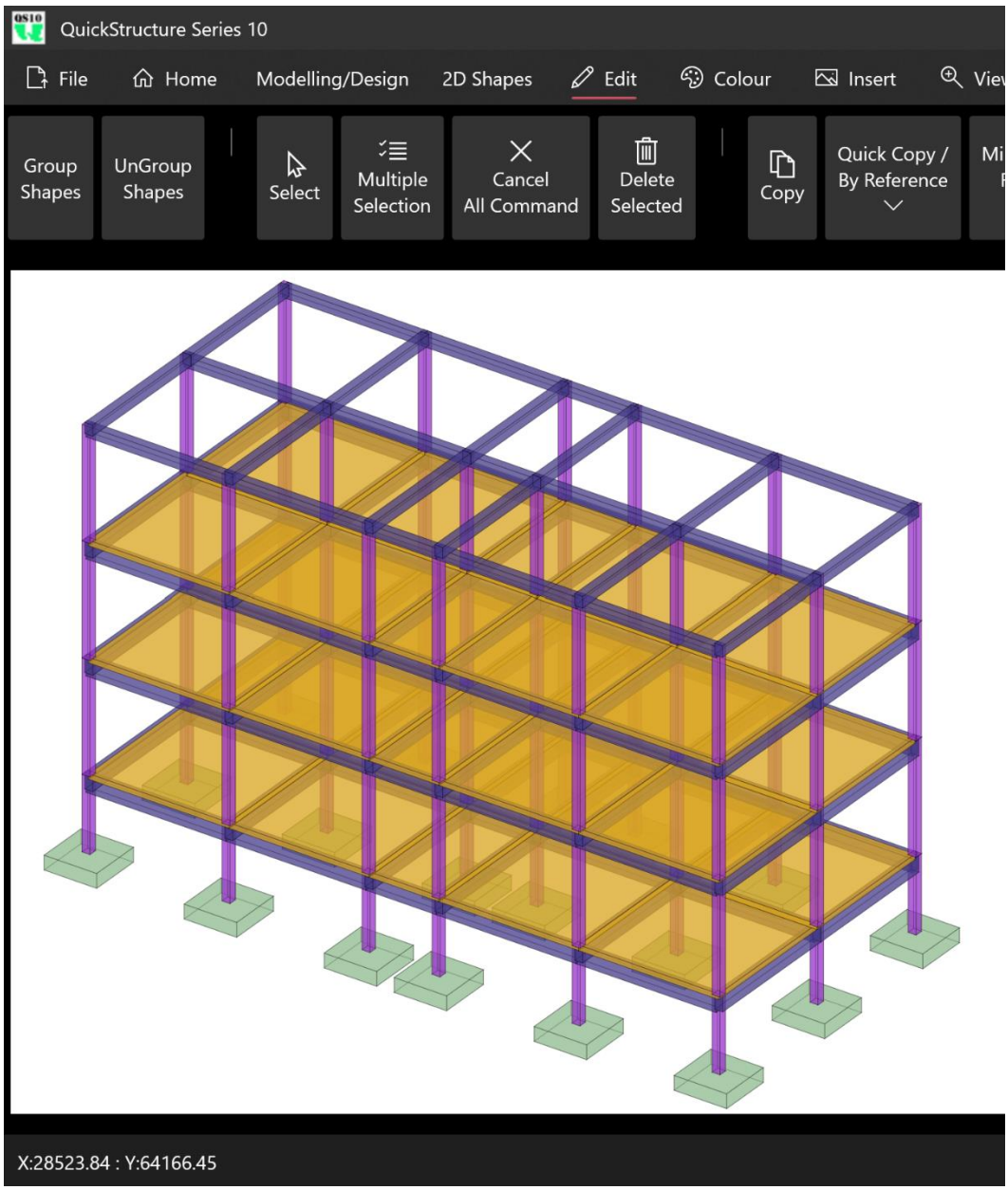
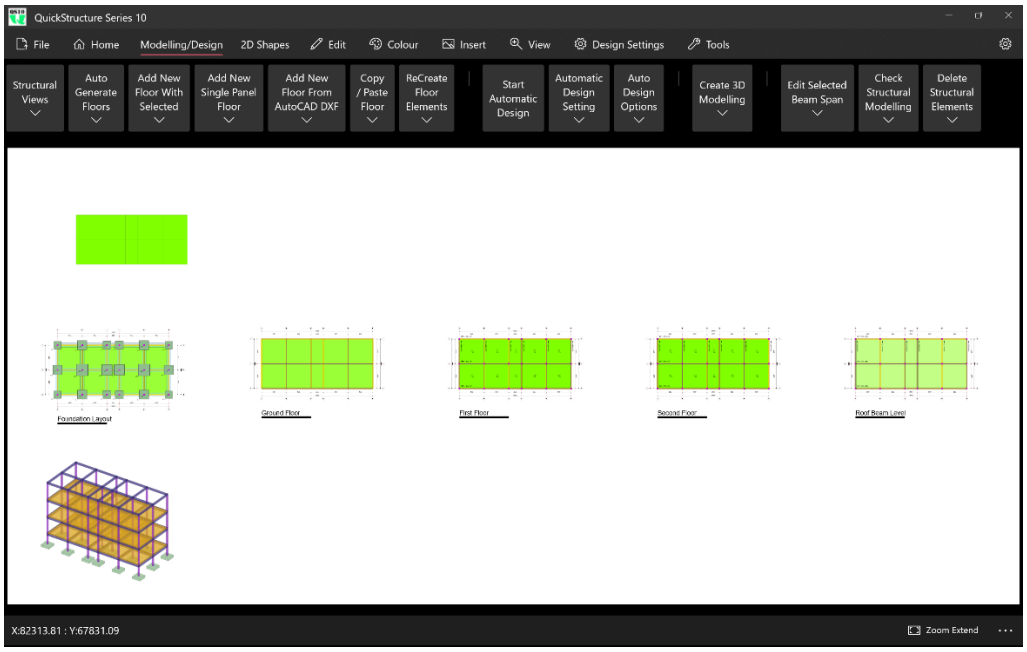
QUICKSTRUCTURE 10

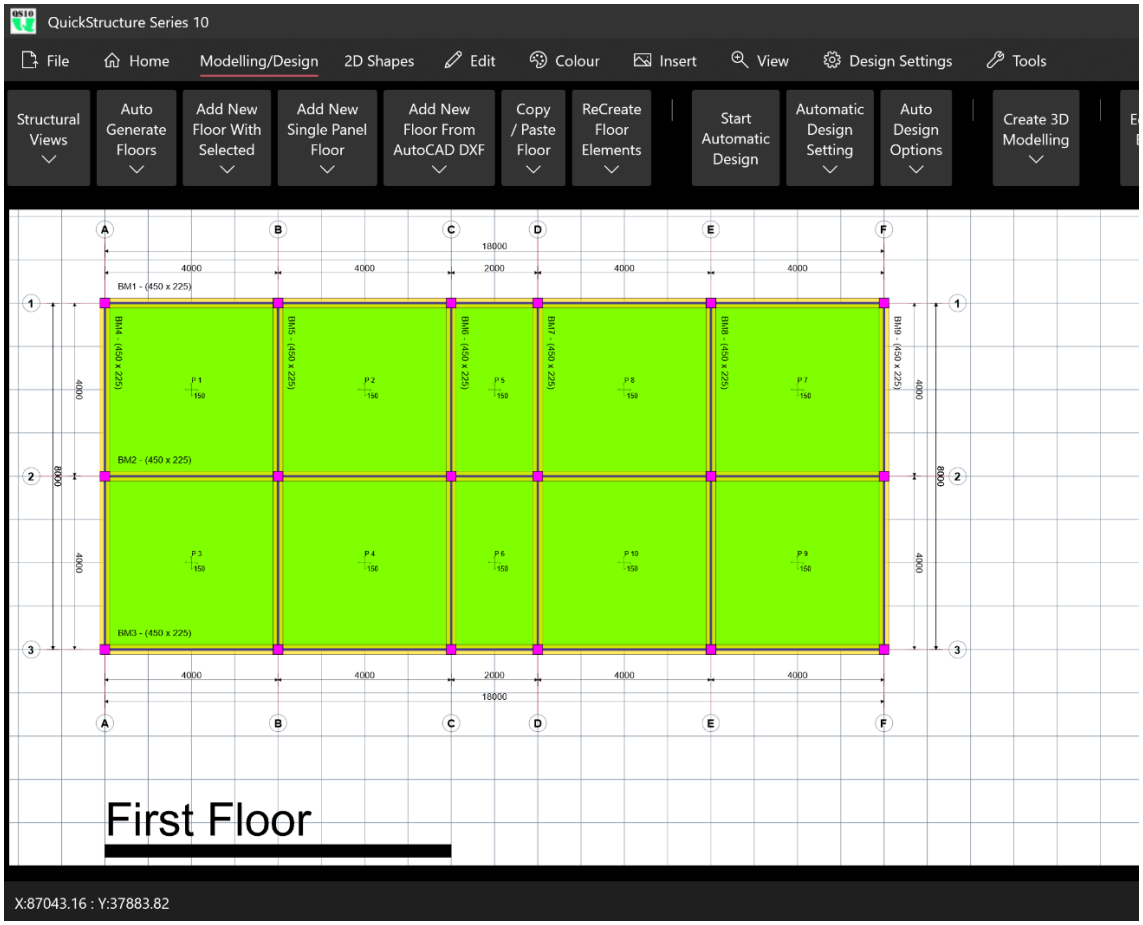
TUTORIAL | PART 3

BLOCK OF FLAT MODELLING DIRECT METHOD



How to Create Block of Flats using QS10. Direct Method

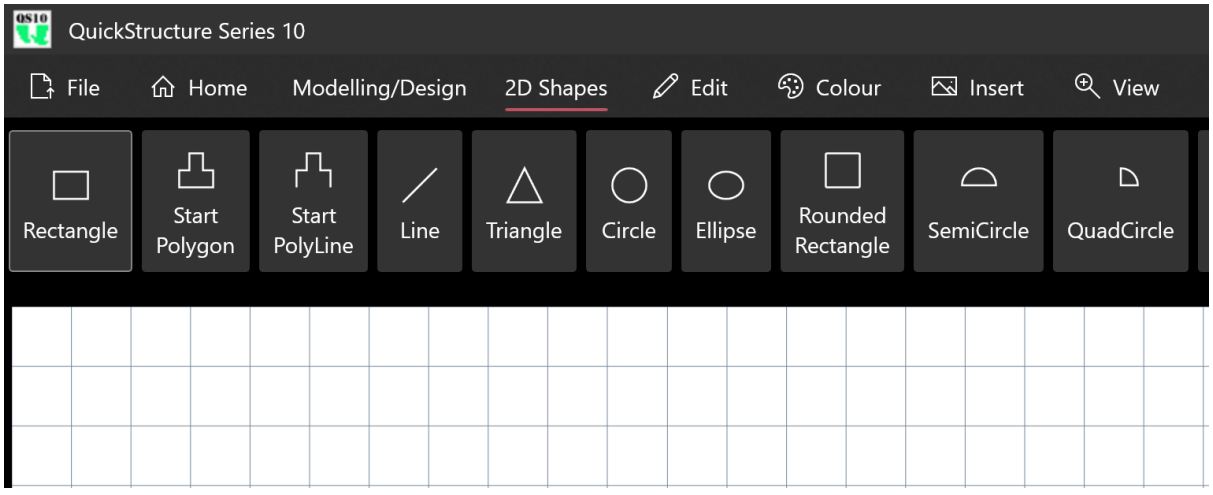




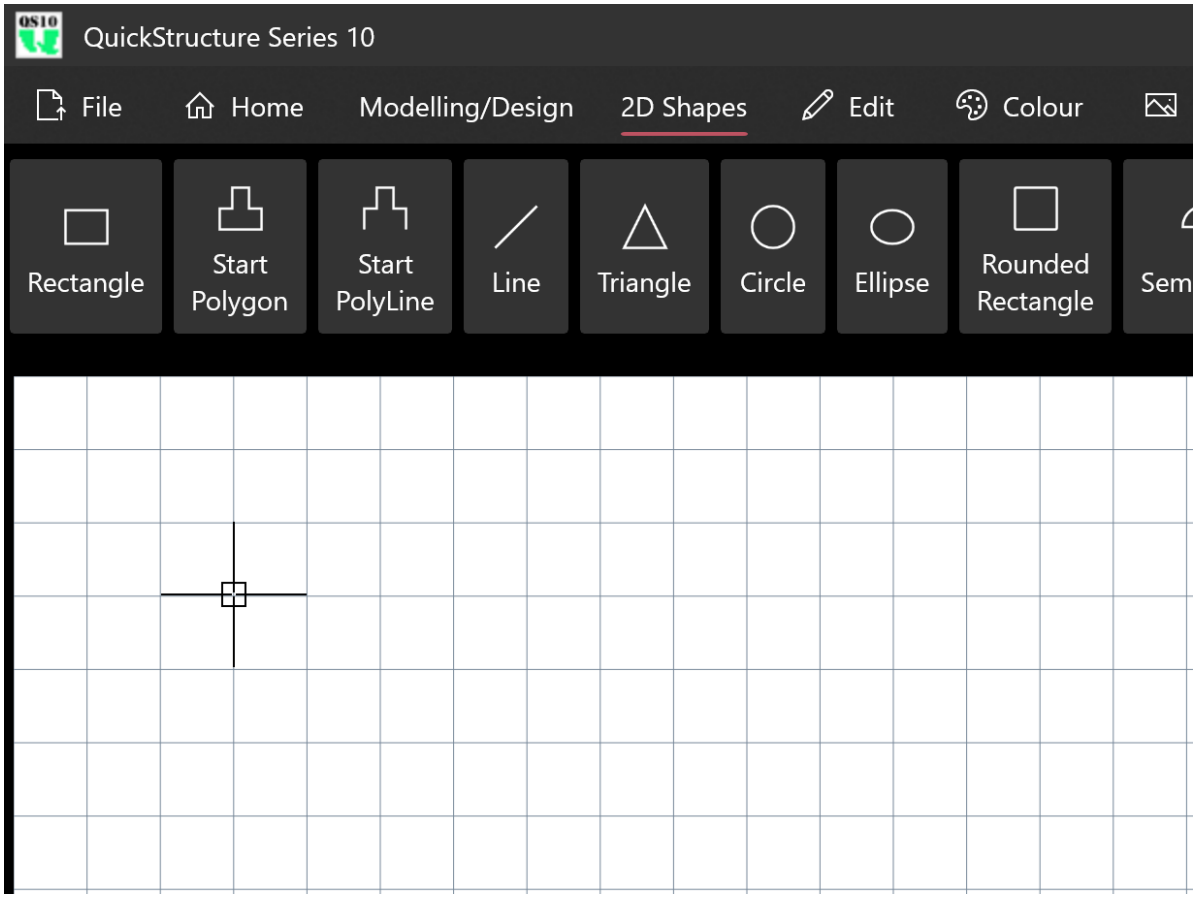
In part 1 and 2 of QS10 tutorials we used auto generate floors button to automatically generate the floors. In this tutorial we will create the rectangles with the rectangle tool and create floors by adding it one by one. This is a direct method. In your design you can use a combination of the methods.

1. Open QuickStructure 10 Software
   Note: It will always open with a new project by default. You don't need to create new project.

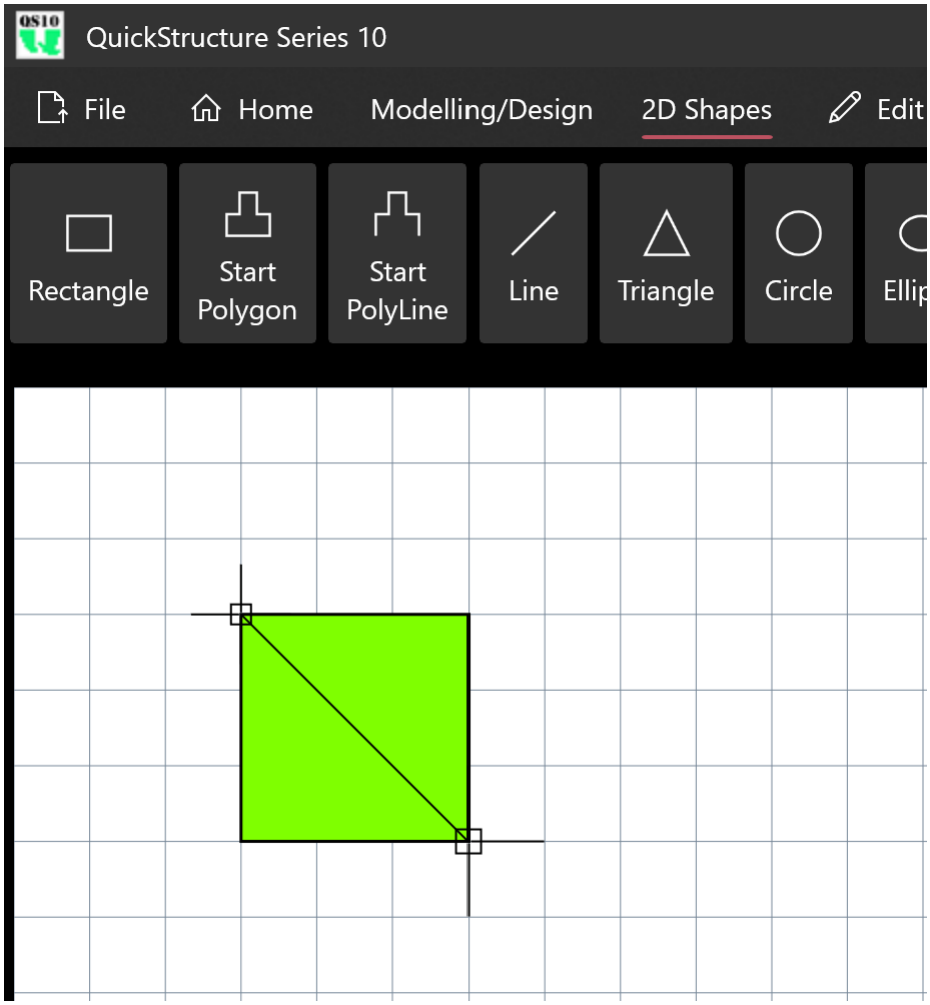
2. Create the rectangles
   - Click 2D Shapes tab and click Rectangle tool button.

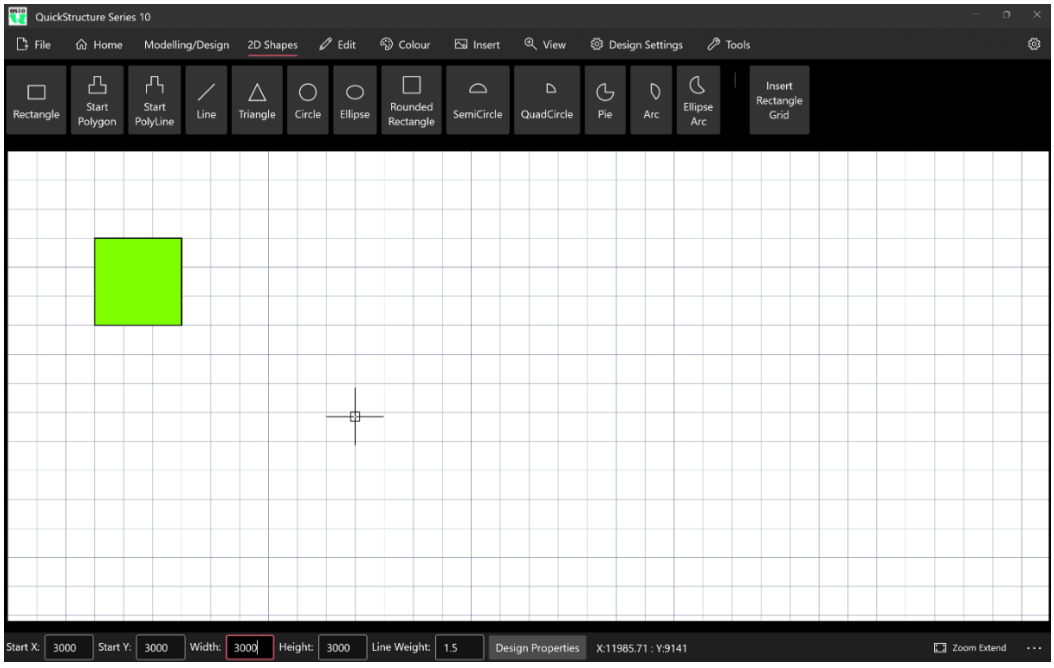


- Move the mouse to point (3000,3000) and click.

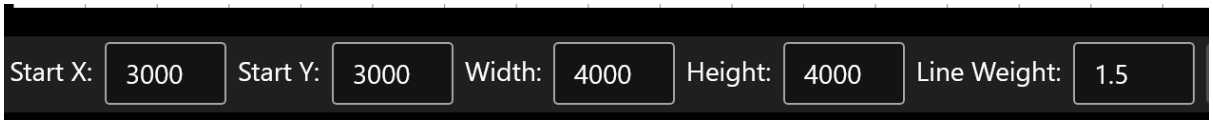


- Move the mouse down at point (6000,6000) and click to draw the rectangle


QuickStructure Series 10
File
Home
Modelling/Design
2D Shapes
Edit
Rectangle
Start Polygon
Start PolyLine
Line
Triangle
Circle


QuickStructure Series 10
File
Home
Modelling/Design
2D Shapes
Edit
Colour
Insert
View
Design Settings
Tools
Rectangle
Start Polygon
Start PolyLine
Line
Triangle
Circle
Ellipse
Rounded Rectangle
SemiCircle
QuadCircle
Pie
Arc
Ellipse Arc
Insert Rectangle Grid
Start X: 3000
Start Y: 3000
Width: 3000
Height: 3000
Line Weight: 1.5
Design Properties
X:11985.71 : Y:9141
Zoom Extend

- At the bottom properties change the Width:4000 and press enter.



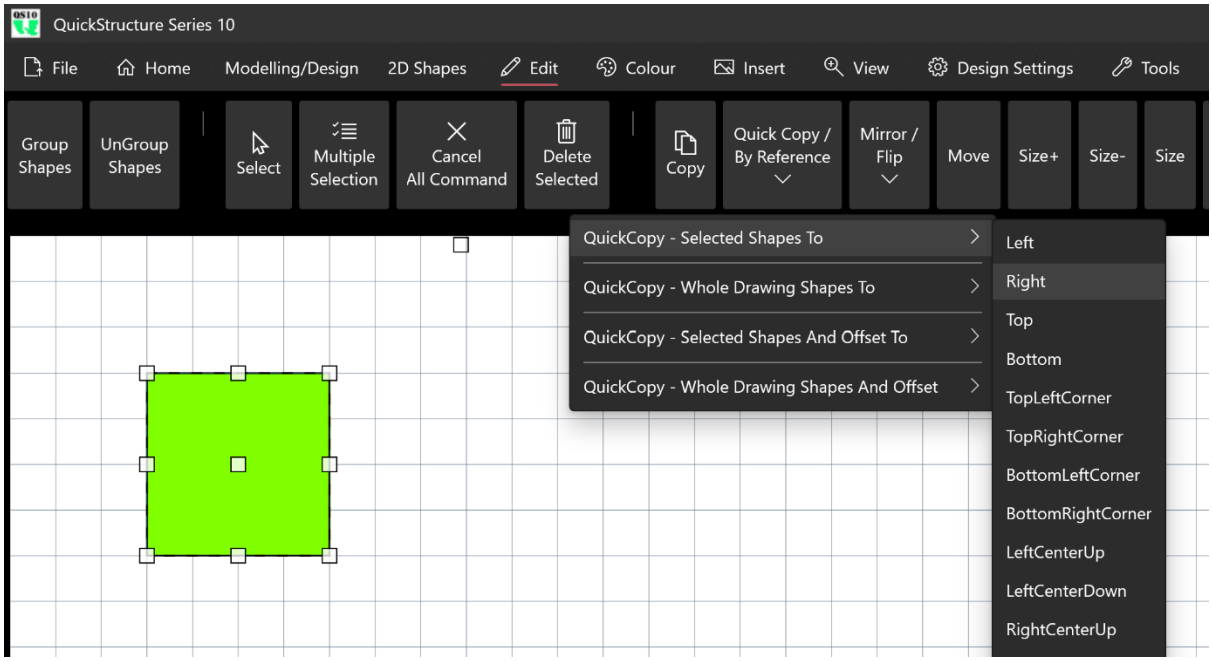
- Change the Height: 4000 and press enter

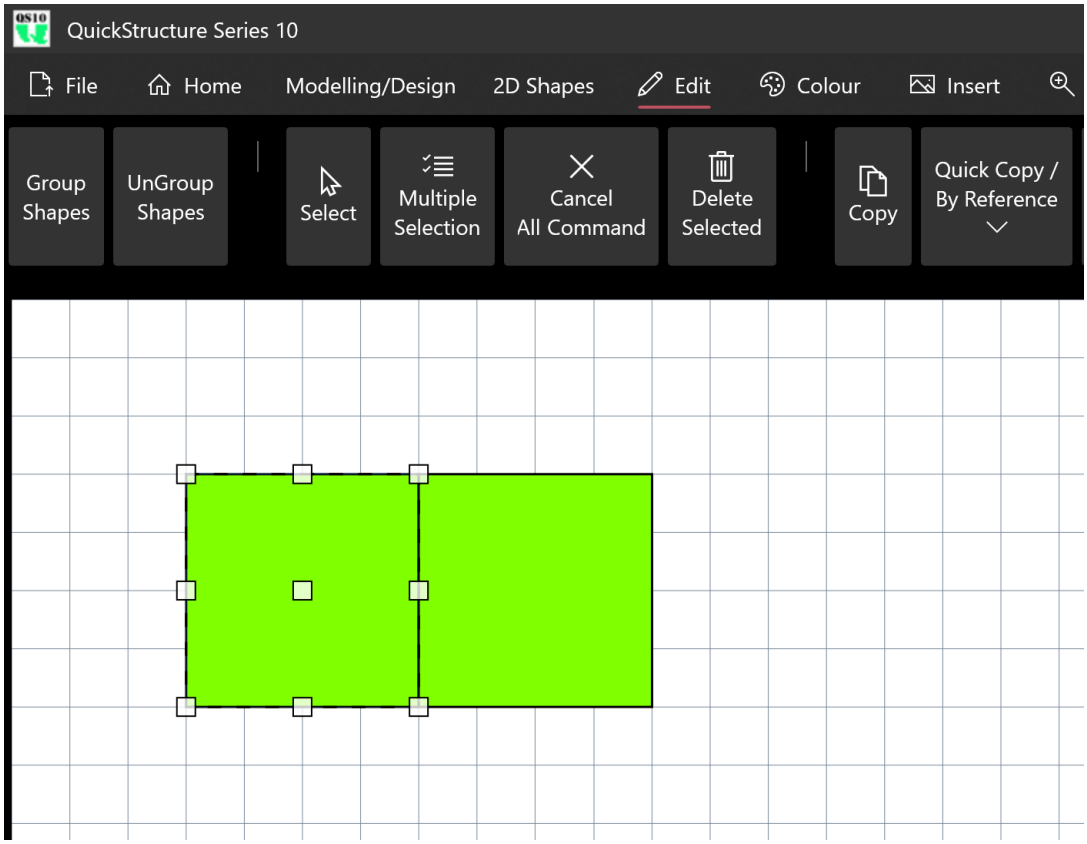
Note:

We could have clicked at point (7000,7000) to get the Rectangle width:4000, height:4000 that we need but I wanted to show how you can edit the rectangle after creating it.

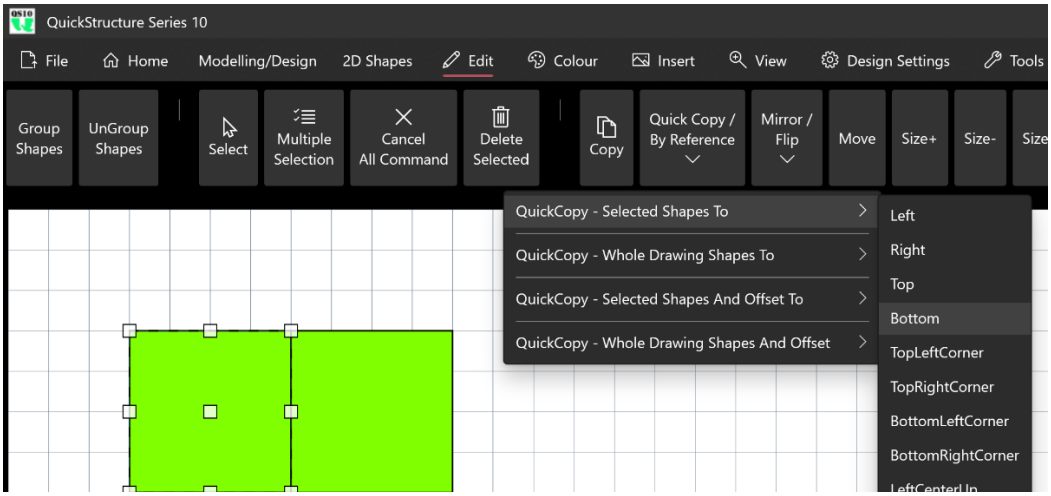
You can change the Start X, Start Y and Line Weight if you need to but in this example we don't need to.

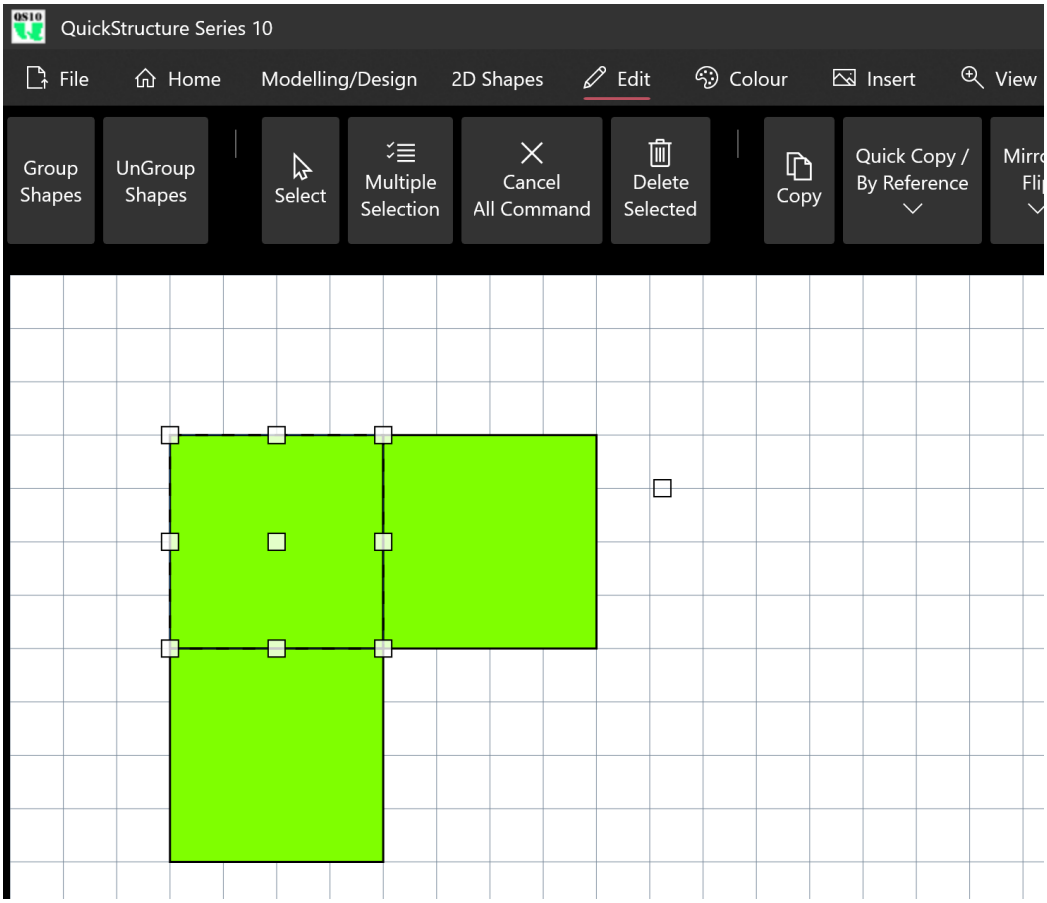
3. Select and Copy rectangle
   - Click Edit and click Select button
   - Click Quick Copy / By Reference, click QuickCopy – Selected Shapes To, and click Right.


QuickStructure Series 10
File
Home
Modelling/Design
2D Shapes
Edit
Colour
Insert
View
Design Settings
Tools
Group Shapes
UnGroup Shapes
Select
Multiple Selection
Cancel All Command
Delete Selected
Copy
Quick Copy / By Reference
Mirror / Flip
Move
Size+
Size-
Size
QuickCopy - Selected Shapes To
QuickCopy - Whole Drawing Shapes To
QuickCopy - Selected Shapes And Offset To
QuickCopy - Whole Drawing Shapes And Offset
Left
Right
Top
Bottom
TopLeftCorner
TopRightCorner
BottomLeftCorner
BottomRightCorner
LeftCenterUp
LeftCenterDown
RightCenterUp

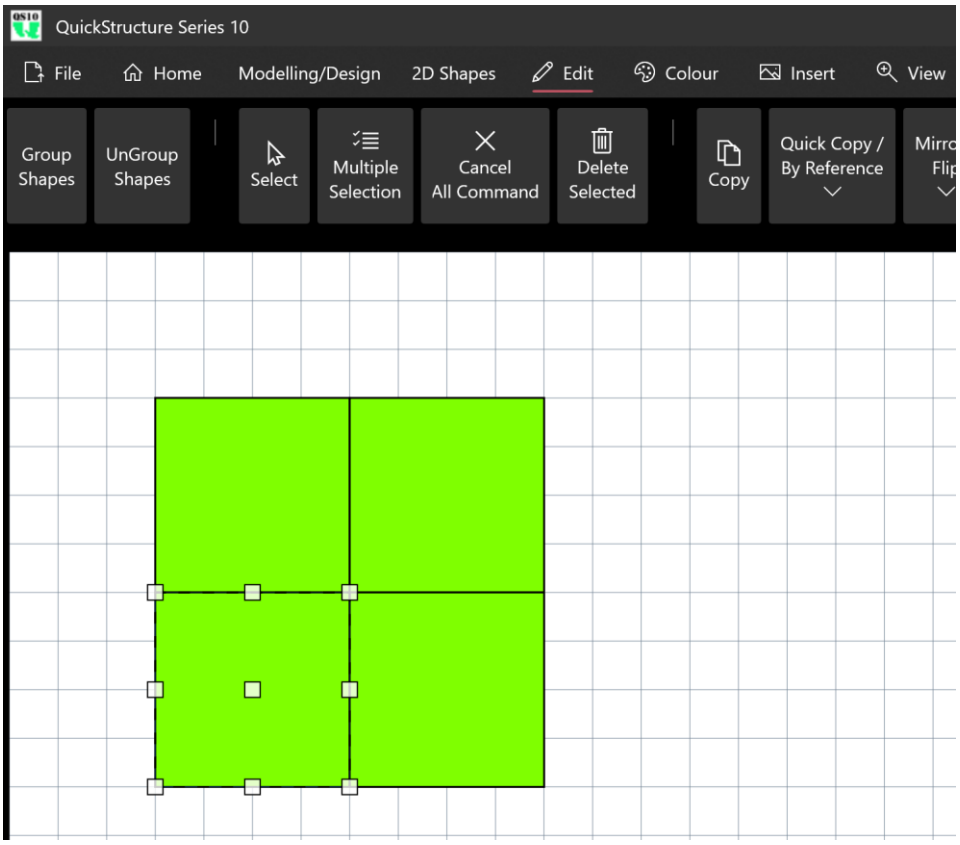

QuickStructure Series 10
File
Home
Modelling/Design
2D Shapes
Edit
Colour
Insert
Group Shapes
UnGroup Shapes
Select
Multiple Selection
Cancel All Command
Delete Selected
Copy
Quick Copy / By Reference

- Click Quick Copy / By Reference, click QuickCopy – Selected Shapes To, and click Bottom

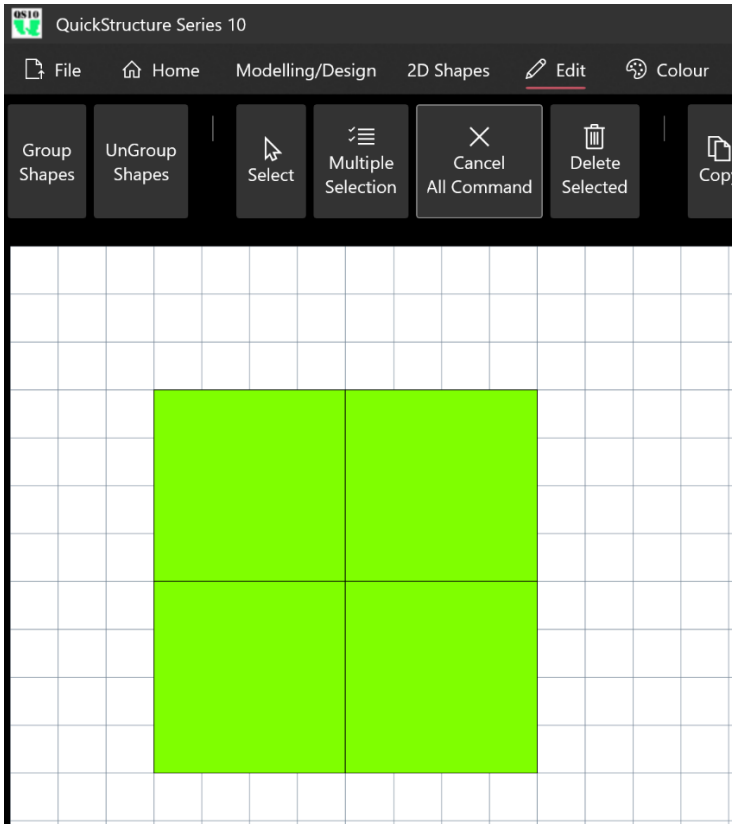




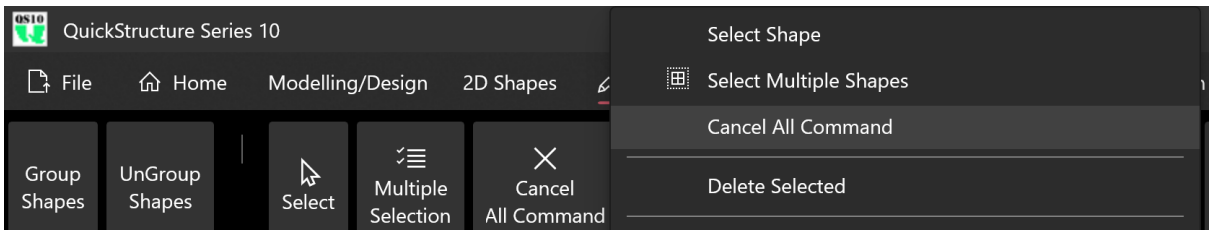
- Click Select and select the third rectangle
- Click Quick Copy / By Reference, click QuickCopy – Selected Shapes To, and click Right



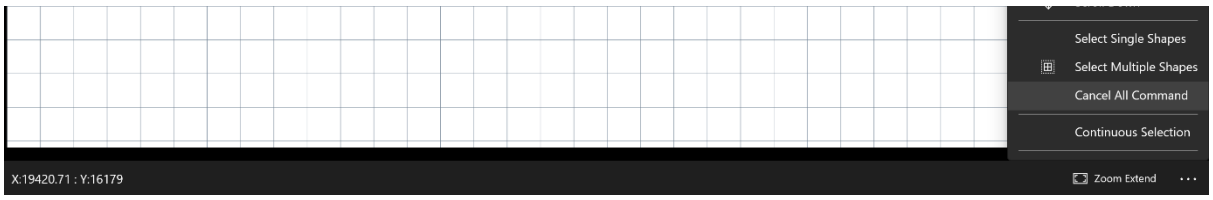
4. Click Edit Tab and Cancel All Command



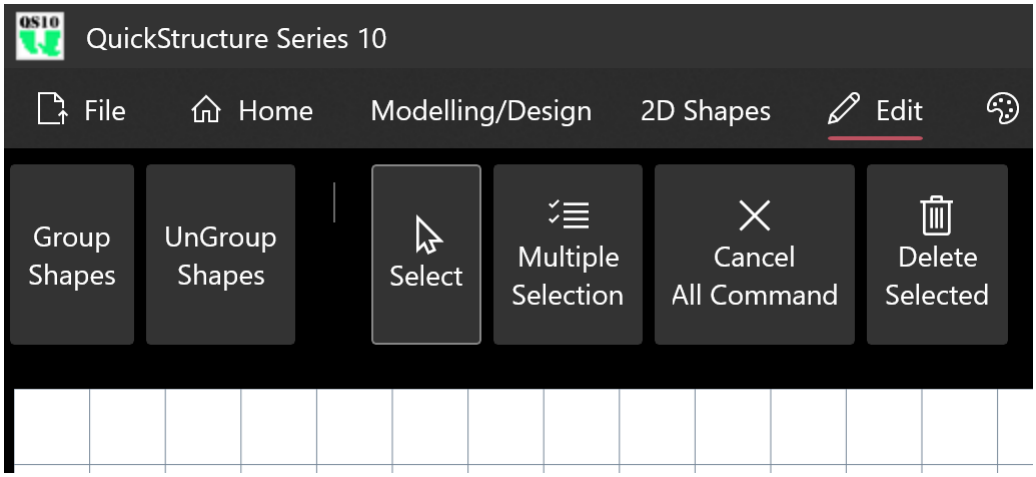
You can also right click on the drawing surface and click Cancel All Command.



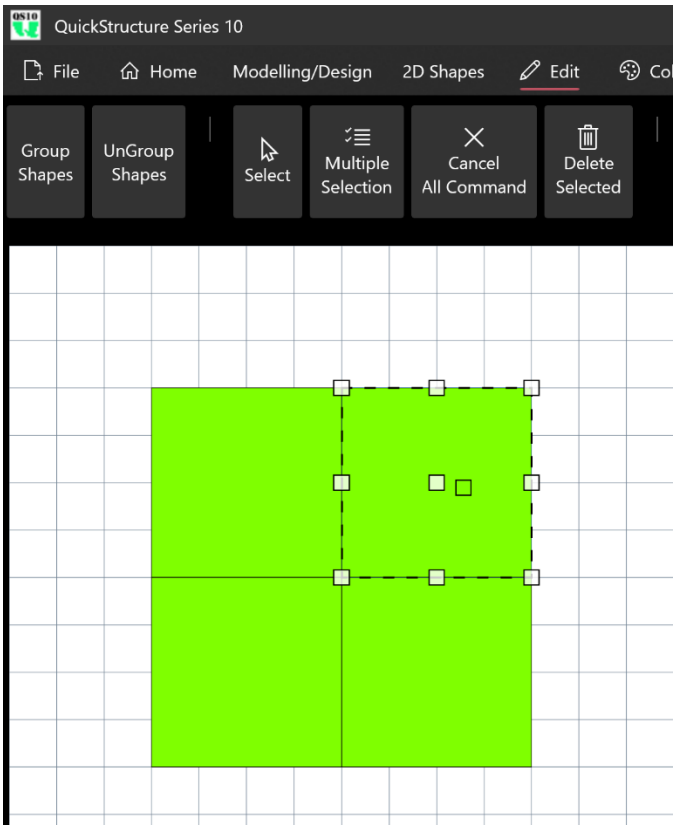
You can also click the … at the bottom right and click Cancel All Command



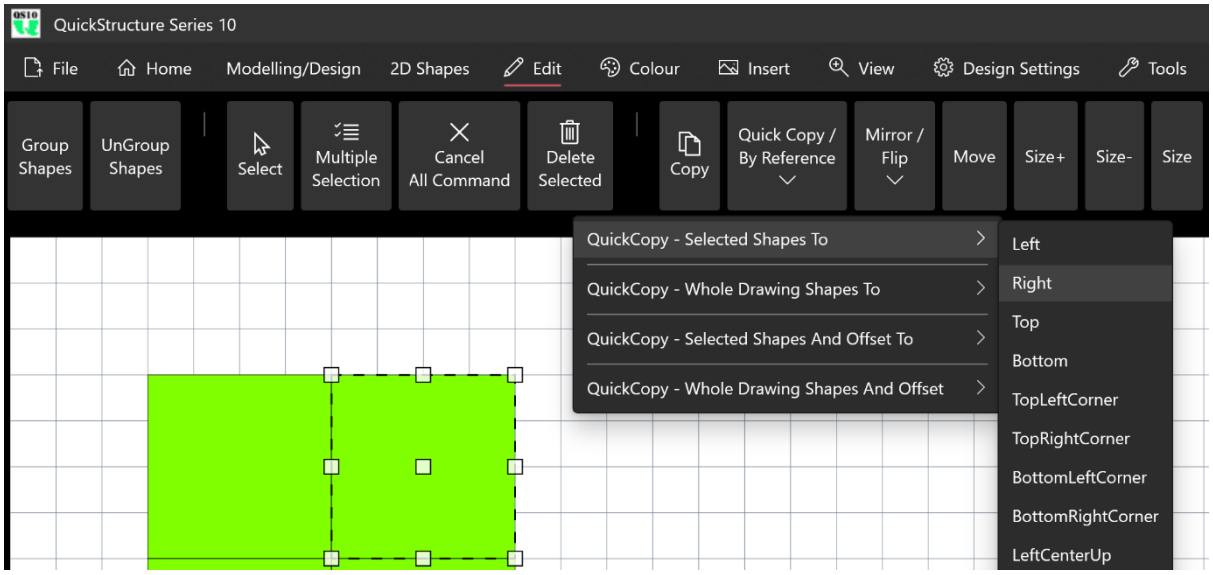
5. Use Quick Copy / By Reference to add a rectangle
   - Click Edit tab and click Select



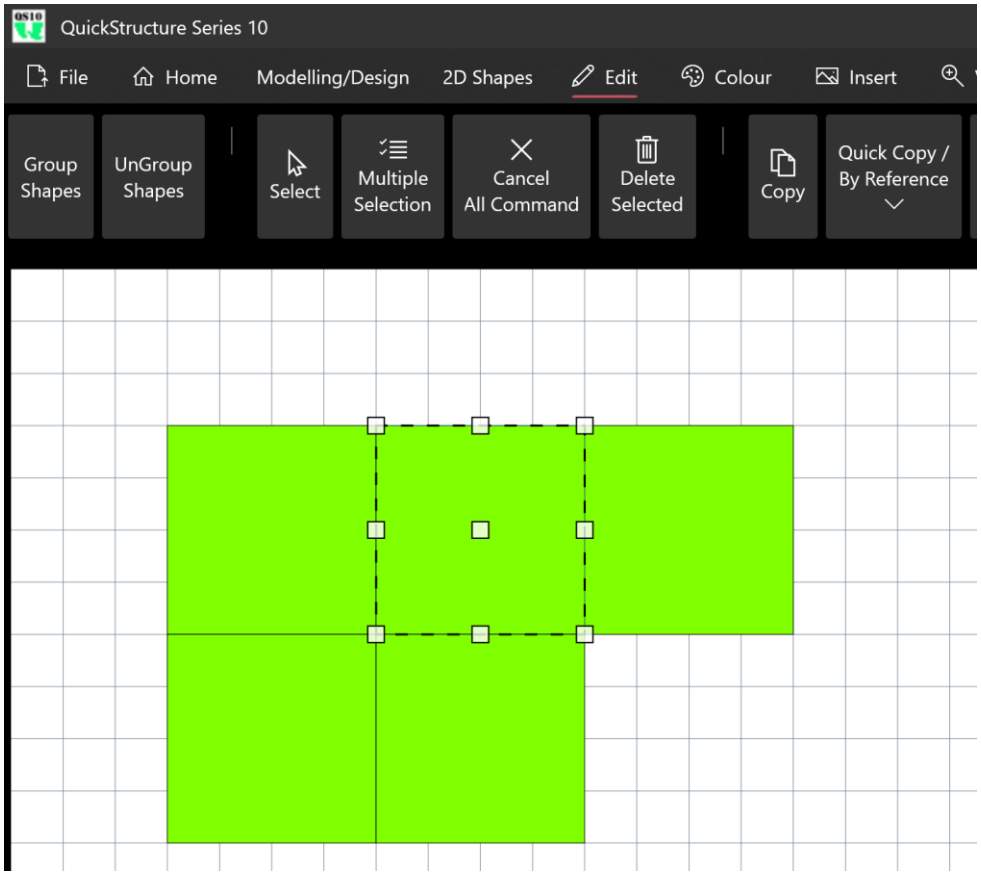
   - Click on the second rectangle as shown below



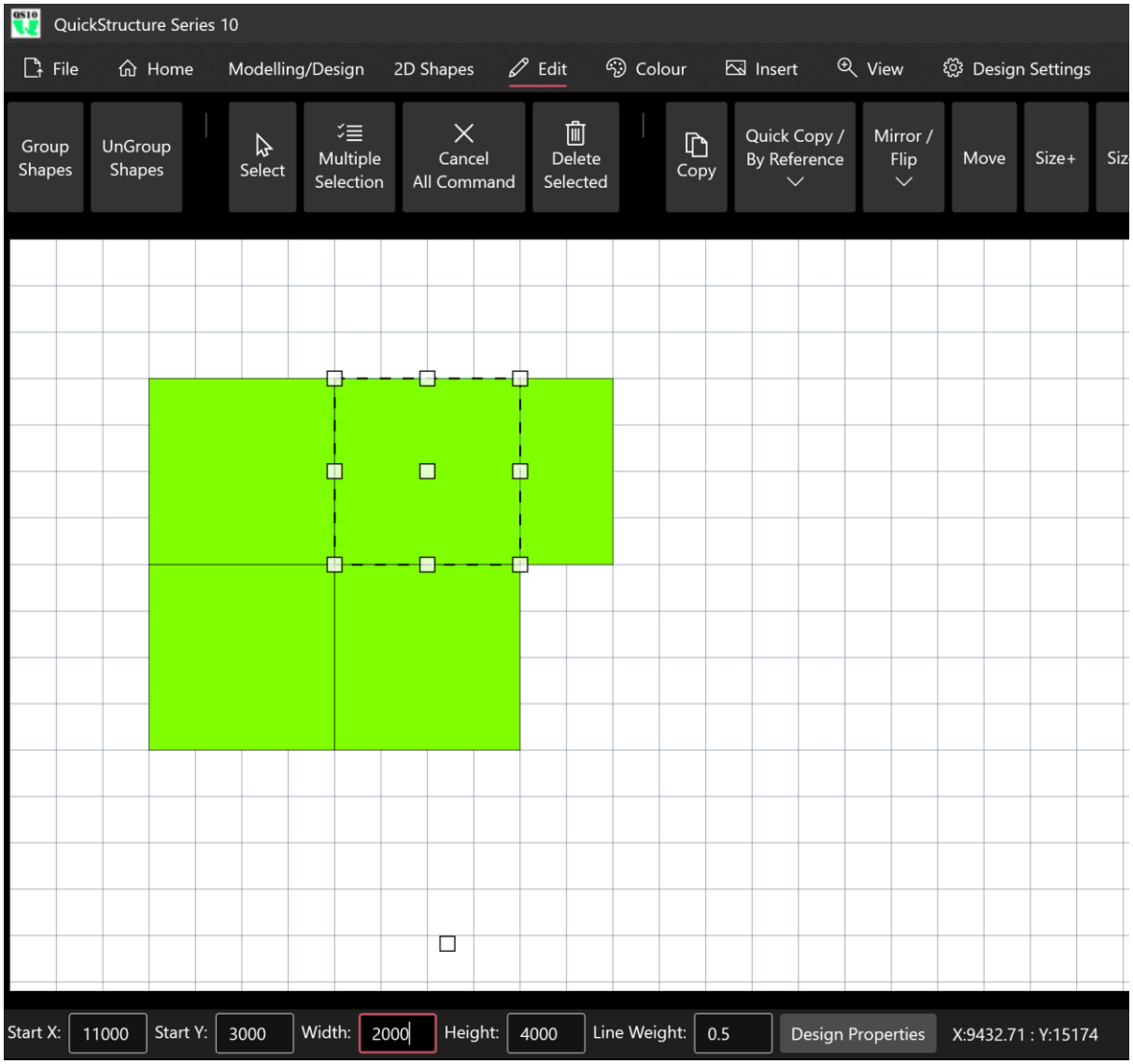
- Click Edit tab, click Quick Copy / By Reference, click QuickCopy – Selected Shapes To, and click Right.



This will happen

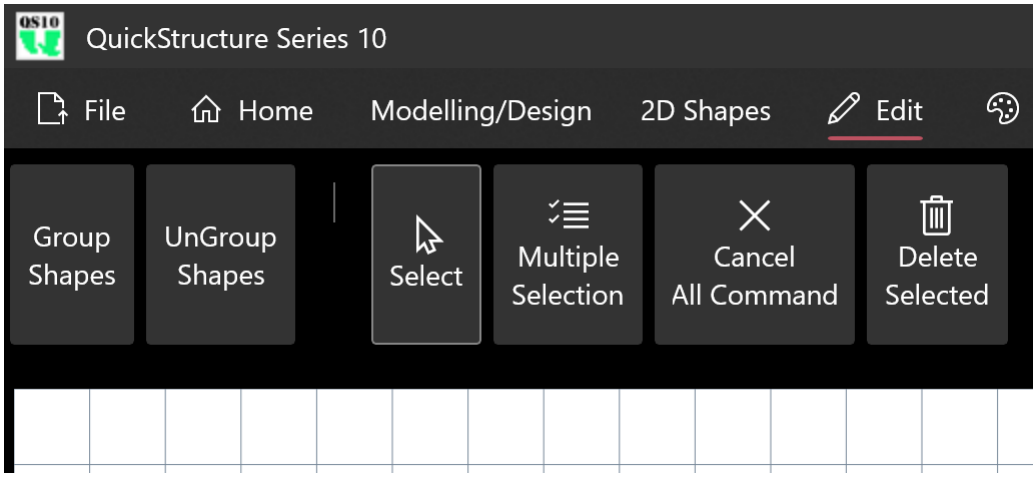


- At the properties at the bottom of the software, change the Width:2000 and press Enter key on the keyboard

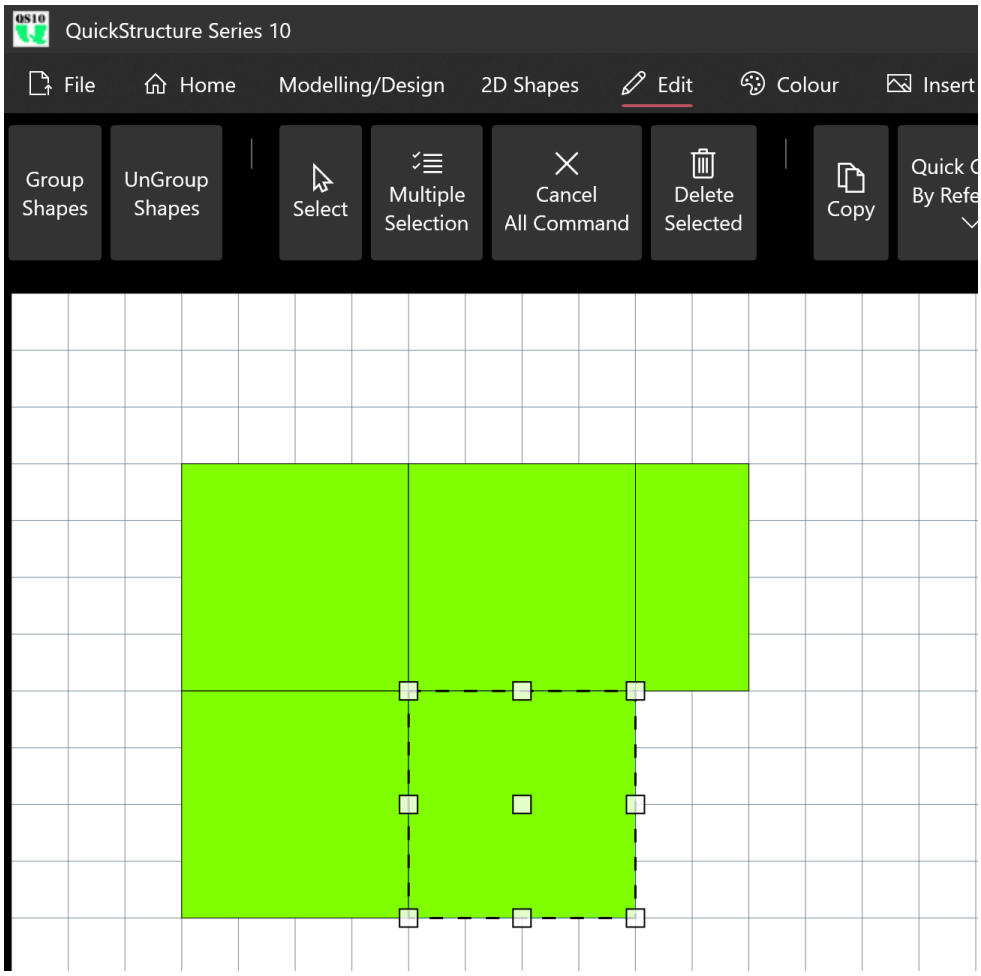


Notice that the width of the newly added rectangle changes. You can also click the new rectangle and change the width to 2000.

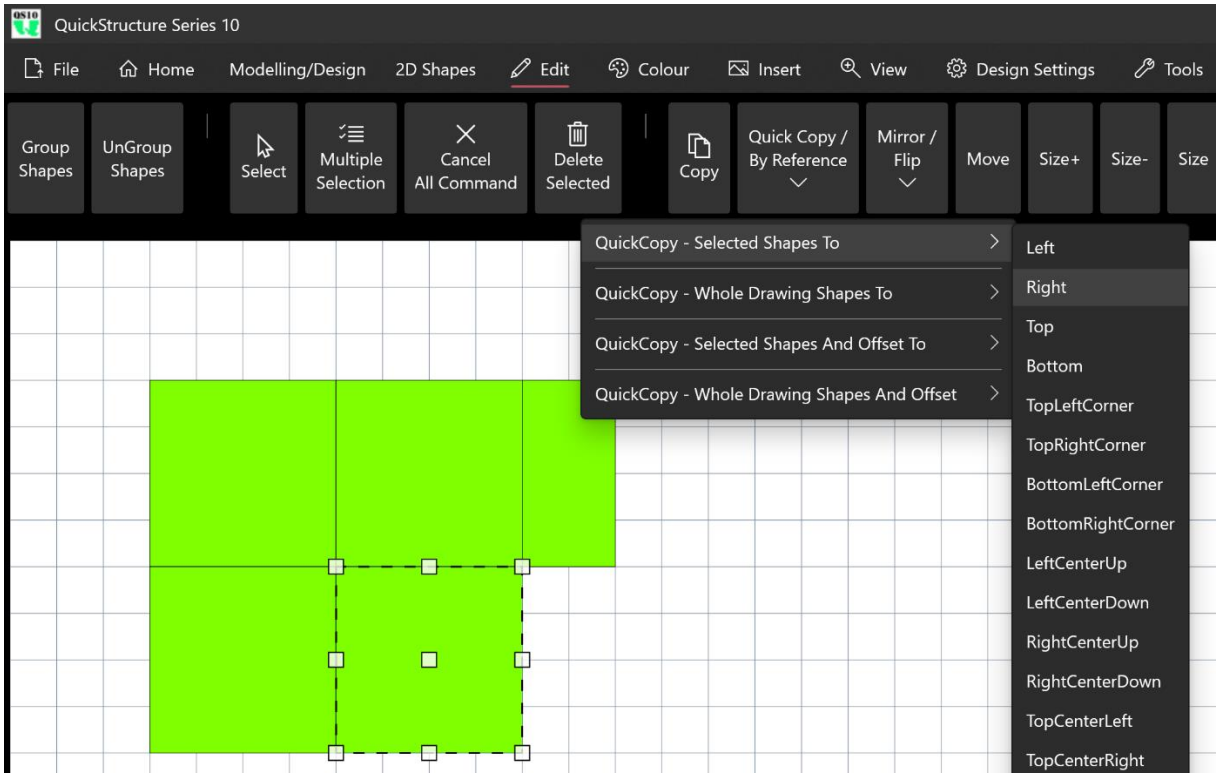
6. Use Quick Copy / By Reference to add a rectangle
   - Click Edit tab and click Select



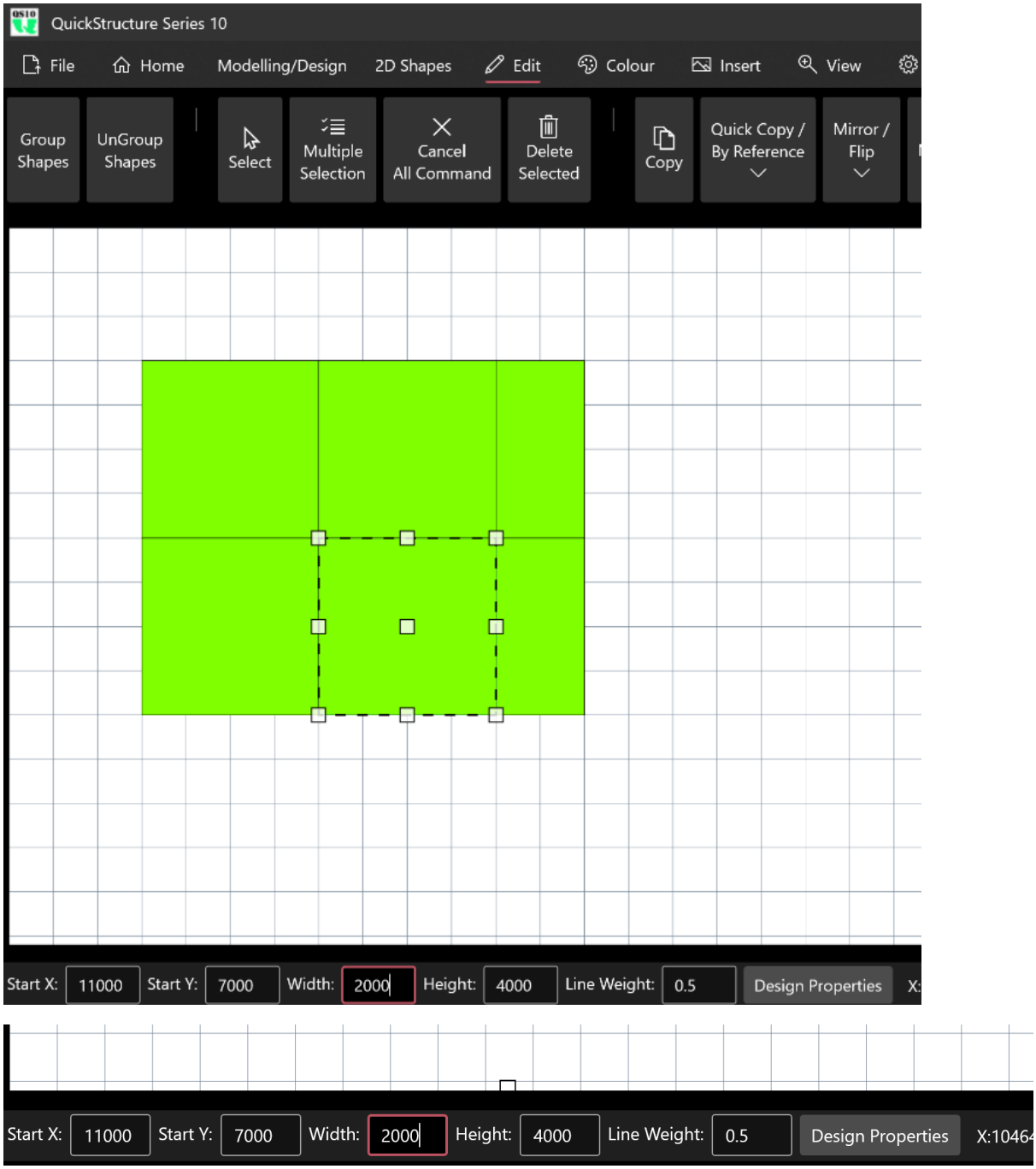
   - Click on the fourth rectangle to select it as shown below



- Click Edit tab, click Quick Copy / By Reference, click QuickCopy – Selected Shapes To, and click Right.



- At the properties at the bottom of the software, change the Width:2000 and press Enter key on the keyboard.


QuickStructure Series 10
File
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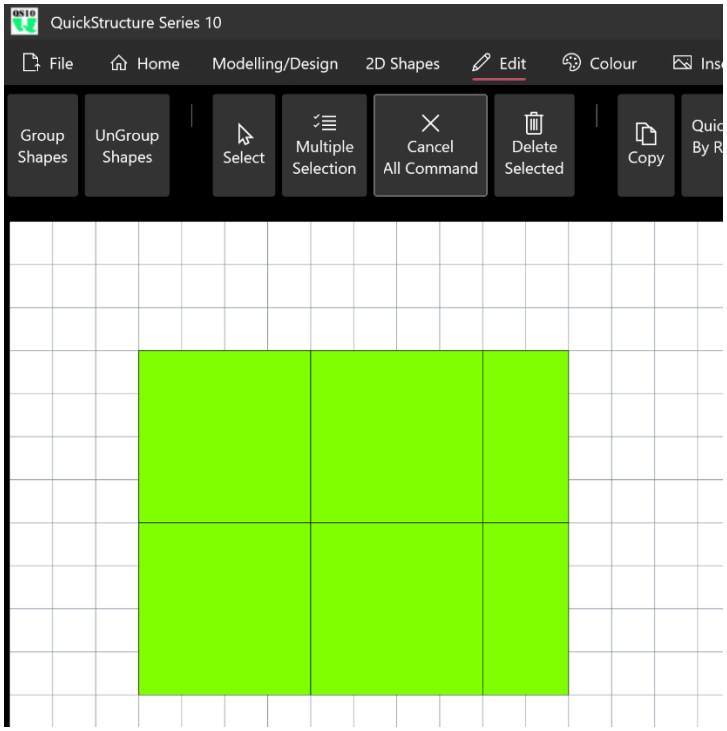
Group Shapes
UnGroup Shapes
Select
Multiple Selection
Cancel All Command
Delete Selected
Copy
Quick Copy / By Reference
Mirror / Flip
Start X: 11000
Start Y: 7000
Width: 2000
Height: 4000
Line Weight: 0.5
Design Properties

Start X: 11000
Start Y: 7000
Width: 2000
Height: 4000
Line Weight: 0.5
Design Properties

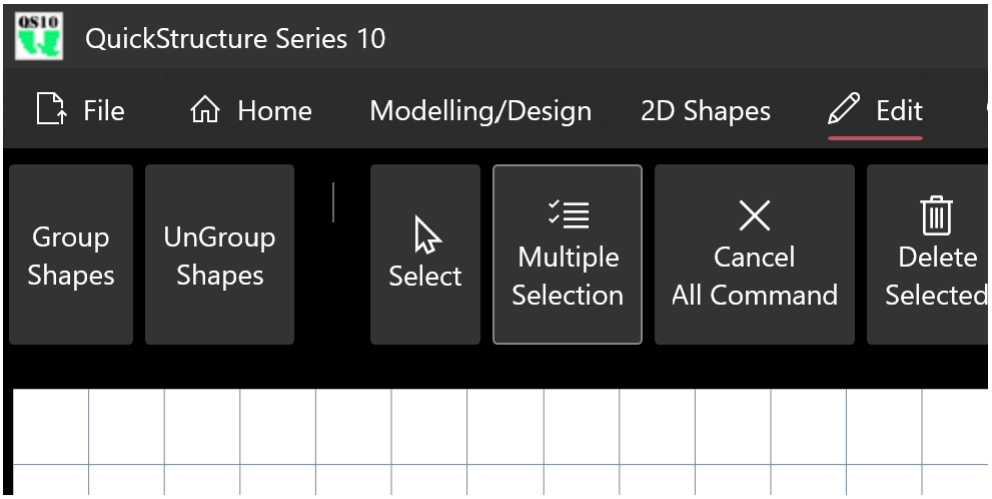
7. Click Edit Tab and click Cancel All Commands



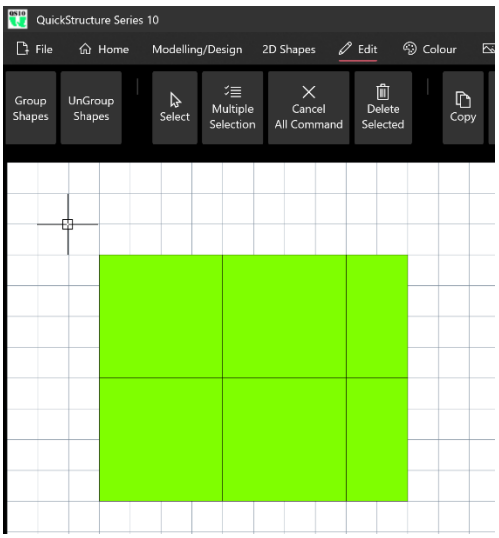
Next, we add the remaining 4 rectangles.

There are many ways to do this. We could us Insert Rectangle Grid tool, or Use Rectangle tool, or use Quick Copy as we did above but we will use mirror tool.

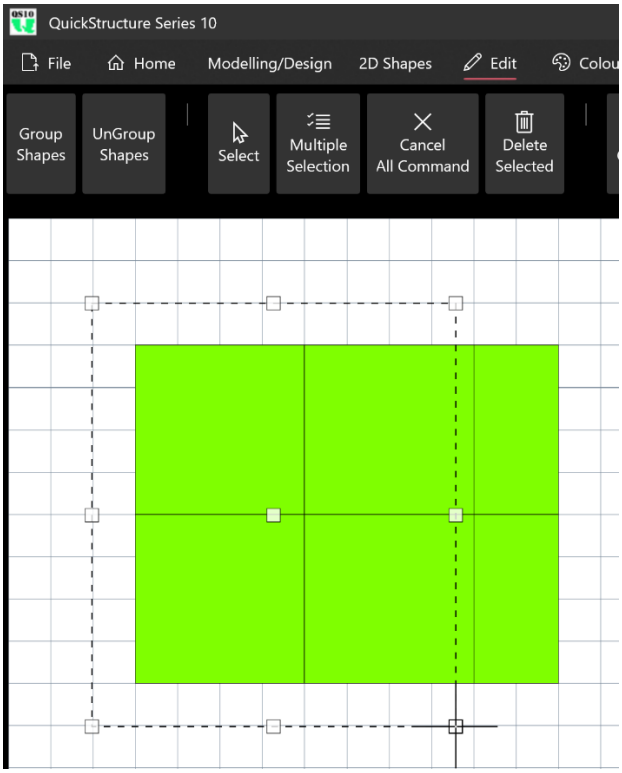
8. Select the first 4 rectangles, to do that
   - Click Edit tab and click Multiple Selection



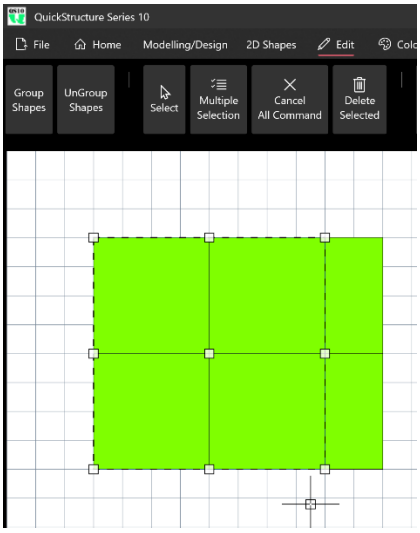
- Move the Mouse to a position top corner of the rectangles and click as shown below



- Move the Mouse to select the first 4 panels and click as shown below



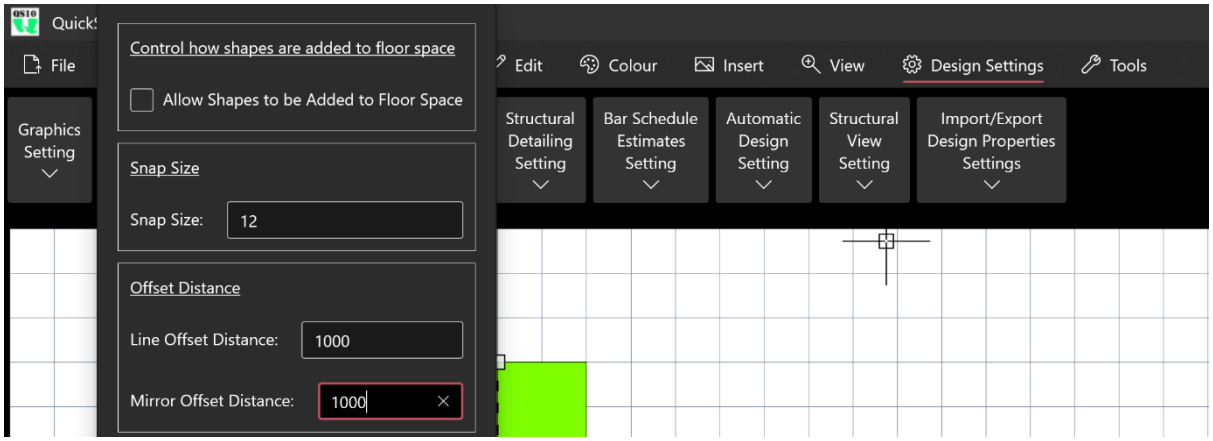
When you select and click, it will look like this



If you make a mistake you can always cancel active command by clicking Cancel All Commands and start the selection again.

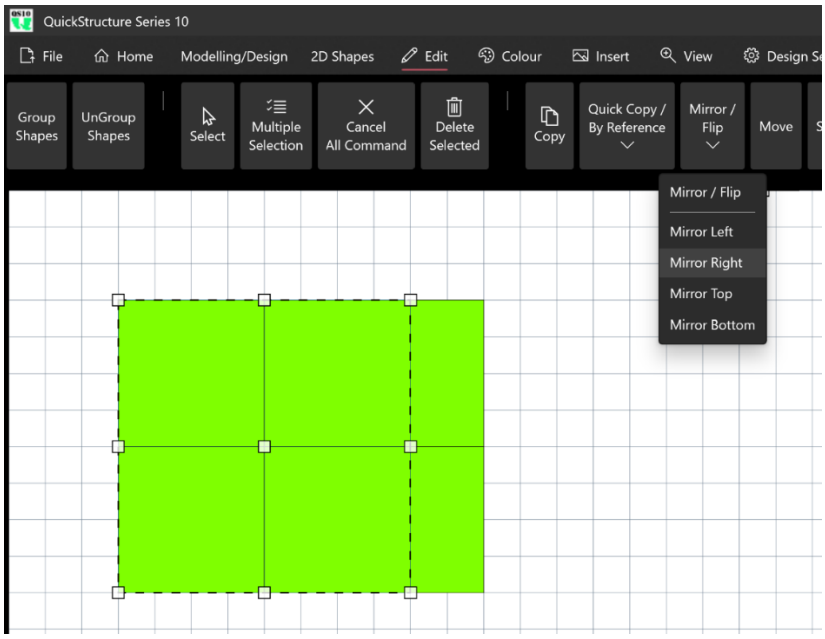
Next, we Mirror the selected rectangle. Before we do that, we need to set the mirror distance.

9. Click Design Settings Tab, click the Graphics Setting button and Edit Mirror Offset Distance:1000 as shown below

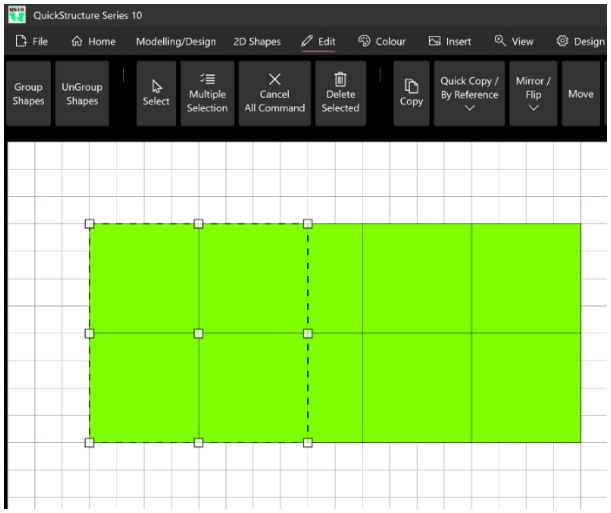


This will make the mirror to start at 1000 away from the selection.

10. Click Edit tab, Click Mirror / Flip and click Mirror Right

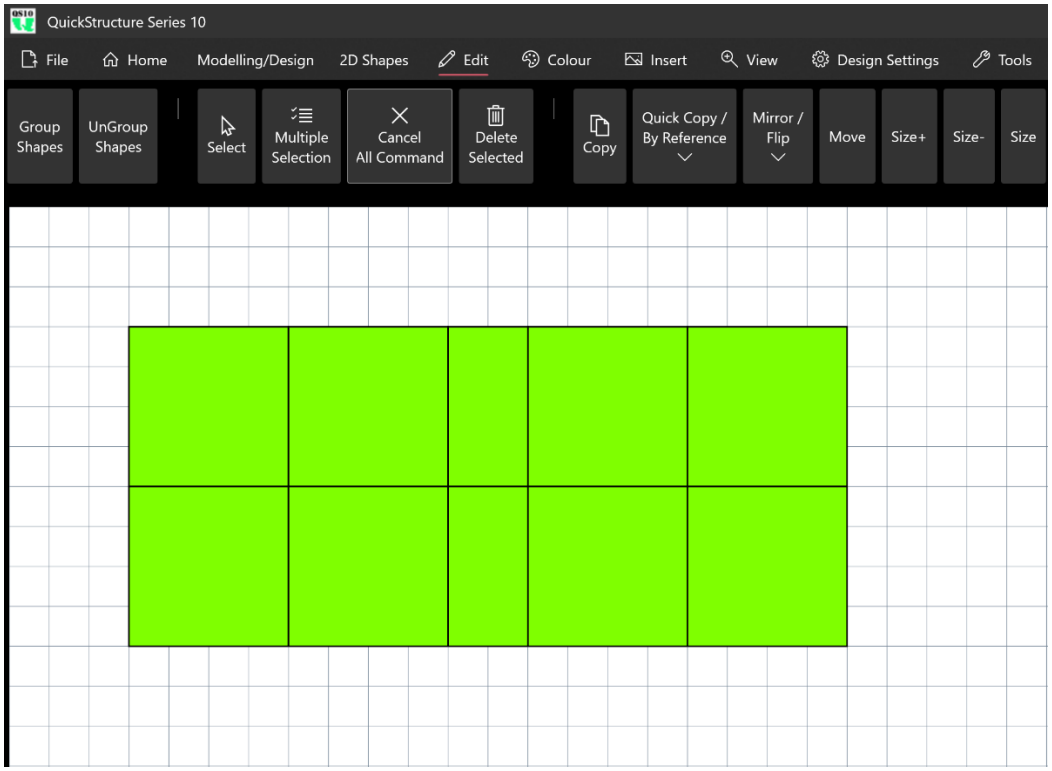


It will look like this



Now we have all the rectangles we need to create our floors

11. Click Cancel All Commands



Note:

- At this point we have the basic geometry to create our floors. This is one of the most important stages in the modelling process.

- This is the building block to the rest of the design. With these rectangles you can easily create the floors.

- In the simple example we are working with we assume that the ground floor, first floor, second floor and roof beam layouts / arrangements are the same.

  This is a very simple arrangement in the next example we will start making the arrangement more complex.

  We need to start with simple arrangements so that you get use to the software before we step it up.

- If the layouts vary, you might need to copy the rectangles and adjust. More on this later.

- Is a good practice to save these plain rectangles in a separate file before we start adding the floors.

  If anything goes wrong in the floor modelling, we can always come back to this plain rectangle and recreate the whole floors again.

  Creating the rectangles or geometry is the biggest work in the software. The next work is editing the beams and columns in the floors, but without the plain rectangles you can’t get to that stage.

- In this example we have 10 rectangle(panels) and the arrangement is simple but in some designs you could have 100+ panels with complex arrangement. So, saving the rectangles arrangement becomes very important. When we start creating the floors the software will generate lot of additional geometries (lines, rectangles, text) things start getting complicated. But if you have your plain

modelling, you can always recreate everything again if anything goes wrong.

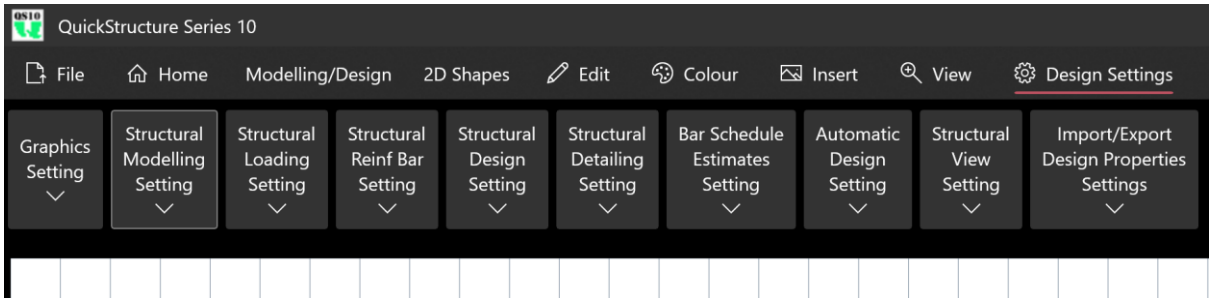
Design can be both simple and complex.

- QS10 Saves plain text format not binary format like QS9. Plain text format can open in notebook.

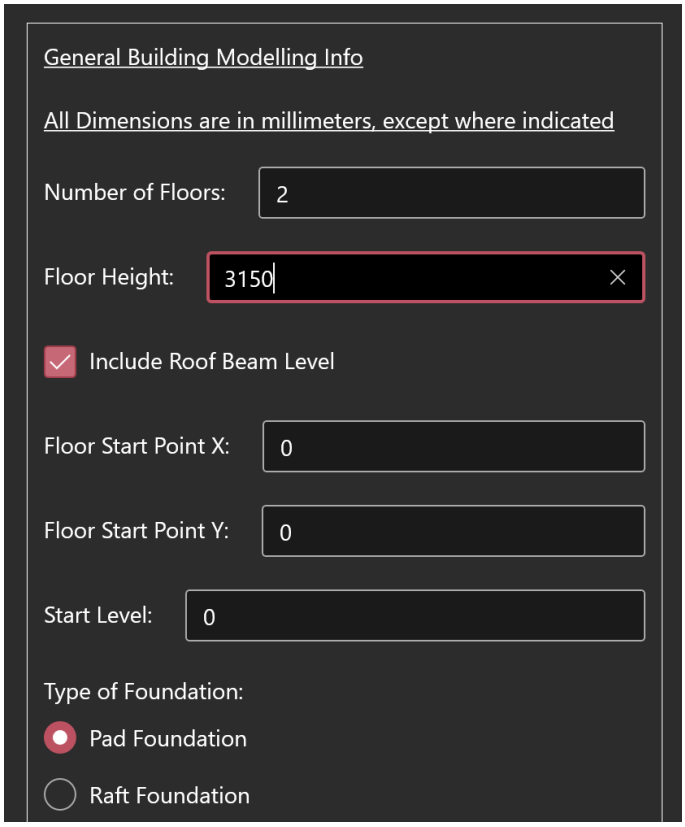
12. Save Project
    - Click File and click Save Project
    - File name: Project Design 3 Plain Geometry

Create the structural floors

13. Set the Floor Settings
    - Click the Design Settings tab and click Structural Modelling Setting



    - Set the General Building Modelling Info as shown below.



Note:

- The design assumes the foundation is pad foundation. If you are designing a raft foundation, select raft foundation as type of foundation.

- The number of floors starts count from the first floor. So, in the example above the number of floors:2, it means two floors above the ground floor. That is first and second floors. We also included the roof beams.

  In total the software will generate:

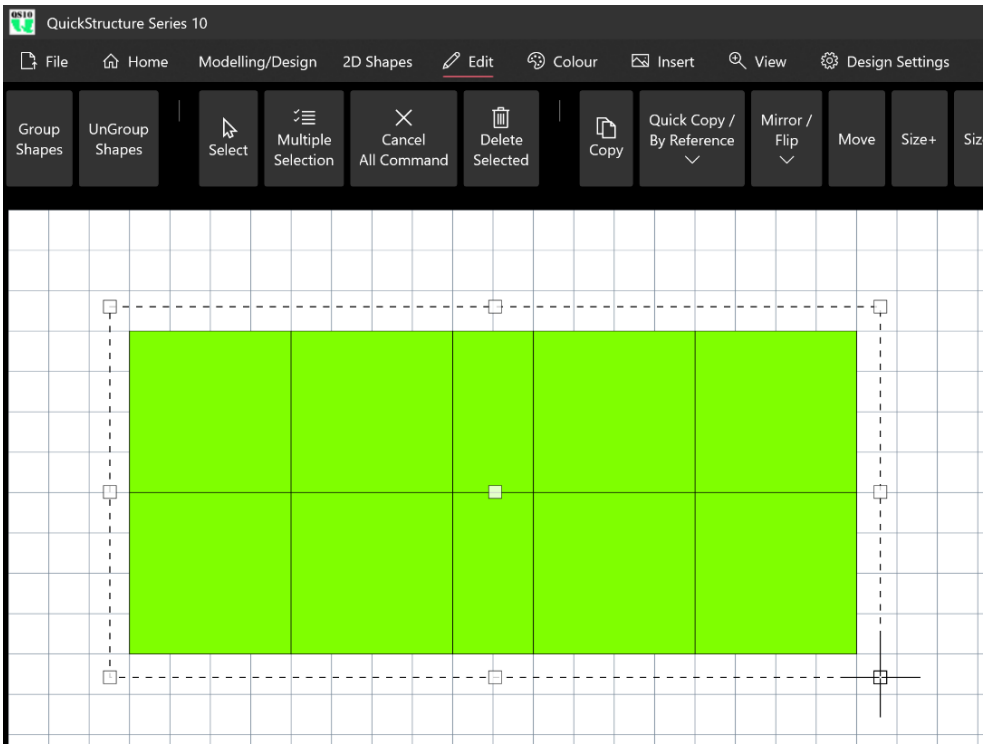
  ground floor layout, first floor layout, second floor layout and roof beam layout.

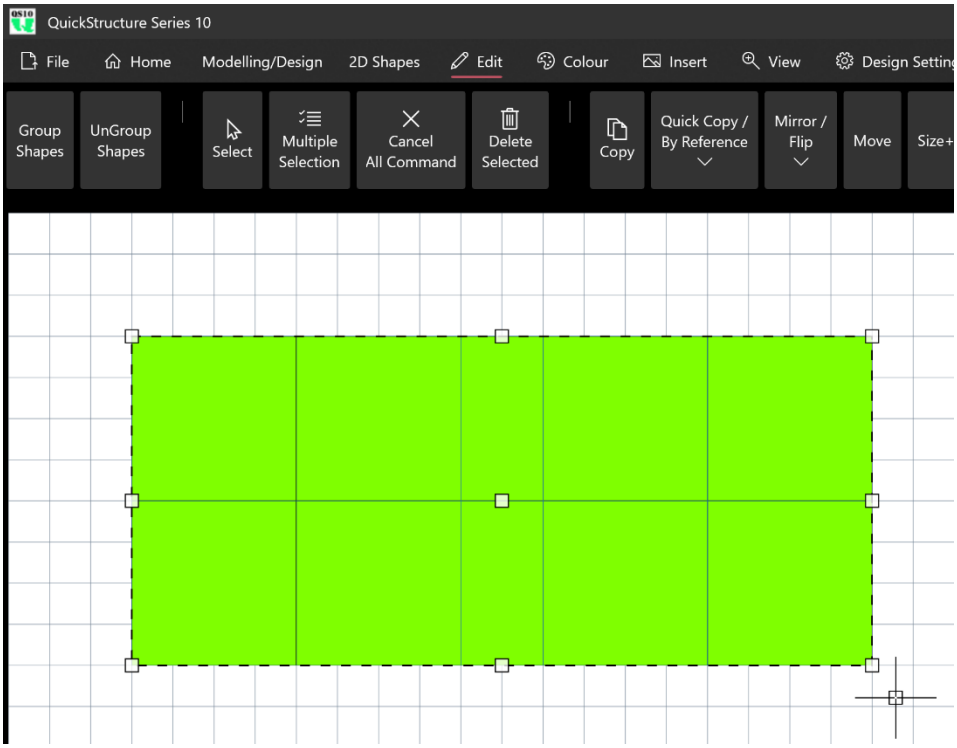
  It is important you understand this. Number of floors:2, means 2 storey building. The roof beam and ground floor will be added separately. For some people, 2 storey building means ground floor and first floor. But for the purpose of the software 2 storey building (Number of

floors:2) means ground floor, first floor and second floor.

- The number of floors setting is only used when you auto generate floors. If you are to add the floors individually it is not important and not used. In this example we will add the floors directly.

14. Click Edit, click Multiple Selection and select all the rectangles as shown below




QuickStructure Series 10
File
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Modelling/Design
2D Shapes
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Colour
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View
Design Setting
Group Shapes
UnGroup Shapes
Select
Multiple Selection
Cancel All Command
Delete Selected
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Quick Copy / By Reference
Mirror / Flip
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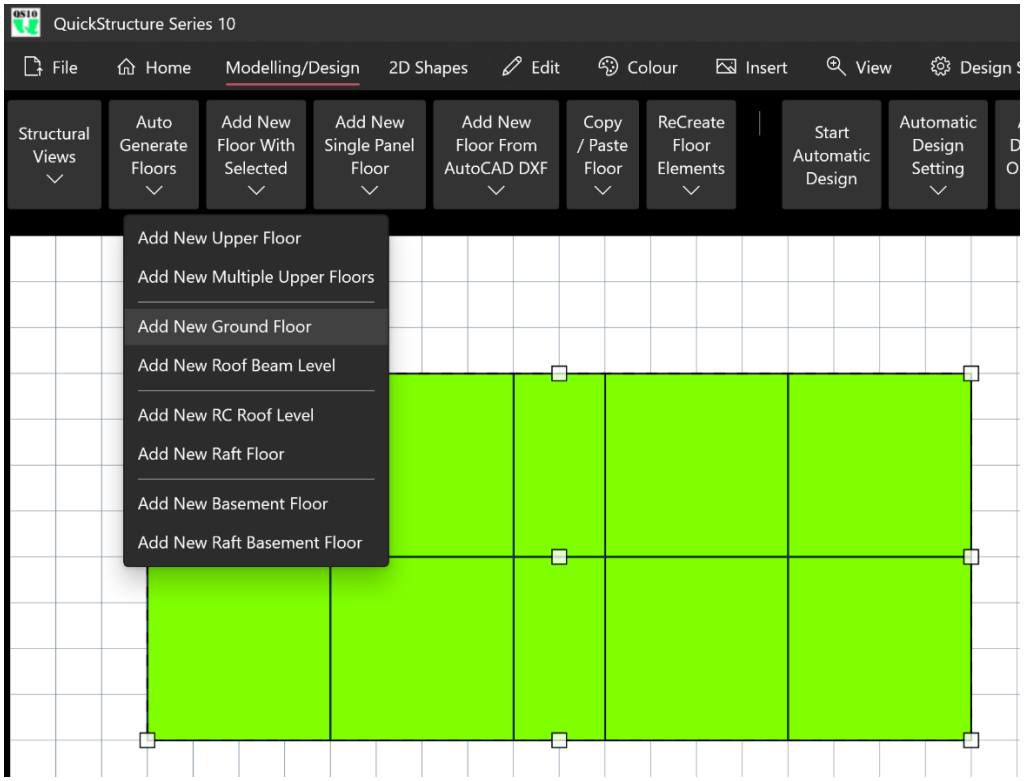
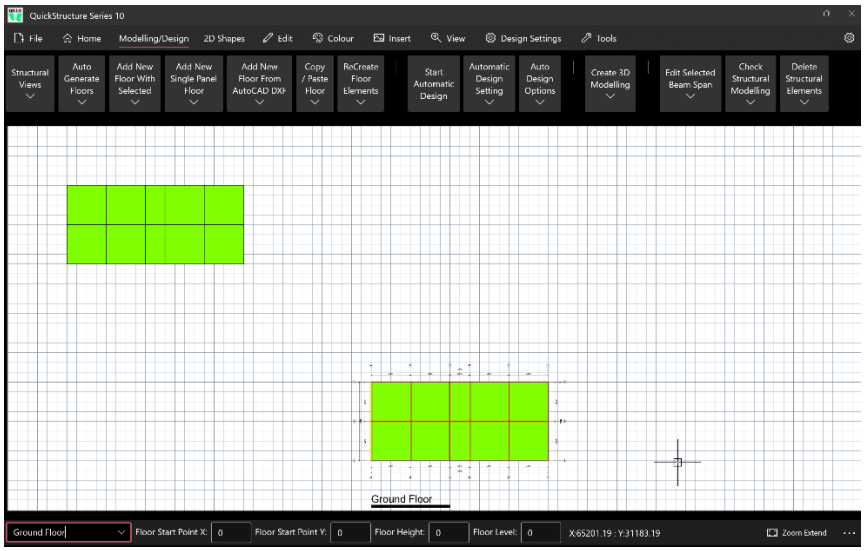
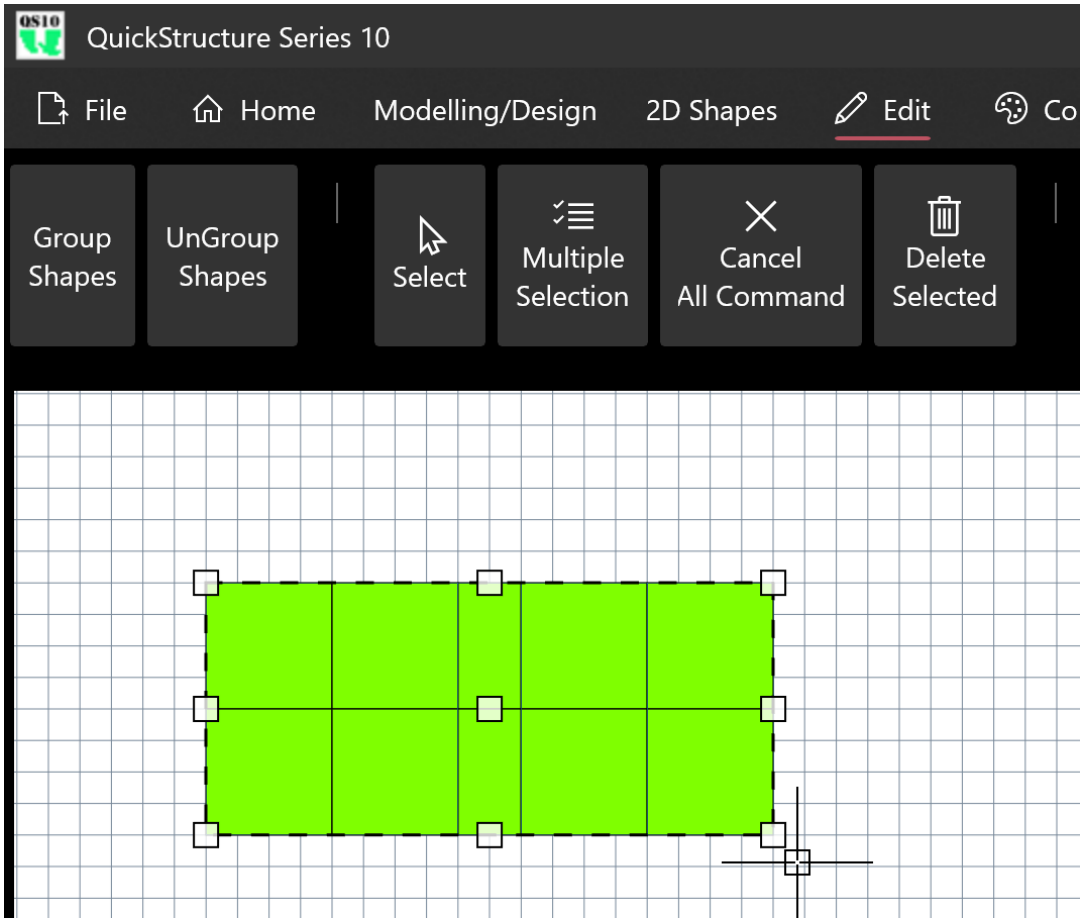
15. Add the Ground Floor
    - Click Modelling / Design tab, Click Add New Floor With Selected, and Click Add New Ground Floor (As shown below)



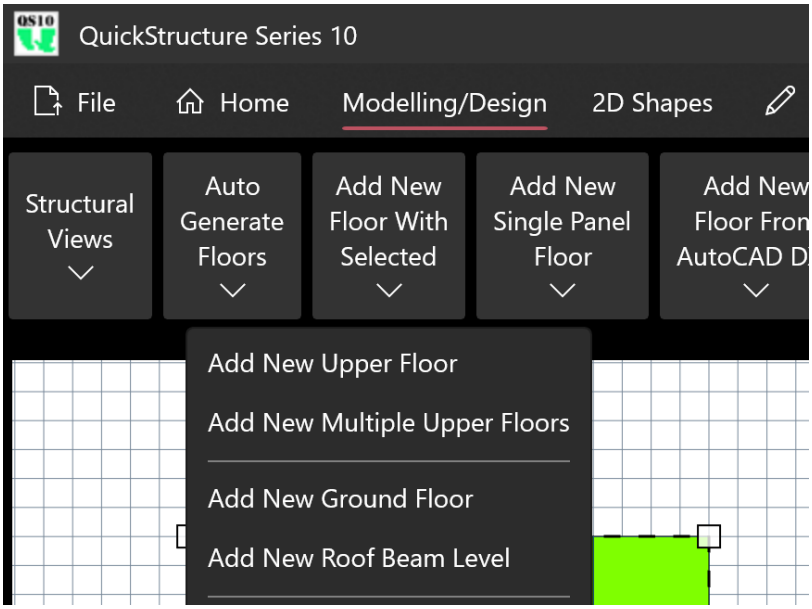
When you do the floor will be generated.

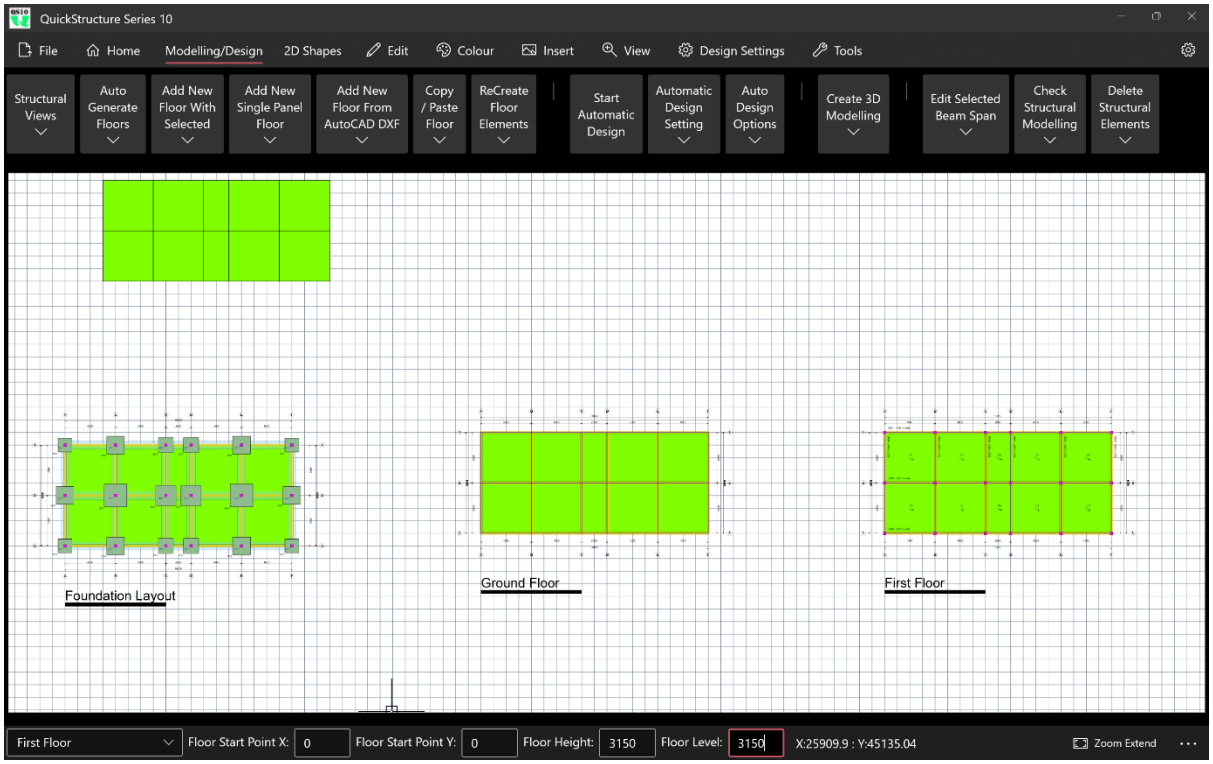


16. Add the First Floor
    - Click Edit tab, click Multiple Selection and select the rectangles as shown below.



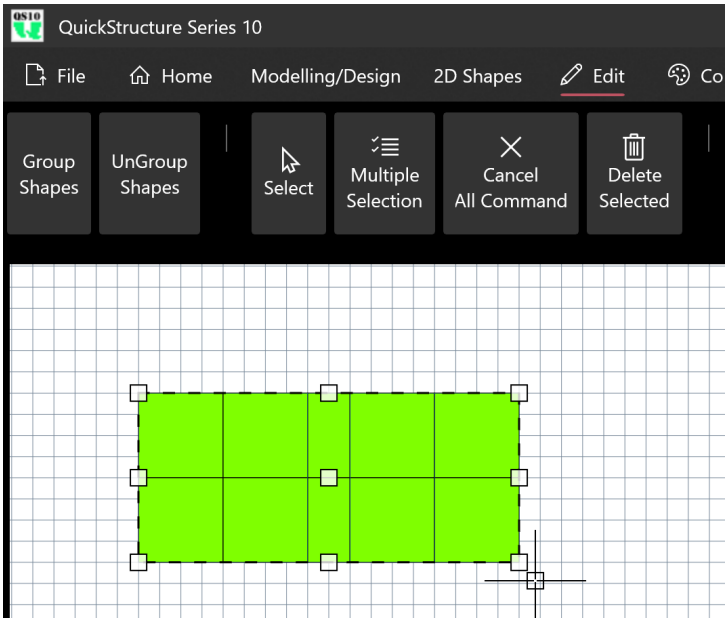
- Click Modelling / Design tab, Click Add New Floor With Selected, and Click Add New Upper Floor (As shown below)



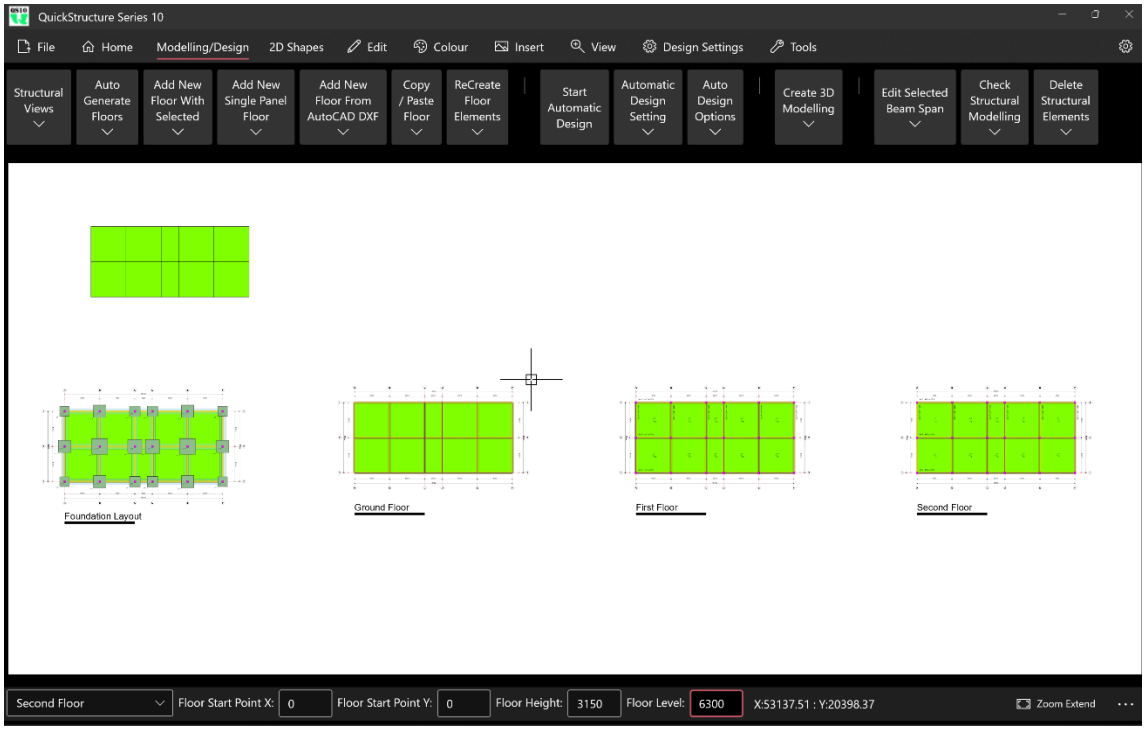


17. Add the Second Floor

- Click Edit tab, click Multiple Selection and select the rectangles as shown below.

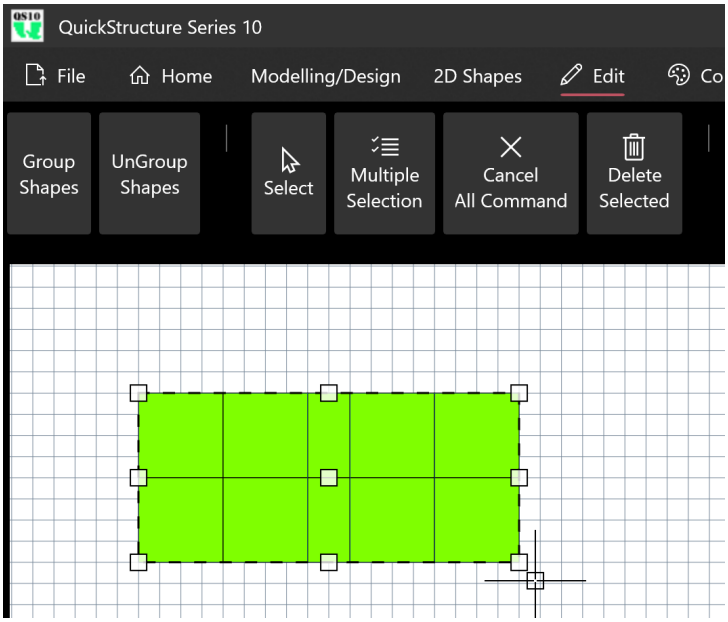


- Click Modelling / Design tab, Click Add New Floor With Selected, and Click Add New Upper Floor (As shown below)

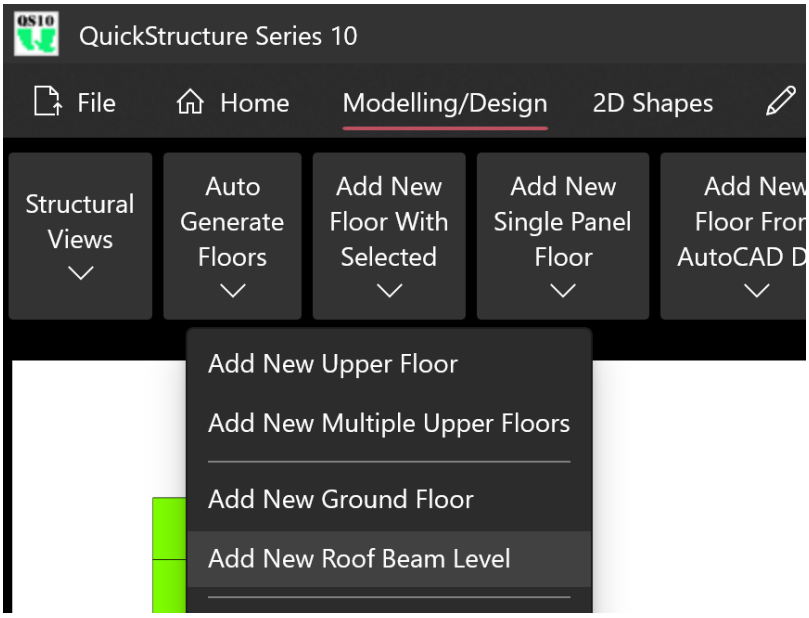


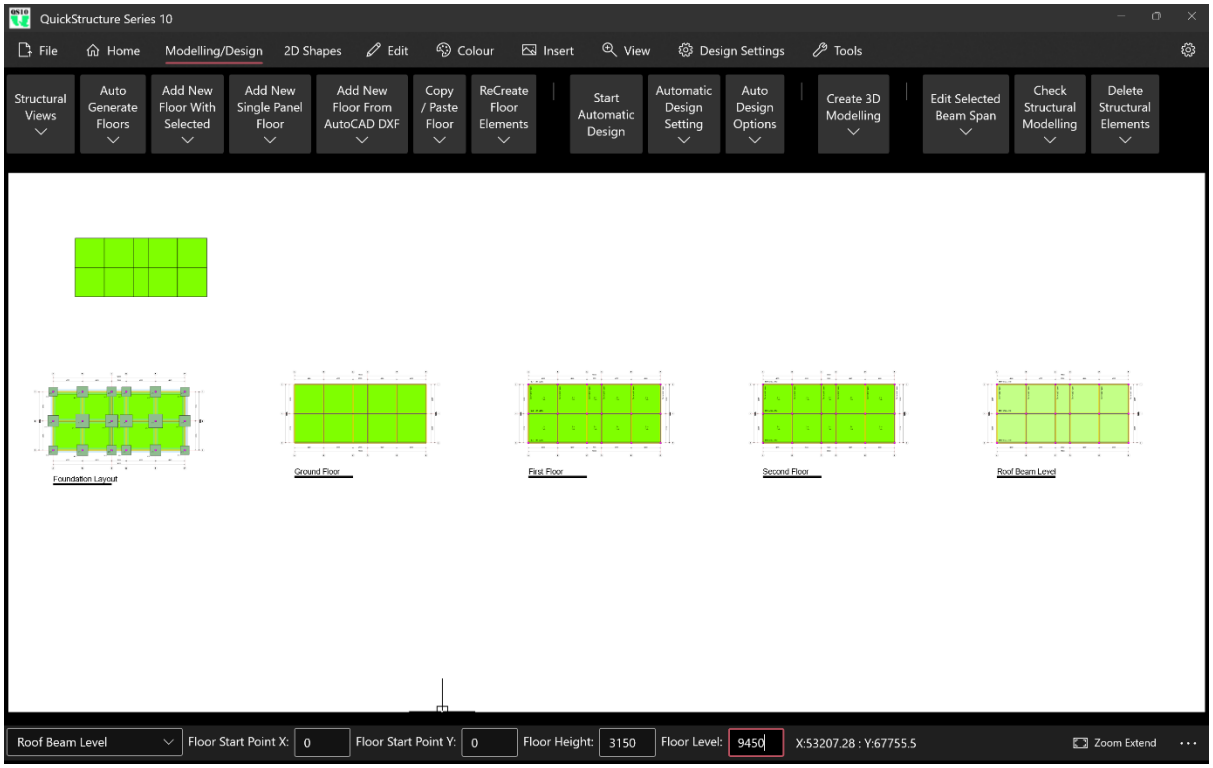
18. Add the Roof Beam Layout

- Click Edit tab, click Multiple Selection and select the rectangles as shown below.



- Click Modelling / Design tab, Click Add New Floor With Selected, and Click Add New Roof Beam Level (As shown below)



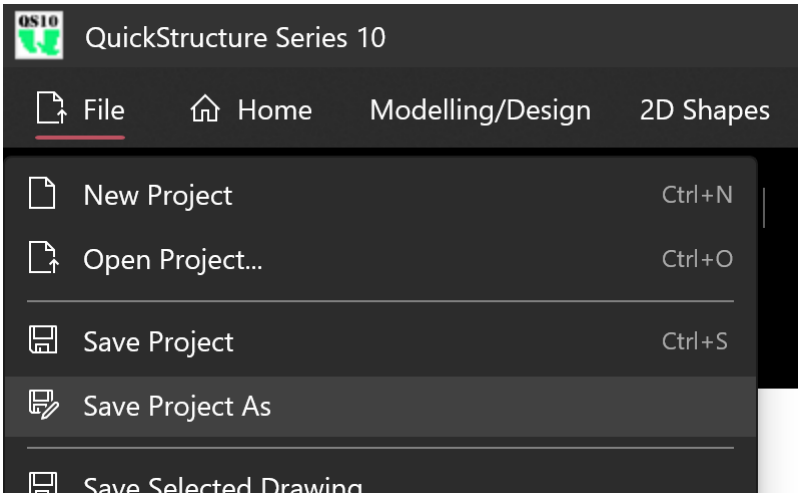


Note:

- We could also use Add New Multiple Upper Floor to Add both the first and second floor at the same time. The software will use the number of floors:2 to do that.
- At this point the software automatically creates the foundation layout.

Now we have the complete structural layouts is time to save the structural modelling.

19. Click File and click Save Project As



- File Name: Project Design 3 Structural Model

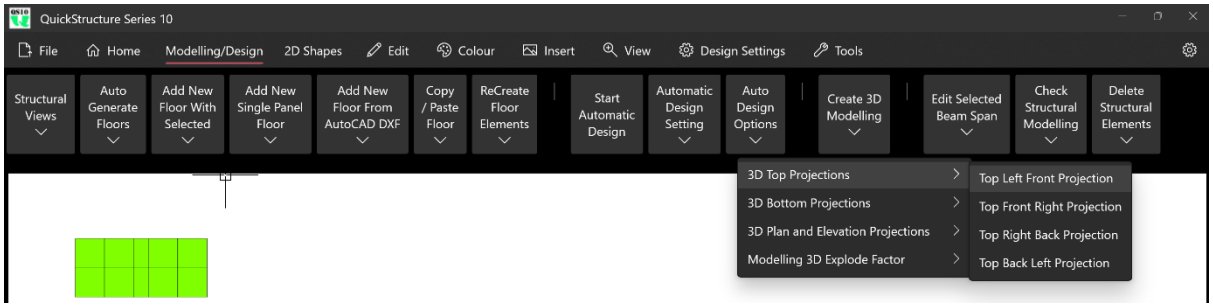
Note:

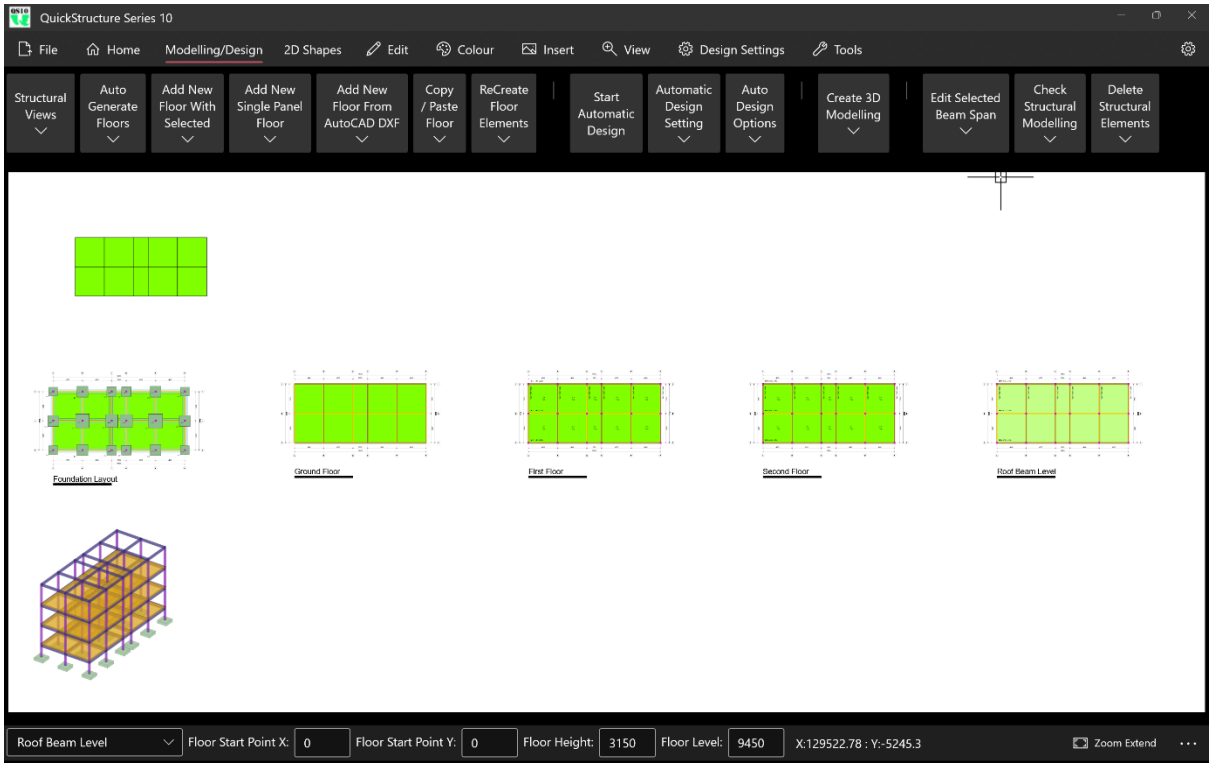
We used Save Project As, so that we will keep the plain geometry file separate, from the structural model. If you use Save Project the software will overwrite the first file we saved.

Some people might want to save the project in one file, in that case you use save project. But it is better the way we did it in this example to keep things separate and have two files.

Create 3D Models

20. Click Modelling / Design, click Create 3D Modelling, click 3D Top Projections and click Top Left Front Projection.

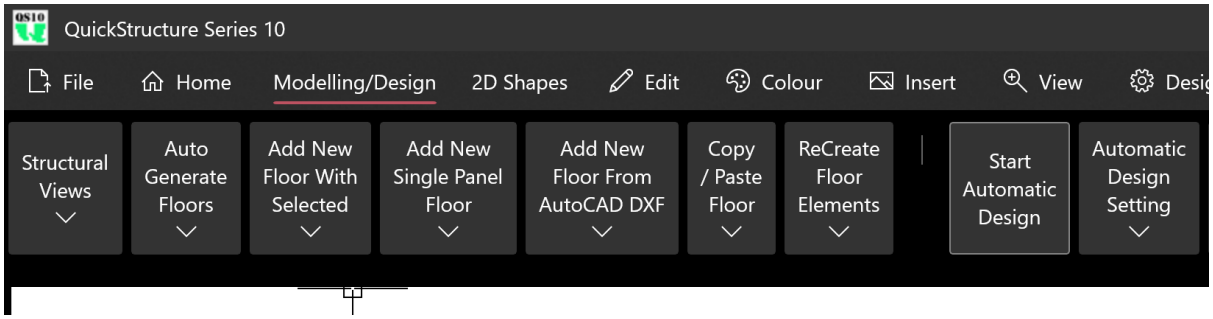




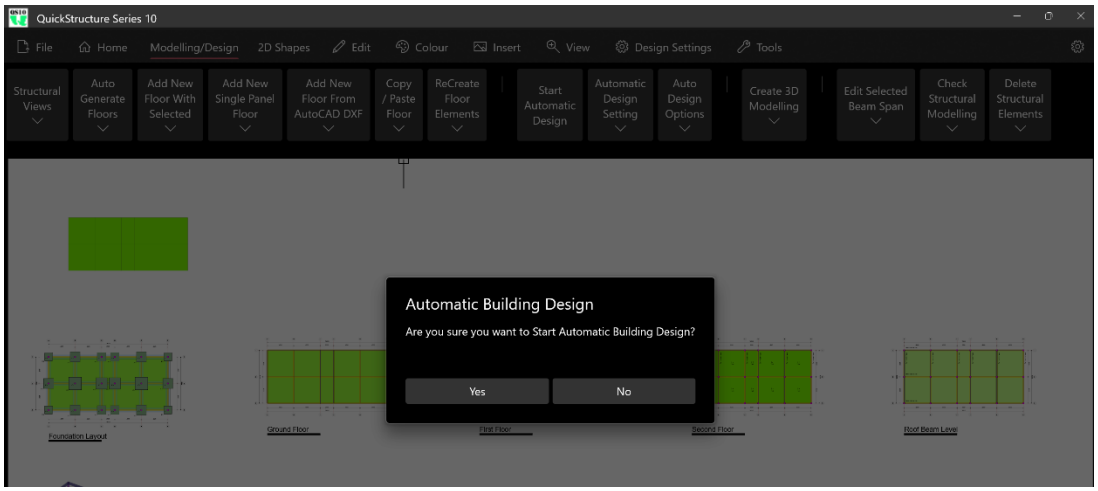
There is a lot to explore in the 3D Modelling. We will do a different tutorial to cover that. You can also explore the 3D Modelling options from the Menus.

We worked extensively on the 3D modelling in QS10.

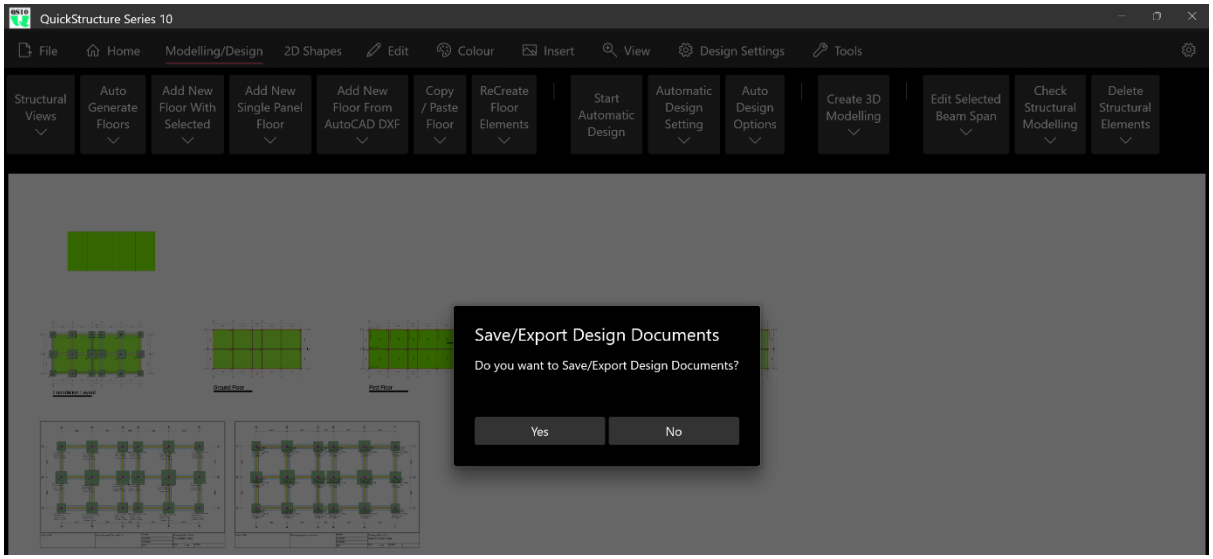
21. Click Modelling / Design and click Start Automatic Design



22. Click Yes to start automatic design



23. Click Yes to Save/Export Design Documents

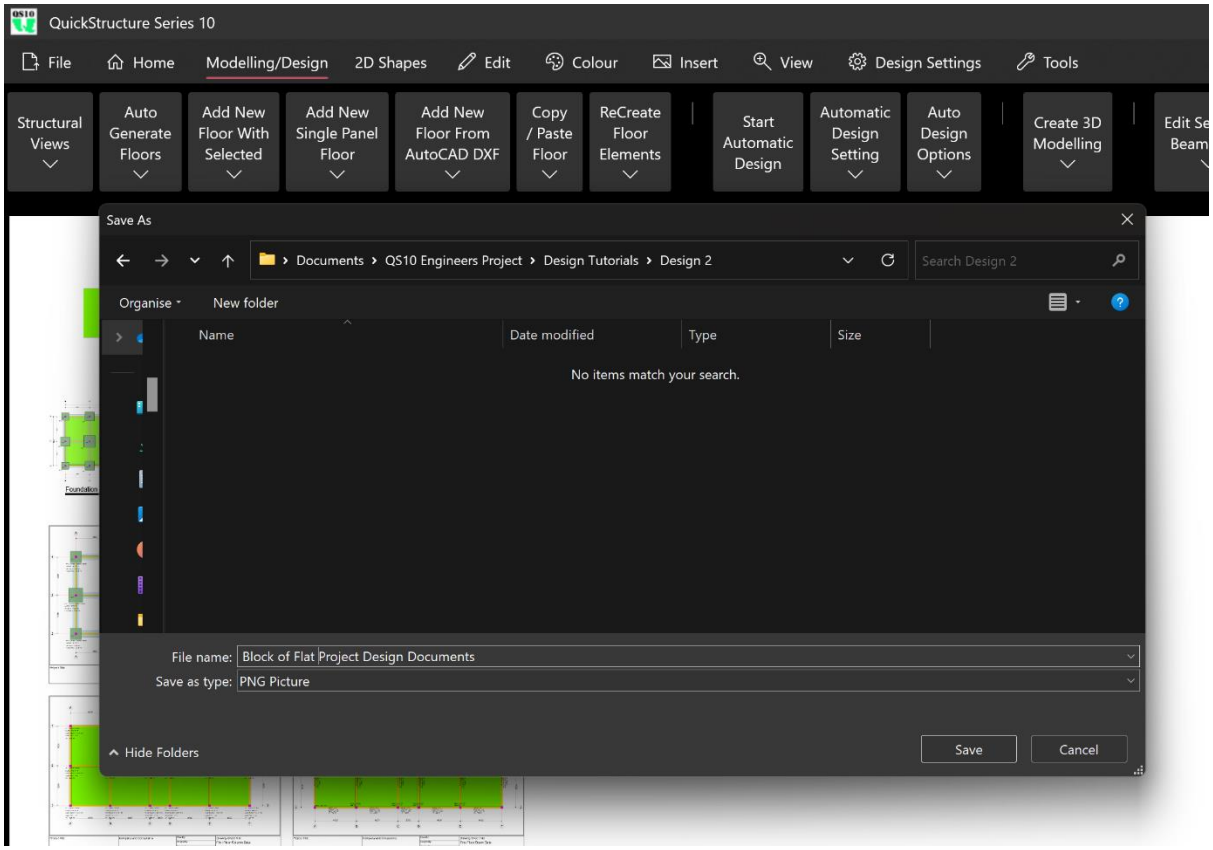


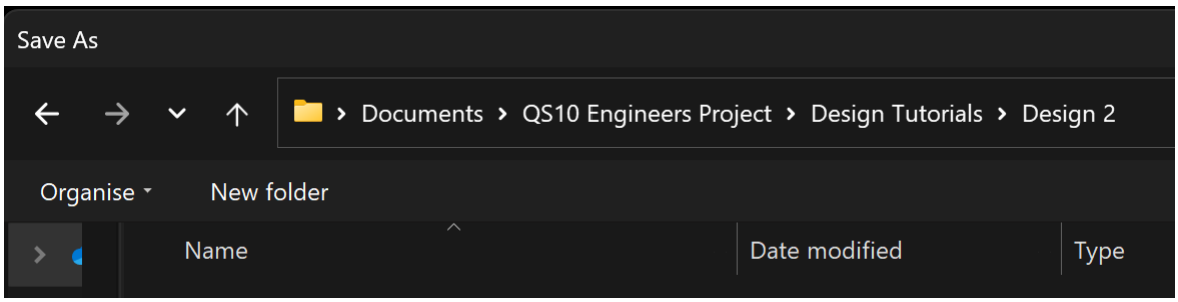
You can also choose to click No and explore the design before you save the documents. Normally you don’t save the documents at first. You look at the design and if you are satisfied with it, then you can than save the design documents.

We will discuss this in detail later.

24. Navigate to my Documents and create a new folder:Design 3, open the folder.
    Is very important you save in a new folder. The software will create some files, so is important they are together.

25. Enter the File Name: Block of Flat Project Design Documents and click Save





Please reference part 2 of QS10 manual for details on automatic design, automatic design settings and saving the design documents.