# 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



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---- Links last accessed: December 6, 2017 ---

#### 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

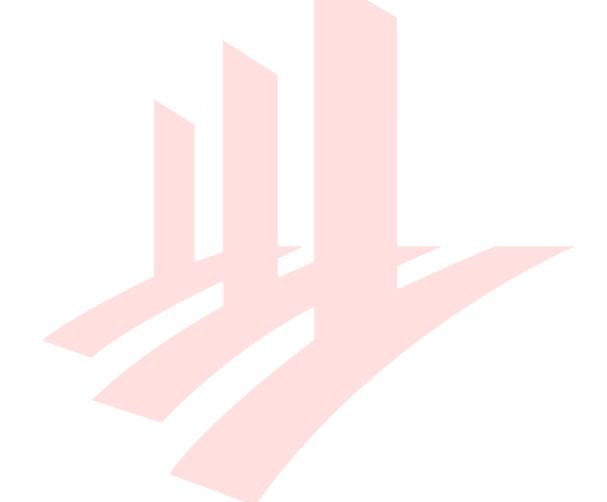
#### Centre for Construction IT

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.

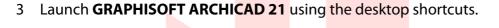
If there are contradictions between this submission guideline and vendor's instructions, BCA BIM team shall be contacted for clarification. Please note that any BIM Submission Guidelines and templates shall be collected from the BCA BIM team.

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.





- 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**.

Start ARCHICAD 21	?	×
What would you like to do?		
Create a New Project		
Open a Project		
Set up Project Settings		
Use a Template		
SG_BIM e-Submission Temp	plate_v21.tpl	~
O Use Latest Project Settings		
Set up Work Environment		
Use: Other Standard Profile 21		~
Quit ARCHICAD	New	
Do not Display this Dialog Next Time		

**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

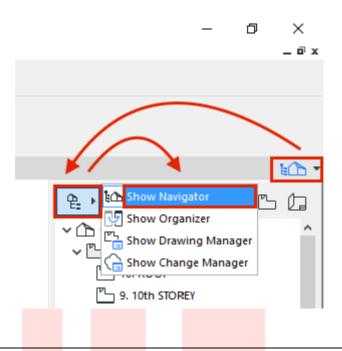
**...Template\_vXX.tpl** for the initial version, then **...Template\_vXX.1.tpl**, **...Template\_vXX.2.tpl**, etc., if available subsequently.

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

Library Manager						? >
ibraries in Project	Library Cont	ent				
Name		Location		Size	Status	
💼 Embedded Libr	ary			0 bytes	;	^
ARCHICAD Libr	ary 21	C:\Program Files\GRAPHIS	. 21\ARCHICAD Library 21	615 ME	3	
🚡 SG BIM Submis	sion Library	Macintosh HD\Users\sbali\	ubmission Library 21.lcf		(Missir	ig)
			= 1			
Add	<b>▼</b>		Library loaded from:			
			Placed objects:			Unknown
			Placed instances:			Unknown
			Placed instances:			Unknown
	are Missing					
Some Libraries	are missing					

- 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.

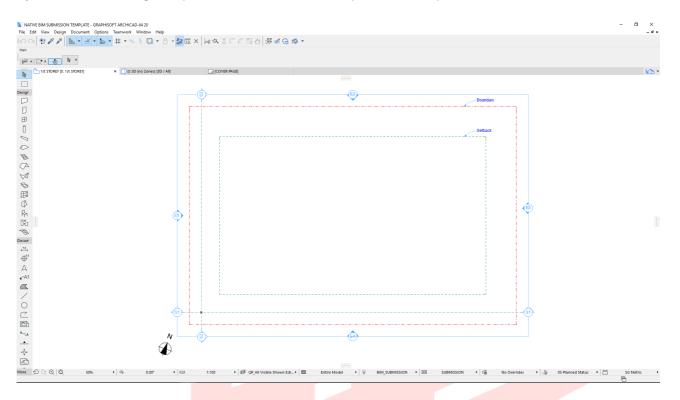


Find more information on the Pop-up Navigator at the GRAPHISOFT Help Center here:

http://helpcenter.graphisoft.com/guides/archicad-20/archicad-20-referenceguide/interaction/navigation/pop-up\_navigator/

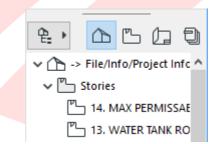
# **PART II - THE ARCHICAD NAVIGATOR**

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

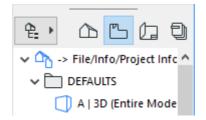


Once turned on, the Navigator palette is displayed on the right side of the interface, containing the following tabs/selectors:

• **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.

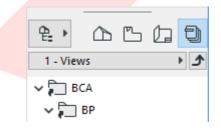
For CP83 submission or project phases after the submission you will still want traditional 2D format deliverables. Expand the **Masters** section and double-click a master layout to open it. The title blocks on the right can be customized to meet you company standards. Feel free to customize the title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

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Tree by	subset			Þ		
✓ 🕞 -> File/Info/Project Info						
V COVER PAGE						
BCA_BP_ VIEW LIST						

**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.

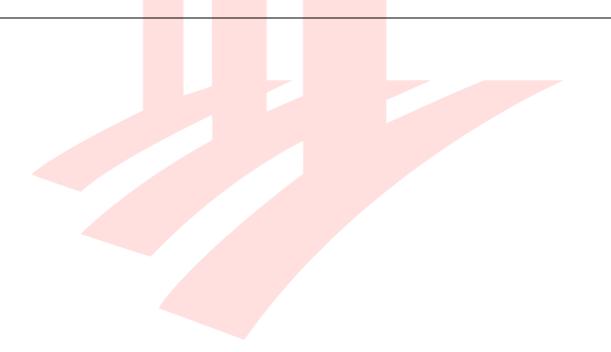


#### NEW in the ARCHICAD 21 Template:

- 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.

Story Settings		?	)	<
No. Name	Elevation	Height to Next	<u>• •</u>	
10 ROOF STOREY	35000	2300	$\checkmark$	$\sim$
9 10th STOREY	31500	3500	$\checkmark$	
8 9th STOREY	28000	3500	$\checkmark$	
7 8th STOREY	24500	3500	$\checkmark$	
6 7th STOREY	21000	3500	$\checkmark$	
5 6th STOREY	17500	3500	$\checkmark$	
4 5th STOREY	14000	3500	$\checkmark$	
3 4th STOREY	10500	3500	$\checkmark$	
2 3rd STOREY	7000	3500	$\checkmark$	
1 2nd STOREY	3500	3500	$\checkmark$	
0 1st STOREY	0	3500		
-1 FOUNDATIONS 1	-1000	1000		
-2 FOUNDATIONS 2	-11000	10000		
				~
Insert Above	Insert Below	Delete St	ory	]

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-thevirtual-building-3/archicad-model-views/stories/ The current template uses the *Project Zero* as the height reference when displaying manually placed elevation dimensions using the Dimension tool, meaning that all elevation heights will be measured from  $\pm 0,00$ .

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

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

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

Project Location			? ×
Project Name:	Go to 'File/Info/Project Info'		Edit
Site Full Address:	Address City Postcode Country		Edit
Latitude:	1° 17' 0.0000"	N ~ •	Cities
Longitude:	103° 51' 0.0000"	E ~	Import
Time Zone (UTC):	(UTC+08:00) Kuala Lumpur, Singap	ore 🗸	Export
Altitude (Sea Level):	15.00 🕨 m		
Project North: /গথ	70.00°		
		K	$\mathbf{I}$
Note: Change of Project Lo position accordingly. Ope position.	ocation will affect the Sun n Sun dialog to change Sun	Show in G	oogle Maps
		Cancel	ОК

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-referenceguide/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.

Reference Levels	< < Previous	Next >>
Reference Levels	Elevation	Relative to
🛱 _ Project Zero	0	$\bigtriangledown$
🛱 – <sup>2</sup> 2nd Reference Level	0	
Sea Level	-15000	
🛱 −¹ False Datum (Survey)	-115000 🚽 🗕	

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

http://helpcenter.graphisoft.com/guides/archicad-20/archicad-20-referenceguide/user\_interface\_reference/dialog\_boxes/project\_preferences\_dialog\_boxes/references/ 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.

MODEL DISPLAY					
▼ STORY LEVELS					
Show Story Levels:	Displa	ay & Out	put		$\sim$
Dot & Dashed		·•	Ų	5	
Markers & Story Level Lines:					
Offset to Boundary:	30.00	mm	0.00		
Built-in Story Marker		Þ	_Ų	5	
✓Arial ✓		_	🗸 Use Syr	mbol Colo	rs
Western ~ M‡	3.00	mm			
<b>B</b> / <u>U</u> ▼∷	4.00	mm			
Reference Level	Sea Level	D P	roject Zero	) )	-
Marker			alse Datur		
Text Settings			nd Refere	nce Level	
2D Representation		V 3	ea Level		
		~			
STORY HANDLE MARKER C	USTOM SETTING	GS			
GRID TOOL					
					_

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.

Dimension Default Settings		?	×
☆		D	efault
Dimension Type:	Dimension Orig	jin:	
¥+¥+¥ ♀-¥+¥ →→ <u>▼</u>	False Datum (S	Survey)	~
Marker Type:	Static Dimen	ision	
	$\bigtriangledown$	45	
Witness Line:			
		U 85 🚺	

## **PART IV - SITE AND SURROUNDINGS FROM EXTERNAL CONTENT**

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

#### DWG

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

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

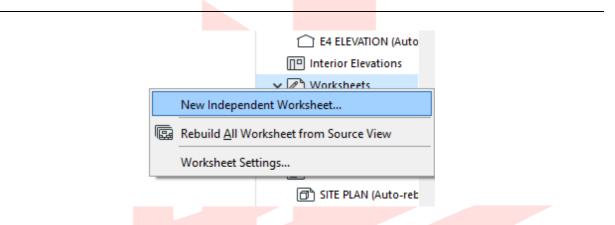
**Note**: Set the scale to 1:1000 for both X and Y in the Attach Xref dialog if your ARCHICAD working unit (mm) is different from the units used for the CAD topography map (meters).

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

A 1 V	,				2	
Attach Xre	t				?	×
ref Name:	< N e	w XREF≻		I	Browse	
ath:	C:\Users	\GSSG\Deskto	op\SITE.dwg			
Reference Ty	pe					
	Attac	hment	Overla	ау		
Insertion Po	int	Scale		Rotation		
Specify O	n-Screen	Spe Spe	cify On-Screen	Specify	On-Screen	
X:	0.00	X:	1.00	Angle:	0.00°	
Y:	0.00	Υ:	1.00	]		
Anchor Point:	Or	awing's own	origin			
	ODr	awing's own a	anchor point			
	⊖ Bo	unding box n	iode:	* + * +		
Place on story	: <u>0. 1s</u>	t STOREY		~		
ranslator:	02 F	or editable im	port	~	Settings	
Description:		this translator conversion ir	to open DXF/DWG o ARCHICAD.	content and con	tinue editing	^
						0

- 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).

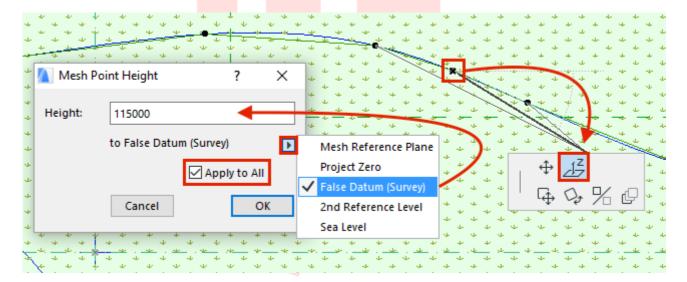


- 5 Select the elevation and section markers and adjust them to the topography map. Similarly you will need to move the boundary lines and the setback lines. These lines will be automatically updated on the elevation and section viewpoints.
- 6 To create a model of the terrain, use the **Mesh tool** 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.

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	🚺 New Mesh Po ? 🗙
	Add New Points     O Create Hole
	Fit to User Ridges
	Cancel OK

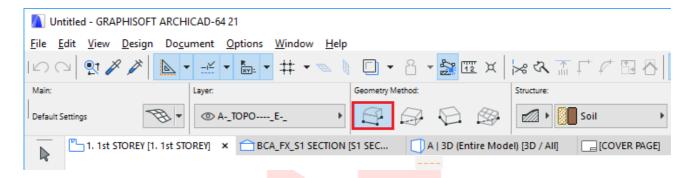
10 When done creating the ridges make sure that the mesh is selected and the Mesh tool is still activated. Click on a **node** of a ridge and choose the **Elevate Mesh Point...** command of the Pet palette. Check the **Apply to All** checkbox to raise all nodes of the ridge and choose the appropriate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

Place Mesh from Survey	ors Data	1	?	×	(
Surveyors Unit:	meter			``	-
Placement:					
Define graphically					
<ul> <li>Original location</li> </ul>					
Zoom to the new	mesh				
Project Zero is above Sea Le	vel by:	15.00	meter		
		Cancel		OK	

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**

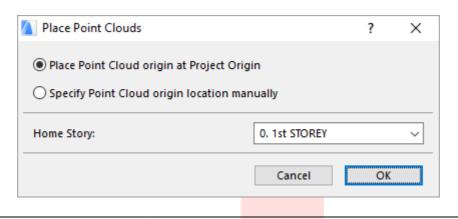
ARCHICAD natively supports the industry standard E57 and XYZ point cloud file formats which can be imported and used to model existing buildings before renovations, surroundings or asbuilt structures.

- 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.

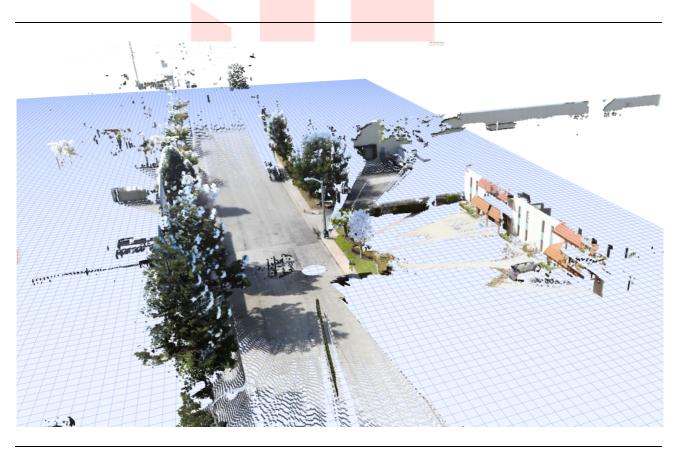
Create Point Cloud	Objects	?	$\times$
LCF files will be genera automatically added to	ated from every imported the Linked Library.	Point Cloud and	
Generate LCF files in th	nis folder:		
C:\Users\GSSG\Docum	nents\GRAPHISOFT\Point	Clouds Browse	
Point Cloud names:		Converted fi	les: 1
Source Name	Object Name	LCF File Name	
Station018.e57	Surroundings	Station018.lcf	A
			~
	ects and LCF files sharing automatically renamed.	the same name and	

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:

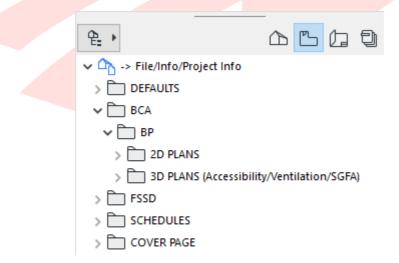
http://helpcenter.graphisoft.com/guides/archicad-20/archicad-20-referenceguide/interoperability/file\_handling\_and\_exchange/working\_with\_point\_clouds/import\_ point\_clouds/

# **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.

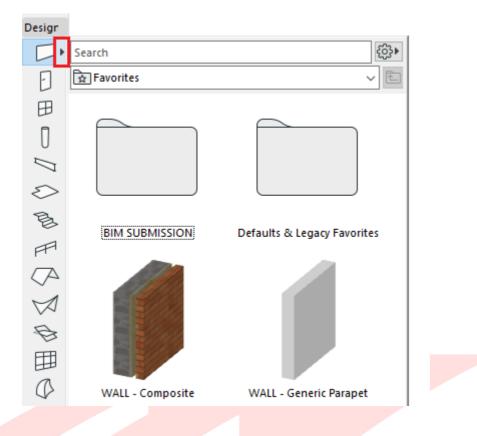
ARCHICAD 21 has the *Quick Options* at hand at the bottom of the screen on a bar. Click the layer setting selector and switch to the **All Visible Shown Editable** layer combination.

	✓ All Visible Shown Editable
	BCA_BIM
	BCA_BIM (no Accessibility)
	CBPU
	CP83
	FSSD
	LTA
	URA
All Visible Sh▶	🖾 Entire Model 🕨 😾 BIM SUBMIS )

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.

Element Transfer Settings			?	$\times$
Name	≜ £ <b>√</b> (	Name:	Edit	table: 1
Exclude ID / Layer [DEFAULT]	^	Transfer All Settings (excl. Home Story) [FAVORITES]		
Exclude Label Text				
Exclude Library Part		Optional Settings to Include during Transfer:		€Ĝ} <b>&gt;</b>
Exclude Metadata		> ∠ ∠ <sup>α</sup> Angle Dimension		^
Exclude Size / Height / Elevation		> E T Beam		
Stair 2D Symbol				
Stair Geometry		> 🗹 🎲 Change Marker		
Stair Structure / Finish		> [] Column		
Transfer All Settings		> 🗆 🌐 Curtain Wall		
Transfer All Settings (excl. Home Story) [FAVORITES]	£1	> 🗹 🕀 Detail/Worksheet		
Transfer Structure / Display / Library Part		> V ++ Dimension		
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		> 🗹 🎊 Fill		
	~	> 🗹 米 Hotspot		~
New Delete	€	Cancel	ОК	

## 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**).

Criteria Set Nam	e:	All Elements					
		Built-in Criteria Sets					
Criteria		All Elements					
Element Type	is	All 2D Elements					
		All 3D Elements					
		All elements on unlocked and visible layers					
		Inverted elements					
Add 🔻		My Criteria Sets					
		Accessibility - Clearance Boxes					
Selected:	0	Accessibility - Routes					
Editable:	ŏ	Accessibility - Symbols					
contable.	, v	Accessibility - Zones					
		All MEP Elements					
		All Modeling Elements					
		All STR Elements					
		Annotations and Markers					
		BScore Descriptions (LSi Input)					
		Details - Air Space Cover Fills					
		Details - Non-BM Fills					
		Zones - Mechanical V with AC					
		Zones - Mechanical Ventilation					
		Zones - Natural V with AC					
		Zones - Natural Ventilation					

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.

	✓ All Visible Shown Editable
	BCA_BIM
	BCA_BIM (no Accessibility)
	CBPU
	CP83
	FSSD
	LTA
	URA
All Visible Sh▶	🖾 Entire Model ► 😾 BIM SUBMIS ।

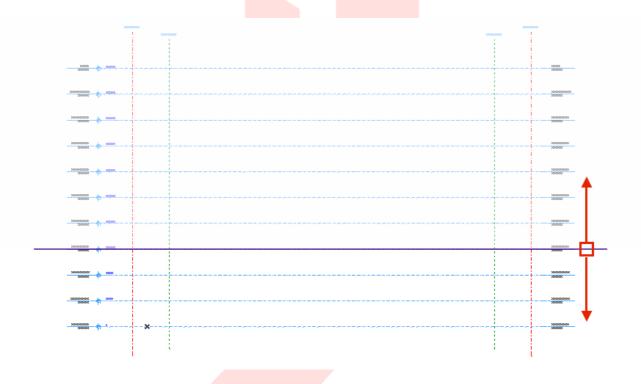
Note: Schedules are editable in all views by default.

# **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.

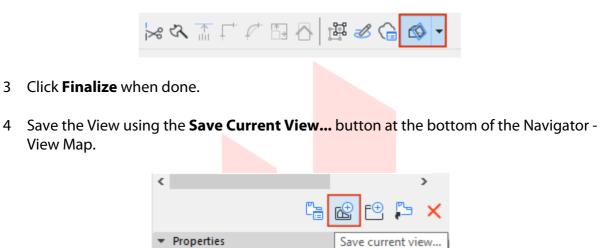


## **Creating/modifying Floor-by-Floor 3D Views (3D Cutaway Planes)**

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

View Map.

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



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.

-		BCA_3D_AV_ 5th STOREY	
		Open	
ľ		New Folder	
		Rename	
		Redefine with current window settings	
	×	Delete	
	à.	3D Projection Settings Ctrl+Shift+F3	
	*0	Sun	
	A	<u>3</u> D Window Settings	

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)

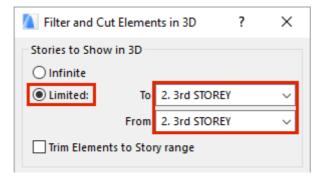
- 1 Open any of the views of the **BCA/BP/3D PLANS** folder in the View Map.
- 2 **Turn off** the Cutaway Planes, the full 3D model will be shown.



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

BCA_3D_AV_ 3rd STOREY [3D / AII]		<u></u>	
		Recent Related Views	•
		Save as View	
		View Settings	
	Þ	Pick Up View Settings	
		Get Last Settings	
		Match All to Current	
	à.	3D Projection Settings	Ctrl+Shift+F3
	P	<u>3</u> D Window Settings	
	$\square$	Perspective	Shift+F3
	Ø	Axonometry	Ctrl+F3
	Ø	3D <u>C</u> utaway	Ctrl+Y
	ŝ,	Filter and Cut <u>E</u> lements in 3D	Ctrl+Alt+A
		Close All Other Tabs and Windo	ws

- 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.

		BCA_3D_AV_ 5th STOREY
ł		BCA_3D_AV_4th STOREY
		Open
*		New Folder
		Rename
		Redefine with current window settings
	×	Delete
	à,	3D Projection Settings Ctrl+Shift+F3
	*0	Sun
	P	<u>3</u> D Window Settings

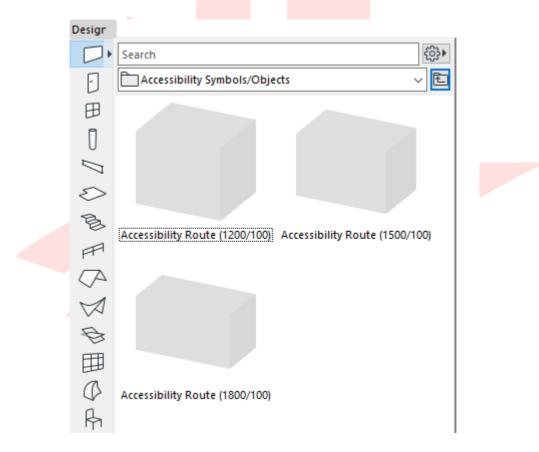
# **PART VII - ACCESSIBILITY & VENTILATION**

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**.

	Geome	try Method:		
Default Settings	- Accessibiloute.BCA_BP 🕨 🎵		$\square$	F

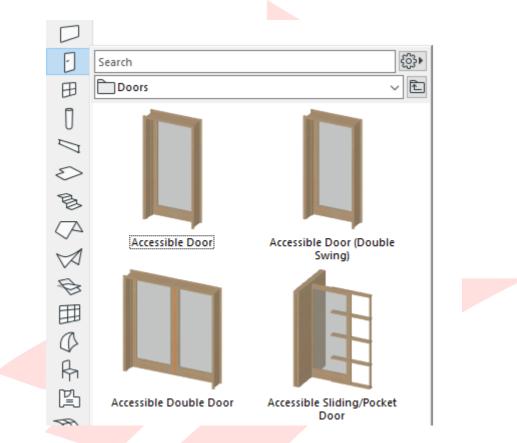
Note: The Bottom offset of the wall is set to **0 by default**. Always make sure that the accessibility route is located on the top surface of your actual slabs to avoid clashes.

ORTANI	SETTINGS	5 (Accessib	oility Ro	ute):					
Geometi	<b>'y:</b>								
• Be	ottom offs	et and sla	b top su	rface	locatio	n			
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.18551116	ation and I	roperties	<u>'ě</u>						
• Fl	ement Clas	sification	Unclassi	fied					
	according				ards				
	ructural Fu		-						
• La	ayer: <b>- Acce</b>	ssibility R	oute.BC	A_BP					
		·							
	- E CLAS	SIFICATION A	ND PROPE	RTIES					
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		CHICAD Class		(Uncla	ssified)				
									~
	* ID	AND CATEGO	RIES						^
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	Re	novation Stat	tus	New				ĪĒ	
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## **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:**

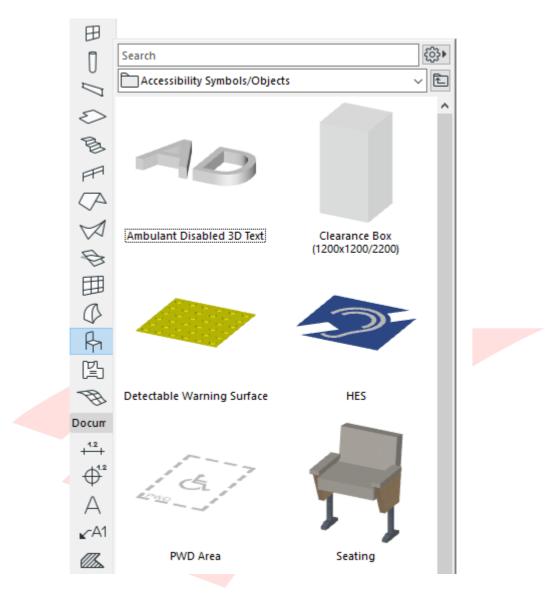
• Accessible: **True** 

Double De	oor 21	Defa
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Anchor	Sill to Story 1 50 Reveal to Wall Face	
► 🔀 H	INGED DOOR SETTINGS	
▶ 5도 F	LOOR PLAN AND SECTIO	N
) a∱te D	DIMENSION MARKER	
	MARKER CUSTOM SETTIN	GS
- E C	LASSIFICATION AND PRO	OPERTIES
_	CLASSIFICATIONS	
	ARCHICAD Classificatio	n Door 📃 🕨
•	ID AND CATEGORIES	
•	ID AND CATEGORIES	D - 001
•		D - 001 Non-Load-Bearing Element
•	ID	
•	ID Structural Function	Non-Load-Bearing Element Undefined use Palette to set default
•	ID Structural Function Position	Non-Load-Bearing Element Undefined
• •	ID Structural Function Position RENOVATION	Non-Load-Bearing Element Undefined use Palette to set default New
•	ID Structural Function Position RENOVATION Renovation Status Show On Renovation F ARCH   REGULATORY R	Non-Load-Bearing Element Undefined use Palette to set default New Tilter All Relevant Filters EEQUIREMENTS
•	ID Structural Function Position RENOVATION Renovation Status Show On Renovation F	Non-Load-Bearing Element Undefined use Palette to set default New Tilter All Relevant Filters EEQUIREMENTS
	ID Structural Function Position RENOVATION Renovation Status Show On Renovation F ARCH   REGULATORY R	Non-Load-Bearing Element Undefined use Palette to set default New Tilter All Relevant Filters EEQUIREMENTS

## **Clearance Boxes**

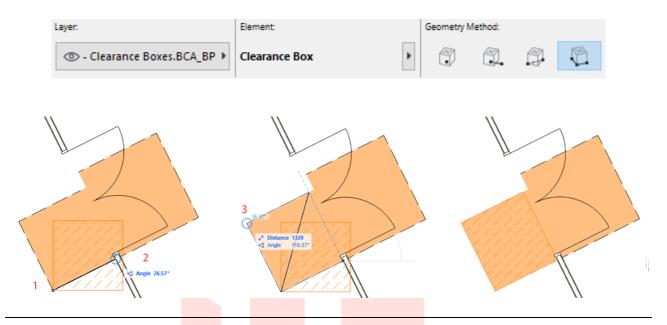
Clearance boxes are only to be placed for accessible doors which have their minimal spaces defined and shown.

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

	ARCHICAD Classification	Building Element Proxy	Þ	
				$\sim$
*	ID AND CATEGORIES			^
	ID	CBOX_001		
	Structural Function	Non-Load-Bearing Element		
	Position	Undefined		
*	RENOVATION	use Palette to set default		
	Renovation Status	New	ĨĿ	
	Show On Renovation Filt	er All Relevant Filters		
*	ARCH   REGULATORY REC	UIREMENTS		
5	Accessible (spaces and el	True		
e	Amendment Status	Proposed		v

## **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**.

			~
AD Classification	. Space	Þ	۱., I
CATEGORIES			^
	ZONE-001		
TION	use Palette to set defa	ult	
ion Status	New	ĪĒ	
n Renovation Filte	r All Relevant Filters		
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le (spaces and el	. True		
f Ventilation	Mechanical		
	market in the second se		×
	ion Status n Renovation Filte REGULATORY REQ Ile (spaces and el f Ventilation	ZONE-001 TION use Palette to set defa ion Status New In Renovation Filter All Relevant Filters REGULATORY REQUIREMENTS Ile (spaces and el True f Ventilation Mechanical	ZONE-001         TION       use Palette to set default         ion Status       New         n Renovation Filter All Relevant Filters         REGULATORY REQUERTS         le (spaces and el True         f Ventilation       Mechanical

**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.

<u> </u>				
Zone l	Default Settings		?	×
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• 🖓 •	NAME AND POSITIONING	i i i i i i i i i i i i i i i i i i i		
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) 🔤 Z	ONE STAMP			
) 🕌 Z	ONE SETTINGS			
۱ 🕜 I	MODEL			
• 📑 /	AREA CALCULATION			
- 🖹 (	CLASSIFICATION AND PRO	OPERTIES		
	CLASSIFICATIONS			
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	ARCHICAD Classificatio	n Space	D	
		n Space	D	E Ç
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•	ARCHICAD Classificatio	on Space ZONE-001	D	
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<ul> <li>✓</li> <li>✓</li> </ul>	ARCHICAD Classificatio	ZONE-001		
<ul> <li>✓</li> <li>✓</li> </ul>	ARCHICAD Classificatio	ZONE-001 use Palette to set default New		
<ul> <li>✓</li> <li>✓</li></ul>	ARCHICAD Classificatio	ZONE-001 use Palette to set default New ilter All Relevant Filters		
<ul> <li>✓</li> <li>✓</li></ul>	ARCHICAD Classificatio	ZONE-001 use Palette to set default New Filter All Relevant Filters EQUIREMENTS		
•	ARCHICAD Classification ID AND CATEGORIES ID RENOVATION Renovation Status Show On Renovation F ARCH   REGULATORY R Accessible (spaces and	ZONE-001 use Palette to set default New Filter All Relevant Filters EQUIREMENTS		
▼ ▼	ARCHICAD Classification ID AND CATEGORIES ID RENOVATION Renovation Status Show On Renovation F ARCH   REGULATORY R Accessible (spaces and	ZONE-001 use Palette to set default New Filter All Relevant Filters EQUIREMENTS el False		
▼ ▼ ▼ ©	ARCHICAD Classification ID AND CATEGORIES ID RENOVATION Renovation Status Show On Renovation F ARCH   REGULATORY R Accessible (spaces and Mode of Ventilation	ZONE-001 use Palette to set default New Filter All Relevant Filters EQUIREMENTS el False Mechanical	OK	

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

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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.

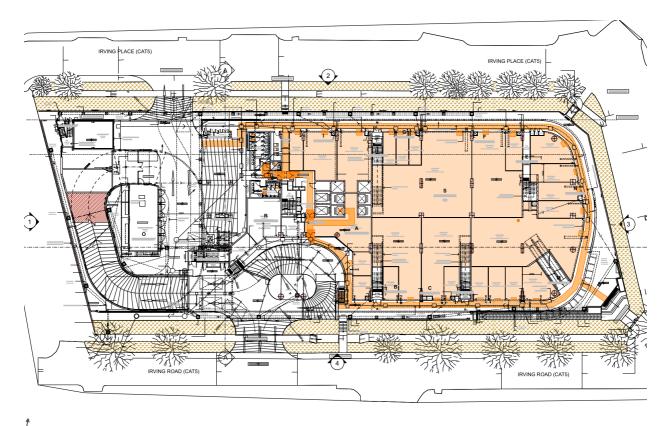
- 1 Open the **BCA\_BP\_ROOMS (All)** schedule from the **Project Map** or **View Map**.
- 2 **Click into any of the checkboxes** of the **Accessible (space)** column to change the accessibility of the Zones.

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

	365.68 m²		
Natural and Air-Conditioned	16.63		
Natural	15.07		
Natural	14.46		
Mechanical and Air-Conditioned	15.06		
Mechanical	104.97		
Mechanical	62.78		
Mechanical	36.86		
Mechanical	30.98		
Mechanical	29.85		
Mechanical	24.64		
Mechanical and Air-Conditioned	14.38	$\boxtimes$	

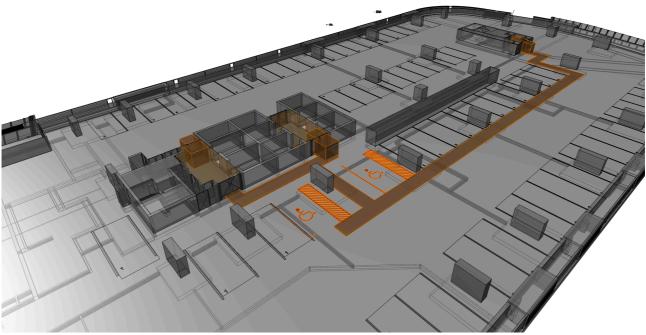
**Note #1**: Accessible Room and Elderly Friendly Room checkboxes refer to hospitality spaces only, where the room provides better accessibility and more space.

**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.

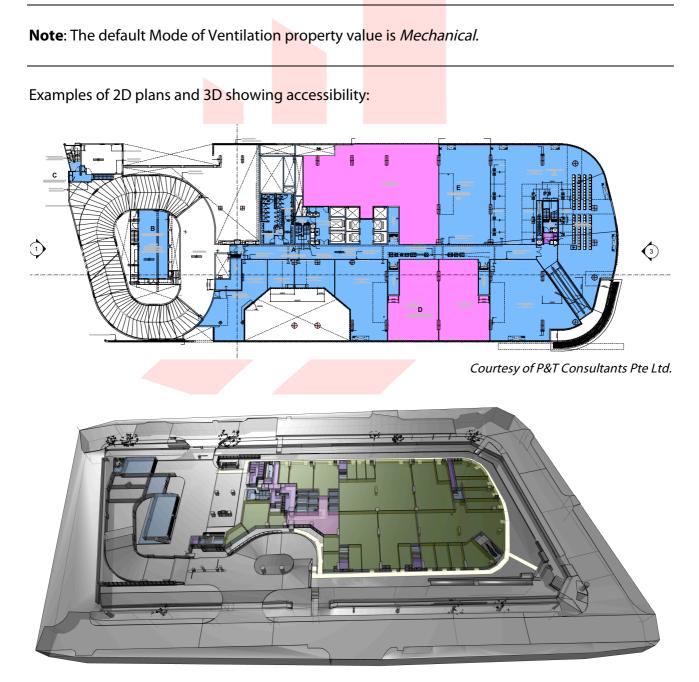


Courtesy of P&T Consultants Pte Ltd.

## **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.

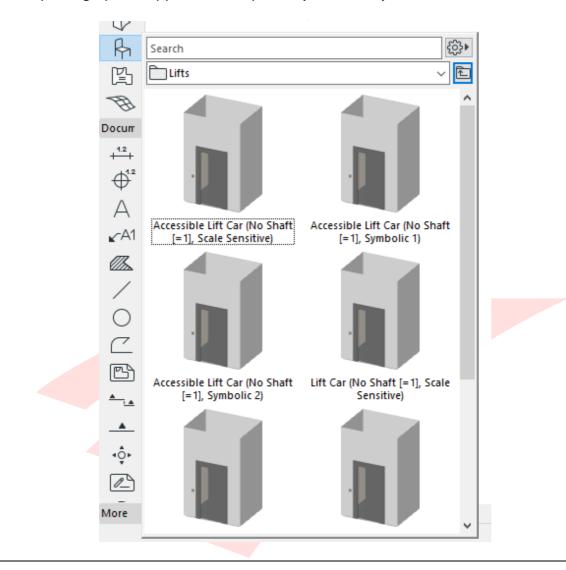


Courtesy of P&T Consultants Pte Ltd.

## 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):**

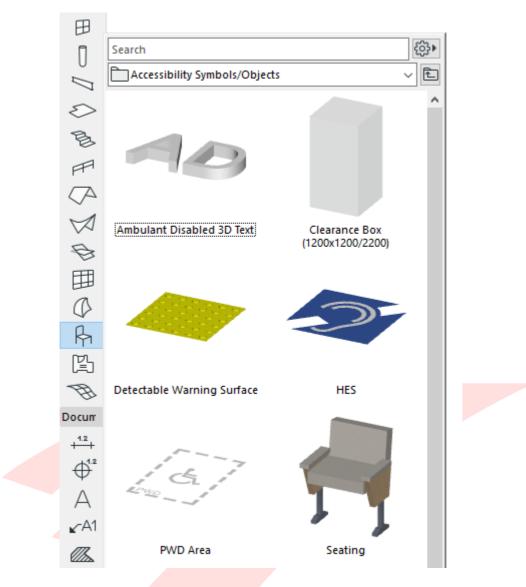
**Classification and Properties:** 

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

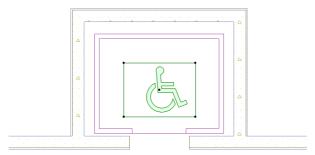
	ARCHICAD Classification	Elevator	Þ	
				~
•	ID AND CATEGORIES			^
	ID	OBJ - 001		
	Structural Function	Non-Load-Bearing Element		
	Position	Interior		
•	RENOVATION	use Palette to set default		
	Renovation Status	New	Ē	
	Show On Renovation Filte	r All Relevant Filters		
•	ARCH   REGULATORY REQU	JIREMENTS		
5	Accessible (spaces and el	True		
e	Amendment Status	Proposed		~

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.



	TINGS (Symbol of <i>I</i> and Properties: t Classification: <b>Bui</b>			nent Proxy		
• ID: acco	rding to your nan	ning	stand	dards		
	ral Function: <b>Non-L</b> ple: <b>True</b>	.oad	-Bear	ing Element		
	ANOTA					
			- 🖹 🕻	LASSIFICATION AND PRO	PERTIES	
$\bigcirc$		<u> </u>		CLASSIFICATIONS		^
				ARCHICAD Classificatio	n Building Element Proxy	
(LAB			*	ID AND CATEGORIES		^
				ID Structural Function	SAC-001	
Symbol of Access	Symbol of Access for People			Position	Non-Load-Bearing Element Undefined	
	with Hearing Loss (HES)		*	RENOVATION	use Palette to set default	
				Renovation Status	New	
				Show On Renovation F	ilter All Relevant Filters	
			-	ARCH   REGULATORY R	EQUIREMENTS	
			5	Accessible (spaces and	el True	
			e	Amendment Status	Proposed	
WC Clearance			*	ARCH   BUILDABILITY S	CORE (Wall Systems)	~
		· -				
<b>₩</b>		1	0	AANOTA	Cancel	ОК

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

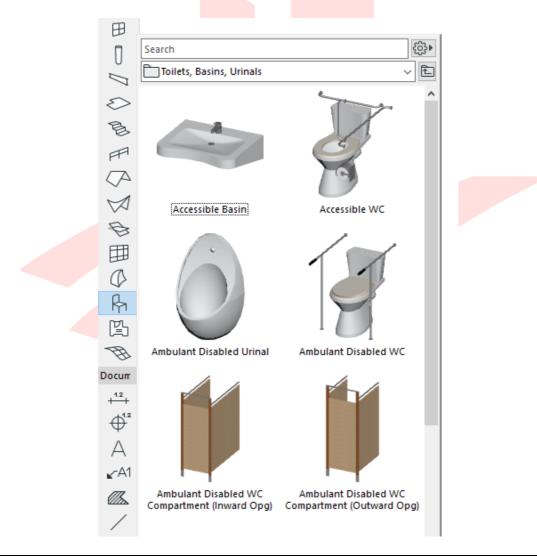
LIFTS							
		Car Inner Dimensions					
Accessible	ID	Clear Opening Width	Width	Depth	Quantity	Remarks	
$\boxtimes$	AL - 001	900	2,000	1,500	1		
					1		
	L - 001	900	2,000	1,500	1		
	L - 002	900	2,000	1,500	1		
					2		
					3		

## 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.

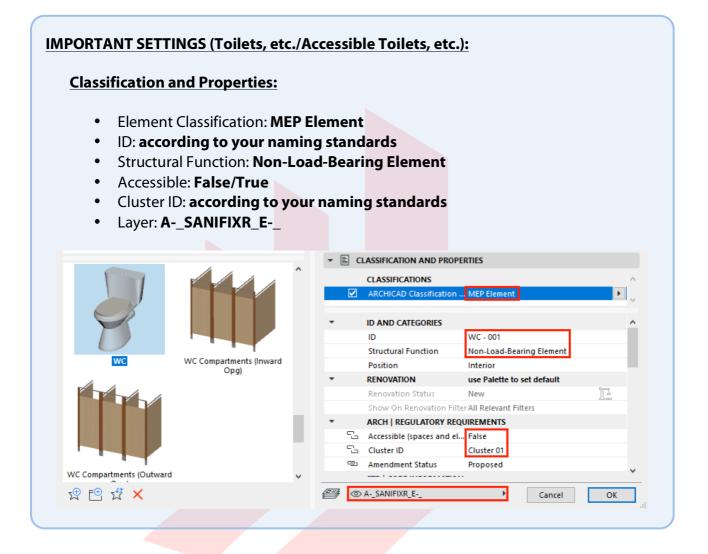
Note: There is a difference between individual toilets and toilet compartments. If you want to add compartments to your model you may decide whether to use the Commercial Bathroom Stall objects with or without the stall separators or built walls with single WC elements. Mixing the different types is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

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



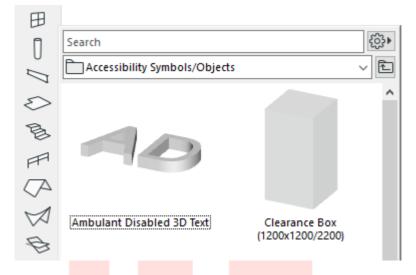
**Note**: A default Cluster ID property is stored with the Favorites, therefore it has to be changed manually.

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



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

 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.

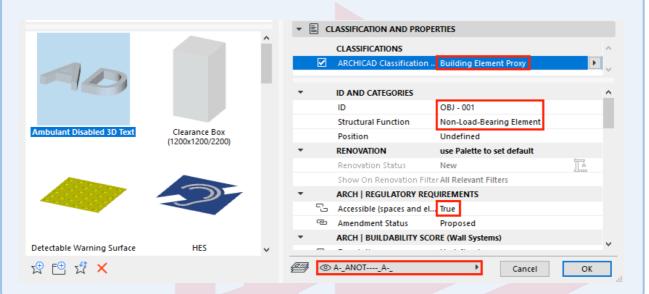


- 2 Once found, **double-click the previe**w to activate the tool with the settings of the favorite.
- 3 Place the necessary number of elements next to the toilets, which are to be marked accessible to highlight the function and the clearances.

#### **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.

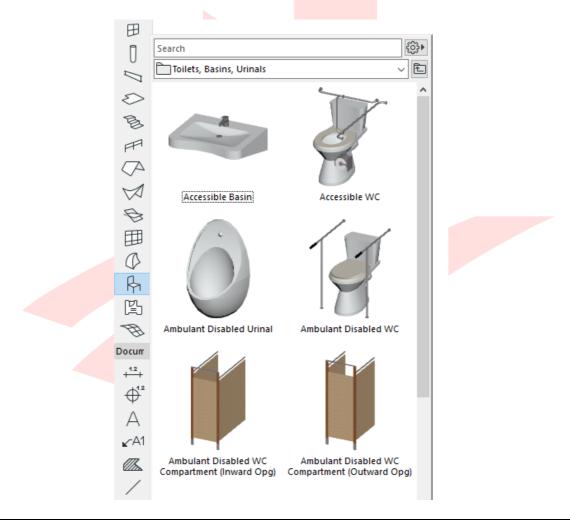
TOILETS						
Home Story	Accessible	Туре	Quantity	Remarks		
1st STOREY,	Cluster 01	I				
		Urinal 20	3			
		WC 20	6			
		Urinal 20	1			
		WC Disabled 20	1			
			11			
1st STOREY,	Cluster 02	-				
		Urinal 20	2			
		WC 20	4			
		Urinal 20	1			
		WC Disabled 20	1			
			8			
2nd STOREY,	, Cluster 03					
		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.



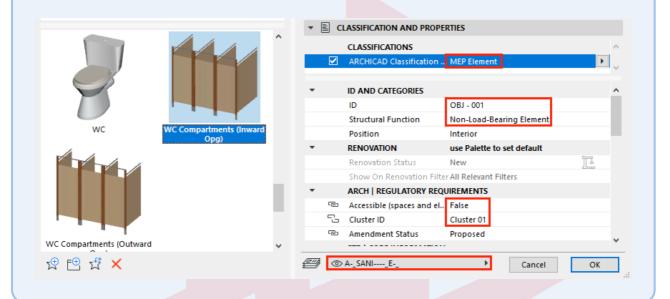
Note: Cluster ID property is not stored with the Favorites, therefore has to be set manually.

- 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.

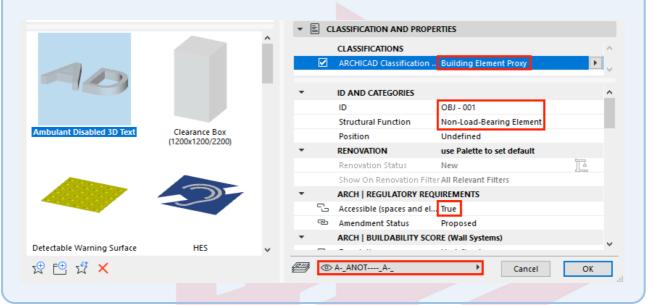
田				
Π	Search		4 දිටුි}	
	Accessibility Symbols/Objects		~ 1	
S			^	
B				
A				
$\triangleleft$	Ambulant Disabled 3D Text	Clearance Box (1200x1200/2200)		
B		(1200/1200/2200)		

- 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-\_

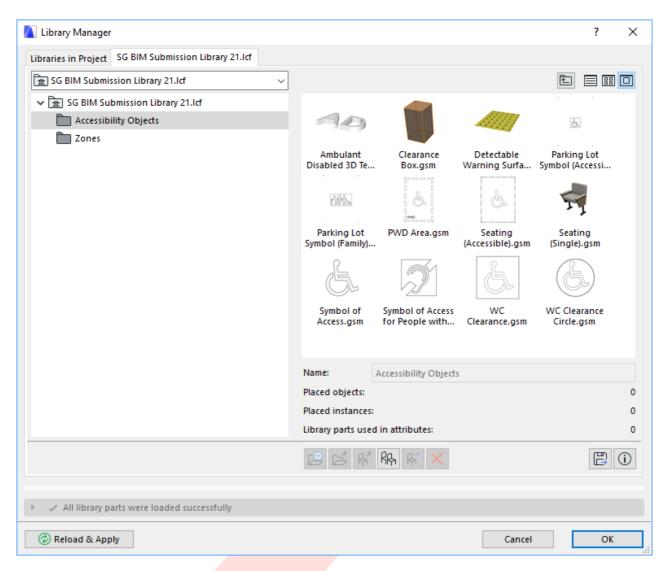


4 Open the **Schedules/Element/Toilets (Compartments)** schedule in the **Project Map** to check the results and make the necessary changes if needed.

	TOILETS (Compartments)								
Home Story	Accessible	Number of Stalls (toilets)	Remarks						
1st STOREY,	Cluster 01								
		3							
	$\square$	1							
		4							
2nd STOREY	, Cluster 02								
		3							
	$\square$	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).

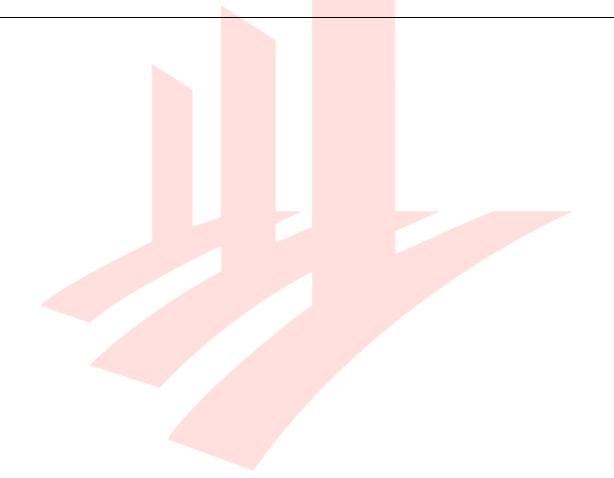


When using these objects, make sure that their settings (for example Accessible: True/False) will allow them to be highlighted in the relevant views. Please refer to element settings of similar objects in this chapter.

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**.

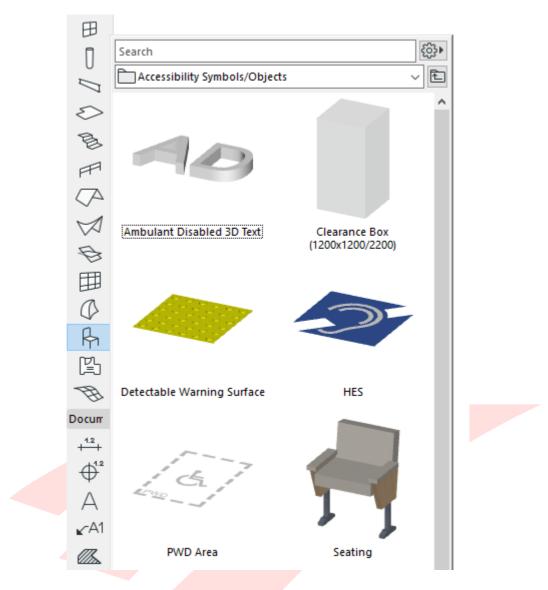
### Accessible (Audience) Seating

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.

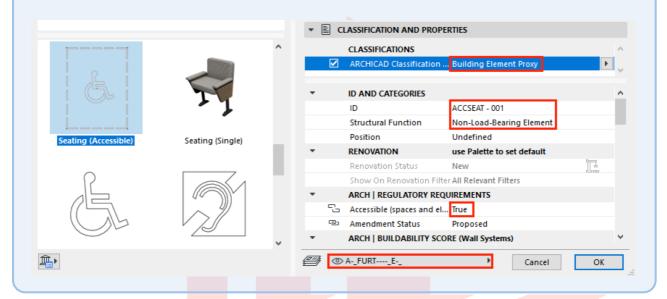


- 2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.
- 3 Place the necessary number of elements.

#### **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



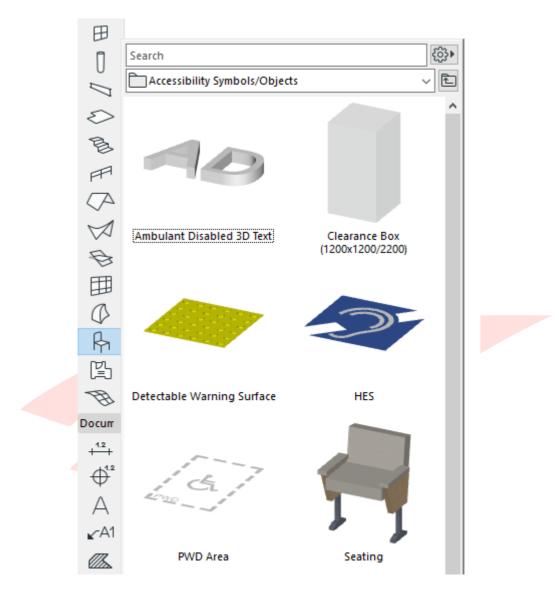
4 Open the **SCHEDULES/BCA\_BP\_AUDIENCE SEATING** schedule to check the results and make the necessary changes if needed.

ACCESSIBLE SEATING								
Home Story	Accessible	ID	Remarks					
1st STOREY,	Auditorium							
		REGSEAT						
		121						
	$\boxtimes$	ACCSEAT						
	5							
		126						

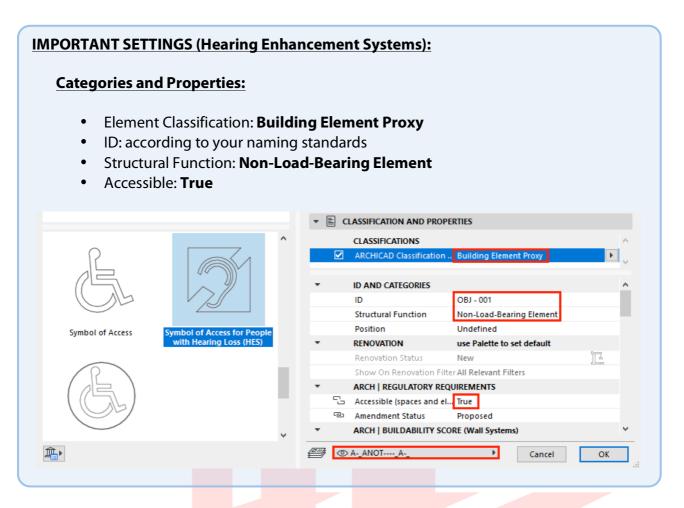
### **Hearing Enhancement Systems**

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.



4 Open the **SCHEDULES/BCA\_BP\_HEARING ENHANCEMENT SYSTEMS** schedule to check the results and make the necessary changes if needed.

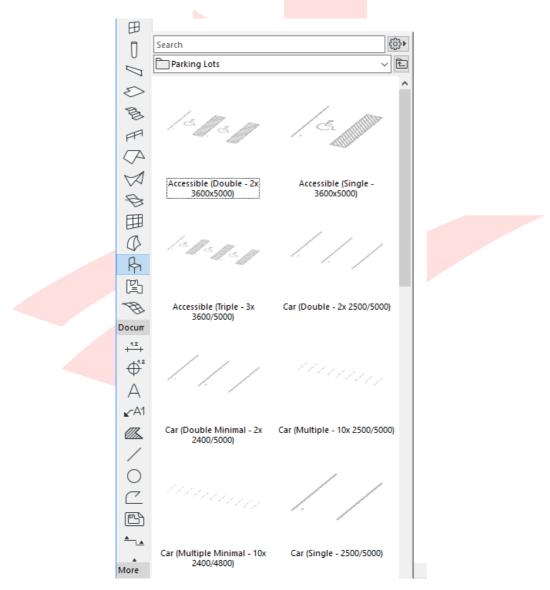
	HEARING ENHANCEMENT SYSTEMS								
Home Story	Room	Quantity	Remarks						
1st STOREY	1st STOREY								
	Auditorium 1								
	1								
2nd STOREY									
	Training Room 1	1							
Training Room 2 1									
		2							
		3							

## **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.

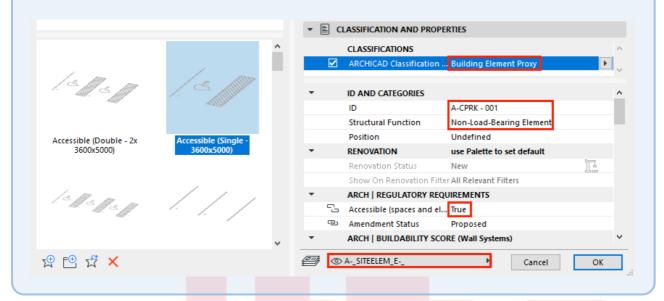


- 2 Once found, **double-click the preview** to activate the tool with the settings of the favorite.
- 3 Place the necessary number of elements.

#### **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.

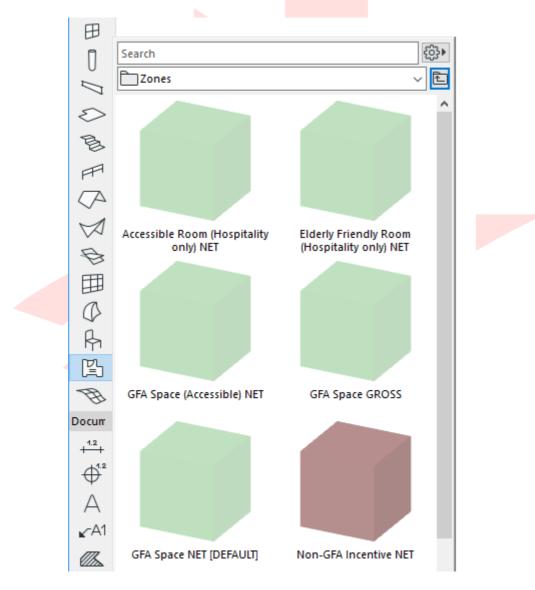
PARKING LOTS								
Home Story	Accessible/Family Car Parking Lot	ID	Minimal Width	Length	Number of Parking Spaces	Remarks		
1st STOREY			•	•		1		
		CPRK - 001	2,500	5,000	38			
		CPRK - 002	2,500	5,000	38			
		CPRK - 003	2,500	5,000	38			
		CPRK - 004	2,500	5,000	38			
		CPRK - 005	2,500	5,000	38			
		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 SETTI	MPORTANT SETTINGS (Accessible/Elderly Friendly Rooms):						
<b>Classification</b> a	nd Properties:						
	-						
Accessibl     Accessibl		lly <b>: True (only one appli</b>	ac)				
Accession	e Room/Lideny Fliend	iy. The (only one applied)	=5)				
• E C	LASSIFICATION AND PROPE	RTIES					
	CLASSIFICATIONS		~				
	ARCHICAD Classification	Space	▶				
	ID AND CATEGORIES						
	ID AND CATEGORIES	ZONE-001					
-	RENOVATION	use Palette to set default					
	Renovation Status	New	Ĩ				
	Show On Renovation Filte						
•	ARCH   REGULATORY REQ						
	Accessible (spaces and el						
	mode of ventilation	Mechanical					
	Accessible Room (hospita.						
	Elderly Friendly (hospitali.						
	Amendment Status	Proposed	~				
	AAREAGFAA_AGFA	Cancel	ОК				

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 Stor	y Room Name	Room No.	Quantity	Remarks		
1st STORE	Y	1				
	Room	101	1			
	Room	102	1			
	Room	103	1			
			3			
2nd STORE	ΞY					
	Room	201	1			
	Room	202	1			
	Room	203	1			
			3			
3rd STORE	Y					
	Room	301	1			
	Room	302	1			
	Room	303	1			
			3			
			9			

ELDERLY FRIENDLY ROOMS (Hotels, guesthouses, dormitories, etc.)									
Home Story	Room Name	Remarks							
2nd STOREY	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 Accessibl	Accessible	Hotels, guesthouses, dormitories, etc.		Quantity		
	Alea	(space)	Accessible Room	Elderly Friendly Room	Quantity		

Mechanical	Natural			1
Mechanical	Mechanical			1
Mechanical and Air-Conditioned	Natural and Air-Co			1
Mechanical and Air-Conditioned	Mechanical and Ai Undefined	r-Conditioned		1
Mechanical and Air-Conditioned	02.70			1
Mechanical and Air-Conditioned	104.97	$\boxtimes$		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	$\boxtimes$		1
Natural and Air-Conditioned	14.46	$\boxtimes$		1
Natural and Air-Conditioned	30.98	$\boxtimes$		1
	605.12 m <sup>2</sup>			12

Natural and Air-Conditioned	24.64		$\boxtimes$	1
Natural and Air-Conditioned	14.46	$\square$	$\square$	1
Natural and Air-Conditioned	30.98	$\boxtimes$		1
Mechanical	30.81			1
Mechanical	30.81			1
	131.70 m <sup>2</sup>			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).

								BCA BP S	TARCASES					
_			Detectable	Numberof	Tread Dept	hs (byrule)	Riser Heigl	hts (by rule)			Railings			
D	Home Story	Clantity	Warning Surfaces	Risers per Flights	min.	mex.	min.	mex.	Distance Between Railing Posts	Distance from Landing/Right	Height of Qurb (perpendicularly)	Height of Ourb (vertically)	Height of Railing	Remarks
STAIR - 0	01													
	1st STOREY	1		20	250	350	150	200	100	150	115	115	100	
STAIR - 0	02													
	1st STOREY	1		20	250	350	150	200	100	150	115	115	100	
TAIR - 0	03								I					
	1st STOREY	4		8; 13	250	350	150	200	100	150	115	115	100	
		6												

The schedule will need further comments/remarks.

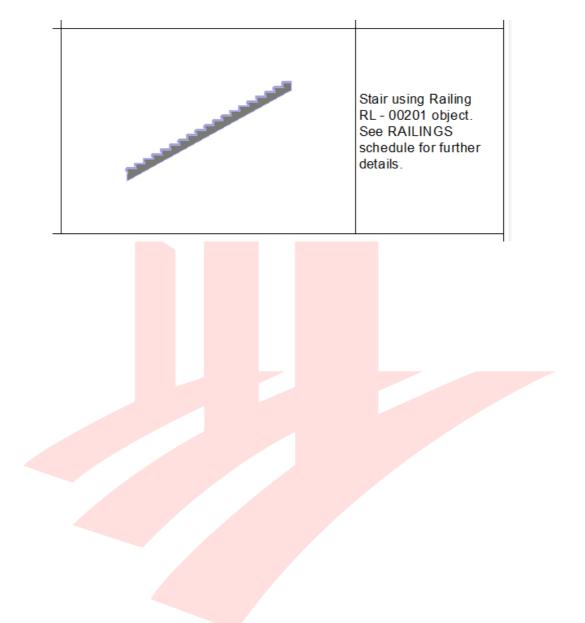
Stairs that were created by Morph for example will NOT be listed therefore need additional comments/remarks in the remark field stating:

- 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.

- ß 낕 Ð Non-GFA Space (Accessible) Non-GFA Space GROSS NET Docum 1.2 Ð А ⊾~A1 ØS. Non-GFA Space NET Shelter r UNIT ۸ More
- 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:**

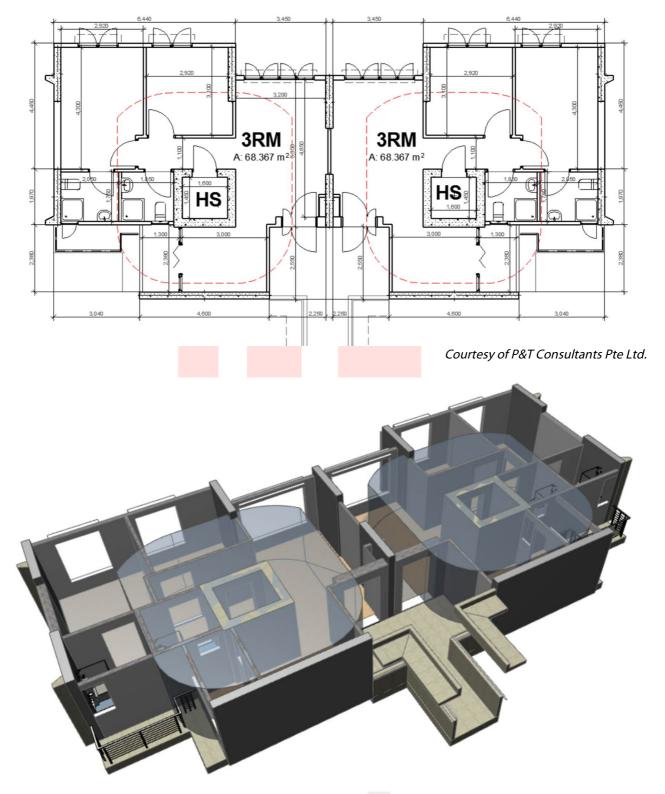
- Layer: according to the **GFA/NonGFA** type of actual shelter
- ARCH | REGULATORY REQUIREMENTS (Shelters) (the content of this property group is only to be used for shelter zones):
  - Dwelling Unit Type: according to the type of unit (create more property value options under **Options/Property Manager...** 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

	ARCHICAD Classification	Space	•
*	ID AND CATEGORIES		^
	ID	ZONE-001	
*	RENOVATION	use Palette to set default	
	Renovation Status	New	Ē
	Show On Renovation Fil	ter All Relevant Filters	
*	ARCH   REGULATORY RE	QUIREMENTS	
e	Accessible (spaces and e	I False	
e	Mode of Ventilation	Mechanical	
e	Accessible Room (hospit	a False	
e	Elderly Friendly (hospital	li False	
e	Amendment Status	Proposed	
e	Positioning	Super	
*	ARCH   REGULATORY RE	QUIREMENTS (Shelters)	
e	bittening onte ifpe (site	t Undefined	
5	GFA of Unit (sqm)	45.70	
e	Shelter Type (shelter zon	e Undefined	
5	No. of Square Units (she	I 27	
e	Required Internal Area o	f 0.00	
6	<b>Required Internal Volum</b>	0.00	~

- 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									
Туре 3	87.40	2	9.72	27	31.14	HA									

	DATA OF STOREY SHELTERS												
Homo Story			Quantitu		Area of SS	Internal Vo							
Home Story	Dwelling Unit Type	GFA of Unit	Quantity	Required	Provided	Required	Provided	Shelter Type					
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										
			2										



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

*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.

🚺 Zone Default	Settings	? ×
<b>公</b> •		Defaul
🔻 🖗 NAME A	AND POSITIONING	
Category:	GFA GFA Zone	•
Name	<zone name=""></zone>	No: <room number=""></room>
	Zone Top:	
	1. 2nd STOREY (Home + 1) V	Zone Polygon:
	-200	
Subfloor	3200	⊖ Gross
Thickness:		Net
	·····	Zone Stamp Angle:
	Home Story:	Relative 🕨
	0. 1st STOREY (Current) V	<u>√</u> 0.00°
	to Project Zero 🕨	

#### 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.

LON	itent Order	•	<< >>	Scale	Sensitive	1:50	~
. [	Zone Name	~	- +				
. [	Measured Area	$\sim$	- +				
. [	Classificatid Properties	$\sim$	- +				
			+				

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. Architectural Native BIM Submission Template for ARCHICAD 21

	CLASSIFICATIONS		<u>^</u>
	ARCHICAD Classification	Space	
•	ID AND CATEGORIES		^
	ID	ZONE-001	
*	RENOVATION	use Palette to set default	_
	Renovation Status	New	Ē
	Show On Renovation Filt	er All Relevant Filters	
*	ARCH   REGULATORY REC	UIREMENTS	
5	Accessible (spaces and el.	True	
e	Mode of Ventilation	Mechanical	
e	Accessible Room (hospita	False	
e	Elderly Friendly (hospitali	False	v

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.

		Default
▼ 🖻 NAMEA	ND POSITIONING	
Category:	UNIT Unit Area	<b>•</b>
Name:	<name></name>	No: <room number=""></room>

- 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 m <sup>2</sup>	1								
	Unit B	64.34	1								
		64.34 m <sup>2</sup>	1								
2nd STOREY											
	Unit A	137.75	1								
		137.75 m <sup>2</sup>	1								
	Unit B	64.34	1								
		64.34 m <sup>2</sup>	1								
		404.18 m <sup>2</sup>	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.

	~	ARCHICAD Classification	Space 🕨	
				~
*		ID AND CATEGORIES		^
		ID	ZONE-001	
•		RENOVATION	use Palette to set default	
		Renovation Status	New I	
		Show On Renovation Filter	r All Relevant Filters	
*		ARCH   REGULATORY REQU	JIREMENTS	
c	.C)	Accessible (spaces and el	False	
c	.C)	Mode of Ventilation	Mechanical	
c	ē	Building Type (SGFA)	General	
C	ē	Position to Sublevel (SGFA)	Above	v

- 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.

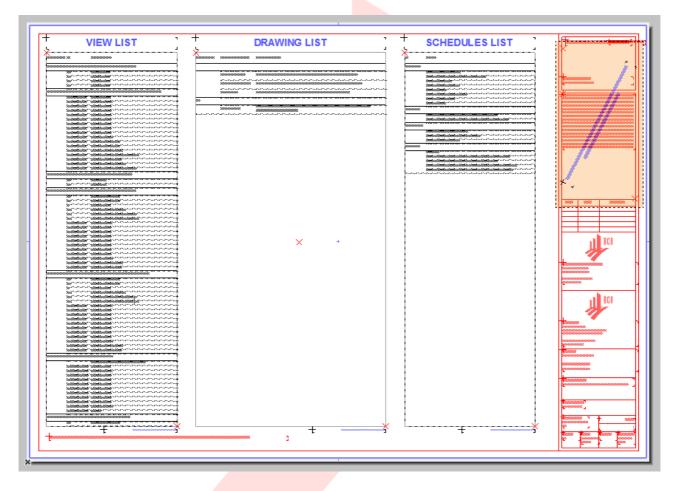
**Note #2**: - BCA-\_LV\_SUM OF OTHER AREAS NOT INCL IN GFA COMPUTATION will automatically generate the same Non-GFA values generated from the - BCA-\_LV\_SUM OF STATISTICAL GROSS FLOOR AREA (SGFA) provided you use the same Layer for the Zones.

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-referenceguide/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.

Main:	
[COVER PAGE]	× BCA_FP_A_ 1st STOREY [1. 1
45	

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 an<mark>d soft</mark>war<mark>e versio</mark>n:

ARCHICAD - **.pla**, **.pln** and/or **.mod**, version **21**, indicated in the file name, for example:

## File format:

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

MLP1\_A-\_MAIN\_--\_A\_21.pla

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

MLP1\_A-\_MAIN\_--\_A\_14\_SITE.pln MLP1\_A-\_101\_--\_A\_14\_BLK101.pln MLP1\_A-\_--A1\_A\_14\_UNITA1.mod

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

#### File Naming Convention:

Project ID			Author				Block/Zone					Unit/ Storey			Submission Version				Software Version			User- defined						
М	l	L	Ρ	1		А	-	_	М	А	Ι	Ν	_	-	-	-	А				2	1	_					

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

## MLP1\_A-\_MAIN\_--\_A\_14\_SITE.pln MLP1\_A-\_101\_--\_A\_14\_BLK101.pln MLP1\_A-\_--\_A1\_A\_14\_UNITA1.mod

#### Final check:

Before submitting the file make sure all necessary views are set correctly and show the relevant information. Check the highlights using the **Graphic Override Combination** option list and use the **BCA\_BP\_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.

wing ID:	By View ID	By View ID 🔹 0.					
	Include Dr	awing in ID sequence					
Drawing Name:	By View: Nar	By View: Name only - Ground Floor					
ource File:	Intern	Internal					
ARCHICAD view:	\Untitled\Floo	\Untitled\Floor Plans\0. Ground Floor					
Jpdate Type:	Auto	Last updated:	2016.09.04. 16:58				
	🔘 Manual	Update Status:	ОК				
Store Drawing	in the Project file						

# **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.

Renovation	
Selected Elements:	
표 & ፲	۴Ľ
Renovation Filter:	

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.

🛕 Reset Ren	novation Status			?	×
Specify wha	at happens with Elements co	urrently in the project	:		
Existing E	Elements:	展 Keep	Status as is		~
To Be Der	molished Elements:	× Delet	te		~
New Elen	nents:	<mark>会 Set t</mark>	o Existing		$\sim$
Show	All Elements on All Relevan	t Filters			
A This	will affect ALL editable Eler	nents in ALL Viewpoir	nts!		
		Ca	ancel	OK	

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.

Graphic Override Rules				? ×
Name 🗠 🙆 🖞	Name:			Editable: 1
Existing Elements 📃 🔺	Existing Elements			
Elements to be Demolished ——— 📃 —				
New Elements	CRITERIA			
	Criteria Valu	e		
Accessibility Route	Elemen Type is	All Types		~
Accessibility Symbols (Parkin	Renovation St is Exist			
Accessibility Symbols (Symbols)				
Accessible Zones				$\checkmark$
All Cover Fills - Light Gray	Add 🕨 Rem	ove		
All Cover Fills - Solid Backgr	•			
All Cover Fills - Solid Foregro	OVERRIDE STYLE			
All Cover Fills - Transparent	of the street			
All Cut Fills - Solid	Line Type:	Solid Line		
All Cut Fills - Solid Black				
All Cut Fills - Solid, No Skin S	🗹 Line / Marker / Text Pen:		_Ų 40	
All Cut Fills - Transparent				_
All Cut Fills - Transparent, No	Fill Type:	Background	▶ 🕼	
All Drafting Fills - Solid				
All Drafting Fills - Transparent	Show Skin Separators			
All Fill Backgrounds - Transp				
All Fill Backgrounds - Windo	Fill Foreground Pen:		‴_Ų 40	
All Zone Fills - Category Back				1111 (->
All Zone Fills - Hide Pattern	Fill Background Pen:		U 19	
All Zone Fills - No Background		• Override pen color only		
All Zone Fills - Solid Backgro	Pens / Colors:			
All Zone Fills - Solid Category		Override pen color and thickness		
All Zone Fills - Solid Foregro	Surface:	AA-Existing	•	G 74
All Zone Fills - Transparent		- revenuing		
New Delete			Cancel	ОК

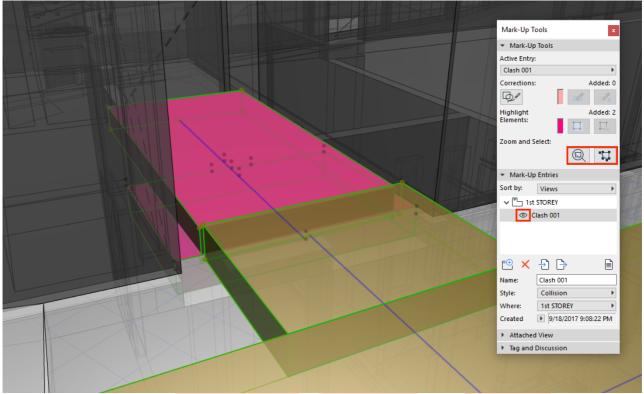
# PART XIII - CLASH DETECTION (optional)

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**.

	Continue	
New Mark-Up Entries:	1	
Collisions Found:	1	
Group 2:	19	
Group 1:	19	
Elements Checked in:		
🛕 Collision Detection Report	? ×	

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.

€ ×	₽	₿	
Name:	Clast	n 001	
Style:	Fals	e Clash (n	o follo 🕨
Where:	1st S	STOREY	Þ
Created	▶ 9	/18/2017 9	9:08:22 PM
Attached	l View		
▼ Tag and	Discus	sion	
Tag Text:		Place or	n Plan
Clash with	1:12 ra	amp	
Comments:			
Author		Date	-
			<u>^</u>
			~
	Add C	omment	

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.

▼ Mark-Up	Entrie	s	
Sort by:	Style		Þ
Name		Style	
Clash 00	)1	False Cla	^
		<b>•</b>	Ň
E ×	÷	B	
Name:	Clash	001	
Style:	False	Clash (no follo	o ▶
Where:	1st ST	TOREY	Þ
Created	▶ 9/	18/2017 9:08:22	2 PM

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.

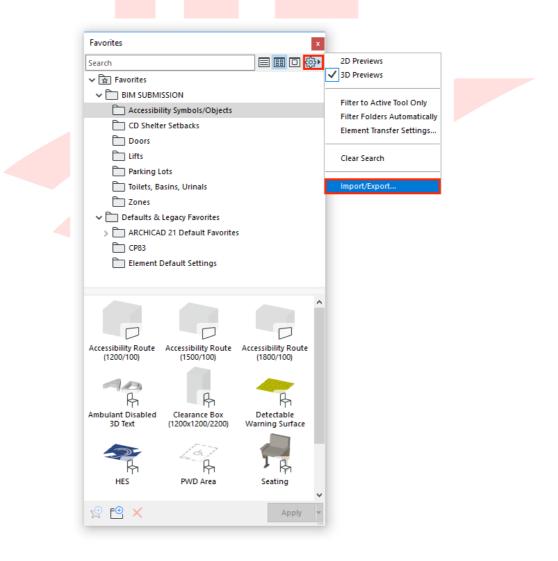
# PART XIV - MERGING THE TEMPLATE INTO AN EXISTING COMPANY TEMPLATE

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...**.

Δ	Attr	ibute M	lanager												?	×
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I	Build	ding Ma	terials													
	Attri	ibutes o	f the current pro	piect: EXISTIN	G TEMPLA		-			Current	File: Untitled	l.aat				
		#	Name	Fill	Surface					#	Name	•	Fill	Surface	Pr	
		1 B	rick			540	^	Select All								^
		2 B	rick - Structural			720			_							
		3 B	rick - Finish			640		Duplicate								
		4 N	lasonry Block - S	it 🚺		730		Delete								
		5 N	lasonry Block - F	il <u>[/////</u>		520		Delete								
		6 C	oncrete			510		Append >>								
	$\checkmark$	7 C	oncrete - Structi	ıral 😳		740		Append >>								
		8 C	oncrete Block -	5t 🔯		750		By Index >>	•							
		9 C	oncrete Block - I	Fi 🔯		530		By Name >>								
	$\checkmark$	10 R	einforced Concr	e 🤐		760		-	- 1							
		11 R	einforced Concr	e 🧰		920		Include: Cut Fills								
		12 Ir	nsulation - Fiber			420		Surfaces								
		13 Ir	sulation - Fiber	S		410		_								
	Г		sulation - Mine			440	×									~
		1	Brick	Þ	•	540										
[		Purg	e Unused		Revert			Print to File.		Open	Mer	ge	Save	e Sa	ve As.	
Som	e Lit	brary Pa	rts' GDL scripts r	nay refer to at	tributes s	hown he	ere as u	unused.			Car	ncel	OI	(	Appl	ly .:

- 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**.

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ng Materials						Ē	Ē	•	ഗ്ഗ്	<b></b>	Al		
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# Name	Fill	Surface	Pr				#	Name		Fill	Surface	Pr	
1 Brick	·////////		540	~	Select All		1 Brick					540	^
2 Brick - Structural			720				2 Brick	- Structura	al			720	
3 Brick - Finish			640		Duplicate		3 Brick	- Finish				640	
4 Masonry Block - St	77772		730				4 Maso	nry Block	- St			730	
5 Masonry Block - Fil			520		Delete		5 Maso	nry Block	- Fil			520	
6 Concrete			510				6 Conc	rete		<b>MARKAR</b>		510	
7 Concrete - Structura	1		740		<< Append		7 Conc	rete - Stru	ctural			740	
8 Concrete Block - St			750		<< By Index		8 Conc	rete Block	- St			750	
9 Concrete Block - Fi			530				9 Conc	rete Block	- Fi			530	
10 Reinforced Concre			760		-	-	10 Reinf	orced Con	cre	****		760	
11 Reinforced Concre	*****		920				11 Reinf	orced Con	cre			920	
12 Insulation - Fiber	*******		420				12 Insul	ation - Fib	er			420	
13 Insulation - Fiber S			410		Junaces		13 Insul	ation - Fib	er S			410	
14 Insulation - Miner	00000000		440	~			14 Insul	ation - Mir	ner			440	۷.
							1 Brick	¢		•		540	
Purge Unused		Revert		1	Print to File								
				·			Close	Merge		Save	S	ave As	•
	<ul> <li>Name</li> <li>Brick</li> <li>Brick - Structural</li> <li>Brick - Finish</li> <li>Masonry Block - St</li> <li>Masonry Block - Fil</li> <li>Concrete</li> <li>Concrete - Structura</li> <li>Concrete Block - St</li> <li>Concrete Block - St</li> <li>Concrete Block - Fi</li> <li>Reinforced Concre</li> <li>Reinforced Concre</li> <li>Reinforced Concre</li> <li>Insulation - Fiber</li> <li>Insulation - Fiber S</li> </ul>	Name     Fill       1 Brick     2       2 Brick - Structural     2       3 Brick - Finish     2       4 Masonry Block - St     2       5 Masonry Block - Fil     2       6 Concrete     2       7 Concrete - Structural     2       8 Concrete Block - St     2       9 Concrete Block - Fil     2       10 Reinforced Concre     2       11 Reinforced Concre     2       12 Insulation - Fiber     2       13 Insulation - Fiber S     2       14 Insulation - Miner     2	Name       Fill       Surface         1 Brick	Name         Fill         Surface         Pr           1 Brick         540         540         540           2 Brick - Structural         720         720           3 Brick - Finish         640         640           4 Masonry Block - St         720         730           5 Masonry Block - St         720         730           6 Concrete         510         740           8 Concrete Block - St         520         750           9 Concrete Block - St         530         750           9 Concrete Block - Fi         530         760           11 Reinforced Concre         5303         760           12 Insulation - Fiber         420         420           13 Insulation - Fiber S         410         440	Name         Fill         Surface         Pr           1 Brick         540         720           2 Brick - Structural         720         720           3 Brick - Finish         640           4 Masonry Block - St         730           5 Masonry Block - St         520           6 Concrete         53333           7 Concrete - Structural         740           8 Concrete Block - St         750           9 Concrete Block - 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Miner       14 Insulation - Miner	#       Name       Fill       Surface       Pr         1       Brick       540       Select All       1       Brick         2       Brick - Structural       720       Duplicate       3       Brick - Structural         3       Brick - Finish       640       Duplicate       3       Brick - Structural         4       Masonry Block - St       720       520       Select All       1       Brick         5       Masonry Block - St       720       520       Select All       Duplicate       3       Brick - Structural         6       Concrete       510       520       Select All       Concrete       Select All       Brick - Structural         7       Concrete       510       Select All       Duplicate       Masonry Block - St         7       Concrete       510       Select All       Select All       Select All         8       Concrete Block - St       520       Sol       Select All       Select All       Select All         9       Concrete Block - St       530       Sol       Select All       Select All	**       Name       Fill       Surface       Pr         1       Brick       540       540         2       Brick - Structural       720         3       Brick - Finish       640         4       Masonry Block - St       720         5       Masonry Block - St       730         5       Masonry Block - Fill       730         6       Concrete       510         7       Concrete - Structural       740         8       Concrete - Structural       750         9       Concrete Block - St       750         9       Concrete Block - Fill       530         10       Reinforced Concre       530         12       Insulation - Fiber       920         12       Insulation - Fiber S       440         V       V       1         14       Insulation - Miner       440         V       1       Brick         Print to Eile       Print to Eile	**       Name       Fill       Surface       Pr         1 Brick       540       540       540         2 Brick - Structural       720       58ick - Finish       28ick - Structural       28ick - Structural         3 Brick - Finish       640       0       0       0       0       0       0         4 Masonry Block - St       720       520       5       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0	#       Name       Fill       Surface       Pr         1 Brick       540       540       540         2 Brick - Structural       720       5816k - Structural       540         3 Brick - Finish       640       0       0       9 Brick - Structural       720         3 Brick - Finish       720       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0

**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 onemodel 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+	-	-
<b>Building Materials</b>	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.

Project Info		? ×
PROJECT DETAILS	^	Add
Project Name		
Project Description		Remove
Project ID		
Project Code		
Project Number		
Project Status		
Keywords		
Notes		
Project Custom		Import
<ul> <li>SITE DETAILS</li> </ul>		mportin
Site Name	~	Export
	Cancel	ОК .:

## 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.

la l
✓ Properties
No Selection.
<b>&gt;</b>
<u> </u>

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.

🛕 Clone a Folder		?	Х
▼ IDENTIFICATION			
Choose Project Map Folder:			
∨ 🏠 Go to 'File/Info/Proje	ect Info'		^
🖺 Stories			
Sections			
Elevations			× .
ID: By viewpoint	~		
Name: By viewpoint	✓ Stories		
Source: Stories			
▼ GENERAL			
∉ Layer Combination:	BCA_BIM		$\sim$
🗔 Scale:	1:100		~
🖾 Structure Display:	Entire Model		~
Ų Pen Set:	BIM_SUBMISSION		~
Model View Options:	SUBMISSION		$\sim$
다급 Graphic Override:	No Overrides		$\sim$
🛆 Renovation Filter:	05 Planned Status		$\sim$
Note: Regardless of this vie according to the source vie	ew's scale, GDL objects will be repres ewpoint's scale.	ented	
▼ 2D/3D DOCUMENTS			
Floor	Plan Cut Plane Settings		
	SG Metric		$\sim$
Q Zooming:	Current Zoom		$\sim$
Ignore zoom and rotation	when opening this view		
▶ 3D ONLY			
	Cancel	Clone	

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/

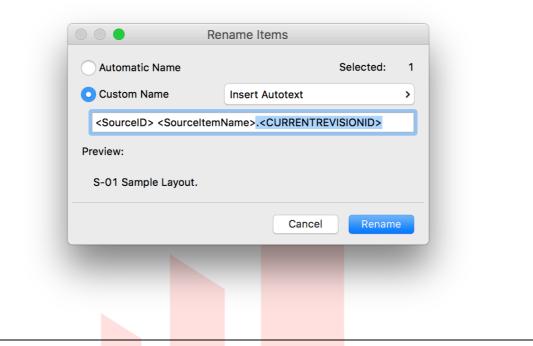
## **Publisher Sets**

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.

Organizer - Publisher	×
£, A 🕒 🗗 🗊	5 L 🗐
✓ △ -> File/Info/Project Info ▲	2 - Layouts (PDF)
> DEFAULTS	✓ I → File/Info/Project Info
✓ 🛅 BCA	COVER PAGE
→ 🛅 ВР	✓ □ A   01 BCA
✓ <sup>→</sup> 2D PLANS	BP 01 Sample Layout
🔑 🔚 FLOOR PLANS (Accessibility)	BP 02 Sample Layout (Details)
BCA_FP_A_ MAX PERMISSABLE HEIGHT	<b>A</b>
BCA_FP_A_ WATER TANK ROOF LEVEL	T
BCA_FP_A_ WATER TANK LEVEL	
BCA_FP_A_ MAIN ROOF LEVEL	
BCA_FP_A_ 10th STOREY	
BCA_FP_A_9th STOREY	
<	
Add Shortcut >>>	F⊕. X
<ul> <li>View Properties</li> </ul>	
FLOOR PLANS (Accessibility)	▼ Properties
BCA_BIM	A   01 BCA

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-referenceguide/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...**.

🚺 Renovation Filter Options		? ×
RENOVATION FILTERS		4 Preview
01 Existing Plan 02 Demolition Plan 03 After Demolition 04 New Construction 05 Planned Status A-A Works	Duplicate Rename Delete Import Export	
FILTER SETTINGS	· · · · · · · · · · · · · · · · · · ·	
<ul> <li>Existing Elements:</li> <li>Elements to be Demolished:</li> <li>New Elements:</li> <li>Additional Filter Options for:</li> <li>Existing Elements</li> <li>Hide Opening Dimension Marker</li> <li>Solid Cut Fill</li> <li>Do not Intersect</li> <li>Elements to be Demolished</li> <li>Vide Opening Dimension Marker</li> </ul>	Override  V Override V Override V	
Hide Opening Dimension Marker	×	Graphic Override Rules
		Cancel OK .::

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...**.

Δ	Model View Options			?	×
-	MODEL VIEW OPTION COMBINATIONS				
	A   Simplified 3D	^	Store as		
	AC21_01 Site AC21_02 Drafting		Rename		
	AC21_03 Building Plans AC21_04 Ceiling Plans		Delete		
	SUBMISSION SUBMISSION (no Accessibility)		Import		
		~	Export		
Þ	CONSTRUCTION ELEMENT OPTIONS				
•	STAIR AND RAILING OPTIONS				
•	DETAIL LEVEL OF STAIR AND RAILING SYMBOLS (ARCHICAD LIBRARY	21)			
DETAIL LEVEL OF DOOR, WINDOW AND SKYLIGHT SYMBOLS (ARCHICAD LIBRARY 21)					
MISCELLANEOUS SETTINGS FOR LIBRARY PARTS (ARCHICAD LIBRARY 21)					
Þ	OVERRIDE FILL DISPLAY				
			Cancel	OK	

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.

Graphic Override Combinations		?	×
No Overrides	Name: BCA_BP_Accessibility		_
A   BScore A   Door Clearance Check A   Fire Resistance Rating	Order of rules to be applied:		
AC21_Ceiling Plan AC21_Fire Plan AC21_Simplified Plan AC21_Site Plan AC21_Site Plan AC21_Structural Plan BCA_BP_Accessibility BCA_BP_Modes of Ventilation	Name       Image: Constraint of the symbols         Accessibility Objects & Symbols       Image: Constraint of the symbols         Accessibility Route       Image: Constraint of the symbols         Accessible Zones       Image: Constraint of the symbols         Accessible Zones       Image: Constraint of the symbols         Accessible Zones       Image: Constraint of the symbols         Black and White Transparent Environment       Image: Constraint of the symbols		<b>`</b> ^
BCA_BP_SGFA Plans BCA_BP_SGFA Plans NEW CP83 FSSD_Shelters	Rules applied by Renovation Filter           Add         Remove         Edit	t Rules	~
New Delete	Cancel	ОК	

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:

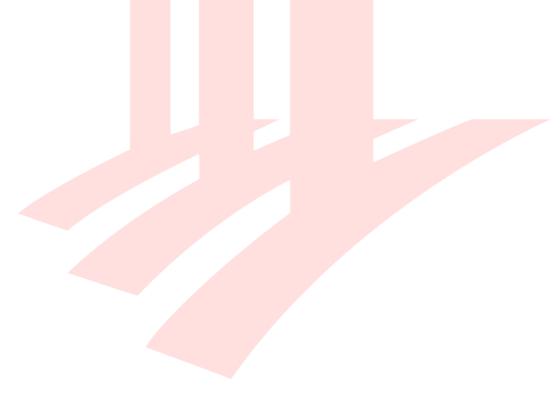
http://helpcenter.graphisoft.com/guides/archicad-20/archicad-20-referenceguide/views\_of\_the\_virtual\_building/graphic\_overrides/

# **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

