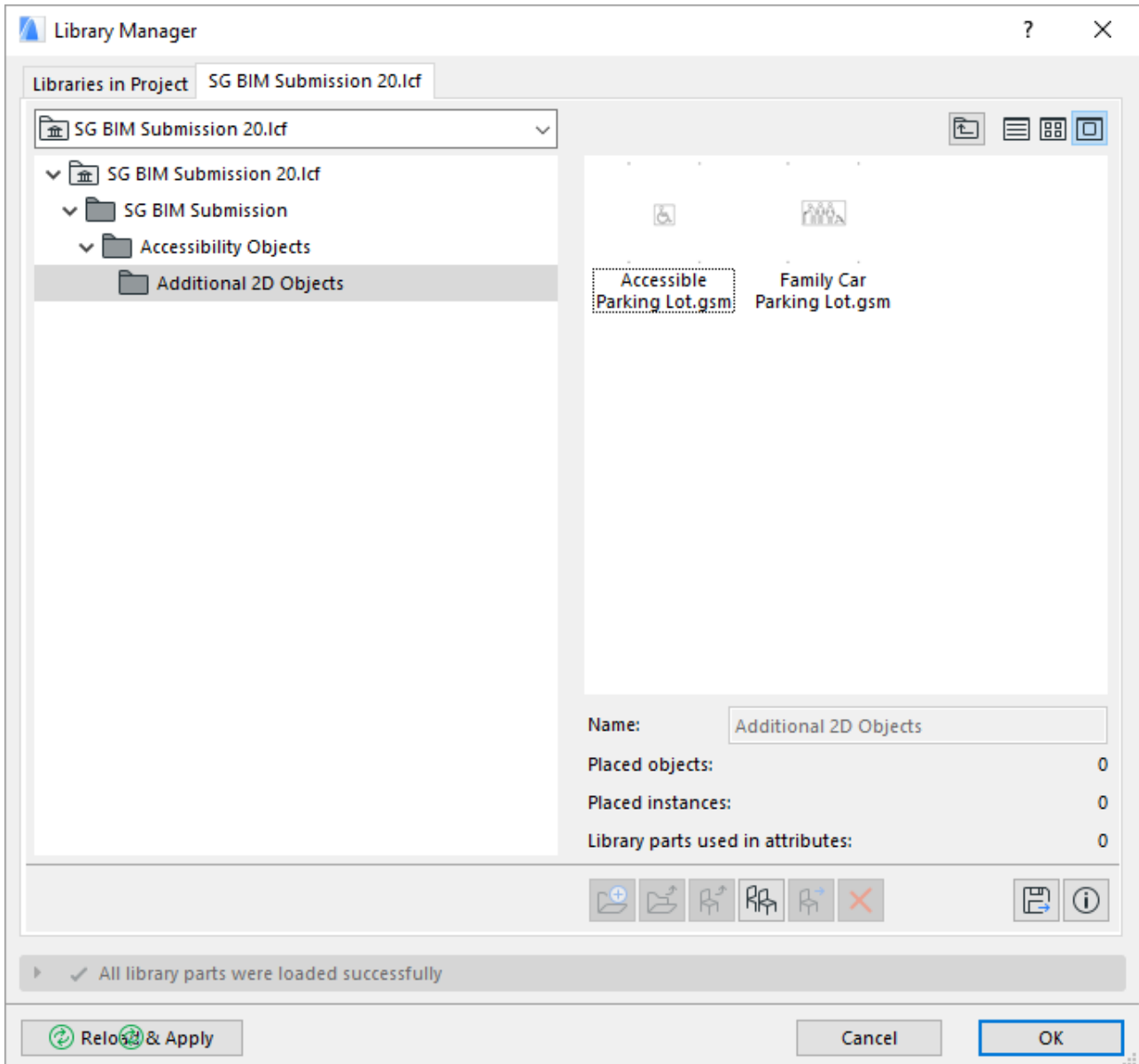
Additional Objects

The linked SG BIM Submission library file contains additional objects that can be used during the submission phase, such as the **Detectable Warning Surface** and **PWD Area** objects and the **Accessible Parking Lot** and **Family Car Parking Lot** objects of the Additional 2D Objects folder.



When using these objects, make sure that their settings (for example Accessible: True/False) will allow them to be highlighted in the relevant views. Please refer to element settings of similar objects in this chapter.

The additional 2D parking lot symbols are only to be used if the built-in representation of the parking lots does not suffice. However note, that the submission process only requires the function and accessibility of the parking lots and not their final appearance, therefore the default ones can be replaced later for tendering, construction, etc. phases.



When using these objects, make sure that their settings (for example Accessible: True/False) will allow them to be highlighted in the relevant views and schedules. Please refer to element settings of similar objects in this chapter.

Note: The final parking lot schedule has to indicate the number of all parking lots and the breakdown in between accessible and regular spaces. If needed change the schedule criterion accordingly when using these additional elements.

PART VIII - SCHEDULES

The officers will use the schedules to perform manual code-checking to see whether the model is built according to the regulations and will comment if necessary. The following part will introduce the schedules one-by-one and present the necessary settings for the related elements which are listed in the aforementioned schedules.

To access the schedules go to the **SCHEDULES** folder in the **View Map**.

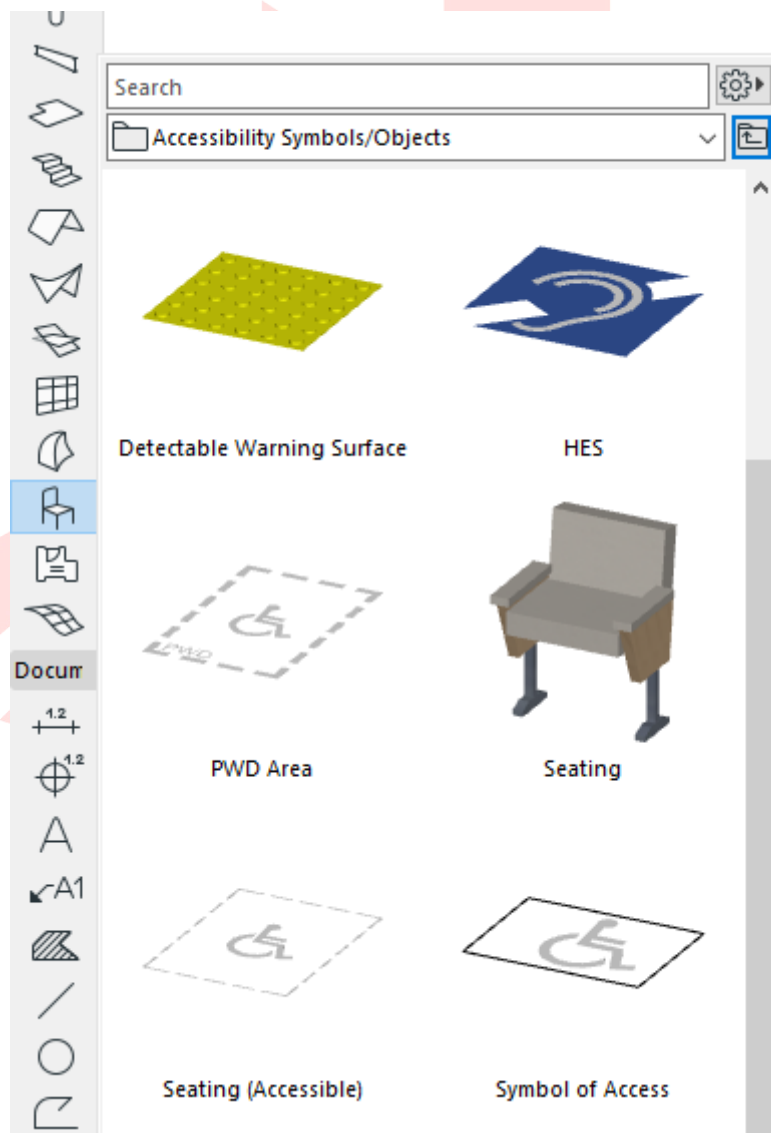


Accessible (Audience) Seating

This schedule lists the total number of auditorium-type seating and the number of accessible seating and sorts them based on accessibility per stories/rooms. For actual requirements please refer to the relevant codes.

Note: The schedule does not list the Audience Seating 20 object of the default ARCHICAD Library 20.

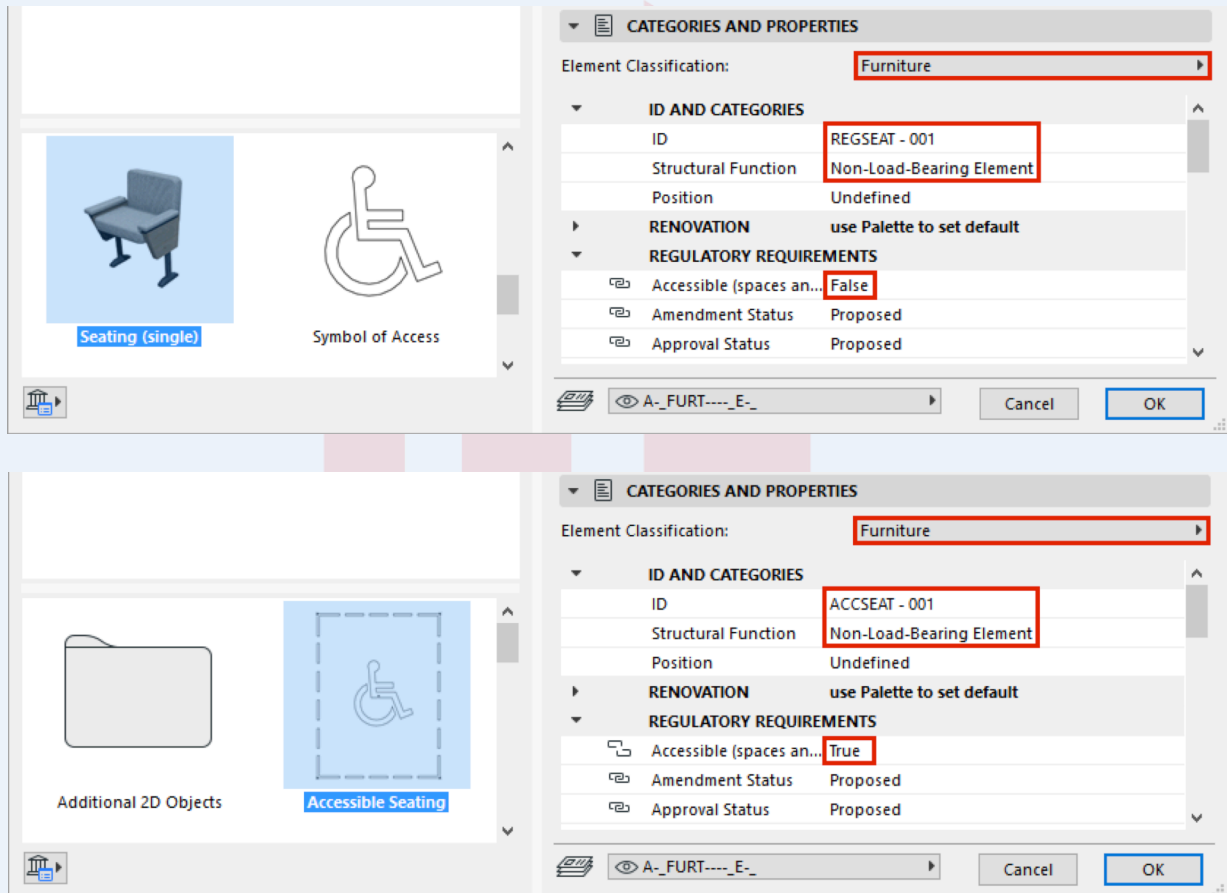
- 1 To place the required seating objects use the **Object** graphical favorite **Seating** or **Seating (Accessible)** under the **BIM SUBMISSION/Accessibility Symbols/Objects** folder.



- 2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.
- 3 Place the necessary number of elements.

IMPORTANT SETTINGS (Seating and Accessible Seating):**Categories and Properties:**

- Element Classification: **Furniture**
- ID: **according to your naming standards**
- Structural Function: **Non-Load-Bearing Element**
- Accessible: **False/True**



- 4 Open the **SCHEDULES/BCA_BP_AUDIENCE SEATING** schedule to check the results and make the necessary changes if needed.

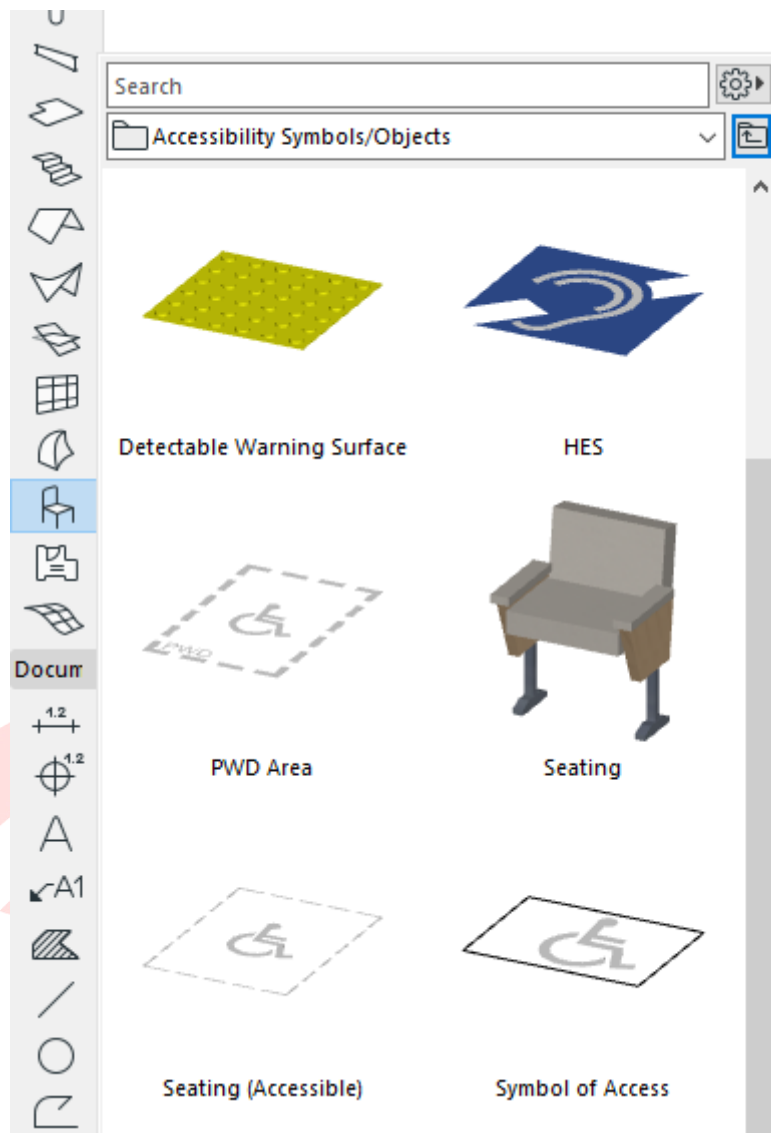
ACCESSIBLE SEATING			
Home Story	Accessible	ID	Remarks
1st STOREY, Auditorium			
	<input type="checkbox"/>	REGSEAT	
		121	
	<input checked="" type="checkbox"/>	ACCSEAT	
		5	
		126	



Hearing Enhancement Systems

This schedule lists the number of Hearing Enhancement Systems (the number of symbols) per rooms. For actual requirements please refer to the relevant codes.

- 1 To place the required symbols use the **Object** graphical favorite **HES** under the **BIM SUBMISSION/Accessibility Symbols/Objects** folder.

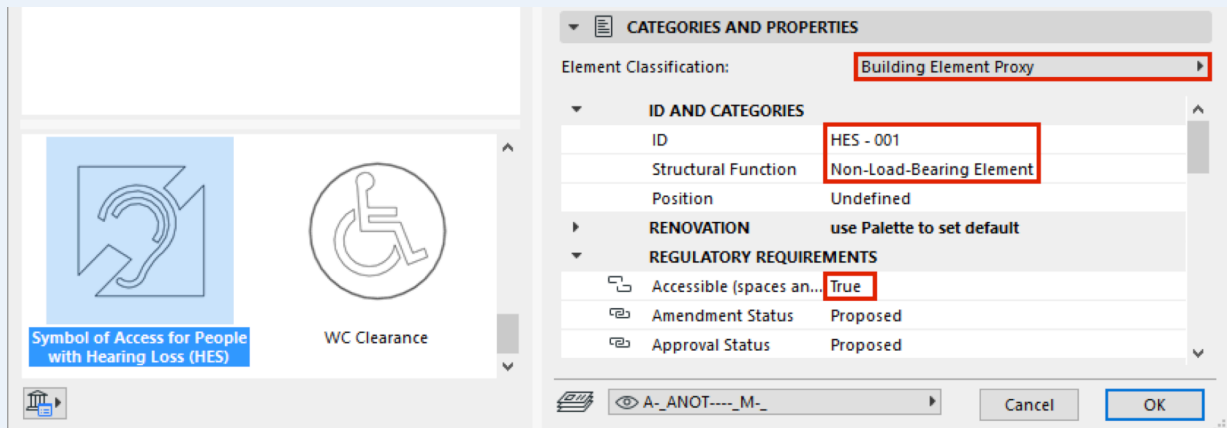


- 2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.
- 3 Place the necessary number of elements.

IMPORTANT SETTINGS (Hearing Enhancement Systems):

Categories and Properties:

- Element Classification: **Building Element Proxy**
- ID: according to your naming standards
- Structural Function: **Non-Load-Bearing Element**
- Accessible: **True**



- 4 Open the **SCHEDULES/BCA_BP_HEARING ENHANCEMENT SYSTEMS** schedule to check the results and make the necessary changes if needed.

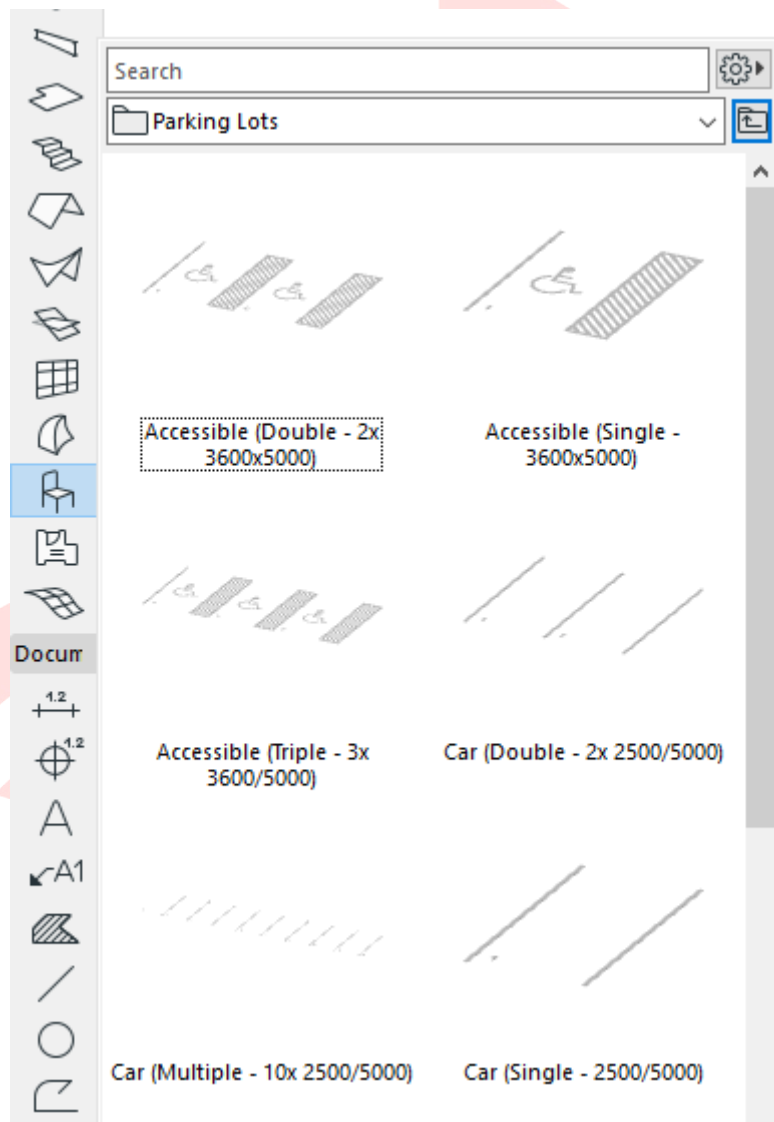
HEARING ENHANCEMENT SYSTEMS			
Home Story	Room	Quantity	Remarks
1st STOREY			
	Auditorium	1	
		1	
2nd STOREY			
	Training Room 1	1	
	Training Room 2	1	
		2	
		3	

Parking Lots

This schedule lists the number of parking spaces and sorts them based on accessibility. For actual requirements please refer to the relevant codes.

Note: The schedule only lists the variants of the Parking Place 20 object of the default ARCHICAD Library 20.

- 1 To place the required objects use the **Object** graphical favorites under the **BIM SUBMISSION/Parking Lots** folder.

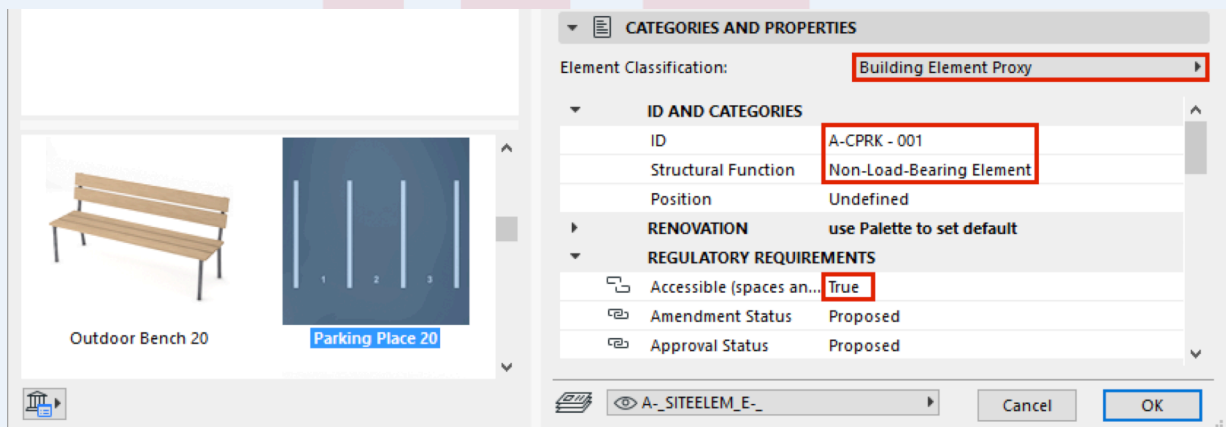
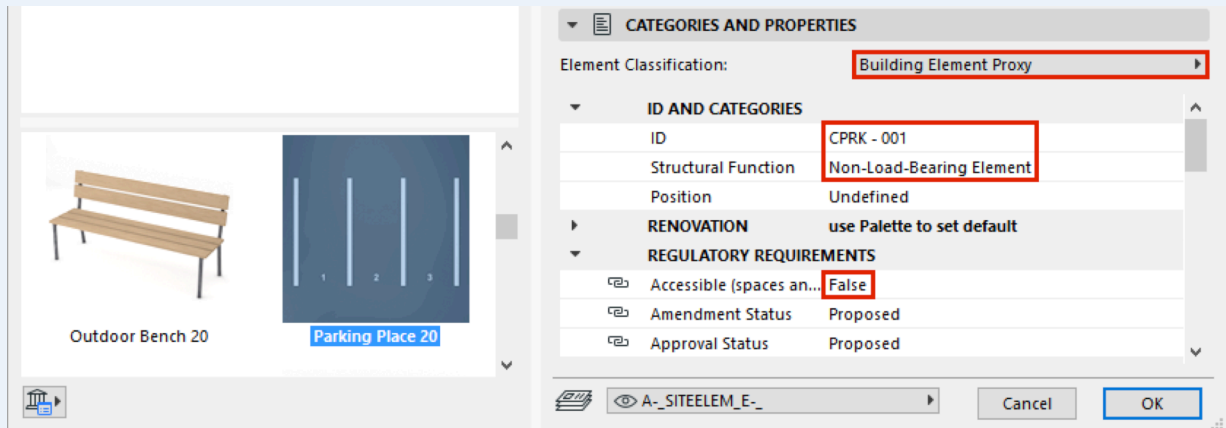


- 2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.
- 3 Place the necessary number of elements.

IMPORTANT SETTINGS (Parking Spaces, Accessible and Family Car Parking Spaces):

Categories and Properties:

- Element Classification: **Building Element Proxy**
- ID: **according to your naming standards**
- Structural Function: **Non-Load-Bearing Element**
- Accessible: **False/True**



- 4 Open the **SCHEDULES/BCA_BP_PARKING LOTS** schedule to check the results and make the necessary changes if needed.
- 5 **Add remarks** to the Accessible/Family Car Park Spaces to confirm that the required total width is provided.

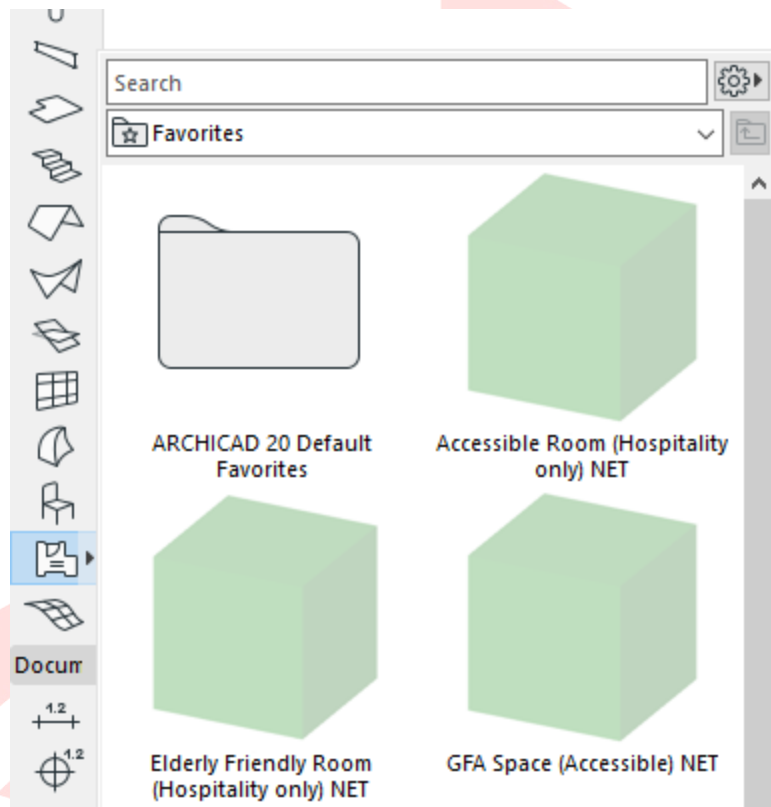
PARKING LOTS						
Home Story	Accessible/Family Car Parking Lot	ID	Minimal Width	Length	Number of Parking Spaces	Remarks
1st STOREY						
	<input type="checkbox"/>	CPRK - 001	2,500	5,000	38	
	<input type="checkbox"/>	CPRK - 002	2,500	5,000	38	
	<input type="checkbox"/>	CPRK - 003	2,500	5,000	38	
	<input type="checkbox"/>	CPRK - 004	2,500	5,000	38	
	<input type="checkbox"/>	CPRK - 005	2,500	5,000	38	
	<input type="checkbox"/>	CPRK - 006	2,500	5,000	38	
					228	
	<input checked="" type="checkbox"/>	A-CPRK - 001	2,500	5,000	2	additional width of 1100 provided
	<input checked="" type="checkbox"/>	A-CPRK - 002	2,500	5,000	2	additional width of 1100 provided
					4	
					232	

Accessible/Elderly Friendly Rooms (Hospitality Projects Only)

This schedule lists the number of Accessible Rooms in hotels, dormitories, guesthouses and other hospitality buildings. For actual requirements please refer to the relevant codes.

Note: All Accessible Rooms and Elderly Friendly Rooms are Accessible spaces, but not necessarily vica versa.

- 1 To place one use the **Zone** graphical favorite **Accessible/Elderly Friendly Room (Hospitality only) NET**.



- 2 Place the necessary number of zones.

IMPORTANT SETTINGS (Accessible/Elderly Friendly Rooms):**Categories and Properties:**

- Accessible: **True**
- Accessible Room/Elderly Friendly: **True**

CATEGORIES AND PROPERTIES

Element Classification: Space

REGULATORY REQUIREMENTS

Accessible (spaces and elements)	True
Amendment Status	Proposed
Approval Status	Proposed
Mode of Ventilation	Mechanical
Accessible Room	True
Elderly Friendly	False

A- _AREAGFAA_ A- _GFA

Cancel OK

CATEGORIES AND PROPERTIES

Element Classification: Space

REGULATORY REQUIREMENTS

Accessible (spaces and elements)	True
Amendment Status	Proposed
Approval Status	Proposed
Mode of Ventilation	Mechanical
Accessible Room	False
Elderly Friendly	True

A- _AREAGFAA_ A- _GFA

Cancel OK

- 3 Open the **SCHEDULES/BCA_BP_ROOMS (Accessible)** or **SCHEDULES/BCA_BP_ROOMS (Elderly Friendly)** schedules to check the results and make the necessary changes if needed.

ACCESSIBLE ROOMS (Hotels, guesthouses, dormitories, etc.)				
Home Story	Room Name	Room No.	Quantity	Remarks
1st STOREY				
	Room	101	1	
	Room	102	1	
	Room	103	1	
			3	
2nd STOREY				
	Room	201	1	
	Room	202	1	
	Room	203	1	
			3	
3rd STOREY				
	Room	301	1	
	Room	302	1	
	Room	303	1	
			3	
			9	

ELDERLY FRIENDLY ROOMS (Hotels, guesthouses, dormitories, etc.)				
Home Story	Room Name	Room No.	Quantity	Remarks
2nd STOREY				
	Room	201	1	
	Room	202	1	
	Room	203	1	
			3	

All Rooms

This schedule lists all rooms with their ventilation types, accessibility options and areas. The main purpose of this list is to enable easy data handling as described in PART VII - ACCESSIBILITY & VENTILATION of this document.

- 1 Open the **SCHEDULES/BCA_BP_ROOMS (All)** schedule to check the results and make the necessary changes if needed.
- 2 Click into the cells and use the arrow to pop up the option list or check/uncheck the checkboxes.

ROOMS (All Types)

Mode of Ventilation	Area	Accessible (space)	Hotels, guesthouses, dormitories, etc.		Quantity
			Accessible Room	Elderly Friendly Room	

Mechanical		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Mechanical		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Mechanical and Air-Conditioned		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Mechanical and Air-Conditioned		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Mechanical and Air-Conditioned	02.70	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Mechanical and Air-Conditioned	104.97	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Mechanical and Air-Conditioned	15.06	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Mechanical and Air-Conditioned	15.07	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Mechanical and Air-Conditioned	16.63	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Natural and Air-Conditioned	24.64	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Natural and Air-Conditioned	14.46	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Natural and Air-Conditioned	30.98	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
	605.12 m²				12

Natural and Air-Conditioned	24.64	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
Natural and Air-Conditioned	14.46	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
Natural and Air-Conditioned	30.98	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
Mechanical	30.81	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Mechanical	30.81	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
	131.70 m²				5

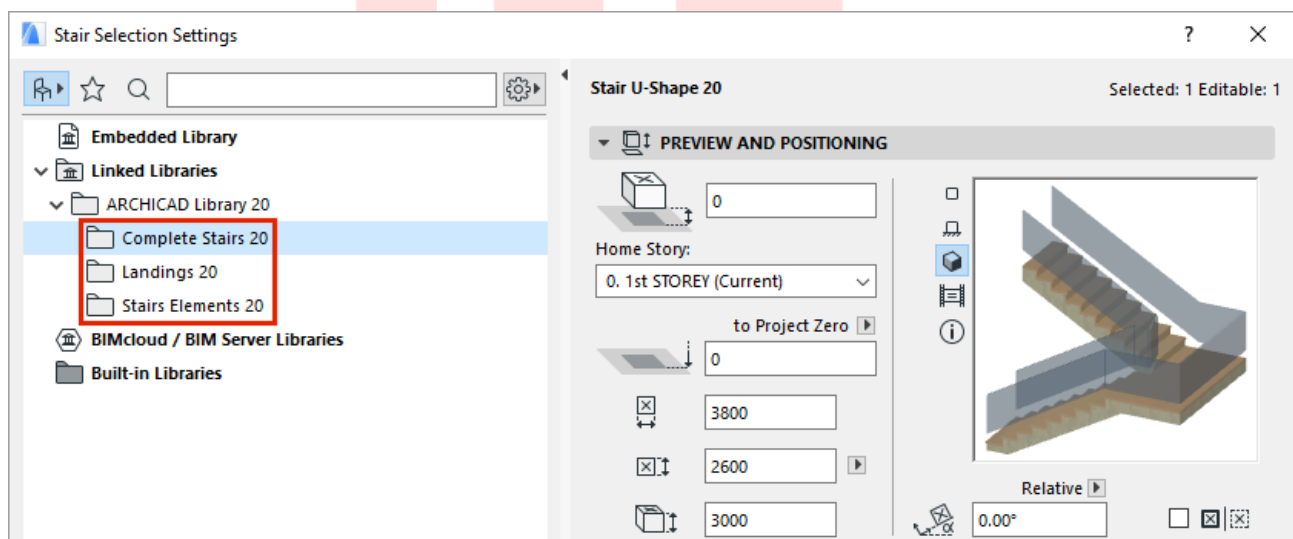
Stairs

This schedule lists all stair objects or elements that are being used as stairs and their element classification is *Stair*. The main purpose of this list is to check the tread sizes, flight widths, number of steps per flights and the railing heights. For actual requirements please refer to the relevant codes.

- 1 Open the **SCHEDULES/BCA_BP_STAIRCASE** schedule to check the details of the stairs you created and make the necessary changes if needed (might not be possible within the schedule).







The schedule will need further comments/remarks since only Stair objects can be listed properly. When using the Stair tool, there are three default types you may choose from:

- Complete Stairs
- Landings
- Stair Elements



The schedule will list the details of **Complete Stairs** and **Stair Elements** only as follows.

Tread sizes are listed for both Complete Stairs and Stair Elements in the same column while railing heights and flight widths are listed separately.

STAIRS AND RAMPS (custom stairs to be checked MANUALLY)																			
Element	Home Story	ID	Quantity	Tread Sizes		Complete Stairs				Stair Elements				Detectable Warning Surfaces	Front View	Side View	Remarks		
				Riser Height (max. 175mm)	Tread Width (min. 225/225/273mm)	Left Railing (total height min. 900mm)	Right Railing (total height min. 900mm)	No. of Rises per Stair	Flight Width	Left Railing (total height min. 900mm)	Right Railing (total height min. 900mm)	No. of Rises per Stair	Flight Width						
1st STOREY	MORPH-ST01	1	1	-	-	-	-	-	-	-	-	-	-	□					
1st STOREY	STA-005	1	1	-	-	-	-	-	-	-	-	-	-	□					
Bay Straight RC 20																			
1st STOREY	STA-005	1	163	234	-	-	-	-	-	300	100	800	100	19	1,200	□			
Bay U-Shape 20																			
1st STOREY	STA-001	2	167	239	750	150	750	150	18	1,200	-	-	-	-	□				
2nd STOREY	STA-001	2	167	239	750	150	750	150	18	1,200	-	-	-	-	□				
			7																

Stairs that were created by Morph for example will NOT be listed therefore need additional comments/remarks in the remark field stating:

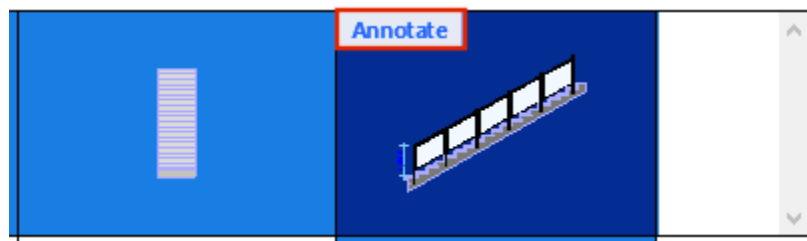
- **Tread sizes** (riser and run)
- **Railing height** (total, including plinths/kerbs)
- **Number of steps per flight**
- **Flight widths**

Using non-stair modeling tools is not recommended, but if used always **set the Element Classification to Stair**.

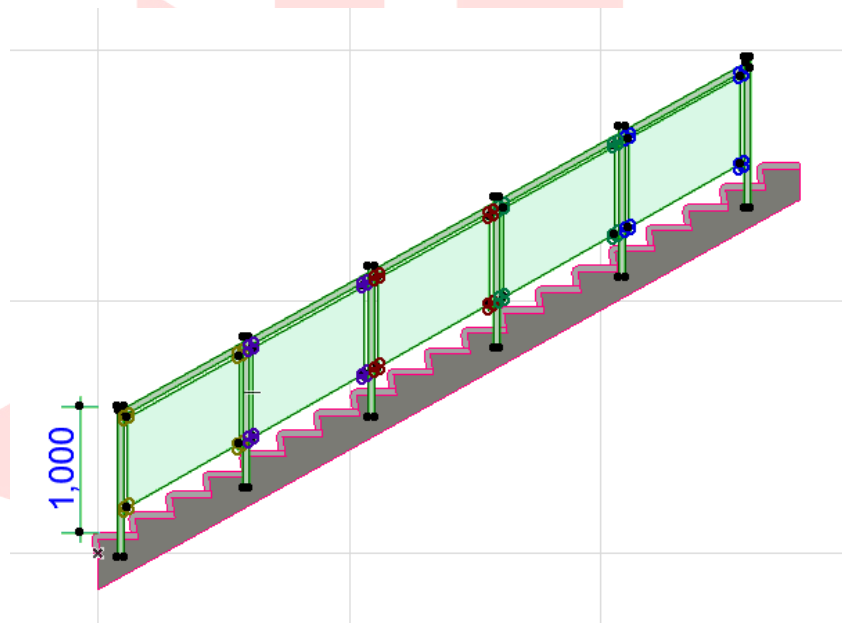


If the railings are not modeled at all or done separately from the Stair tool objects, for example by 2D drafting elements in particular viewpoints (sections/elevations) or the railing object is placed manually on top of the stairs then those elements will not be shown in this list either.

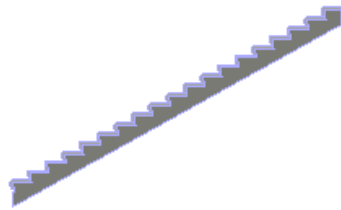
2D drafting elements can be added to the previews manually by selecting the **preview cell** and clicking **Annotate**.



You can simply copy-paste the linework from the viewpoints where you already have the railing drawn and add dimensions for clarification.



The separate 3D railing objects have to be referred to in the **Remarks** column.

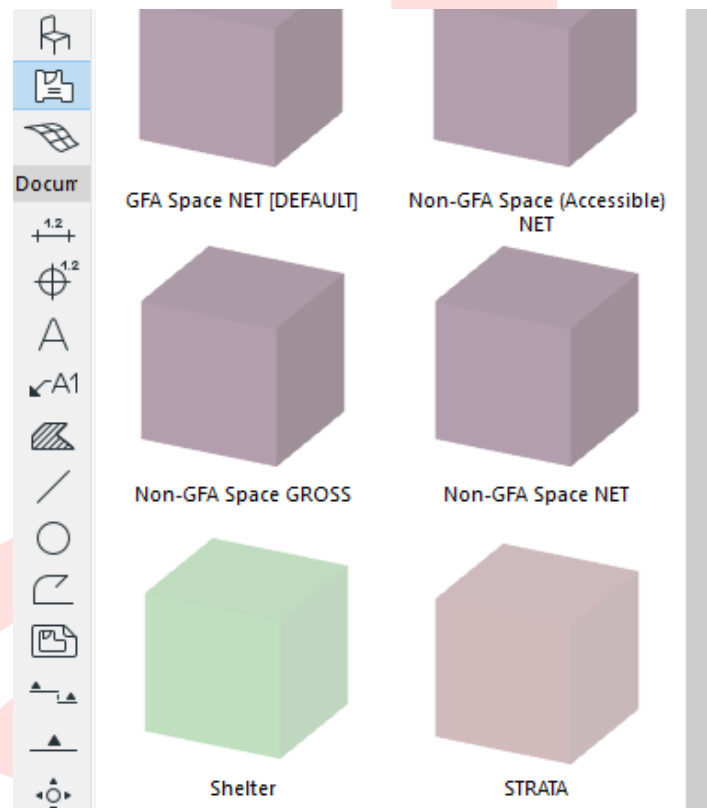
	<p>Stair using Railing RL - 00201 object. See RAILINGS schedule for further details.</p>
---	--

Shelters

These schedules list all household/storey and staircase storey shelters. Shelters use the Zone tool for the area calculation as ordinary spaces whereas the setbacks are represented by Morphs. The list needs manual filling of properties of the above mentioned elements as follows.

Note: The shelter setbacks are using one common layer that is only shown on the FSSD layer combination. Any additional layers that might be needed for shelter (setbacks) must be incorporated into the FSSD layer combination.

- 1 To place a shelter, use the **Zone** graphical favorite **Shelter**.



- 2 Place the necessary number of zones.

IMPORTANT SETTINGS (Accessible/Elderly Friendly Rooms):**Name and Positioning:**

- Category: **CD_HS .../CD_SS .../CD_SSS ...** (according to the type of actual shelter)

Categories and Properties:

- Layer: according to the **GFA/NonGFA** type of actual shelter
- REGULATORY REQUIREMENTS (Shelters) (the content of this property group is only to be used for shelter zones):
 - Dwelling Unit Type: according to the type of unit (create more property value options under **Options/Property Manager...** if needed)
 - GFA of Unit: input the total GFA of the unit in which the shelter is located
 - Shelter Type (only for HS and SS): **HA/HB/SA/SB** according to the position of the shelter - this value can be set in the schedules as well
 - No. of Square Units: calculate according to the code of practice - this value can be set in the schedules as well
 - Required Internal Area: calculate according to the code of practice - this value can be set in the schedules as well
 - Required Internal Volume: calculate according to the code of practice - this value can be set in the schedules as well

CATEGORIES AND PROPERTIES

Element Classification: Space

ID AND CATEGORIES

ID	ZONE-001
----	----------

RENOVATION use Palette to set default

Renovation Status	New
-------------------	-----

Show On Renovation... All Relevant Filters

REGULATORY REQUIREMENTS

REGULATORY REQUIREMENTS (Shelters)

Dwelling Unit Type (s... Type 1	
GFA of Unit (sqm)	45.30
Shelter Type (shelter z... HA	
No. of Square Units (...	27
Required Internal Are...	0.00
Required Internal Vol...	0.00

ZONES

IFC PROPERTIES

A_-AREAGFAA_A-_.GFA

Cancel OK

- 1 Open the **SCHEDULES/FSSD_CD_ ...** schedules to check the results and make the necessary changes if needed.
- 2 Click into the cells and change the details if needed.

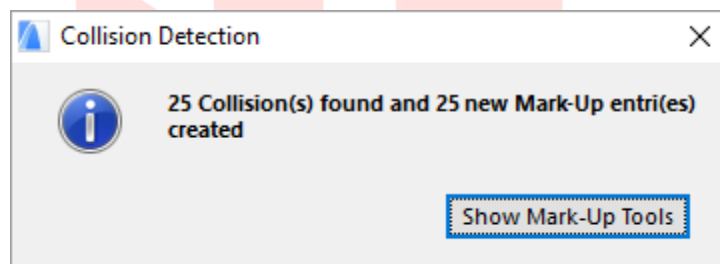
DATA OF HOUSEHOLD SHELTERS						
Dwelling Unit Type	GFA of Unit	No. of HS	Internal Area	No. of Square Units	Internal Volume	Shelter Type
Type 1	45.30	2	9.72	27	31.14	HA
Type 2	60.20	2	14.34	39	45.88	HA
Type 3	87.40	2	9.72	27	31.14	HA

DATA OF STOREY SHELTERS								
Home Story	Dwelling Unit Type	GFA of Unit	Quantity	Internal Area of SS		Internal Volume of SS		Shelter Type
				Required	Provided	Required	Provided	
1st STOREY								
	Undefined	132.50	1	3.00	14.95	9.00	47.86	HA
2nd STOREY								
	Undefined	132.50	1	3.00	14.95	9.00	47.86	HA
			2					

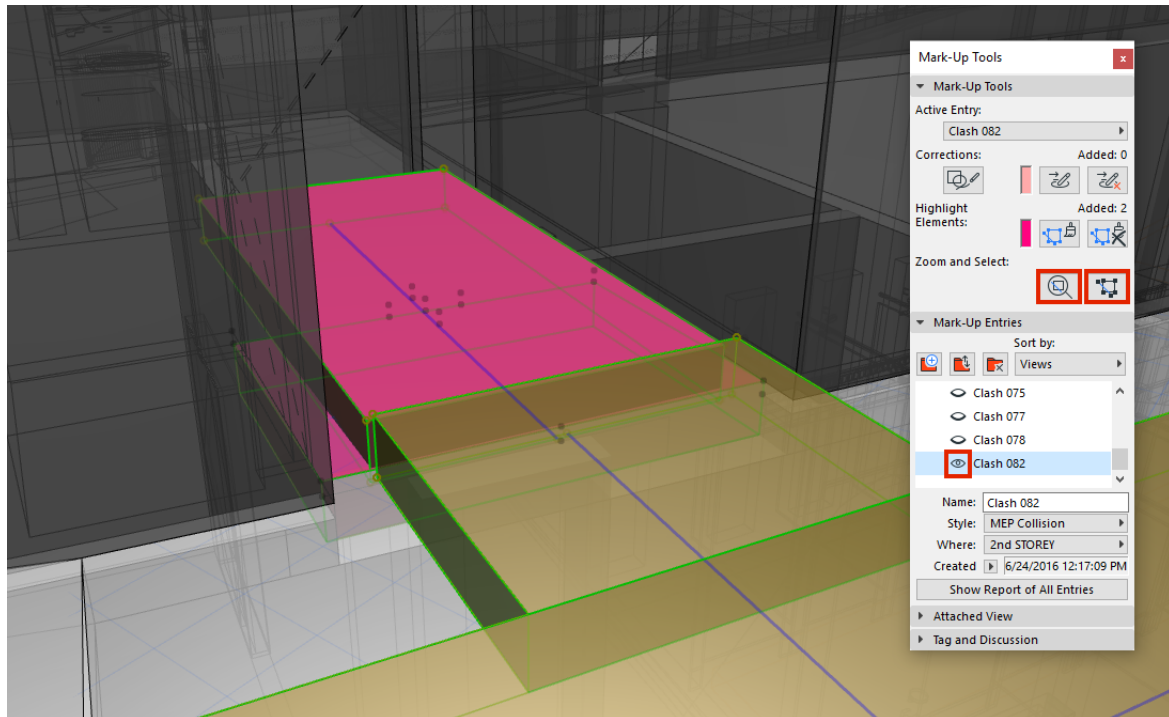
PART IX - CLASH DETECTION (optional)

Clash detection can be carried out in between accessibility elements and regular building elements to ensure access and clearances. This is completely voluntarily and will not be checked by the officers, however it can increase the quality of the BIM project.

- 1 Open the **CLASH DETECTION/QP_Accessibility Route** view which shows the entire building and the accessibility routes.
- 2 Launch the **Design/MEP Modeling/Detect Collisions** command. Make sure that there are **no elements selected**, otherwise the checking will only involve those selected elements and you will get false results.
- 3 The found clashes will be listed under the Mark-Up Tools palette. Click **Show Mark-Up Tools**.

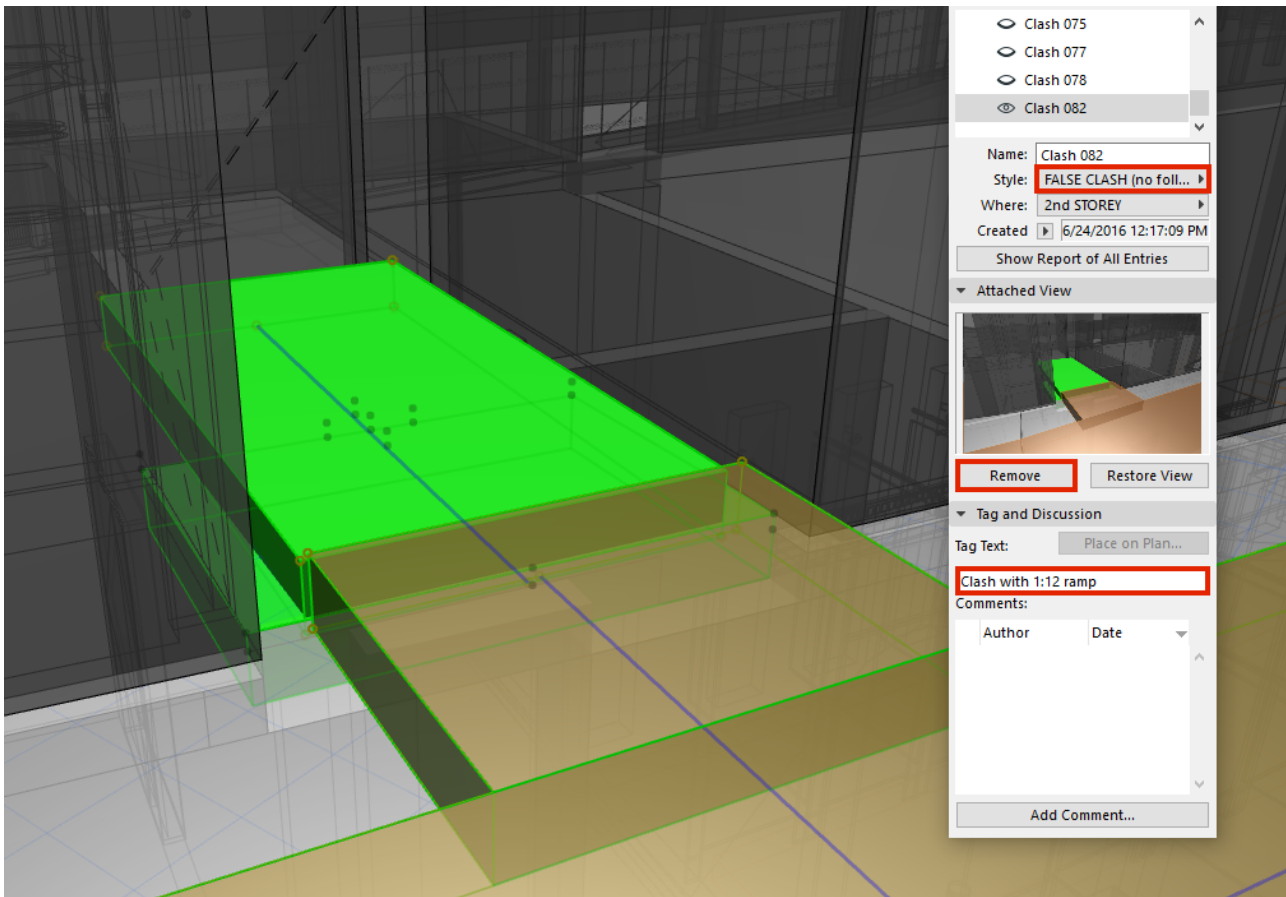


- Go through the entries one-by-one and validate the results. Use the **eye icon** to show the actual clashes and the **Focus on Elements** or **Select Elements** buttons to zoom in and highlight the colliding elements respectively. The elements will be highlighted with magenta color by default.

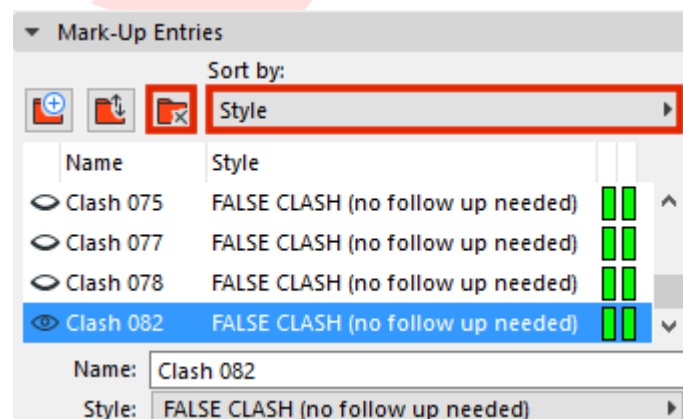


- If the clash is a real issue (for example accessibility route clashing with elements) then fix the model accordingly.

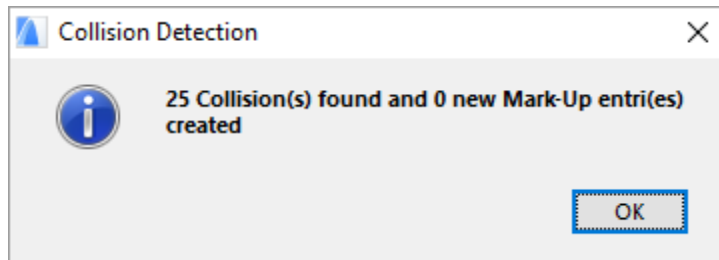
- 6 If the clash is not a valid problem (for example MEP connections of bathroom fixtures hitting walls) then change the Style to **FALSE CLASH (no follow up needed)** for indication.
- 7 Use the **Capture** button under Attached View (will change to 'Remove' once the view is taken) to provide a visual for the processing officers and use the **Tag Text** field under Tag and Discussion to explain the clash and the reason why it does not need any follow ups.



- 8 Once done, the Mark-Up entries have to be cleaned up. The clashes that were fixed have to be deleted (**select the entry** and click **Delete Entry**) and to have a better overview you may want to sort the items by **Style**, so it is easier to find the outstanding issues.



- 9 Run the clash detection once again without any elements selected to see if the fixes worked. The real fixed issues should not be found again while the existing false clashes will remain.



Note: Always keep the false clashes. Deleting these entries would result in new clashes when the model is checked again.

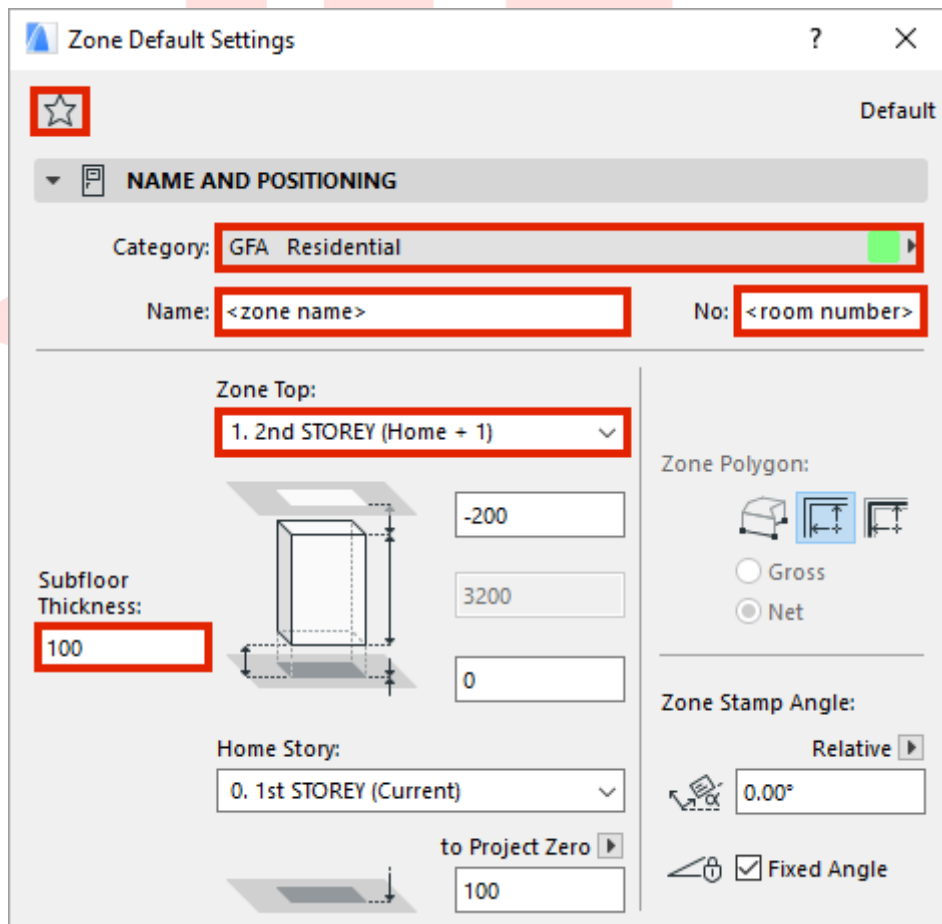
- 10 Open the **BCA/CLASH DETECTION/QP_Clearance Boxes** view and repeat the process to check/verify clashes with the clearance boxes.

PART X - AREA TABULATION

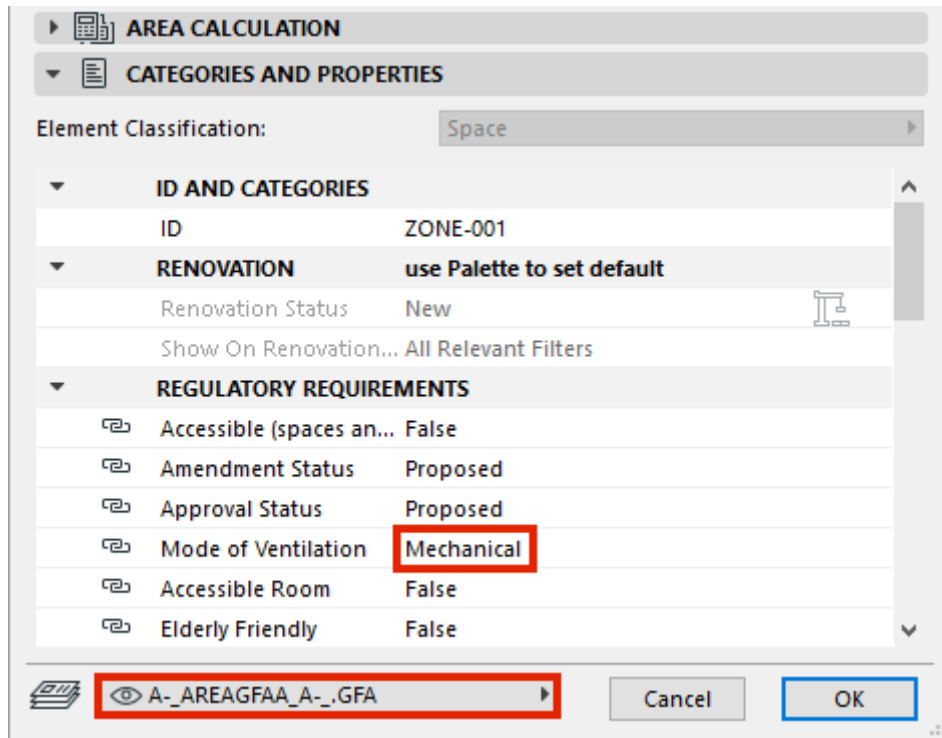
GFA (for URA)

Schedule **URA-_LV_ SUM OF GROSS FLOOR AREA (GFA) New** can be viewed under the **SCHEDULES** folder of the **View Map**.

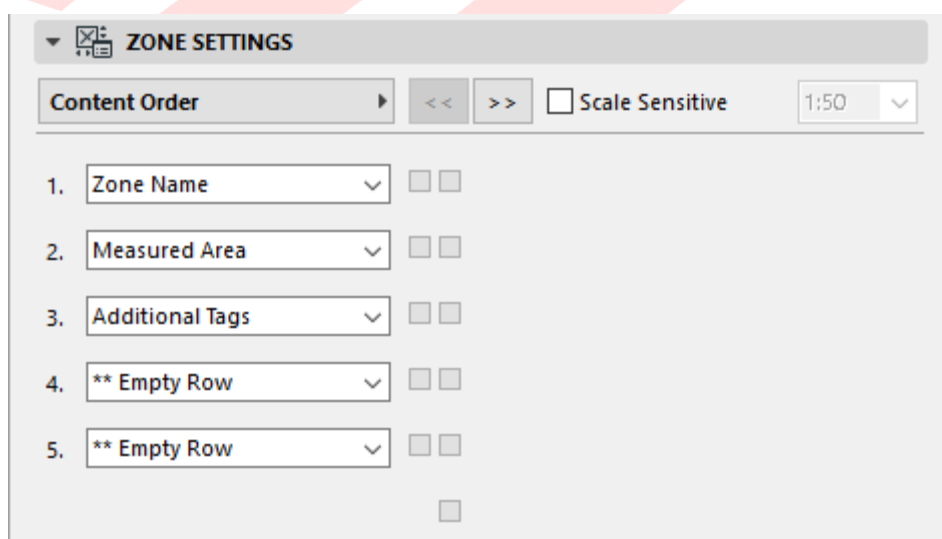
- 1 Open a **floor plan** viewpoint from the Navigator.
- 2 Activate the **Zone tool** and open its settings. Select the appropriate **Favorite** (any of the GFA Spaces/Non-GFA Spaces).
- 3 Set **Zone Category** and insert a **Zone Name**. Always set the **Zone Top** according to the actual story heights considering top offsets as well when linked to a story 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.



- 4 In the **Categories and Properties** panel, change the **Mode of Ventilation** property to define the type of ventilation. This will be displayed in the Zone Stamp. Also fill the **BlockNo (Pset_SpaceCommon)** IFC property at the bottom of the list if necessary.
- 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.



- 6 Check the appearance of the Zone Stamp under **Zone Settings**: Zone Name, Measured Area and Additional Tags 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.

- 7 Double-click to open the **URA-_LV_ SUM OF GROSS FLOOR AREA (GFA) New** schedule.
- 8 To learn more and configure the settings of other tables click the **Scheme Settings...** button at the top right.

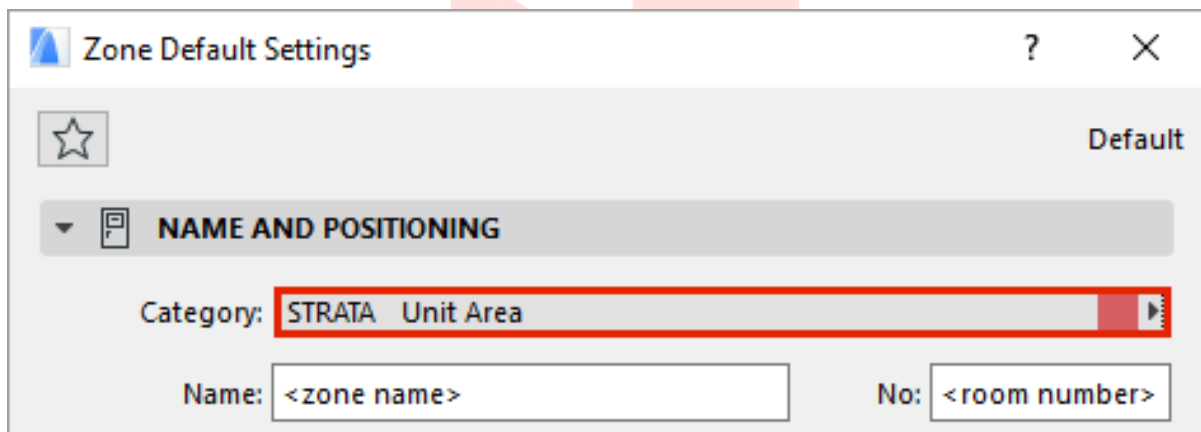
NEW in the ARCHICAD 20 Template:

- Zone Stamps using new object from loaded SG BIM SUBMISSION library
- Properties for easier data input
- Automatic mapping of property values to existing IFC properties
- Zone favorites for GFA, Non-GFA, Accessible, Non-Accessible spaces with gross and net options
- More Zone Categories according to the URA GFA Definitions
- Revised color-coding of categories

STRATA (for URA)

Schedule **URA-_LV_ STRATA** can be viewed under the **SCHEDULES** folder of the **View Map**.

- 1 Open a **floor plan** viewpoint from the Navigator.
- 2 Activate the **Zone tool** and open its settings. Select the graphical favorite **STRATA**.
- 3 Set **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 story 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.



- 4 Place the necessary number of zones.

- 5 Open the **SCHEDULES/BCA_BP_STRATA** schedule to check the results and make the necessary changes if needed.

STRATA (Units)			
Home Story	Name	Area	Quantity
1st STOREY			
	Unit A	137.75	1
		137.75 m²	1
	Unit B	64.34	1
		64.34 m²	1
2nd STOREY			
	Unit A	137.75	1
		137.75 m²	1
	Unit B	64.34	1
		64.34 m²	1
		404.18 m²	4

SGFA (for BCA)

Schedules **BCA_LV_STATISTICAL GROSS FLOOR AREA (SGFA)** and **BCA_LV_SUM OF OTHER AREAS OF OTHER AREAS NOT INCL IN GFA COMPUTATION** can be viewed under the **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 Select the **A_-AREAGFAD_A_-NonGFA** layer if the Zone is a Non-GFA Zone and create the Zone polygon on the floor plan.
- 3 Double-click to open the respective schedules under the **SCHEDULES** folder of the View Map.

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

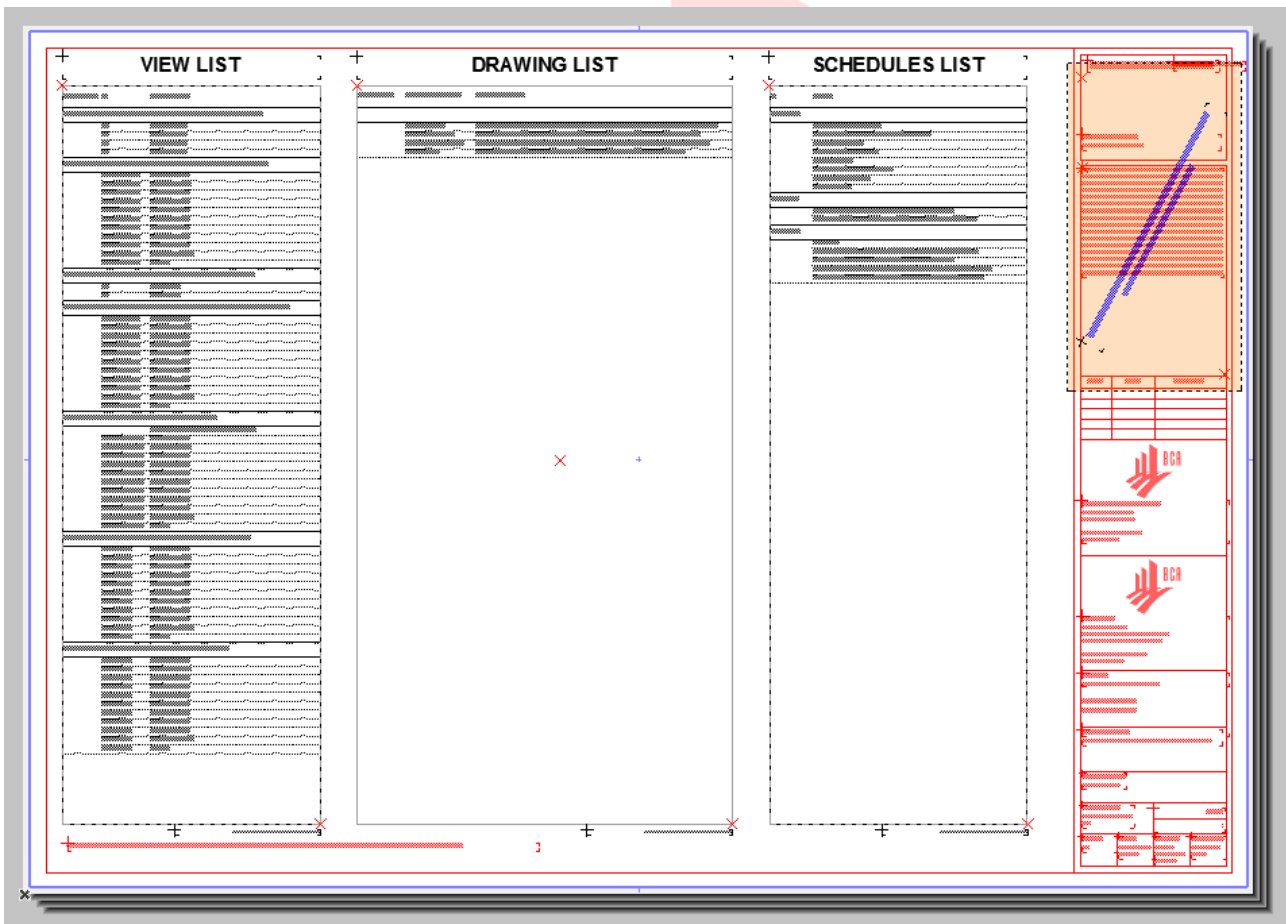
Note #2: - BCA-_LV_SUM OF OTHER AREAS NOT INCL IN GFA COMPUTATION will automatically generate the same Non-GFA values generated from the - BCA-_LV_SUM OF STATISTICAL GROSS FLOOR AREA (SGFA) provided you use the same Layer for the Zones.

PART XI - COVER PAGE

The Native BIM Submission does not require layouts in general, though layouting is still the most common way to communicate the design intent and to document the project. The Layout Book contains a generic layout which may be used for generic layouting purposes.

For the Native BIM Submission you only need to prepare one cover page layout.

- 1 Open the **COVER PAGE** layout in the Layout Book.



- 2 Fill the necessary project information using **Project Info**.
- 3 Use the revisions according to the project status to make use of the **Revision History Object** or remove the object on the **A1 Landscape** master layout and use the free space for your convenience.

Find more information on the Revision Management
at the GRAPHISOFT Help Center here:

http://helpcenter.graphisoft.com/guides/archicad-20/archicad-20-reference-guide/documentation/revision_management/

- 4 Make sure that the **View List**, **Schedule List** and **Drawing List** are clearly visible. If necessary change the cell sizes of the schedules in the **View Map/COVER PAGE** folder. If line breaks occur at wrong positions, modify the drawings using the **Restructure Table** command of the Pet palette. Click the bottom corners to activate it.



- 5 Fill the **Custom Fields** on the left or right (remove the highlight boxes first) if needed.
- 6 Replace the Endorsements on the Master Layouts. Go back to the **Project Map/Worksheets/AC20 Endorsements** and look for the necessary textbox. Copy and paste it to the **COVER PAGE** master layout. Further changes may also be done.

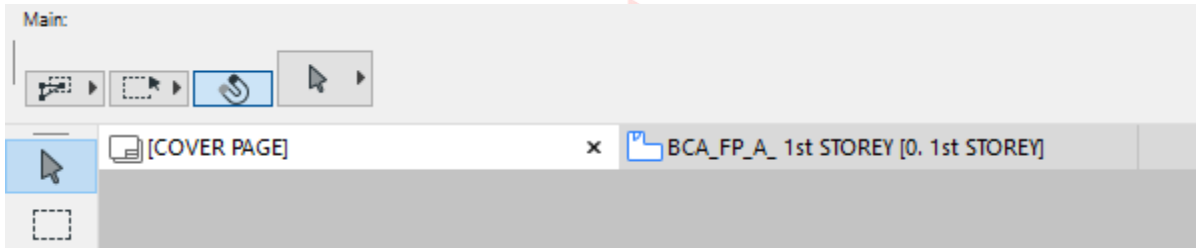
NEW in the ARCHICAD 20 Template:

- Preset Cover Page for Native BIM Submission
- Generic Master Layouts merged to one
- Endorsements moved to separate worksheet
- Revision History object
- View List and Schedule List
- New Black and White and Grayscale Favorites for Drawings

PART XII - THE SUBMISSION FILE FORMAT

Saving the files requires a specific naming format to define the following.

- 1 Make sure that all tabs except a floor plan of the project are closed and that the **COVER PAGE layout is opened** and **moved to the front**. This layout has to be the one that appears when the officers open the file.



Note: A floor plan viewpoint or view has to remain open, otherwise ARCHICAD will close the project.

- 2 Use **File/Save as...** menu command and save you file in one of the different formats.

BIM native file format and software version:

ARCHICAD - **.pla**, **.pln** and/or **.mod**, version **20**, indicated in the file name, for example:

MLP1_A-_MAIN_--_A_20.pla

File format:

- Single File - if only one file is submitted, for example:

MLP1_A-_MAIN_--_A_20.pla

- Federated Files - if two or more files are submitted, for example:

MLP1_A-_MAIN_--_A_14_SITE.pln
MLP1_A-_101_--_A_14_BLK101.pln
MLP1_A_--_A1_A_14_UNITA1.mod

Note: PLA files include all library elements used in a project and make the file management easier for the submission, therefore it is highly recommended to use this format.

File Naming Convention:

Project ID				Author				Block/Zone				Unit/Storey				Submission Version				Software Version				User-defined			
M	L	P	1	_	A	-	_	M	A	I	N	_	-	-	_	A			_	2	0	_					

File with **MAIN** included in the file name indicates that it is the only file to open for checking.

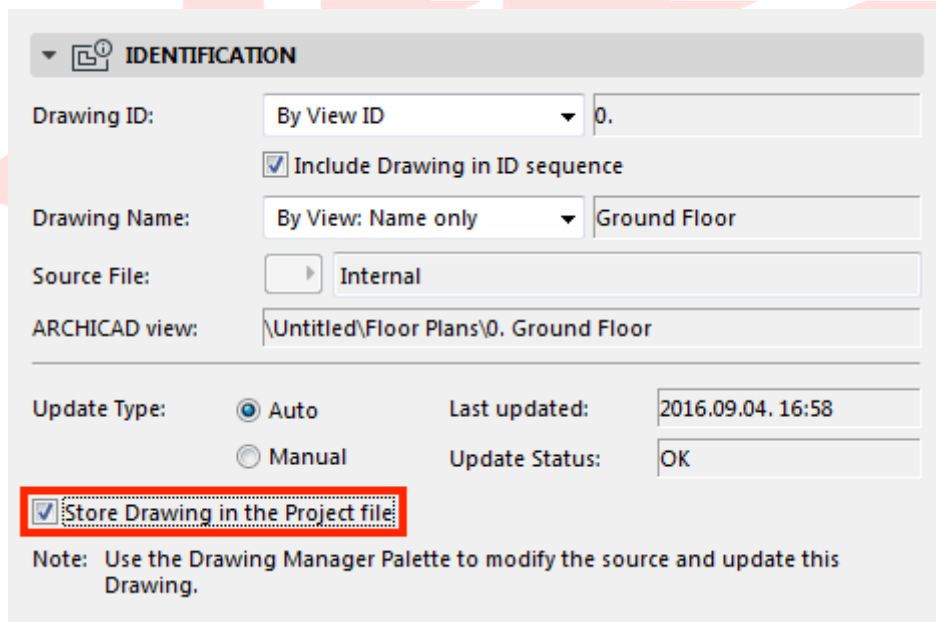

MLP1_A-MAIN--A_14_SITE.pln
 MLP1_A-101--A_14_BLK101.pln
 MLP1_A--A1_A_14_UNITA1.mod

Final check:

Before submitting the file make sure all necessary views are set correctly and show the relevant information. Check the highlights using the **Graphic Override Combination** option list and use the **BCA_BP_All Accessibility** and/or **BCA_BP_Modes of Ventilation** overrides.

Make sure that all external references (2D drawings) are stored with the project file to ensure that the checking officers will see the same content as the QP.

- 1 Select the linked drawings and open their settings.
- 2 Check the **Store Drawing in the Project file** checkbox for each drawing.



IDENTIFICATION

Drawing ID: By View ID 0.

☒ Include Drawing in ID sequence

Drawing Name: By View: Name only Ground Floor

Source File: Internal

ARCHICAD view: \Untitled\Floor Plans\0. Ground Floor

Update Type: ☒ Auto ☐ Manual

Last updated: 2016.09.04, 16:58

Update Status: OK

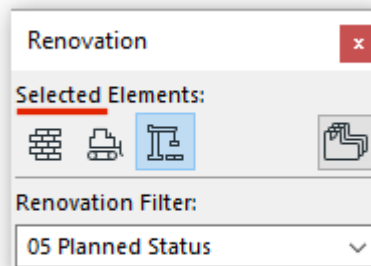
☒ **Store Drawing in the Project file**

Note: Use the Drawing Manager Palette to modify the source and update this Drawing.

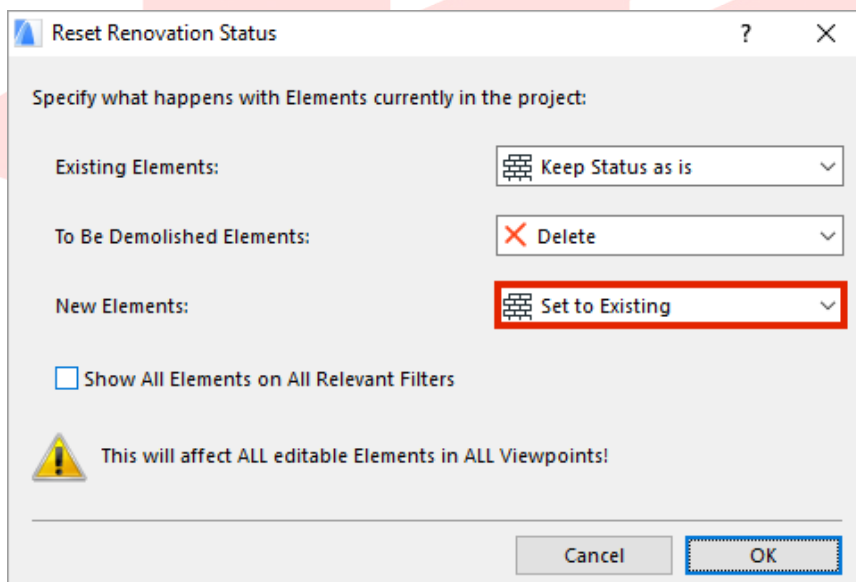
PART XIII - A&A WORKS (RENOVATION)

By default all elements are defined as *New*. Renovation Filter colors are based on the CP83 color coding.

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



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.

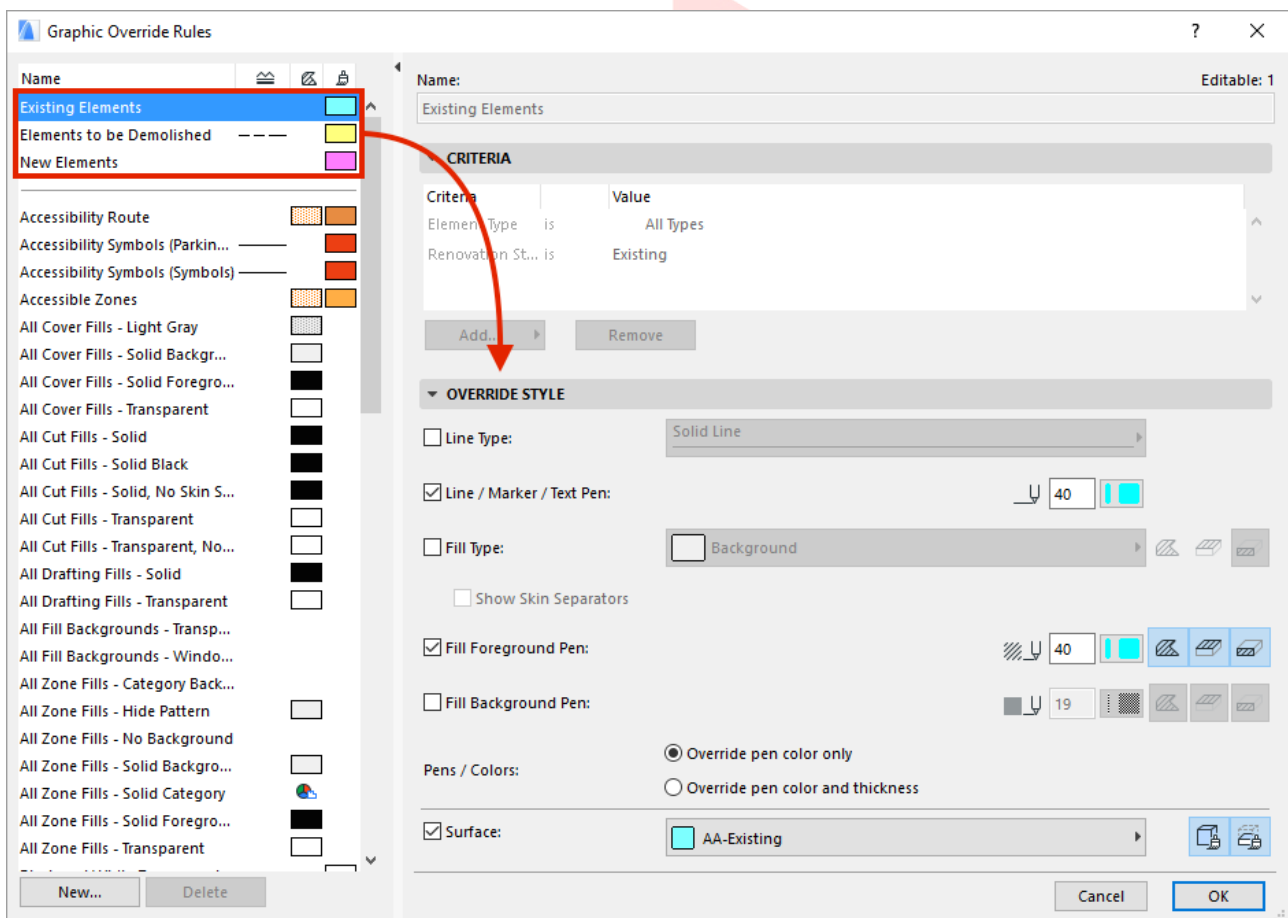


Find more information on the Renovation feature
at the GRAPHISOFT Help Center here:

http://helpcenter.graphisoft.com/tips/renovation/#About_the_Renovation_Feature

For additional filtering options:

- 1 Go to **Document/Renovation/Renovation Filter Options...**
- 2 Under Filter Settings, filtering options can be changed. To edit the appearance of the elements with different statuses use the **Graphic Override Rules...** button at the bottom right.
- 3 Select the status at the top left to override to modify the 2D/3D representations under Override Style.



NEW in the ARCHICAD 20 Template:

- Brand new Graphic Override Rules include Renovation Styles as well
- New pen assignments to all three statuses using native ARCHICAD pen colors to comply with both native and traditional (CP83) submissions
- To be deleted/Demolished elements shown with dashed outlines

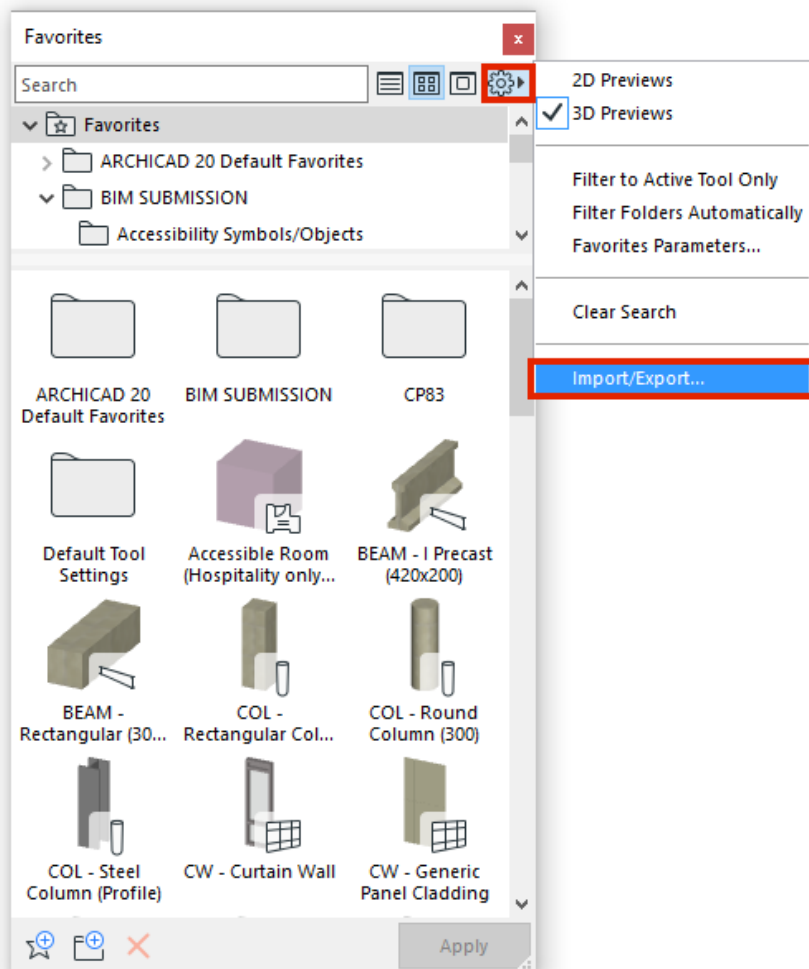
PART XIV - MERGING THE TEMPLATE INTO AN EXISTING COMPANY TEMPLATE

The current version of the template contains most of the default settings that are shipped with the ARCHICAD 20 INT version and the additional customizations to comply with the Native BIM Submission requirements. These template settings can be migrated into your existing company templates as follows.

Favorites

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

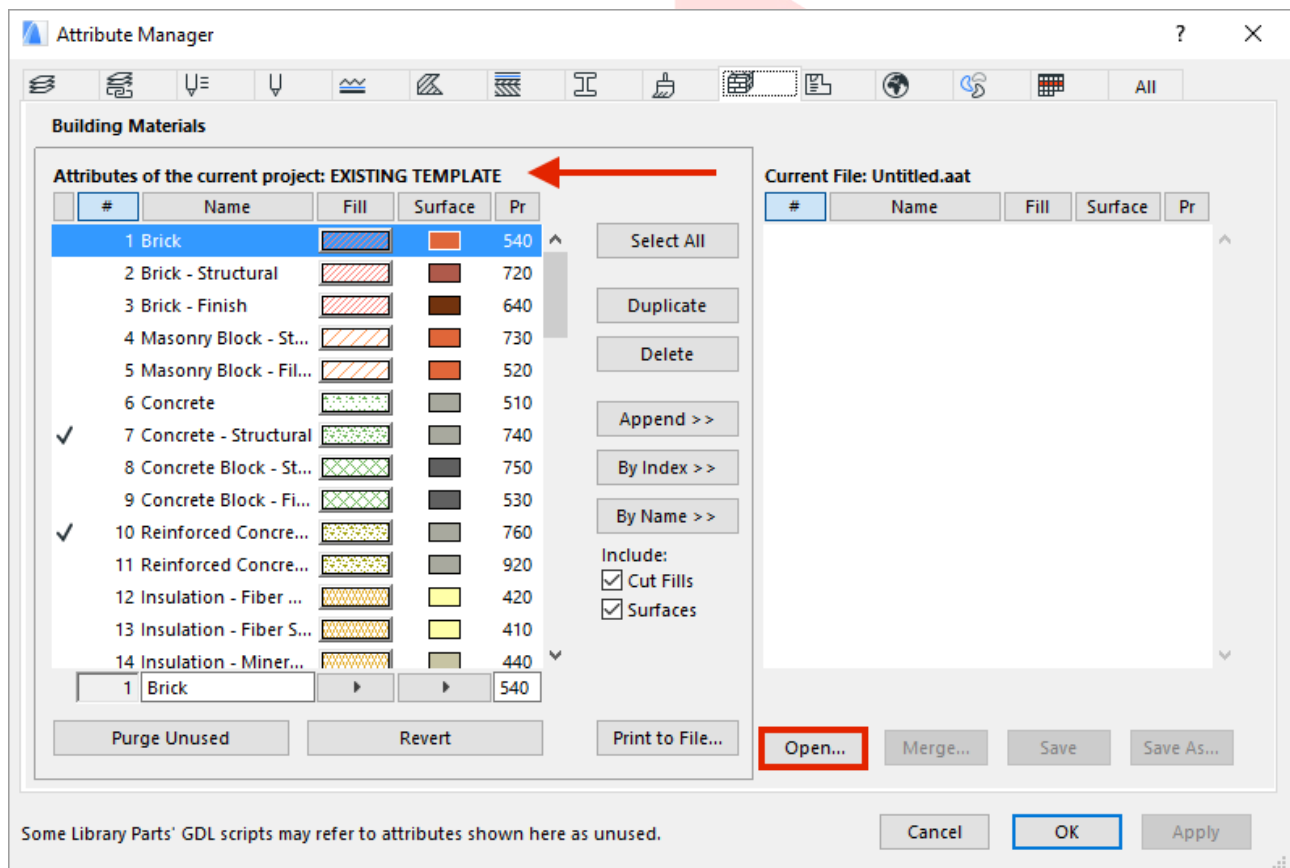
- 1 Open the **Window/Palettes/Favorites** of the Native BIM Submission Template.
- 2 Click the **cogwheel button** at the top right and choose **Import/Export...**
- 3 Similarly, use the same command in the company template file.



Attributes

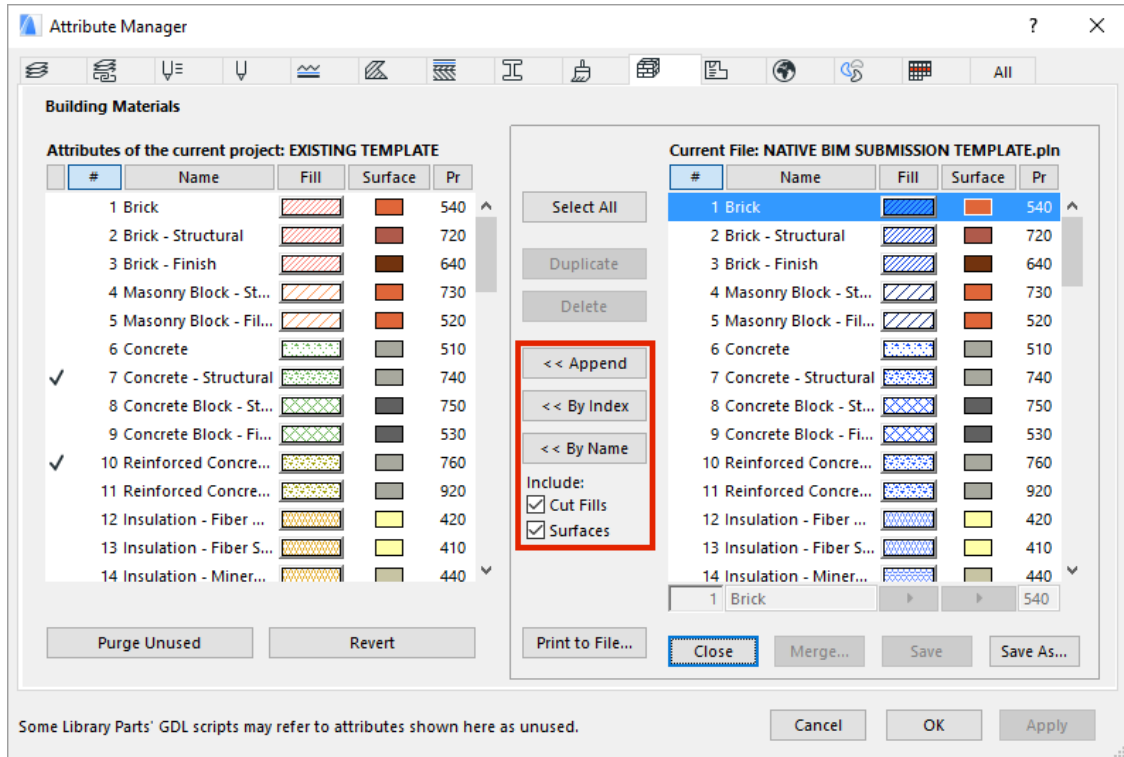
Attributes include Layers, Layer Combinations, Pens and Pen Sets, Lines, Fills, Composites, Complex Profiles, Surfaces, Building Materials.

- 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 20 Template:

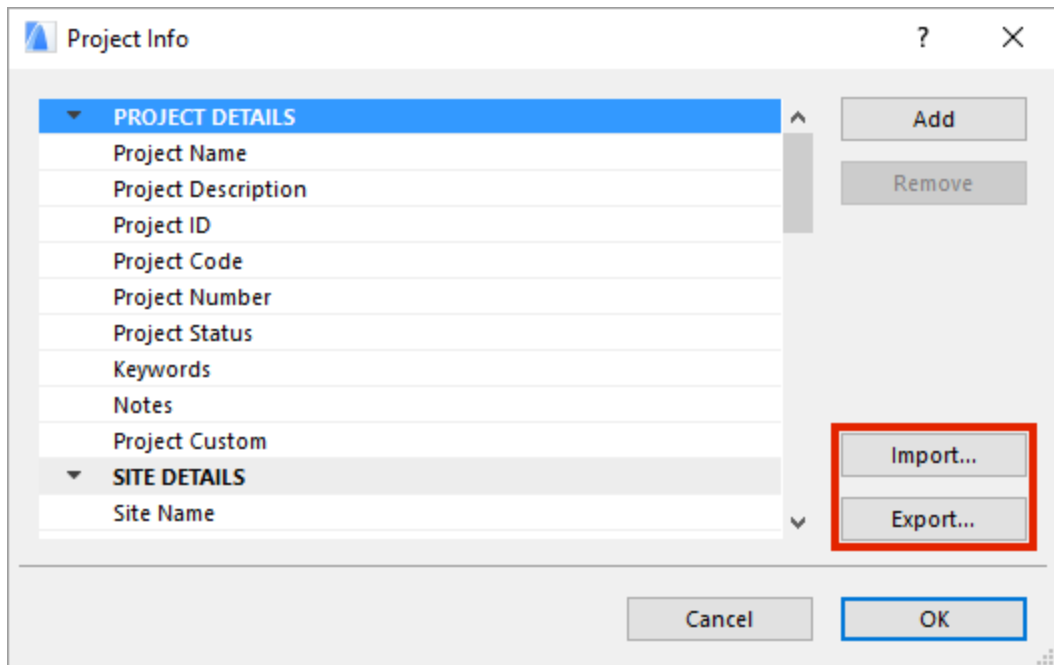
- 12 new Glass surfaces and 13 new Paint surfaces for property-based highlights (accessibility, ventilation, zones, BScore, etc.) + 4 Solid color Surfaces for alternative ventilation highlights
- 2 new Building Materials: Air Space - Void, Backfill
- New Fill: Double - Vertical
- New pen sets for BIM Submission and black and white representation with property-based highlights
- BIM Submission pen set: new pens for BScore, Fire Rating, Accessibility and Ventilation overrides
- New Layers for accessibility routes, clearance boxes (BCA, LTA), solid element operations
- New Layer Combinations for QPs for editing, CP83 submission, BIM Submission and clash detection (2x)

Find more information on the Attribute Manager
at the GRAPHISOFT Help Center here:

<http://helpcenter.graphisoft.com/guides/archicad-19-int-reference-guide/configuration-2/attributes/attribute-manager/>

Project Info

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



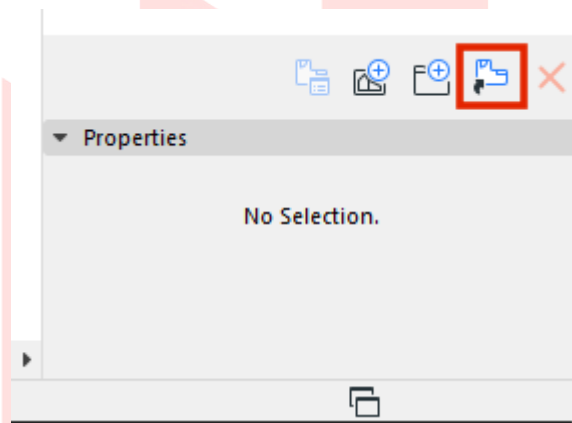
Views, Layouts and Master Layouts

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

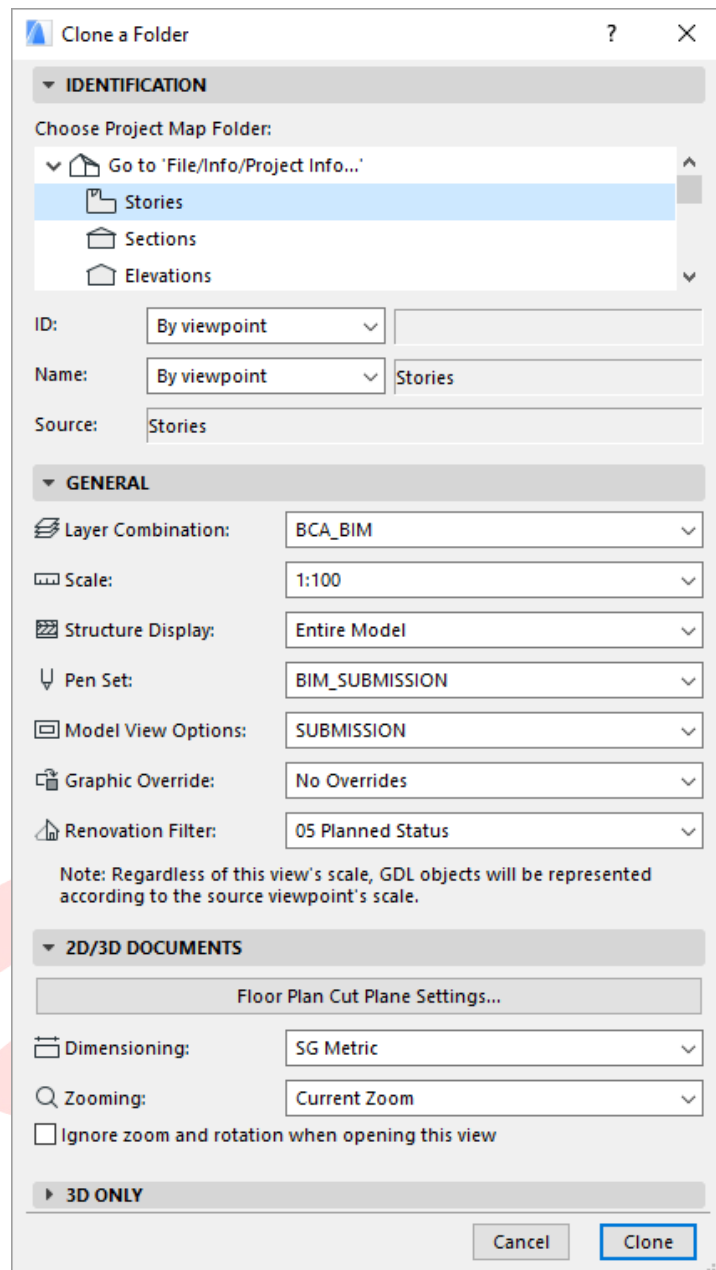
- 1 **Select all elements** of the Master Layout and use the **copy** command.
- 2 **Paste** the elements into an empty Master Layout in the company file.

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 (IDENTIFICATION), set the view factors (GENERAL) 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.



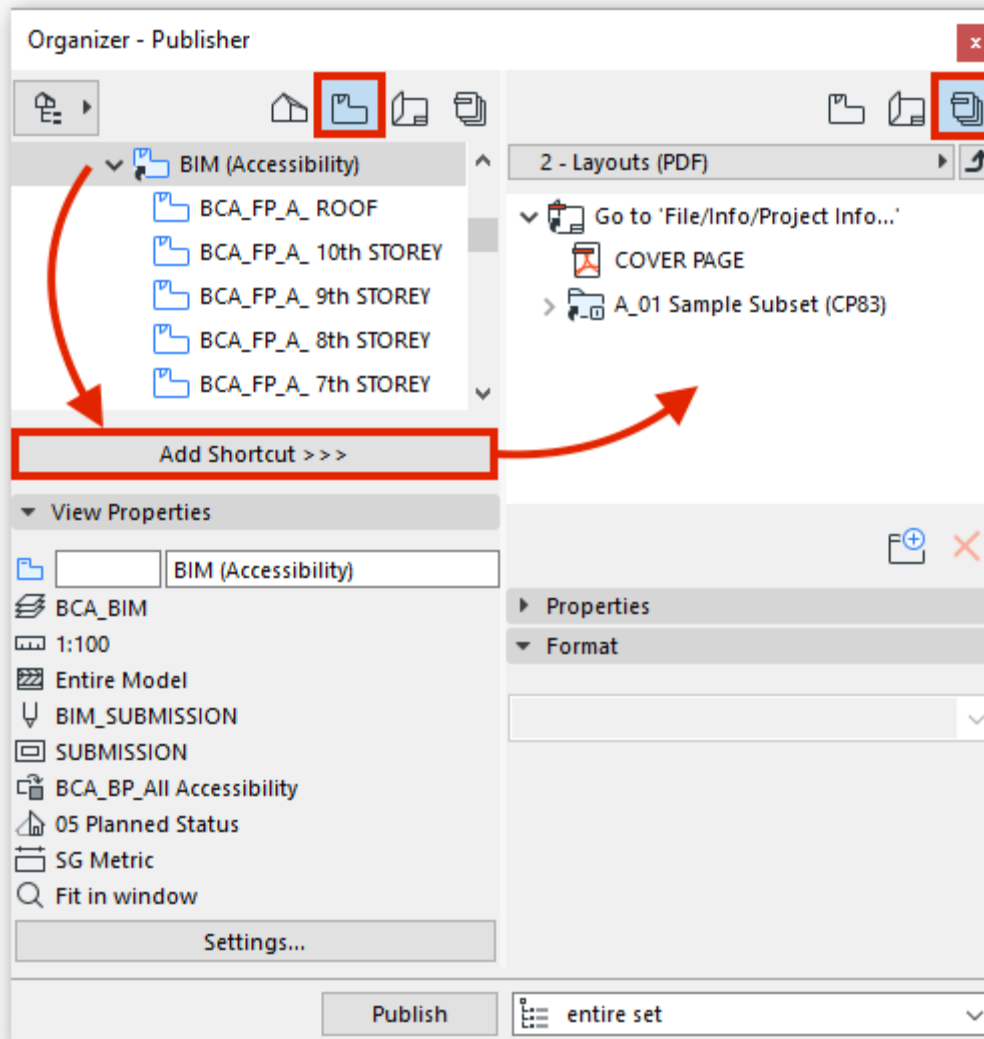
- 3 **Drag** the content of the cloned folders or the folders themselves **from the View Map to the Layout Book** in the **Organizer** (under **Window/Palettes/Organizer**) manually to ensure that the View Map and the Layout Book are synchronized.

Find more information on Cloning a Folder
at the GRAPHISOFT Help Center here:

http://helpcenter.graphisoft.com/guides/archicad-20/archicad-20-reference-guide/interaction/navigation/organizer_palette/clone_a_folder_in_the_view_map/

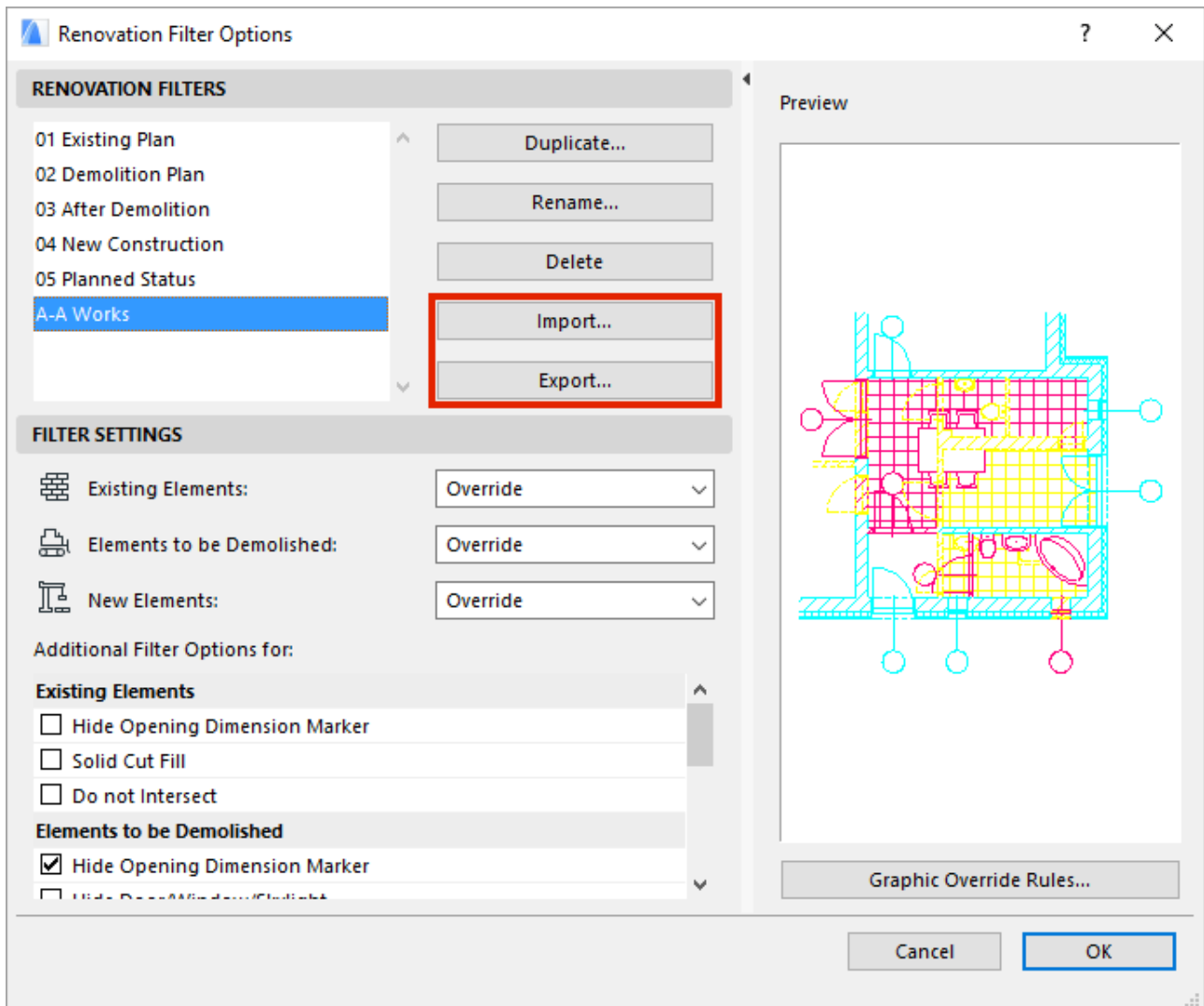
Publisher Sets

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

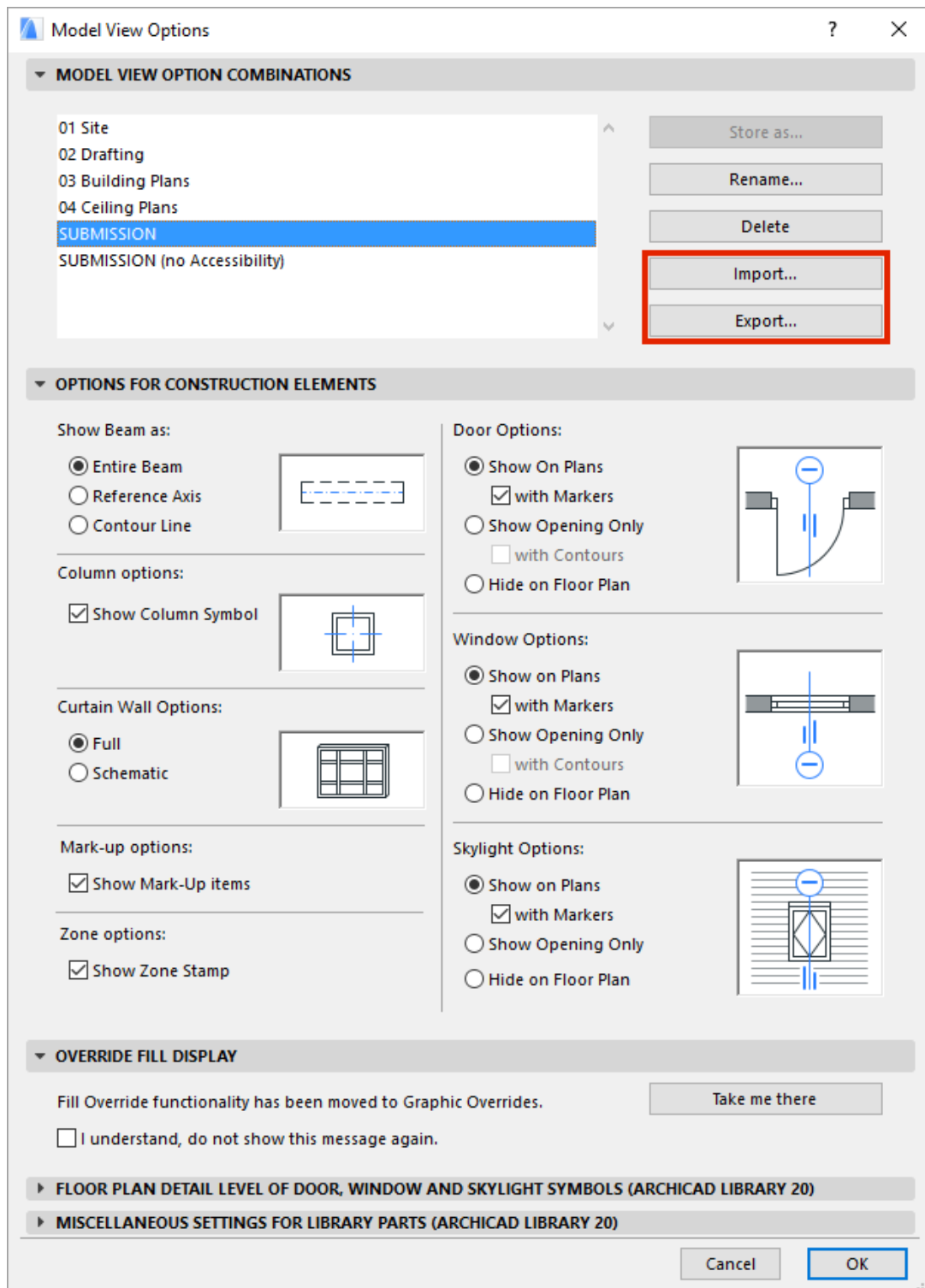
- 1 Open **Document/Renovation/Renovation Filter Options...** in the **Native BIM Submission Template**.
- 2 Select the **A-A Works** renovation filter on the left and click **Export...**



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

Model View Options

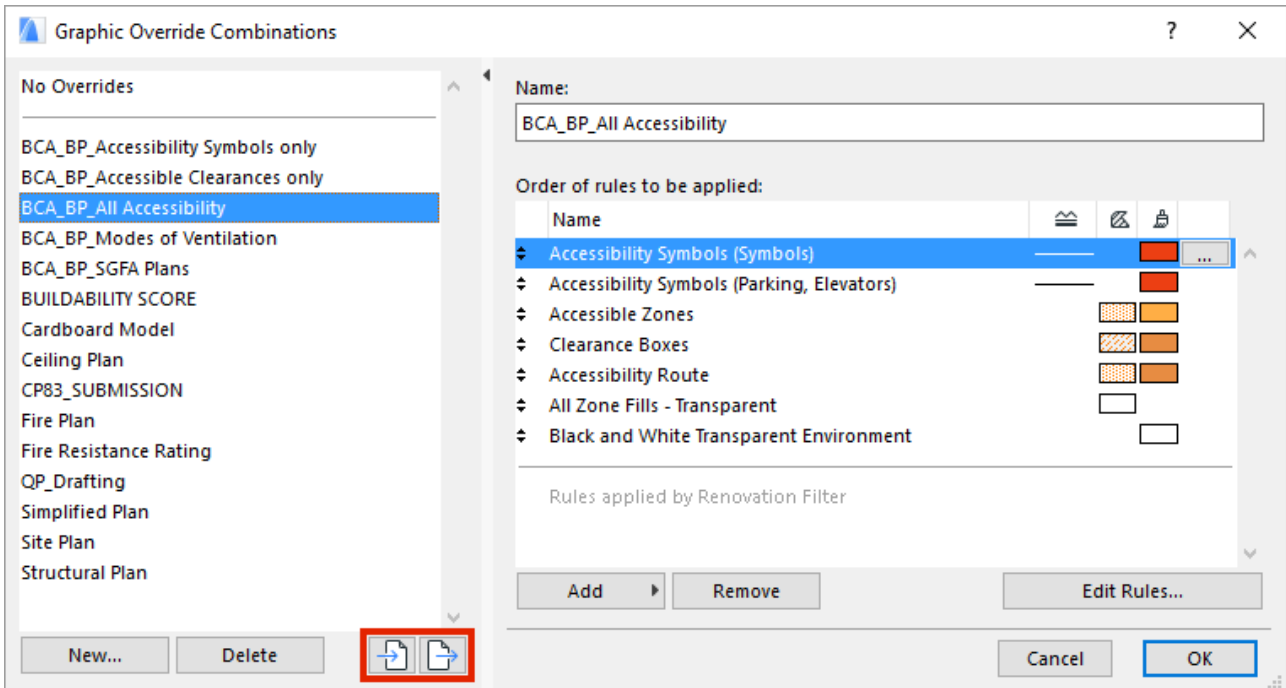
- 1 Open **Document/Set Model View/Model View Options....**
- 2 Select the **Model View Option** you want to export on the left and click **Export....**



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

Graphic Override Combinations

- 1 Open **Document/Graphic Overrides/Graphic Override Combinations....**
- 2 Select the **Graphic Override Combination** you want to export on the left and click the **Export** button.



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

Note: The Graphic Override Rules cannot be exported/imported.

NEW in the ARCHICAD 20 Template:

- Separate and combined Graphic Override Combinations for Accessibility Symbols and Clearances
- Graphic Override Combinations for Ventilation plans, SGFA and Buildability Score
- Graphic Override Rules for Accessibility (5x), Ventilation (5x), BScore (16x) and Transparency

Find more information on the Graphic Overrides
at the GRAPHISOFT Help Center here:

http://helpcenter.graphisoft.com/guides/archicad-20/archicad-20-reference-guide/views_of_the_virtual_building/graphic_overrides/

PART XV – GENERAL REQUIREMENTS OF THE DELIVERABLES (CP83 Submissions Only)

Based on the BIM e-Submission Guideline 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 XVI – CREATING NAVIGABLE 3D PDFS OF ARCHICAD MODELS (CP83 Submissions Only)

The following workflows serve as legacy reference for traditional BIM submissions only and will not be supported nor recommended in the future. When submitting using native formats, the 3D model is also included therefore there is no need to create additional navigable model views.

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**.

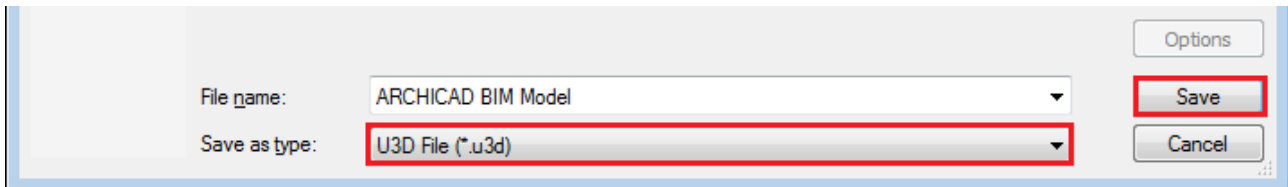
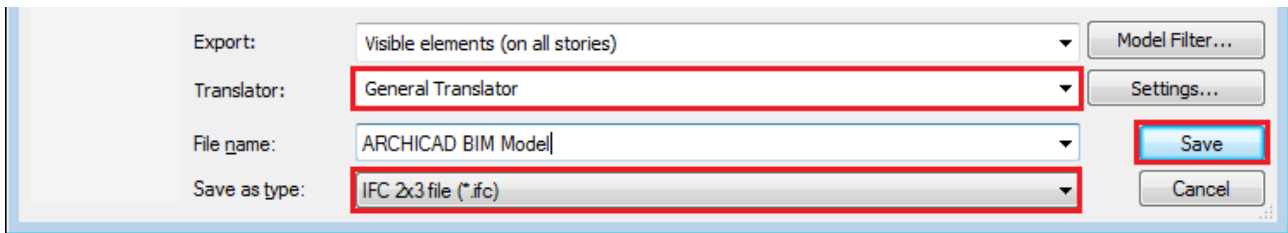
Find more information on 3D PDF Layout Publishing directly from ARCHICAD at the GRAPHISOFT Help Center here:

<http://helpcenter.graphisoft.com/guides/archicad-18-int-reference-guide/interoperability/file-handling-and-exchange/working-with-pdf-documents/3d-content-in-pdf/>

- 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

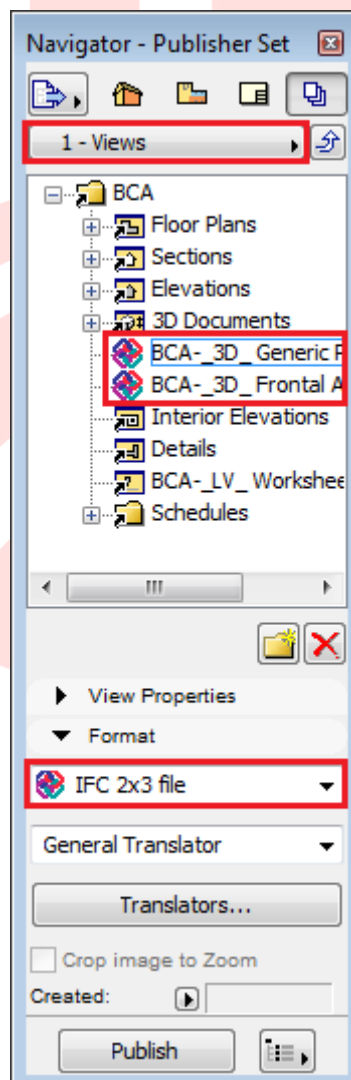
Saving the BIM model in IFC/U3D format

- 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.



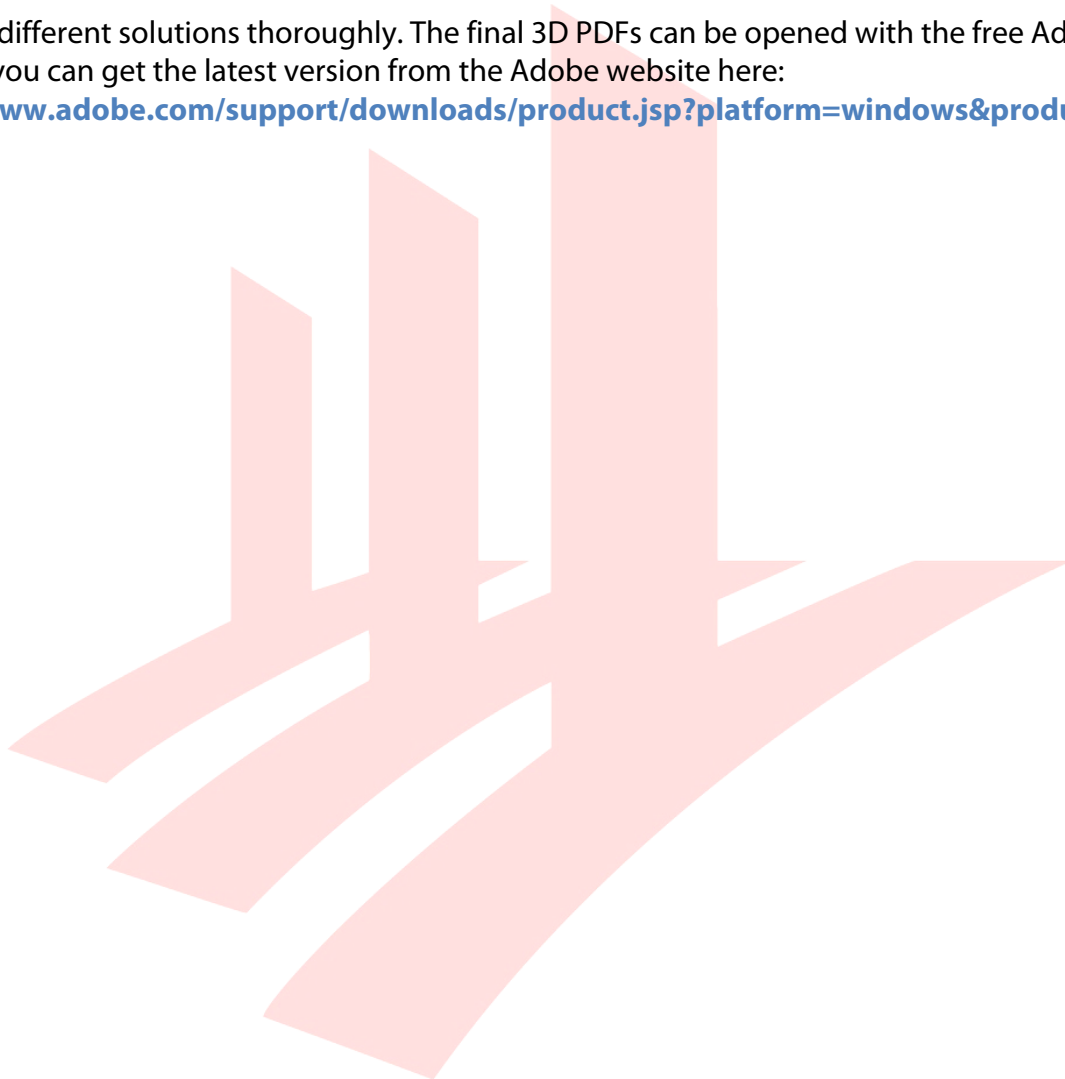
Importing the IFC model/U3D file into a PDF creator

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:

<http://www.adobe.com/support/downloads/product.jsp?platform=windows&product=10>

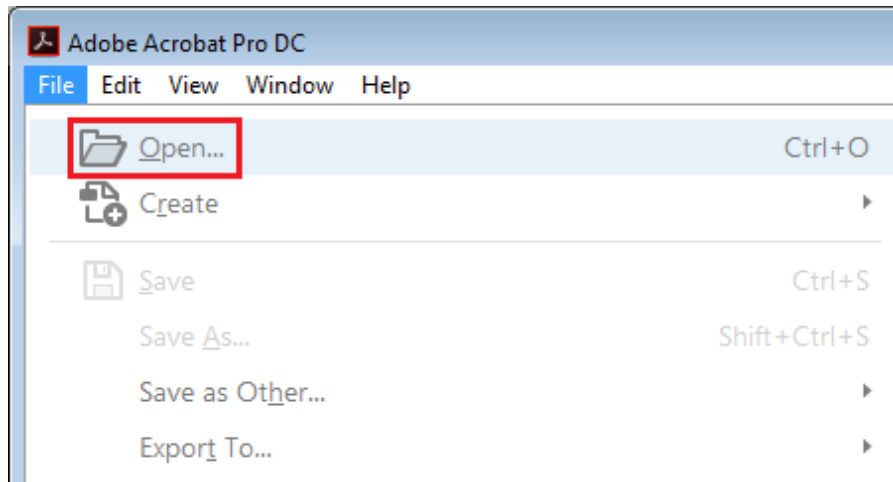


Adobe Acrobat X Pro/XI Pro/DC Pro (U3D import only):

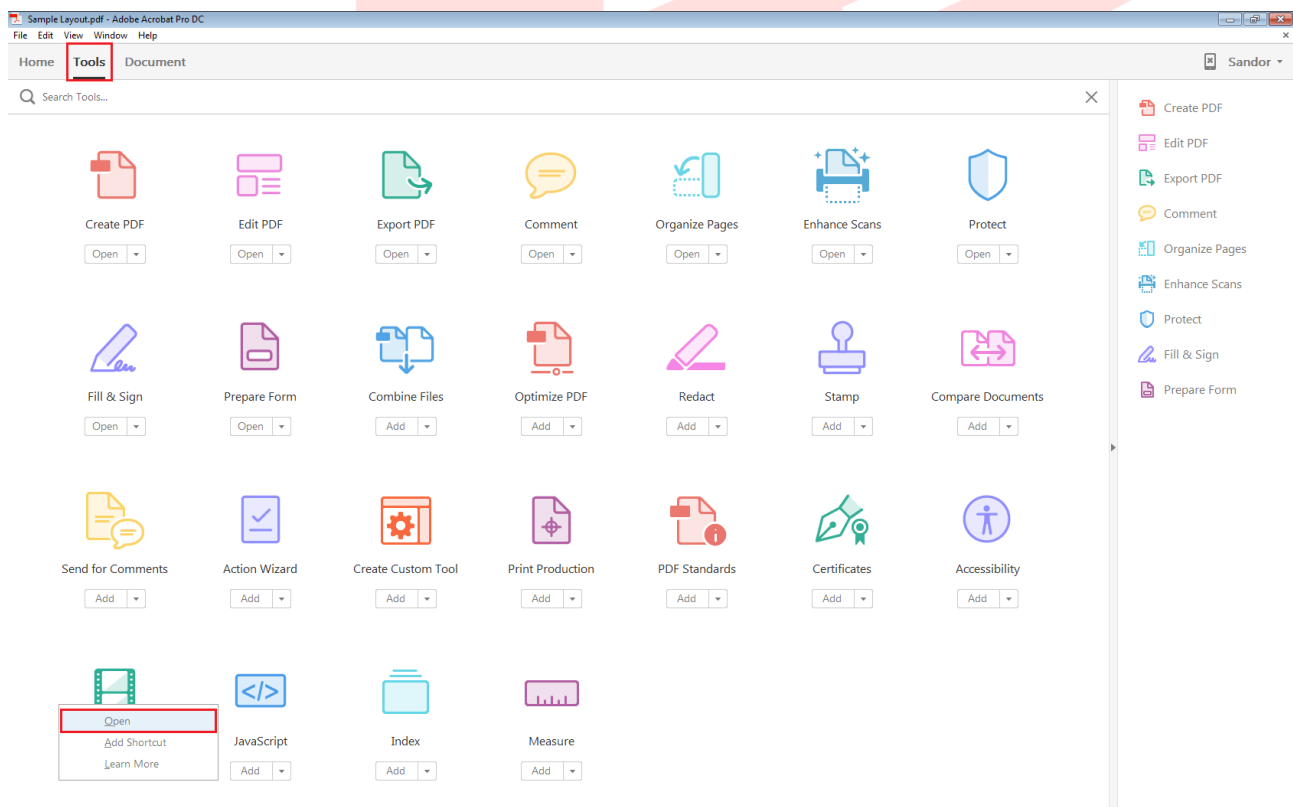
You can get the latest versions from the Adobe website here:

<https://helpx.adobe.com/acrobat/kb/acrobat-downloads.html>

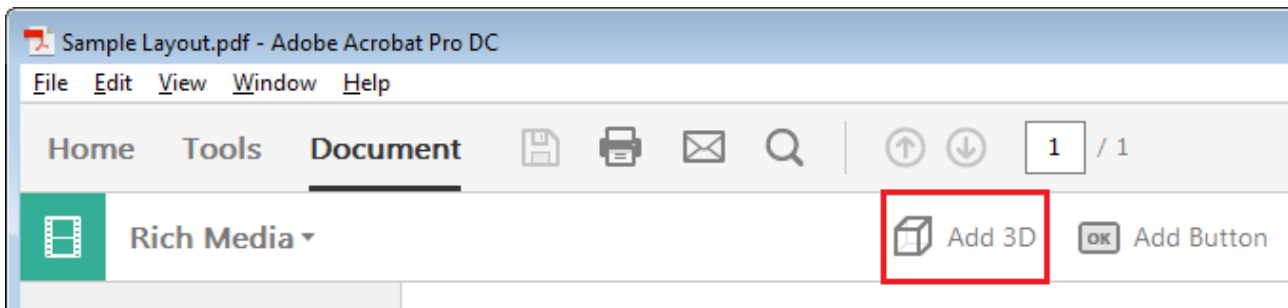
- 1 Launch **Adobe Acrobat DC Pro** and select the **File/Open...** menu command.



- 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.



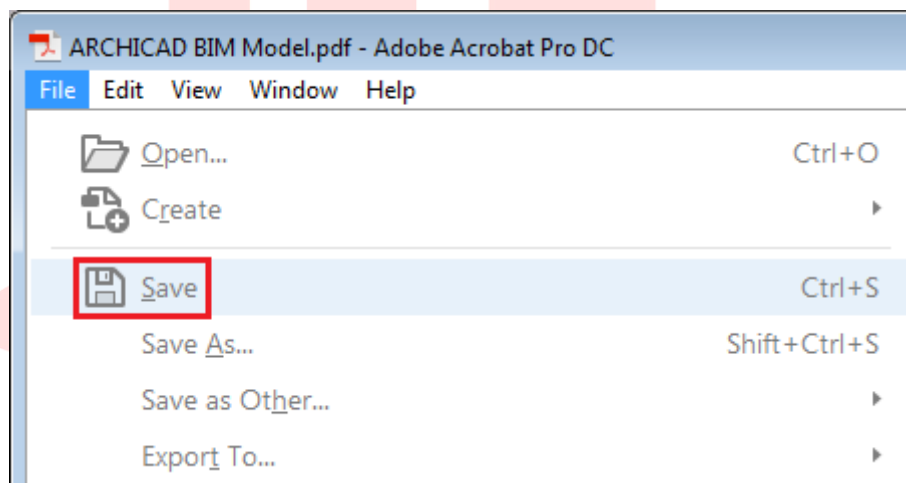
4 Click **Add 3D**.



- 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.

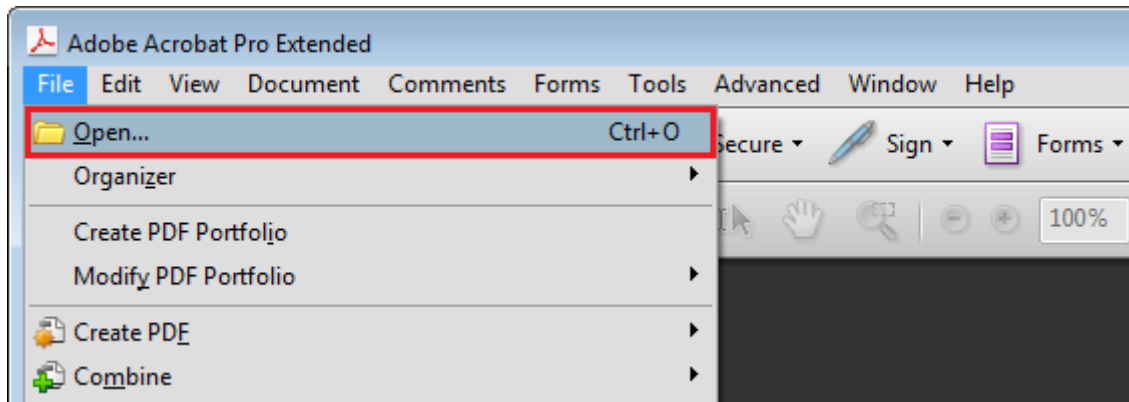
Note: U3D files above 50-100 MB cannot be imported smoothly.

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

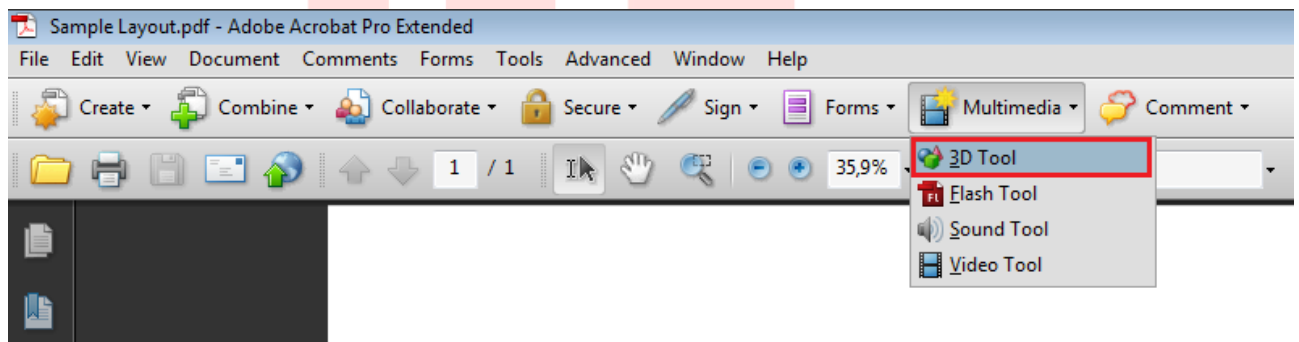


Adobe Acrobat 9 Pro Extended:

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

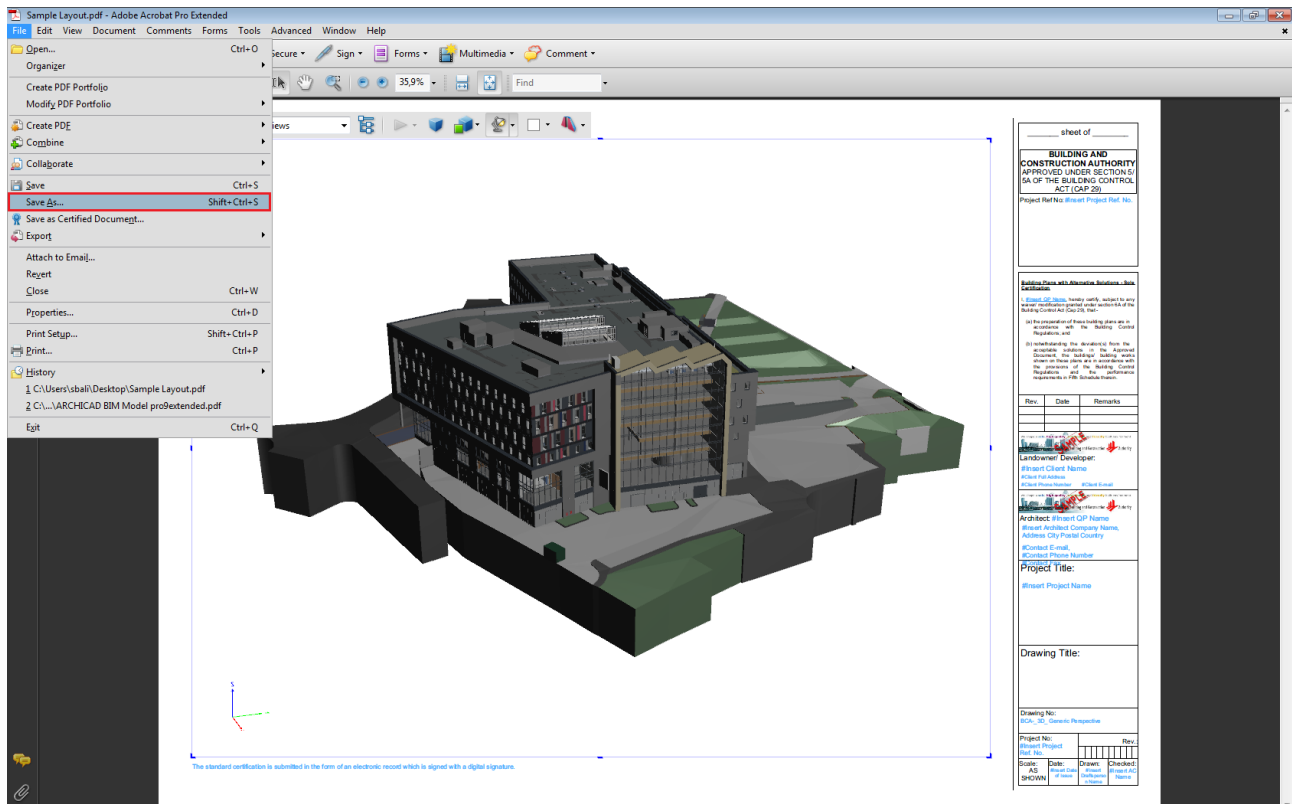


- 2 Select and open the **empty layout PDF**.
- 3 Once opened, use the **3D Tool** option from the **Multimedia** section.



- 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).

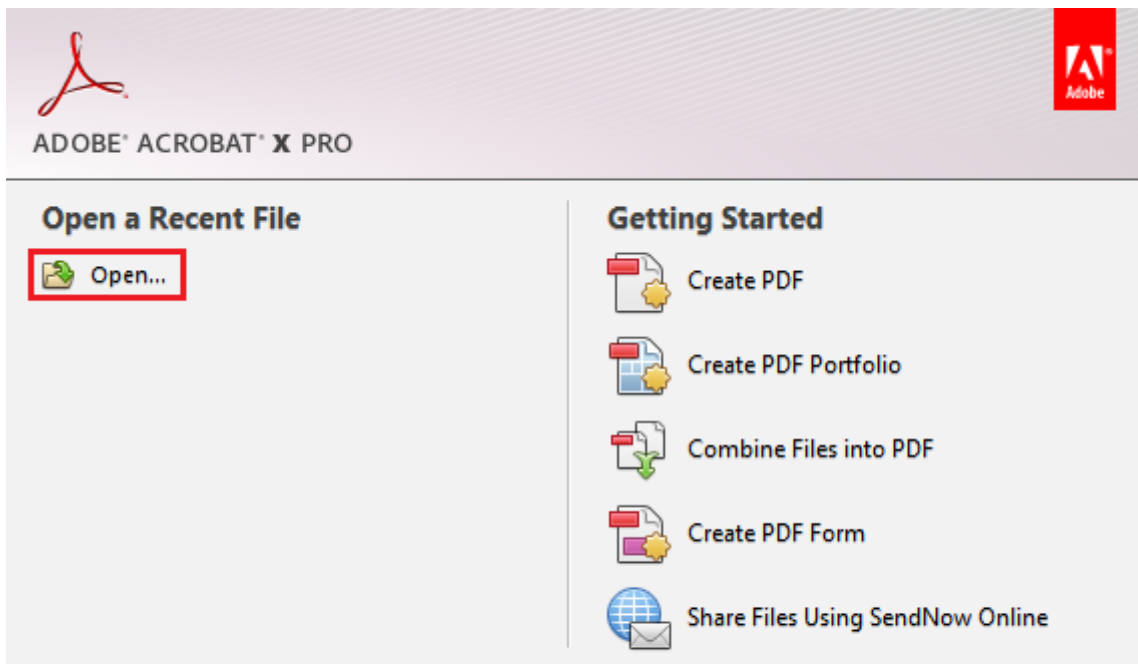
Note #2: To create 3D PDFs without the layouts you can simply open the IFC/U3D files directly instead of pasting them into the layout PDF.

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

You can get the latest version from the Tetra4D website here:

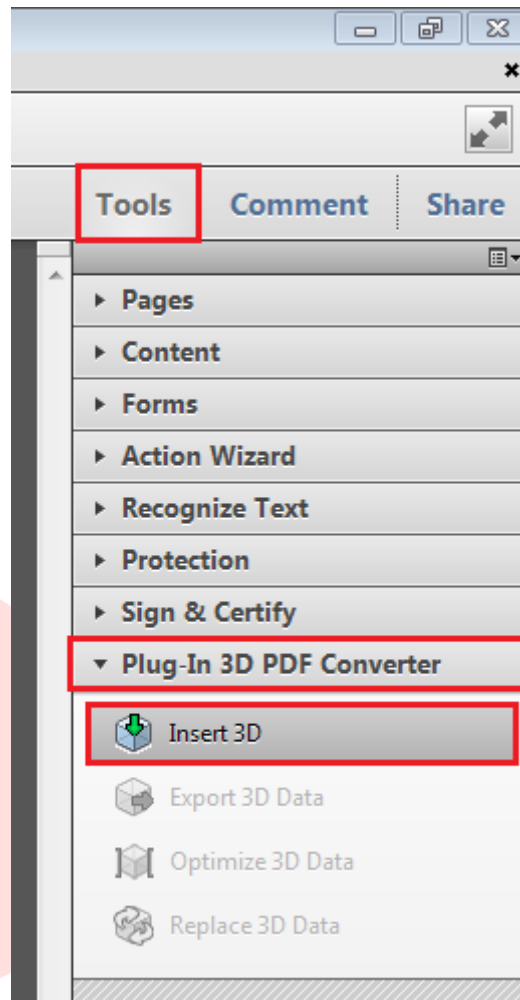
<http://www.tetra4d.com/download>. Make sure you have Adobe Acrobat X Pro or later installed already.

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



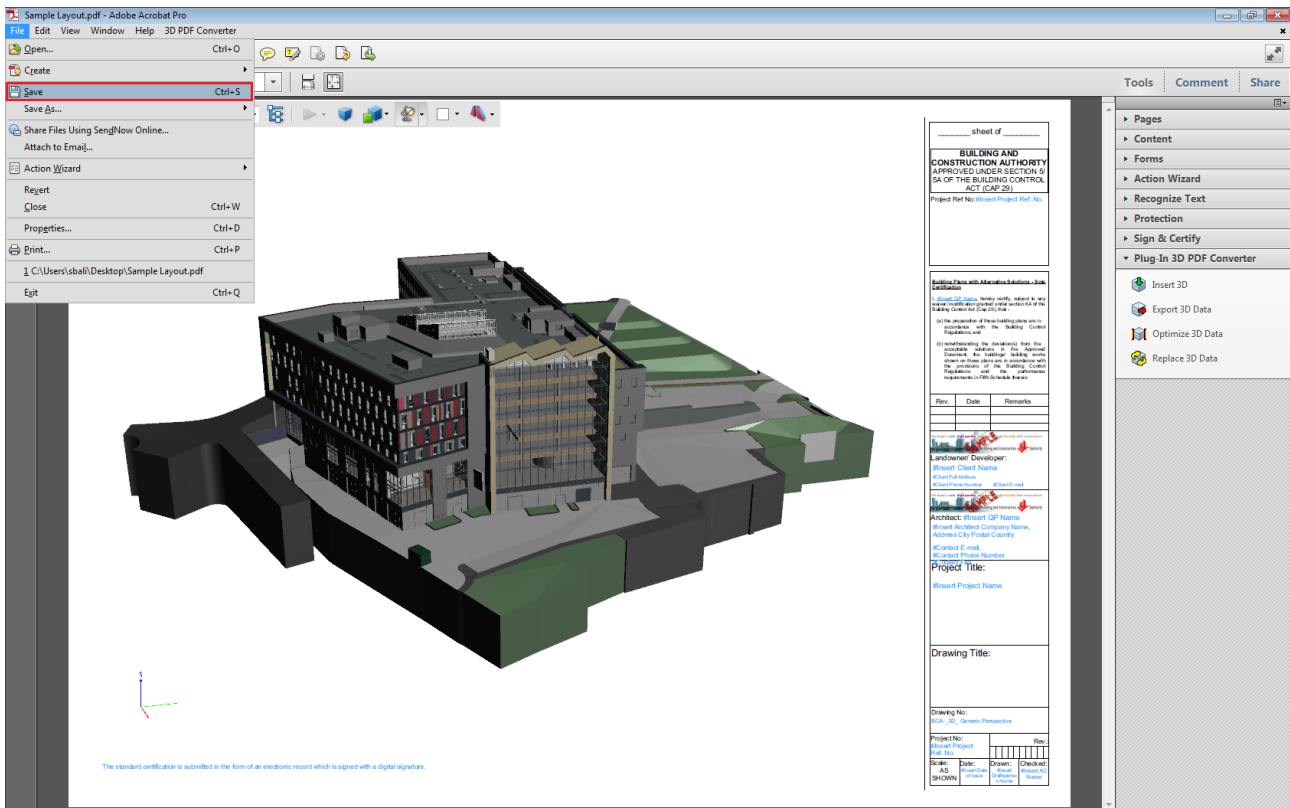
- 2 Select and open the **empty layout PDF**.

- 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, the 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).

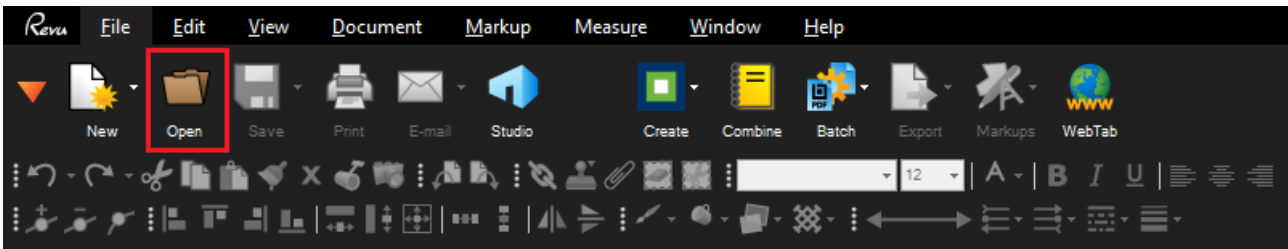
Note #2: To create 3D PDFs without the layouts you can simply open the IFC/U3D files directly instead of pasting them into the layout PDF.

Bluebeam Revu CAD:

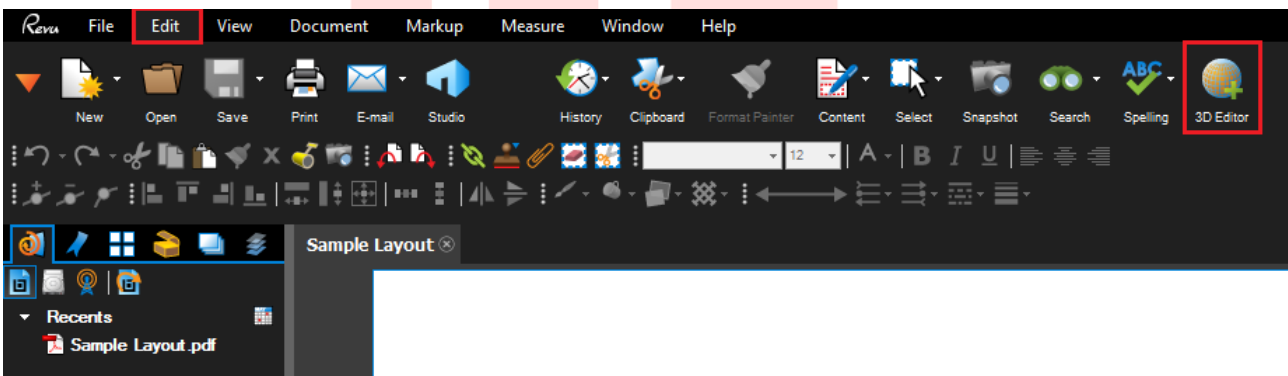
You can get the latest version from the Bluebeam website here:

<http://www.bluebeam.com/us/products/revu/index.asp> (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.

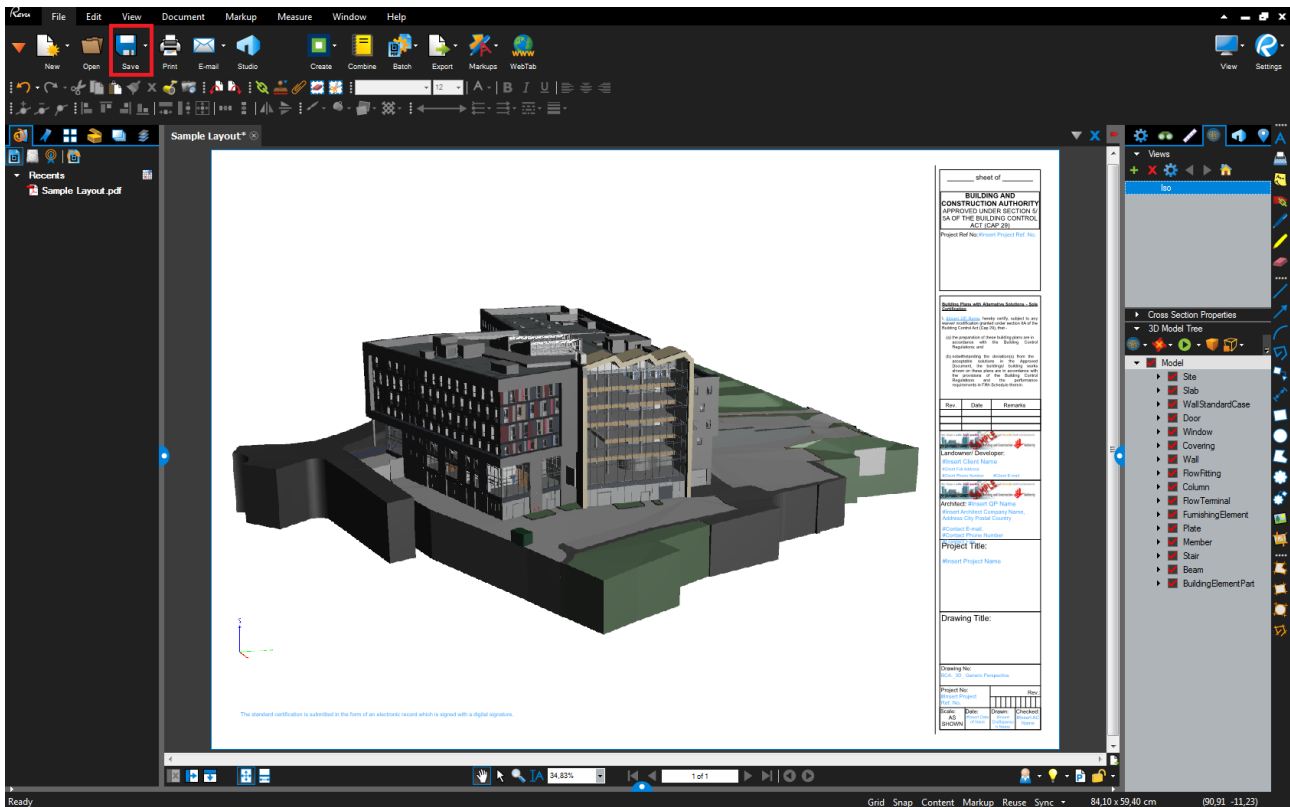


- 2 Select and open the **empty layout PDF**.
- 3 Select the **Edit** tab page on top and click **3D Editor** on the right.



- 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

Revision of the current template and guide done by GRAPHISOFT Singapore.

For any queries please contact:

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Singapore 608531

