Stade des Alpes - Grenoble
Etudes et Techniques Internationales (ETI)

Tutorial Storeys

Scia Engineer 2010.1

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What is Storeys

Storeys is a special entity in Scia Engineer. It is defined by "Storey manager" dialogue. The Storeys object can be only once in the project. Any changes can be done in "Storey manager".
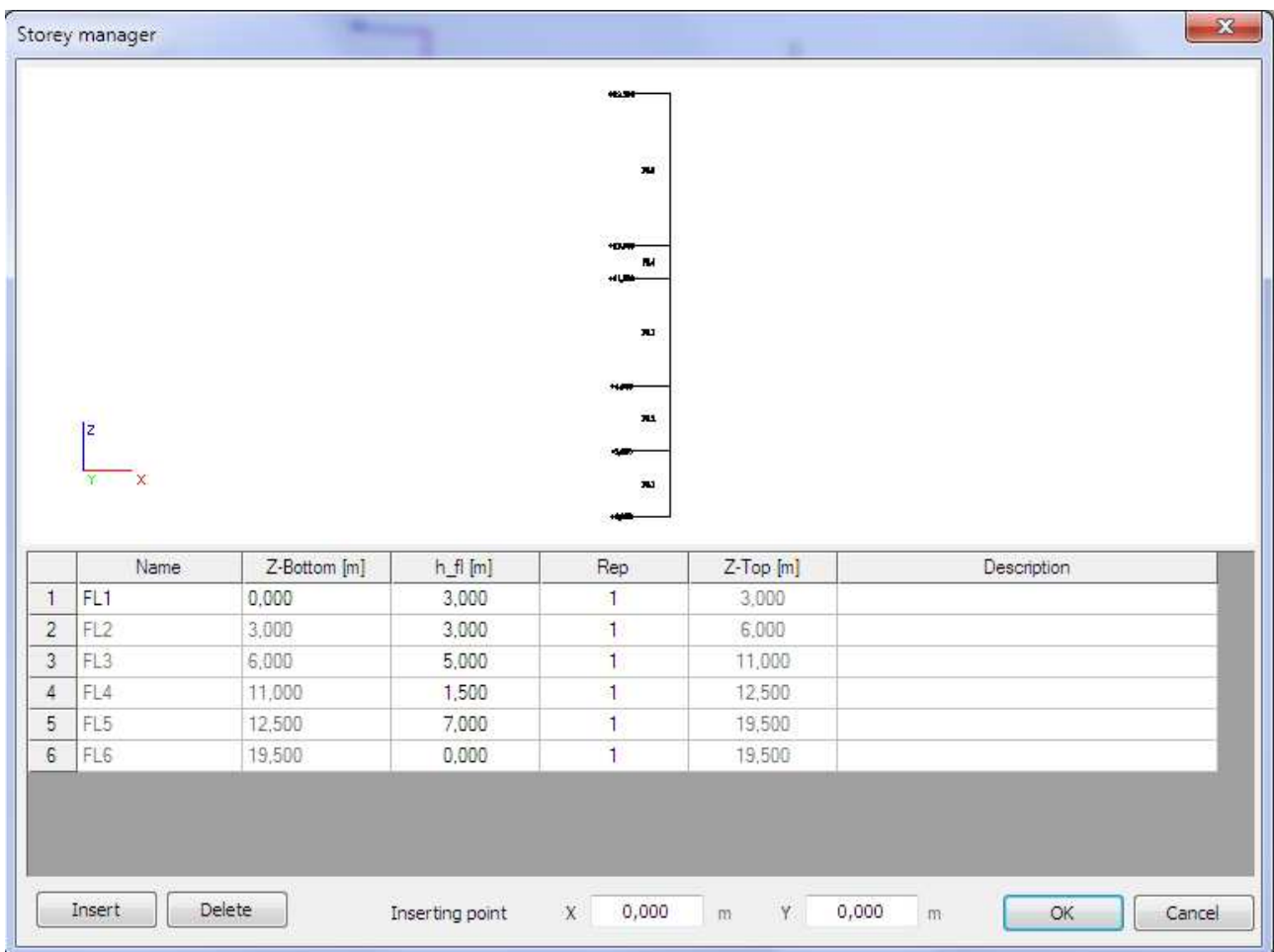
Storeys can be used with 2D linegrid. Together they create similar object as 3D linegrid. A visual copy of a 2D linegrid in each Storey is controlled by view parameters.

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Location of Storeys in Scia Engineer

Storeys dialogue can be started from service "Line grid and storeys".
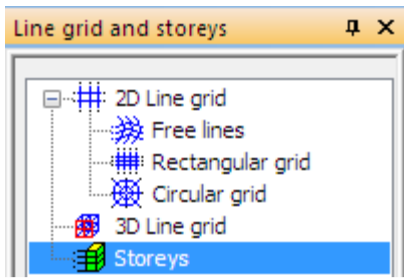
Dialogue "Storey manager" starts. Each storey can be defined in an ordinary grid.

	Name	Z-Bottom [m]	h_fl [m]	Rep	Z-Top [m]	Description
1	FL1	0,000	3,000	1	3,000	
2	FL2	3,000	3,000	1	6,000	
3	FL3	6,000	5,000	1	11,000	
4	FL4	11,000	1,500	1	12,500	
5	FL5	12,500	7,000	1	19,500	
6	FL6	19,500	0,000	1	19,500	

How to define Storeys

1) Open a new blank project in Scia Engineer with this settings:
   a) Structure – General XYZ
   b) Project level – Advanced
   c) Model – One
   d) Material – Concrete
   e) National code and annex – EN

   No more functionality is needed for the Storeys input.

2) Find the command Storeys and start dialogue Storey manager.

	Name	Z-Bottom [m]	h_fl [m]	Rep	Z-Top [m]	Description
1	FL1	0,000	0,000	1	0,000	

3) Define a new name for floors. Write down "Floor" in the column for the name. It is automatically renamed to "Floor1".
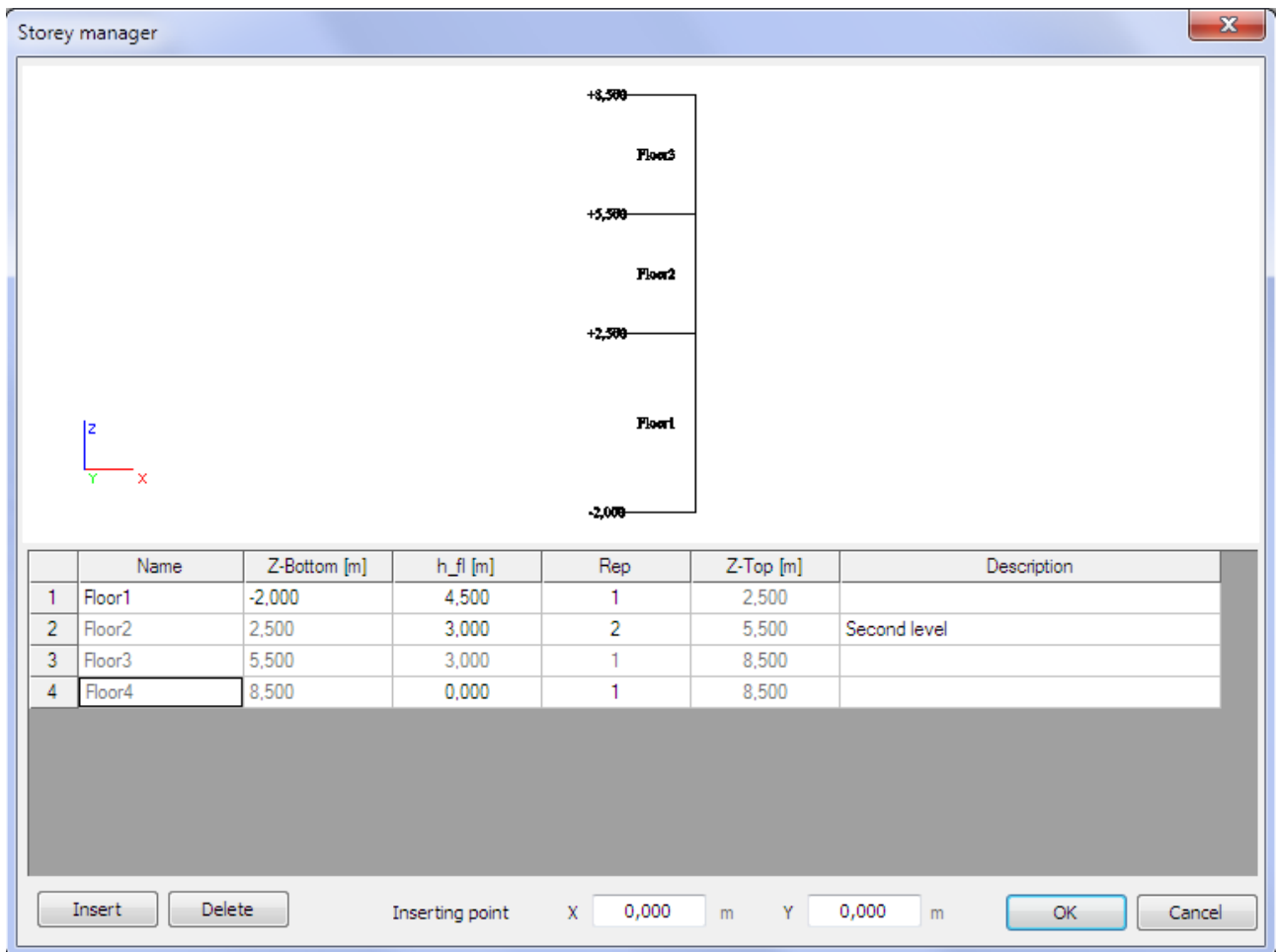
	Name	Z-Bottom [m]
1	Floor1	0

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4) Define "Z-bottom" to -2.000m and "h_fl" to 4.500m. "Rep" stays 1.

	Name	Z-Bottom [m]	h_fl [m]	Rep	Z-Top [m]	Description
1	Floor1	-2,000	4,500	1	2,500	
2	Floor2	2,500	0,000	1	2,500	
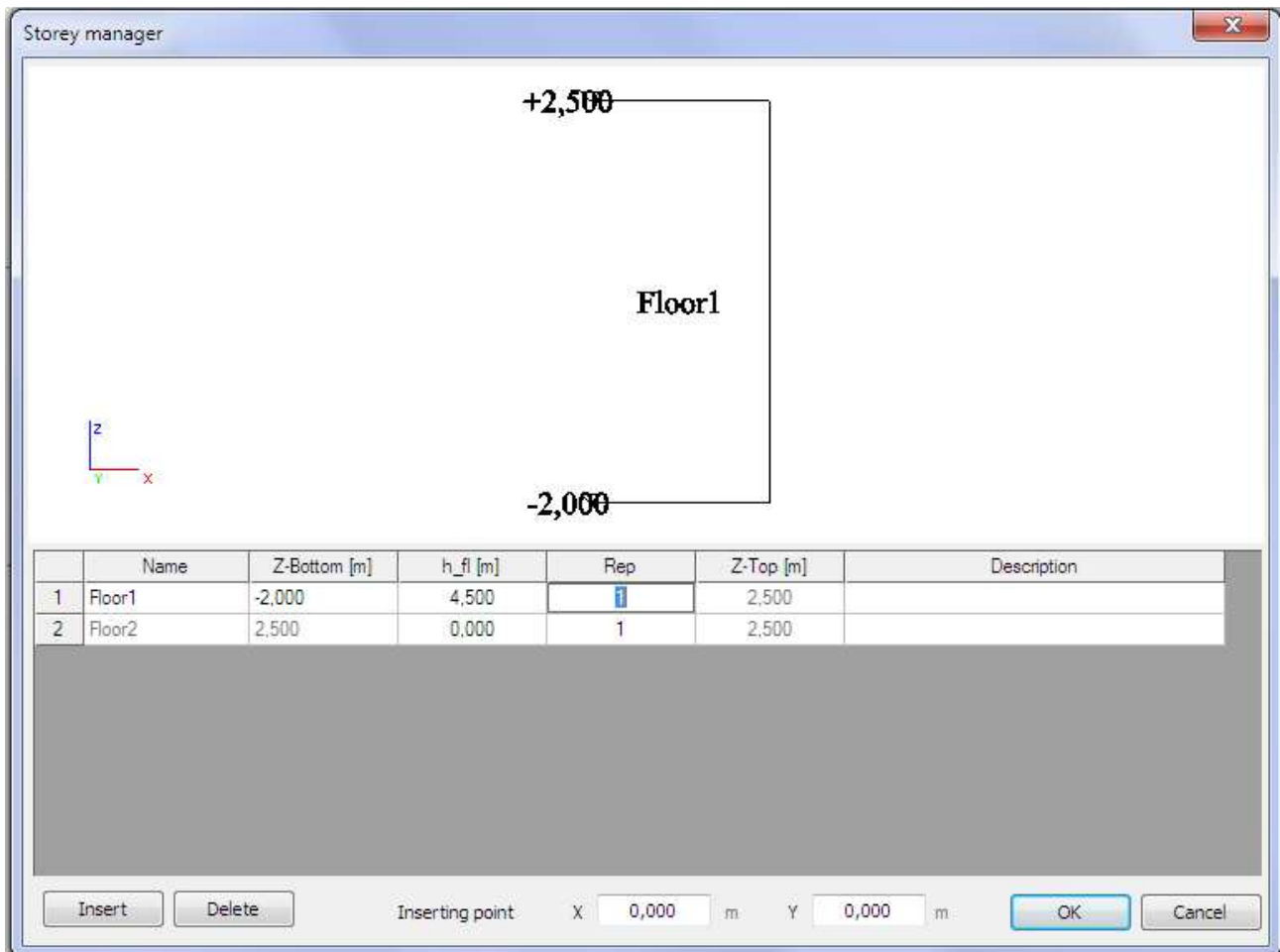
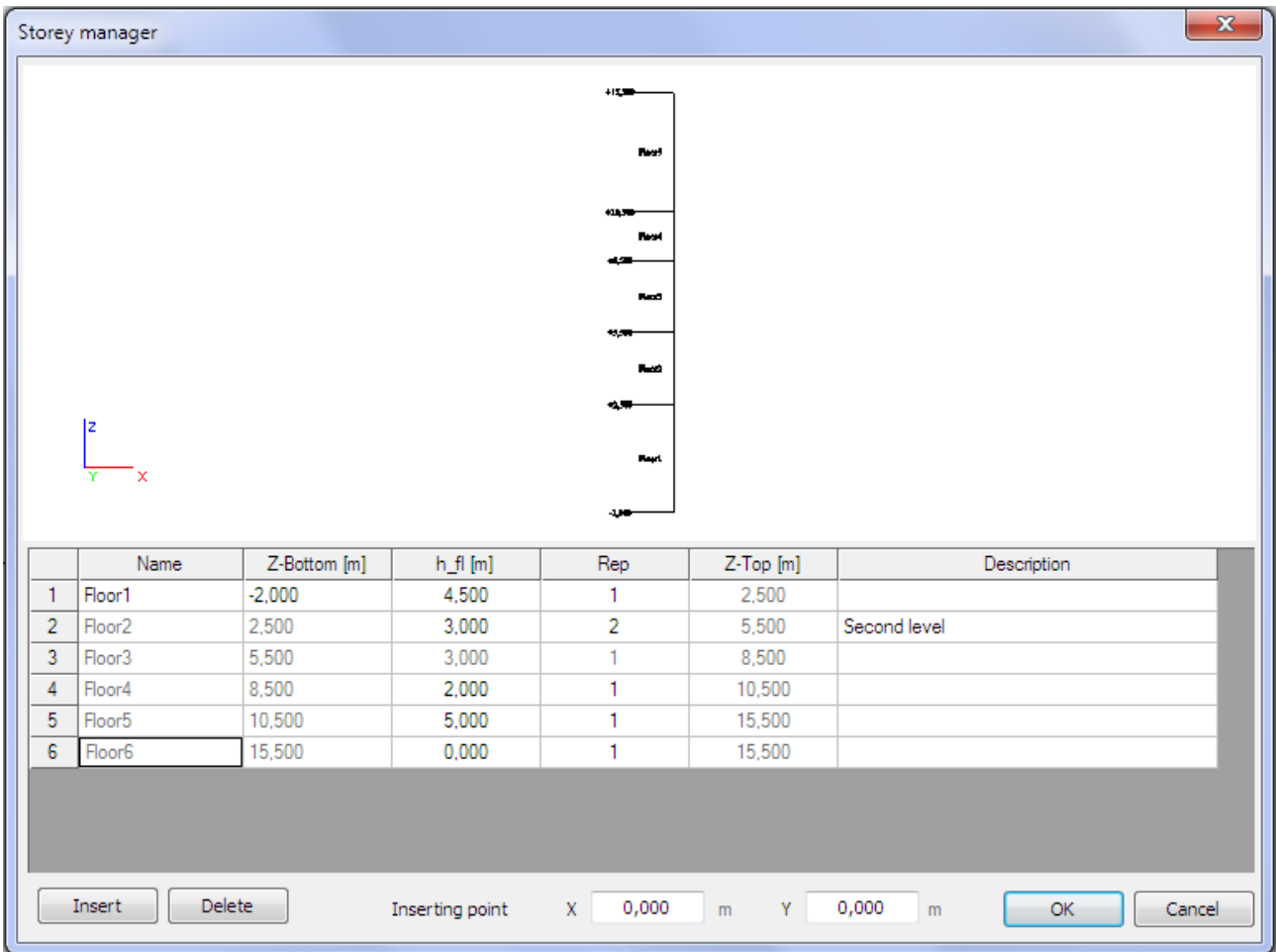There is a scheme of Storeys in the picture above. One storey is defined.

5) Define another row = next level with these settings:
   a) "h_fl" = 3.000
   b) "Rep" = 2
   c) "Description" = Second level
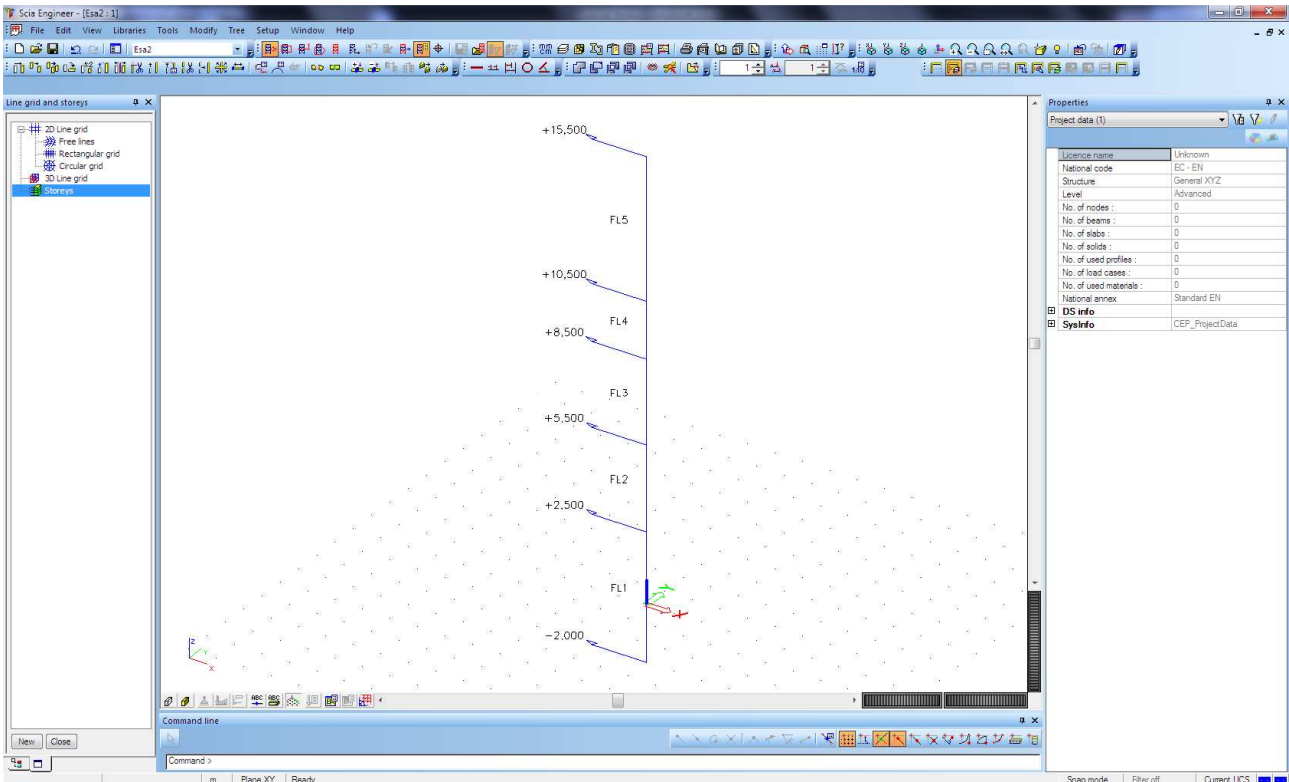
The preview is automatically updated according to the changes in the dialogue.

6) Add 2 more levels with height 2.000 and 5.000m.

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7) Confirm the Storeys by OK and see the result in the 3D window.

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Modification of Storeys

1) Storeys can be edited only in the "Storey dialogue". Start this dialogue again.
2) Buttons "Insert" and "Delete" modify the number of rows in the dialogue. Click on row number 3 and then on the "Insert" button.

	Name	Z-Bottom [m]	h_fl [m]	Rep	Z-Top [m]	Description
1	Floor1	-2,000	4,500	1	2,500	
2	Floor2	2,500	3,000	2	5,500	Second level
3	Floor3	5,500	3,000	1	8,500	
4	Floor4	8,500	2,000	1	10,500	
5	Floor5	10,500	5,000	1	15,500	
6	Floor6	15,500	0,000	1	15,500	

Insert   Delete   Inserting point   X   0,000   m   Y   0,000   m   OK   Cancel

There is a new row with default values from row number 4.

	Name	Z-Bottom [m]	h_fl [m]	Rep	Z-Top [m]	Description
1	Floor1	-2,000	4,500	1	2,500	
2	Floor2	2,500	3,000	2	5,500	Second level
3	Floor3	5,500	3,000	1	8,500	
4	Floor4	8,500	2,000	1	10,500	
5	Floor5	10,500	2,000	1	12,500	
6	Floor6	12,500	5,000	1	17,500	
7	Floor7	17,500	0,000	1	17,500	

3) Click on the row with number 6 and push button "Delete".

	Name	Z-Bottom [m]	h_fl [m]	Rep	Z-Top [m]	Description
1	Floor1	-2,000	4,500	1	2,500	
2	Floor2	2,500	3,000	2	5,500	Second level
3	Floor3	5,500	3,000	1	8,500	
4	Floor4	8,500	2,000	1	10,500	
5	Floor5	10,500	2,000	1	12,500	
6	Floor6	12,500	5,000	1	17,500	
7	Floor7	17,500	0,000	1	17,500	

Insert   Delete   Inserting point   X   0,000   m   Y   0,000   m   OK   Cancel

The 6th row is deleted from the grid.

|	Name	Z-Bottom [m]	h_fl [m]	Rep	Z-Top [m]	Description
1	Floor1	-2,000	4,500	1	2,500	
2	Floor2	2,500	3,000	2	5,500	Second level
3	Floor3	5,500	3,000	1	8,500	
4	Floor4	8,500	2,000	1	10,500	
5	Floor5	10,500	2,000	1	12,500	
6	Floor6	12,500	0,000	1	12,500	

4) Edit value for "Z-bottom" from -2.000 to -0.500. All values under this cell are automatically recalculated.

	Name	Z-Bottom [m]	h_fl [m]	Rep	Z-Top [m]	Description
1	Floor1	-0,5	4,500	1	5,000	
2	Floor2	5,000	3,000	2	8,000	Second level
3	Floor3	8,000	3,000	1	11,000	
4	Floor4	11,000	2,000	1	13,000	
5	Floor5	13,000	2,000	1	15,000	
6	Floor6	15,000	0,000	1	15,000	

5) Edit value "Rep" in 4th row from 1 to 3.

	Name	Z-Bottom [m]	h_fl [m]	Rep	Z-Top [m]	Description
1	Floor1	0,500	4,500	1	5,000	
2	Floor2	5,000	3,000	2	8,000	Second level
3	Floor3	8,000	3,000	1	11,000	
4	Floor4	11,000	2,000	3	13,000	
5	Floor5	13,000	2,000	1	15,000	
6	Floor6	15,000	2,000	1	17,000	
7	Floor7	17,000	2,000	1	19,000	
8	Floor8	19,000	0,000	1	19,000	

6) See the result in the 3D window.
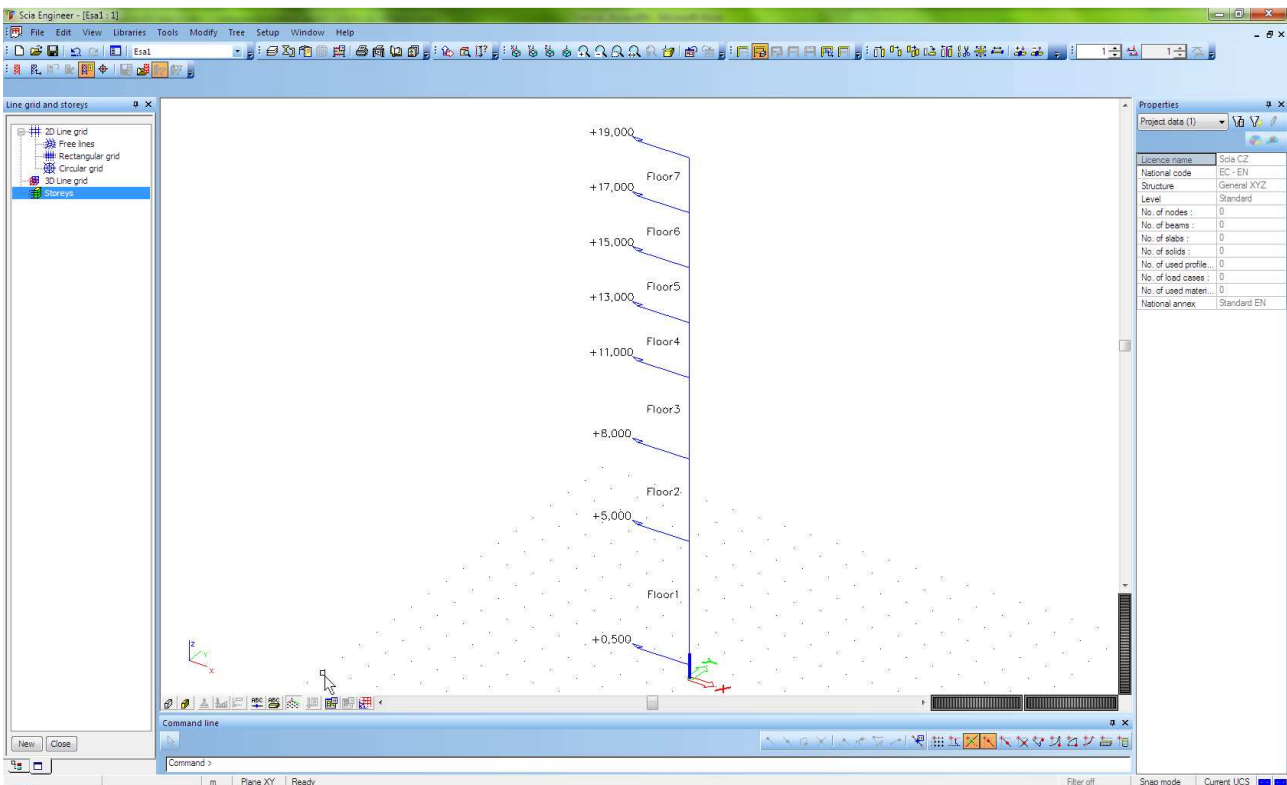
7) Result is also saved in project "storeys_final.esa".

Storeys and Linegrid in one project.

1) Open project "storeys+linegrid_start.esa".
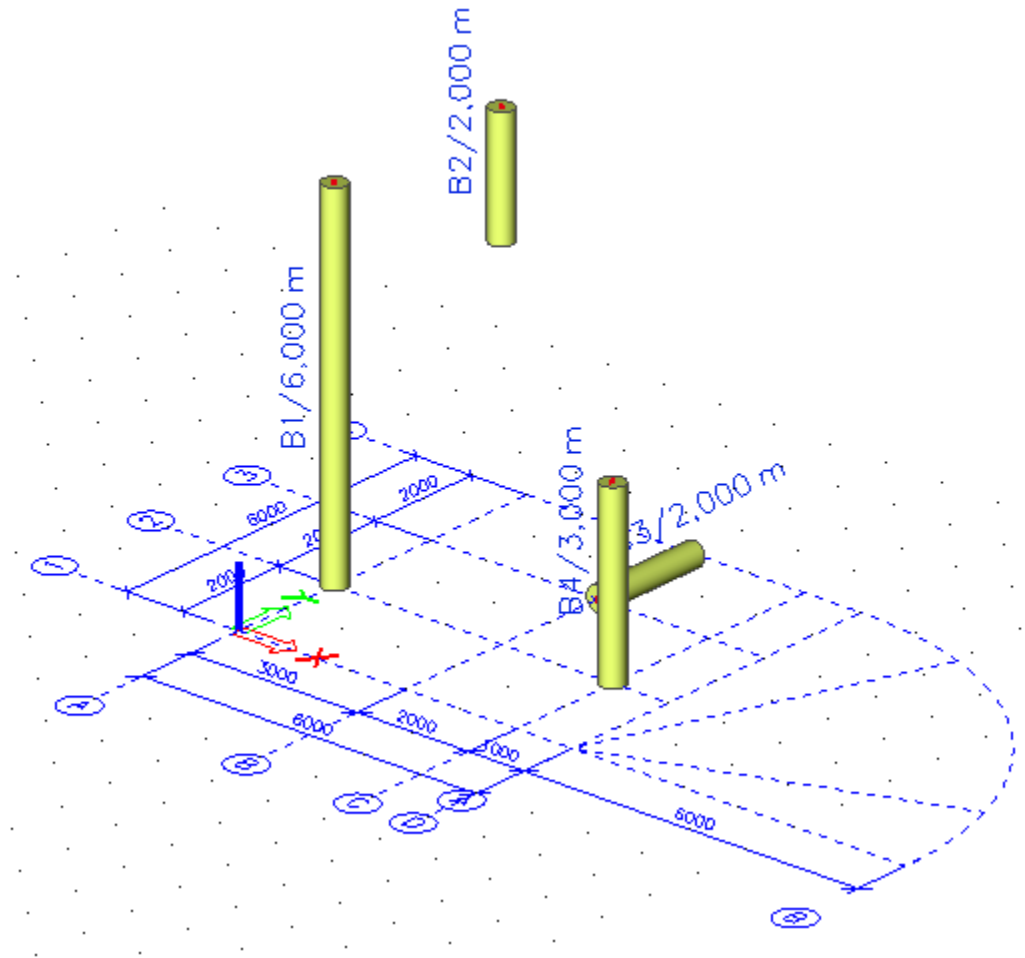

2) Open service "Line grid and storeys".
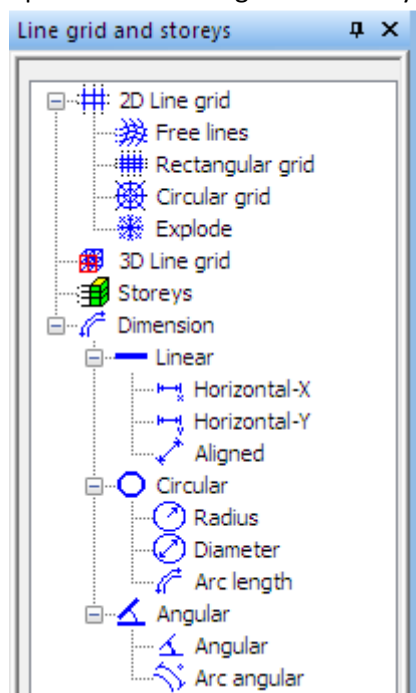
3) Define Storeys with these settings:
   a) "h_fl" in 1st row = 3, "Rep" = 2
   b) "h_fl" in 3rd row = 2, "Rep" = 1
   c) Inserting point is x=-5.000, y=-2.000

	Name	Z-Bottom [m]	h_fl [m]	Rep	Z-Top [m]	Description
1	FL1	0,000	3,000	2	3,000	
2	FL2	3,000	3,000	1	6,000	
3	FL3	6,000	2,000	1	8,000	
4	FL4	8,000	0,000	1	8,000	

Inserting point	X	0,000	m	Y	0,000	m

Inserting point	X	-5,000	m	Y	-2,000	m

4) Close "Line grid and Storeys" service and see the changes in the 3D model. The 2D linegrid is copied to the each level of Storeys.
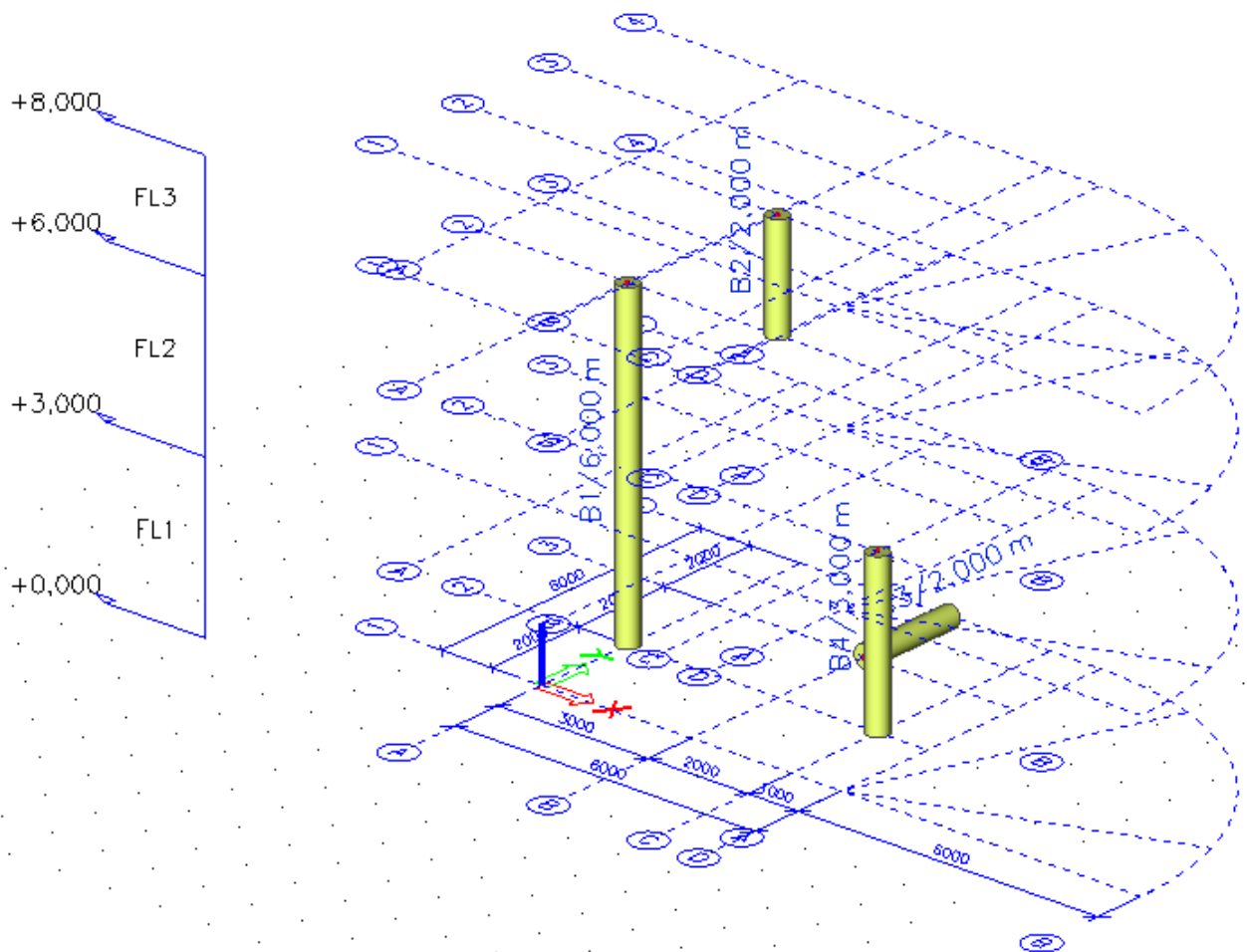
5) Change view parameters for the whole structure. Tab "Modelling/Drawing", item "Grid projection" -> uncheck the checkbox and confirm it by OK button.
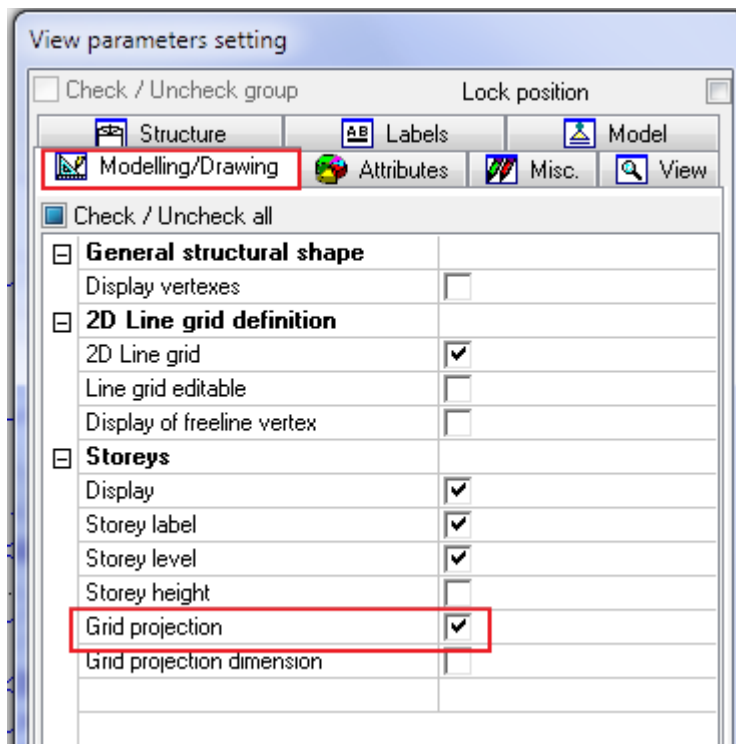
The 2D linegrid is displayed only in the working plane.
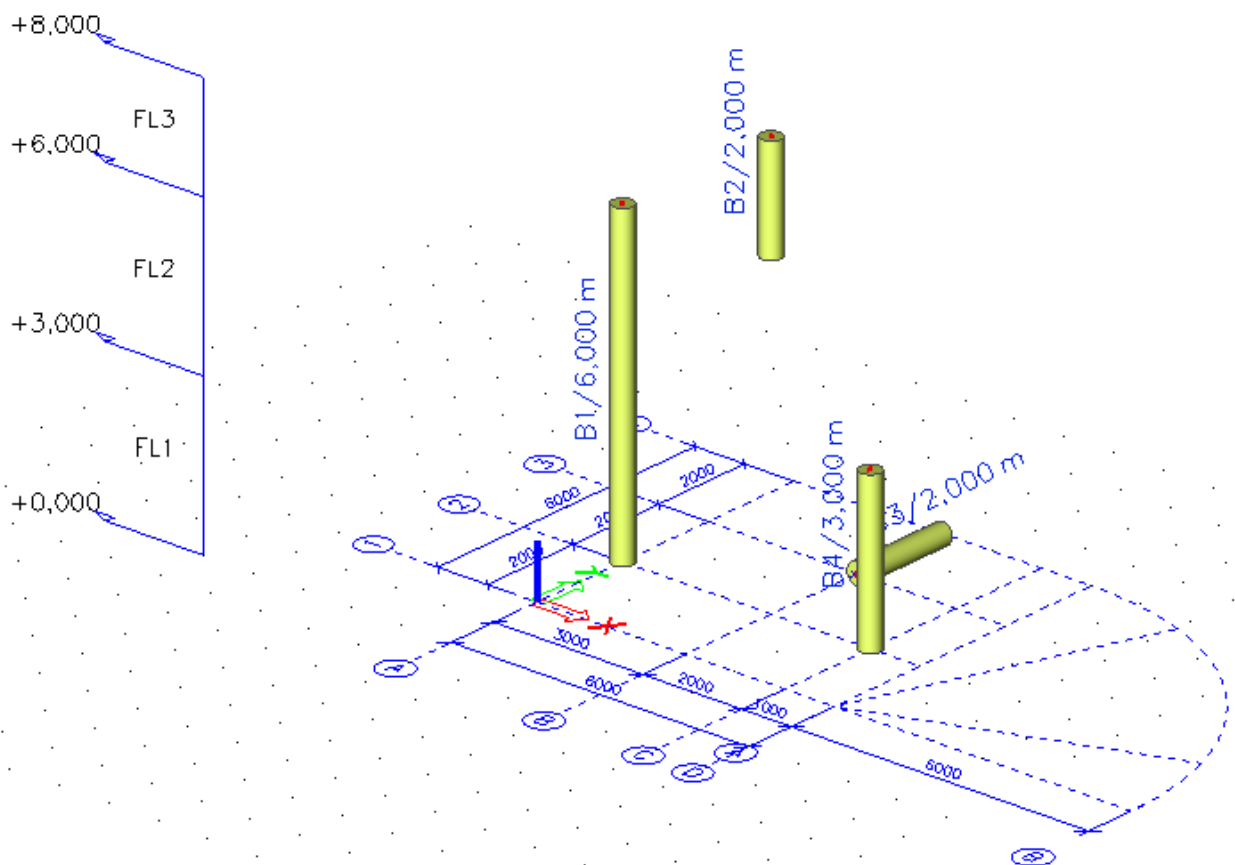
6) The result is in file "storeys+linegrid_final.esa".

How to use storey activity

1) Open file "storeys+linegrid_final.esa".
2) Graphically select all three storeys in the project and set their properties to "Include members on top" and "Include members on bottom" as checked. Then click action button "Allocate automatically".
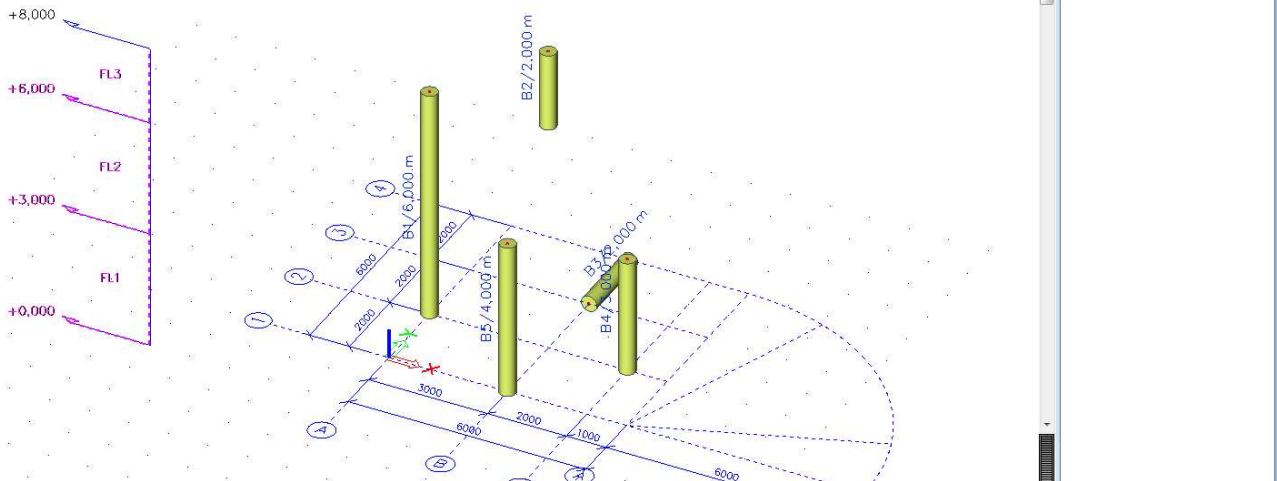

3) Deselect all storeys and now select only the second level. Set property "Allocation type" to Part inside. Click action button "Allocate automatically".

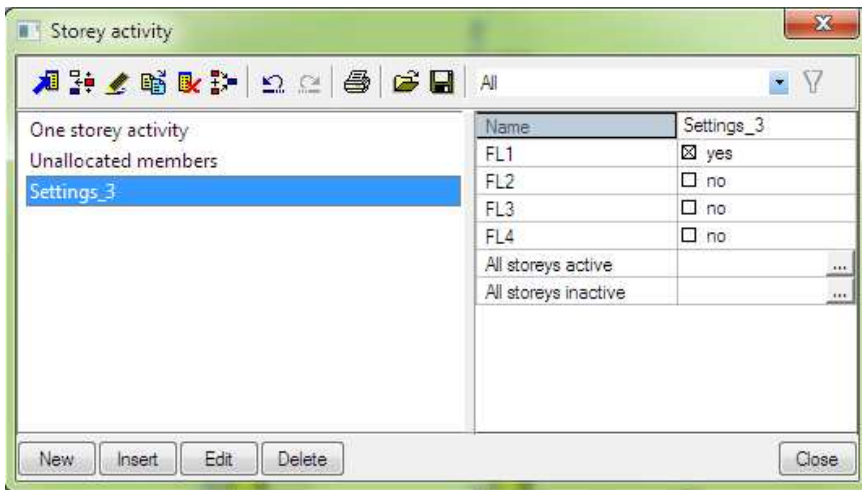| Name	FL2
Description	
Z-Bottom [m]	3,000
h_fl [m]	3,000
Filtered allocation of E...	...
Allocation type	Part inside
Include members on top	☒ yes
Include members on b...	☒ yes
Current used activity	☒ yes

4) Use View Y.
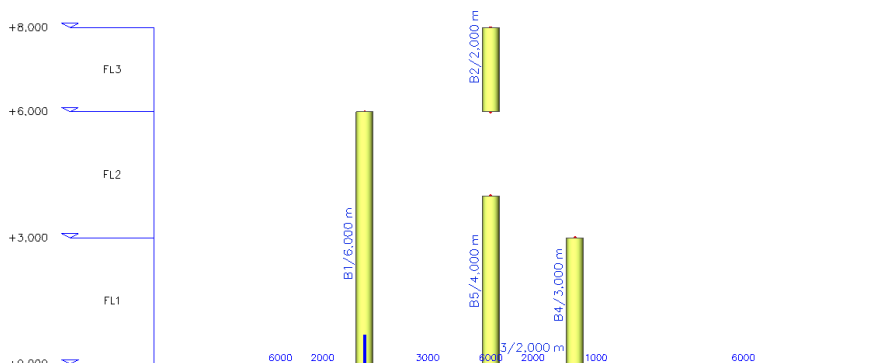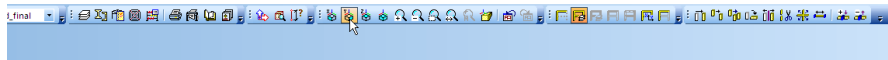
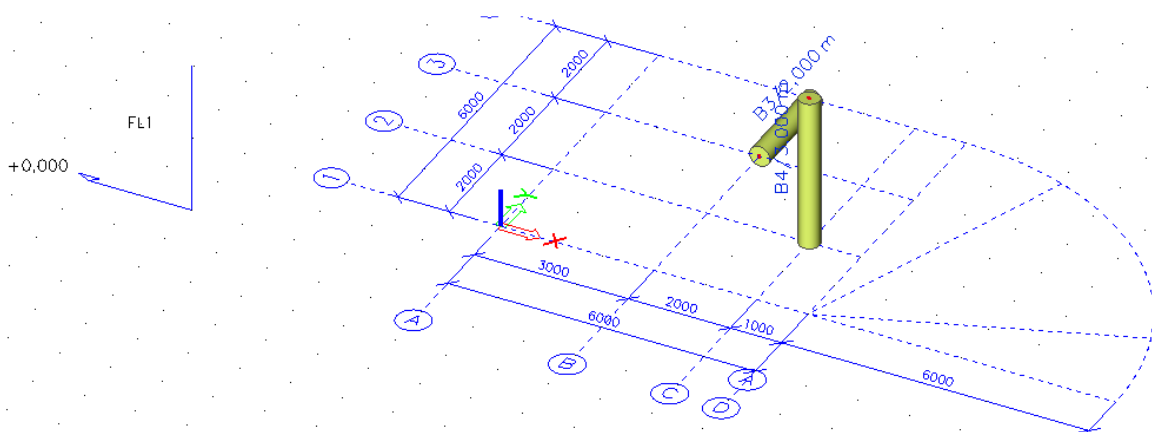5) Switch activity to Activity by storey. Confirm the warning.
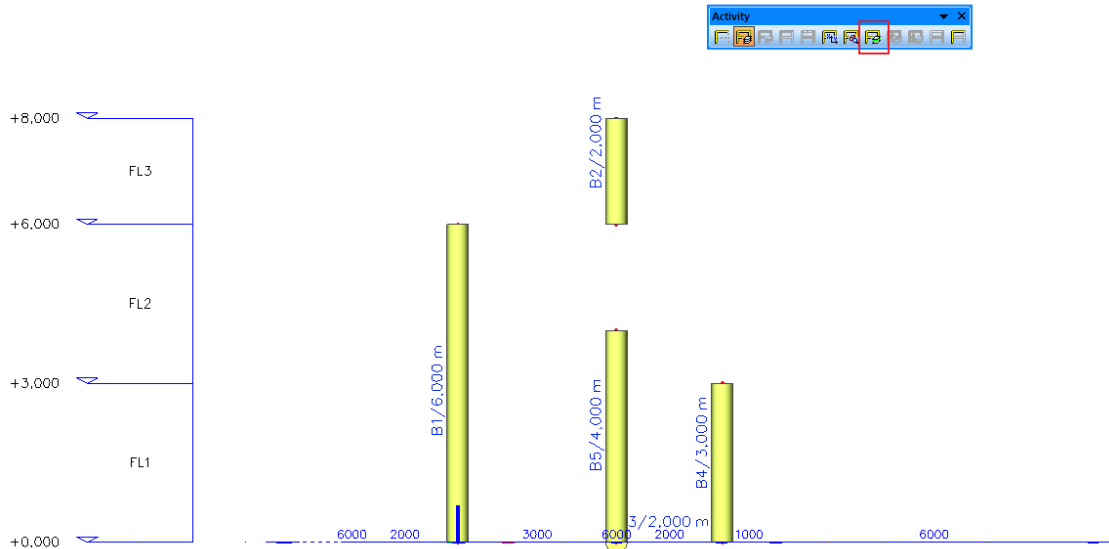
6) The new dialogue is opened. All possible activities that can be used for storeys are here.

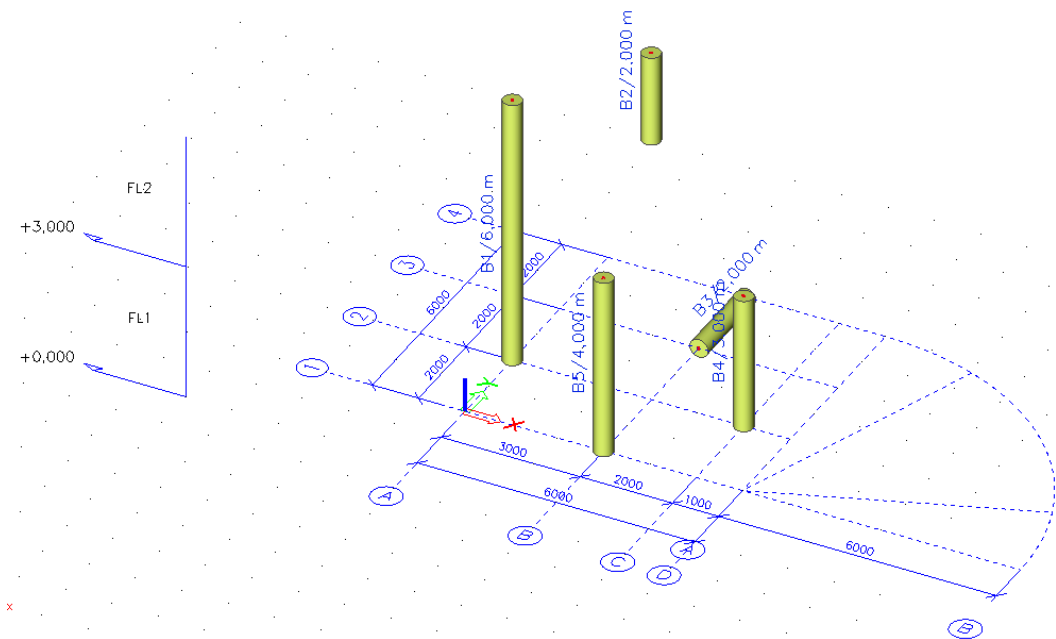7) Select "One storey activity" and there only 1st level – FL1. Close the dialogue.

The result in the 3D window:

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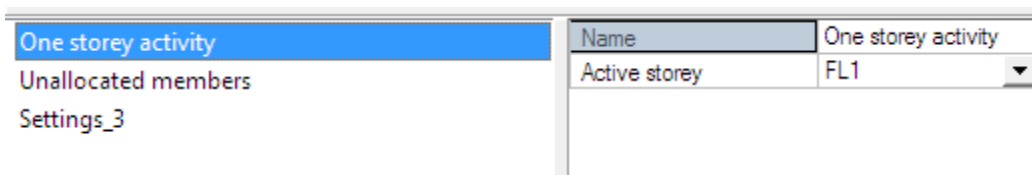
8) Go again to the "Storey activity" dialogue and select Settings_3. Check also the second storey – FL2. Close the dialogue.

The result in the 3D window:

9) Conclusion: The activity by storeys works in the similar way as activity by Layers. It is useful functionality for higher buildings. The engineer has possibility to work in separate levels without defining layers.