


2.3.1.5 BOREHOLES

Window 2-622: Options in menu Boreholes

Option	Method	Toolbar	Description
Create	From dialog	—	Window 2-623
Delete	Delete		Window 2-627
Update	Parameters	—	Window 2-626
	Map materials on visible elements	—	Window 2-625
	Map materials on selected elements	—	Window 2-624
Hide/show	Triangles		Window 2-628
	Polygons		Window 2-629

Window 2-622

Window 2-623: Boreholes:Create:FromDialog

This option allows the user to add geological profiles at boreholes, and then to project materials from boreholes to the real 3D continuum mesh. This way one may create a uniform 3D mesh avoiding strict generation of all 3D complex geological strata.

	Depth	Material number	Material name
1	0	1	sand
2	5	2	clay
3	12	3	tertiary clay
4			

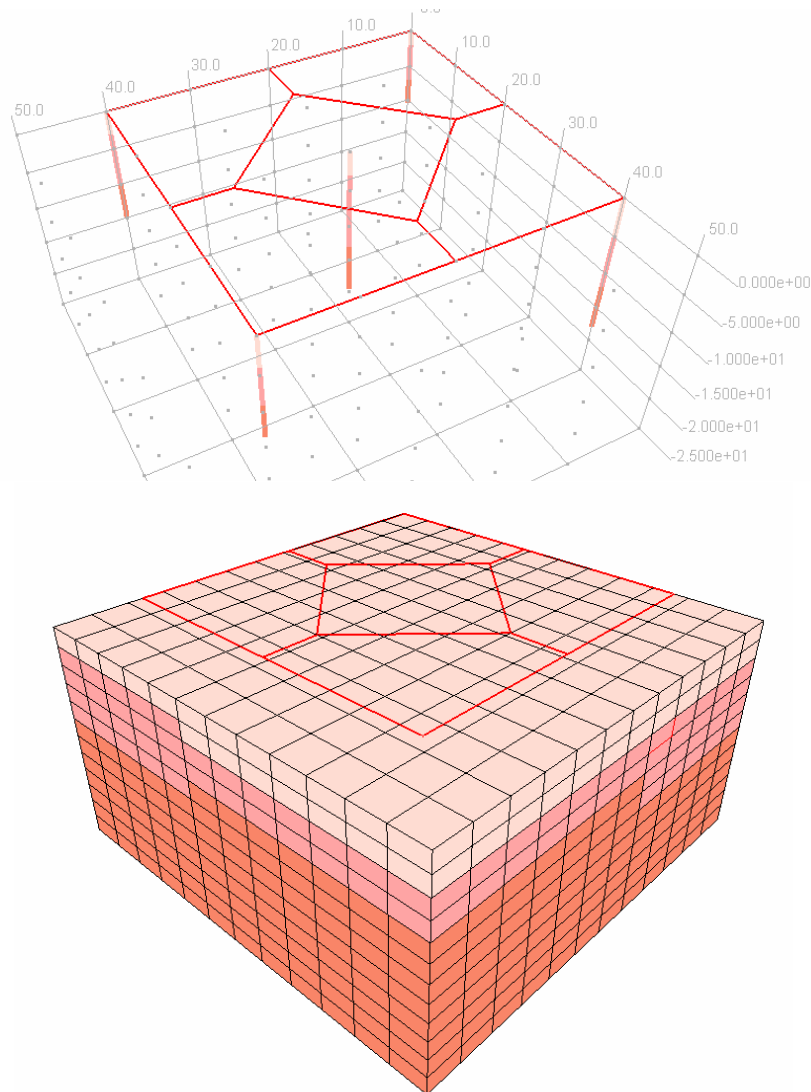
Remarks:

- So far this option is valid for boreholes oriented exclusively towards the vertical (y) axis
- To edit the profile a list of predefined materials must be set up first at the material level
- Location of the borehole in the x-z plane is defined by the two coordinates **X** [] and **Z** [] while its elevation (y coordinate of the ground surface) is defined in **Y** [] edit field
- Minimum 3 boreholes are needed
- For given set of boreholes a Delaunay triangulation is generated first and then Voronoi polygons are created; mapping of the materials from boreholes to the real mesh, by means of the projection of the center of the element on the Voronoi polygon, is described in Win.(??) and Win.(2-625)
- Depths are assumed to be positive numbers with zero value at the top of the borehole
- Number of material layers in the bore hole can be any

Window 2-623

Window 2-624: Boreholes:Update:Map on selected elements

This option performs mapping of geological strata, extrapolated from the set of boreholes, on the real continuum 3D mesh but exclusively for selected set of elements. By using this operation only `Initial material` is updated for selected element. If we consider the example of 5 defined boreholes (see first figure below) then the result of material mapping will be as shown in the next figure

**Remarks:**

1. To increase the accuracy, the net of boreholes must include larger number of boreholes; some of them can be artificially generated by standard geological interpretation procedures
2. Mapping of the `Initial material` from boreholes to the real continuum 3D mesh is performed in the following manner:
 - Center of the continuum element is projected vertically on the Voronoi polygon treated as the zone of influence of a certain borehole
 - Then center of the element is projected horizontally on the borehole profile and material layer is identified

Window 2-624

Window 2-625: Boreholes:Update:Map on visible elements

This option works in the same manner as the one given in Win.(2-624) but on all currently visible continuum 3D elements.

Window 2-625

Window 2-626: Boreholes:Update:Parameters

This option allows to modify definition of the single selected bore hole by editing the worksheet described in Win.(??)

Window 2-626

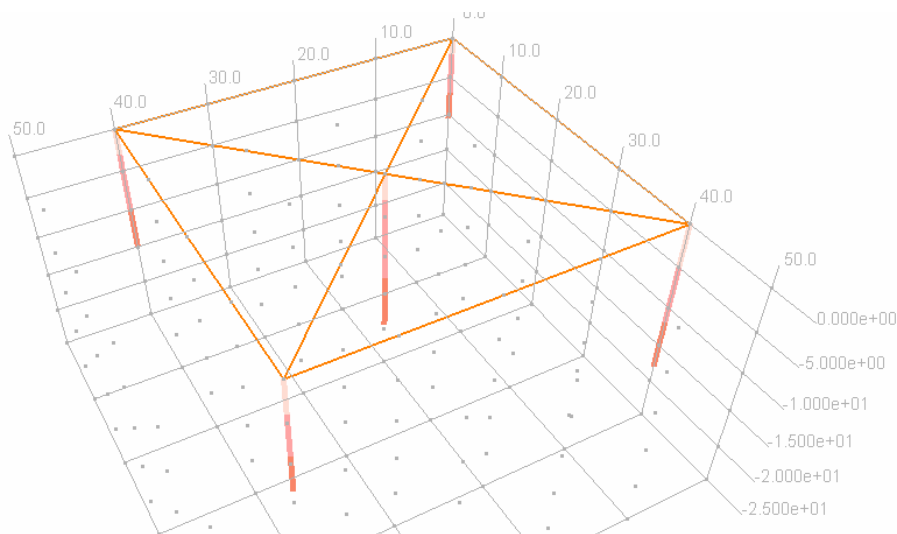
Window 2-627: Boreholes>Delete>Delete

Using this option user may delete a borehole picked in the graph pane.

Window 2-627

Window 2-628: Boreholes:Hide/Show:Triangles

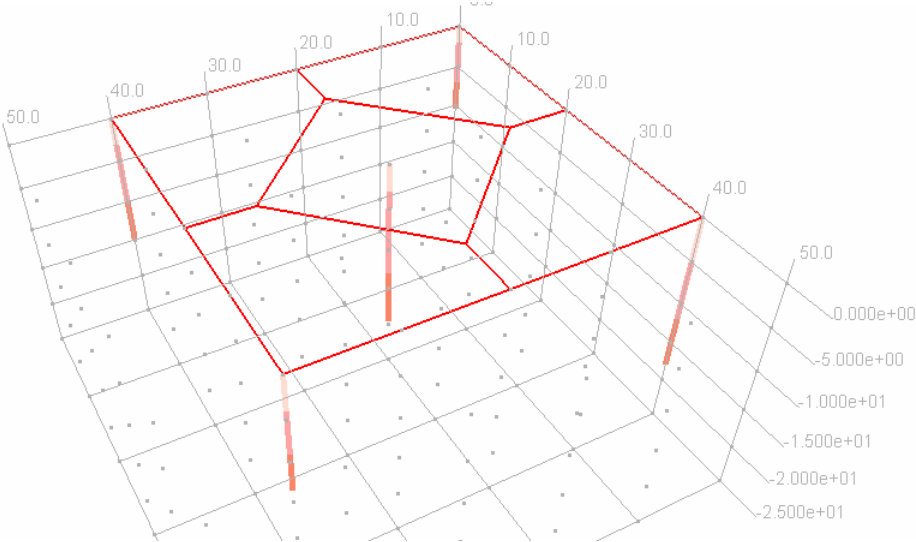
This option hides/shows Delaunay triangulation for a given set of boreholes. An example of that operation is shown in the figure below for case of five boreholes.



Window 2-628

Window 2-629: Boreholes:Hide/Show:Polygons

This option hides/shows Voronoi polygons for a given set of boreholes. An example of that operation is shown in the figure below for case of five boreholes.



Window 2-629