Aalto University
School of Engineering

Aalto BIM exercise

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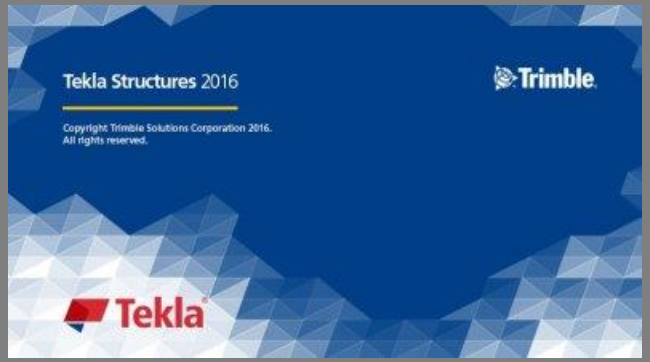
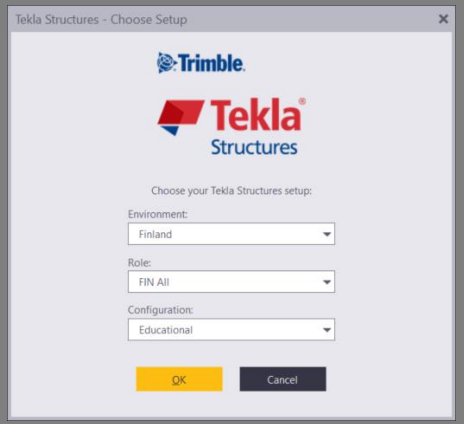
School of Engineering

In use: tekla structures learning2016
Environment: Finland



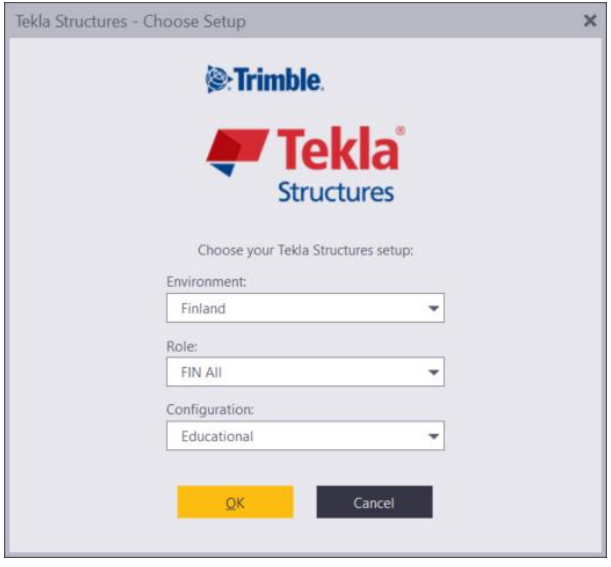


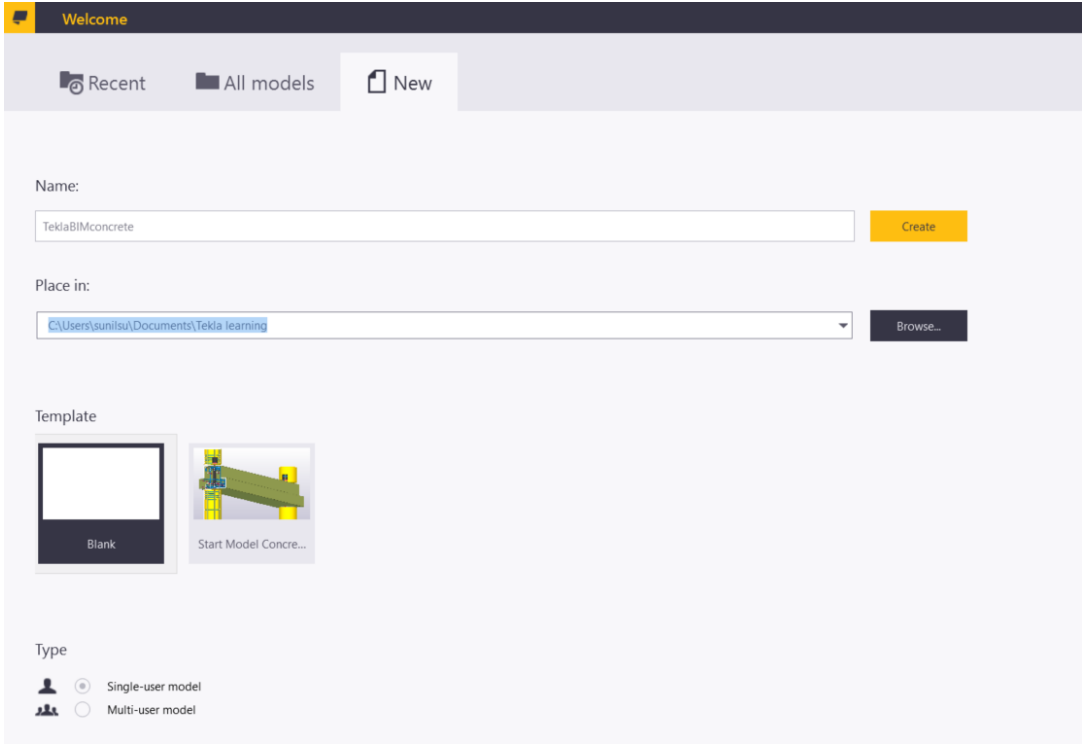
Tekla structures

Basics of concrete objects

Open tekla structures

Choose ”Finland” environment and create new project

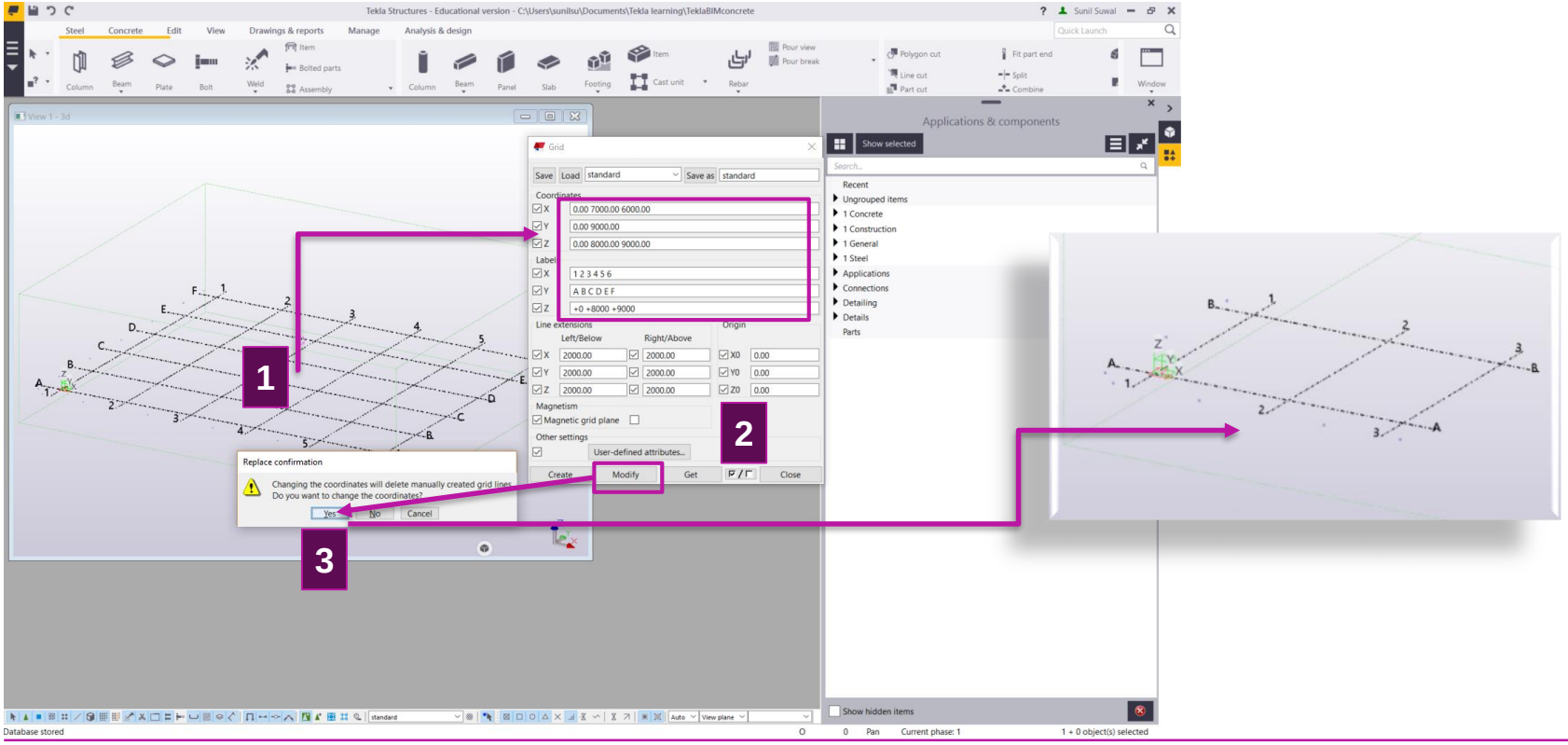




GRID

Double-click the grid to open the Grid dialog box.

- **Modify values.**
- **Fit work area to entire model**



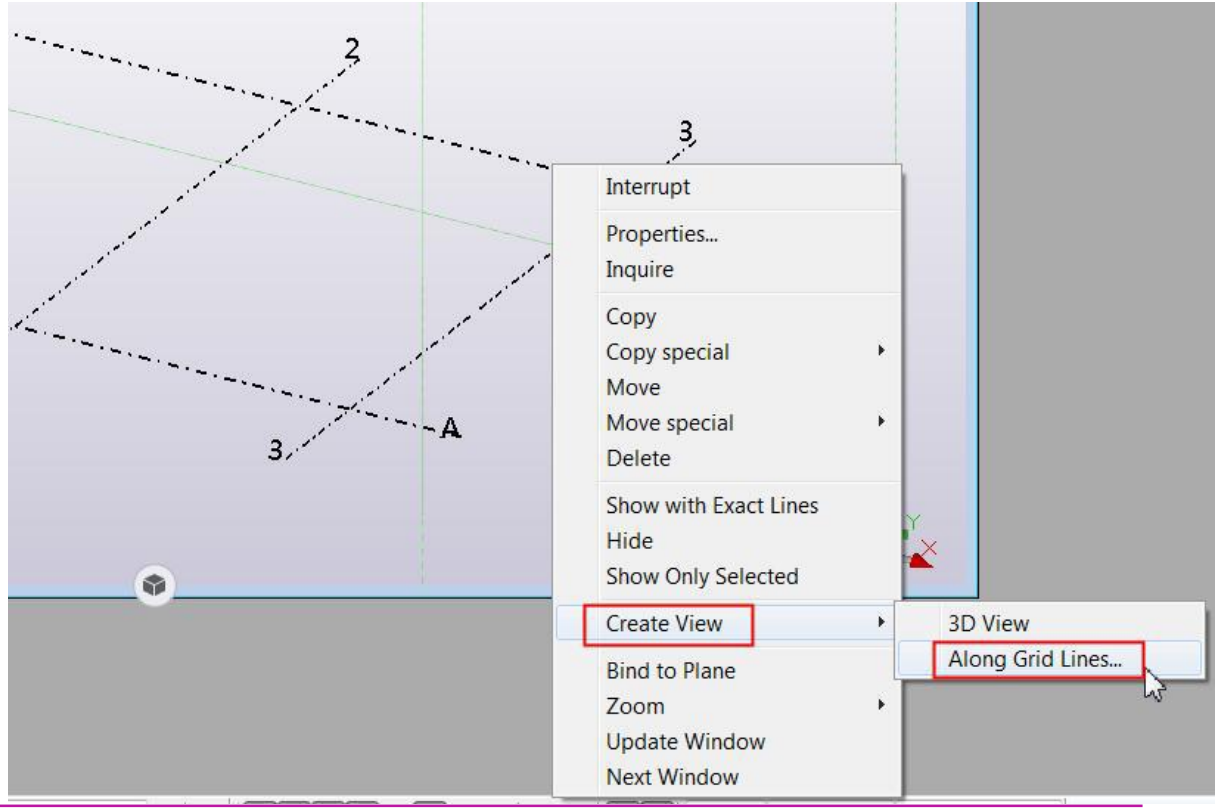
Views along grid lines

Create all views at one time by selecting the grid

> right-click the mouse >

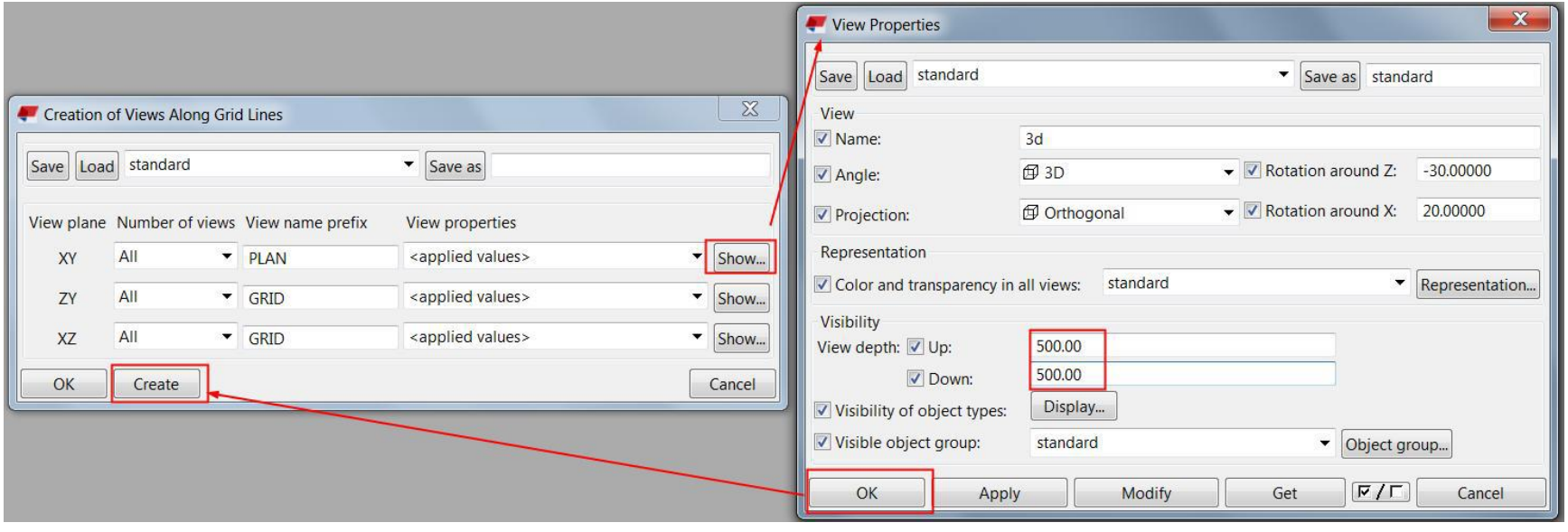
> Create View

> Along Grid Lines...



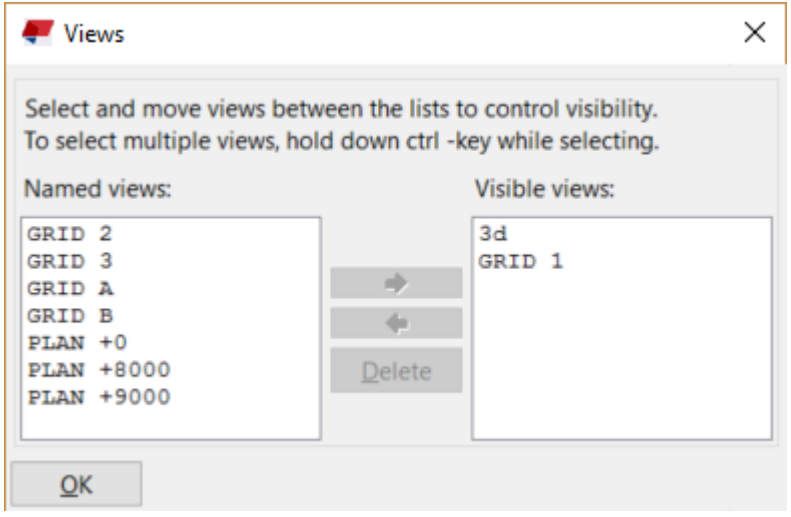
Modify the view depth

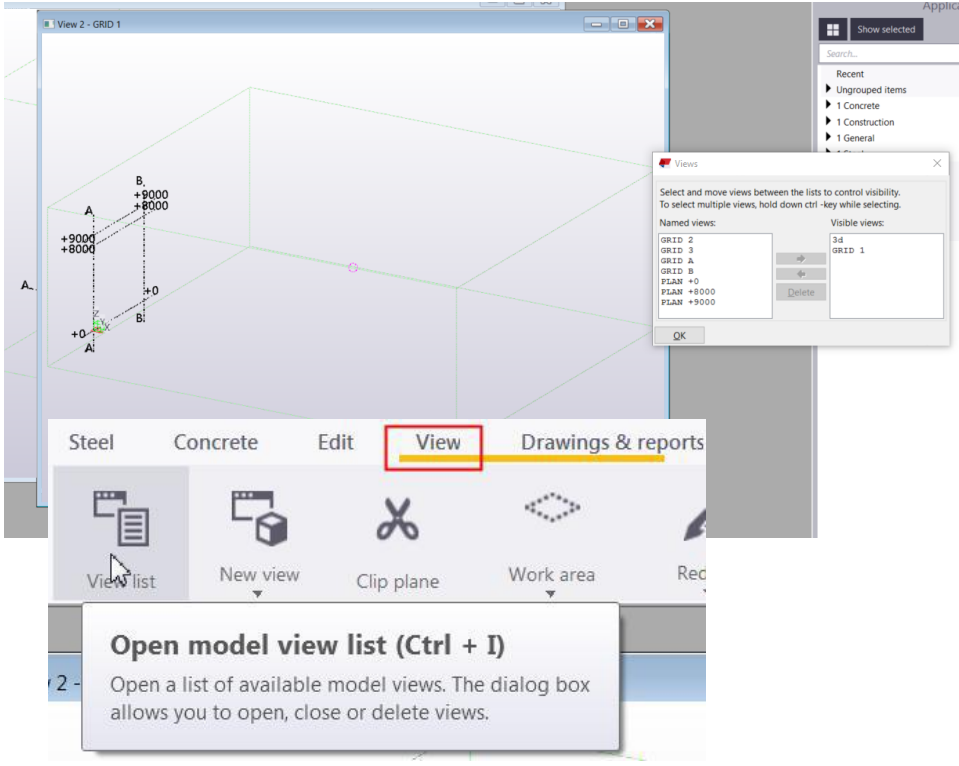
- **Click any Show… button.**
- **Enter to both fields of view depth : 500**
- **OK and Create.**



Named views and Visible views

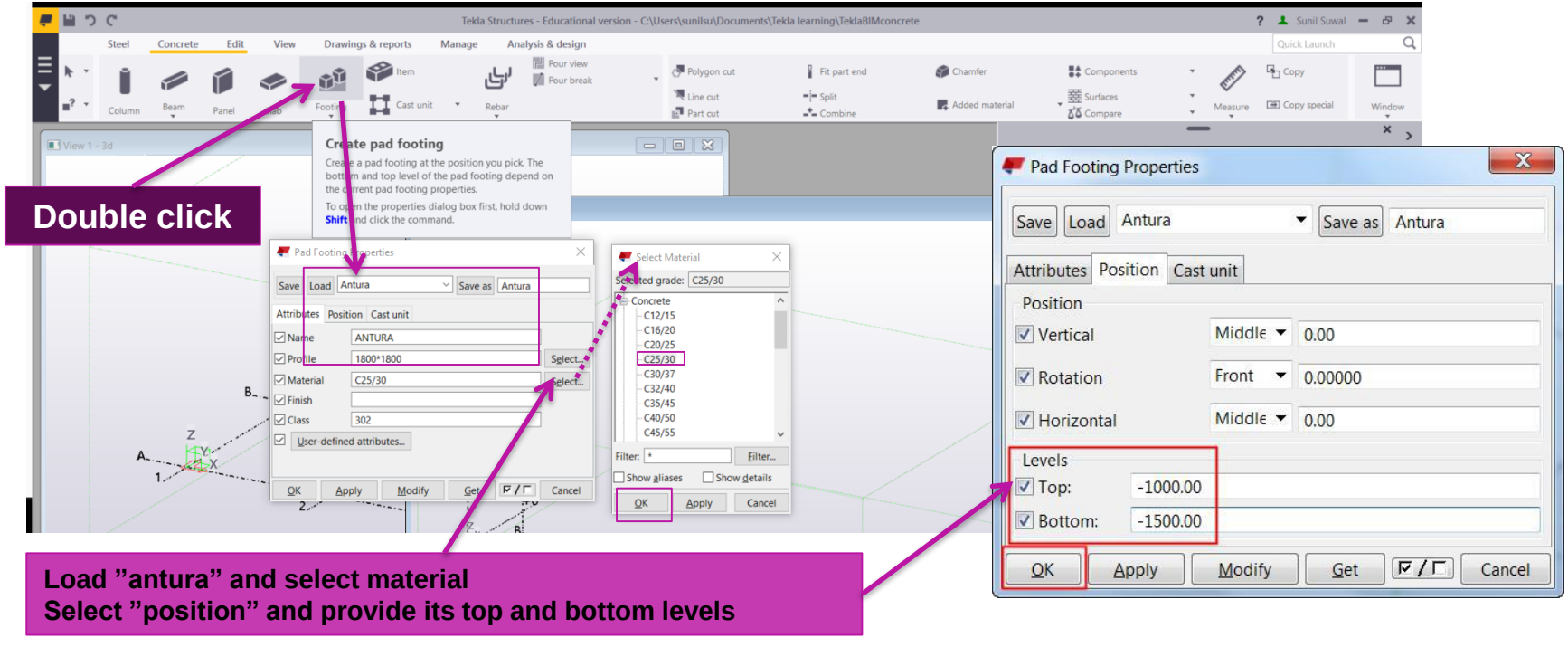
- **All the views will be created based on the grid settings**
- **You can double-click to open any view ”Grid 1”**





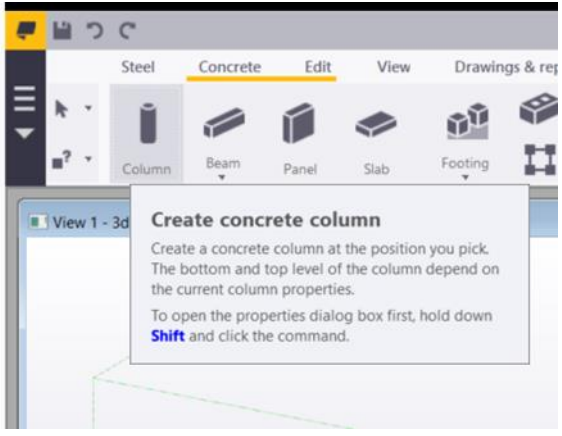
Footing: Antura

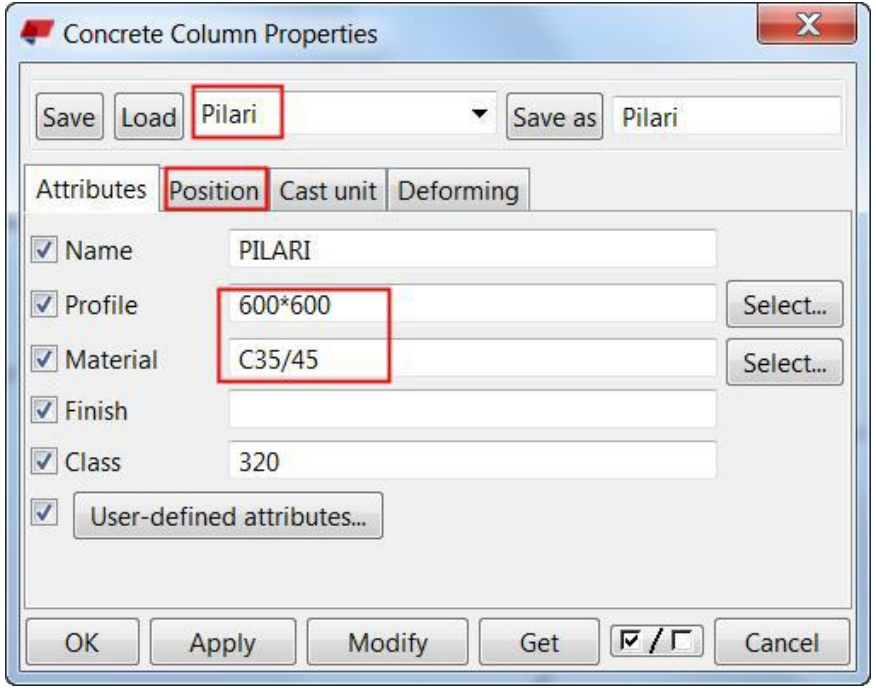
Create a pad footing into the intersection A/1 into 3d view.



Concrete column: Pilari (cast-in-place)

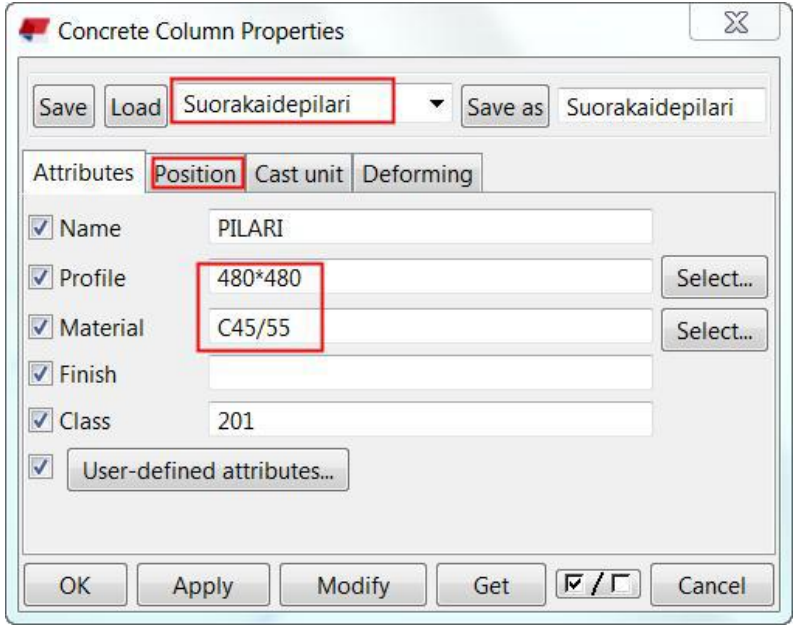
- **Create a concrete column into the intersection A/1.**
- **Define the bottom level so that the column is directly on the top of the footing (the Position tab).**
- **The height is 1000 mm.**

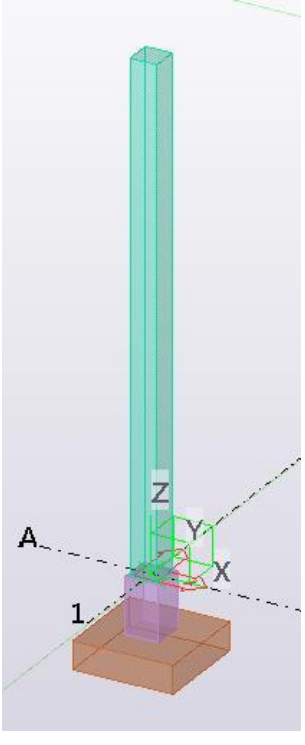




Concrete column: Suorakaidepilari (Precast)

- **Create a concrete column into the intersection A/1.**
- **Define the bottom level so that the column is on the zero level (the Position tab).**
- **The height is 9000 mm.**

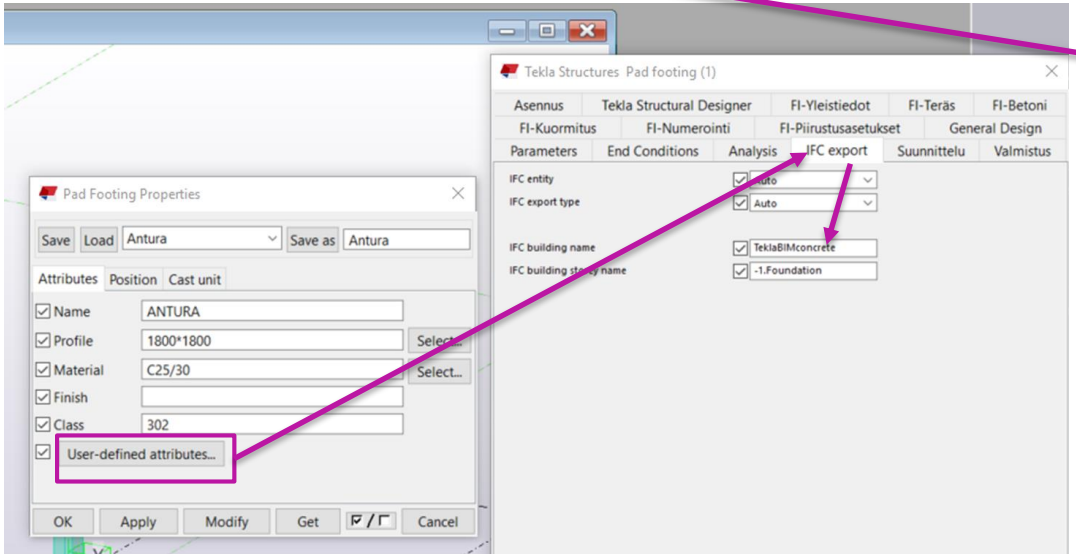




User definded attributes (UDA)

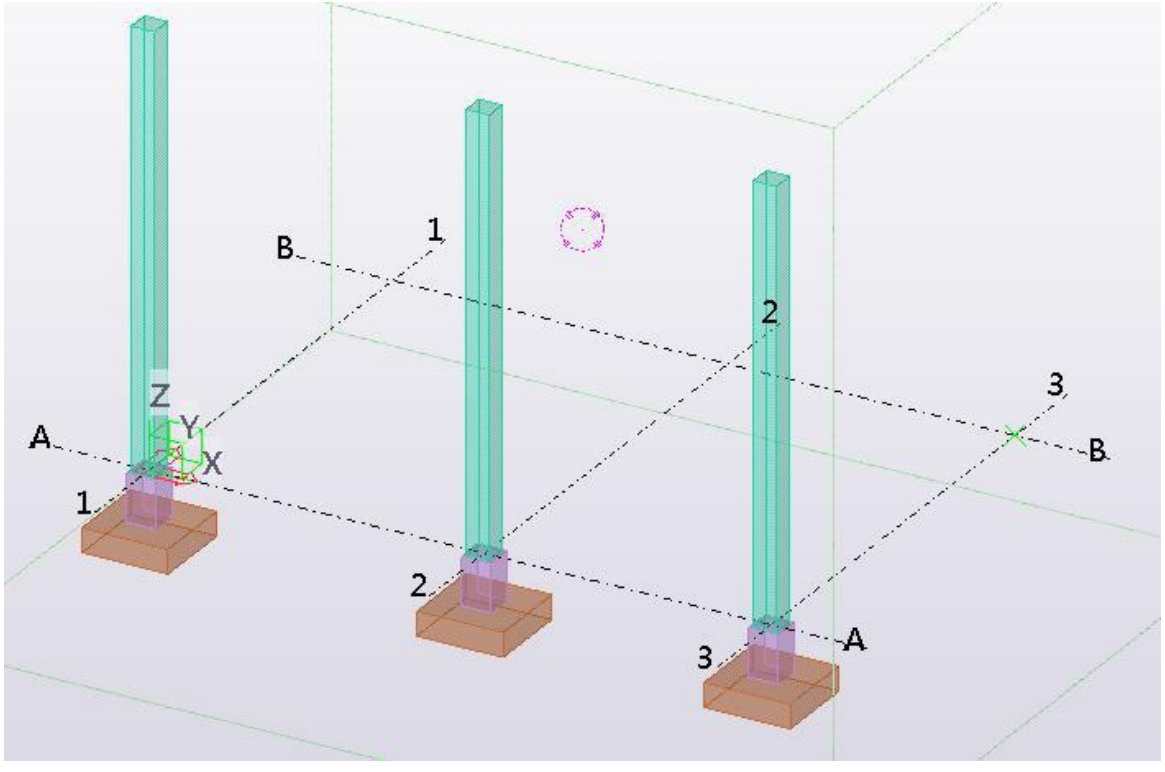
Provide IFC building name and IFC building story name from UDA for the components

- **”antura”**
- **”Pilari”**
- **”suorakaidepilari”**



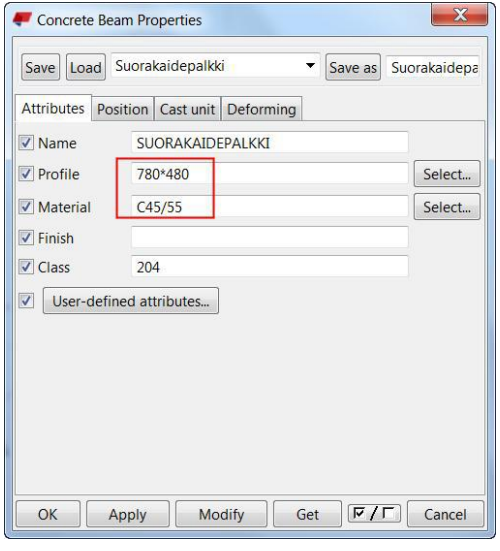
Copy all objects

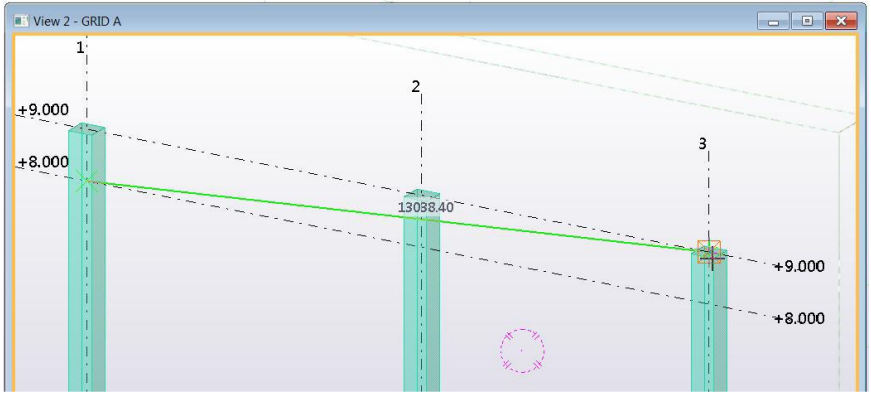
Select all objects and copy them:

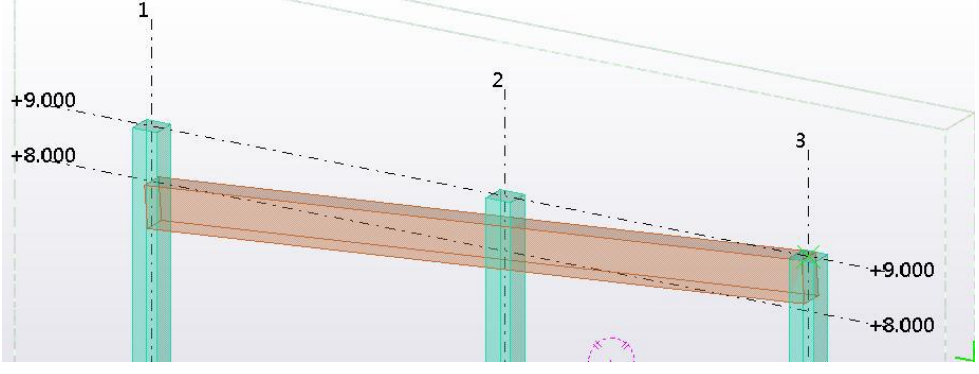


Concrete beam: Suorakaidepalkki (Precast)

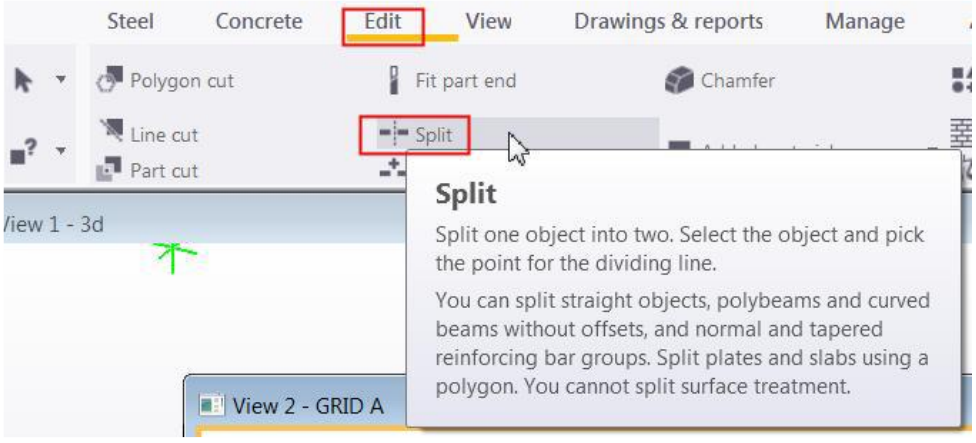
- **Open Grid A.**
- **Create a beam from 1/+8.000 to 3/+9.000.**





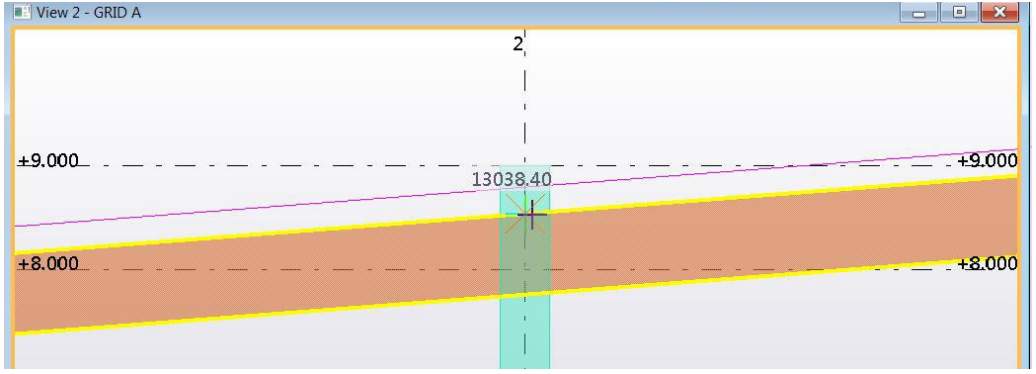


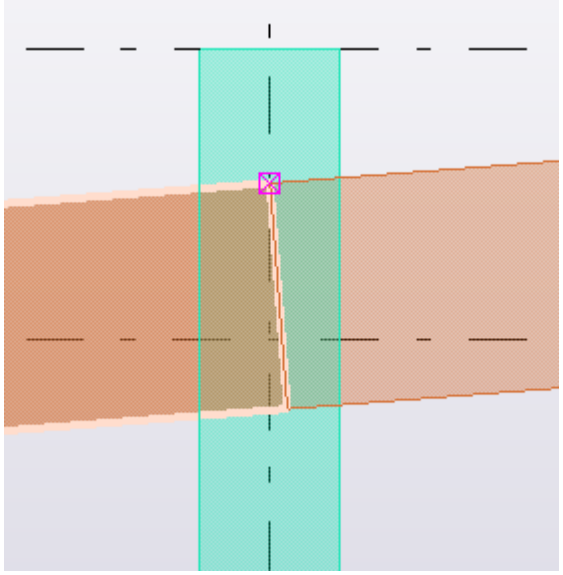
Split the beam at grid 2



Select the beam and split it from the mid point of grid 2.

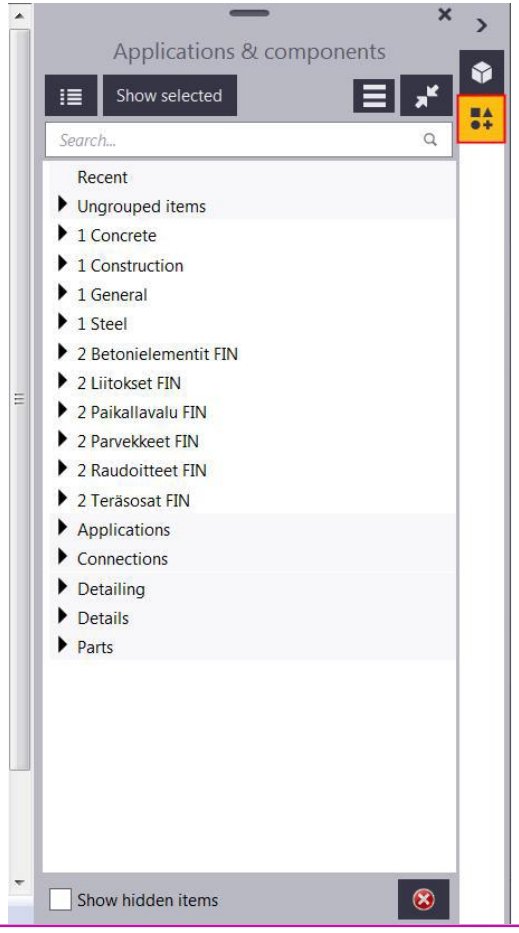
Change view projection if needed (Ctrl + P)





Applications and components

Click the yellow button on the right side of the screen to open the Applications & components catalog.



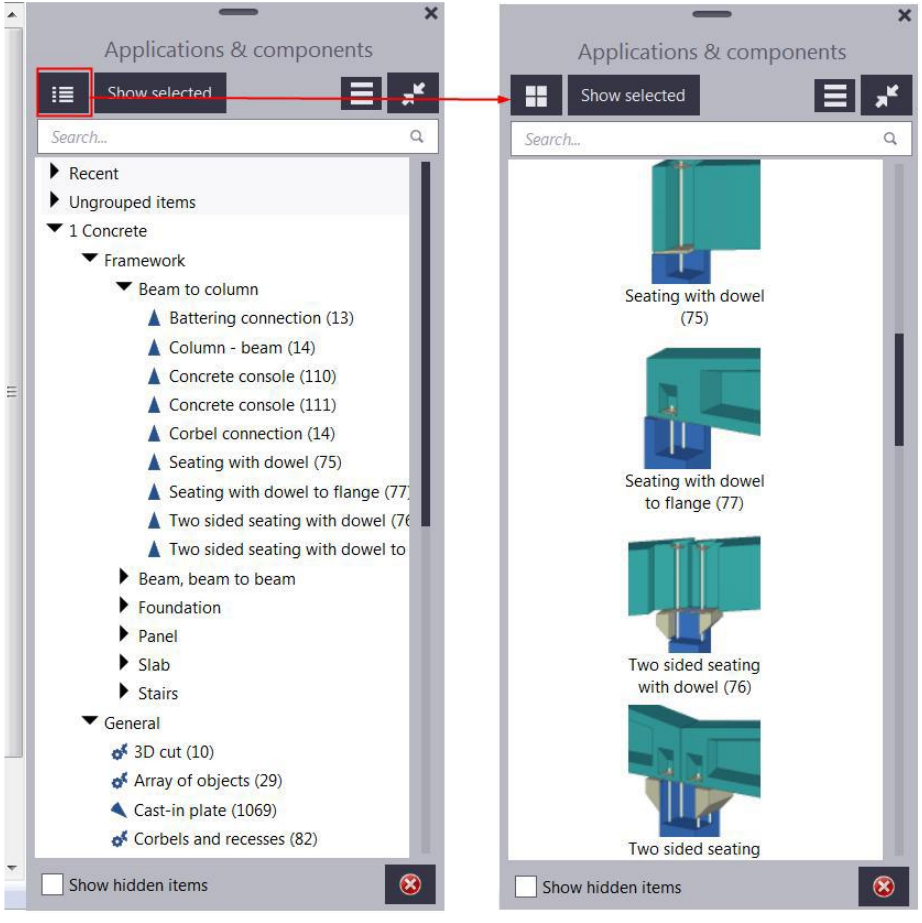
Applications and components

Click the Change between list and thumbnails button.

The blue color means: primary part. You have to pick this first.

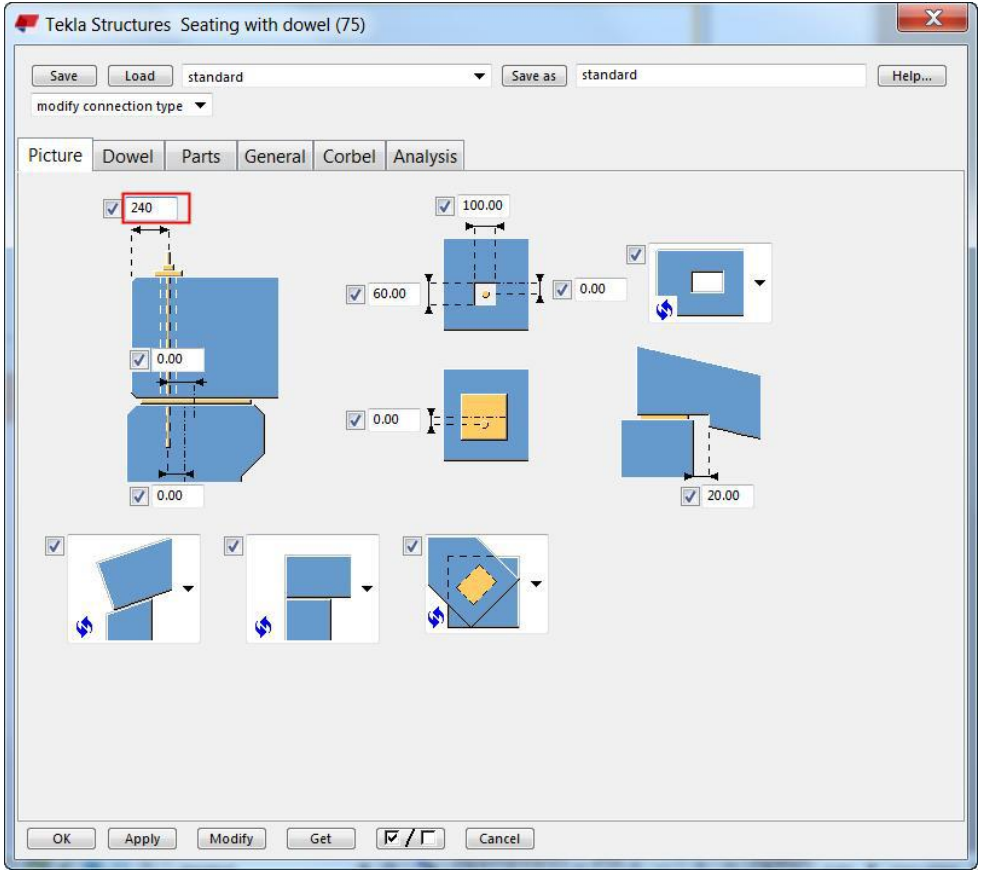
The green color: secondary part.

Double-click the icon of Seating with dowel (75).



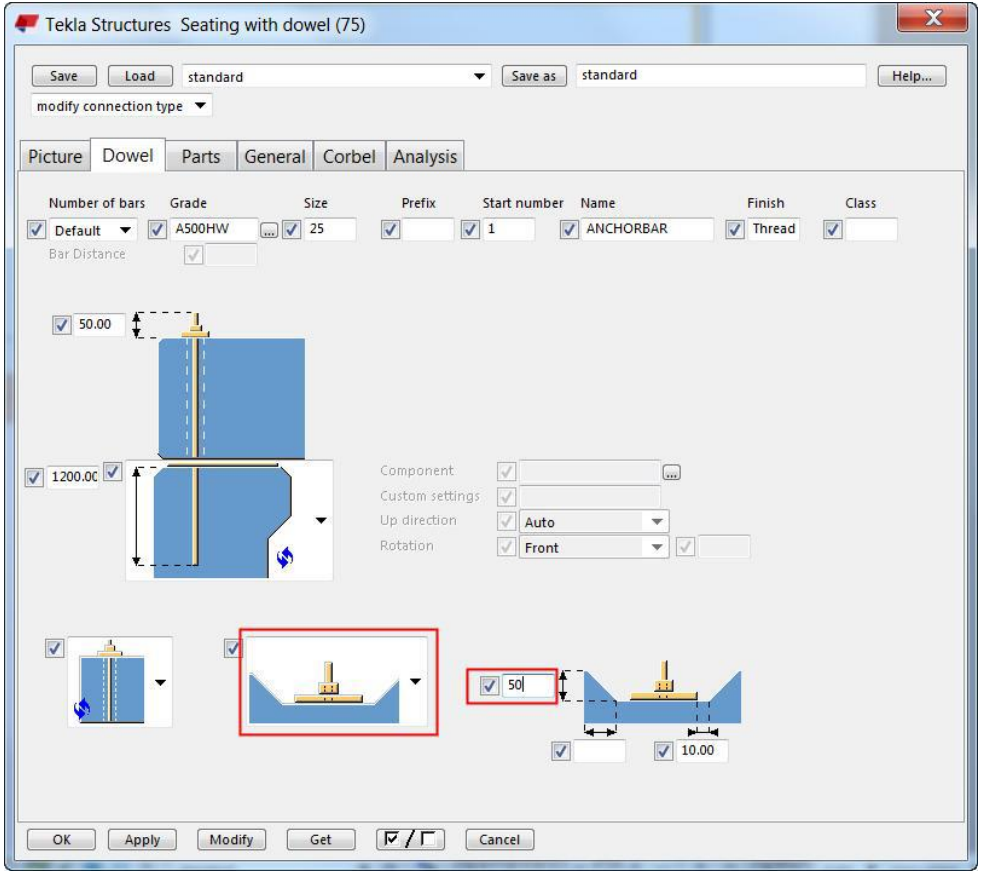
Seating with dowel (75)

Picture tab:



Seating with dowel (75)

Dowel tab:

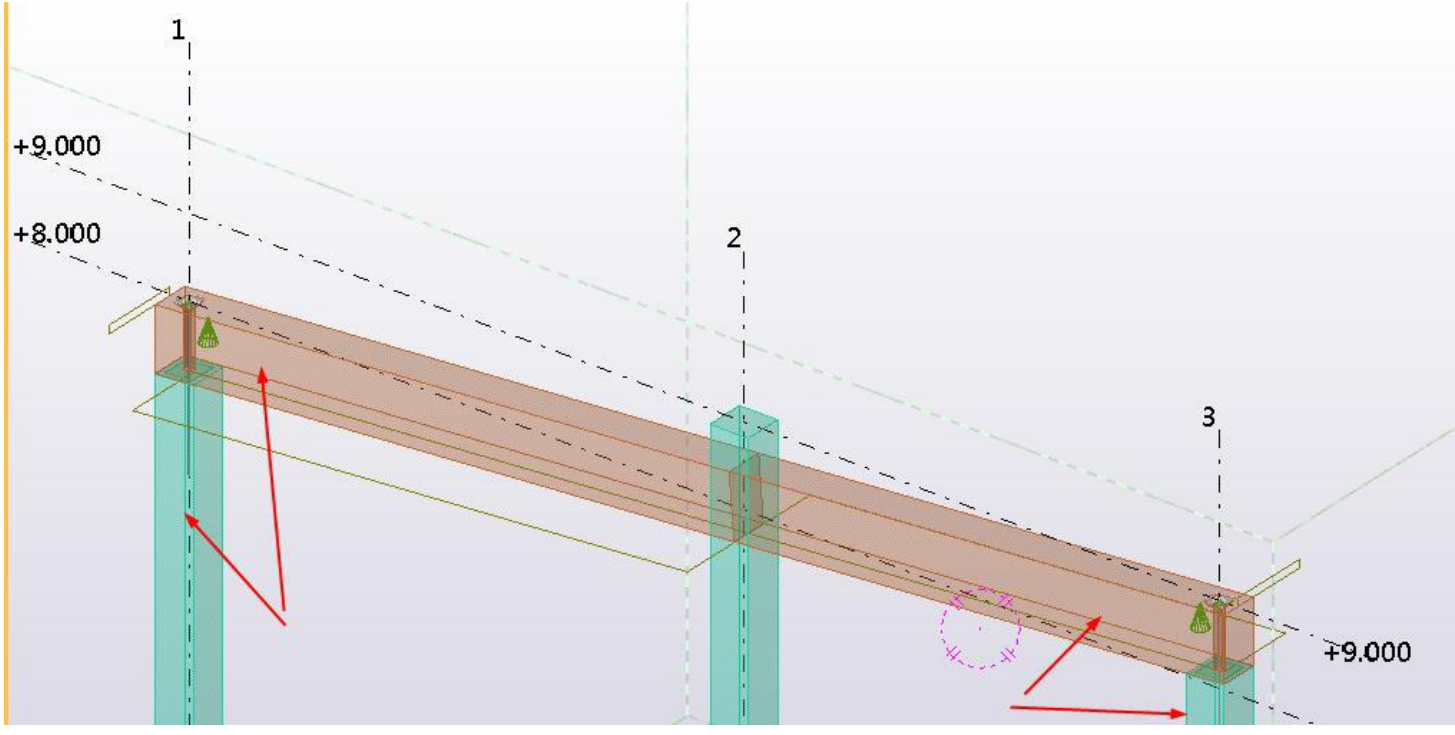


ok

Seating with dowel (75)

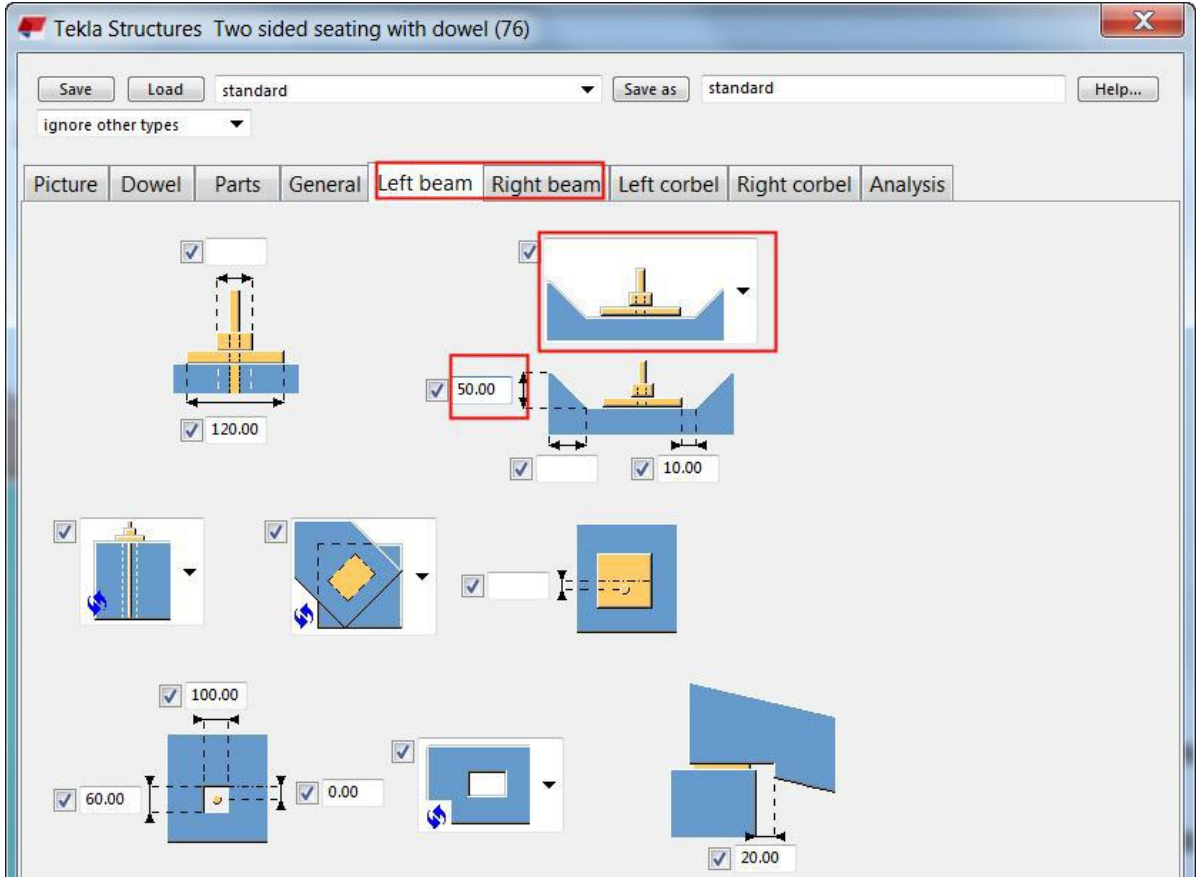
Pick the column first and then the beam.

Redraw view.



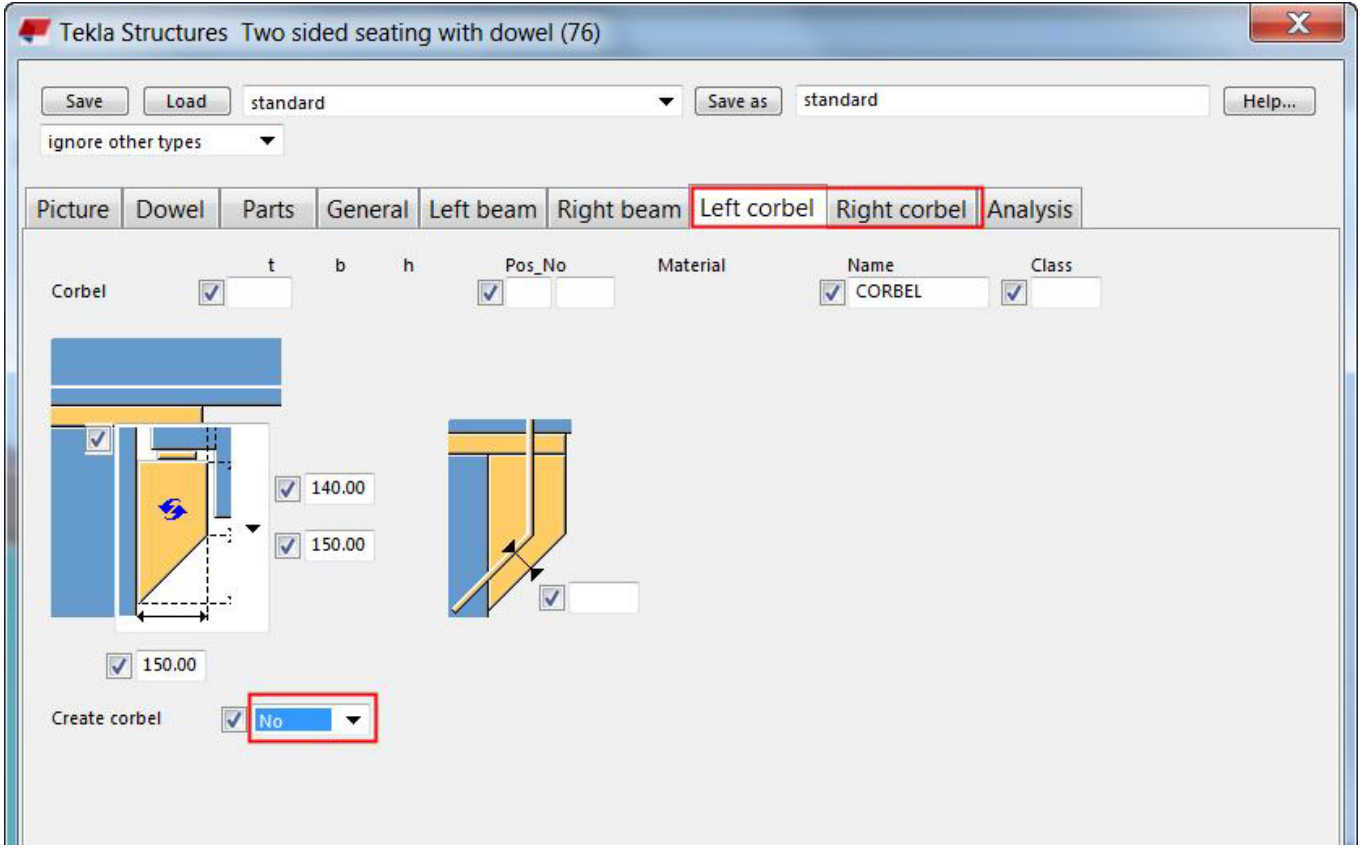
Two-sided seating with dowel (75)

Both Left beam and Right beam tabs:



Two-sided seating with dowel (75)

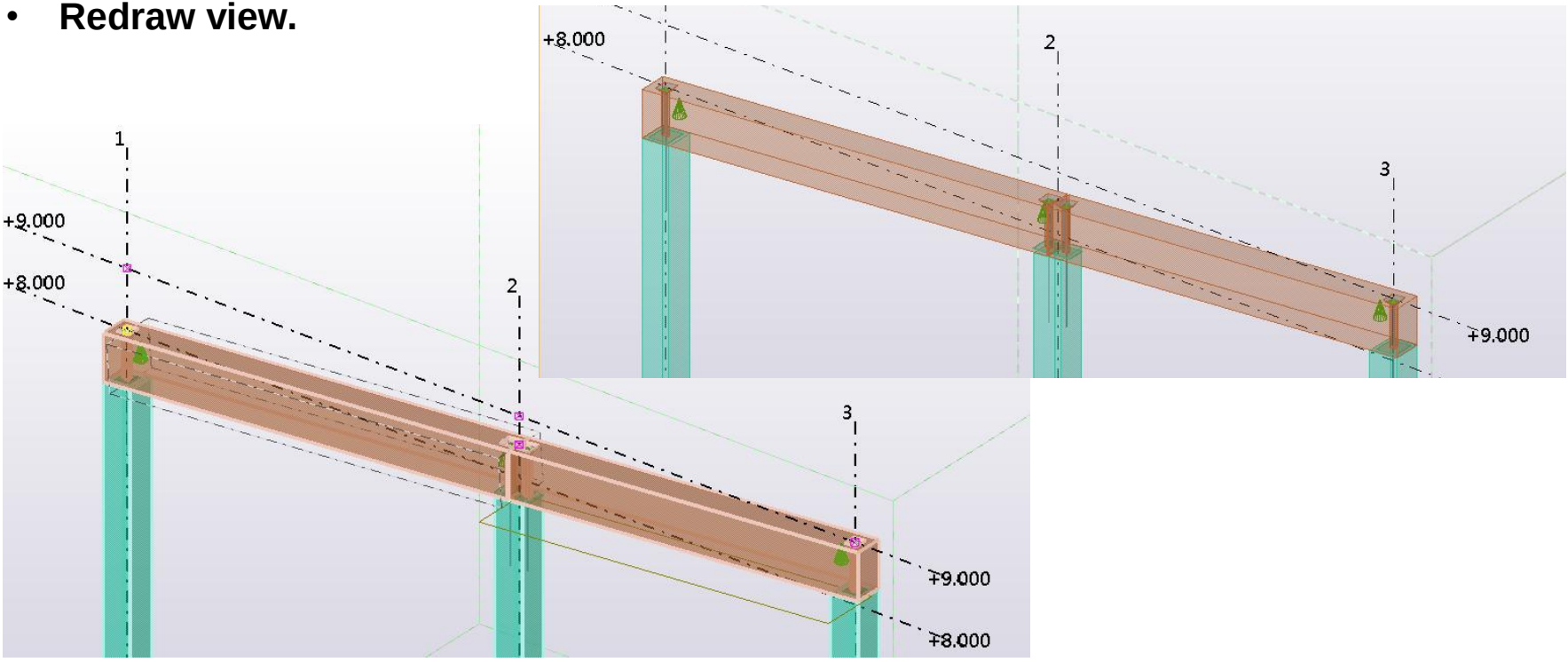
Both Left corbel and Right corbel tabs:



Two-sided seating with dowel (75)

Pick the column first and then the beams.

- **To finish, press the middle mouse button.**
- **Redraw view.**

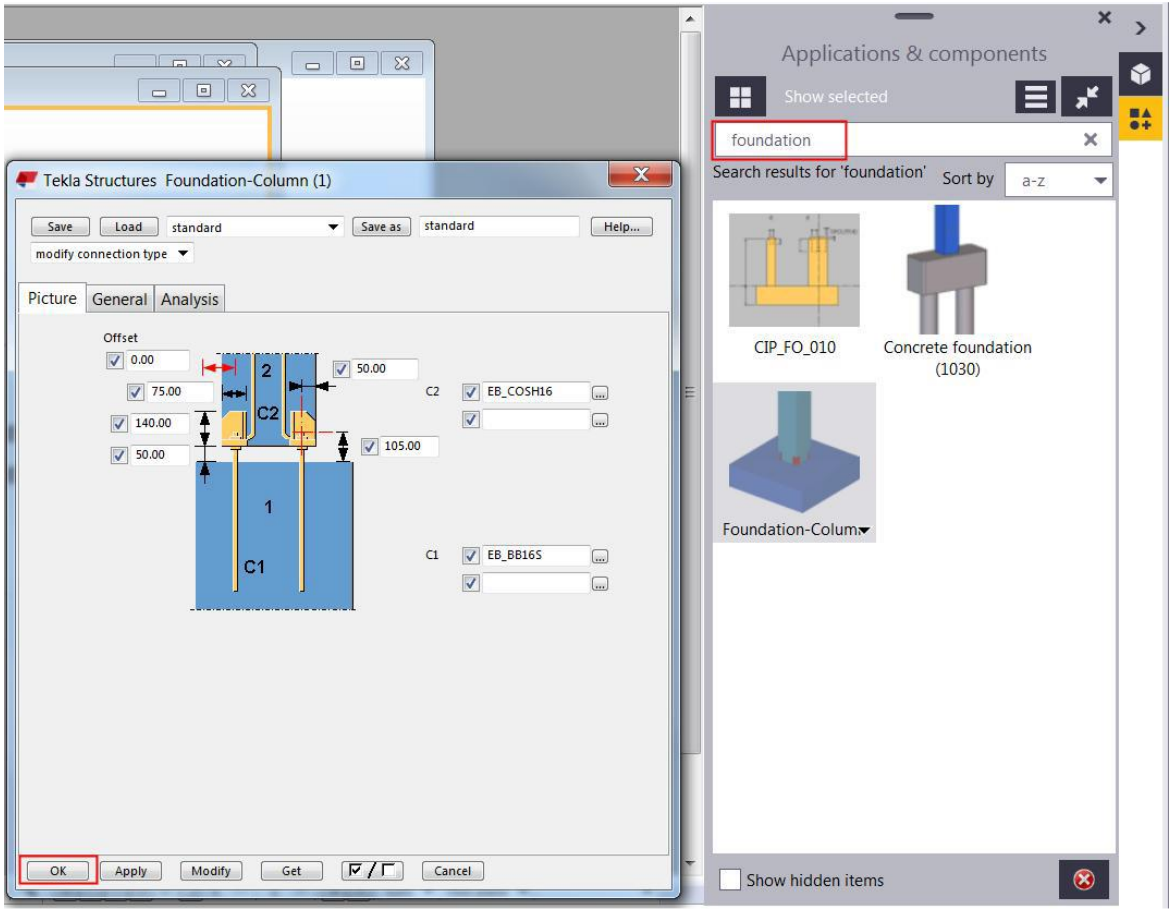


Foundation - Column

We can also search the component.

Type foundation into the field.

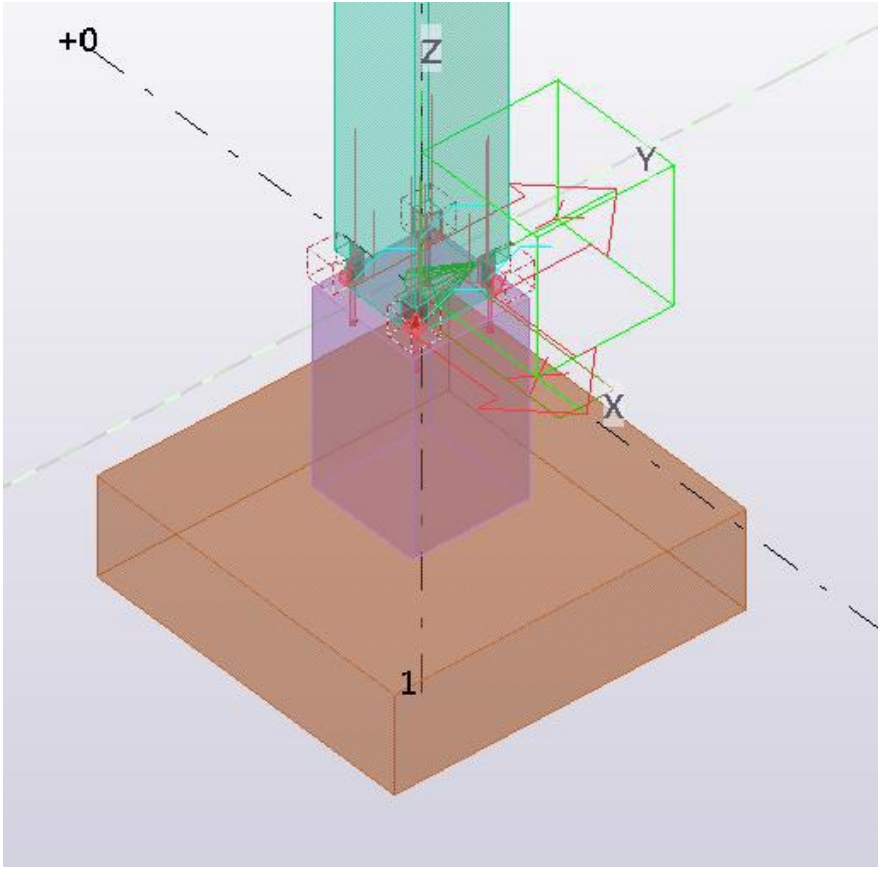
We use the default values when we create the connection.



Foundation - Column

The CIP column is the primary part.

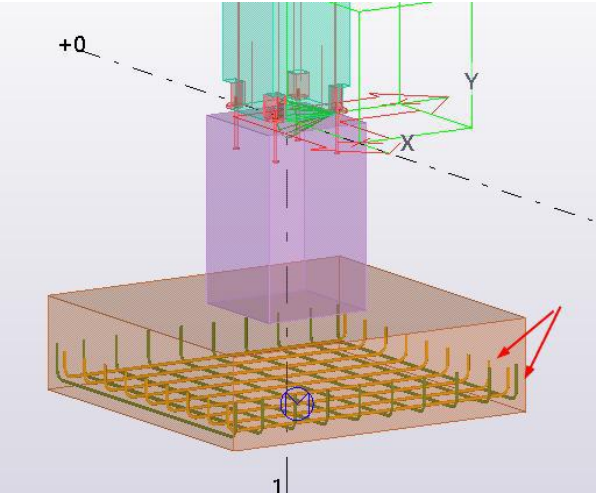
The precast column is the secondary part.

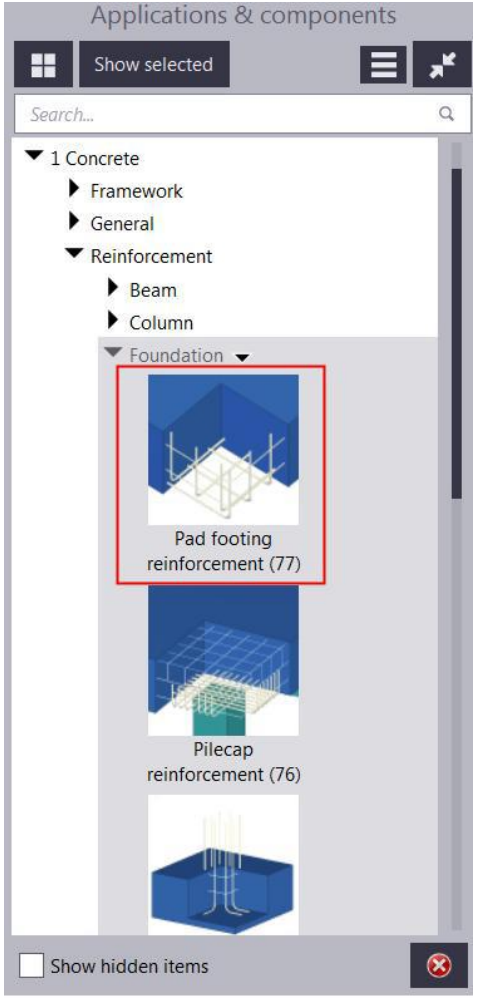


Reinforcement

Pad footing reinforcement (77).
Double-click the icon.

Try to find out how you could define the reinforcement as shown.
You can always double-click the reinforcement,
change values and modify.



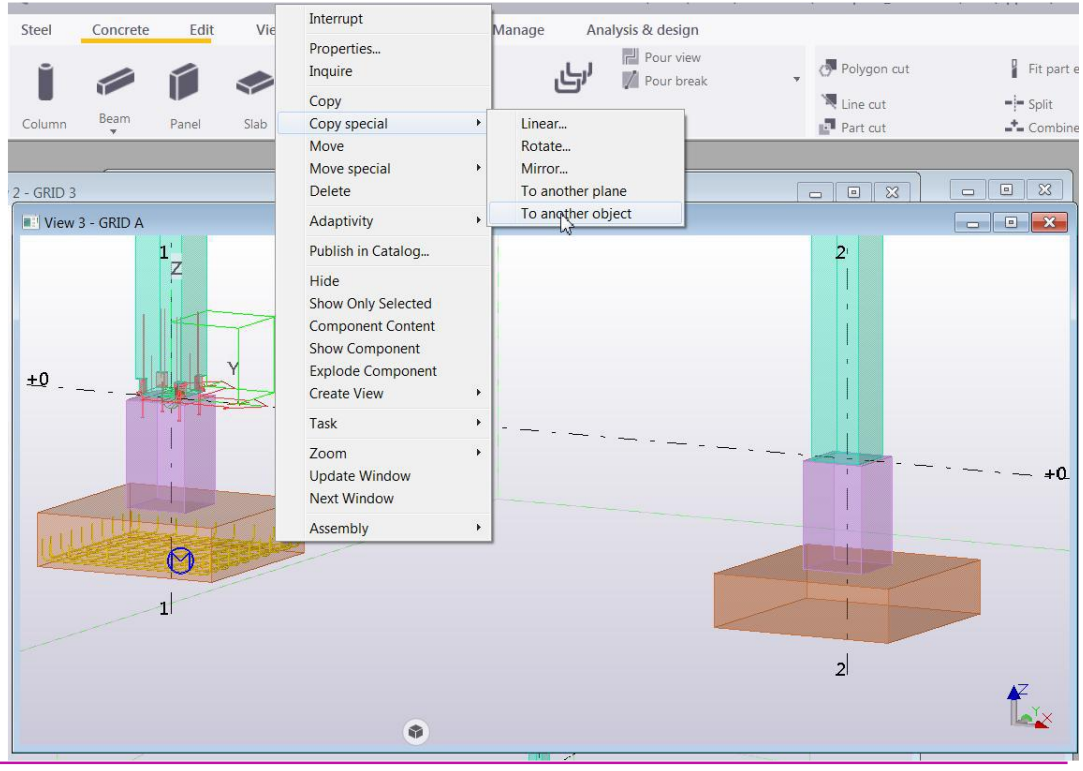


Pad footing reinforcement (77)

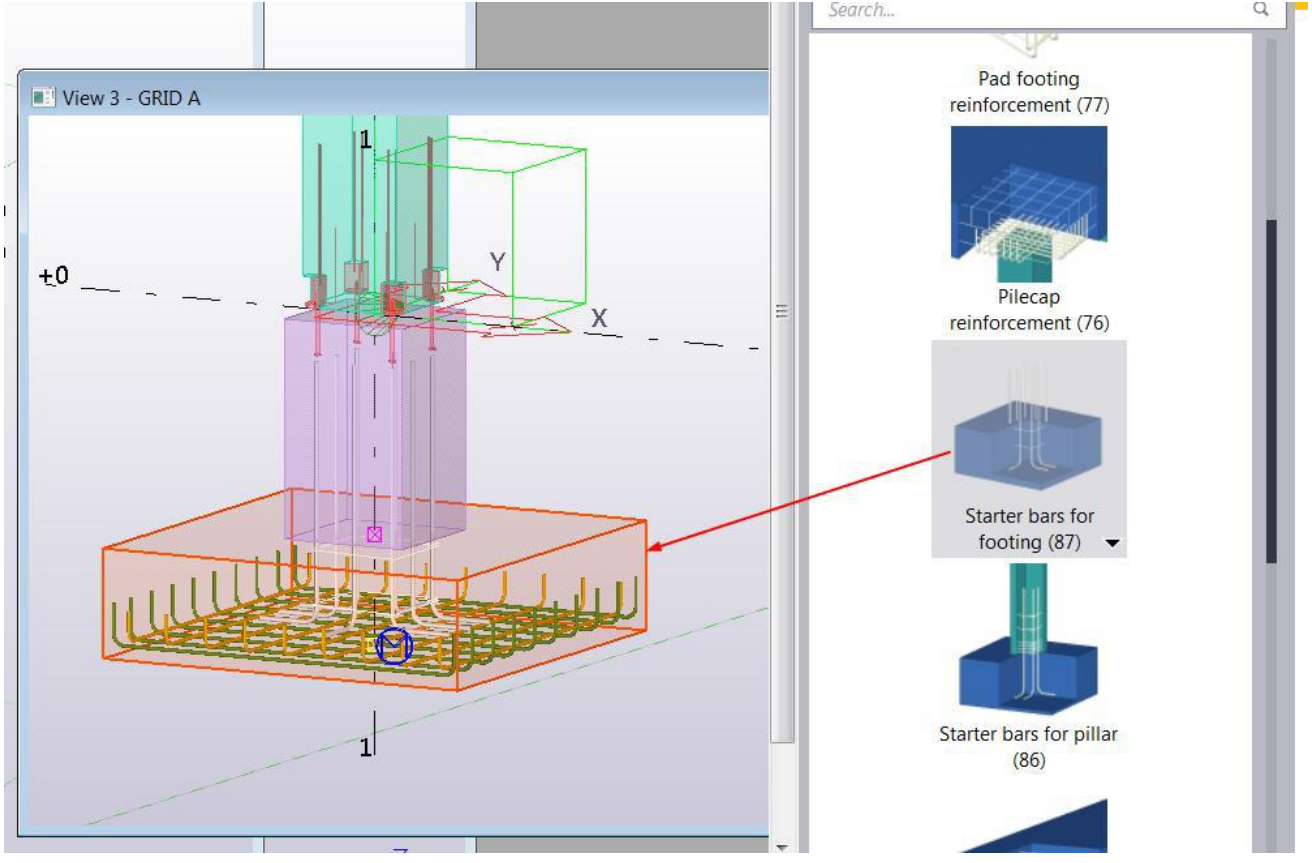
You can also copy the reinforcement to other similar objects.

To copy the reinforcement select it > right-click the mouse > Copy special > To another object.

- Pick first the source object.
- Pick then the other footing for the destination object.

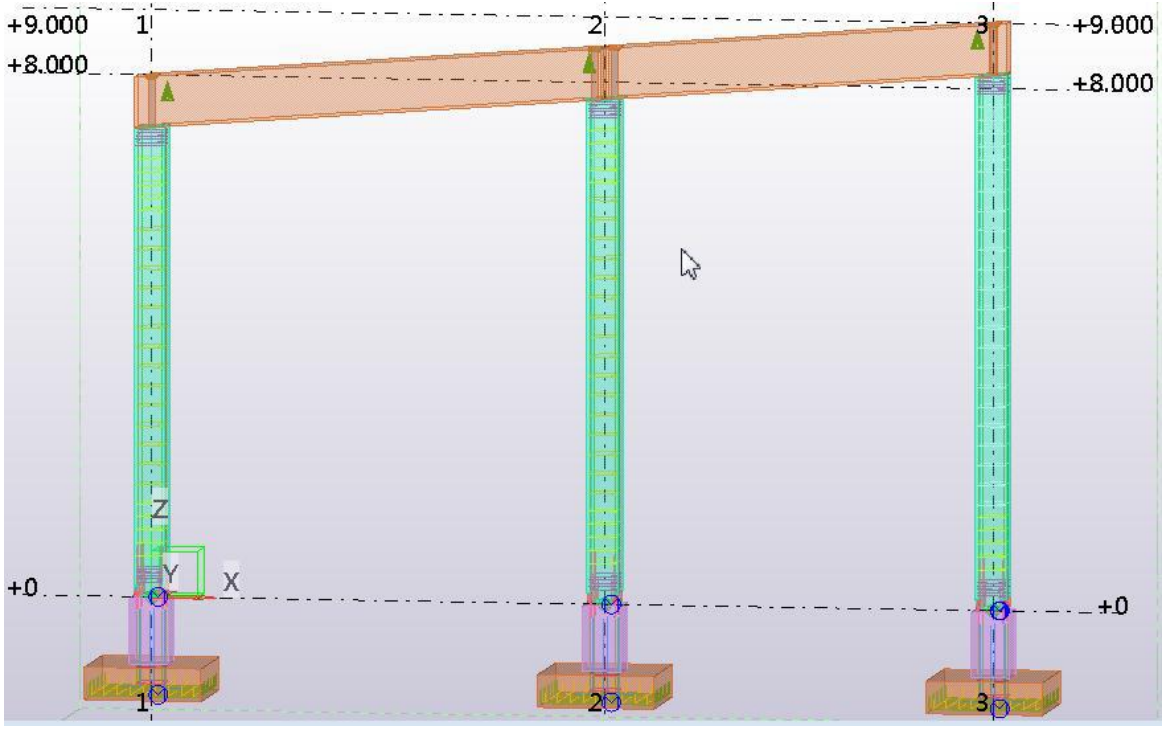


Starter bars for footing (87)



Rectangular column reinforcement (83)

- **Find out, how you can define the spacings of stirrups.**
- **Modify the profile of one column. What happens?**
- **Undo modifying.**

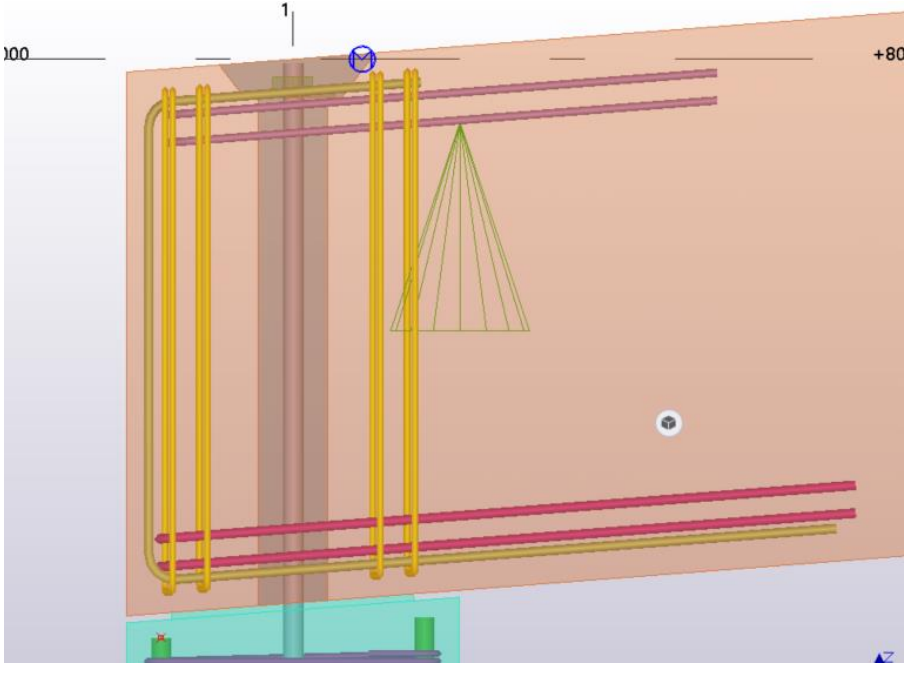


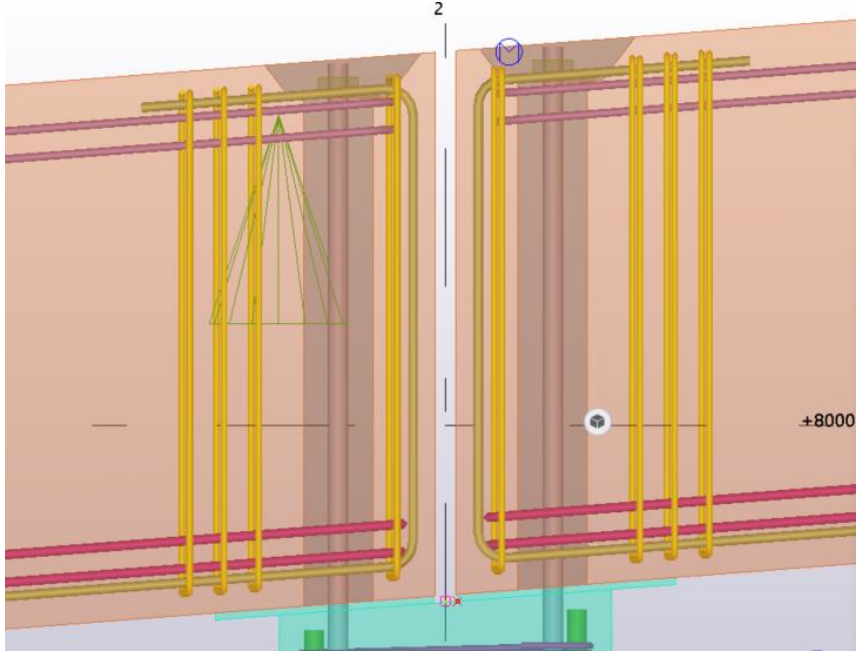
Beam end reinforcement (79)

Select the beam end.

Pick position: click one corner of the beam.

Modify the reinforcement as shown.

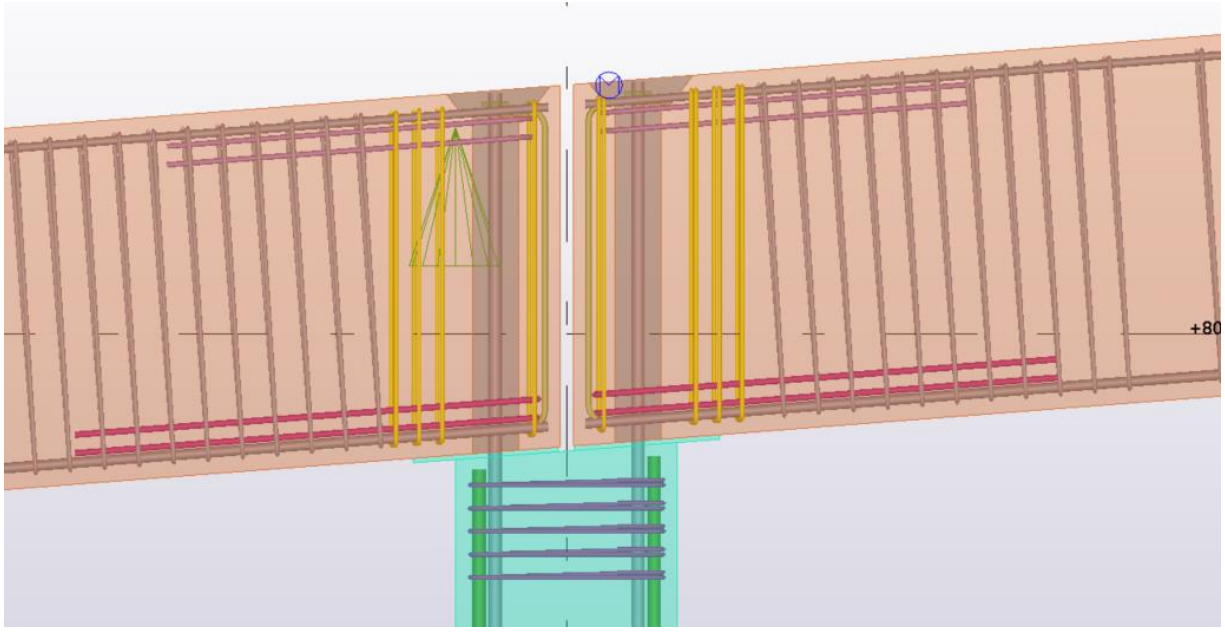


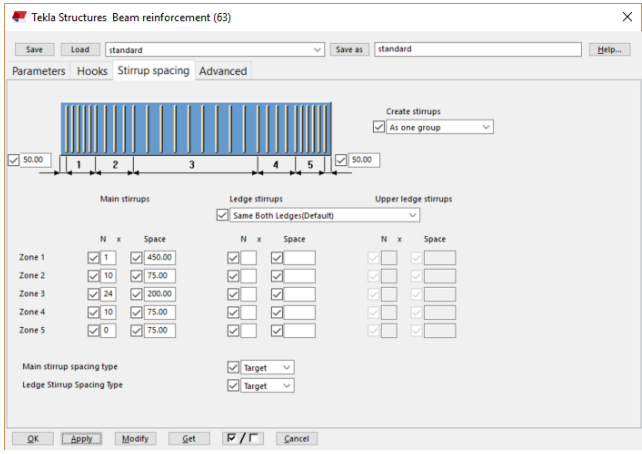


Beam reinforcement (63)

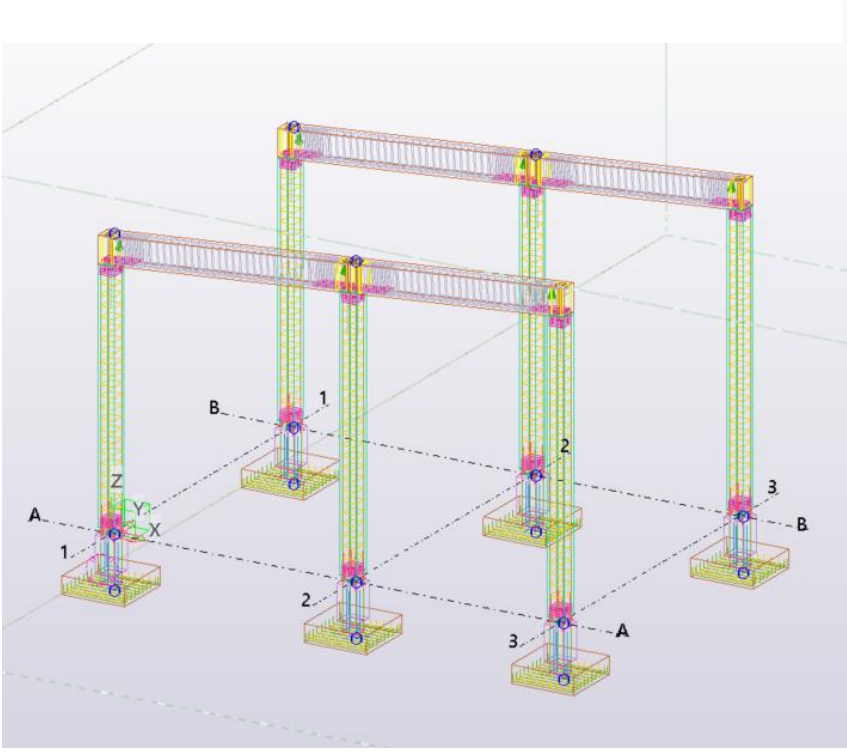
Pick the beam.

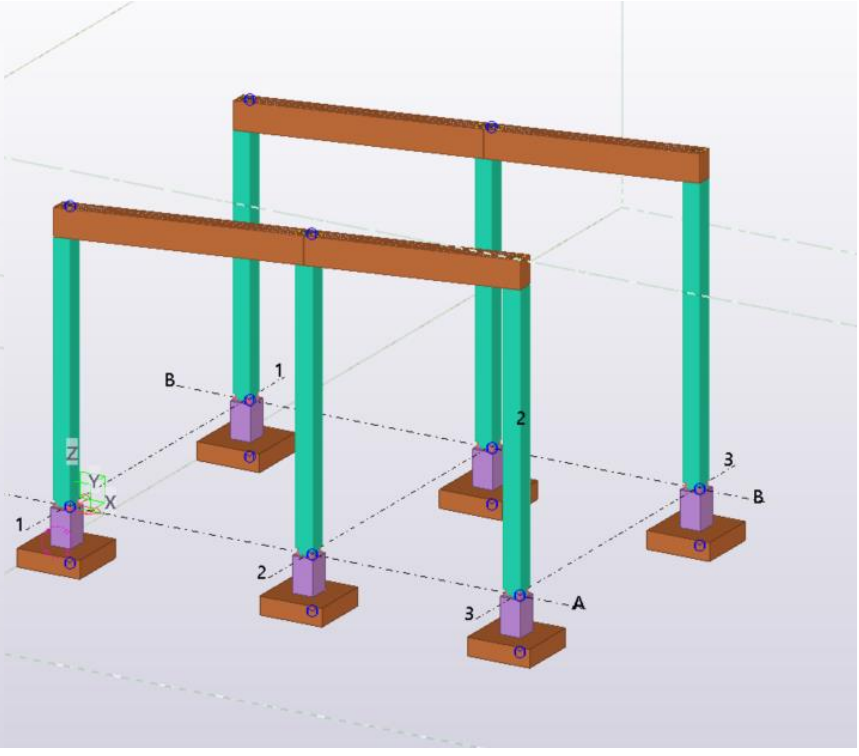
Modify the reinforcement like below.



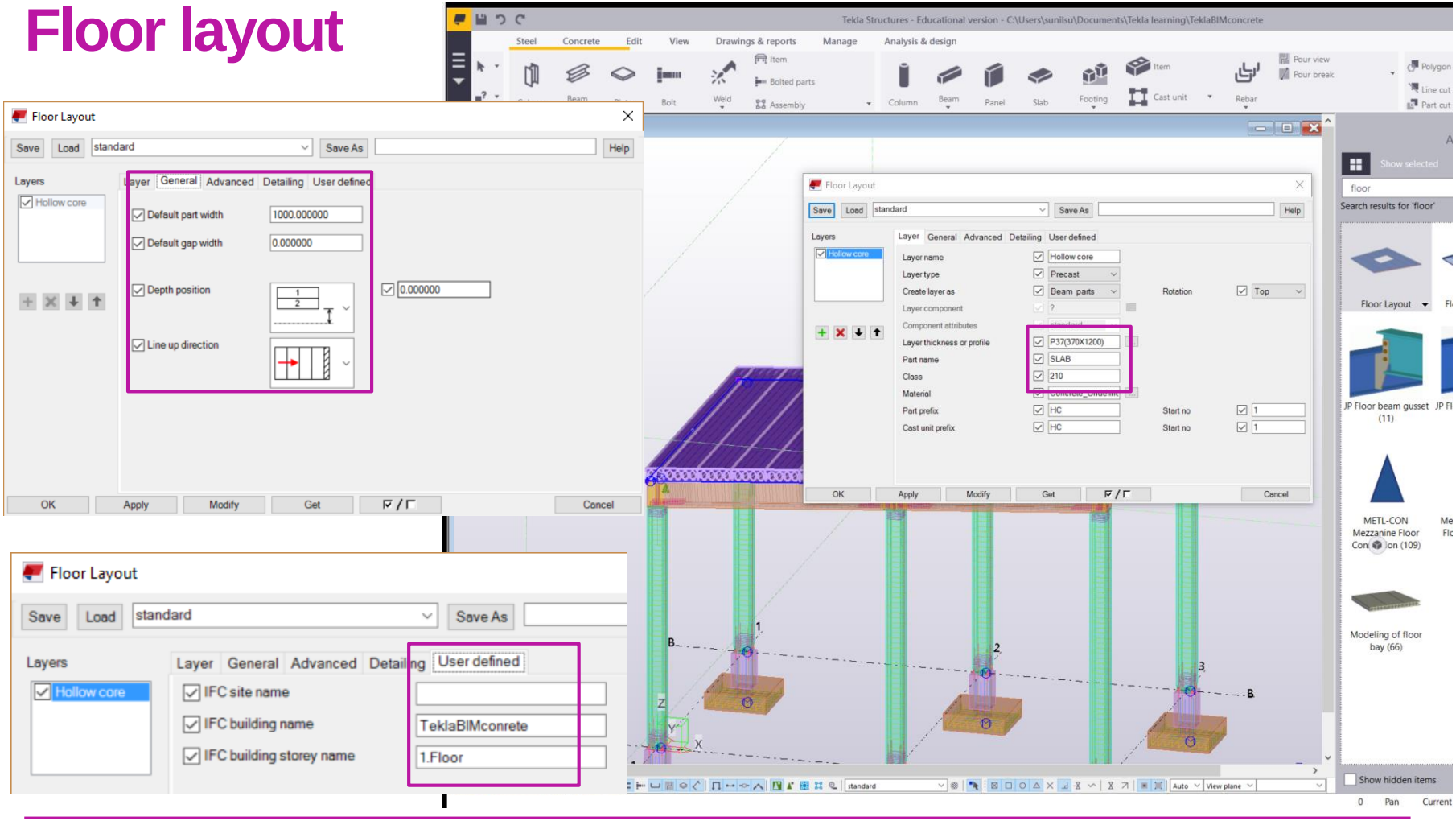


Copy from Grid A to Grid B



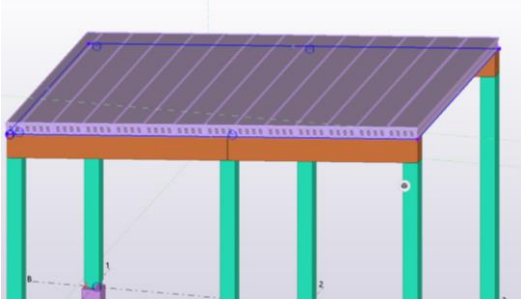


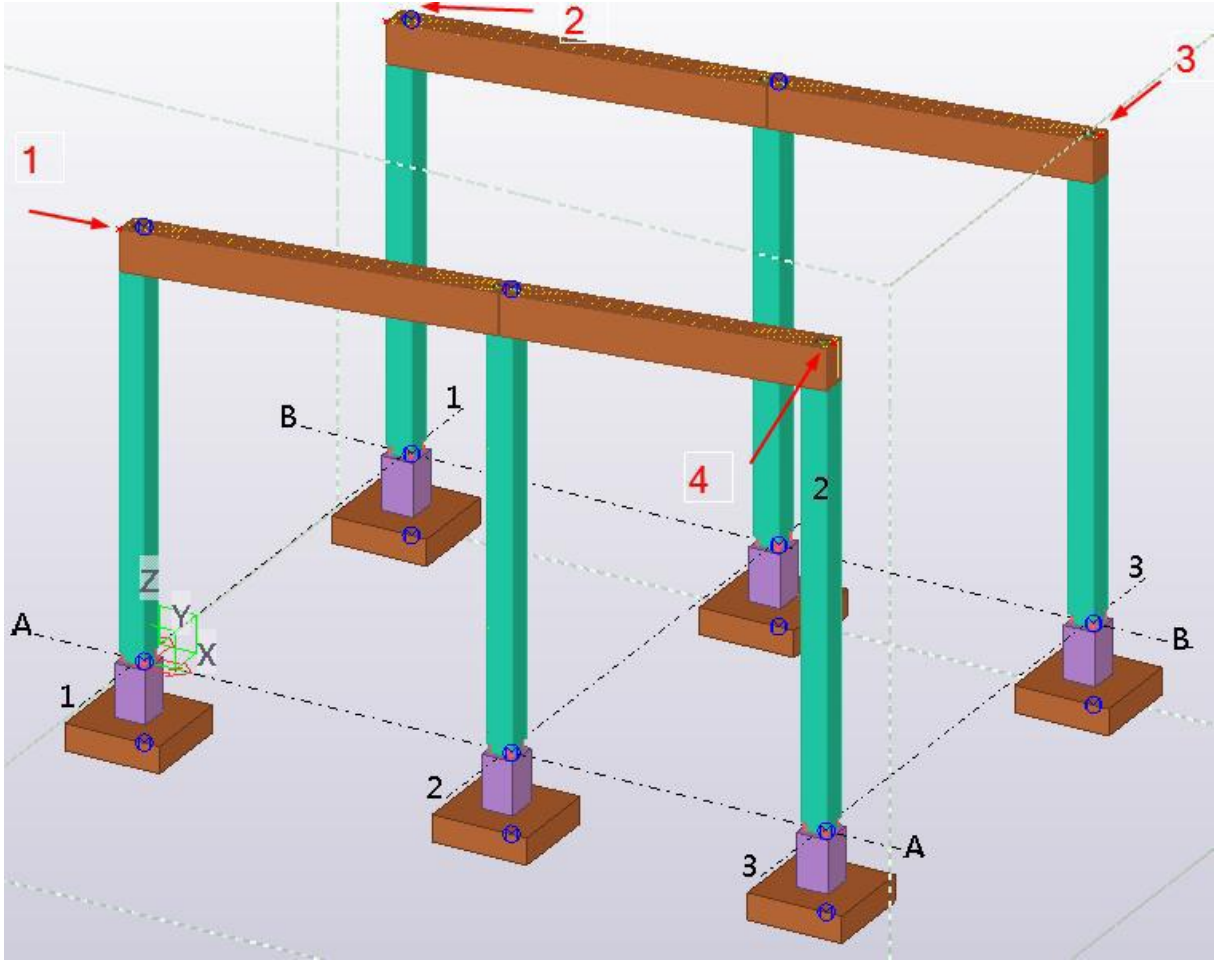
Floor layout



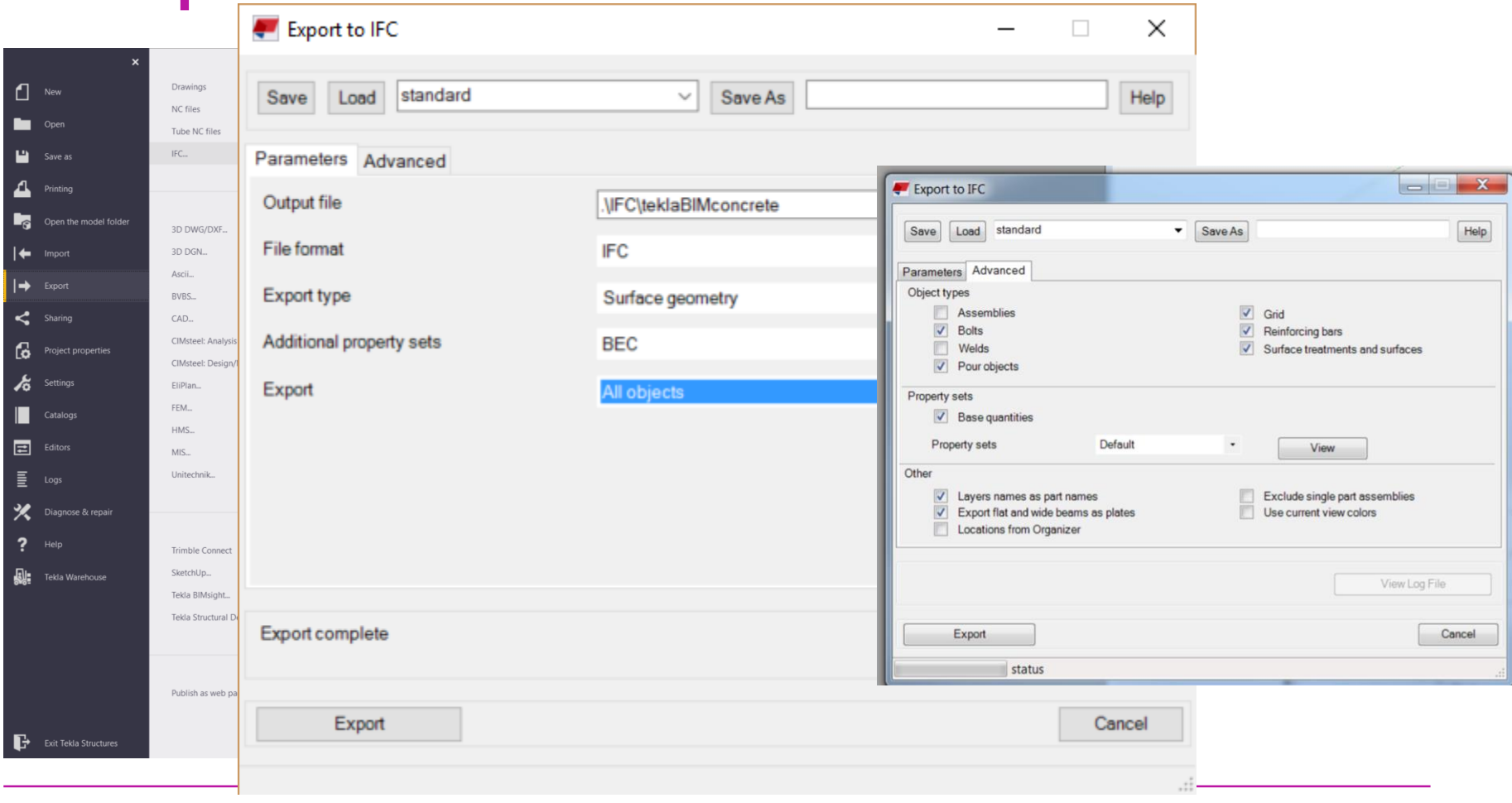
Floor layout

Pick corner points





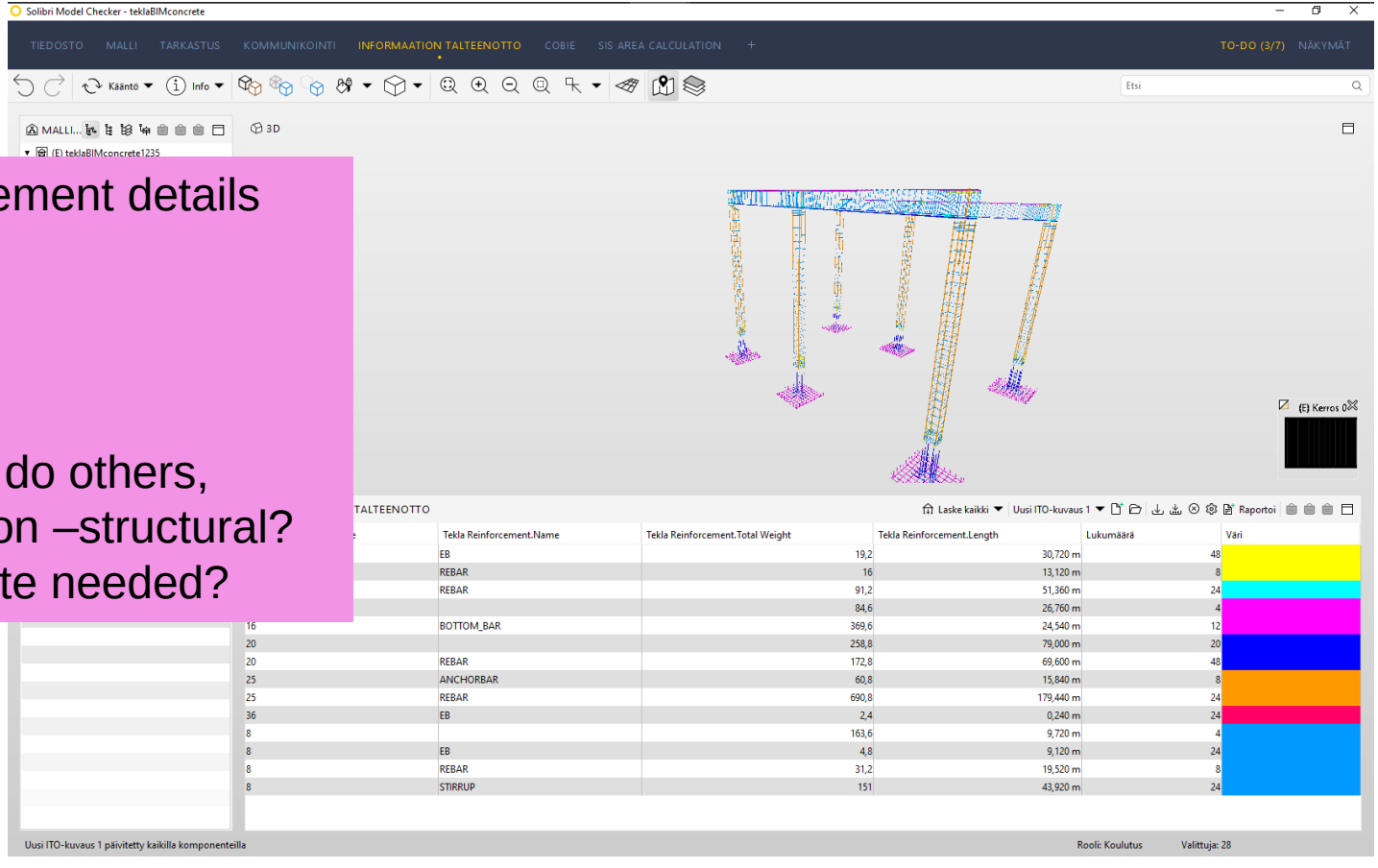
IFC export


New
Open
Save as
Printing
Open the model folder
Import
Export
Sharing
Project properties
Settings
Catalogs
Editors
Logs
Diagnose & repair
Help
Tekla Warehouse
Exit Tekla Structures
Drawings
NC files
Tube NC files
IFC...
3D DWG/DXF...
3D DGN...
Ascii...
BVBS...
CAD...
CIMsteel: Analysis
CIMsteel: Design/
EliPlan...
FEM...
HMS...
MIS...
Unitechnik...
Trimble Connect
SketchUp...
Tekla BIMsight...
Tekla Structural D
Publish as web pa
Export to IFC
Save
Load
standard
Save As
Help
Parameters
Advanced
Output file
.\IFC\teklaBIMconcrete
File format
IFC
Export type
Surface geometry
Additional property sets
BEC
Export
All objects
Export complete
Export
Cancel
Export to IFC
Save
Load
standard
Save As
Help
Parameters
Advanced
Object types
Assemblies
Bolts
Welds
Pour objects
Grid
Reinforcing bars
Surface treatments and surfaces
Property sets
Base quantities
Property sets
Default
View
Other
Layers names as part names
Export flat and wide beams as plates
Locations from Organizer
Exclude single part assemblies
Use current view colors
View Log File
Export
Cancel
status

Report findings in solibri

Eg. reinforcement details

If interested do others,
BIM validation –structural?
Total concrete needed?

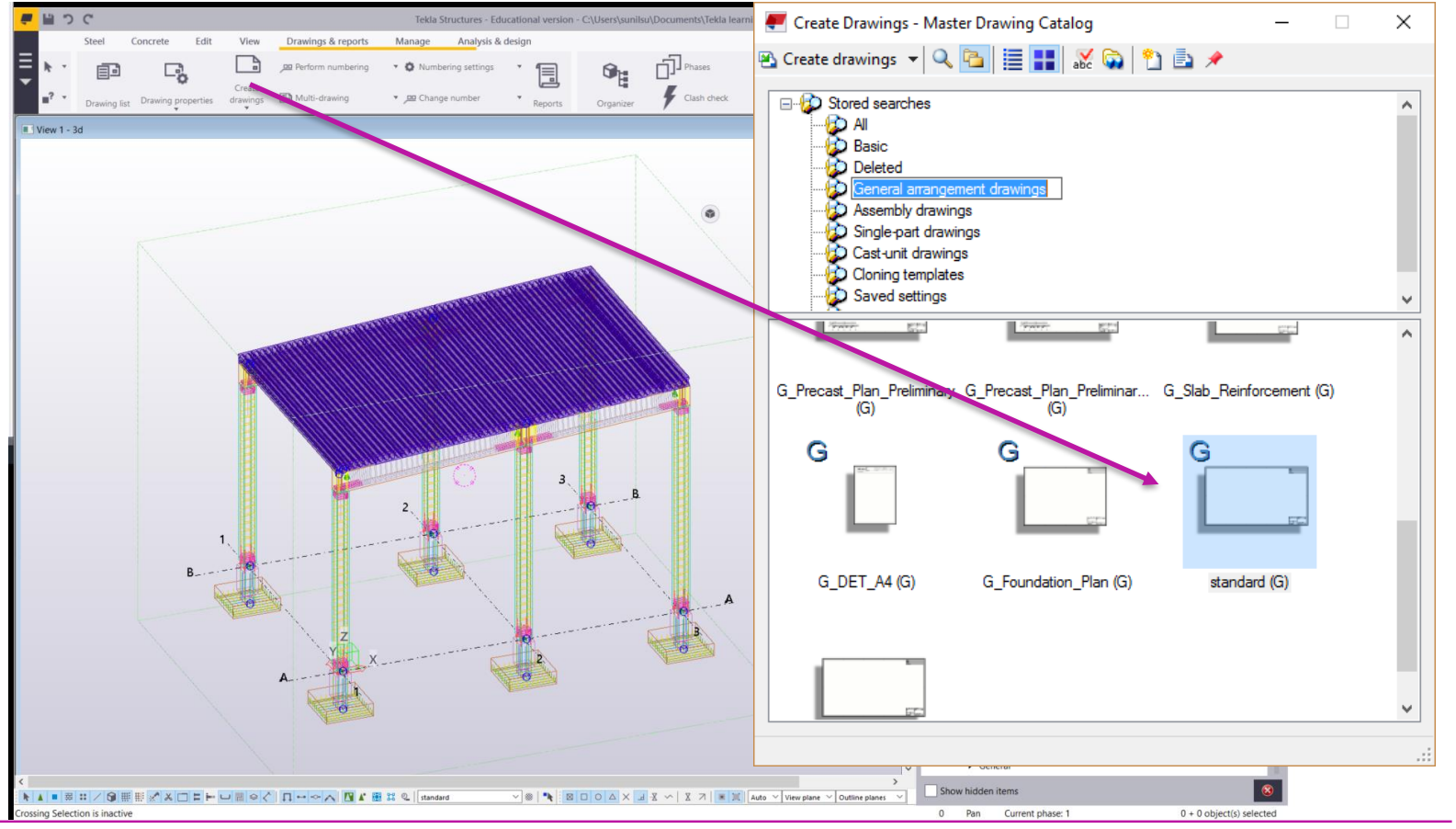


Aalto University
School of Engineering

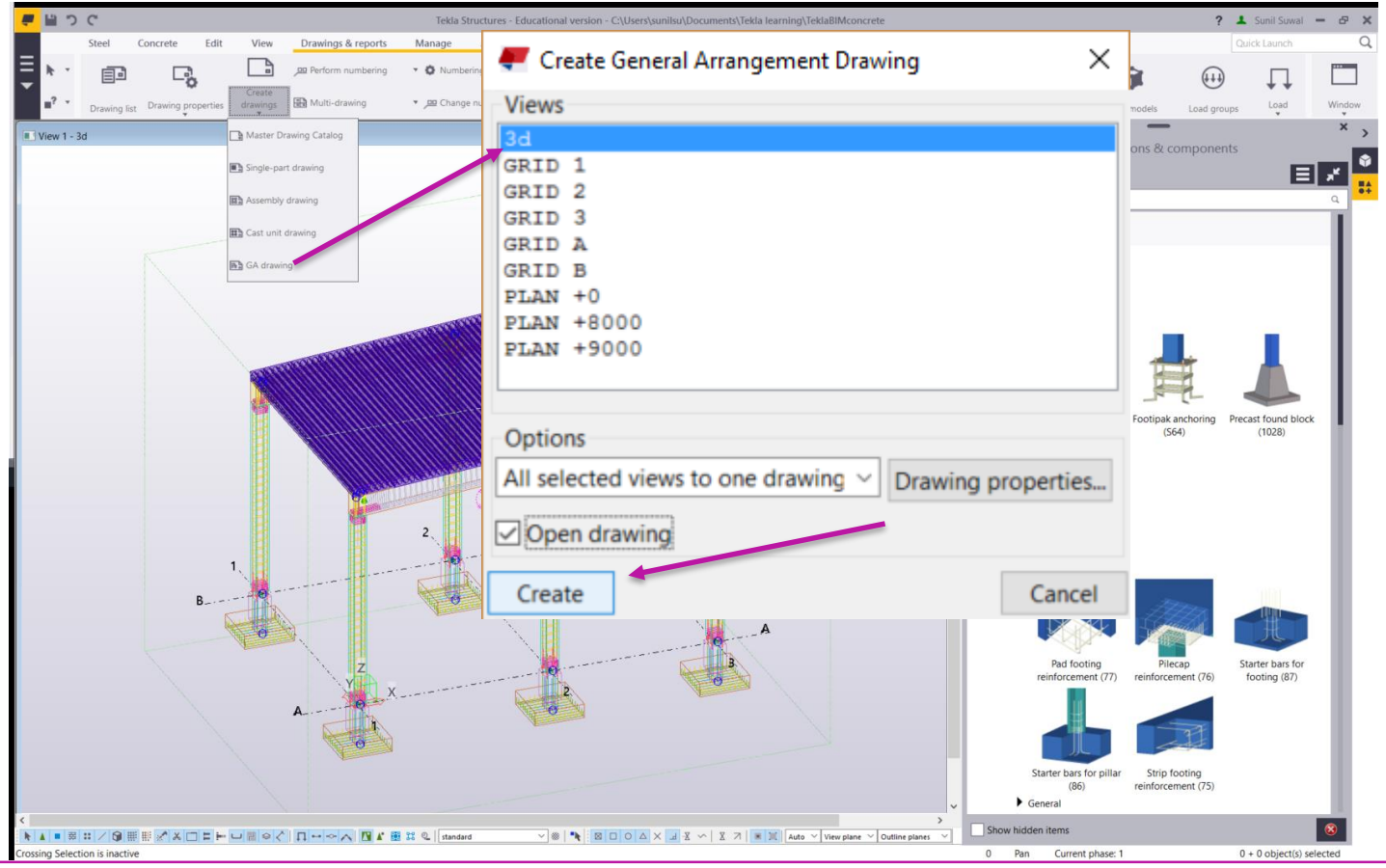
Drawings and reports

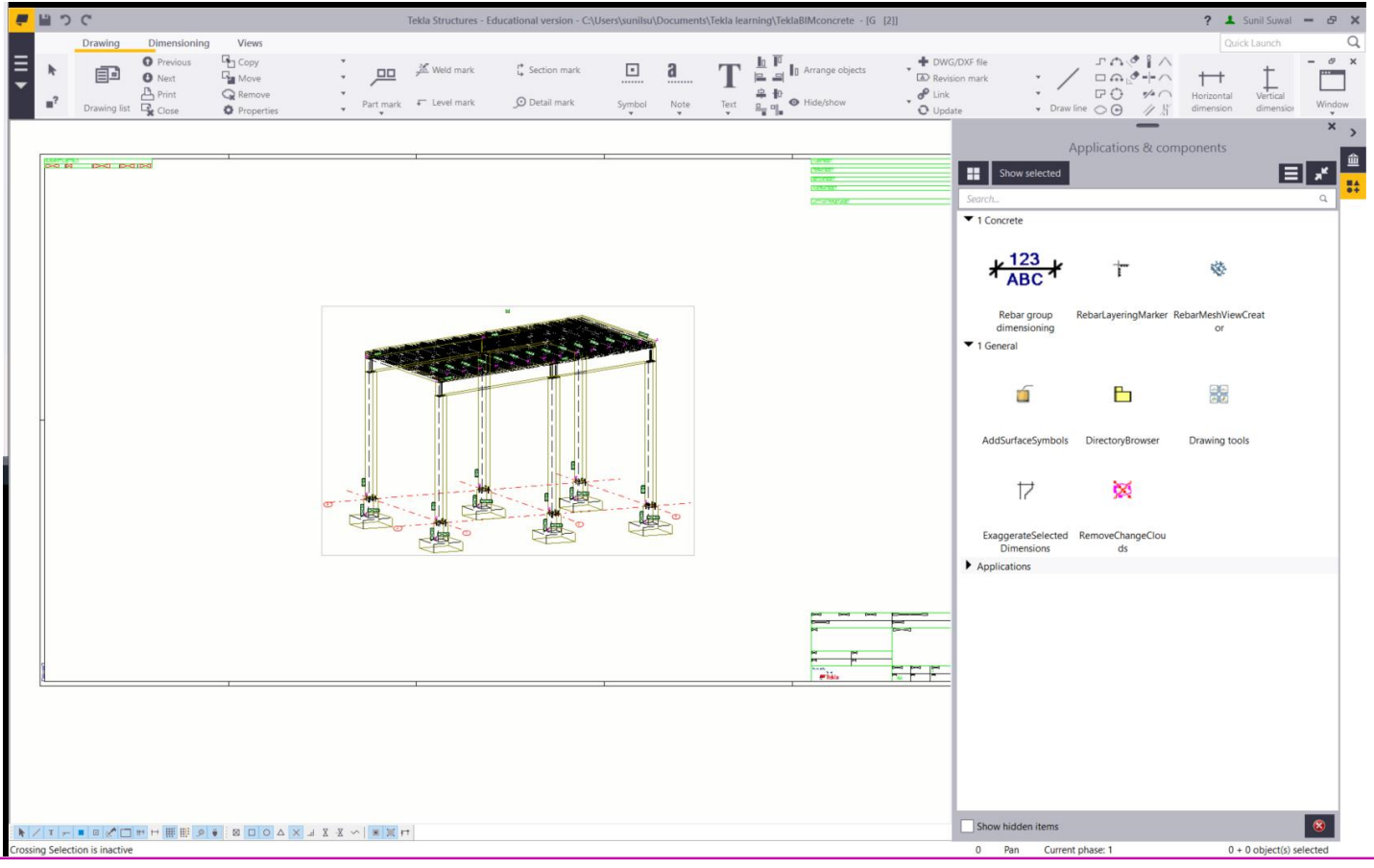
teklaBIMconcrete

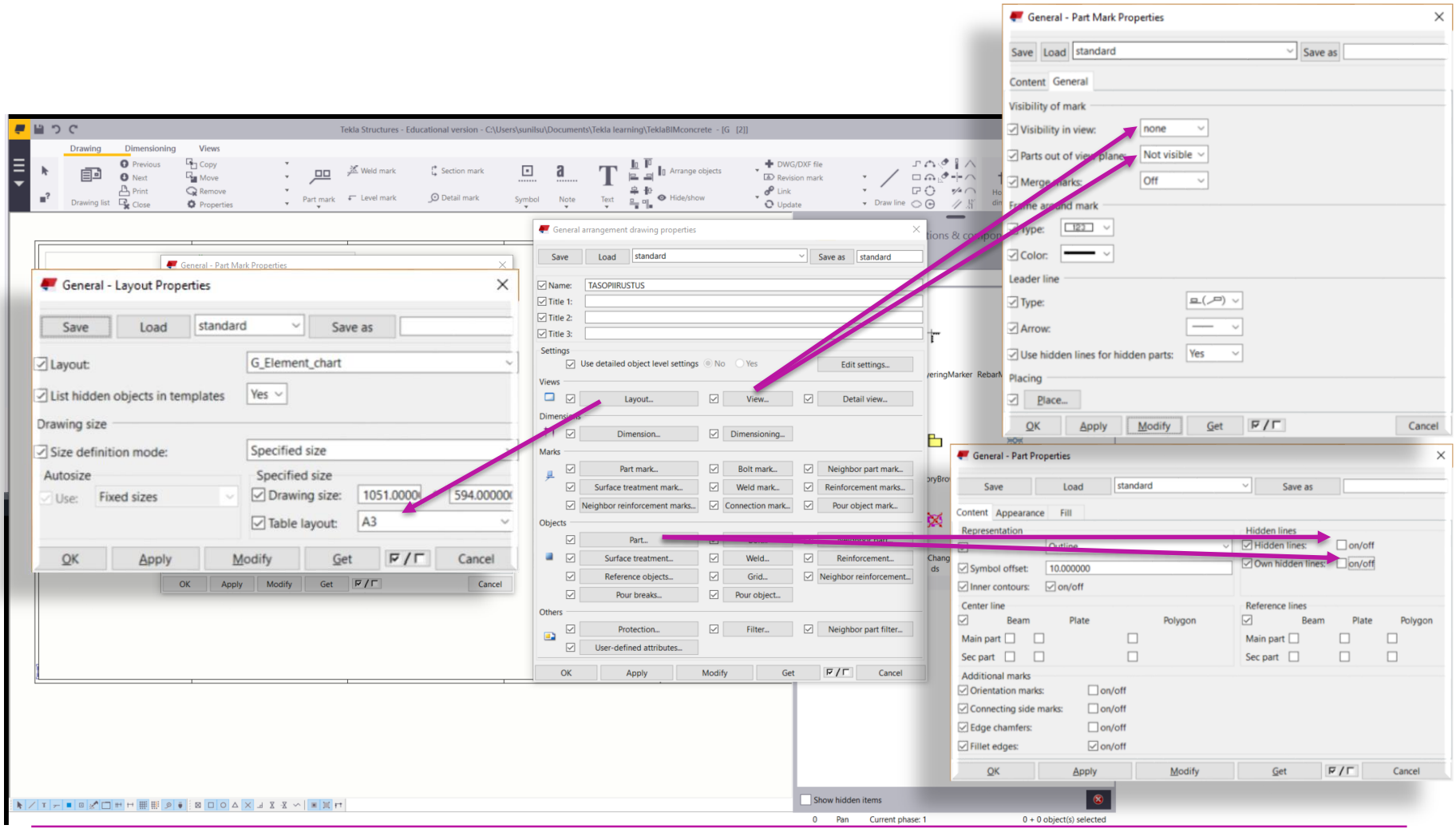
Drawings

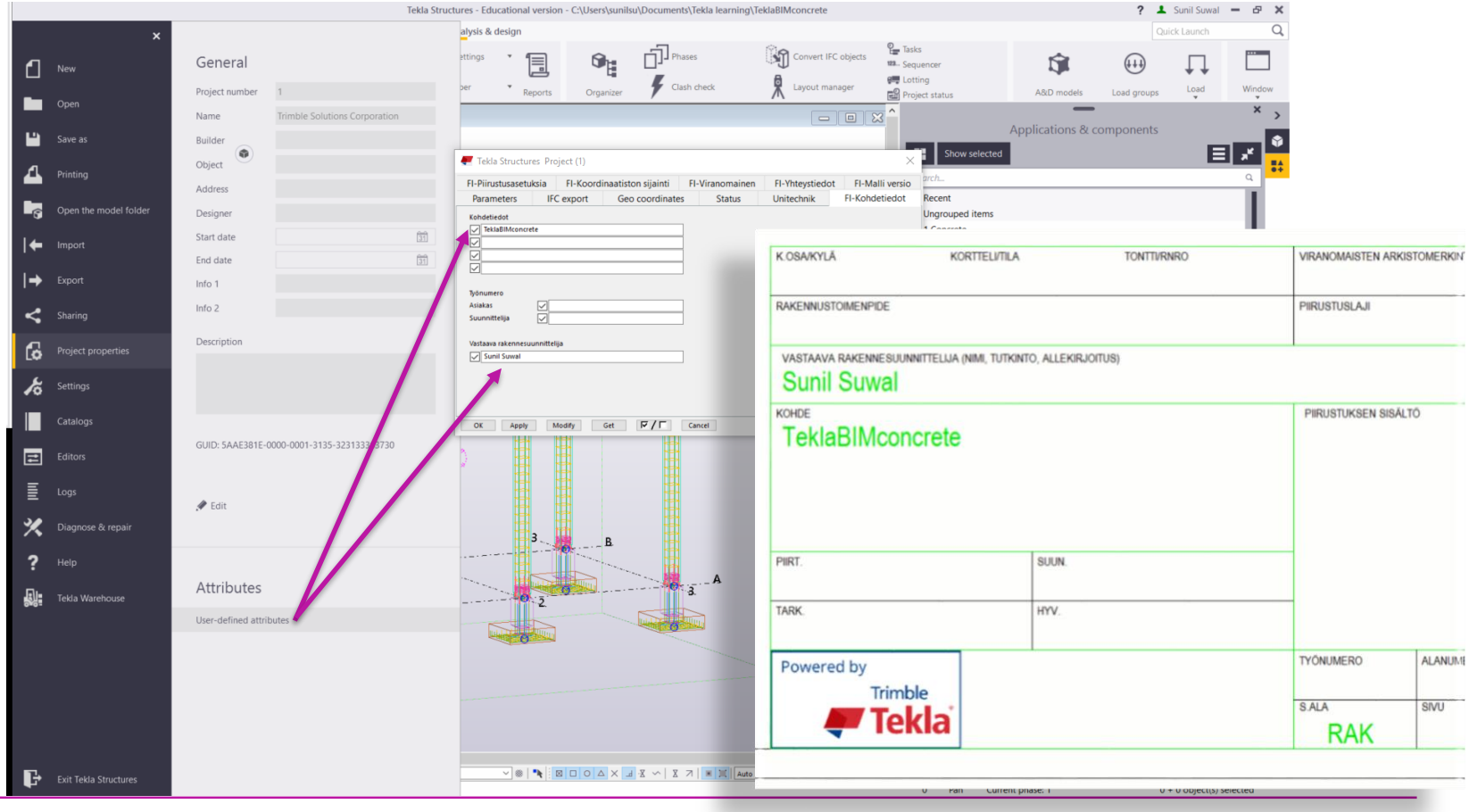

Create Drawings - Master Drawing Catalog
Create drawings
Stored searches
All
Basic
Deleted
General arrangement drawings
Assembly drawings
Single-part drawings
Cast-unit drawings
Cloning templates
Saved settings
G_Precast_Plan_Preliminary (G)
G_Precast_Plan_Preliminar... (G)
G_Slab_Reinforcement (G)
G_DET_A4 (G)
G_Foundation_Plan (G)
standard (G)
Steel
Concrete
Edit
View
Drawings & reports
Manage
Analysis & design
View 1 - 3d
Show hidden items
Crossing Selection is inactive

GA drawing


Create General Arrangement Drawing
Views
3d
GRID 1
GRID 2
GRID 3
GRID A
GRID B
PLAN +0
PLAN +8000
PLAN +9000
Options
All selected views to one drawing
Drawing properties...
Open drawing
Create
Cancel
Master Drawing Catalog
Single-part drawing
Assembly drawing
Cast unit drawing
GA drawing
Footipak anchoring (S64)
Precast found block (1028)
Pad footing reinforcement (77)
Pilecap reinforcement (76)
Starter bars for footing (87)
Starter bars for pillar (86)
Strip footing reinforcement (75)
General
Show hidden items


Tekla Structures - Educational version - C:\Users\sunilsu\Documents\Tekla learning\TeklaBIMconcrete - [G [2]]
Sunil Suwal
Drawing
Dimensioning
Views
Quick Launch
Drawing list
Previous
Next
Print
Close
Copy
Move
Remove
Properties
Part mark
Weld mark
Level mark
Section mark
Detail mark
Symbol
Note
Text
Arrange objects
Hide/show
DWG/DXF file
Revision mark
Link
Update
Draw line
Horizontal dimension
Vertical dimensio
Window
Applications & components
Show selected
Search...
1 Concrete
Rebar group dimensioning
RebarLayeringMarker
RebarMeshViewCreator
1 General
AddSurfaceSymbols
DirectoryBrowser
Drawing tools
ExaggerateSelected Dimensions
RemoveChangeClouds
Applications
Show hidden items
Crossing Selection is inactive
0
Pan
Current phase: 1
0 + 0 object(s) selected


General - Part Mark Properties
Save
Load
standard
Save as
Content
General
Visibility of mark
Visibility in view:
none
Parts out of view plane:
Not visible
Merge marks:
Off
Frame around mark
Type:
Color:
Leader line
Type:
Arrow:
Use hidden lines for hidden parts:
Yes
Placing
Place...
OK
Apply
Modify
Get
Cancel
General - Layout Properties
Layout:
G_Element_chart
List hidden objects in templates
Yes
Drawing size
Size definition mode:
Specified size
Autosize
Use:
Fixed sizes
Specified size
Drawing size:
1051.0000
594.00000
Table layout:
A3
General arrangement drawing properties
Name:
TASOPIIRUSTUS
Title 1:
Title 2:
Title 3:
Settings
Use detailed object level settings
Edit settings...
Views
Layout...
View...
Detail view...
Dimensions
Dimension...
Dimensioning...
Marks
Part mark...
Bolt mark...
Neighbor part mark...
Surface treatment mark...
Weld mark...
Reinforcement marks...
Neighbor reinforcement marks...
Connection mark...
Pour object mark...
Objects
Part...
Surface treatment...
Weld...
Reinforcement...
Reference objects...
Grid...
Neighbor reinforcement...
Pour breaks...
Pour object...
Others
Protection...
Filter...
Neighbor part filter...
User-defined attributes...
General - Part Properties
Content
Appearance
Fill
Representation
Outline
Symbol offset:
10.000000
Inner contours:
on/off
Hidden lines
Hidden lines:
on/off
Own hidden lines:
on/off
Center line
Beam
Plate
Polygon
Main part
Sec part
Reference lines
Additional marks
Orientation marks:
Connecting side marks:
Edge chamfers:
Fillet edges:
Show hidden items
Pan
Current phase: 1
0 + 0 object(s) selected


Tekla Structures - Educational version - C:\Users\sunilsu\Documents\Tekla learning\TeklaBIMconcrete
New
Open
Save as
Printing
Open the model folder
Import
Export
Sharing
Project properties
Settings
Catalogs
Editors
Logs
Diagnose & repair
Help
Tekla Warehouse
Exit Tekla Structures
General
Project number
Name
Trimble Solutions Corporation
Builder
Object
Address
Designer
Start date
End date
Info 1
Info 2
Description
GUID: 5AAE381E-0000-0001-3135-32313335
Edit
Attributes
User-defined attributes
Tekla Structures Project (1)
FI-Piirustusasetuksia
FI-Koordinaatiston sijainti
FI-Viranomainen
FI-Yhteystiedot
FI-Malli versio
Parameters
IFC export
Geo coordinates
Status
Unitechnik
FI-Kohdetiedot
Kohdetiedot
TeklaBIMconcrete
Työnumero
Asiakas
Suunnittelija
Vastaava rakennesuunnittelija
Sunil Suwal
OK
Apply
Modify
Get
Cancel
Applications & components
Show selected
Recent
Ungrouped items
K.OSA/KYLÄ
KORTTELI/TILA
TONTTI/RNRO
VIRANOMAISTEN ARKISTOMERKIN
RAKENNUSTOIMENPIDE
PIIRUSTUSLAJI
VASTAAVA RAKENNESUUNNITTELIJA (NIMI, TUTKINTO, ALLEKIRJOITUS)
Sunil Suwal
KOHDE
TeklaBIMconcrete
PIIRUSTUKSEN SISÄLTÖ
PIIRT.
SUUN.
TARK.
HYV.
Powered by
Trimble
Tekla
TYÖNUMERO
S.ALA
RAK
SIVU

Thank you