Architectural Native BIM Submission Template

for ARCHICAD 21

Building and Construction Authority
52 Jurong Gateway Road, #11-01
Singapore 608550

www.bca.gov.sg

Charles Perkins Centre, Australia | fjmt - francis-jones morehen thorp | Photo by John Golling

Building and Construction Authority

We shape a **safe**, **high quality**, **sustainable** and **friendly** built environment.

Trademarks

Credits

Courtesy of GRAPHISOFT

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If you have any comments, suggestions or clarifications, please contact:

GRAPHISOFT Singapore
152 Beach Road
#10-05 Gateway East
Singapore 189721

Building and Construction Authority
52 Jurong Gateway Road, #11-01
Singapore 608550

Centre for Construction IT
200 Braddell Road
Level 1, Block A, ZEB Building @ BCA Academy
Singapore 579700

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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 21 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 21 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_v21.tpl** file to the default settings folder of ARCHICAD (within the folder ARCHICAD was installed to), usually located at **C:/Program Files/GRAPHISOFT/ARCHICAD 21/Defaults/ARCHICAD**.

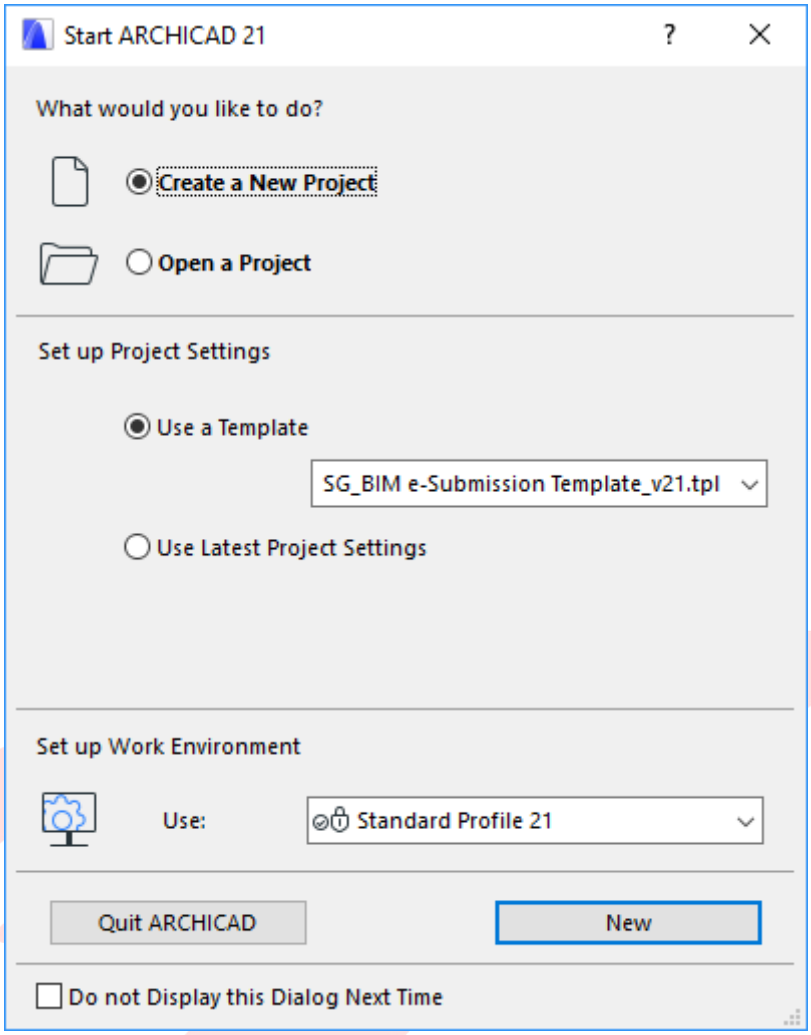
2 Place the **SG BIM Submission Library 21.lcf** library container file into a folder where it will not be modified, moved or deleted, for example any folders which you already use for storing libraries or the **C:/Program Files/GRAPHISOFT/ARCHICAD 21** installation folder.

3 Launch **GRAPHISOFT ARCHICAD 21** using the desktop shortcuts.

4 The Start ARCHICAD 21 dialog appears, choose **Create a New Project** and select **Use a Template**.

5 Click into the dropdown list and use the **Browse Template...** option to locate the **SG BIM e-Submission Template_v21.tpl** template file.

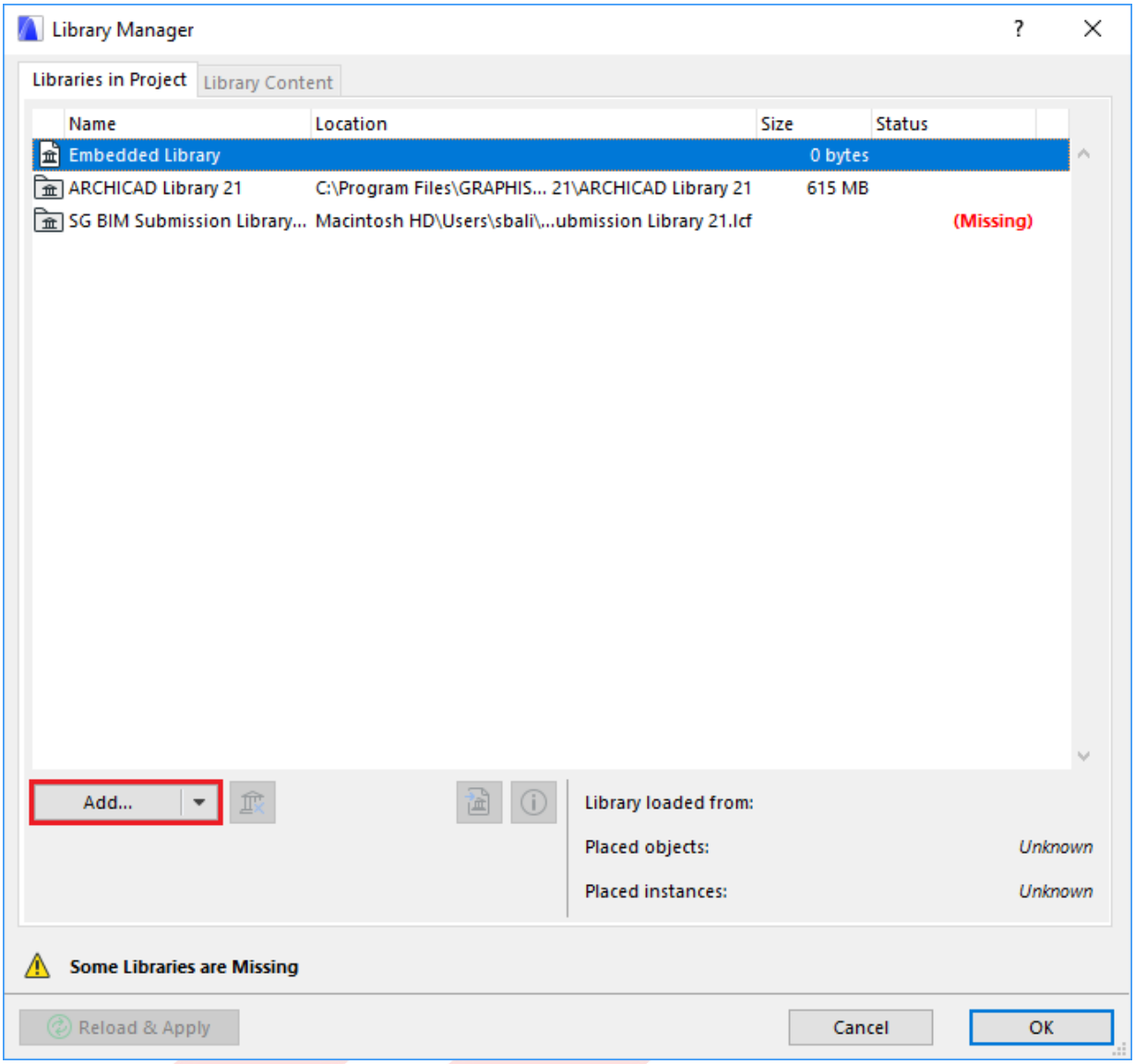
6 Choose the **Standard Profile 21** Work Environment and click **New**.



Note #1: To ensure the authenticity of the downloaded template file, make sure you obtain it from the CORENET BIM Support Team at:
https://corenet.gov.sg/general/building-information-modeling-(bim)-e-submission.aspx

Note #2: The template is constantly improved based on user feedback, therefore minor differences may occur between the actual version and the screenshots presented in this guide. Only the latest versions of the template are available on CORENET.
The naming of the template file indicates the updates and revisions, such as **...Template_vXX.tpl** for the initial version, then **...Template_vXX.1.tpl**, **...Template_vXX.2.tpl**, etc., if available subsequently.

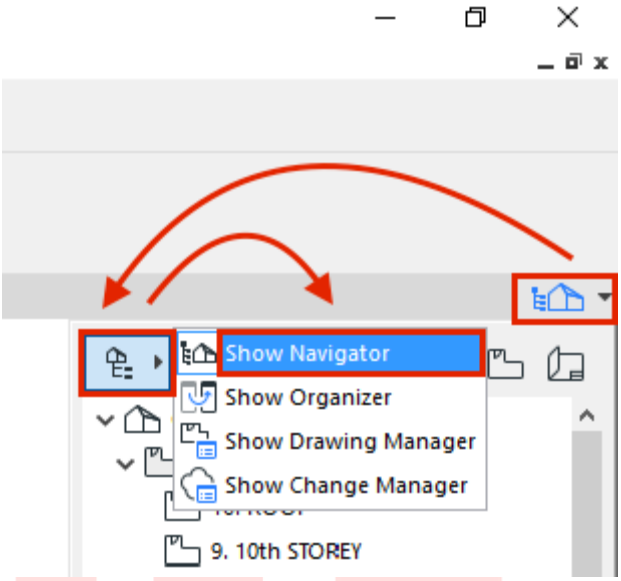
7 Once ARCHICAD 21 is launched, it may prompt for missing elements of the LCF file.



8 Click **Add...**. Locate the LCF file and click **Open**.

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

10 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.

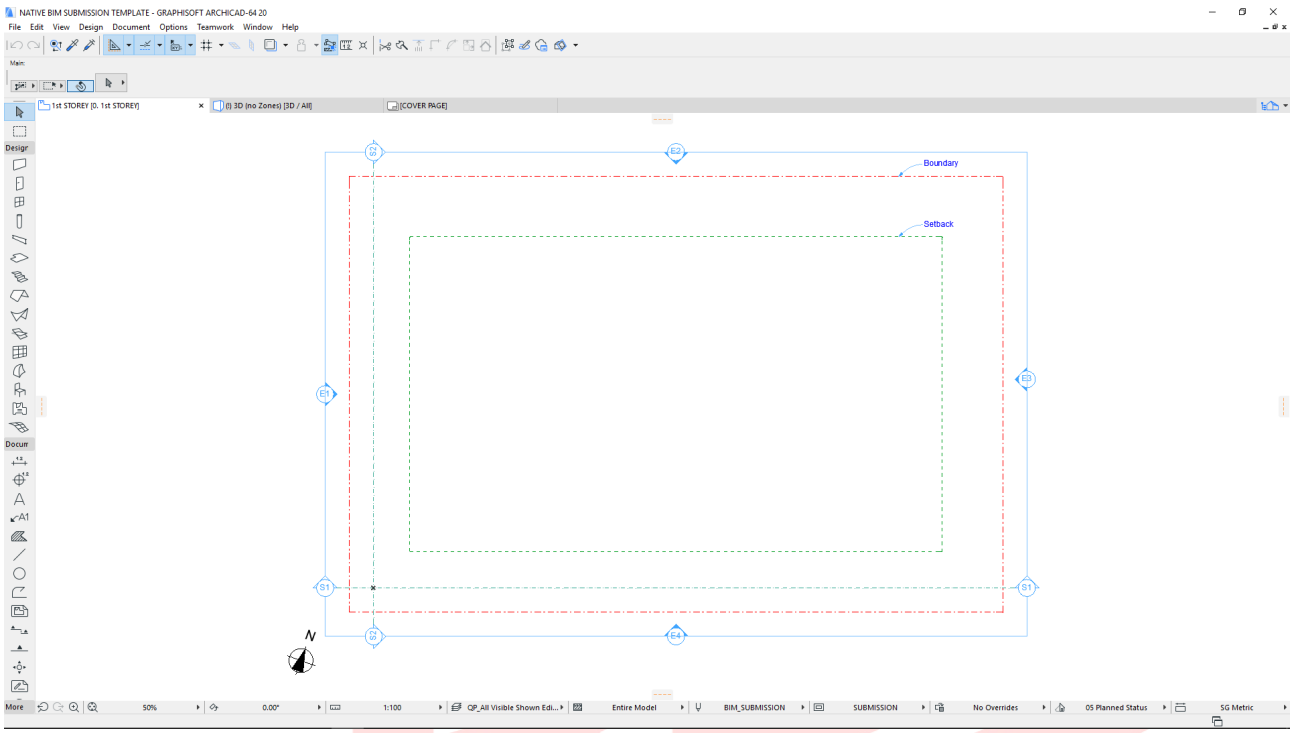


Find more information on the Pop-up Navigator
at the GRAPHISOFT Help Center here:

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

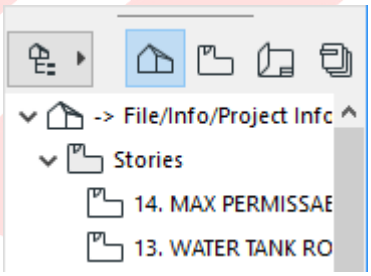
PART II - THE ARCHICAD NAVIGATOR

By default the Navigator palette is not shown (see previous chapter).

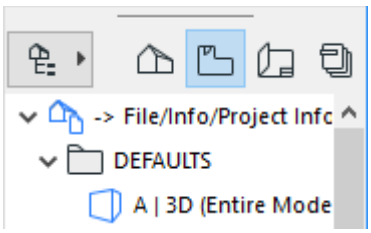


Once turned on, the Navigator palette is displayed on the right side of the interface, containing the following tabs/selectors:

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

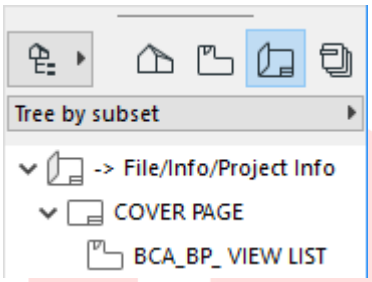


- **View Map** - model views filtered for different purposes. The folder structure here is organized for the native BIM submission.



- **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.

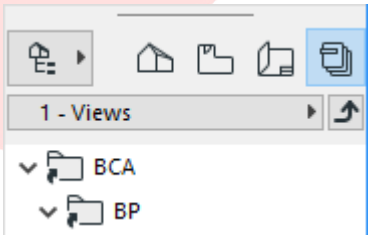
  For CP83 submission or project phases after the submission you will still want traditional 2D format deliverables. Expand the **Masters** section and double-click a master layout to open it. The title blocks on the right can be customized to meet you company standards. Feel free to customize the title 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 21 Template:

- Extended Story setup (foundation and roof storeys)
- Revised View Map naming convention
- Full set of Working Views and defaults for 3D, architectural and structural
- Separate folders for SGFA Plans
- Publisher Sets with various examples for different workflows (reference modeling and one-model concept)

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.

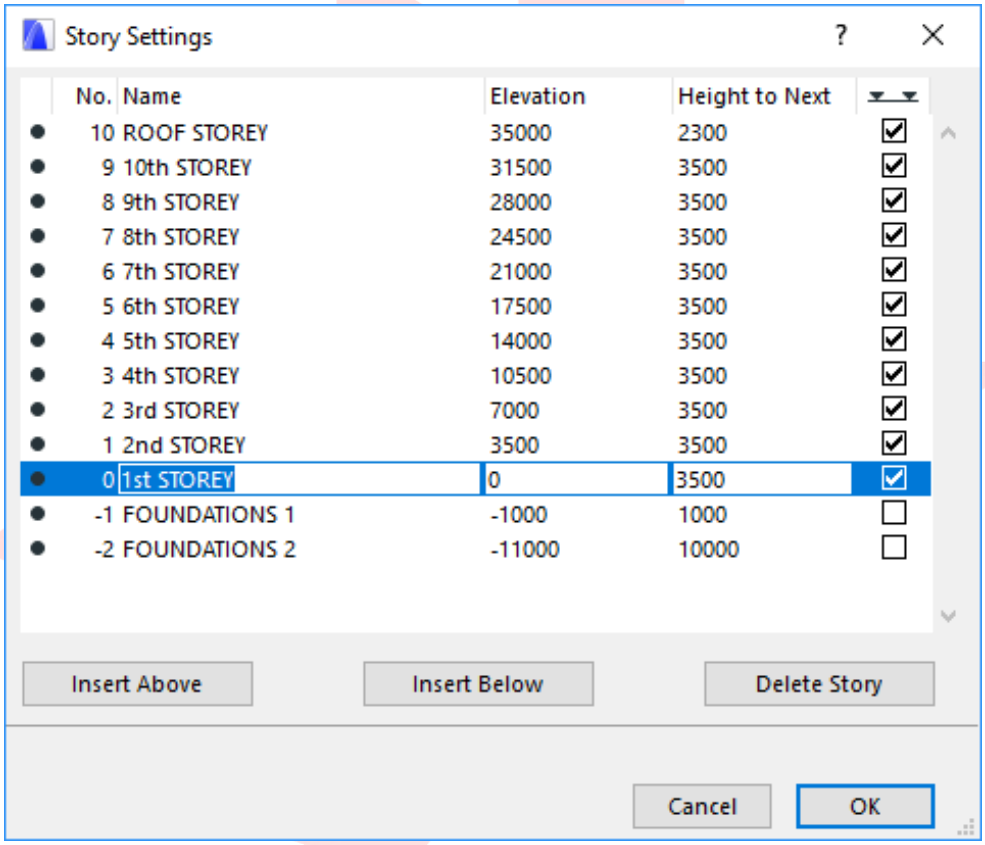
Note: Traditional submission formats are still accepted, but not supported or recommended by BCA, nor GRAPHISOFT Singapore as the creator of this template from July 2016 onwards.

PART III - STOREYS, PROJECT LOCATION AND REFERENCE LEVELS

By default the template contains 10 generic storeys, a roof and foundations. To edit the Story Settings use the **Design/Story Settings...** menu command.

All generic 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:

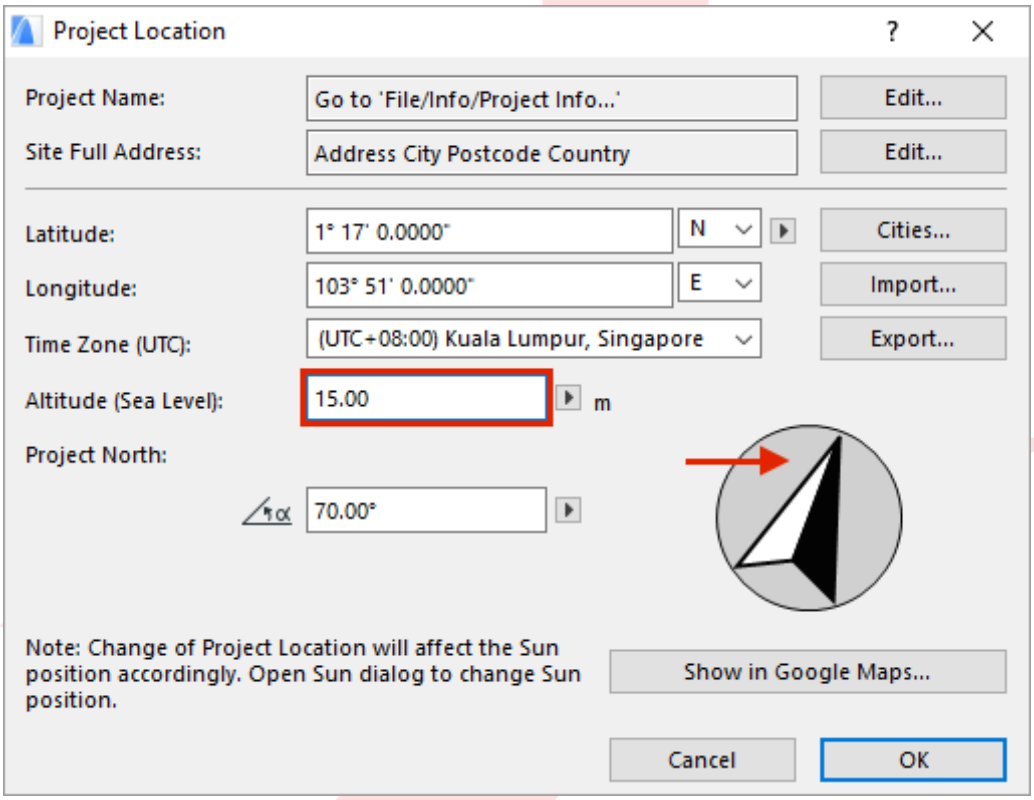
http://helpcenter.graphisoft.com/guides/archicad-19-int-reference-guide/views-of-the-virtual-building-3/archicad-model-views/stories/

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 ±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).



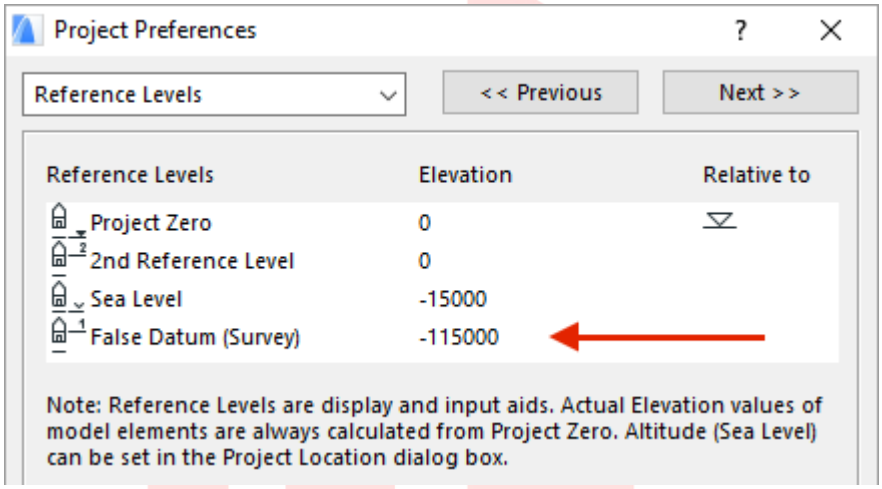
2 Additionally you can also set Project North either by typing the value or simply clicking on the symbol and rotating it within the dialog.

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:

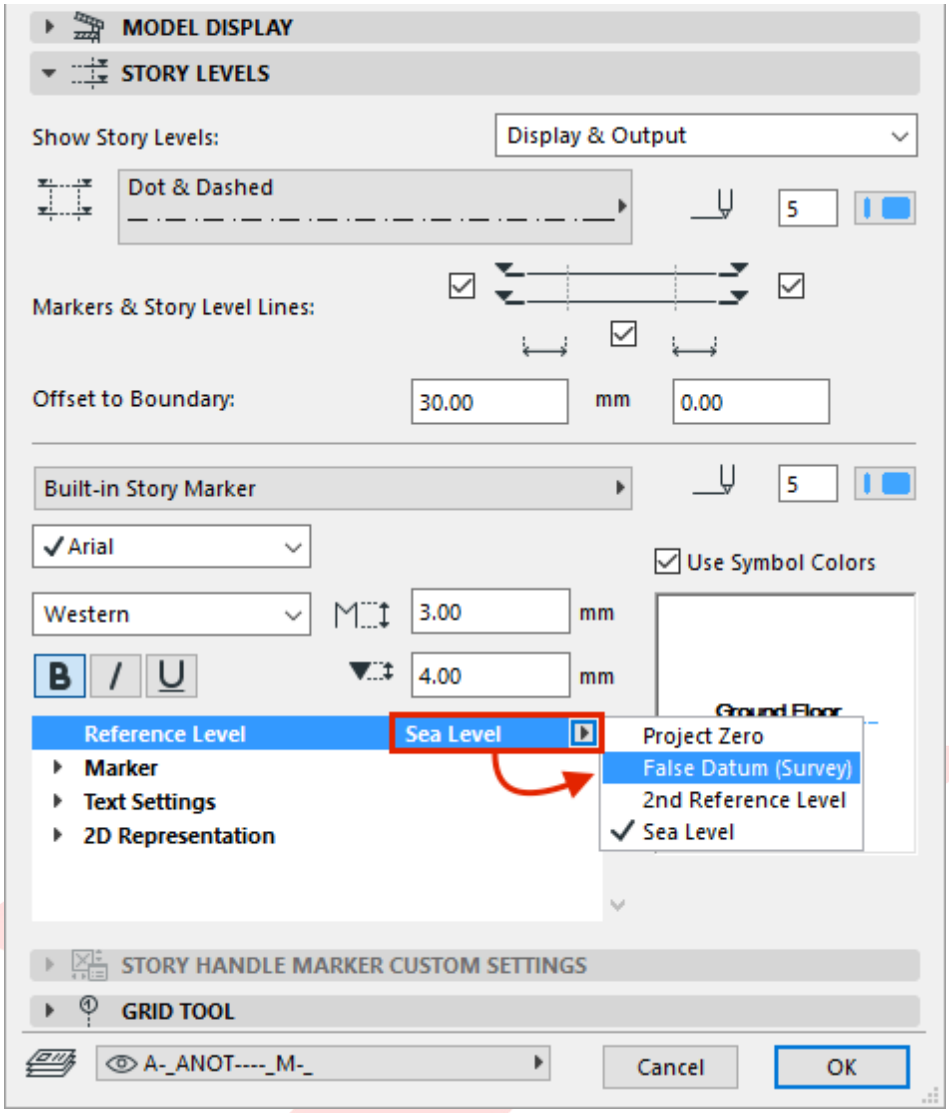
1 Go to **Options/Project Preferences/Reference Levels...** dialog and change the values of the **2nd Reference Level**. The units of the values follow the working unit settings, millimeters by default. The 1st Reference Level has been altered to display *False Datum*. By choosing that option when placing 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.



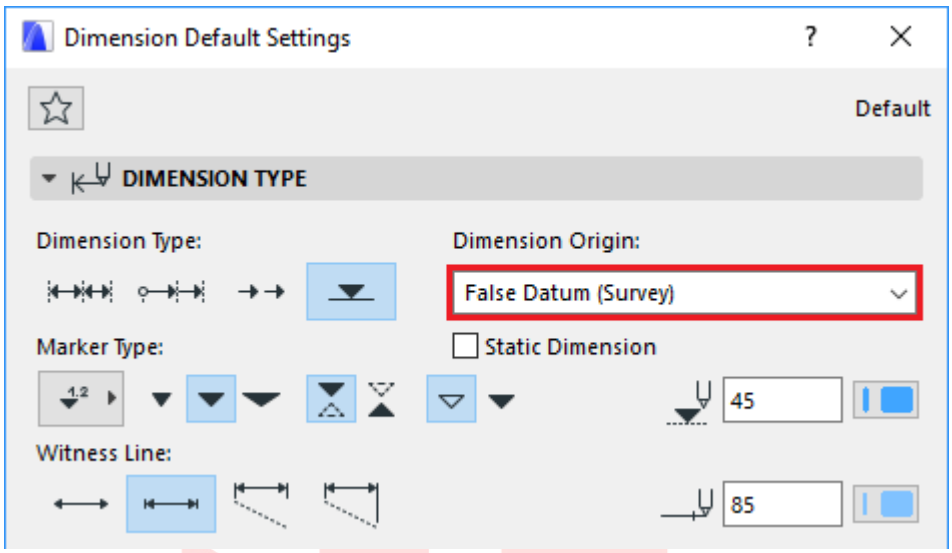
Find more information on the Reference Levels
at the GRAPHISOFT Help Center here:

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

2 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.



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).

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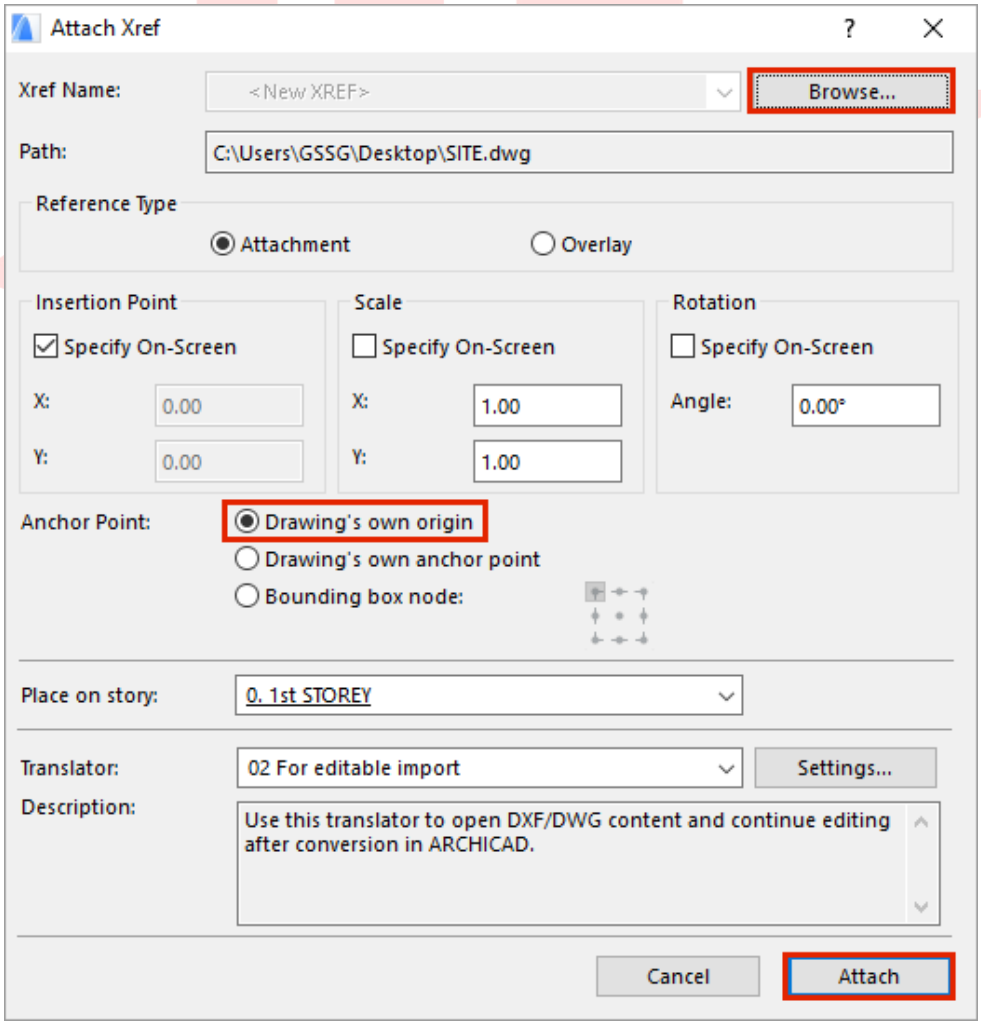
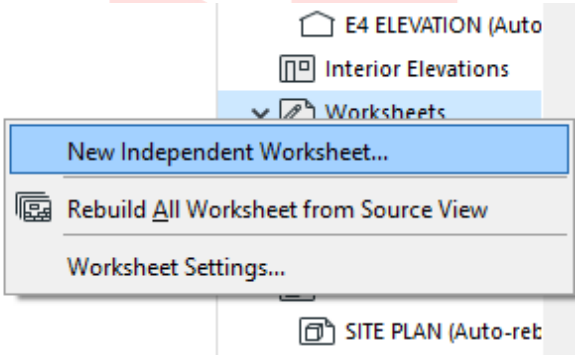
2 Browse for the file and make sure the **Drawing's own origin** is selected as an Anchor Point and click **Attach**.



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 you translator. Click a spot to define the origin point of the topography map.

Note: 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).



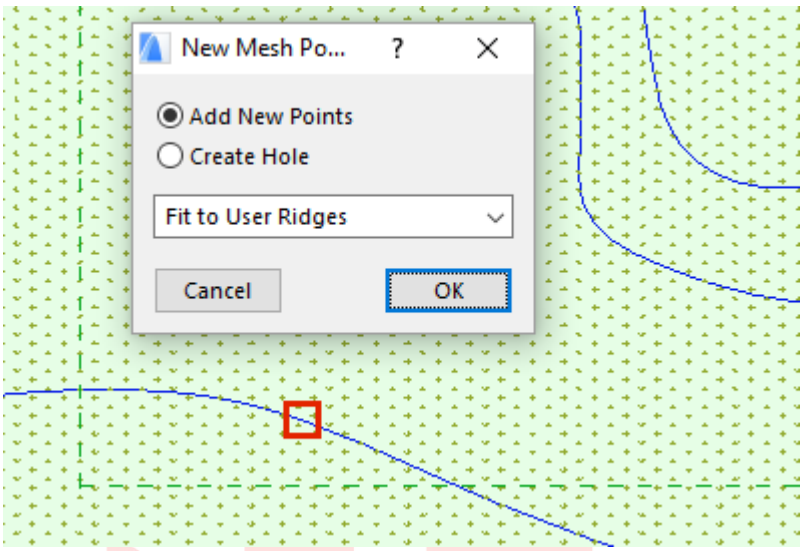
5 Select the elevation and section markers and adjust them to the topography map. Similarly you will need to move the boundary lines and the setback lines. These lines will be automatically updated on the elevation and section viewpoints.

6 To create a model of the terrain, use the **Mesh tool** in the Toolbox. Draw the boundaries of the terrain.

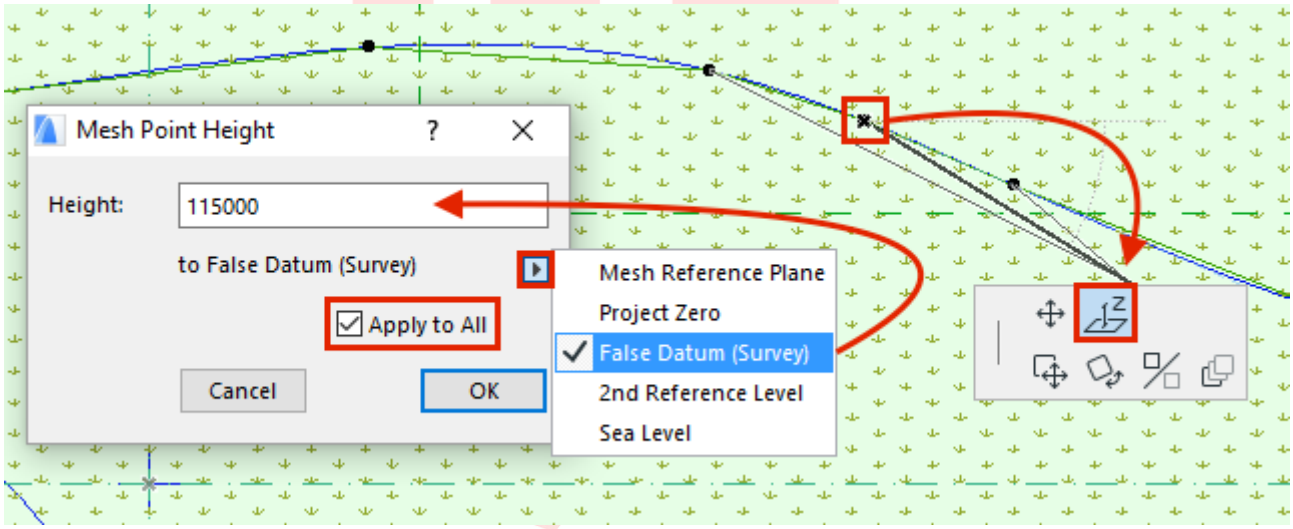
7 Recreate continuous mesh ridges by first selecting the **mesh** in the model space, then activating the **Mesh tool** in the Toolbox.

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.



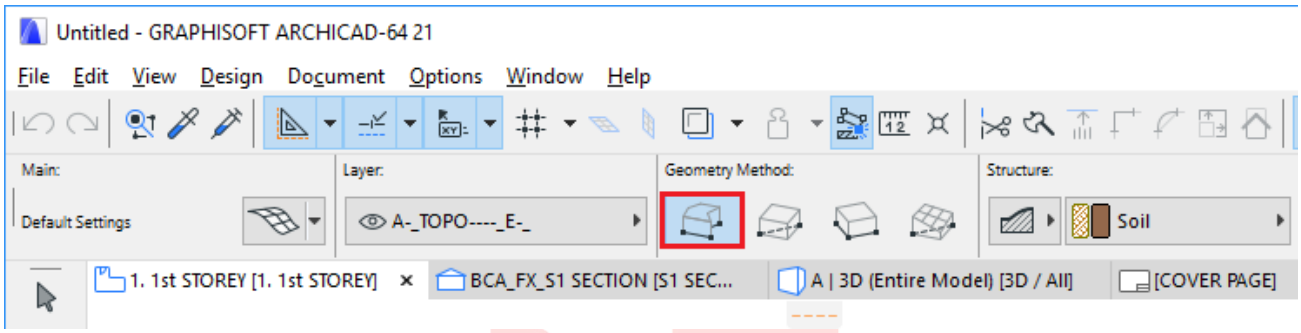
10 When done creating the ridges make sure that the mesh is selected and the Mesh tool is still activated. Click on a **node** of a ridge and choose the **Elevate Mesh Point...** command of the Pet palette. Check the **Apply to All** checkbox to raise all nodes of the ridge and choose the appropriate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

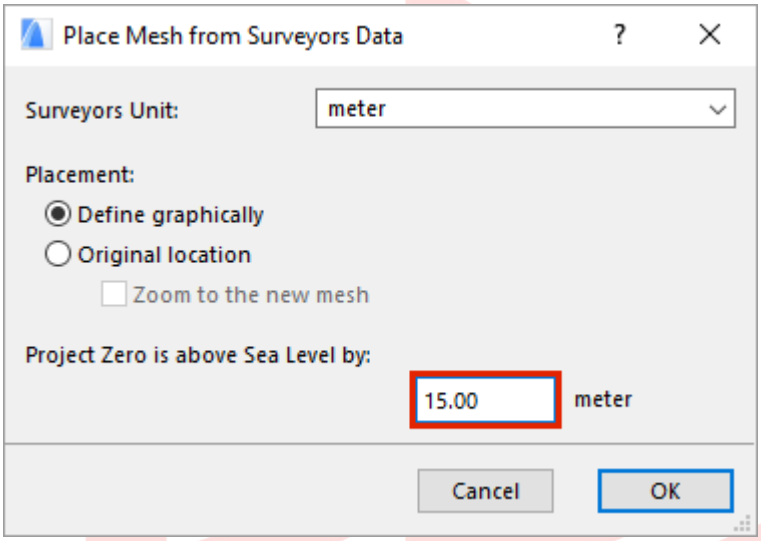
3 Elevate the points one-by-one using the **Elevate Mesh Point...** command (similarly to the ridges).

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.

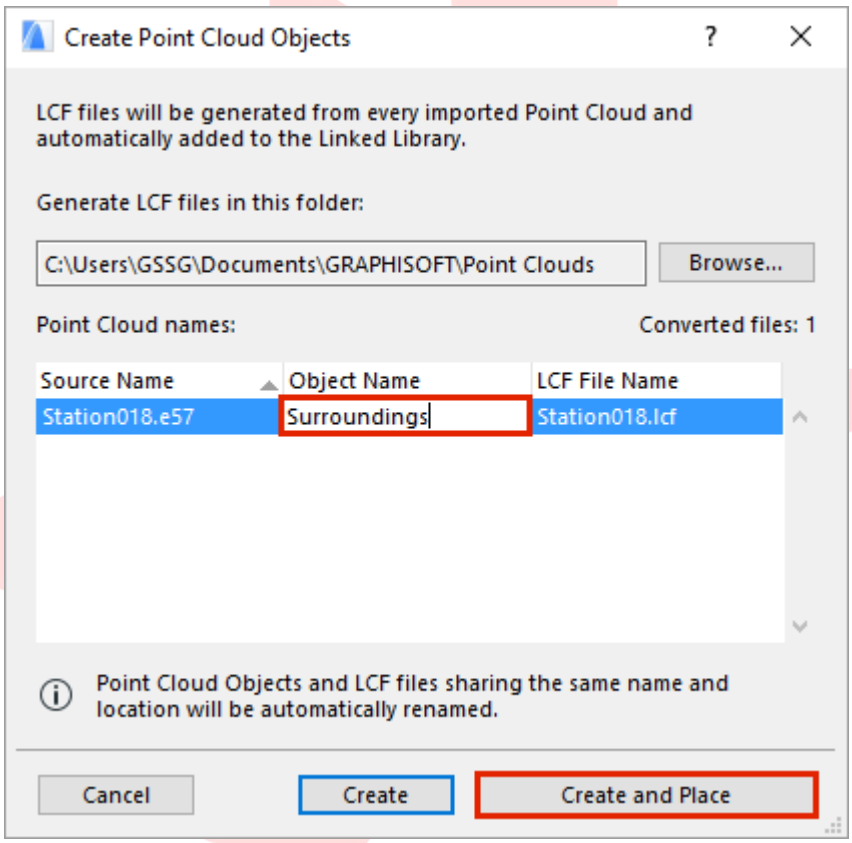
Point Clouds

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.

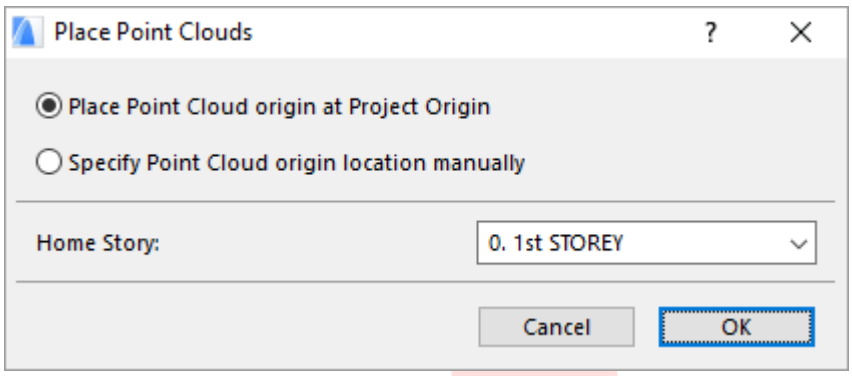
2 Select the desired point cloud file and click **Open**. The Format Conversion dialog will appear if importing an XYZ format point cloud file.

3 In case of E57 format you only need to specify the name of the object the point cloud will be converted to.

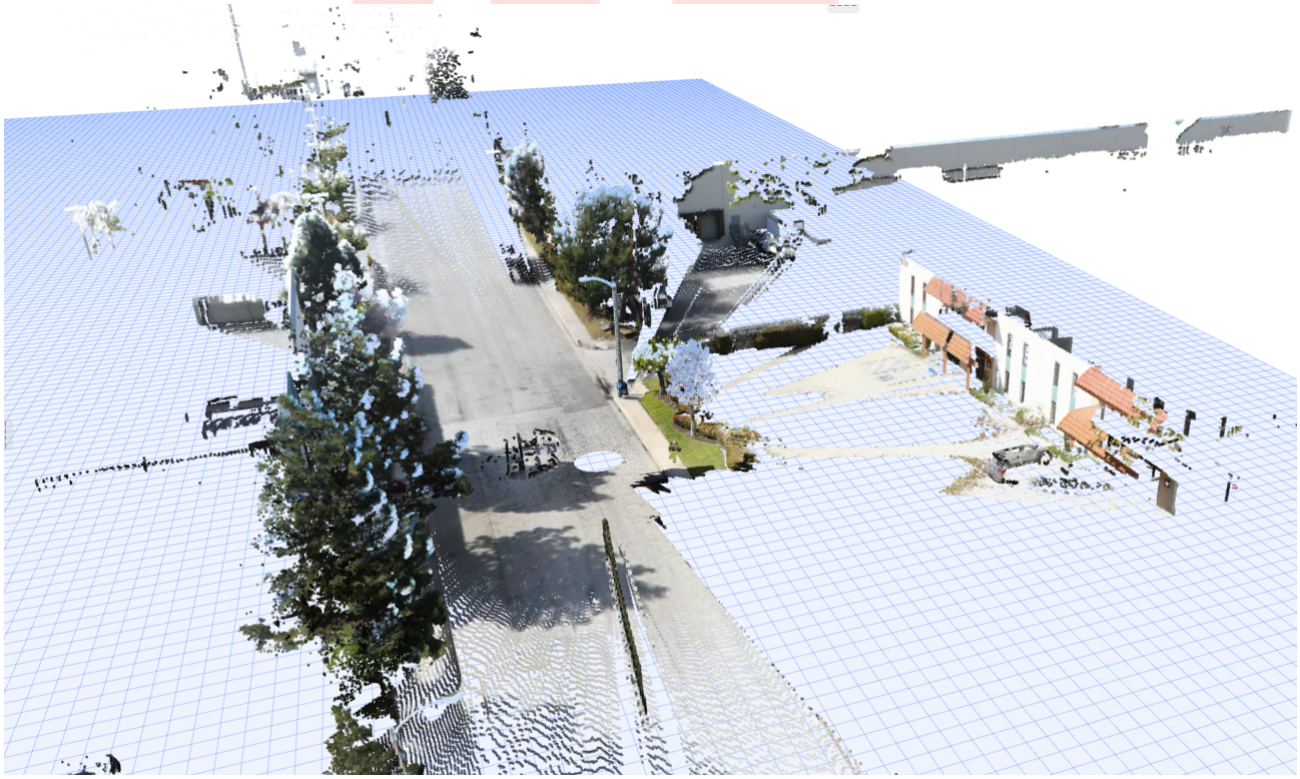


4 Specify the name of the object that will be created after the import in the Create Point Cloud Objects dialog and click **Create and Place**.

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

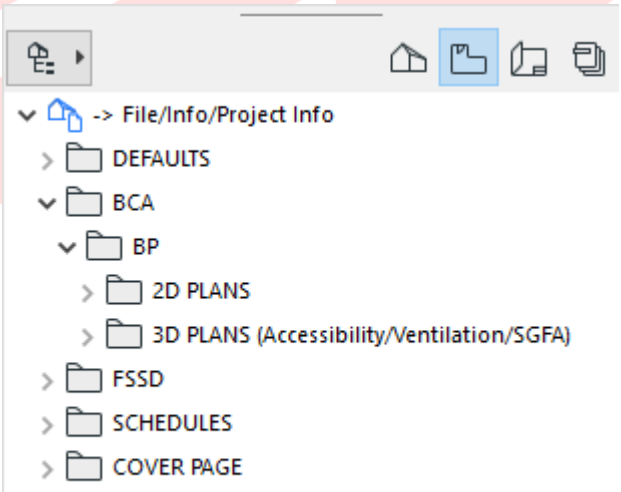
The Navigator - View Map contains predefined views, which can be used as-is for the submission:

- The **DEFAULTS** folder contains views to help the QPs with modeling, by storing default settings in which all elements are visible and editable - 3D views for generic references and the **WORKING VIEWS** folder, a Cloned Folder of the Stories viewpoints of the Project Map for both architectural and structural modeling (named with A | and S | prefixes respectively). In case structural views are not needed, the views can be deleted.

- 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 **FSSD** folder contains Views specifically highlighting the shelters.

- 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.

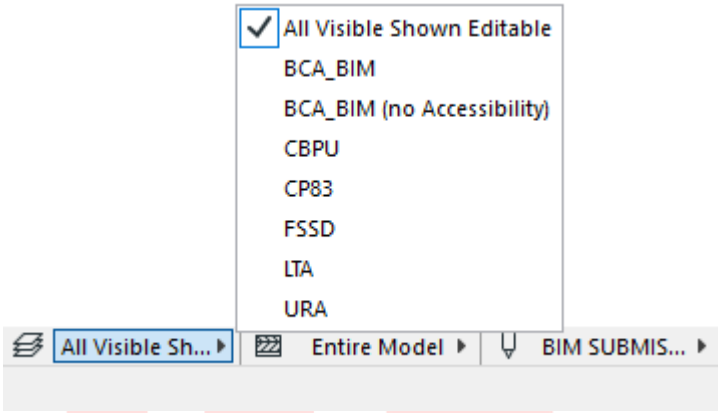


- The **COVER PAGE** folder is purely to collect views that are part of the submission cover page.

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.

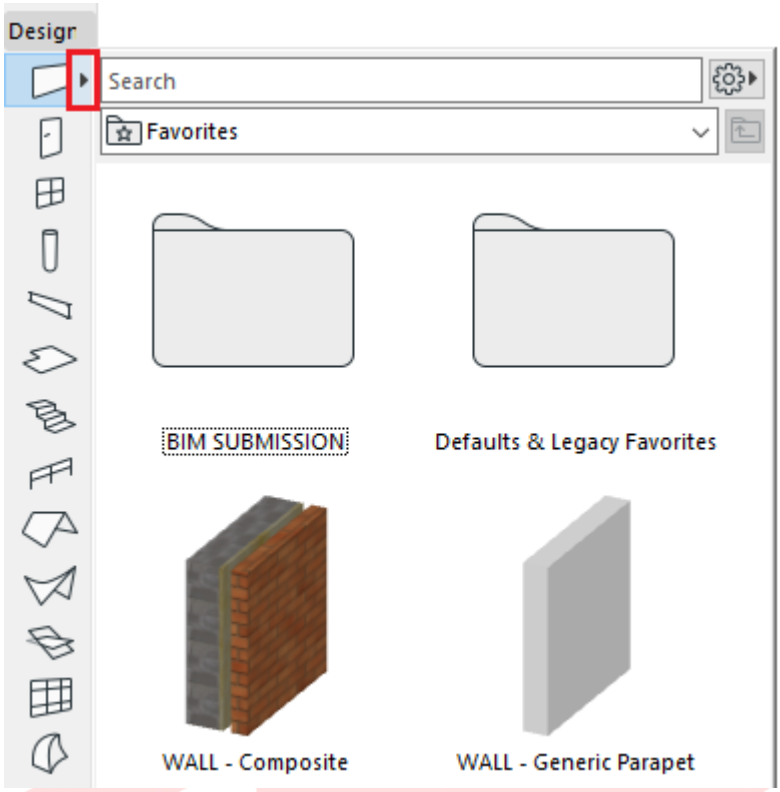
ARCHICAD 21 has the *Quick Options* at hand at the bottom of the screen on a bar. Click the layer setting selector and switch to the **All Visible Shown Editable** layer combination.



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.



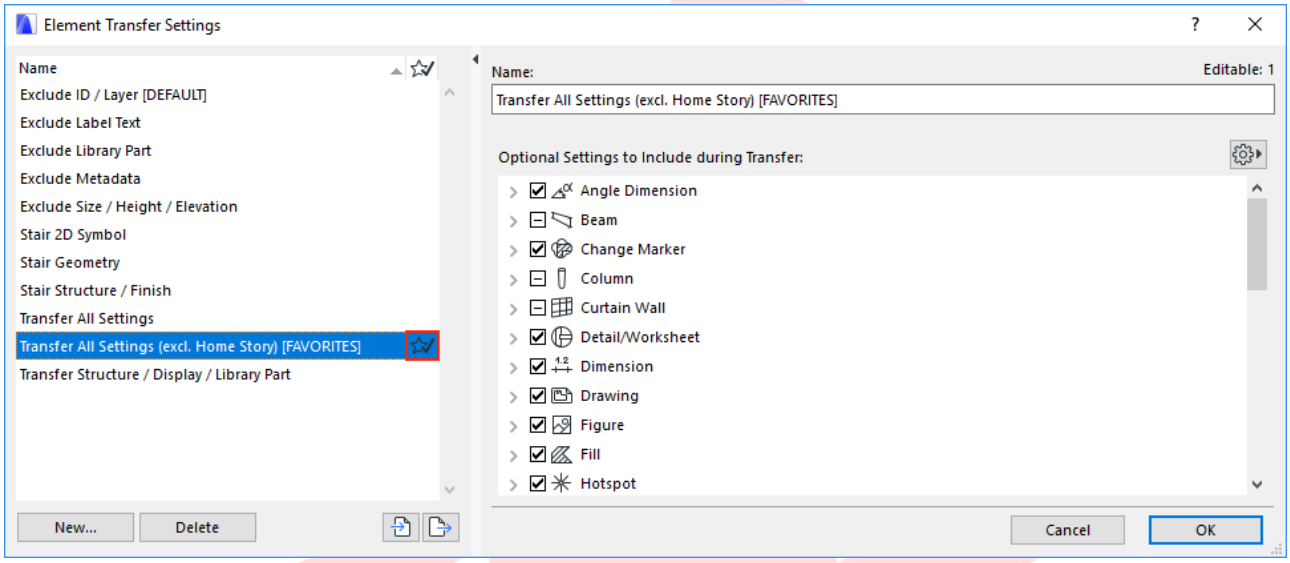
- **Free-floating** items in the root folder are generic Favorites.
- The **BIM SUBMISSION** folder contains the Favorites needed specifically for submission.
- **Defaults & Legacy Favorites** contain Favorites from the standard ARCHICAD template, Favorites for CP83 submission (not recommended) and the defaults for each element. These can be deleted if the user finds them irrelevant.
- **STRUCTURAL ELEMENTS** shall be used in case the structural elements will be used directly from the architectural model when working with the structural disciplines later (integrated model workflow only), otherwise (reference model workflow) can be deleted.

To ensure that the Favorites work correctly, always check the Element Transfer Settings on the Favorites Palette.

1 Open **Window/Palettes/Favorites**.

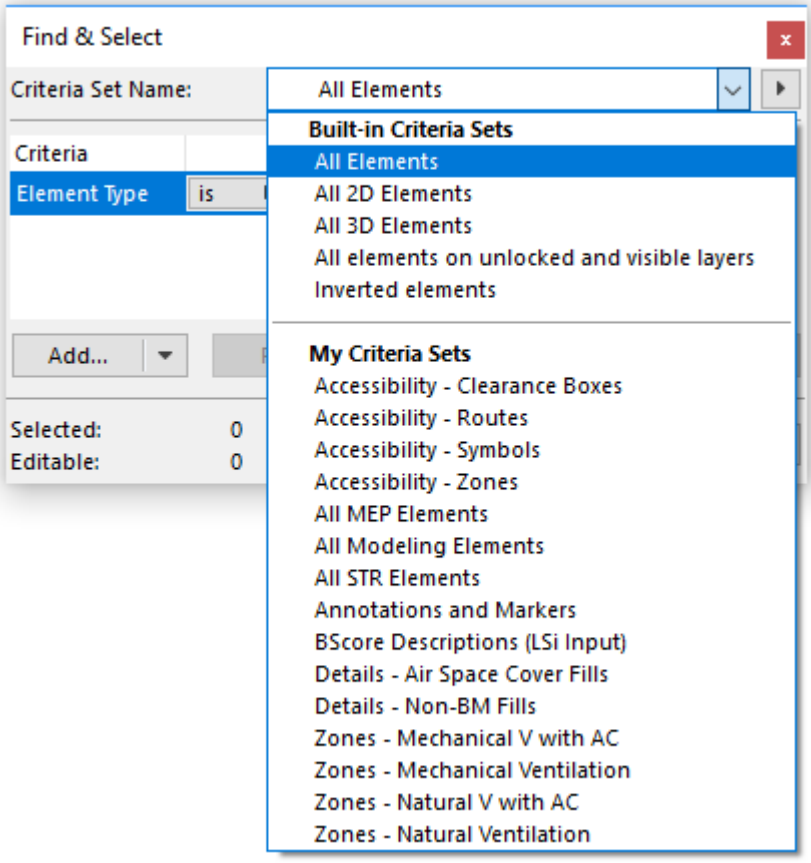
2 Click the **cogwheel** on the top right of the palette and choose **Element Transfer Settings....**

3 Check if **the star appears next to Transfer All Settings (excl. Home Story) [FAVORITES]**. This means that the transfer settings (on the right) stored in the selected preset will be applied when saving/using Favorites.



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 21 Template:

- Renamed Find & Select criteria sets, new sets for MEP and STR

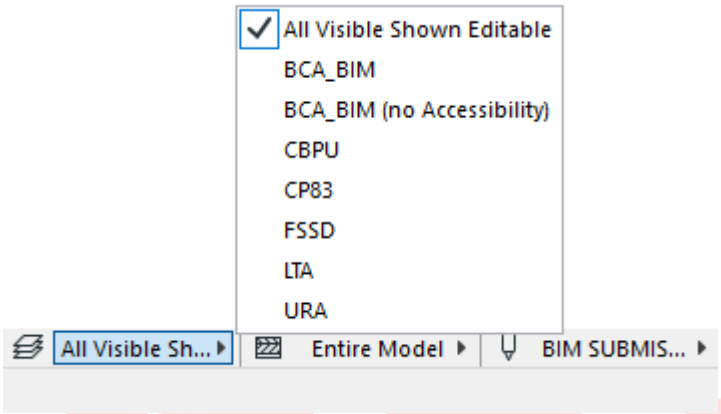
Editing in general

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 **DEFAULTS/WORKING VIEWS** views from the **View Map** to gain access to all editing functions.

OR

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



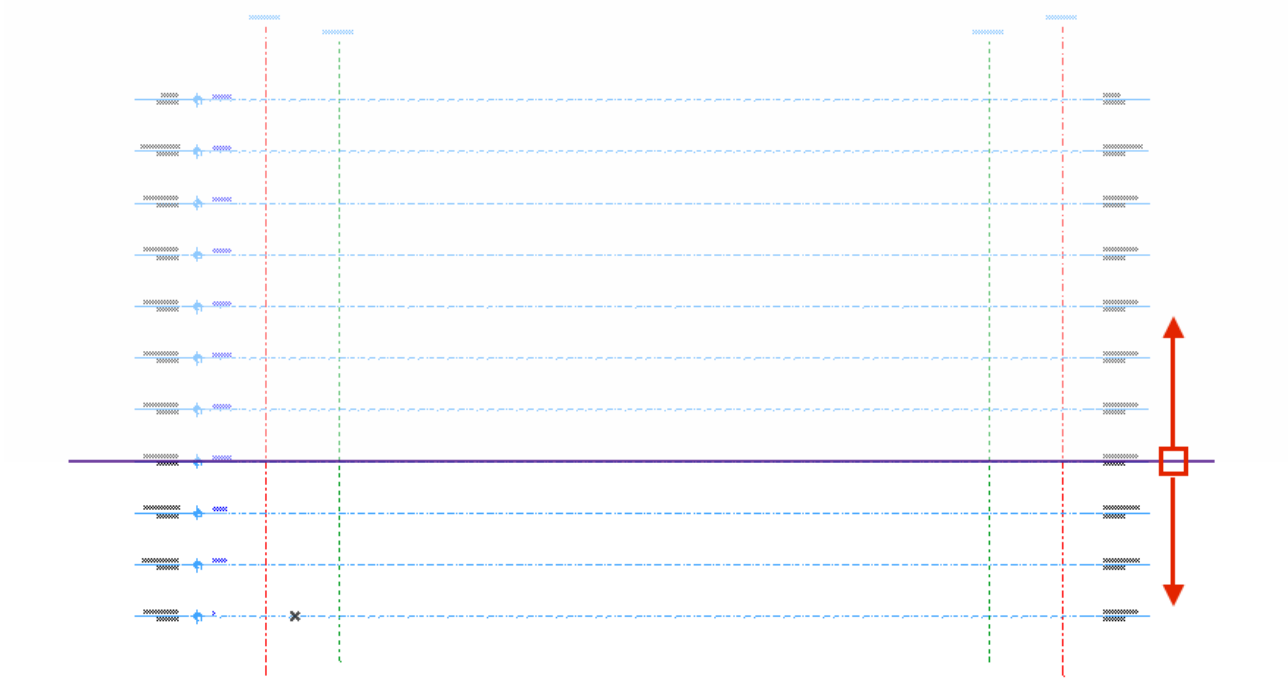
Note: Schedules are editable in all views by default.

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.



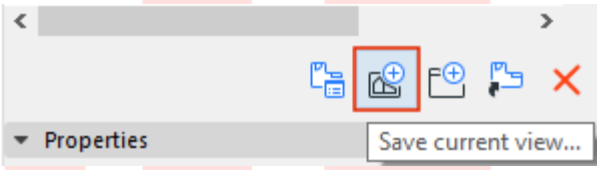
Creating/modifying Floor-by-Floor 3D Views (3D Cutaway Planes)

1 Open any of the views of the **BCA/BP/3D PLANS** folder in the View Map.

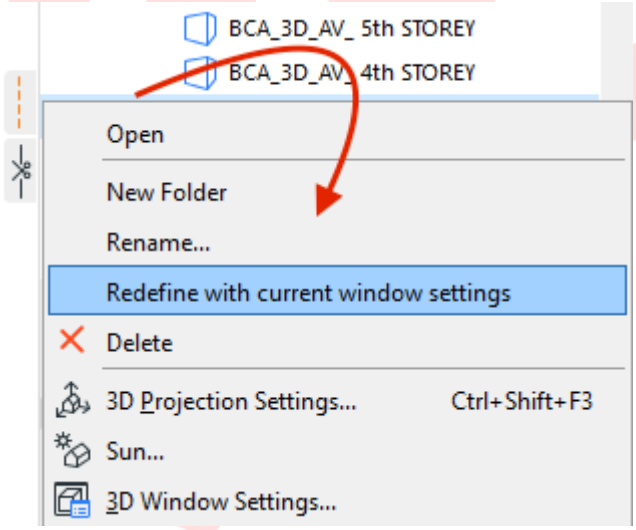
2 Use the **3D Cutaway Plane** function of the Standard Toolbar to set the trimming.

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.



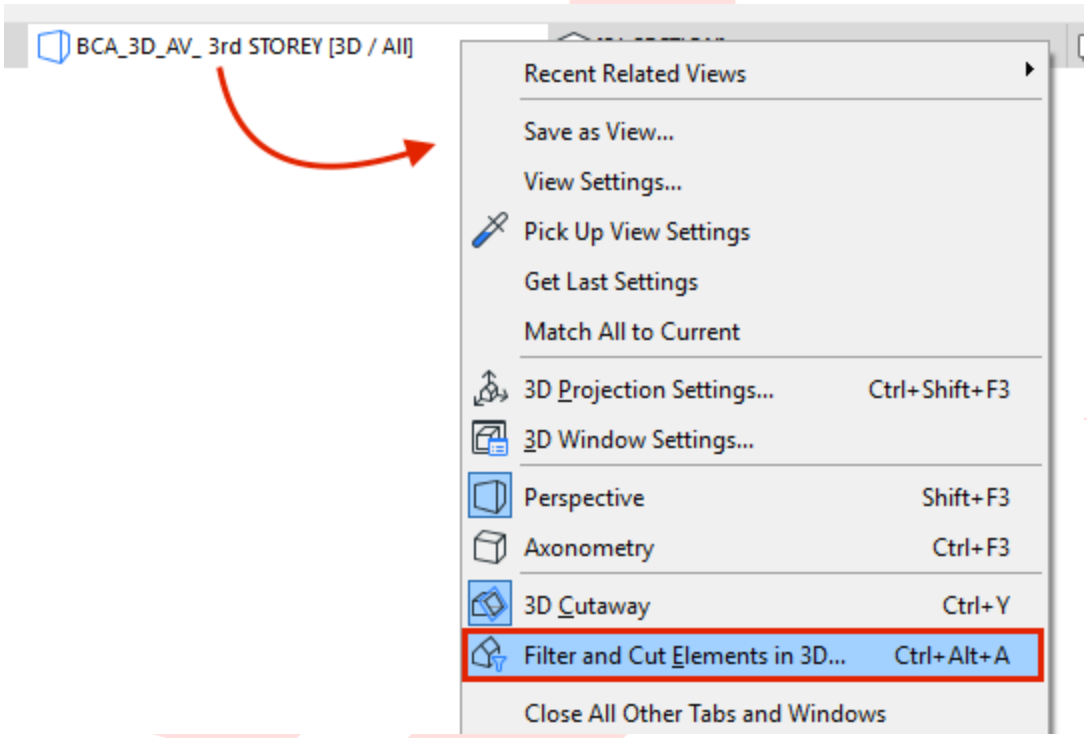
Note: When changing story heights (**Design/Story Settings...**) the elevation of Cutaway Planes must be readjusted.

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.

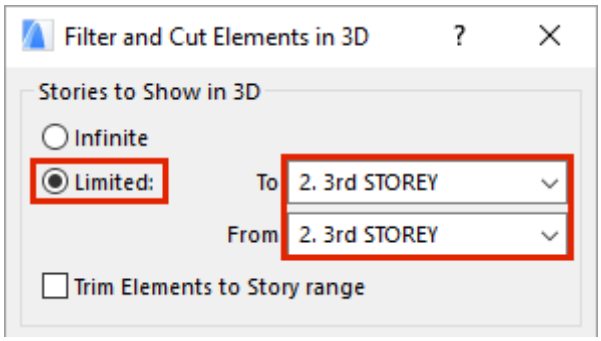
2 **Turn off** the Cutaway Planes, the full 3D model will be shown.

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

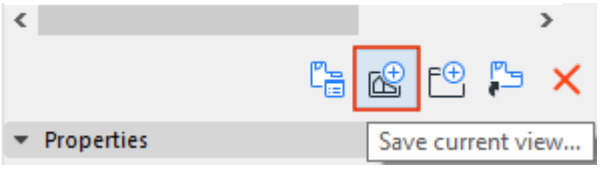


4 Set Stories to Show in 3D to **Limited**.

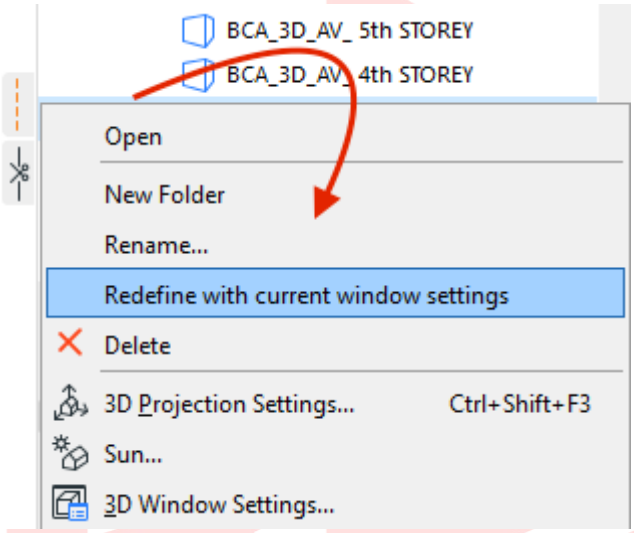
5 To/From: **Select the story for both options** for which you want to create the 3D floor plan and click **OK**.



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.



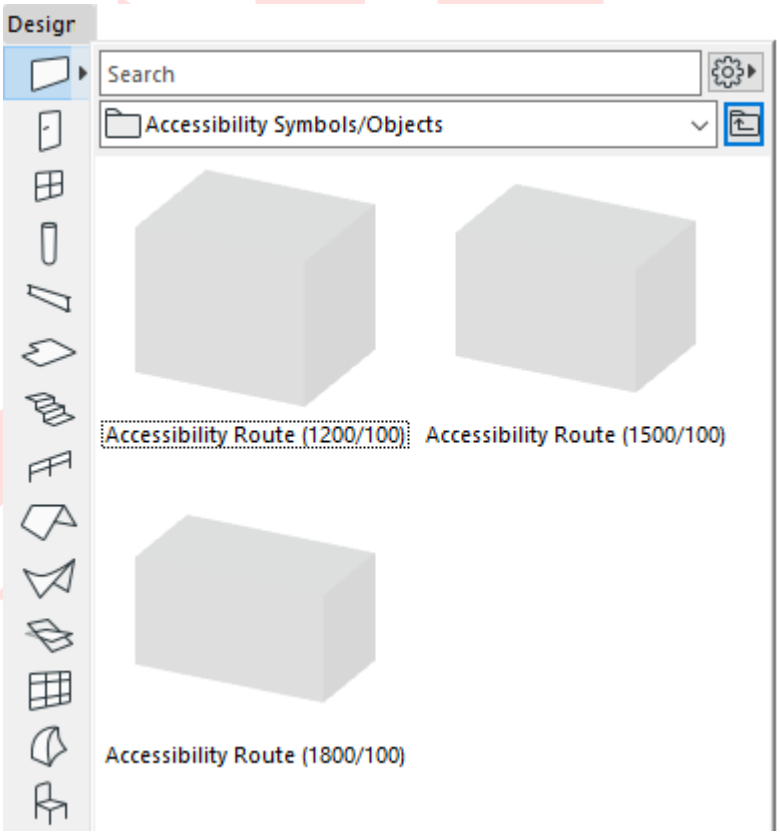
PART VII - ACCESSIBILITY & VENTILATION

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

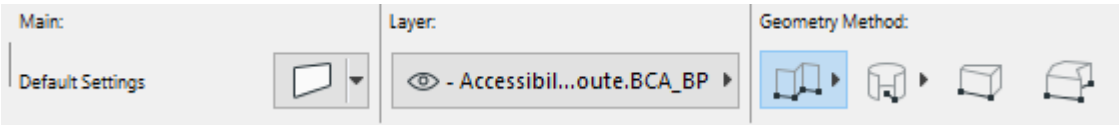
Accessibility routing is using the Wall tool.

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.

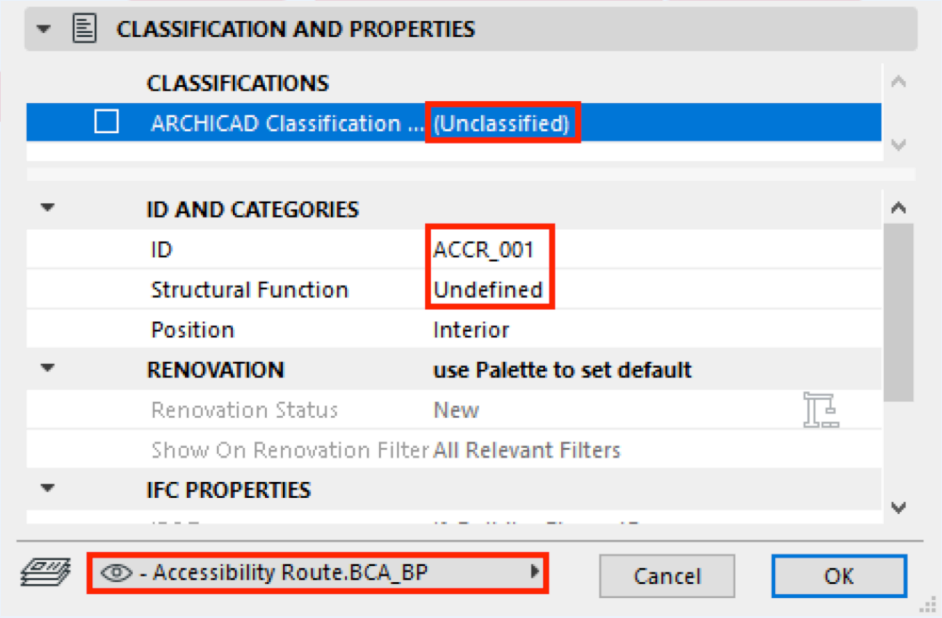
IMPORTANT SETTINGS (Accessibility Route):

Geometry:

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

Classification and Properties:

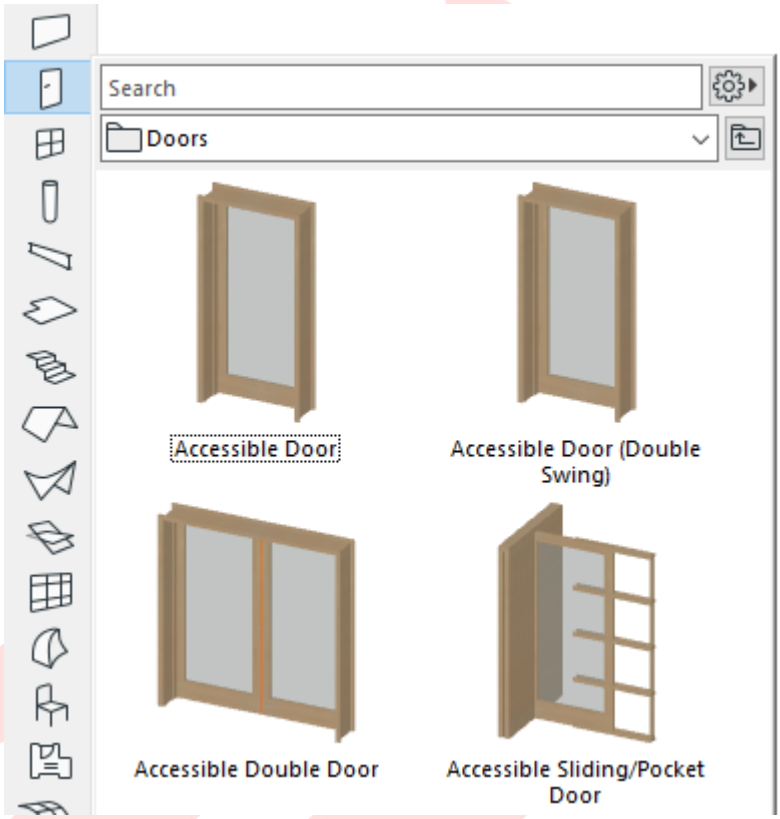
- Element Classification: **Unclassified**
- ID: **according to your naming standards**
- Structural Function: **Undefined**
- Layer: **- Accessibility Route.BCA_BP**



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.

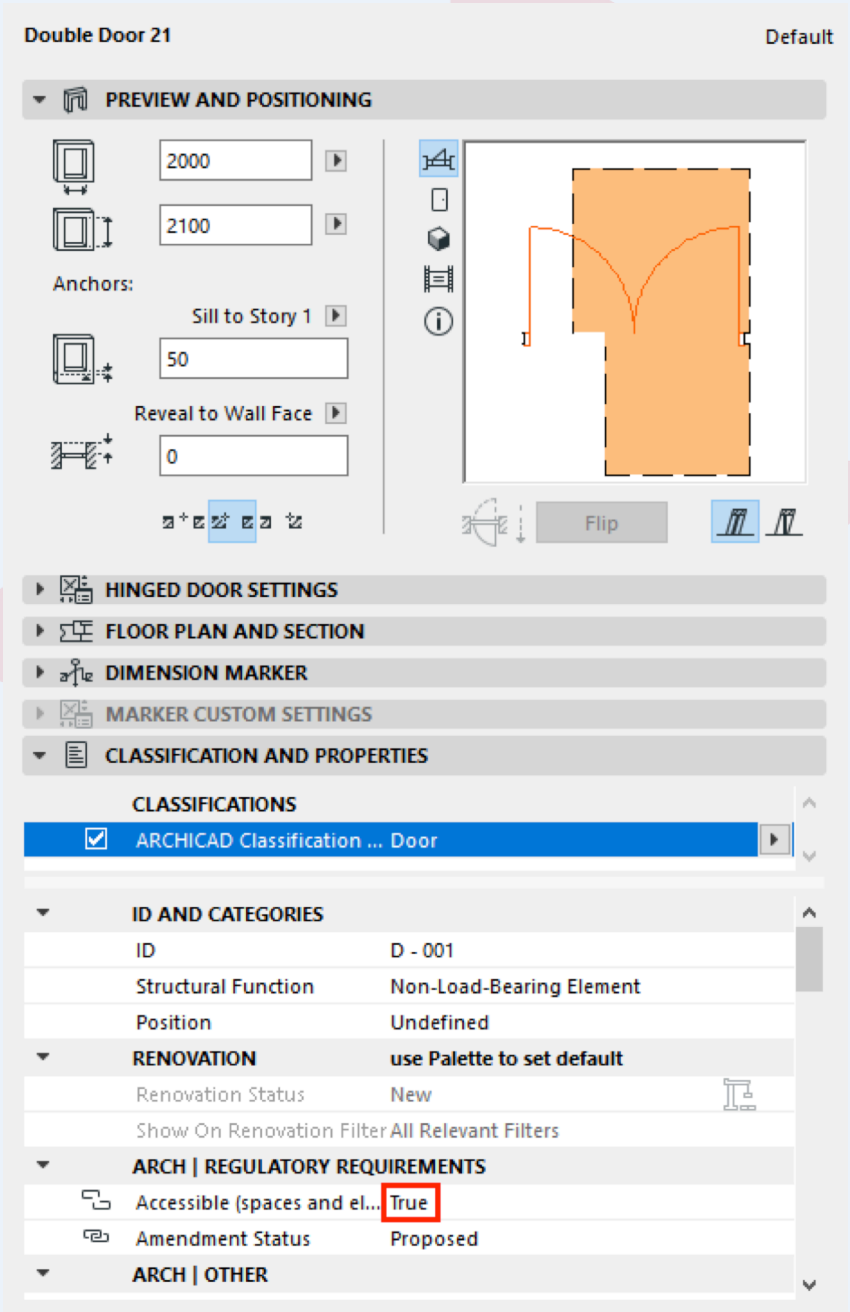
IMPORTANT SETTINGS (Accessible Doors):

Door Settings:

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

Classification and Properties:

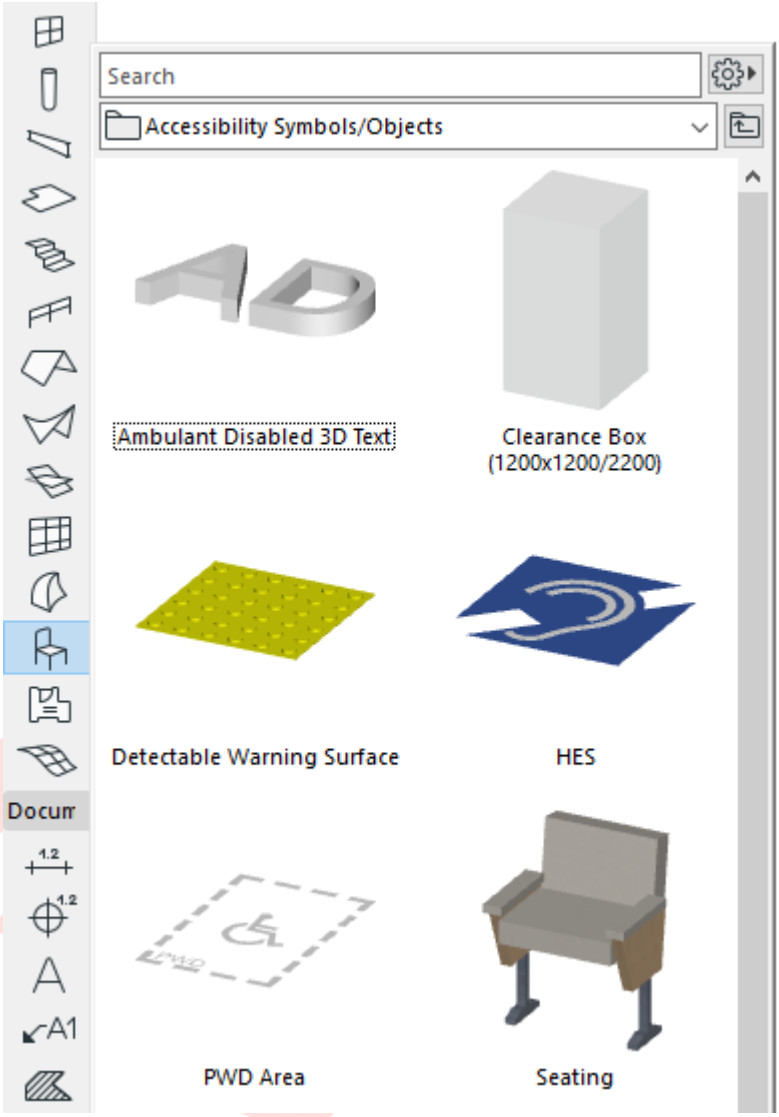
- Accessible: **True**



Clearance Boxes

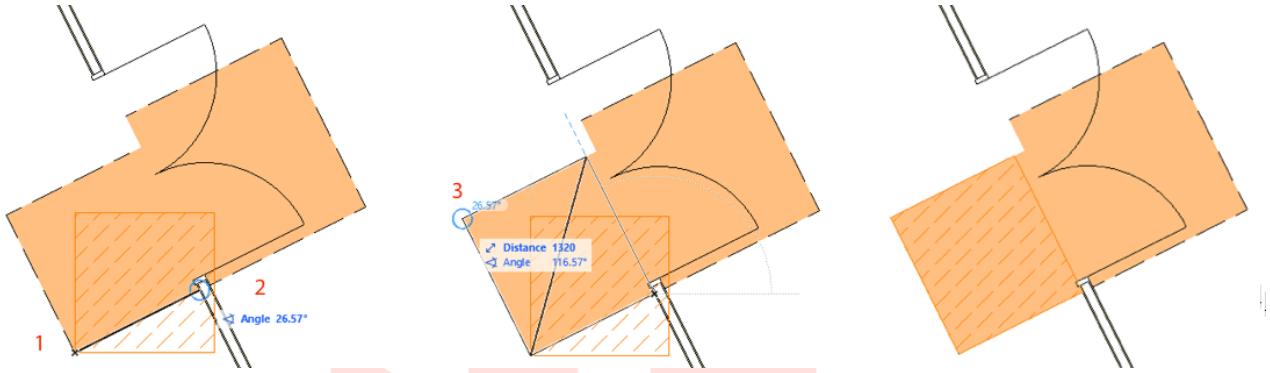
Clearance boxes are only to be placed for accessible doors which have their minimal spaces defined and shown.

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).

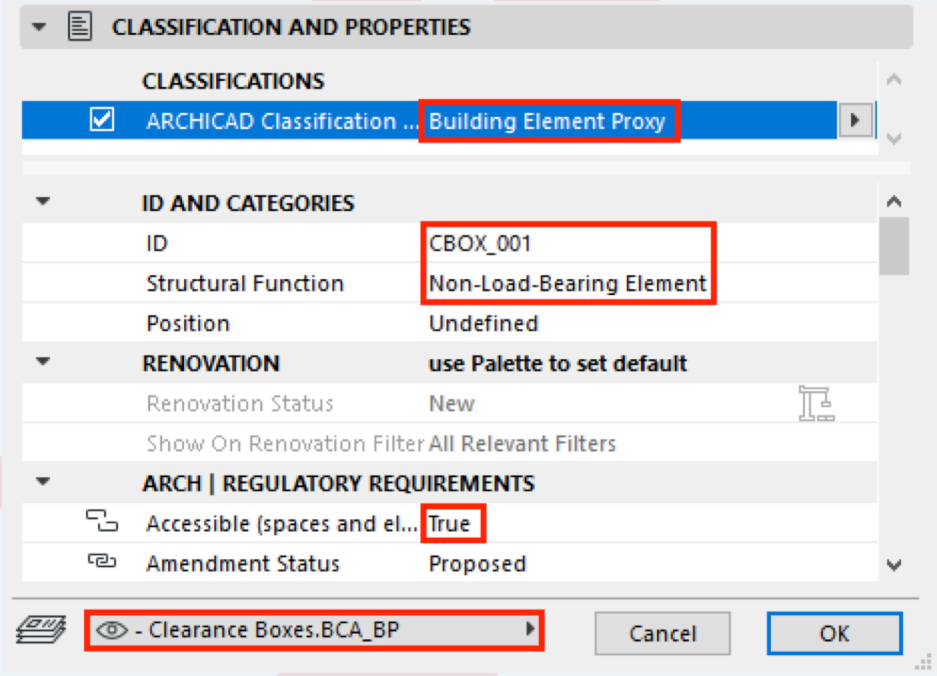
IMPORTANT SETTINGS (Clearance Boxes):

Geometry:

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

Classification and Properties:

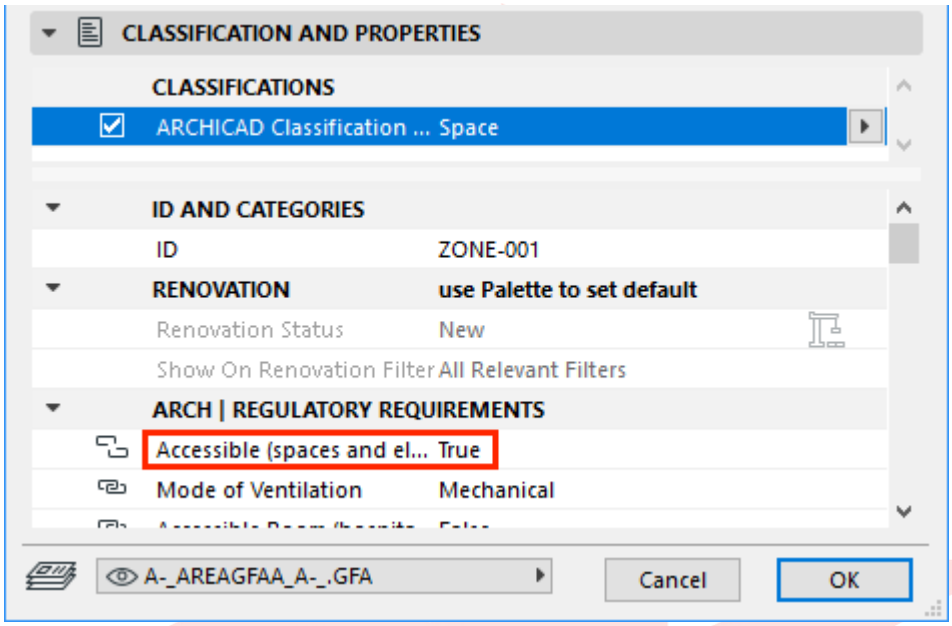
- Element Classification: **Building Element Proxy**
- ID: **according to your naming standards**
- Structural Function: **Non-Load-Bearing Element**
- Accessible: **True**
- Layer: **- Clearance Boxes.BCA_BP**



Zone Accessibility

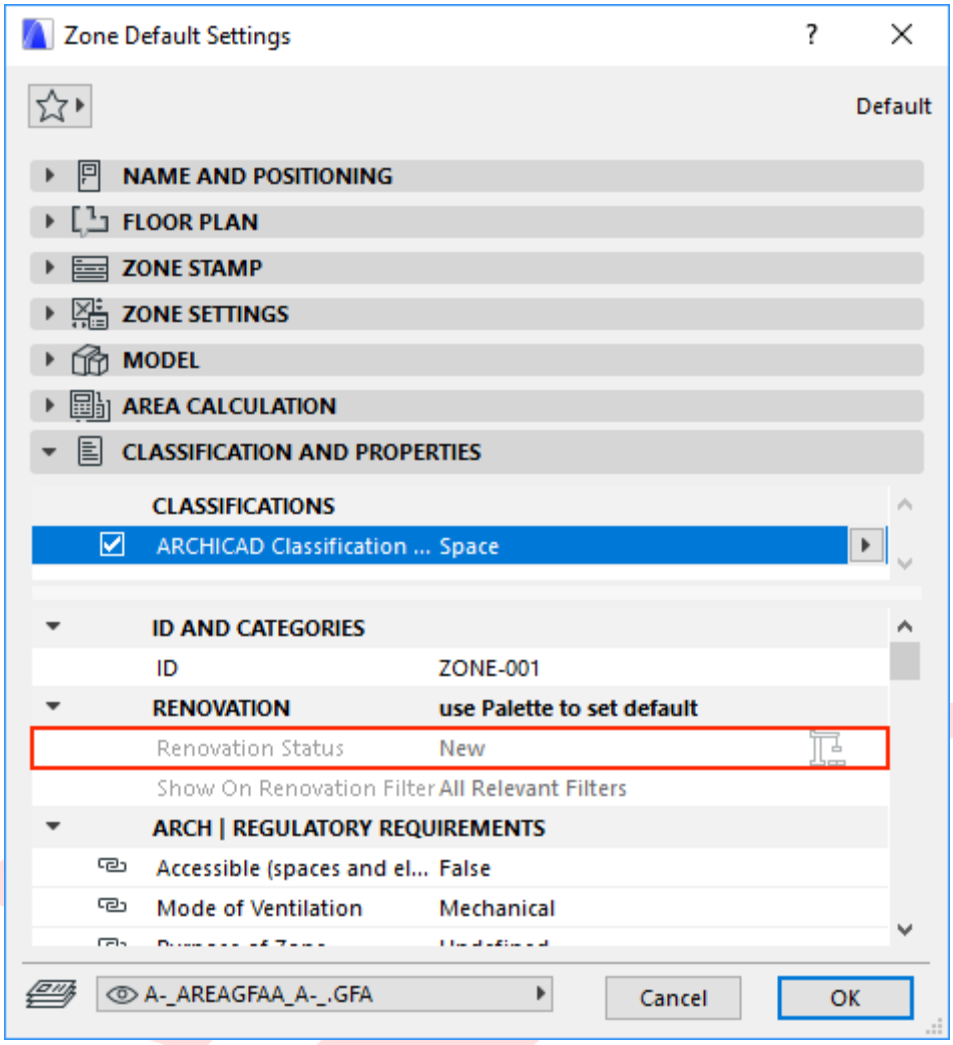
Accessibility of Zones needs to be set if the accessibility route goes through the zone or is reaching it via an accessible opening.

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

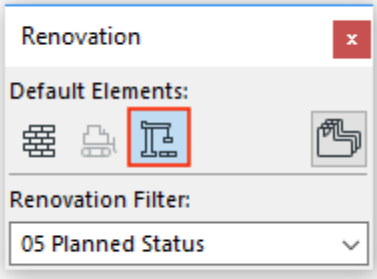


Note #1: The Zone favorites include stored information about accessibility.

Note #2: Zones can only be placed in between boundaries if the *Renovation Statuses* of those are the same as the Zone. By default all elements are set to be with *New* status.



In case you cannot place the Zone, **check the Renovation palette (Window/Palettes/Renovation)**.



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**.

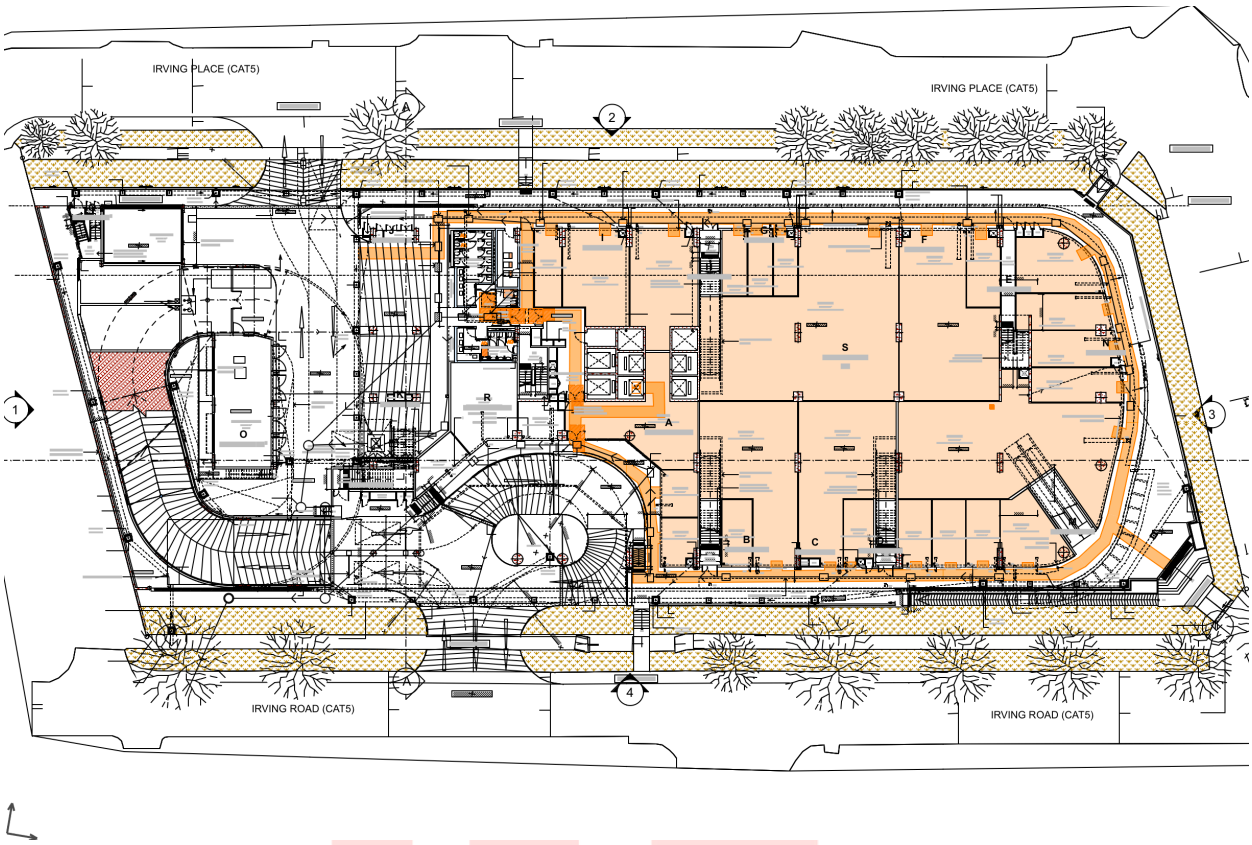
2 **Click into any of the checkboxes** of the **Accessible (space)** column to change the accessibility of the Zones.

Mode of Ventilation	Area	Accessible (space)	Hotels, guesthouses, dormitories, etc.	
			Accessible Room	Elderly Friendly Room
Mechanical and Air-Conditioned	14.38	☒	☐	☐
Mechanical	24.64	☐	☐	☐
Mechanical	29.85	☒	☐	☐
Mechanical	30.98	☐	☐	☐
Mechanical	36.86	☒	☐	☐
Mechanical	62.78	☐	☐	☐
Mechanical	104.97	☒	☐	☐
Mechanical and Air-Conditioned	15.06	☐	☐	☐
Natural	14.46	☒	☐	☐
Natural	15.07	☐	☐	☐
Natural and Air-Conditioned	16.63	☐	☐	☐
	365.68 m^2			

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.

Examples of 2D plans and 3D showing accessibility:



Courtesy of P&T Consultants Pte Ltd.

Courtesy of P&T Consultants Pte Ltd.

Modes of Ventilation

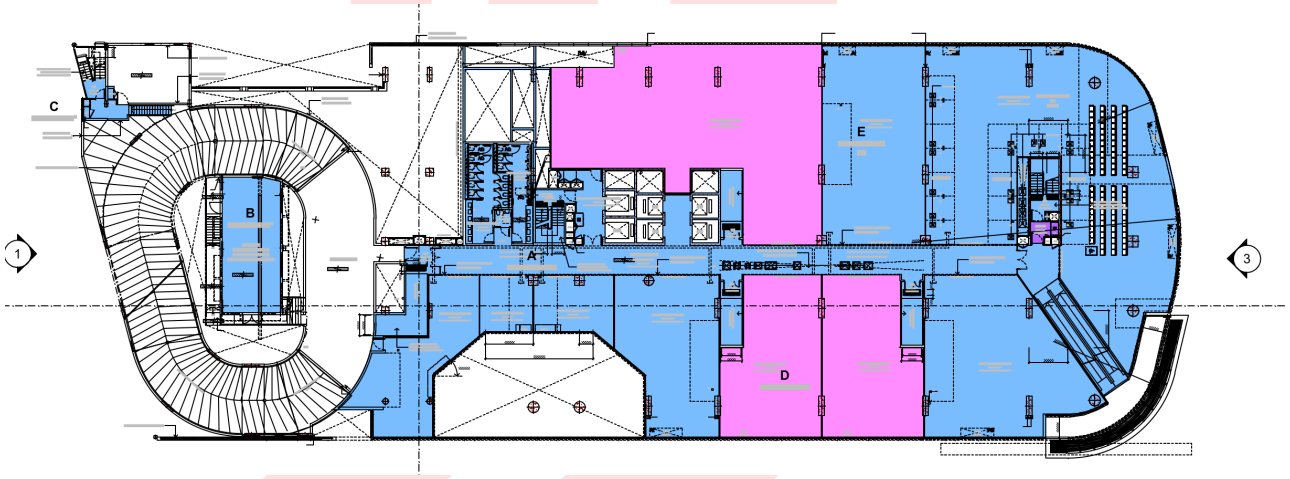
Setting the Mode of Ventilation for the Zones follows the exact same method as accessibility described above:

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

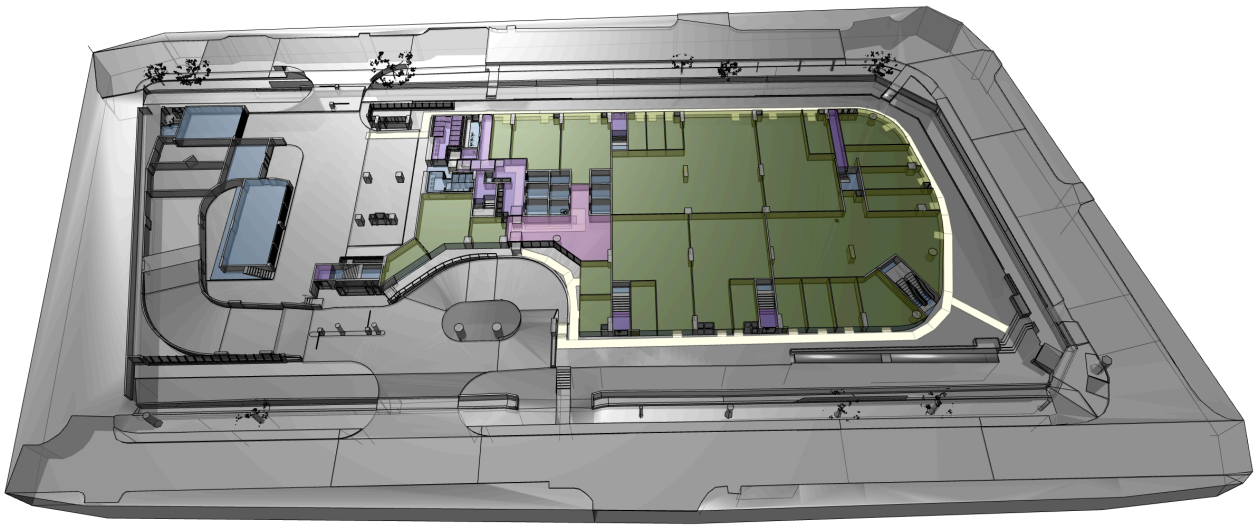
B **Click into any of the cells** of the **Mode of Ventilation** column within the **BCA_BP_ROOMS (All)** schedule and choose a value from the option list.

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

Examples of 2D plans and 3D showing accessibility:



Courtesy of P&T Consultants Pte Ltd.

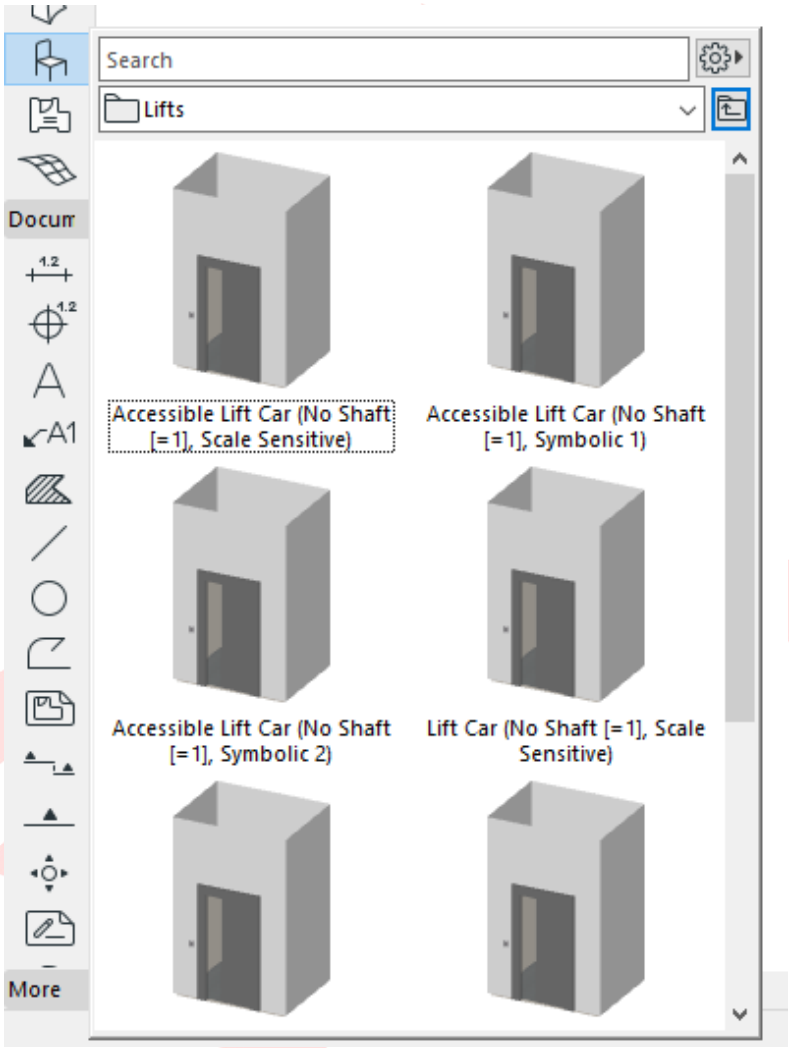


Courtesy of P&T Consultants Pte Ltd.

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).

---

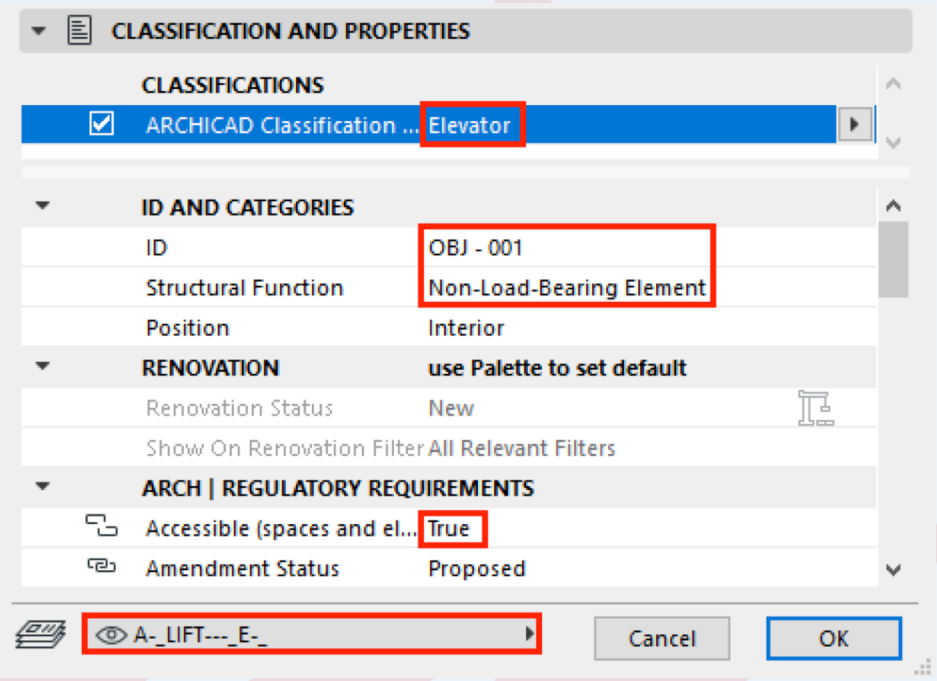
2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.

3 Place the necessary number of elements.

IMPORTANT SETTINGS (Lifts/Accessible Lifts):

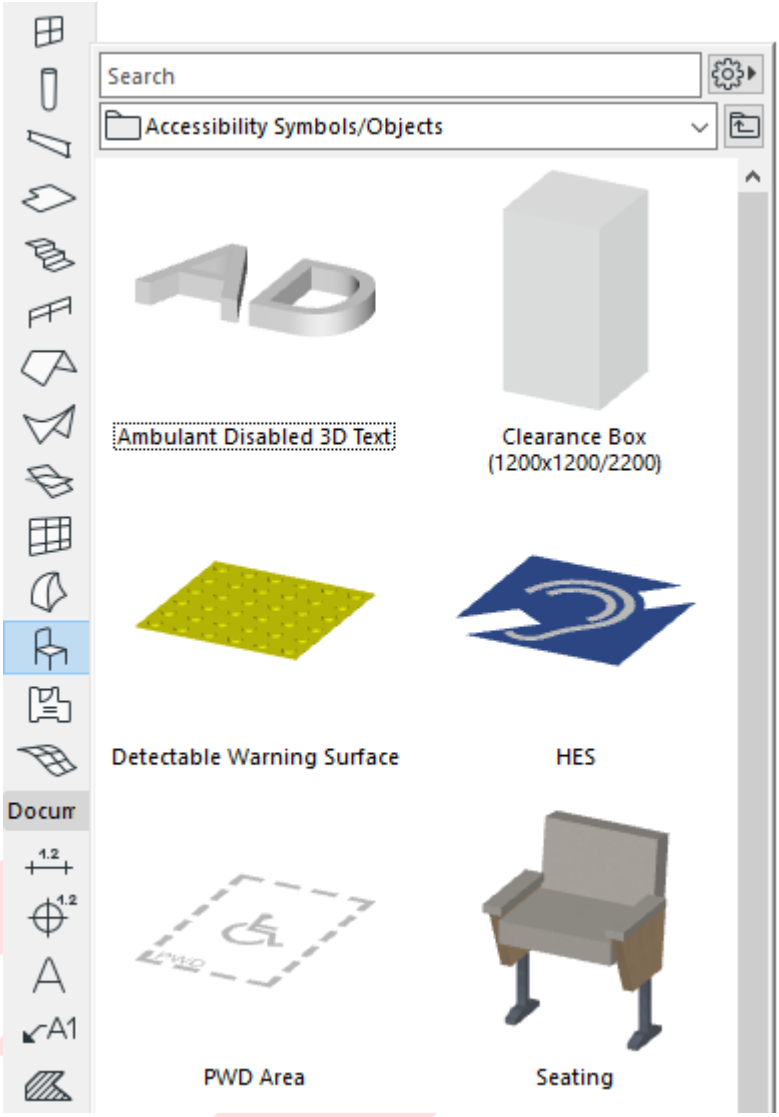
Classification and Properties:

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



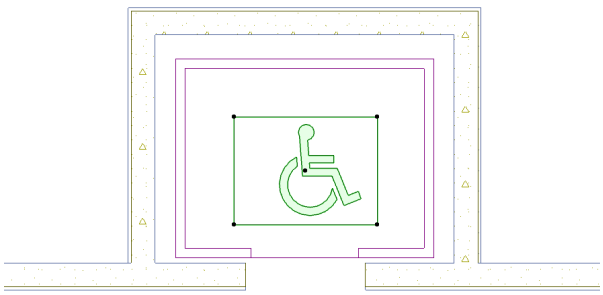
Add the 2D symbol for accessibility to mark the elevators on plans as well.

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.

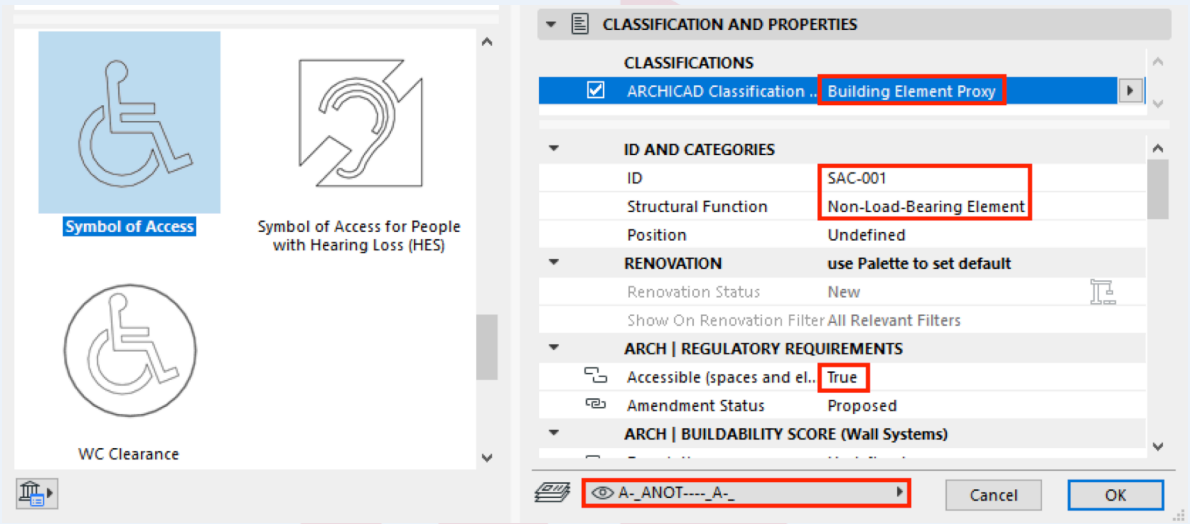
3 Place the necessary number of elements into the lifts, which are to be marked accessible.



IMPORTANT SETTINGS (Symbol of Access):

Classification 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/A | 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		
☒	AL - 001	900	2,000	1,500	1	
					1	
☐	L - 001	900	2,000	1,500	1	
☐	L - 002	900	2,000	1,500	1	
					2	
					3	

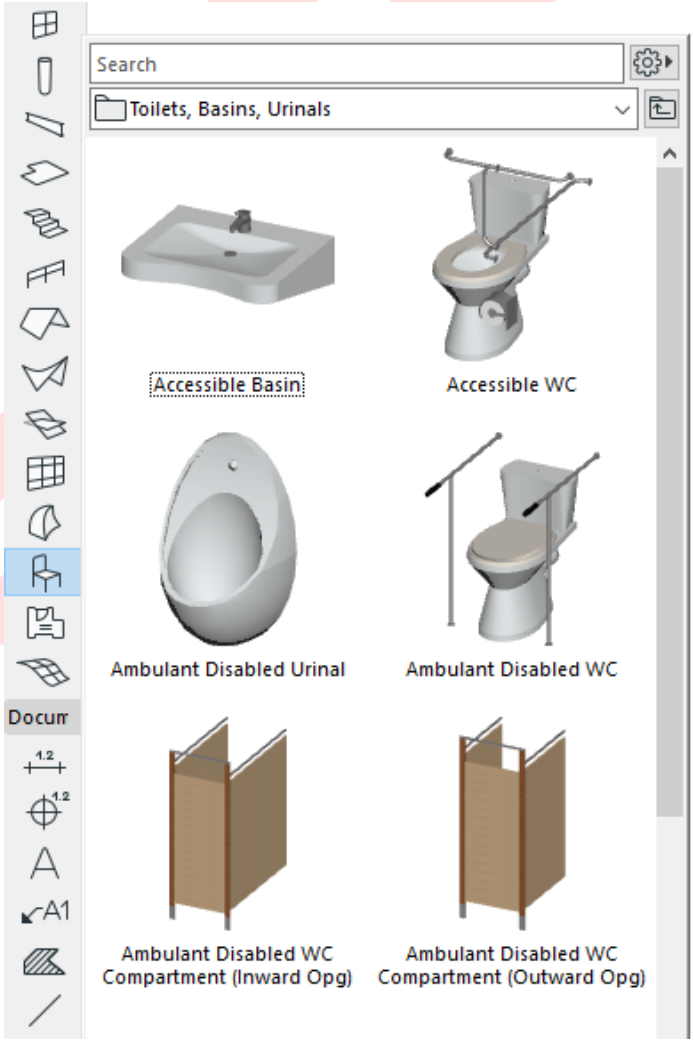
Toilets

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.

---

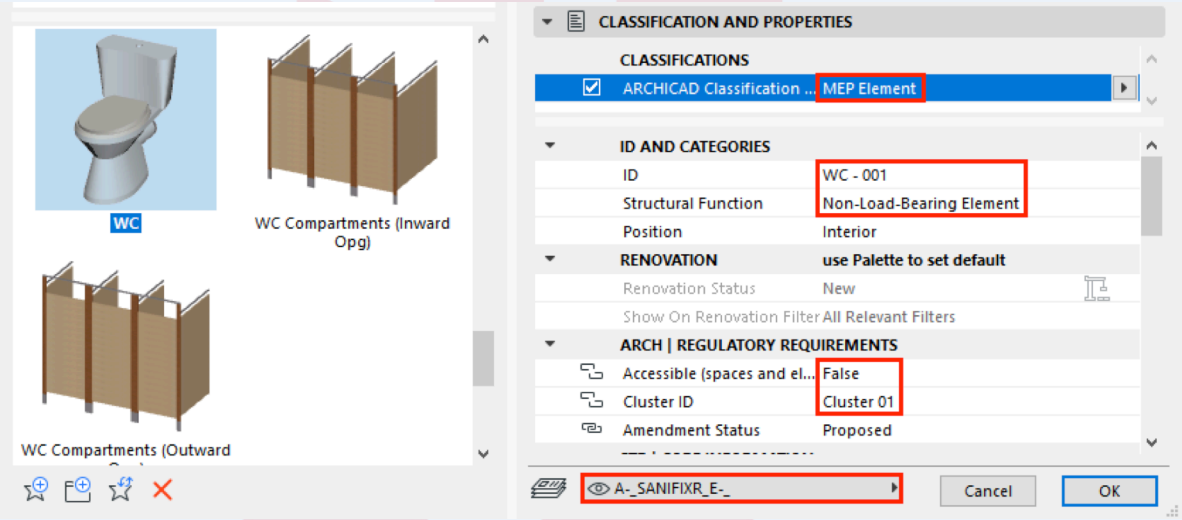
2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.

3 Place the necessary number of elements.

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

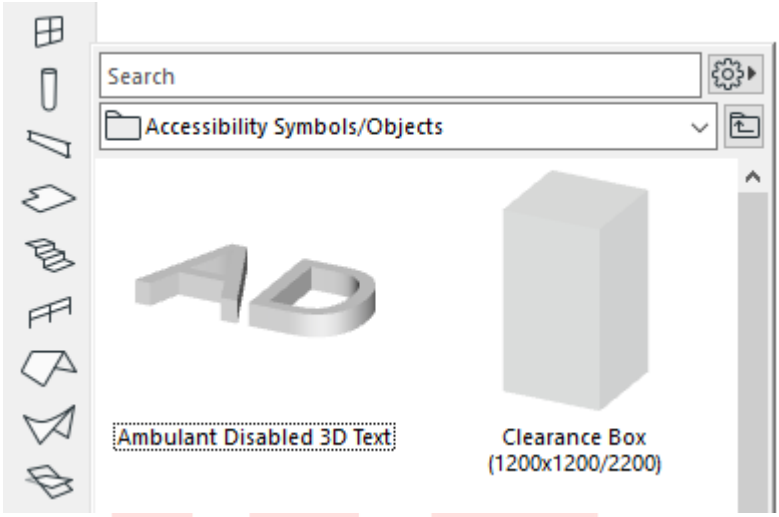
Classification and Properties:

- Element Classification: **MEP 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-_SANIFIXR_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.



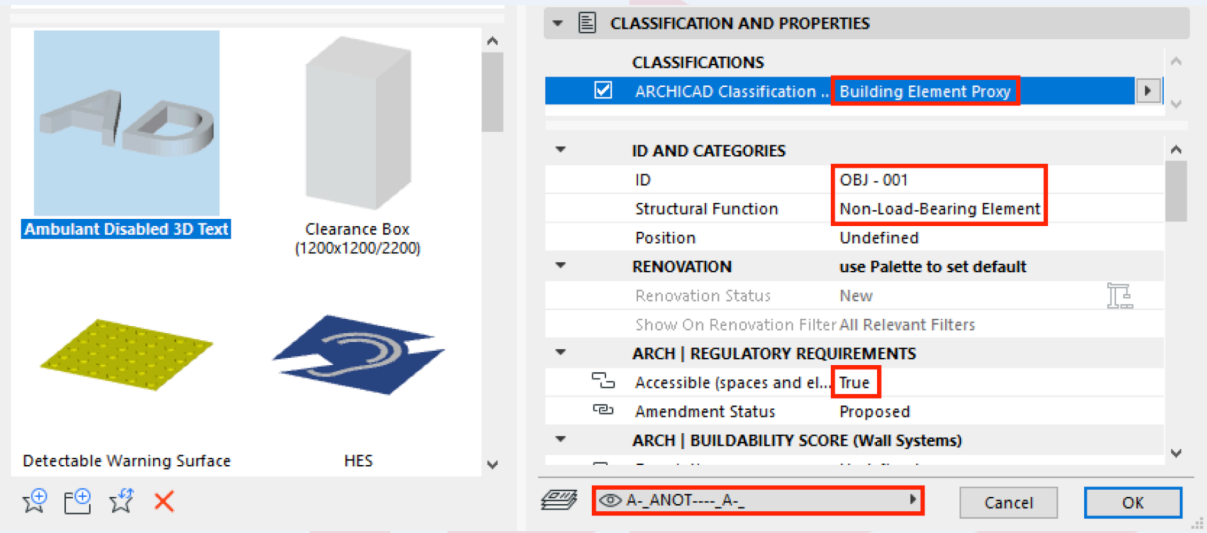
2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.

3 Place the necessary number of elements next to the toilets, which are to be marked accessible to highlight the function and the clearances.

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

Classification 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** 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				
	☐	Urinal 20	3	
	☐	WC 20	6	
	☒	Urinal 20	1	
	☒	WC Disabled 20	1	
			11	
1st STOREY, Cluster 02				
	☐	Urinal 20	2	
	☐	WC 20	4	
	☒	Urinal 20	1	
	☒	WC Disabled 20	1	
			8	
2nd STOREY, Cluster 03				
	☐	Squatting Toilet 20	4	
	☐	Urinal 20	3	
	☐	WC 20	2	
	☒	Urinal 20	1	
	☒	WC Disabled 20	1	
			11	
			30	

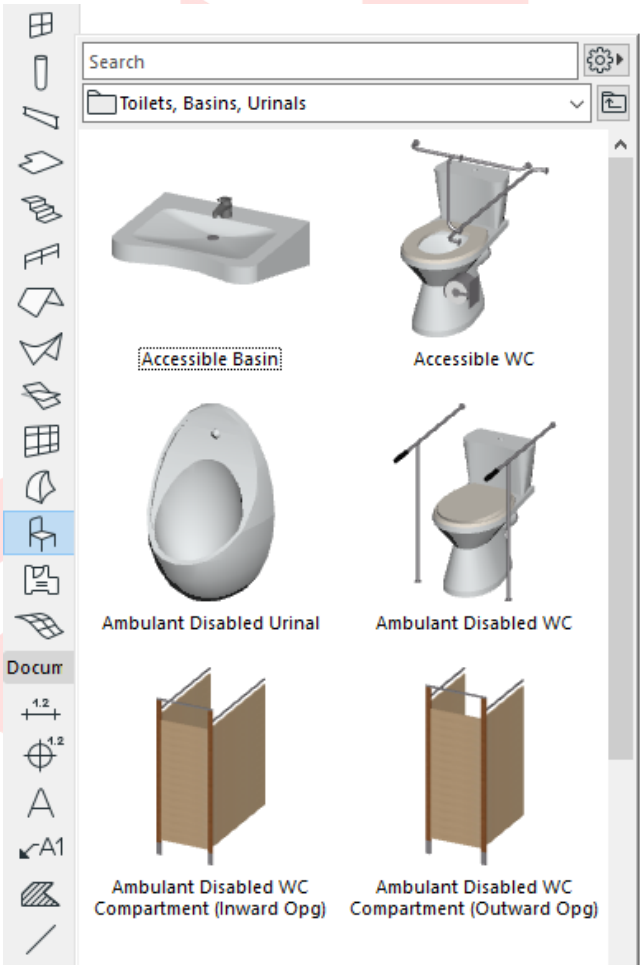
Toilet Compartments

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.

---

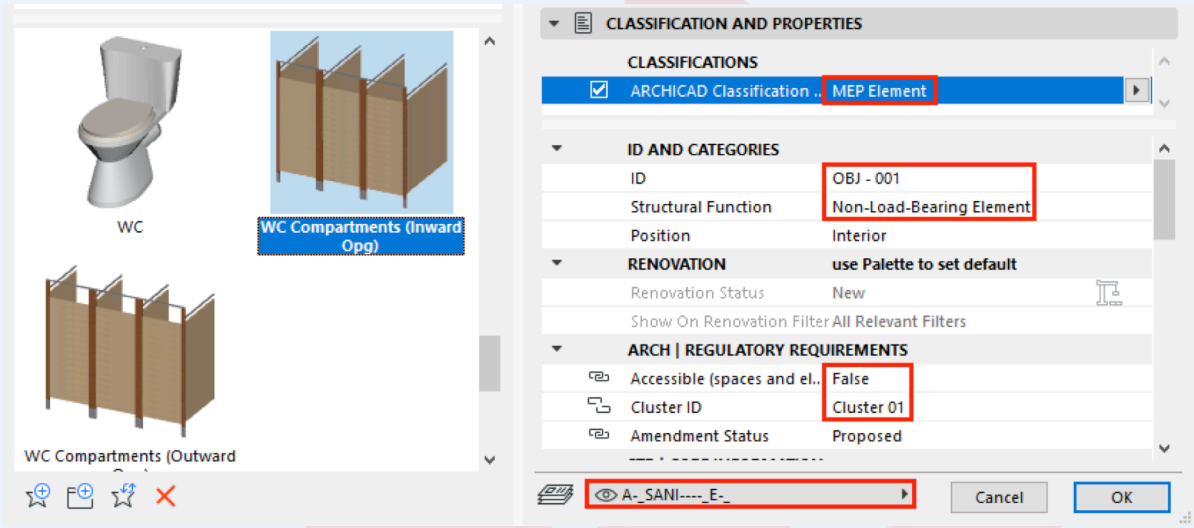
2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.

3 Place the necessary number of elements.

IMPORTANT SETTINGS (Toilet Compartments/Accessible Toilet Compartments):

Classification and Properties:

- Element Classification: **MEP 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-_SANI_E-_**

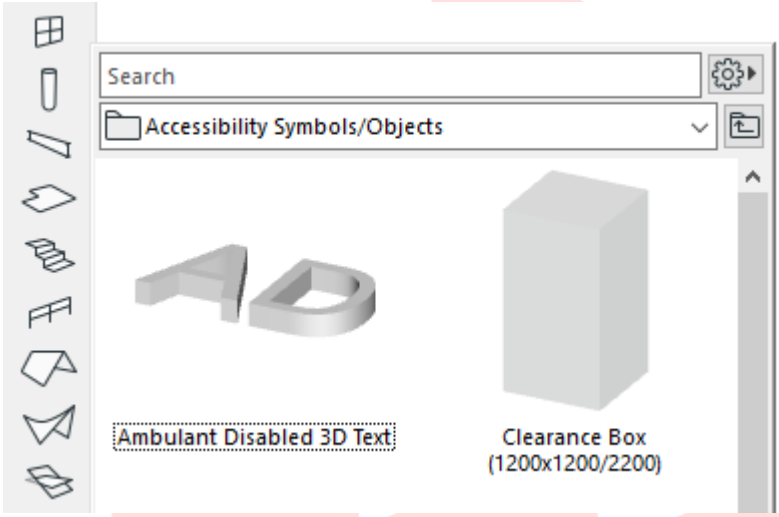


Add the 2D symbol for accessibility to mark the accessible and ambulant disabled toilets on plans as well.

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.



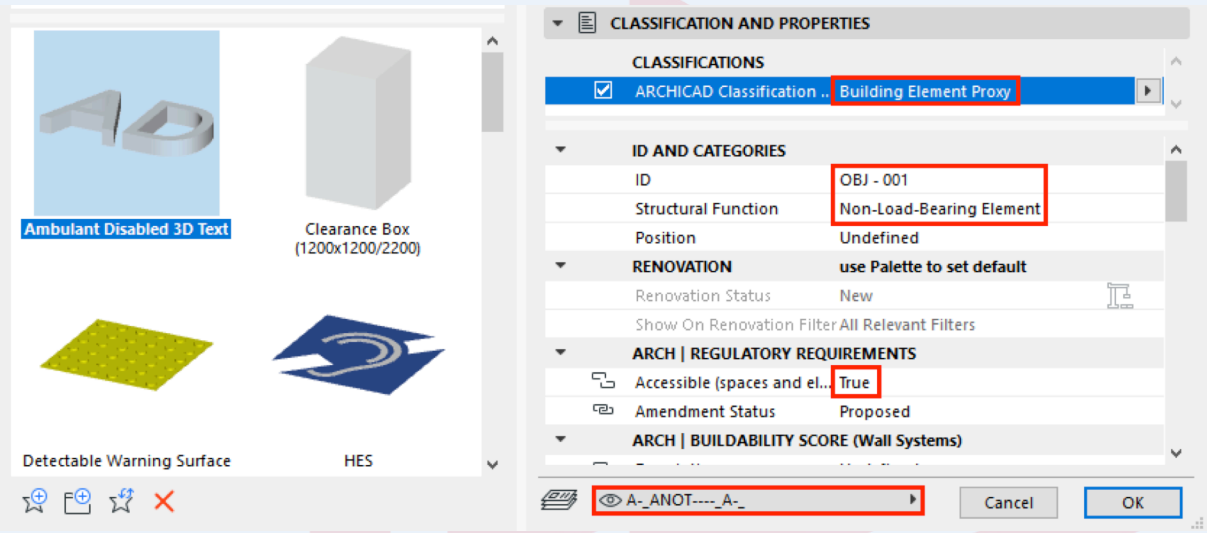
2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.

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):

Classification 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-_**

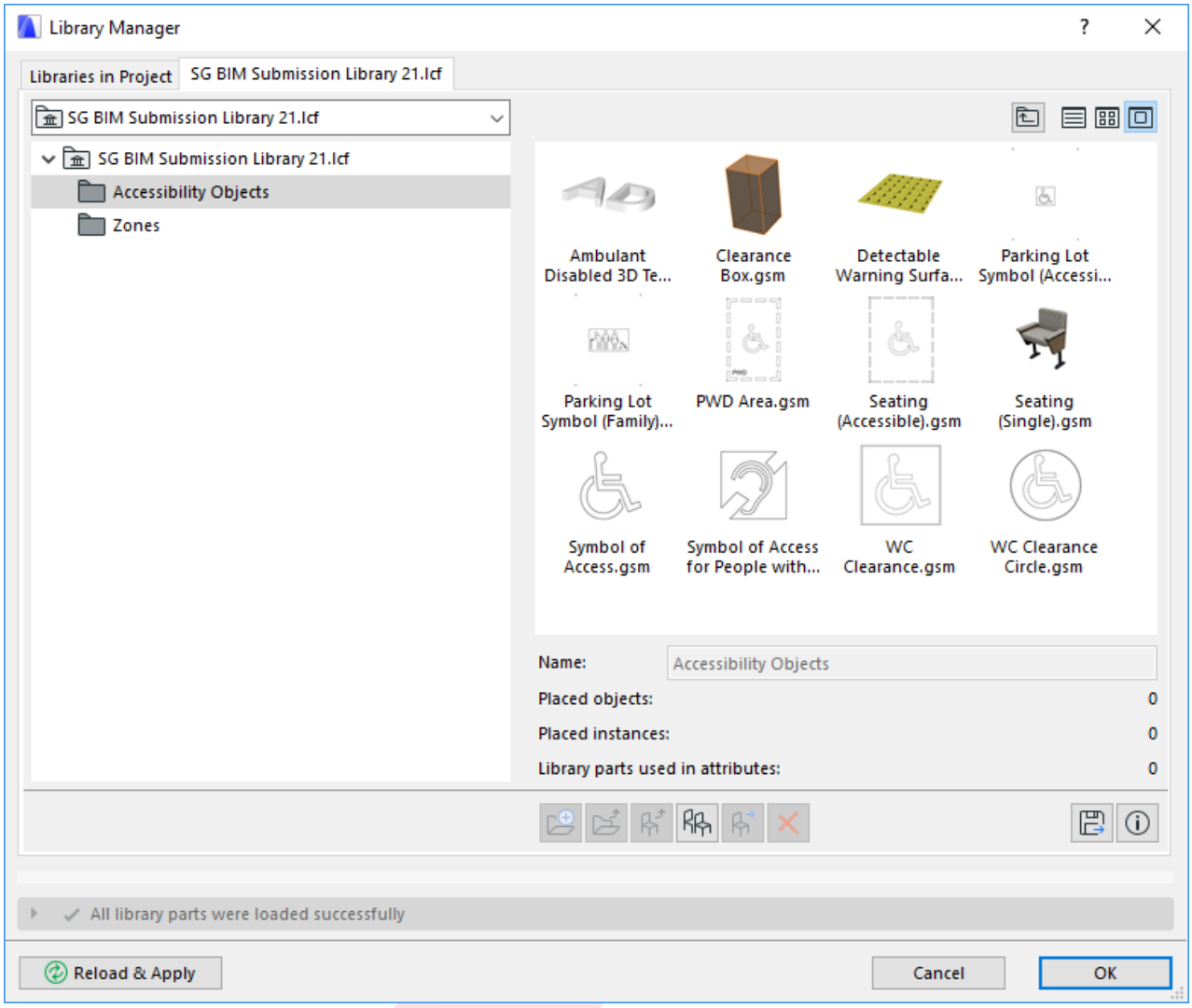


4 Open the **Schedules/Element/Toilets (Compartments)** schedule in the **Project Map** to check the results and make the necessary changes if needed.

TOILETS (Compartments)			
Home Story	**Accessible**	**Number of Stalls (toilets)**	**Remarks**
1st STOREY, Cluster 01			
	☐	3	
	☒	1	
		4	
2nd STOREY, Cluster 02			
	☐	3	
	☒	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 **Parking Lot Symbol** objects (2D only).



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**.

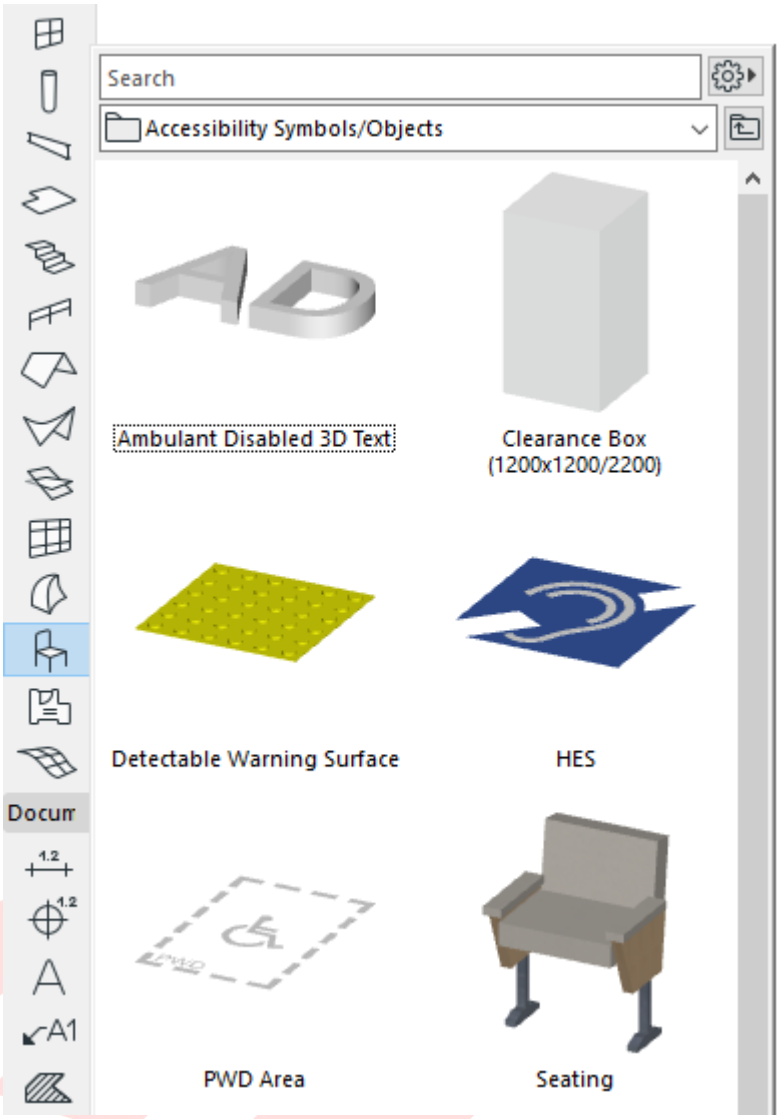
Accessible (Audience) Seating

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 21 object of the default ARCHICAD Library 21.

---

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



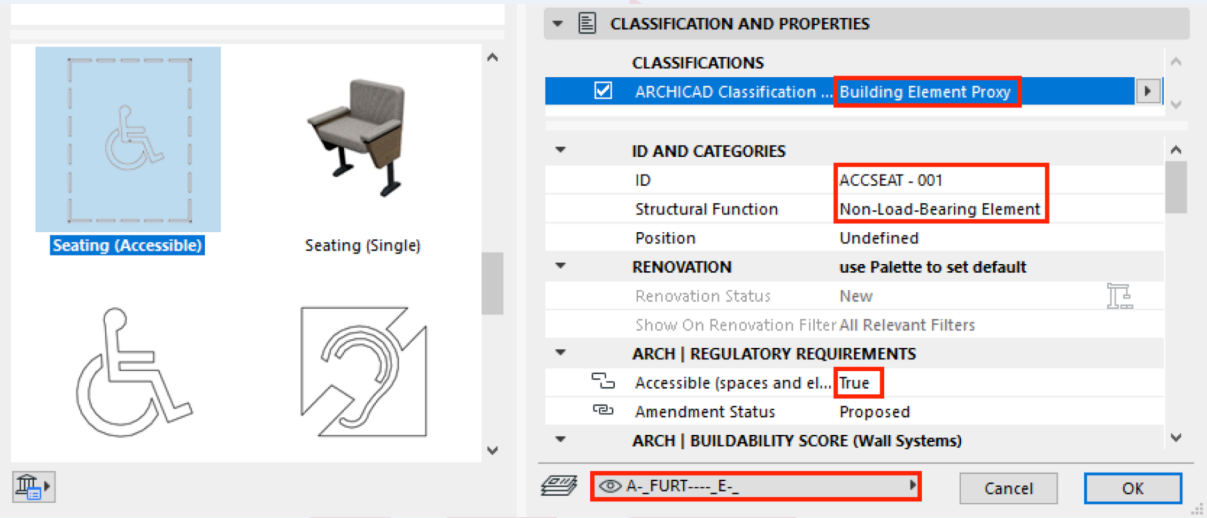
2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.

3 Place the necessary number of elements.

IMPORTANT SETTINGS (Seating and Accessible Seating):

Classification and Properties:

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



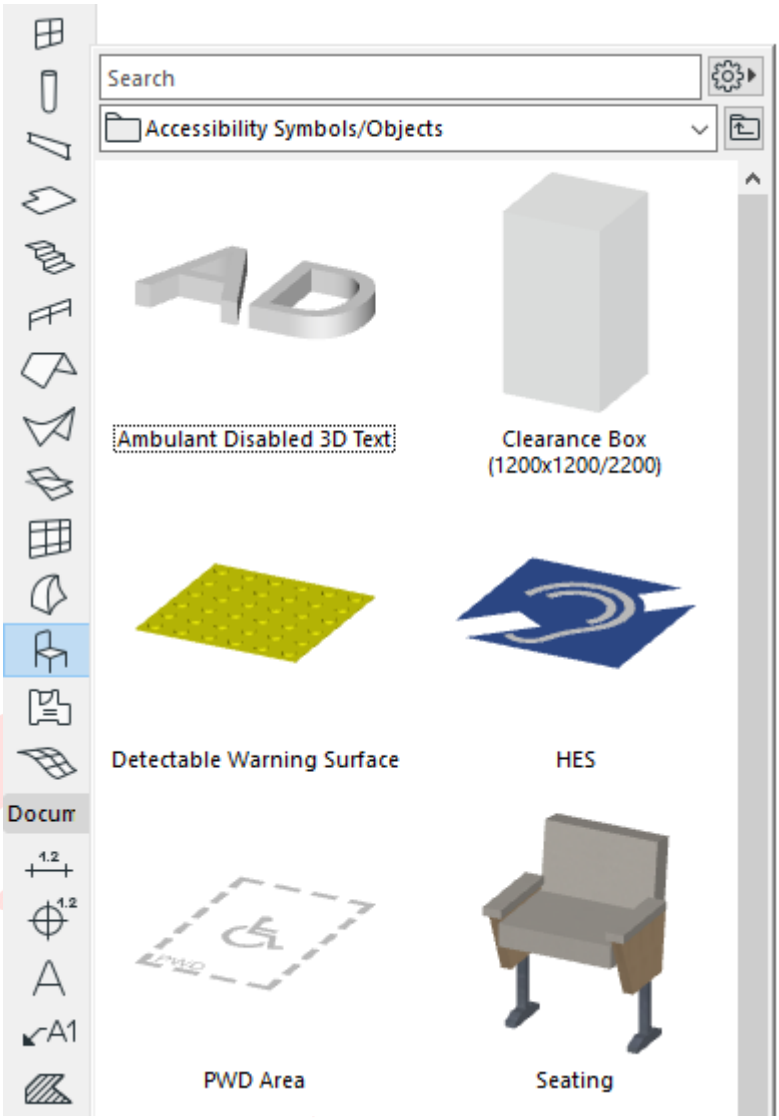
4 Open the **SCHEDULES/BCA_BP_AUDIENCE SEATING** schedule to check the results and make the necessary changes if needed.

ACCESSIBLE SEATING			
Home Story	**Accessible**	**ID**	**Remarks**
1st STOREY, Auditorium			
	☐	REGSEAT	
		121	
	☒	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.



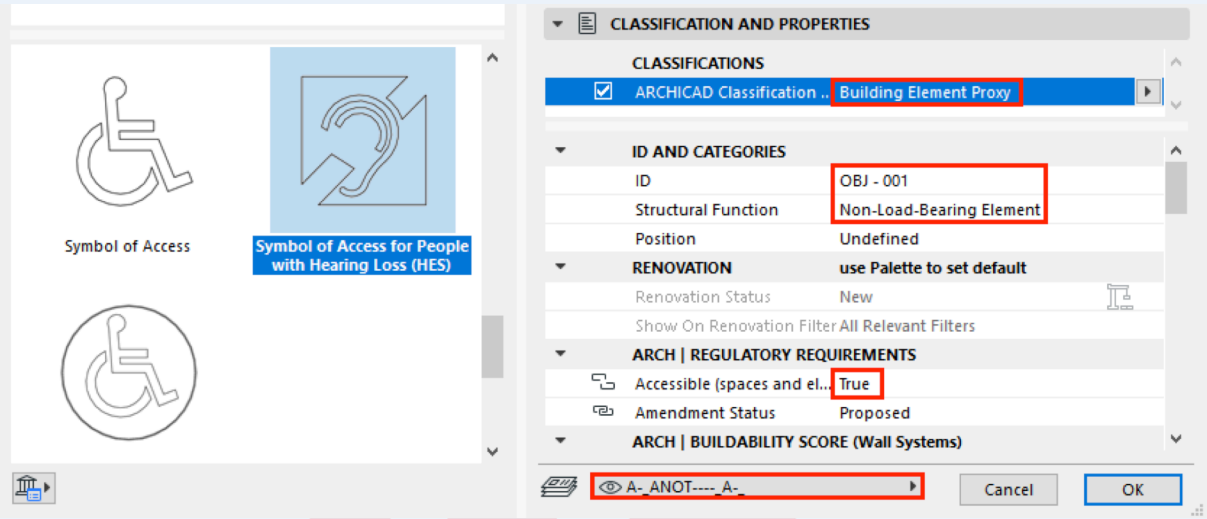
2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.

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	

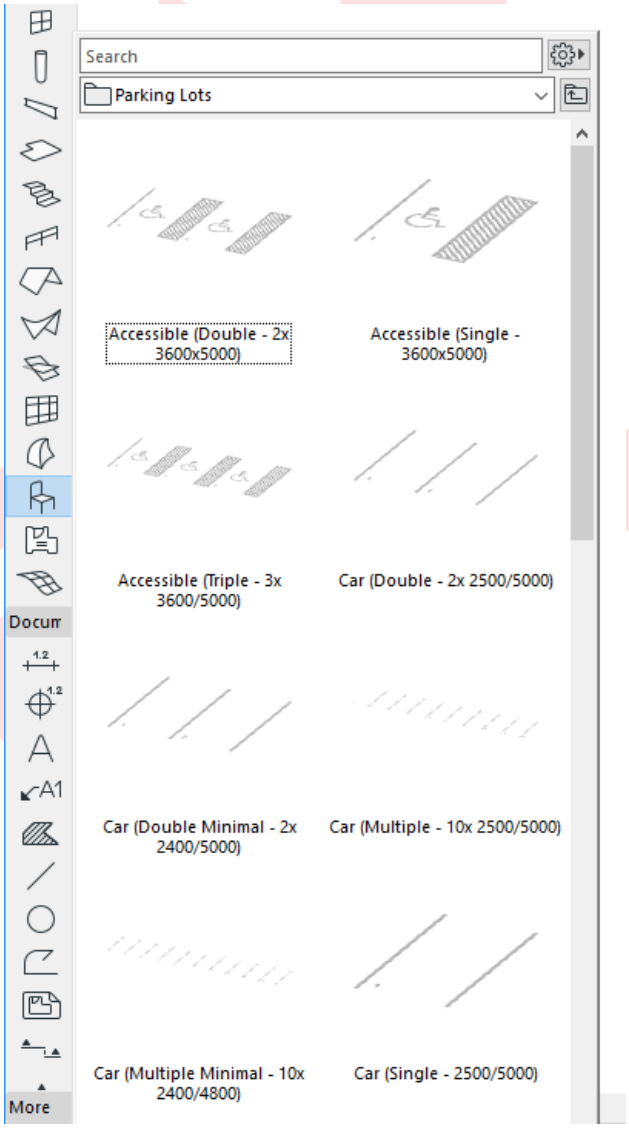
Parking Lots

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 21 object of the default ARCHICAD Library 21.

---

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



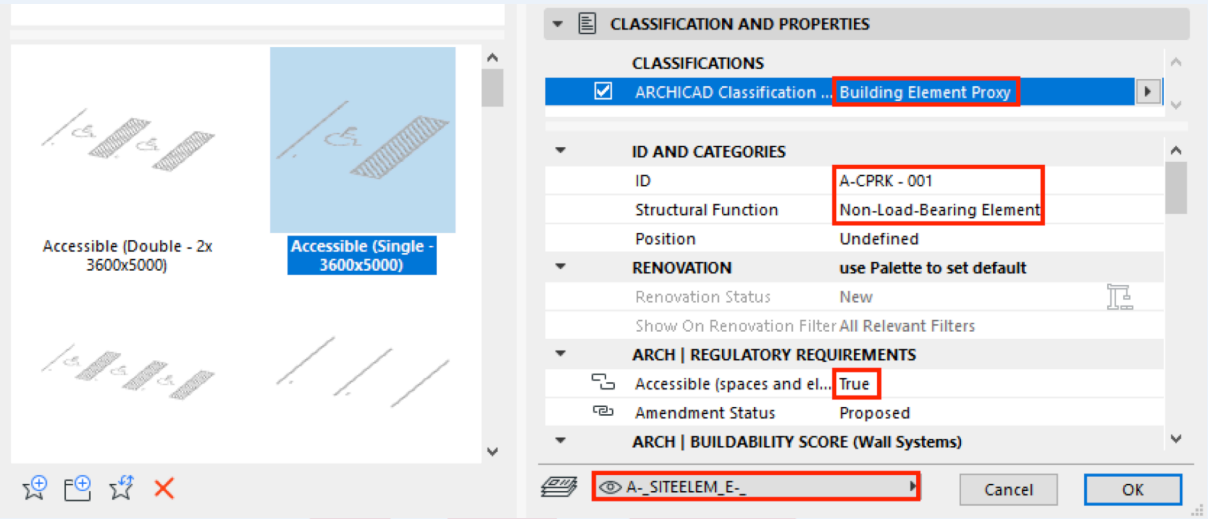
2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.

3 Place the necessary number of elements.

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

Classification 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						
	☐	CPRK - 001	2,500	5,000	38	
	☐	CPRK - 002	2,500	5,000	38	
	☐	CPRK - 003	2,500	5,000	38	
	☐	CPRK - 004	2,500	5,000	38	
	☐	CPRK - 005	2,500	5,000	38	
	☐	CPRK - 006	2,500	5,000	38	
					228	
	☒	A-CPRK - 001	2,500	5,000	2	additional width of 1100 provided
	☒	A-CPRK - 002	2,500	5,000	2	additional width of 1100 provided
					4	
					232	

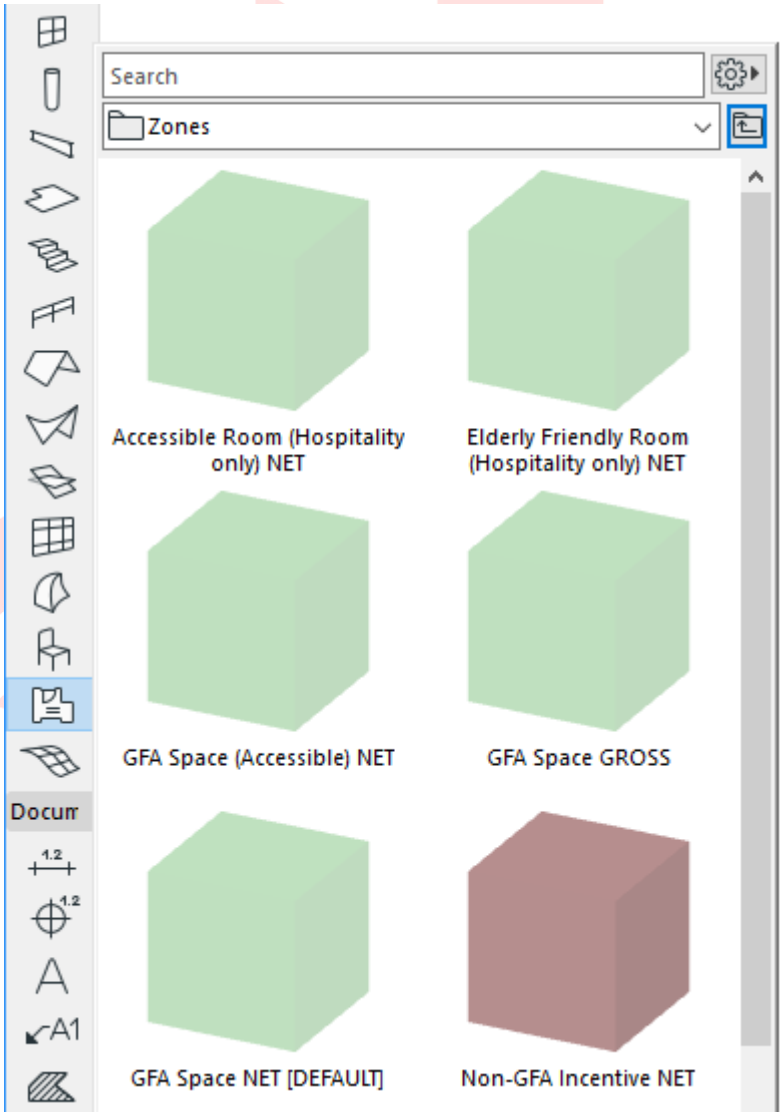
Accessible/Elderly Friendly Rooms (Hospitality Projects Only)

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**.

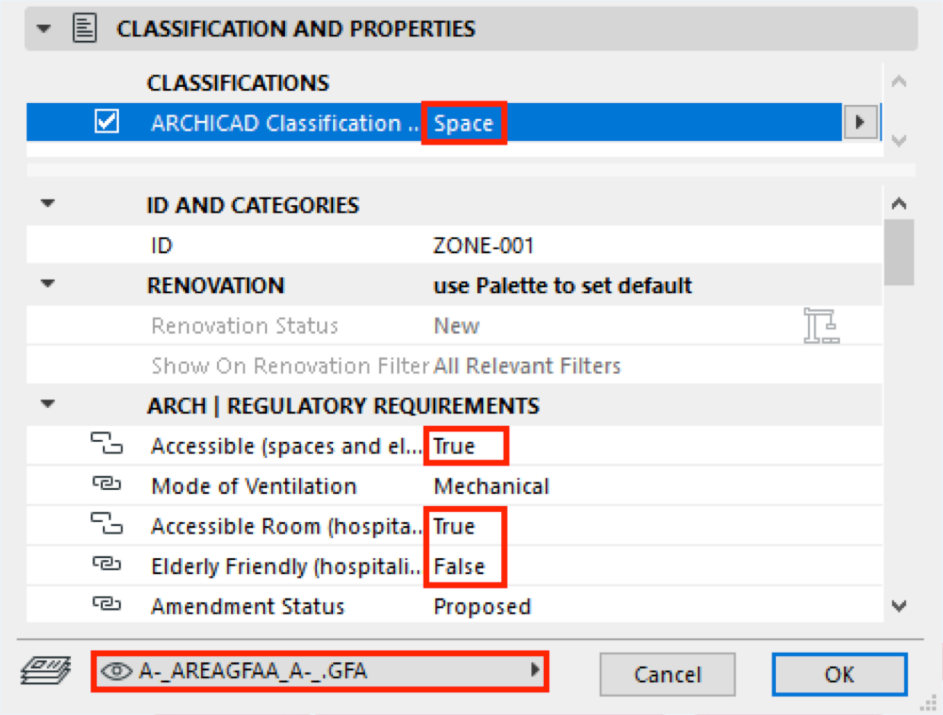


2 Place the necessary number of zones.

IMPORTANT SETTINGS (Accessible/Elderly Friendly Rooms):

Classification and Properties:

- Accessible: **True**
- Accessible Room/Elderly Friendly**: True (only one applies)**



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		☐	☐	☐	1
Mechanical			☐	☐	1
Mechanical and Air-Conditioned			☐	☐	1
Mechanical and Air-Conditioned			☐	☐	1
Mechanical and Air-Conditioned	62.78	☐	☐	☐	1
Mechanical and Air-Conditioned	104.97	☒	☐	☐	1
Mechanical and Air-Conditioned	15.06	☐	☐	☐	1
Mechanical and Air-Conditioned	15.07	☐	☐	☐	1
Mechanical and Air-Conditioned	16.63	☐	☐	☐	1
Natural and Air-Conditioned	24.64	☒	☒	☐	1
Natural and Air-Conditioned	14.46	☒	☒	☐	1
Natural and Air-Conditioned	30.98	☒	☒	☐	1
	605.12 m²				**12**

Natural
✓ Mechanical
Natural and Air-Conditioned
Mechanical and Air-Conditioned
Undefined

Natural and Air-Conditioned	24.64	☒	☐	☒	1
Natural and Air-Conditioned	14.46	☑	☐	☑	1
Natural and Air-Conditioned	30.98	☒	☐	☒	1
Mechanical	30.81	☐	☐	☐	1
Mechanical	30.81	☐	☐	☐	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.

BCA_BP_STAIRCASES														
ID	Home Story	Quantity	Detectable Warning Surfaces	Number of Risers per Flights	Tread Depths (by rule)		Riser Heights (by rule)		Railings					Remarks
					min.	max.	min.	max.	Distance Between Railing Posts	Distance from Landing/Flight	Height of Curb (perpendicularly)	Height of Curb (vertically)	Height of Railing	
STAIR - 001														
	1st STOREY	1	☐	20	250	350	150	200	100	150	115	115	100	
STAIR - 002														
	1st STOREY	1	☒	20	250	350	150	200	100	150	115	115	100	
STAIR - 003														
	1st STOREY	4	☐	6; 13	250	350	150	200	100	150	115	115	100	
		6												

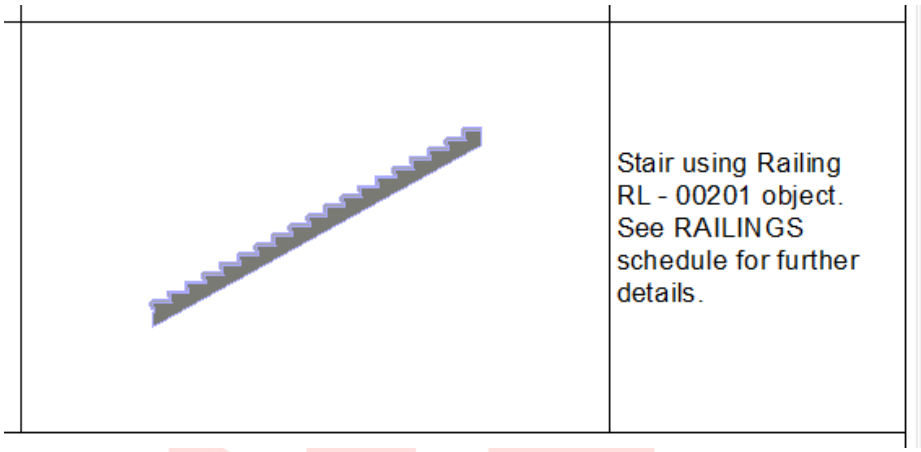
Stairs that were created by Morph for example will NOT be listed therefore need additional comments/remarks in the remark field stating:

- **Tread sizes** (riser and run)
- **Railing height** (total, including plinths/curbs)
- **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 included in this list either.

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



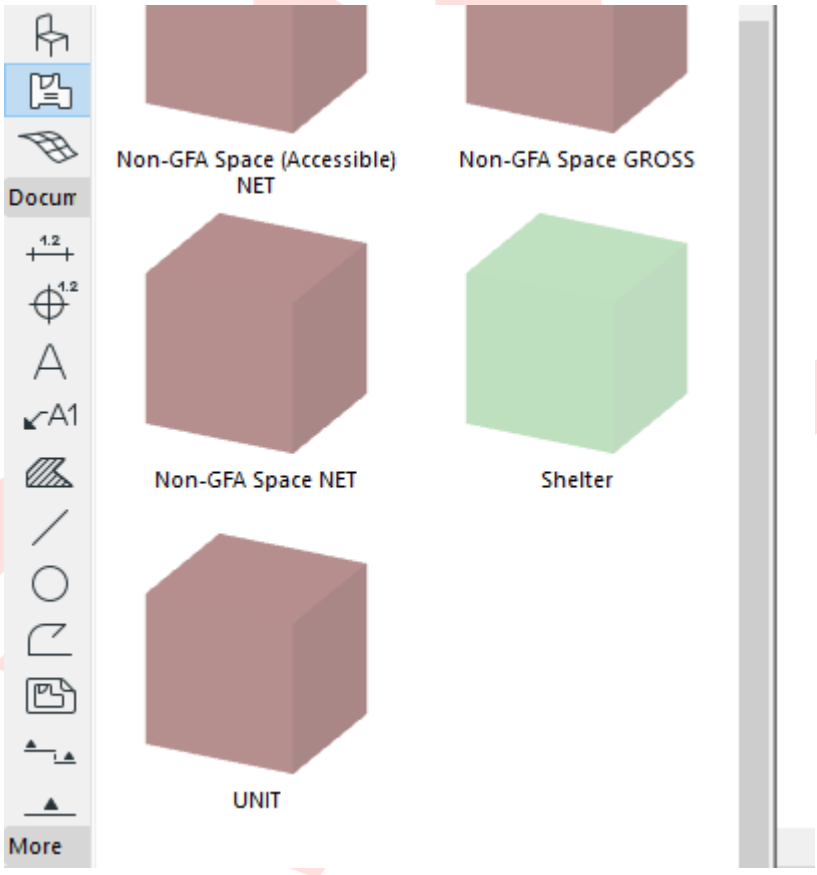
Shelters

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.

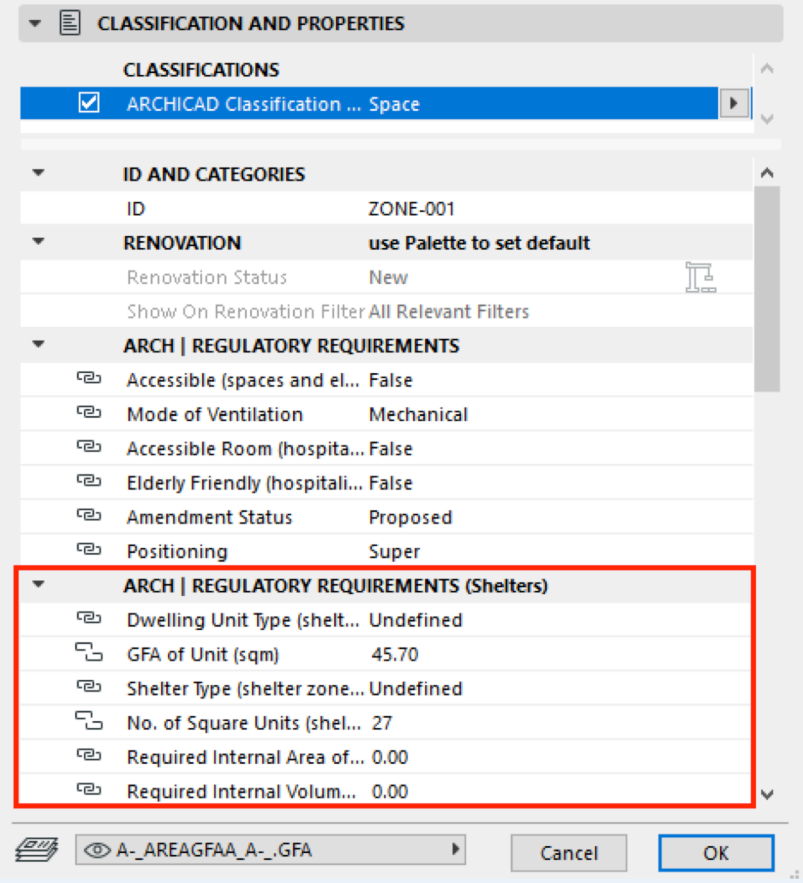
IMPORTANT SETTINGS (Accessible/Elderly Friendly Rooms):

Name and Positioning:

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

Classification and Properties:

- Layer: according to the **GFA/NonGFA** type of actual shelter
- ARCH | 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



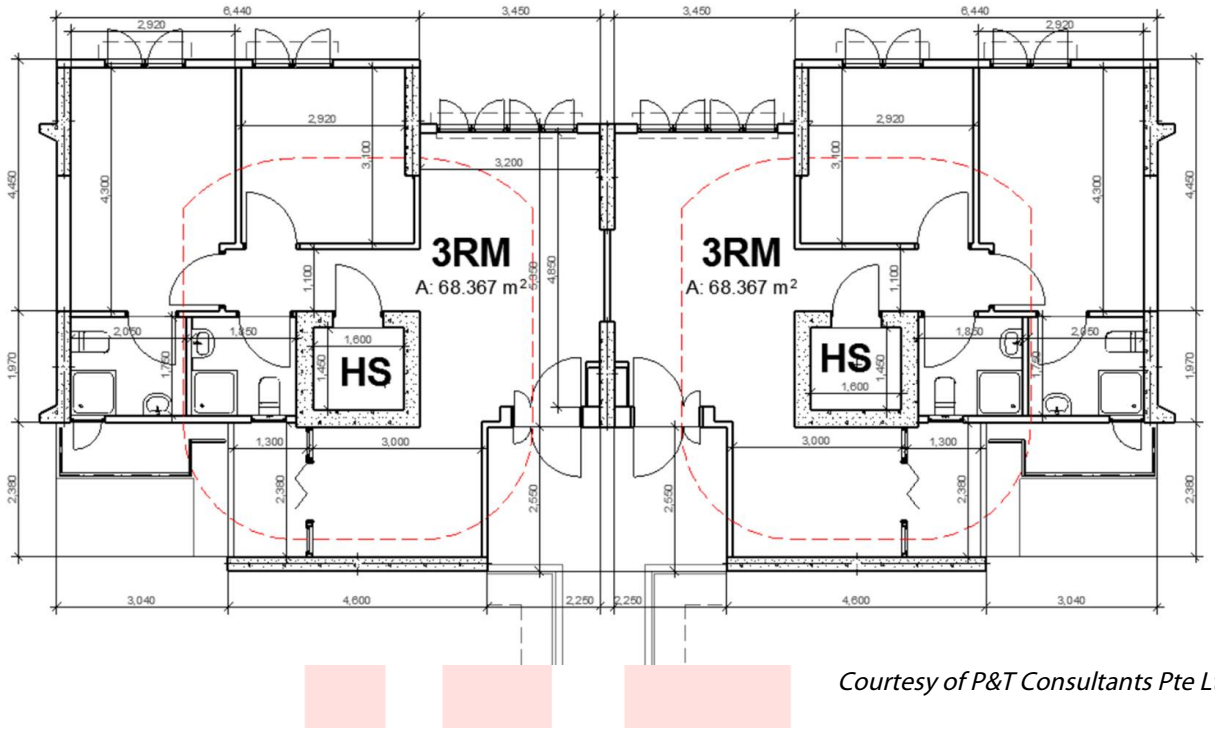
1 Open the **SCHEDULES/FSSD_CD_ ...** schedules to check the results and make the necessary changes if needed.

2 Click into the cells and change the details if needed.

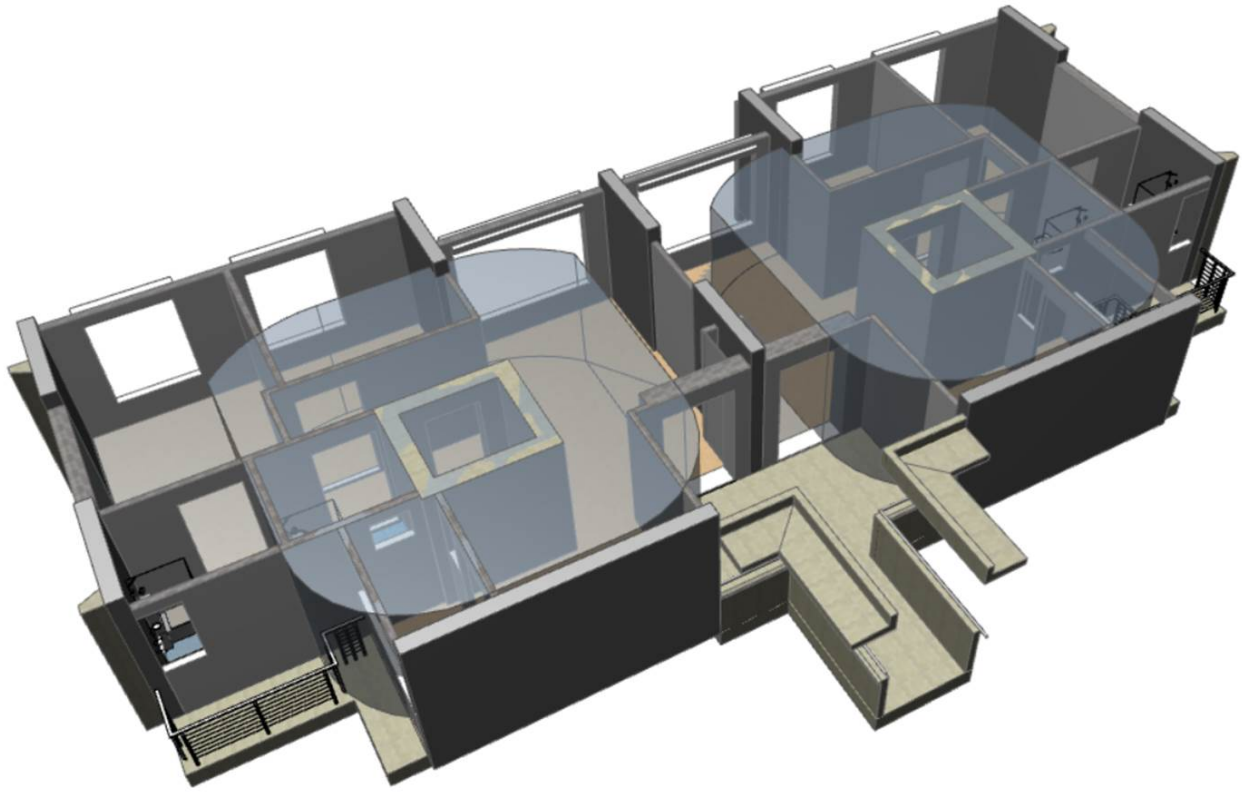
DATA OF HOUSEHOLD SHELTERS						
Dwelling Unit Type	**GFA of Unit**	**No. of HS**	**Internal Area**	**No. of Square Units**	**Internal Volume**	**Shelter Type**
Type 1	45.30	2	9.72	27	31.14	HA
Type 2	60.20	2	14.34	39	45.88	HA
Type 3	87.40	2	9.72	27	31.14	HA

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					

Examples of 2D and 3D plans showing the shelters:



Courtesy of P&T Consultants Pte Ltd.



Courtesy of P&T Consultants Pte Ltd.

PART IX - AREA TABULATION

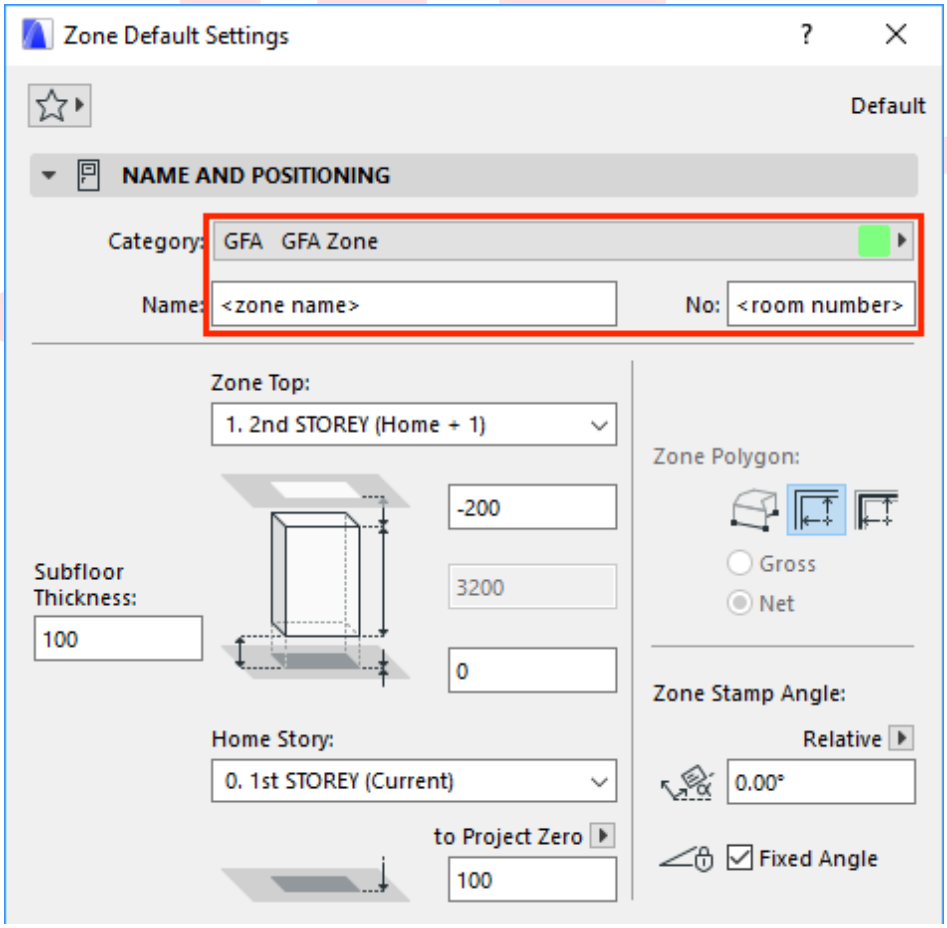
GFA

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.

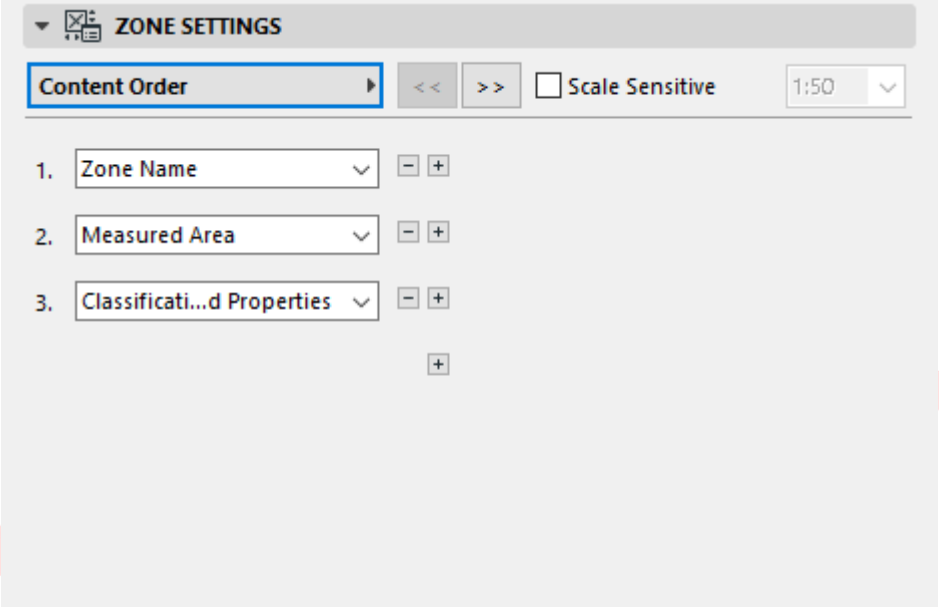


NEW in the ARCHICAD 21 Template:

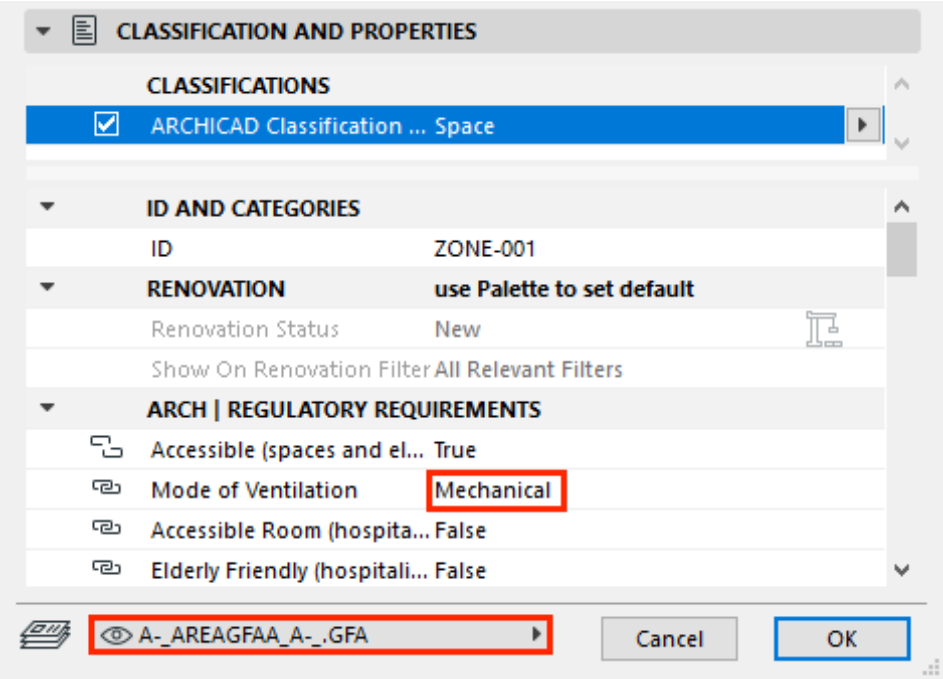
- Zone Categories were cleaned up for easier management, showing generic GFA/NonGFA/etc categories. Use the **Purpose of Zone** property under **Classifications and Properties/ARCH | Other** to set the function.

4 In the **Classification 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 Check the appearance of the Zone Stamp under **Zone Settings**: Zone Name, Measured Area and Classifications and Properties should be displayed.



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



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, Classification and Properties section/1. Row** and change the value to **None** or select one from the available parameters.
To turn off the display of all metadata in general go to the **Zone Settings panel/Content Order section** and click the **(-) button** besides the Classification and Properties 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.

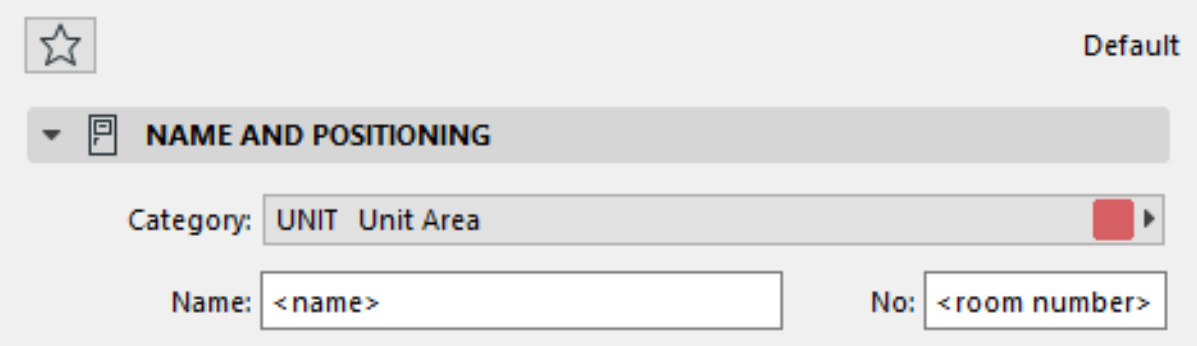
STRATA

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 **UNIT**.

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

Schedules

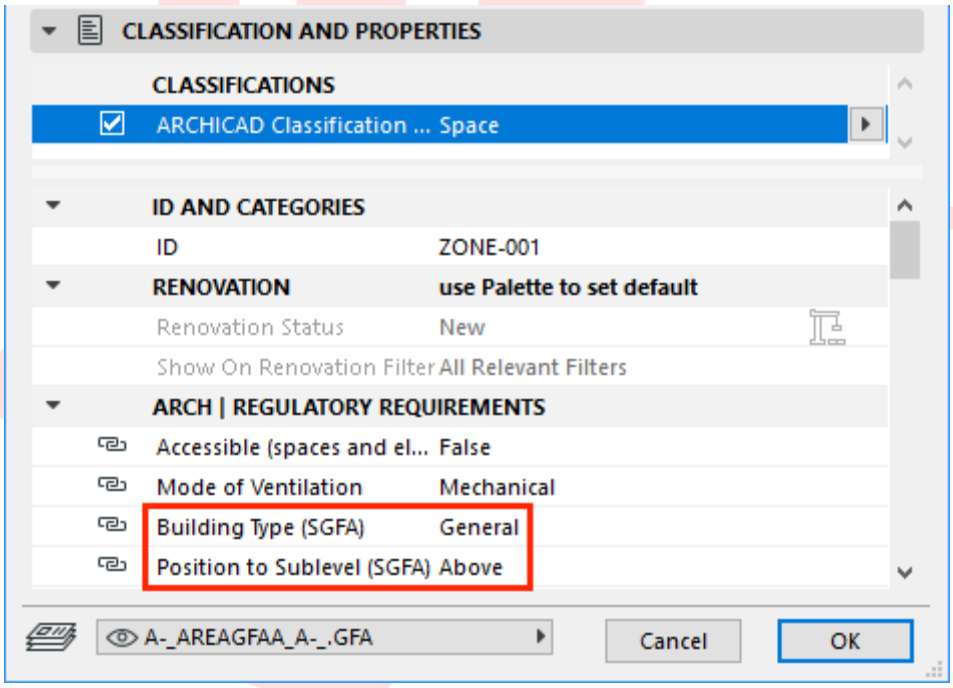
- **BCA_LV_ STATISTICAL GROSS FLOOR AREA (SGFA)**,
- **BCA_LV_ STATISTICAL GROSS FLOOR AREA (SGFA) NEW1** (for general buildings),
- **BCA_LV_ STATISTICAL GROSS FLOOR AREA (SGFA) NEW2** (for specified buildings) and
- **BCA_LV_SUM OF OTHER AREAS OF OTHER AREAS NOT INCL IN GFA COMPUTATION**

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 Set thebuilding type and the position of the Zone under **Classification and Properties/Building Type (SGFA)** and **Position to Sublevel (SGFA)** whether it is located above or below the 6 metres offset below the ground respectively.



3 Select the **A-_AREAGFAD_A-_.NonGFA** layer if the Zone is a Non-GFA Zone and create the Zone polygon on the floor plan.

4 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.

5 To view the final SGFA plans, open views from the **BCA/BP/2D PLANS/SGFA PLANS** folder in the View Map.

PART X - COVER PAGE

Though the Native BIM Submission is mainly based on views, Layouts are still required for submission. The Layout Book contains a generic layout, which may be used for generic layouting purposes, besides, the QPs need to prepare one cover page layout containing all the required project information.

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/ Endorsements** and look for the necessary textbox. Copy and paste it to the **COVER PAGE** master layout. Further changes may also be done.

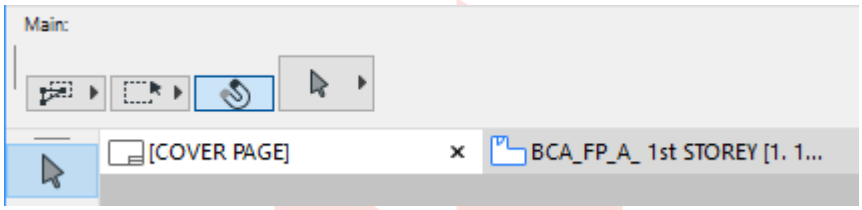
NEW in the ARCHICAD 21 Template:

- A1 LANDSCAPE (Grid) Master Layout for multiple drawings (details) placed on a single Layout
- Existing Cover Page Layouts excluded from sequencing, new Subsets/Layouts will continue as no. 2

PART XI - 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 **21**, indicated in the file name, for example:

M L P 1 _ A - _ M A I N _ - - _ A _ **2 1 . p l a**

File format:

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

M L P 1 _ A - _ M A I N _ - - _ A _ 2 1 . p l a

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

M L P 1 _ A - _ M A I N _ - - _ A _ 1 4 _ S I T E . p l n
M L P 1 _ A - _ 1 0 1 _ - - _ A _ 1 4 _ B L K 1 0 1 . p l n
M L P 1 _ A - _ - - _ A 1 _ A _ 1 4 _ U N I T A 1 . m o d

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	1	_						

File with **M A I N** included in the file name indicates that it is the only file to open for checking.

M L P 1 _ A - _ M A I N _ - - _ A _ 1 4 _ S I T E . p l n
M L P 1 _ A - _ 1 0 1 _ - - _ A _ 1 4 _ B L K 1 0 1 . p l n
M L P 1 _ A - _ - - _ A 1 _ A _ 1 4 _ U N I T A 1 . m o d

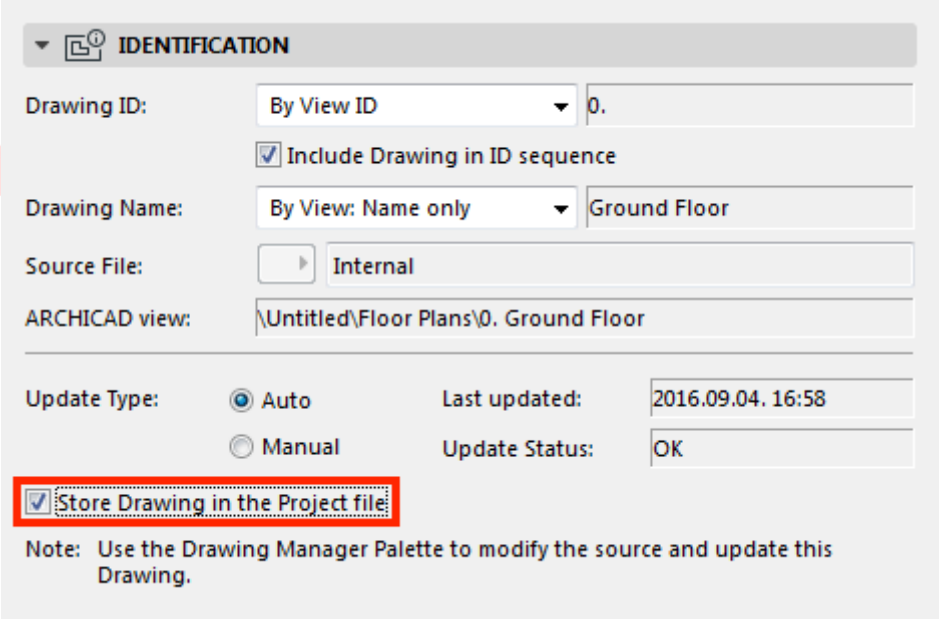
Final check:

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_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.

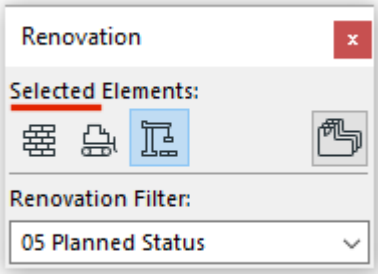
2 Check the **Store Drawing in the Project file** checkbox for each drawing.



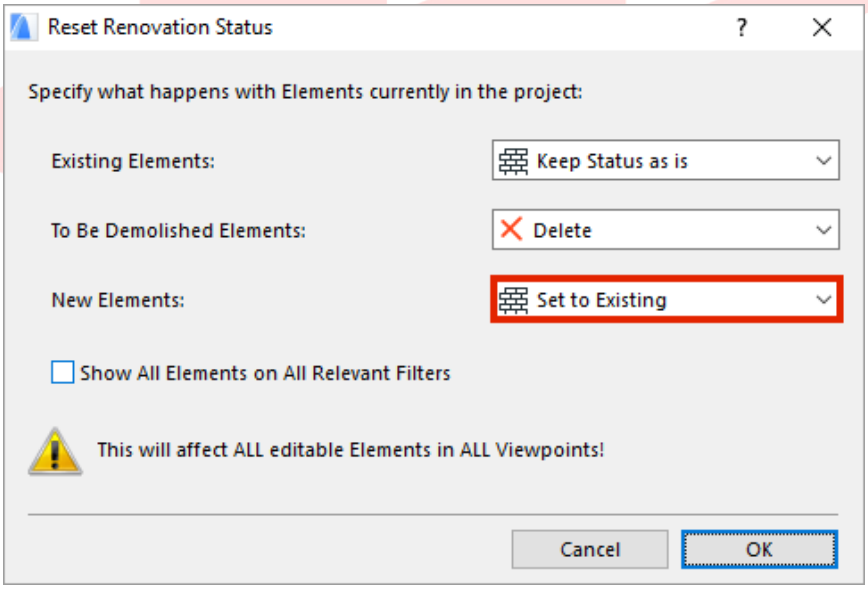
PART XII - A&A WORKS (RENOVATION)

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:

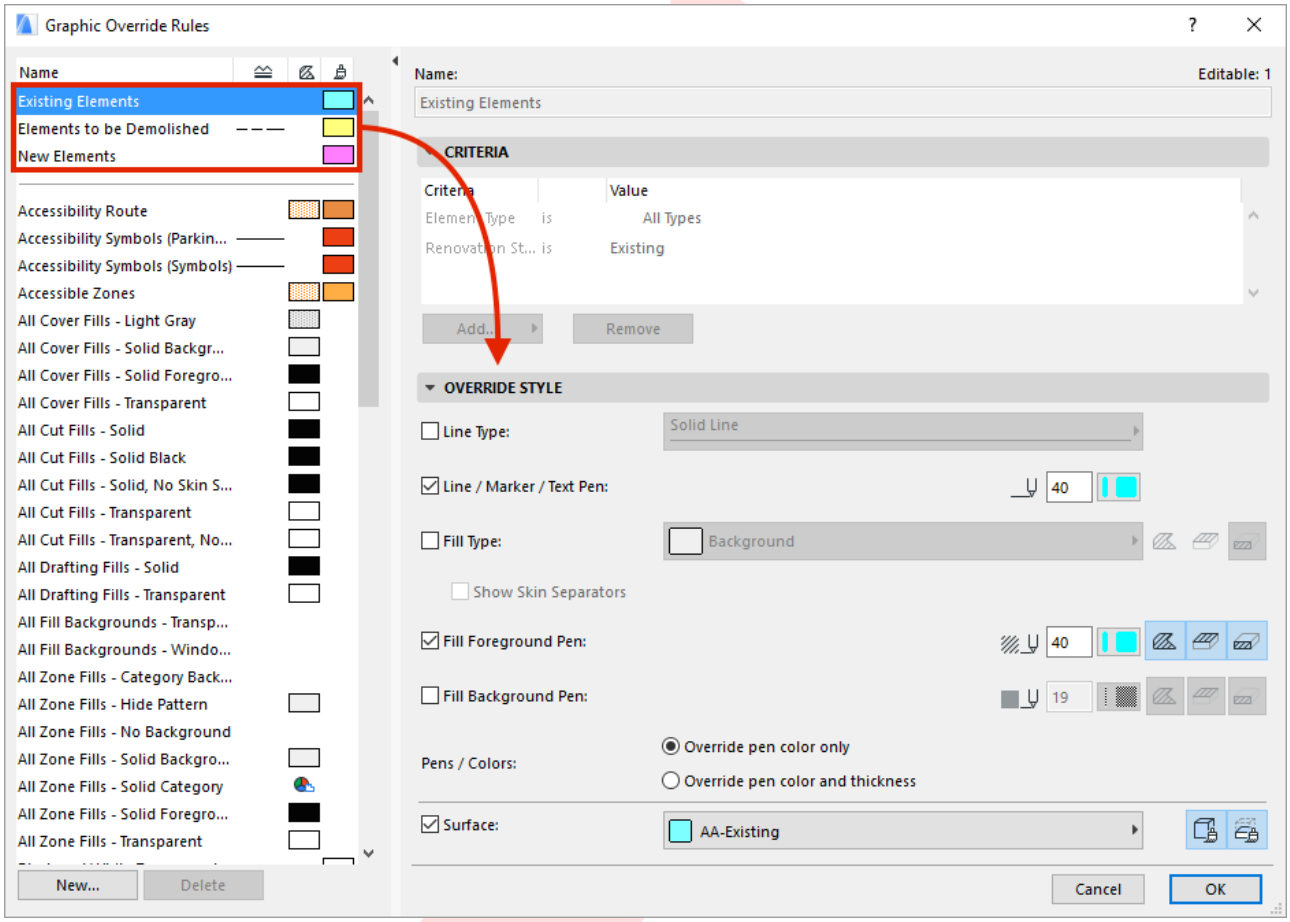
http://helpcenter.graphisoft.com/tips/renovation/#About_the_Renovation_Feature

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.



PART XIII - CLASH DETECTION (optional)

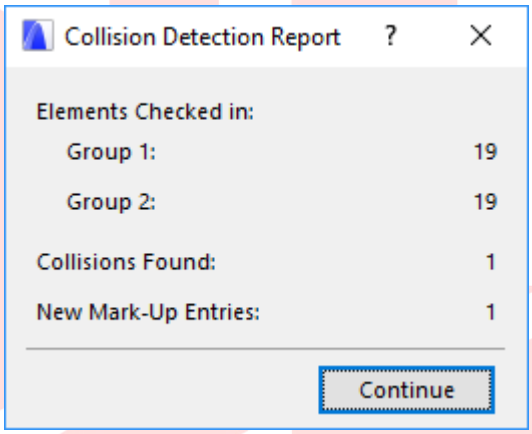
Clash detection can be carried out in between accessibility elements and regular building elements to ensure access and clearances. This is completely voluntarily and will not be checked by the officers, however it can increase the quality of the BIM project.

1 Launch the **Design/Collision Detection...** command.

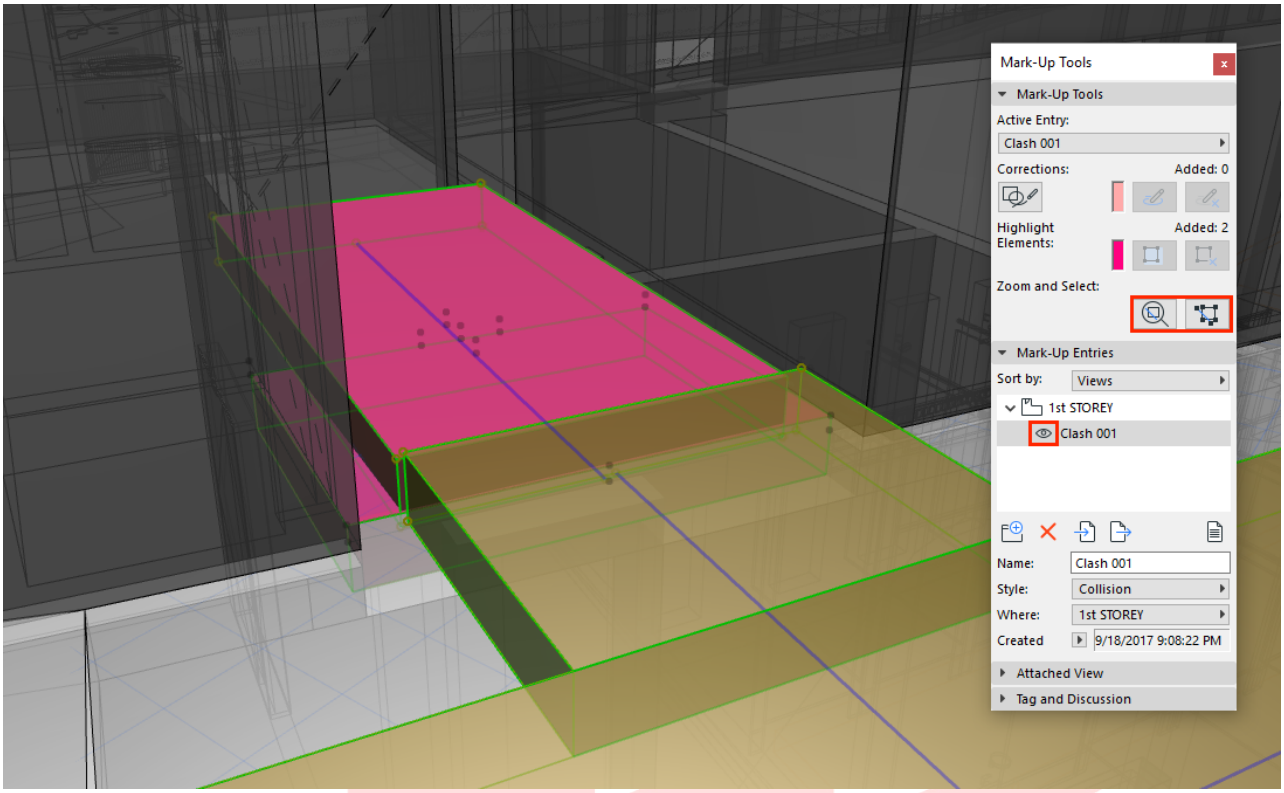
2 **Define the two groups** you wish to check for collision. Preset Find & Select Criteria Sets can be used for this purpose.

3 **Run the check**.

4 The found clashes can be listed under the Mark-Up Tools palette. Click **Continue**.



5 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.

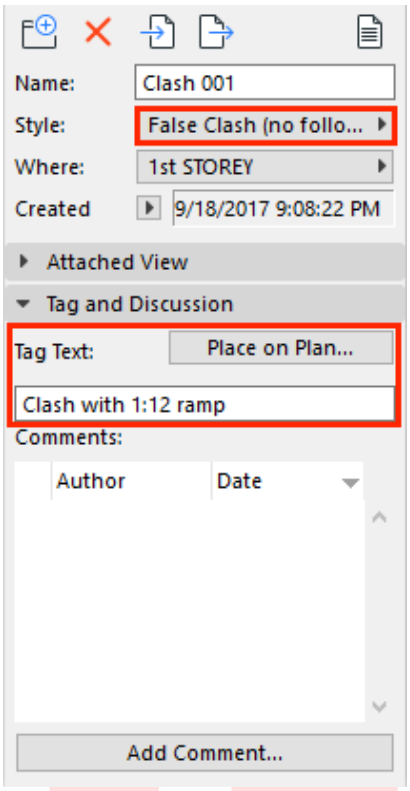


Courtesy of Liu & Wo Architects Pte Ltd.

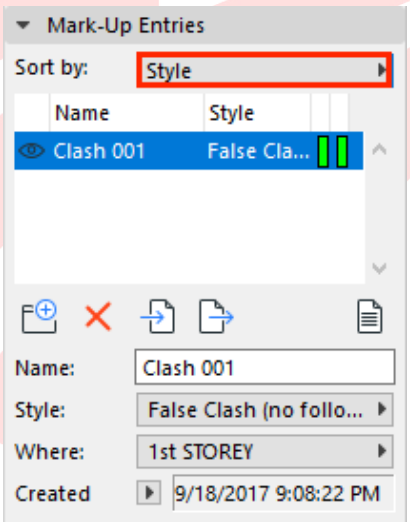
6 If the clash is a real issue (for example accessibility route clashing with elements) then fix the model accordingly.

7 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.

8 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.



9 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.



10 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.

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 21 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.

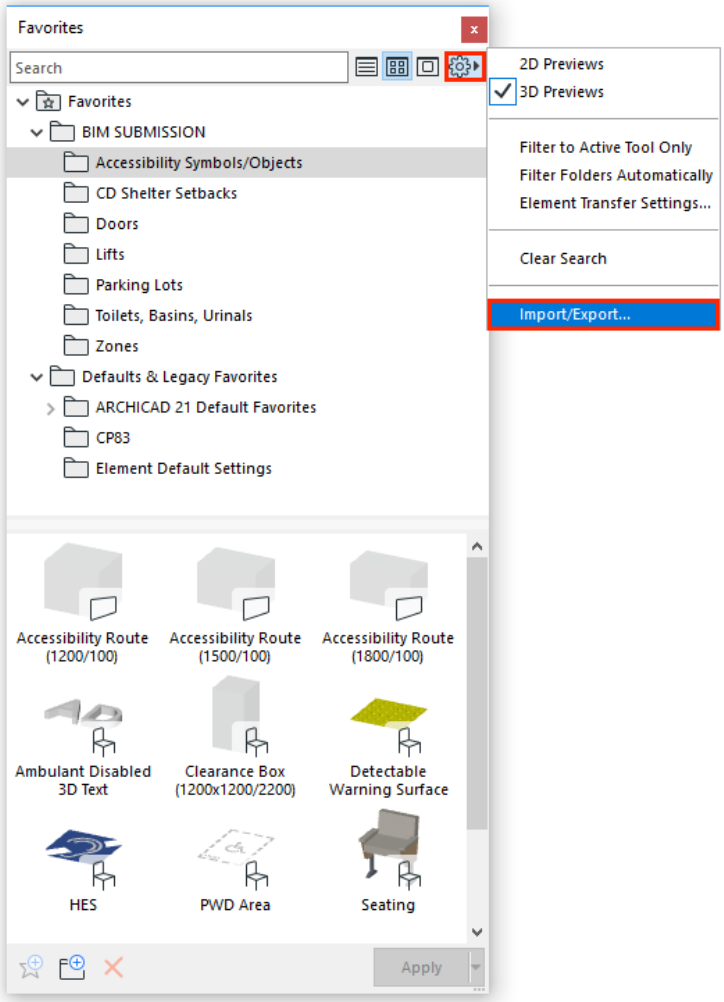
Favorites

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.

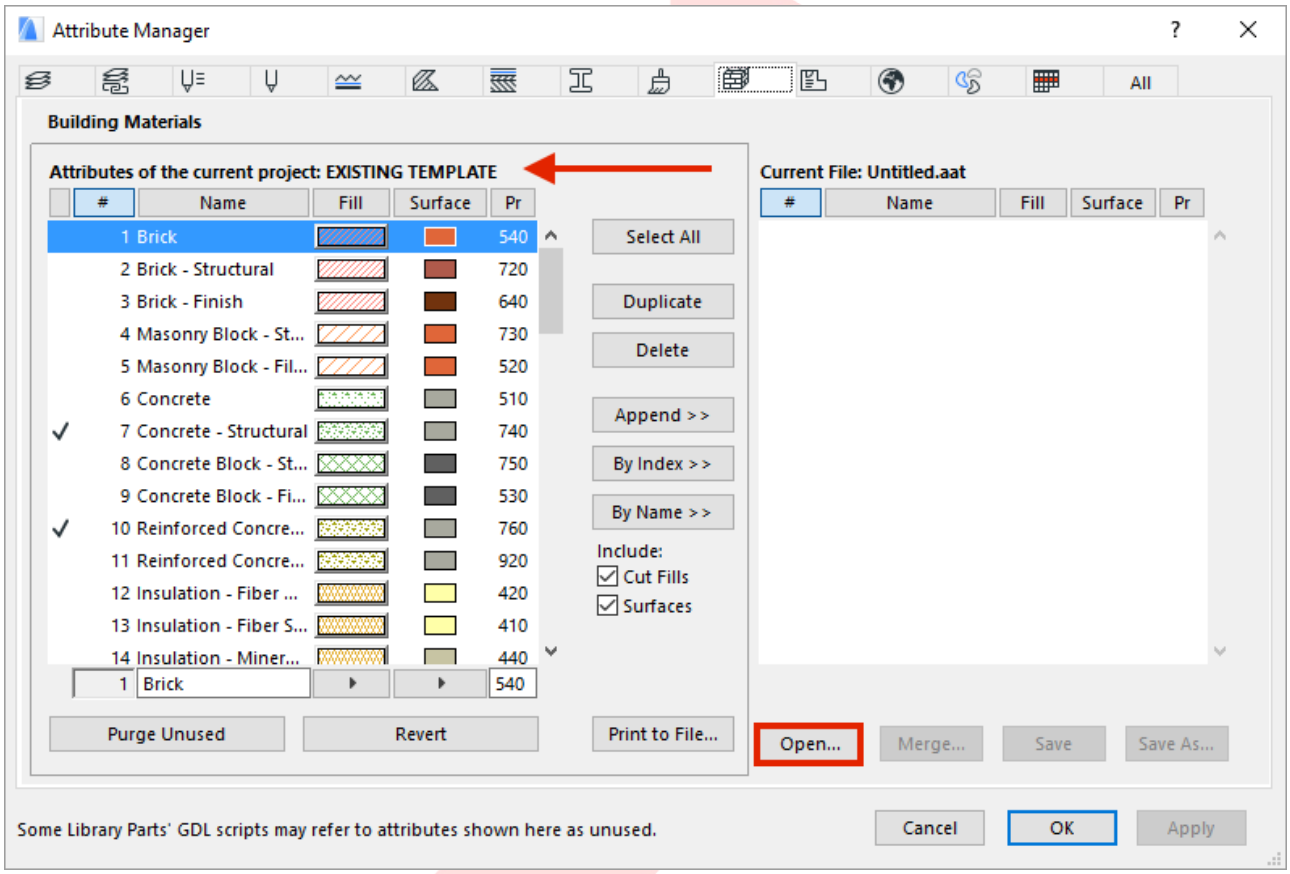


Attributes

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...**.

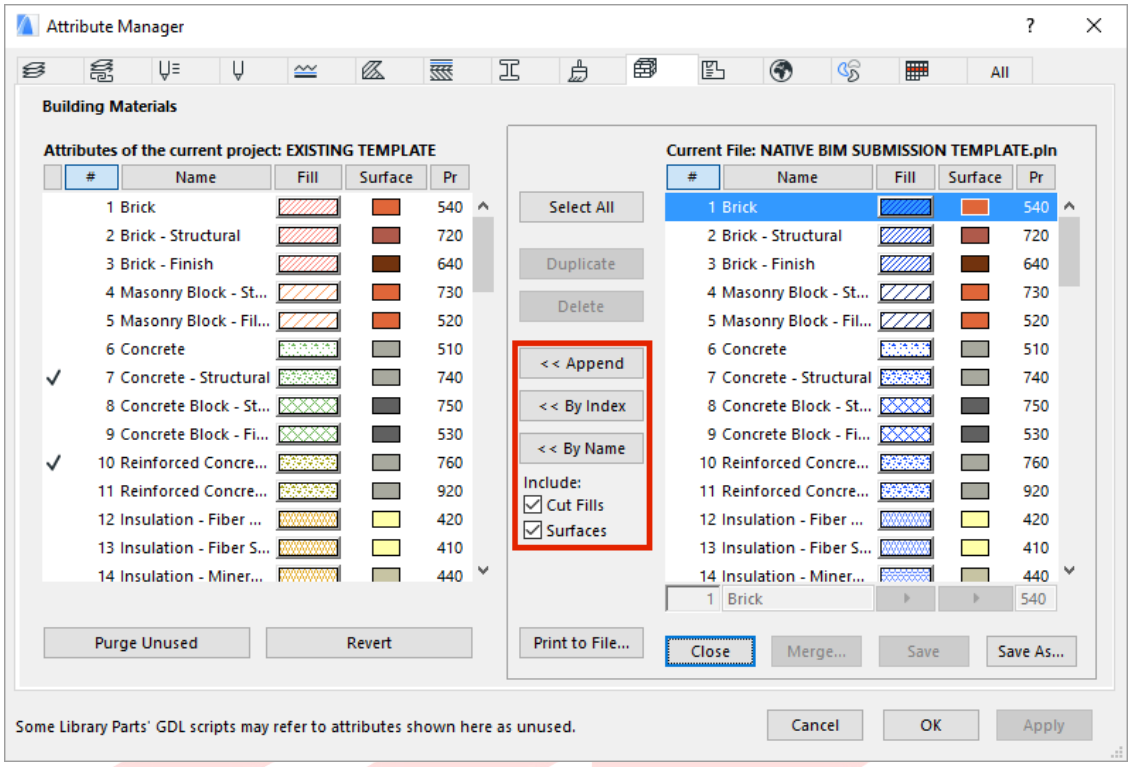


3 Once opened, select the different types of attributes using the selector tabs on the top of the dialog.

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 21 Template:

- Existing attributes rearranged for better index no. sequencing to comply with one-model concept as well as detailed in the following table (STR and MEP attributes are not appearing in the current template for architectural BIM submission):

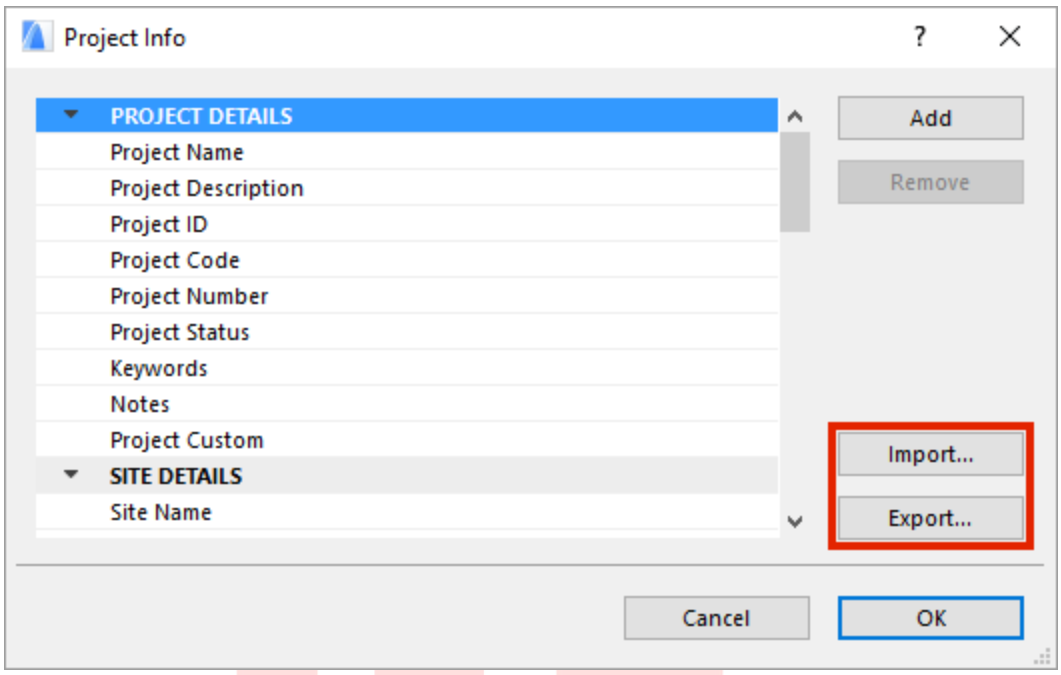
	ARCHICAD Defaults	ARCHI	STR	MEP
Layers	0-74		301+	401+
Layer Combinations	removed	201+	301+	401+
Pen Sets	1-13	201+	301+	401+
Line Types	1-24		301+	401+
Fill Types	1-137	201+	uses ARCHI	uses ARCHI
Composites	1-25	201+	-	-
Profiles	1-22	201+	-	-
Surfaces	1-133	201+	-	-
Building Materials	1-60	201+	-	-
Zone Categories	1-12	201+	AC defaults	AC defaults
MEP Systems	modified	-	-	1-33

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

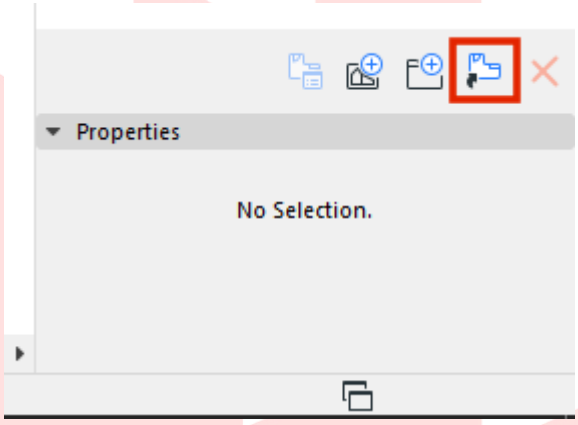
Views, Layouts (and Layout Subsets) and Master Layouts cannot be exported directly. The contents of the Master Layouts however can be copied manually.

1 **Select all elements** of the Master Layout and use the **copy** command.

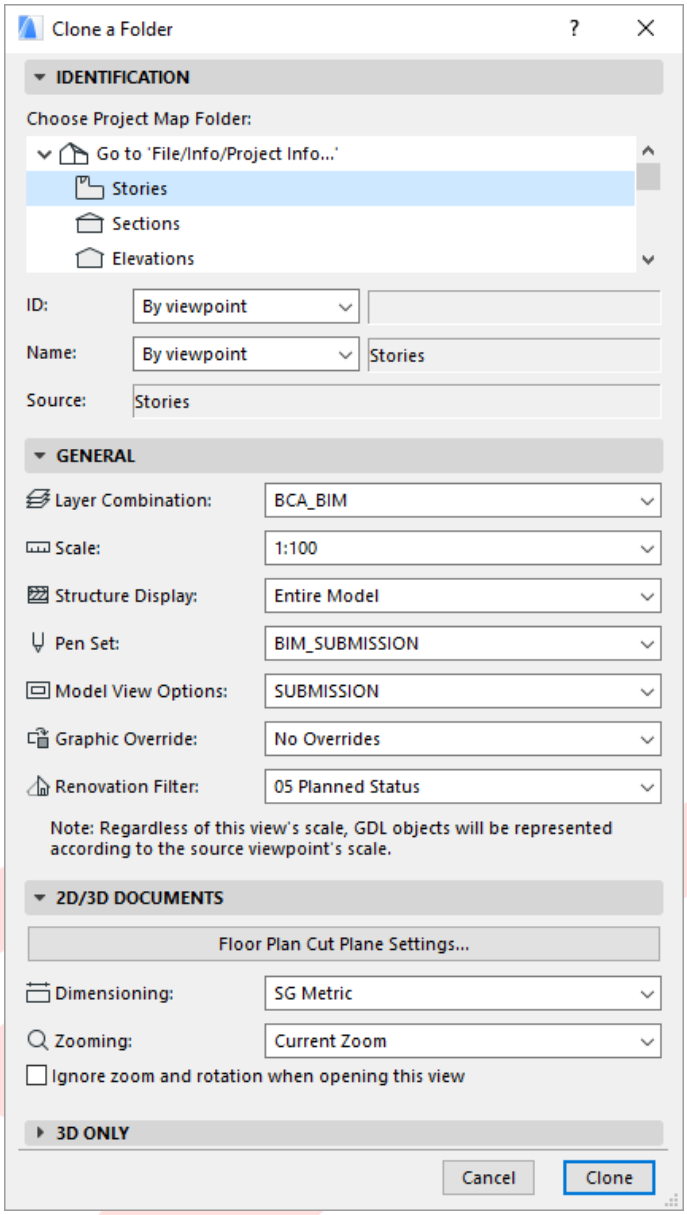
2 **Paste** the elements into an empty Master Layout in the company file.

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.



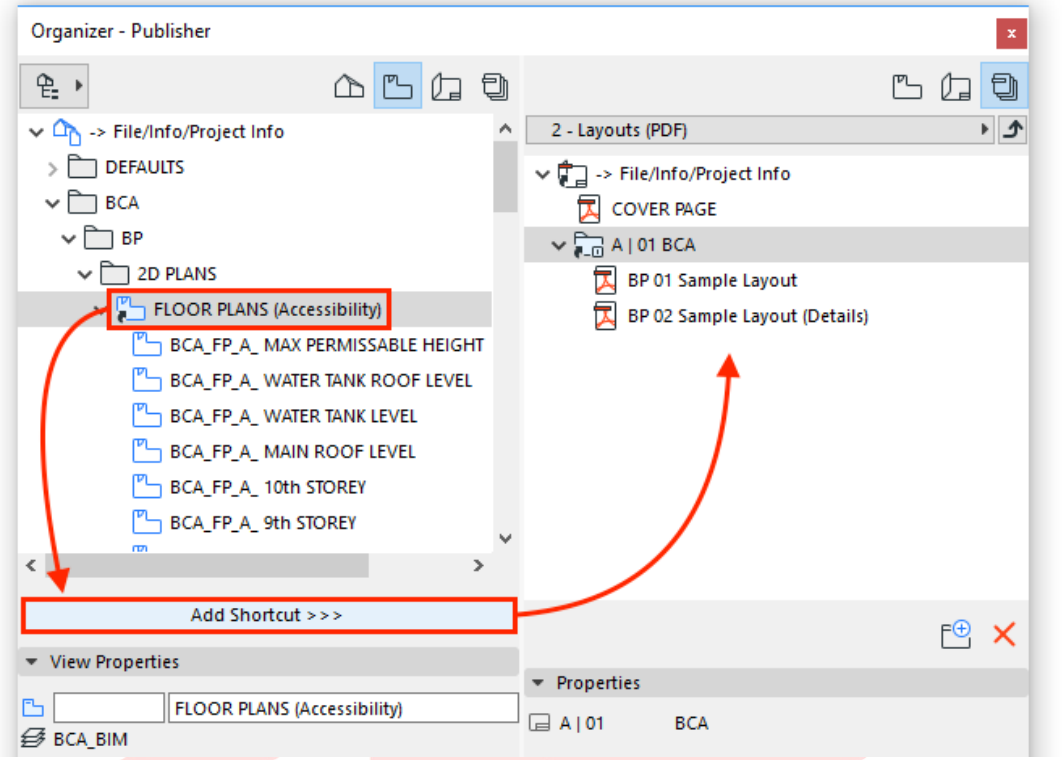
3 **Drag** the content of the cloned folders or the folders themselves **from the View Map to the Layout Book** in the **Organizer** (under **Window/Palettes/Organizer**) manually to ensure that the View Map and the Layout Book are synchronized.

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.



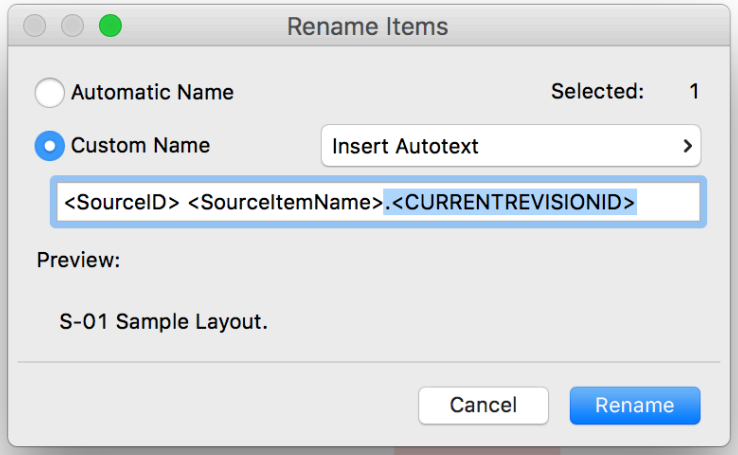
The Publisher Set item names can also include Autotexts, such as codes, IDs, revision numbers, etc. Those custom fields that were created under the Layout Info Scheme can also be inserted.

1 **Select the item**/folder/root folder of the set.

2 **Right-click and choose Rename Items...**.

3 Change to **Custom Name** radiobox.

4 **Add Autotexts from the Insert Autotext dropdown list**. Note, that the input field allows custom entries as well (for example project IDs can be used as prefixes - if not set as an autotext).



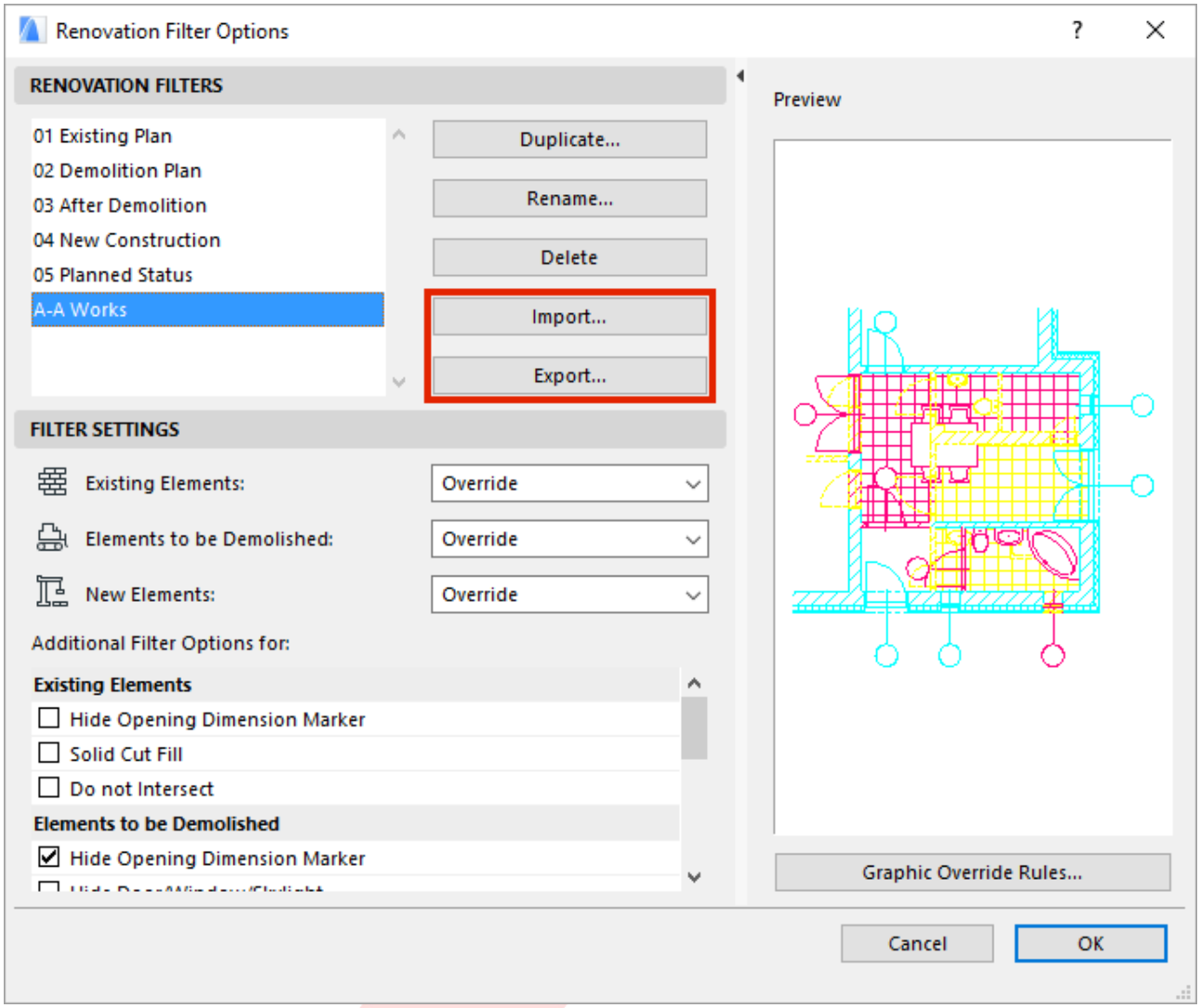
Find more details on **Revision Management** in general
at the GRAPHISOFT Help Center here:

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

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...**.

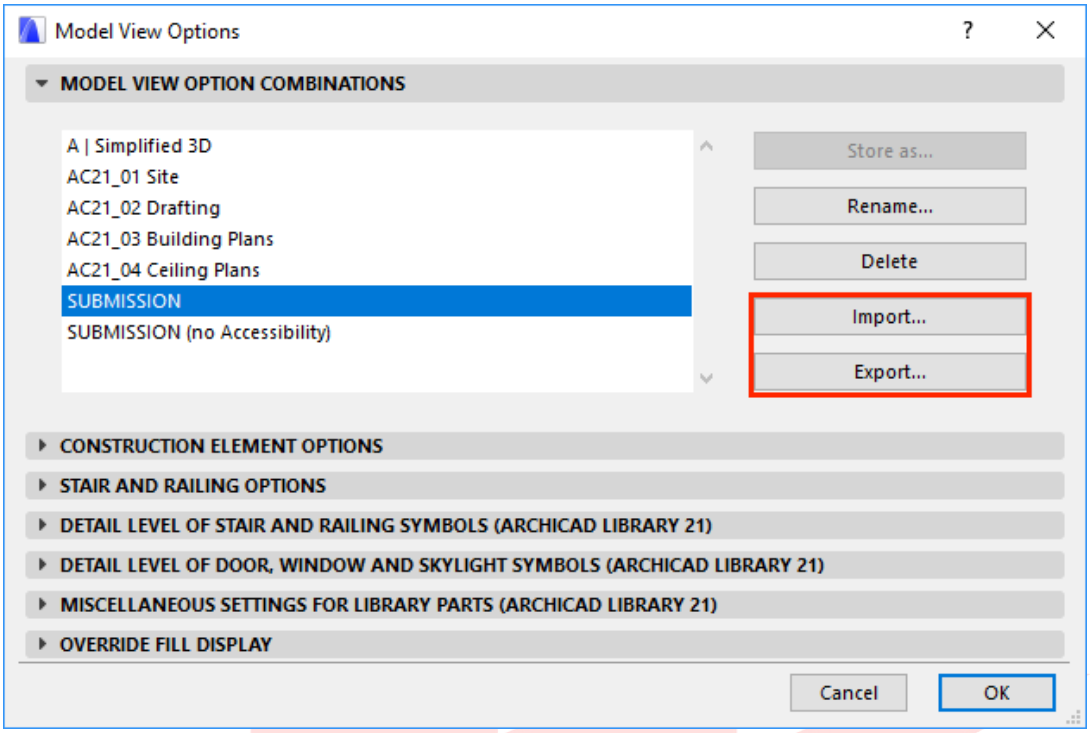


3 Similarly use the **Import...** button in the **company template file**.

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...**.

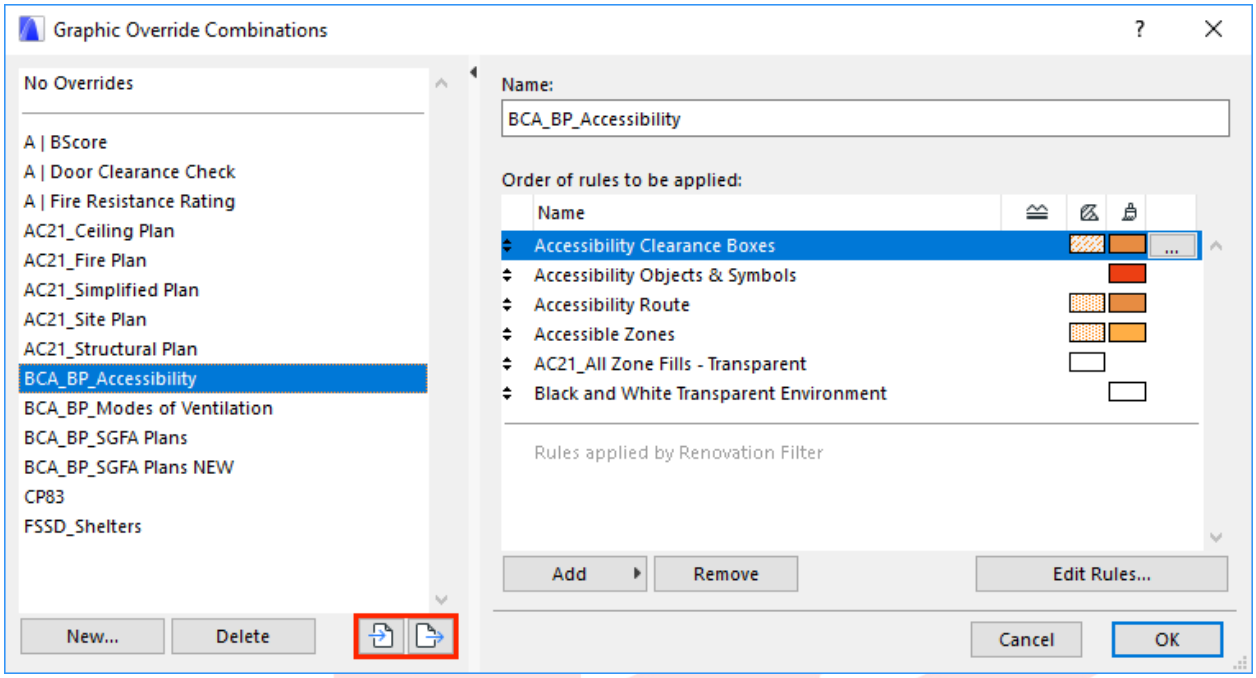


3 Similarly use the **Import...** button in the **company template file**.

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 individually.

NEW in the ARCHICAD 21 Template:

- Graphic Override Combinations and Rules narrowed down
- A | prefix used respectively for architectural and BCA_BP_ and FSSD_ for use for submissions.
- AC21_ prefix added for factory defaults.

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

Based on the BIM e-Submission COP of December, 2017, the deliverables must be submitted in the following formats. For actual requirements always check the applicable COP.

- **URA and BCA**:
    - Native files - **.PLA** (project) and **.BIMX** (3D)
      [or .PDF (including navigable 3D views)]
- **SCDF, NEA, PUB, NParks, LTA, HDB, JTC**:
    - Lightweight files - **.PDF** (including navigable 3D views), **.BIMX**

All drawing views (plans, elevations, sections, layout views or sheets) must be compiled into a single file with the 3D model.

ACKNOWLEDGEMENT

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

For any queries please contact:

GRAPHISOFT Singapore
152 Beach Road
#10-05 Gateway East
Singapore 189721