



Aalto University  
School of Engineering

RAK-C3003 - Tietoyhdennetty rakentaminen, 23.02.2017-07.04.2017

# Aalto BIM exercise

*Sunil Suwal*



Aalto University  
School of Engineering

# BIM authoring tool - Archicad



GRAPHISOFT.  
ARCHICAD 21

[www.graphisoft.com](http://www.graphisoft.com)

[www.mad.fi](http://www.mad.fi)

STEP UP  
YOUR BIM

*Kuva: mad.fi*

Register and download archicad from :

<https://myarchicad.com/>

Finnish materials can be downloaded from:

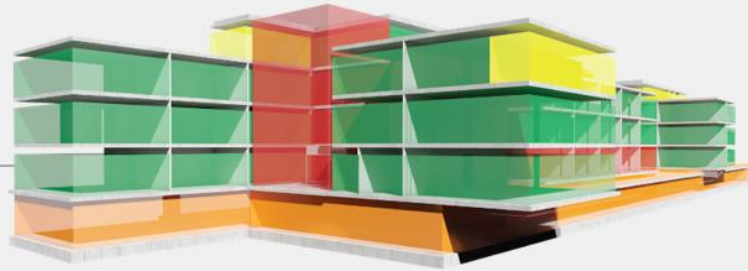
<http://mad.fi/tuki/archicad/archicad-kasikirjat>



# Archicad



- STRUCTURAL MODEL
- LOAD-BEARING ELEMENTS
  - STRUCTURAL PROPERTIES
  - ARCHICAD CLASSIFICATION



- ANALYSIS MODEL
- SPACES AND SPACE BOUNDARIES
  - SPACE PROPERTIES
  - SPACE CLASSIFICATION



- ENTIRE PROJECT MODEL
- ALL PROJECT ELEMENTS
  - ALL PROJECT PROPERTIES
  - UNICLASS CLASSIFICATION

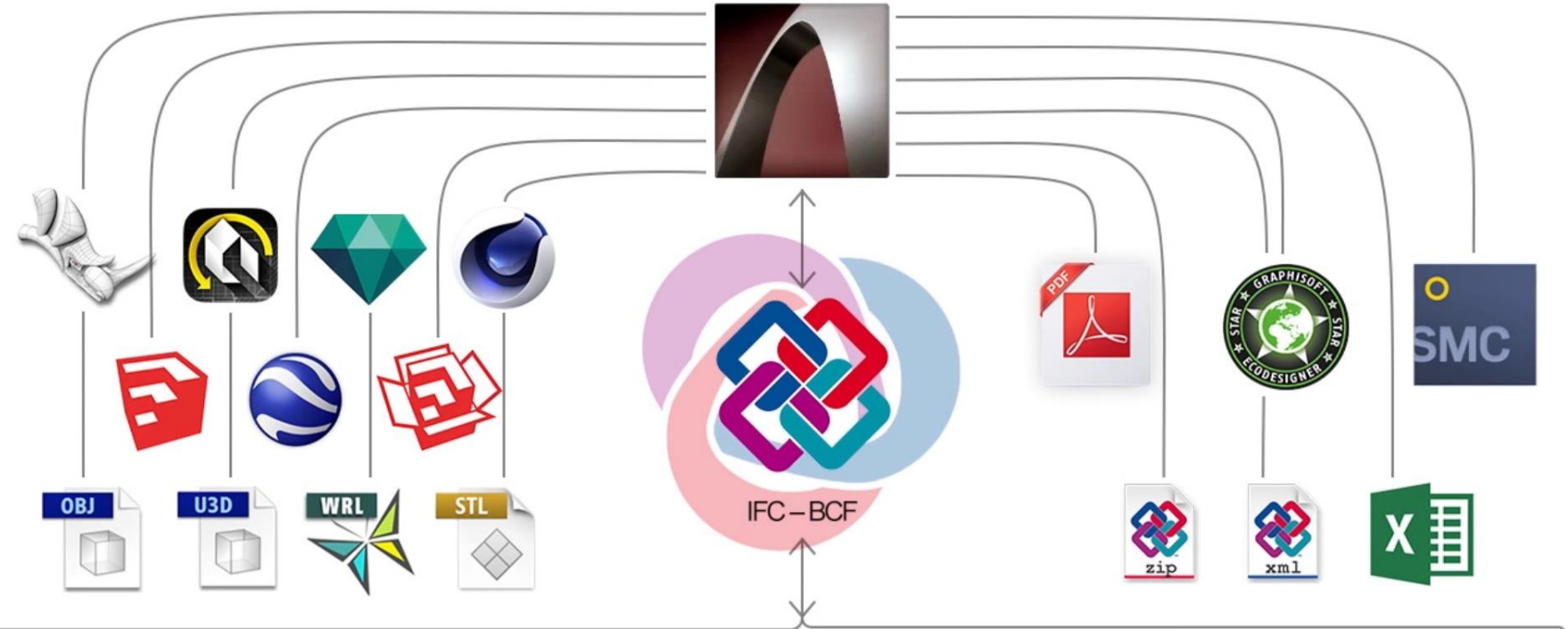


**Publish**



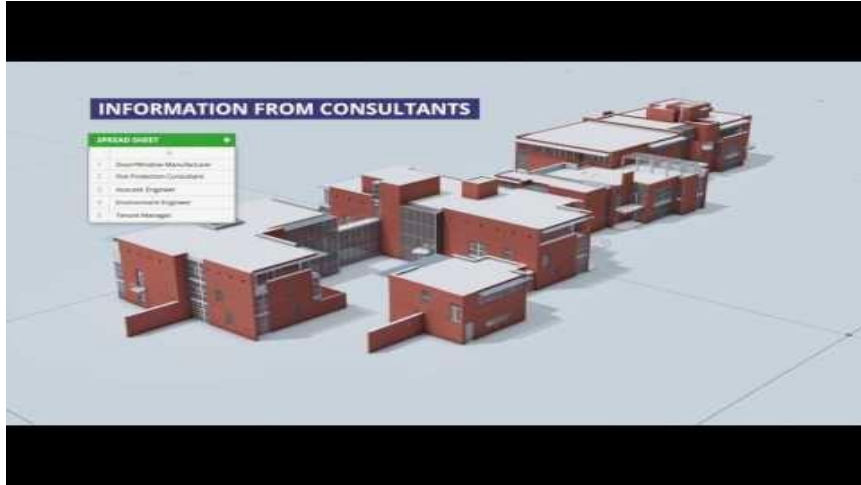
MICROSOFT OFFICE COMPLEX, GRAPHISOFT PARK, BUDAPEST  
DESIGNED BY LUKÁCS AND VIKÁR ARCHITECTS

# BIM Data



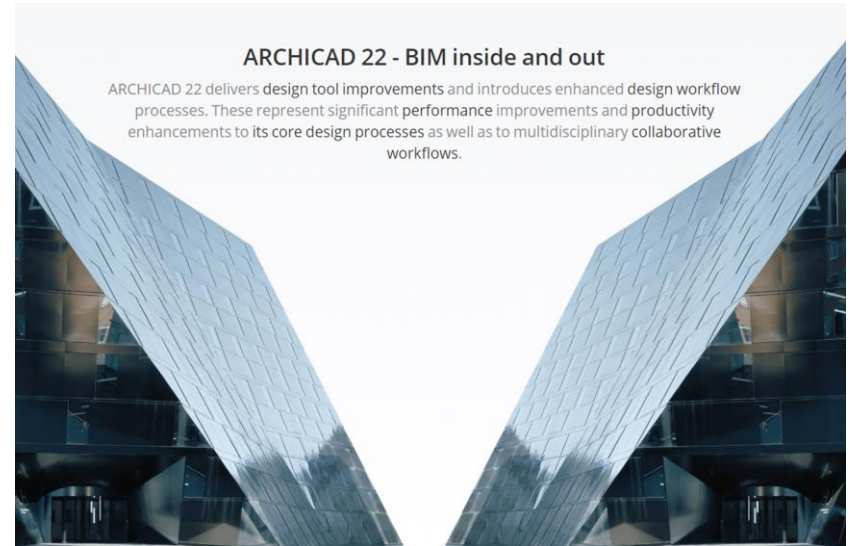
And many more...

# ARCHICAD 21 - The "I" in BIM Concept



<https://www.youtube.com/watch?v=pCWyUgGN5i0>

# ARCHICAD 22 - BIM inside and out



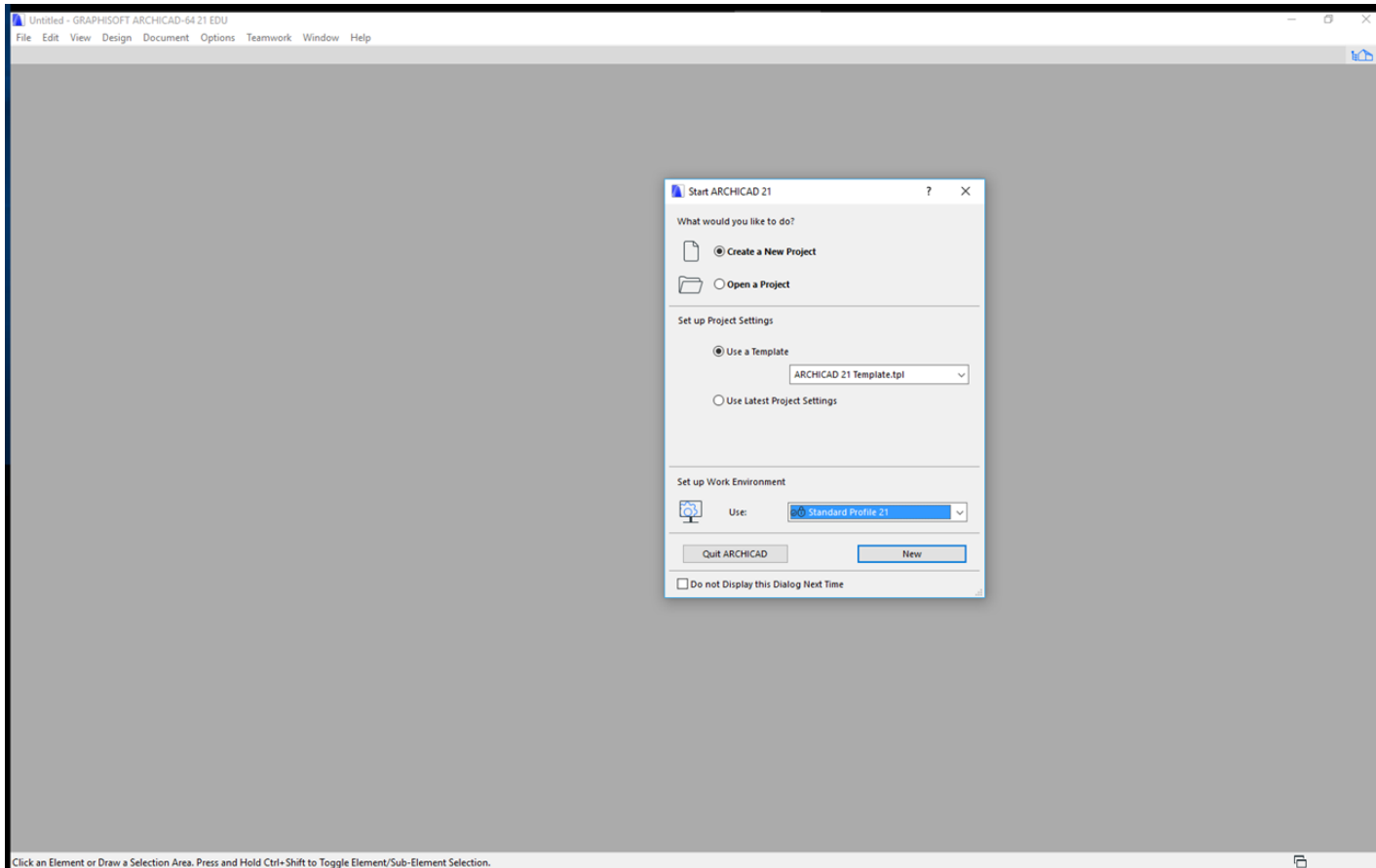


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# Starting archicad

*C:\Program Files\GRAPHISOFT\ARCHICAD 21\Archicad.exe*

# You can click on the welcome screen and proceed







**INFO BOX**  
Tiedot apuikkuna

**Työkalut**

Tiedot-apuikkuna:  
Näyttää seuraavaksi  
piirrettävän (työkalun)  
ei Oletusasetukset  
TAI  
Valittuna olevan  
elementin asetukset

Työkalut-  
apuikkuna: Joku  
työkaluista on  
aina päällä

Painikepalkki

Valikkorivi:  
-Arkisto on tiedoston tietojen sekä tallennus ja tulostus-käskyjen paikka.  
-Muokkaus-valikossa on yleiset muokkauksikäskyt  
-Näkymä sisältää päälimmiseen ikkunaan liittyviä asetuksia  
-Suunnittelu-työkalujen erikoiskäskyt ovat Suunnittelu-valikossa  
-Dokumentti-työkalujen erikoiskäskyt ovat Dokumentti-valikossa  
-Vaihtoehdoissa on projektin ja työympäristön asetuksia  
-Tiimi-valikossa tiimiprojektien asetukset  
-Ikkunoissa painikepalkki ja apuikkunat

Hukkuneet apu-  
ikkunat löytyy  
täältä!

Tiedoston ja sen  
päälimmäisen ikkunan  
nimi

Projekti-apuikkuna jossa  
Sisältö-esillä. Muut  
vaihtoehdot ovat:  
-Näkymät  
-Planssit  
-Tulosteet

Tilajana, jossa  
tilannekohtainen ohje

Julkisivu-merkki, Pohja-  
ikkunaan luotu julkisivu  
näky Projektin ikkunan  
Julkisivut kansiossa (kun  
sen avaa  
koimipiainikkeesta)

Täällä voi luoda/poistaa  
Projekti-ikkunaan kohteita,  
nähdä tietoja ja muuttaa  
niiden asetuksia.  
Huomaa että ylempää  
puurakenteesta valitun 1.  
kerros-kerroksen  
Asetukset... ovat nyt  
muutettavissa.

# CW-1 Levy

Make a 3d Model of object and generate various views

## Archicad workflow:

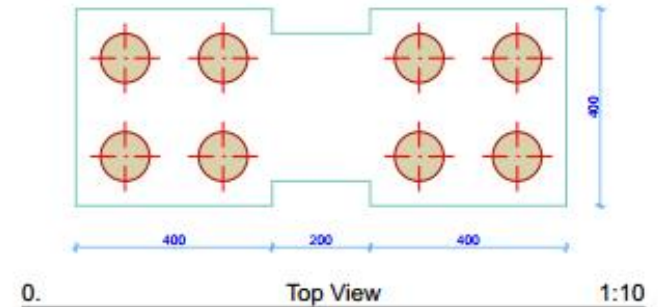
**Project map:** Model the project here

**View map:** Save different views from same model

**Layout book:** Organize different layouts/drawings

**Publisher:** Publish/print/share

Learning objectives: Basics of Archicad and workflow, documentation





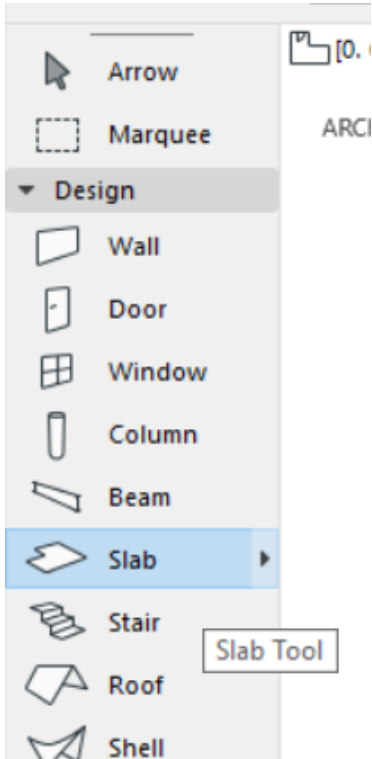
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# Modeling the object

*Using slab tool*

# Tool : Slab

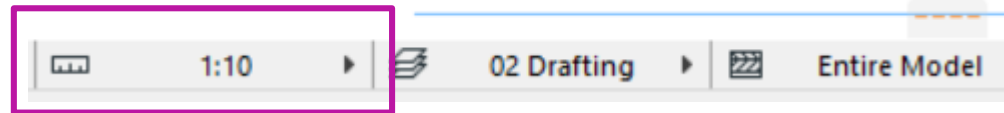
Post subject: The most useful keyboard shortcuts for ArchiCAD  
<http://archicad-talk.graphisoft.com/viewtopic.php?t=39458>



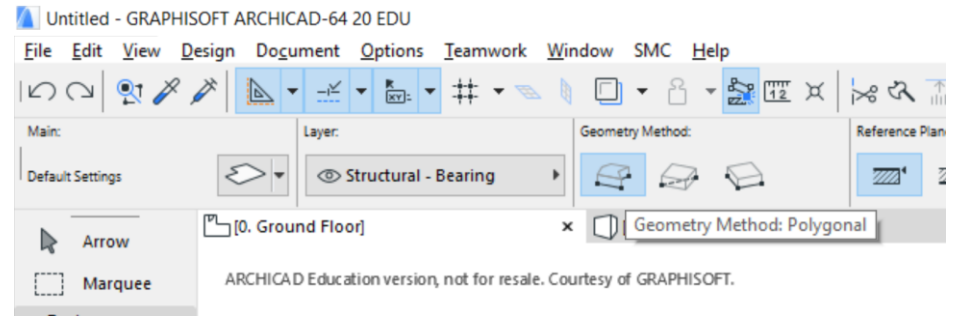
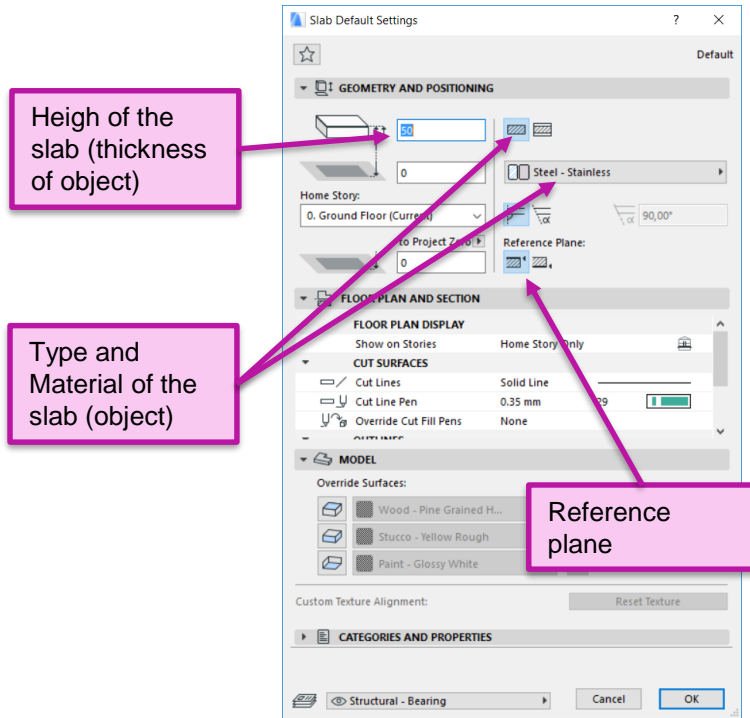
Mouse wheel double click - zoom extent

3D window – Shift + mouse roll - orbit

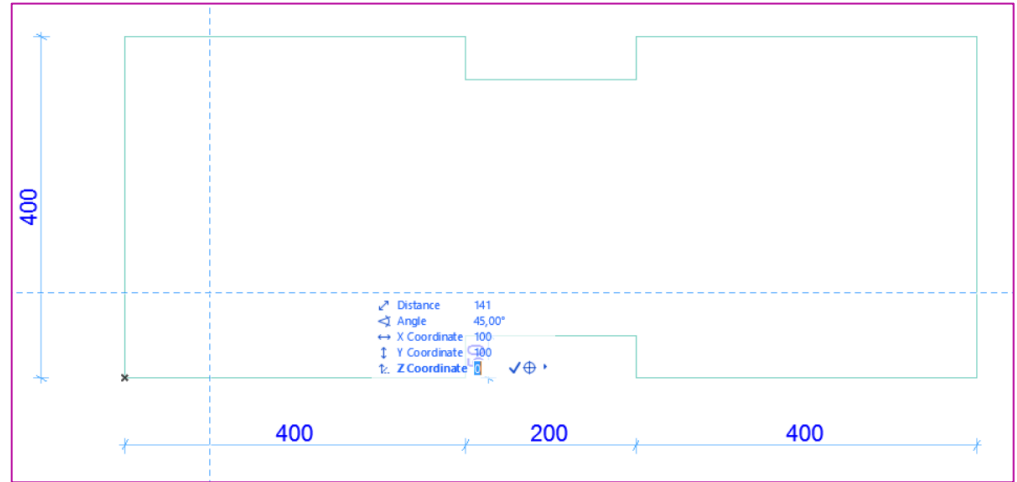
Remember to change the scale of the viewport (1:100 to 1:10). The current scale of the viewport is visible from the **bottom bar**.



Double click the slab tool and change its settings as shown below:



Select : Polygonal geometry method and start to draw from "x- origin"



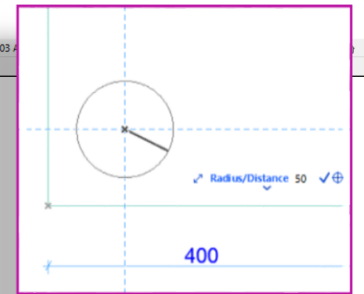
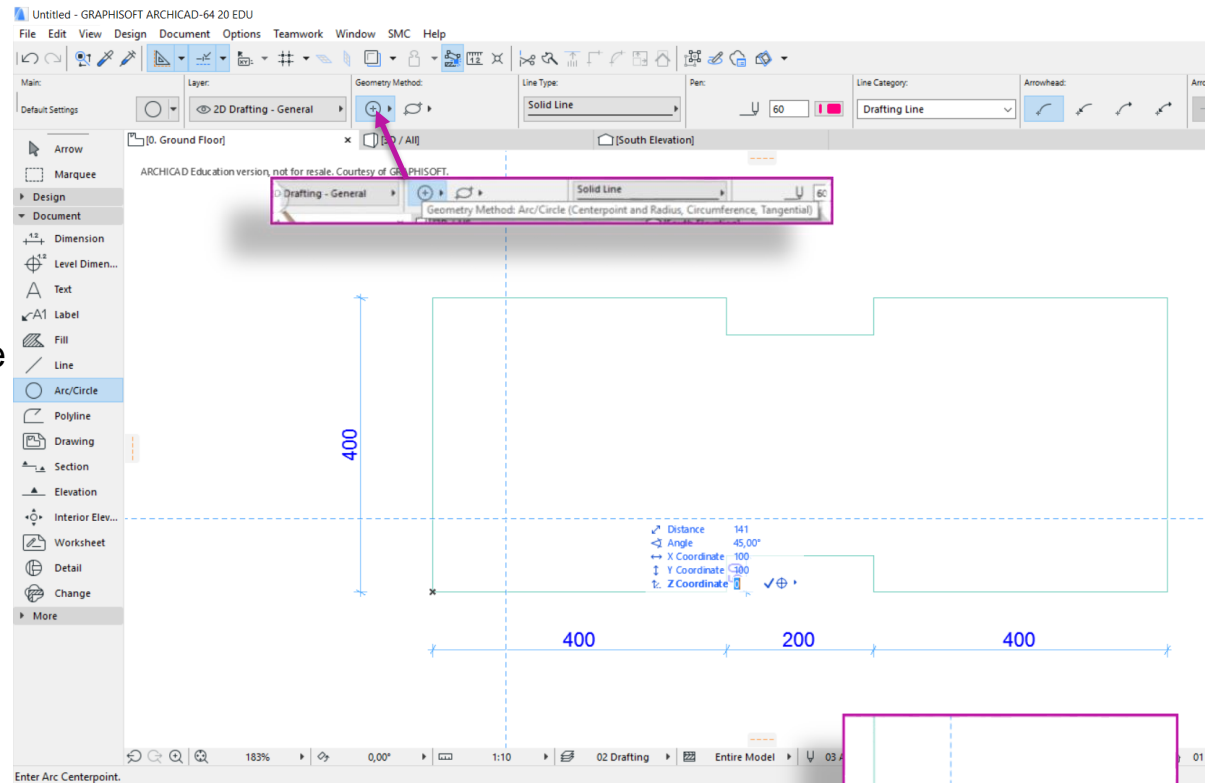
Select "circle" tool from "Document tool group". Remember to check if centerpoint and radius geometry method is active

Type "x" from the keyboard and type "100". Shift to the next field in dynamic input by pressing "tab" key from the keyboard. A blue snap guide line is generated at 100mm from origin.

Type "100" for "y-coordinate" and press tab to generate another blue snap guide line.

Left Click on the intersection point and move the cursor somewhere to the right or left.

Put "50" as the radius, press "enter" and make a 360 degree circle. You can click on the starting point of the circle to make a full circle.

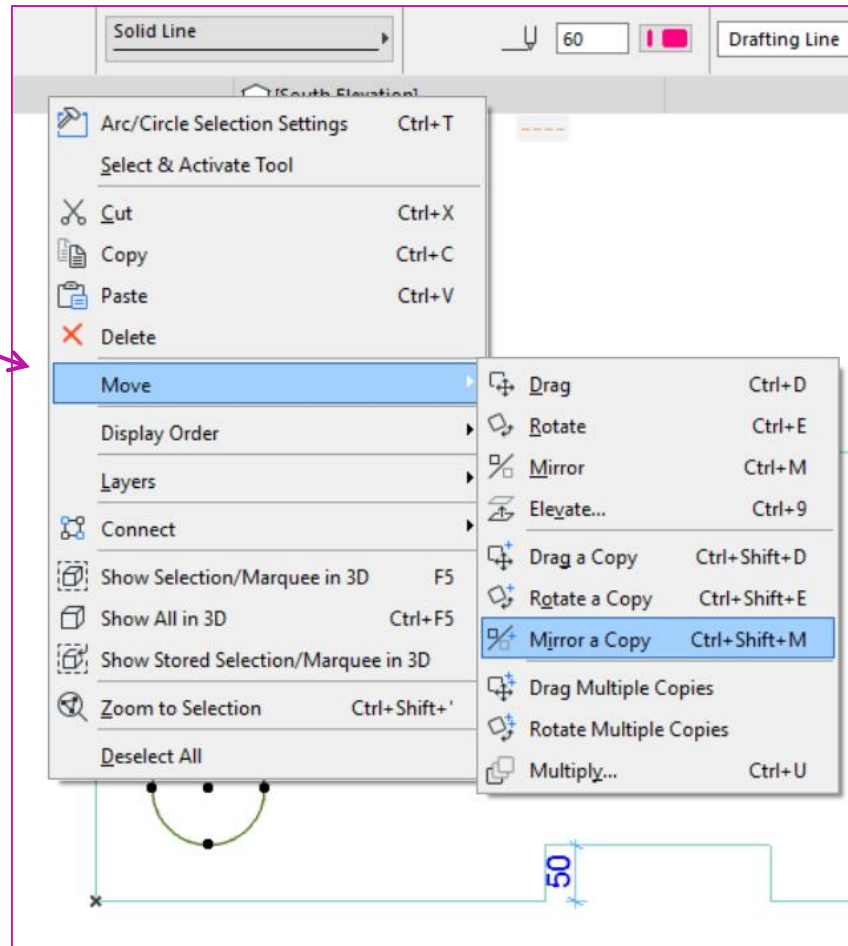
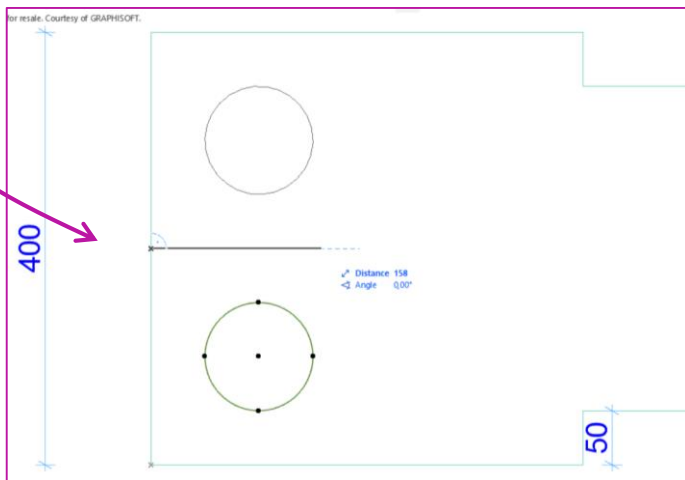


Select the created circle.

Right click on an empty place and select "move > mirror a copy".

Define mirror axis by two points.

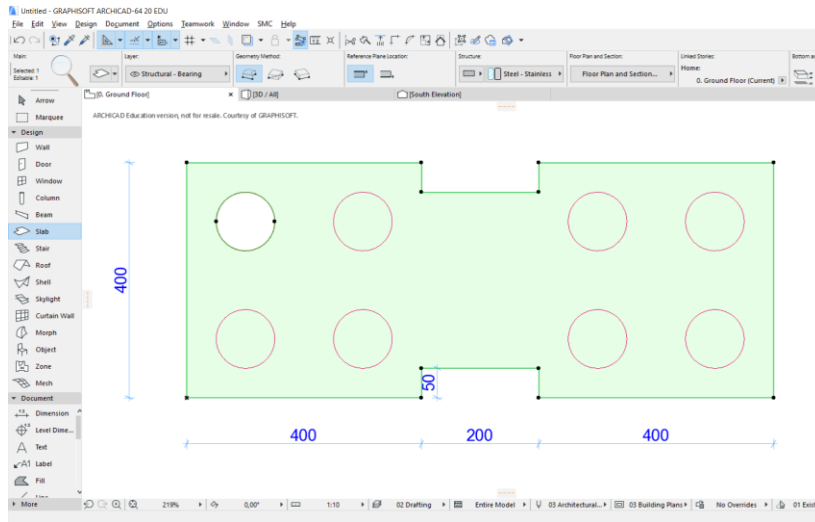
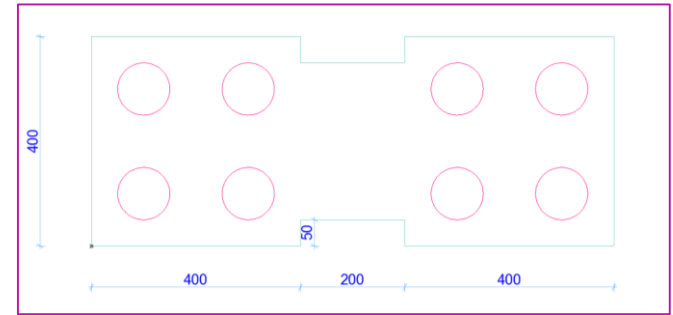
1. mid point of the vertical side at left
2. Parallel with x-axis



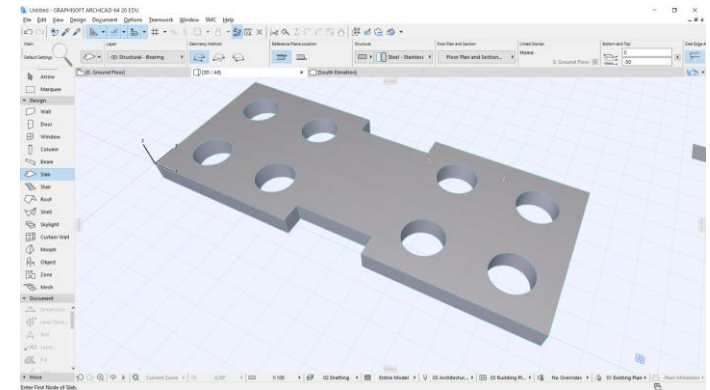
Repeat the process to copy and complete other circles

To subtract the slab parts:

- Select "Slab element" and then "slab tool"
- Press down "space bar" + "left click" inside the circles



Check in 3D view to see the results







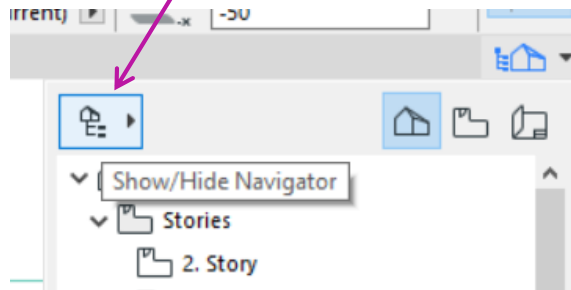
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# Documentation of the object

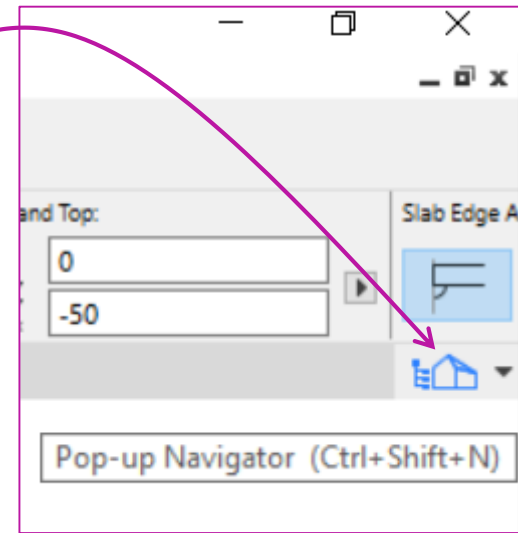
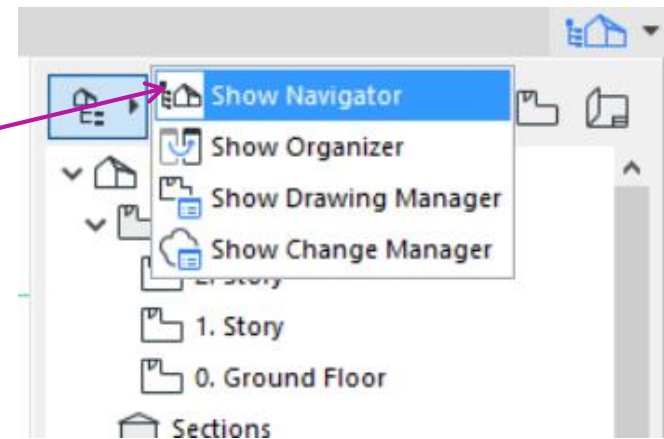
*View map and layout map*

## Make the "navigator map " visible

1. Left click popup navigator form the top right
2. Click "show hide navigator"

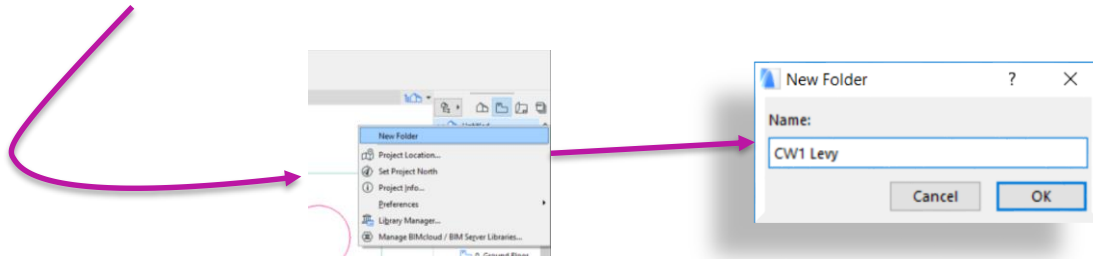


3. Click "show navigator"



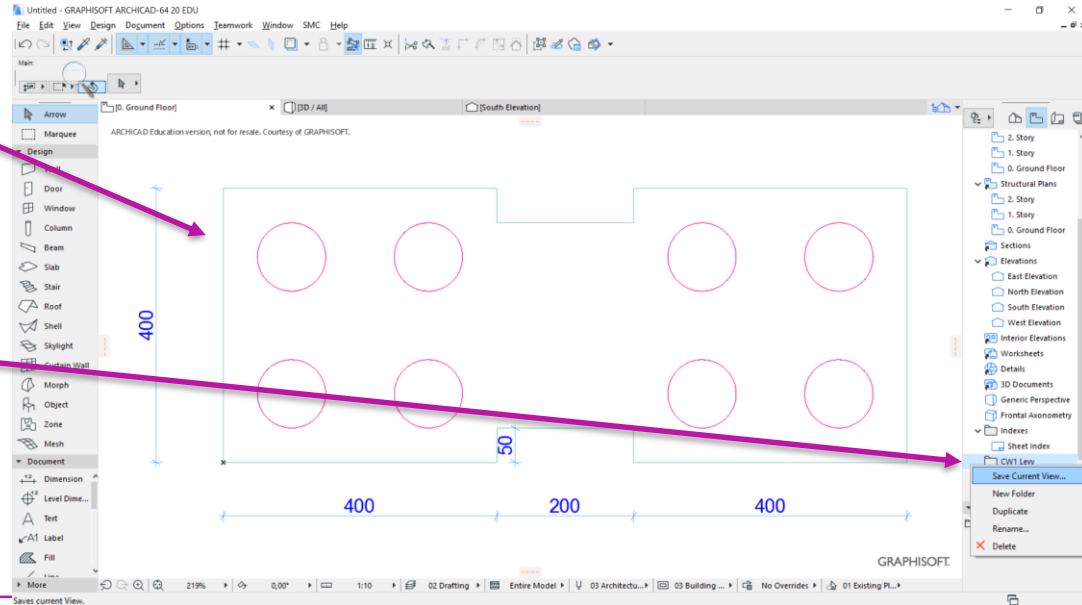
Make a folder "CW1 levy" in the project view map

Right click on the view map "project name" or anyviews

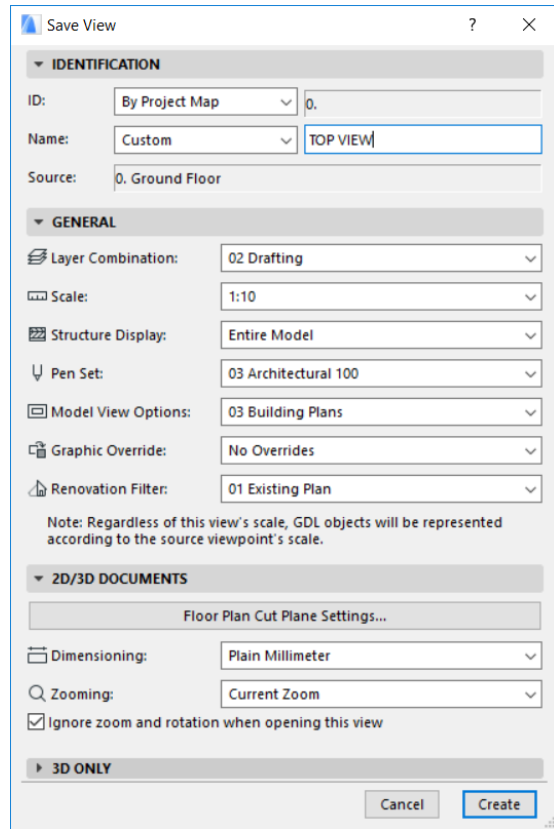


Organize the view of the object

And save current view by right clicking on the folder

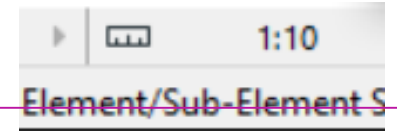


View settings: change the name to custom and provide a name "TOP VIEW"



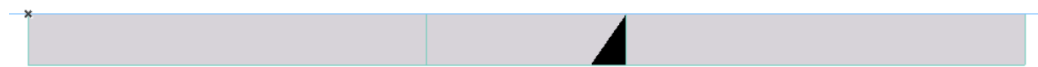
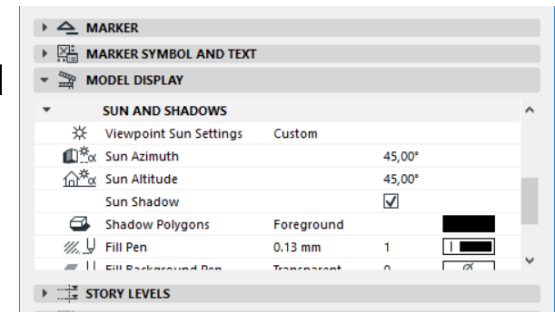
Go to "South Elevation" from the view map.

Change the scale to "1:10" and zoom and manage the view of the object



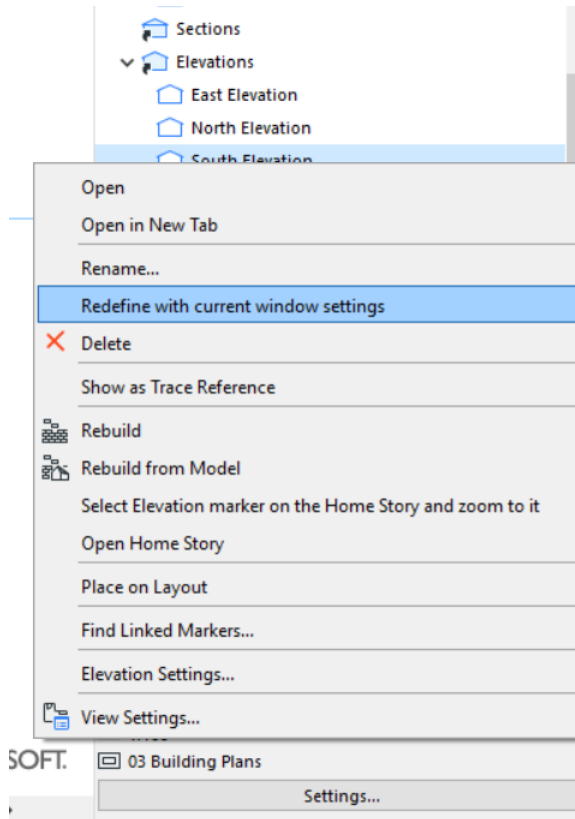
Right click on empty area > go to elevation settings.

Turn on sun shadow and change the shadow polygons to foreground and assign black colour

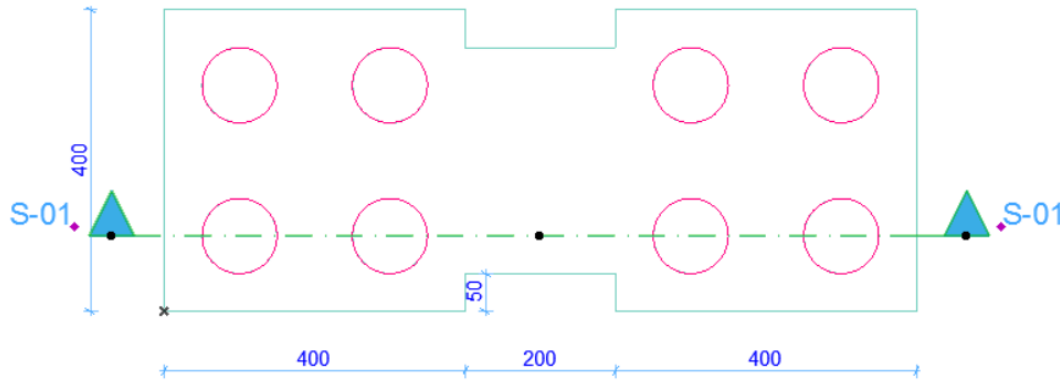


Right click on the "south elevation" and select "redefine with current window settings"

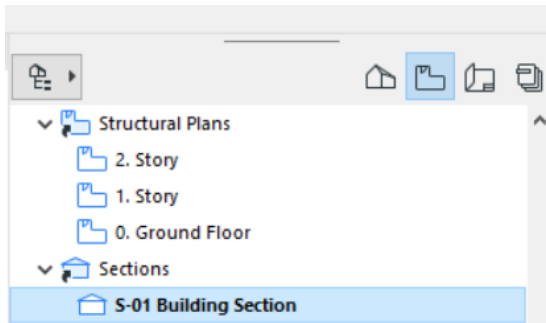
Drag and drop updated "south elevation" to "CW 1 Levy" folder



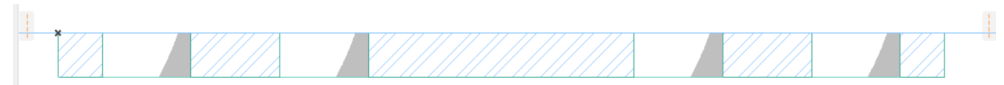
Go to "TOP VIEW". Select "section tool" from document tool group and place a section marker along x axis as shown below.



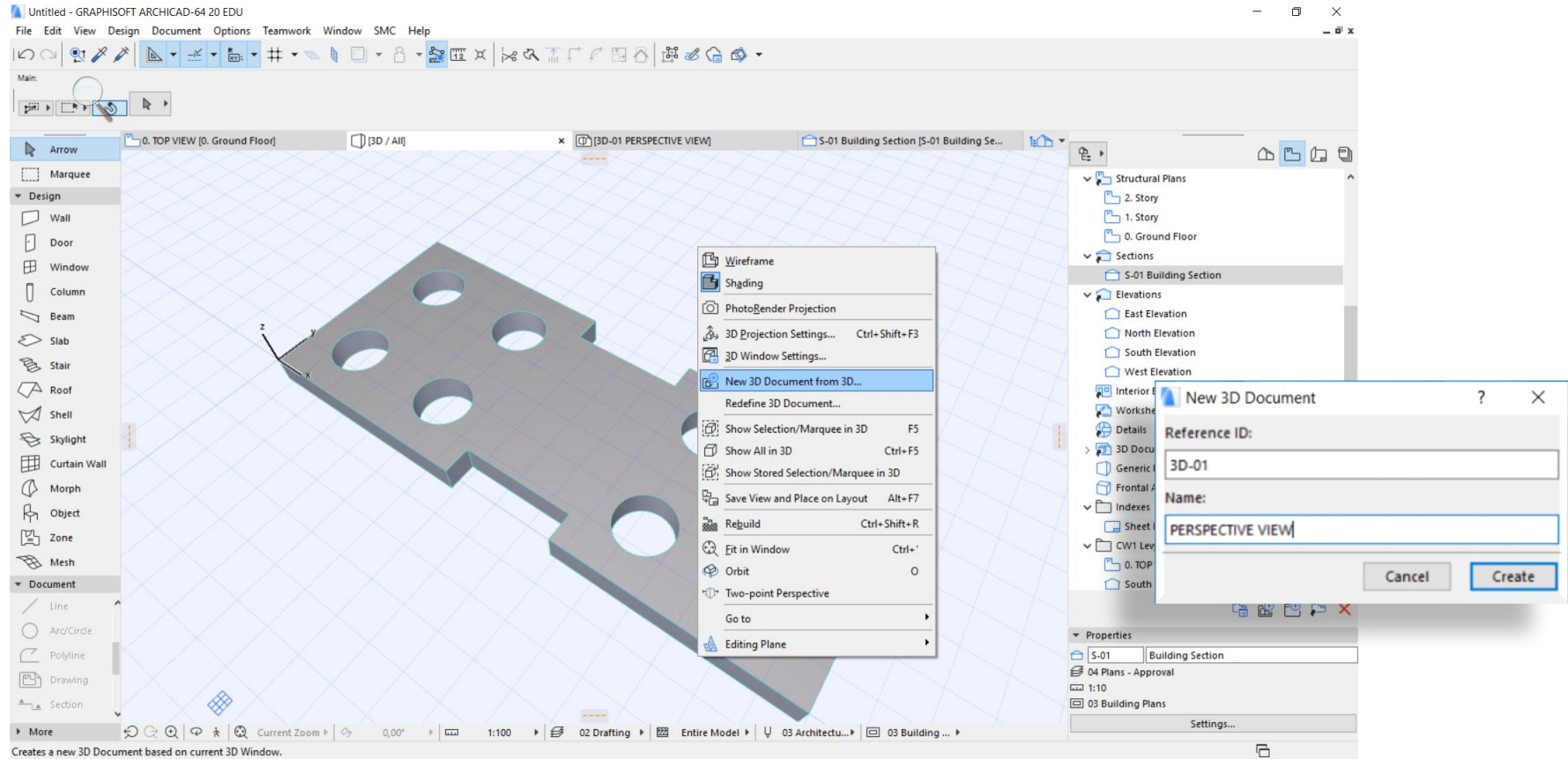
Check the outcome from the "S-01 Building section" from view map.



Go to "section settings" (right click at empty place) and make necessary settings (in the example below – sun shadows is turned on from "model display")

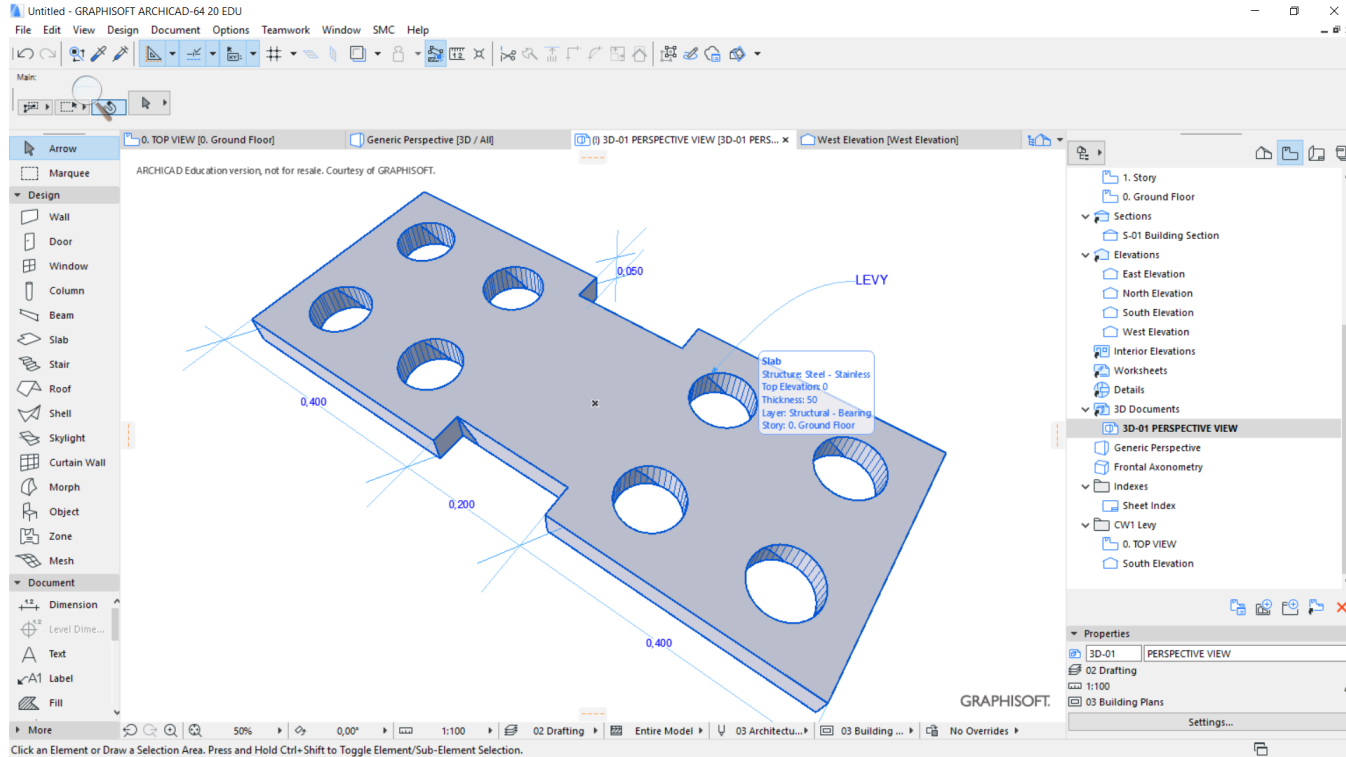


Go to 3D view and once the desired view is achieved > right click in an empty area and make a new "PERSPECTIVE VIEW" 3D document from 3D



Remember to organise the view and update the view in the list.

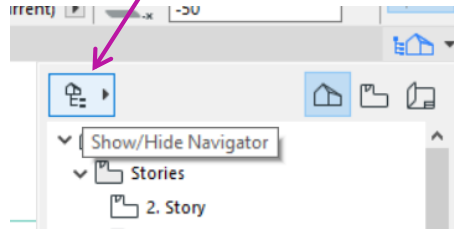
Various 2D documentation tools can be used for annotation of the element in 3D document



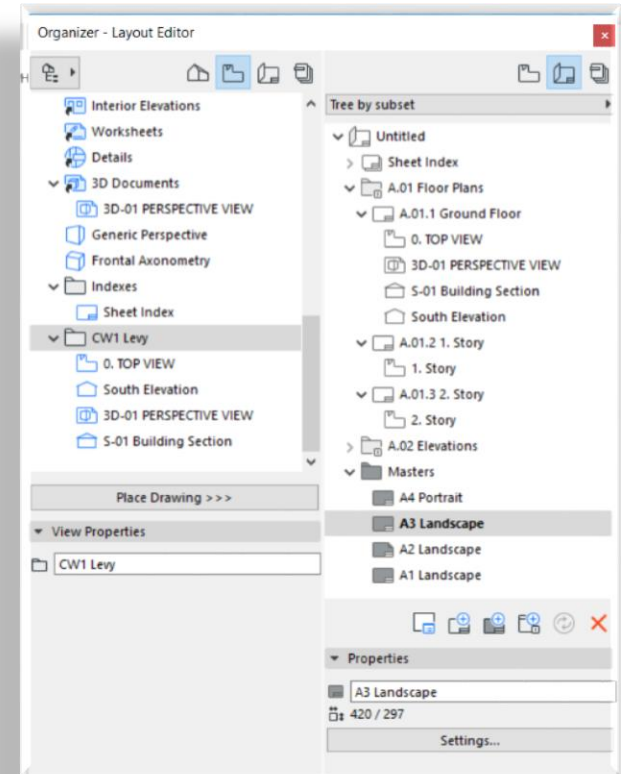
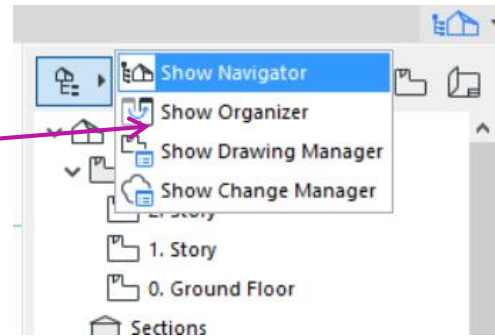


# Layout book

1. Click "show hide navigator"



2. Click "show organizer"



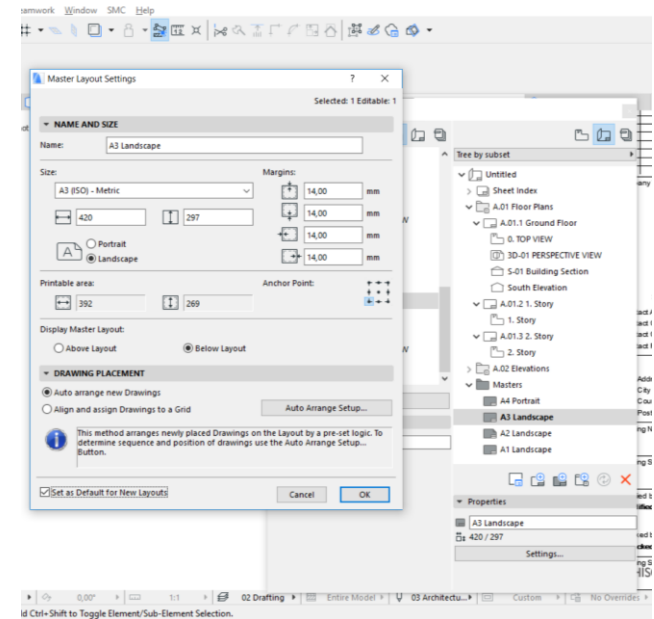
Double click "A3 Landscape" from masters folder and make space for "drawing name" field by removing "drawing status" and other necessary fields.

#Project Name	
#Site Address1	
#Site City	
#Site Country	
#Site Postcode	
Drawing Name	
#Drawing Name	
Drawing Status	
#Státus	
Modified by	Date
#Modified by	
Checked by	Date
#Checked by	
Drawing Scale	
1:###	
Layout ID	Revision
#LayID	#RevID

#Project Name	
#Site Address1	
#Site City	
#Site Country	
#Site Postcode	
Drawing Name	
#Drawing Name	
Checked by	Date
#Checked by	
Drawing Scale	
1:###	
Layout ID	Revision
#LayID	#RevID

Right click on "A3 Landscape" from masters folder and go to its settings

Check mark "set as default for new layouts"



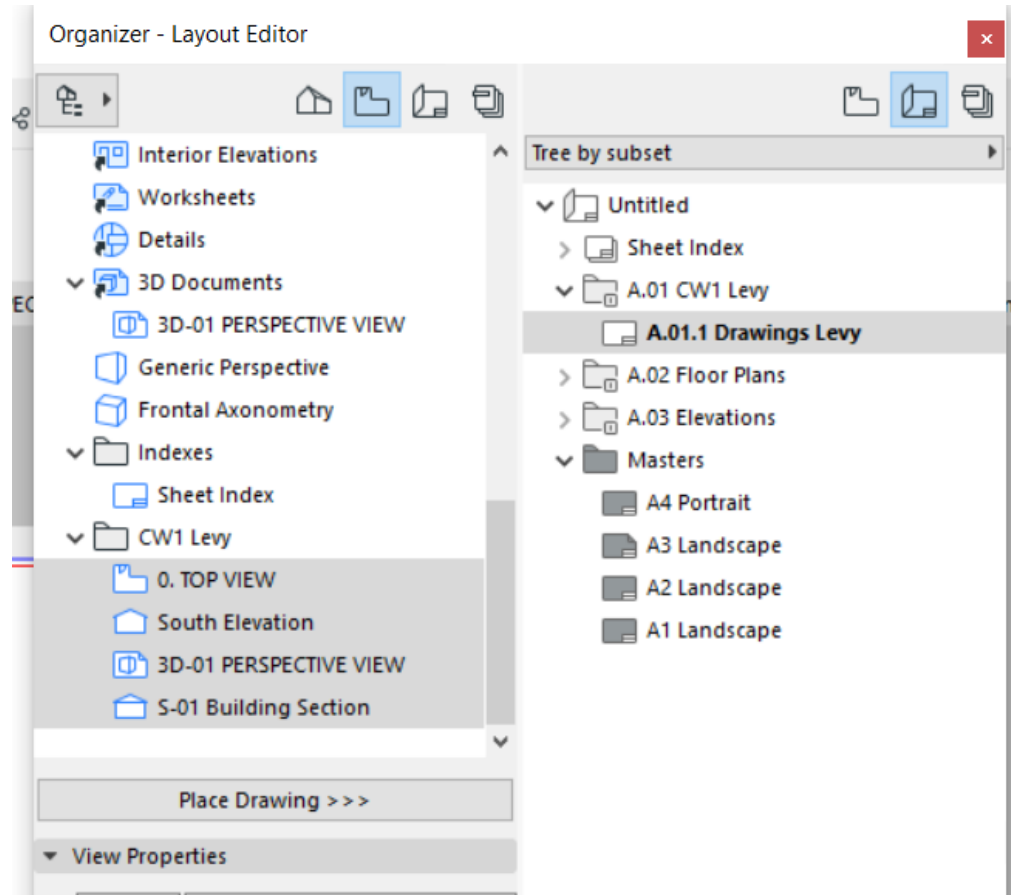
Make "Drawings Levy" folder and "Drawings Levy" layout in "layout book"

- Folder place can be placed by dragging and dropping its place to automatically update its "ID – A.01"

Select views from "view map" on left and "layout - drawings levy" from layout book

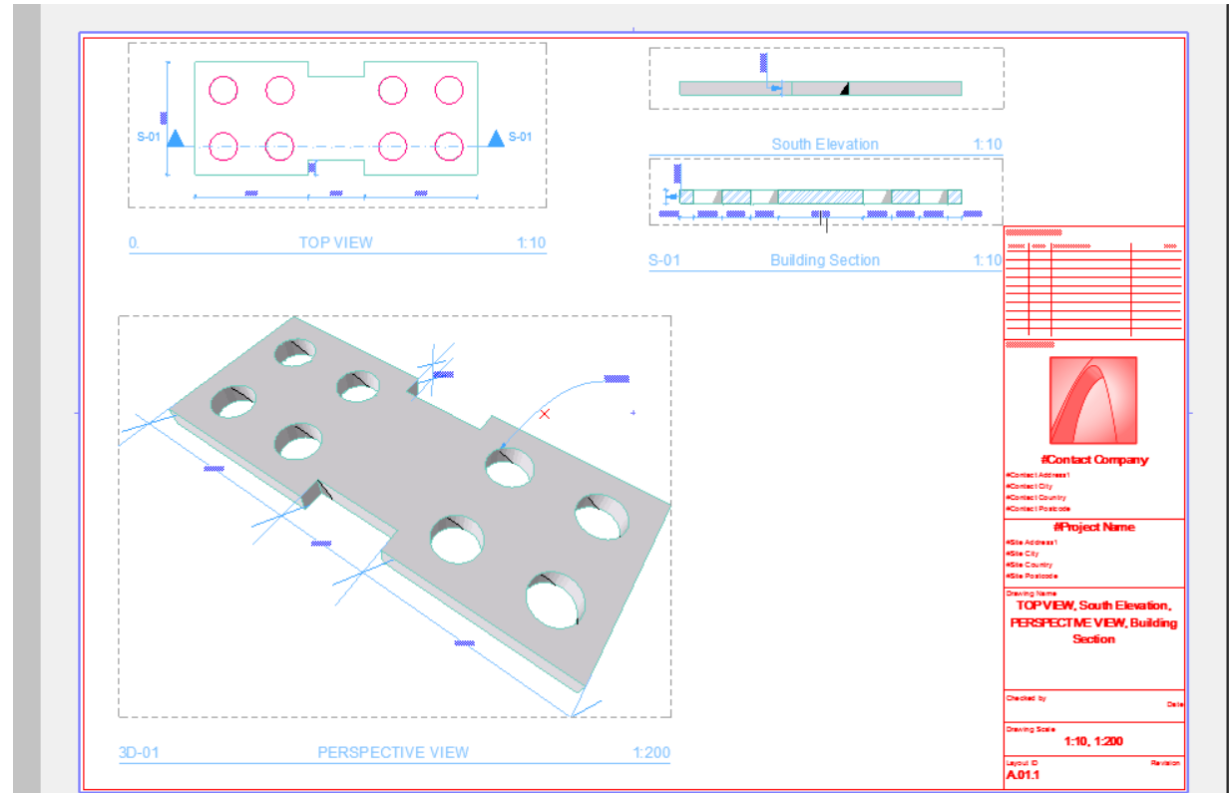
And click place drawing

Check the result in the layout



Organize the views in the layout. You can select the view from layout (now termed as drawing if in layout) and check its setting – drawing settings

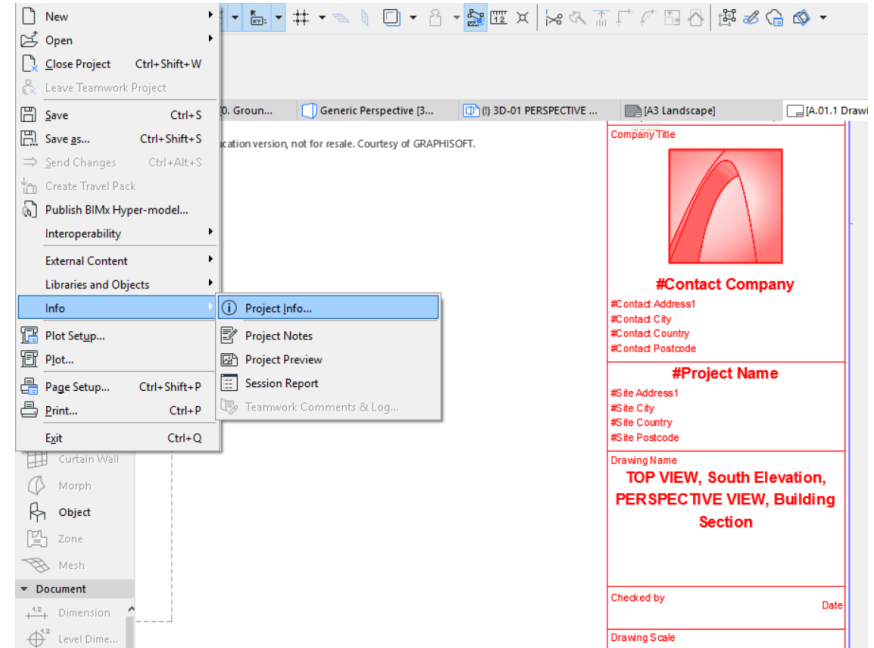
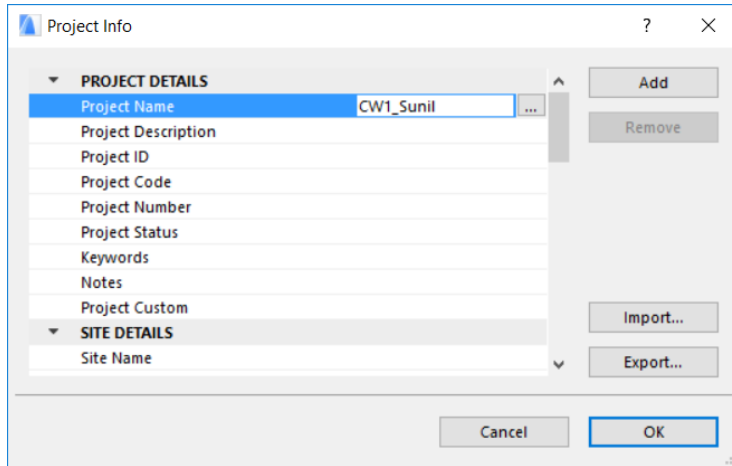
Go to the individual views from "view map" and put necessary annotations like some dimensions. These will be automatically updated in the layout but remember to check the views in layout



Update information in the name plate of "A3 landscape" from File > info > project info..

Input CW1\_yourname in the "project name" field

You can also update other details as needed



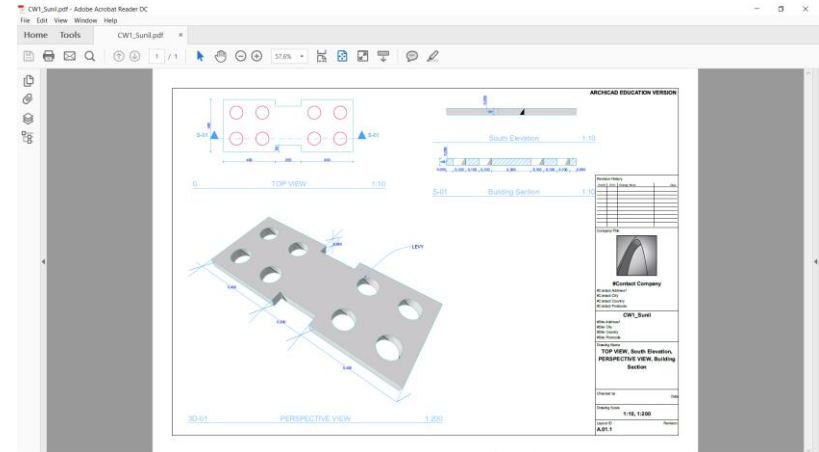
Go to "drawings levy" layout if not active

Save ( File > save as ... pdf) or Print as a pdf document.

change the document type as "pdf" in the save as dialogue box

provide the name same as the project name "CW1\_yourname.pdf "

Submit the pdf document from mycourses.



# Save the model as IFC and check the properties in either Soibri, Trimble connect or Tekla BIMsight

Check it  
with Solibri

INFO

Laatta.01

	Part_PrecastConcreteElementGeneral	Part_SlabCommon					
Identiteetti	Sijainti	Määrä	Materiaali	Profiili	Relatiot	Luokittelu	Hyperlinkit
Ominaisuus				Anno			
Malli				CW1			
Suunnitteluala				Arkkitehti			
Nimi				SLA - 001			
Vaihe							
Tyyppi				Steel - Stainless 50			
Tyyppin nimi				Steel - Stainless 50			
Esimääräty tyyppi				FLOOR			
Mallin kategoriat							
Kuvaus							
Materiaali				Steel - Stainless 0,050 m			
Kuvaus				Structural - Bearing			
Iljgeleima							
Geometria				Pursotus			
Sevelius				ARCHICAD-64			
GUID				776R0K15F02eekthh			
BATID				AD1D405B-0140-453E-848A-DE8FEEDE8D68			

Tervetuloa Solibri Model Checker-ohjelmaan

Roikki Koulutus Valittuja: 0

*Use information take off to extract information, make the table with information of your choice and submit the excel from generated from ITO.*

**Thank you**