



**GE**  **MAX**

**TUTORIAL**

**From GFD to Surfaces, Sections  
and Plot**

# From GFD to Surfaces, Sections & Plot



## DESCRIPTION

- Use Survey data to create surfaces, sections and plot

## GOAL

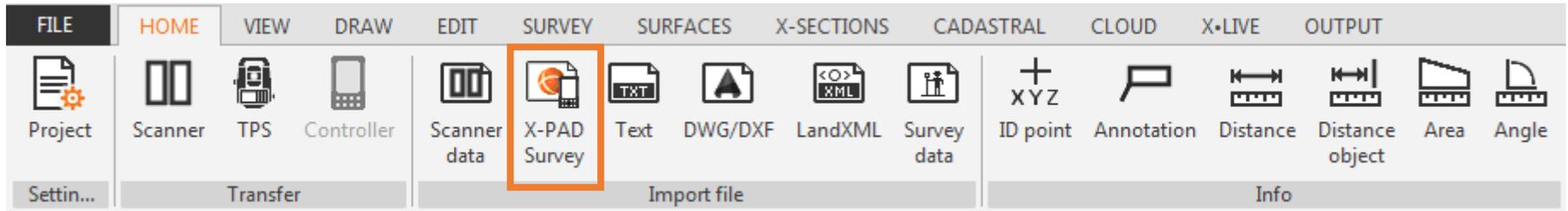
- How to use survey data to create surfaces
- How to use survey data to create sections
- How to create plot

## DATA

- Terracina.gfd



# Import SURVEY data

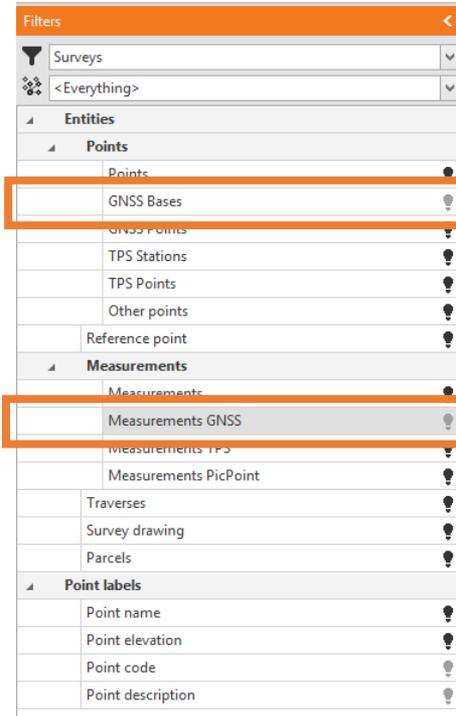
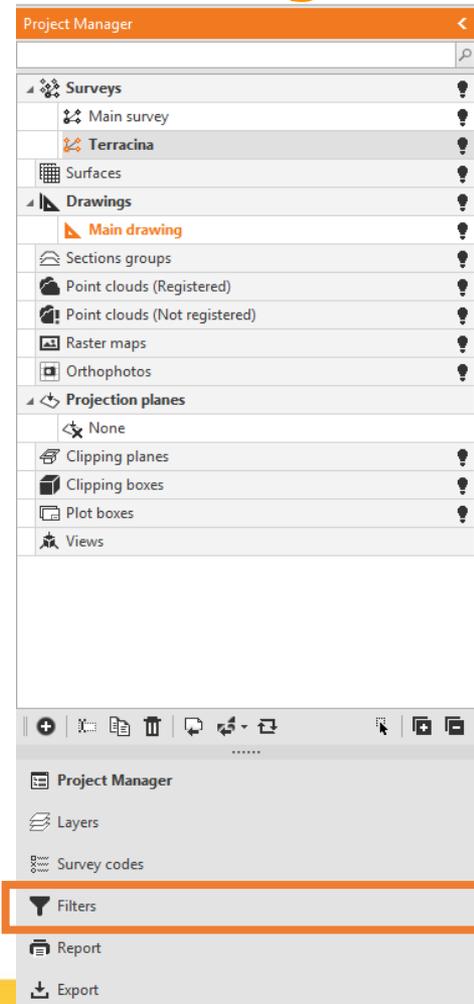


**IMPORT FILE** bar are the toolbar where find all the features related to data importation

Select **X-PAD Survey** to import survey file recorded in field with X-PAD Field software and select the job from the relative folder.



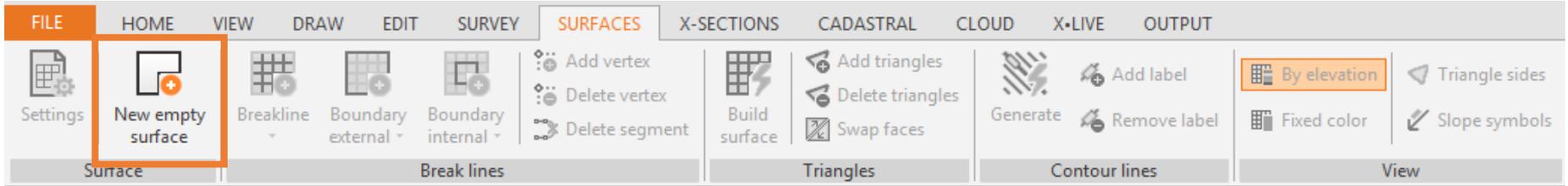
# Survey data FILTERS



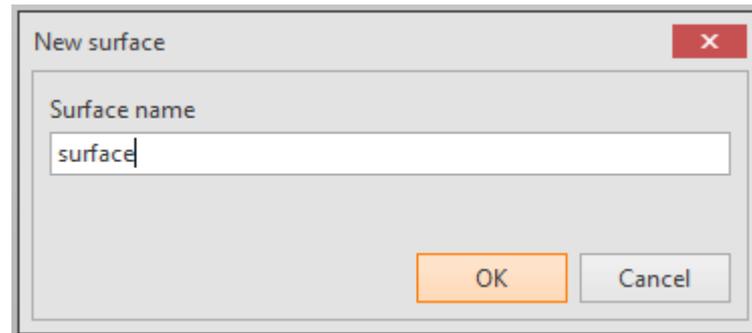
From the **PROJECT MANAGER** select **FILTERS**, from entities deselect GNSS Bases and Measurements GNSS to hide this entities



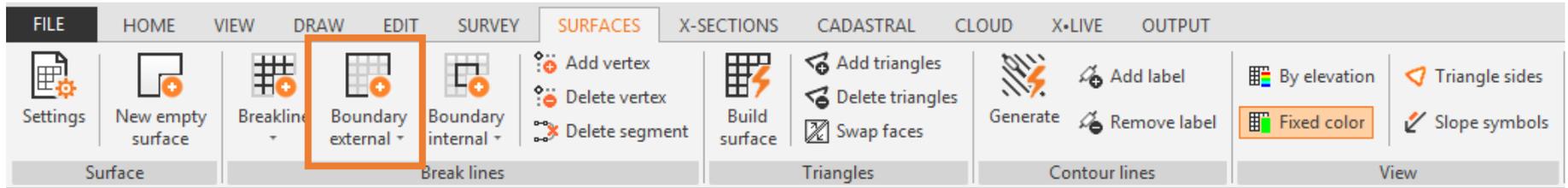
# New Surface



From the ***SURFACES*** menu select New empty surface and insert the name of the new surface.



# New Surface – BREAK LINES



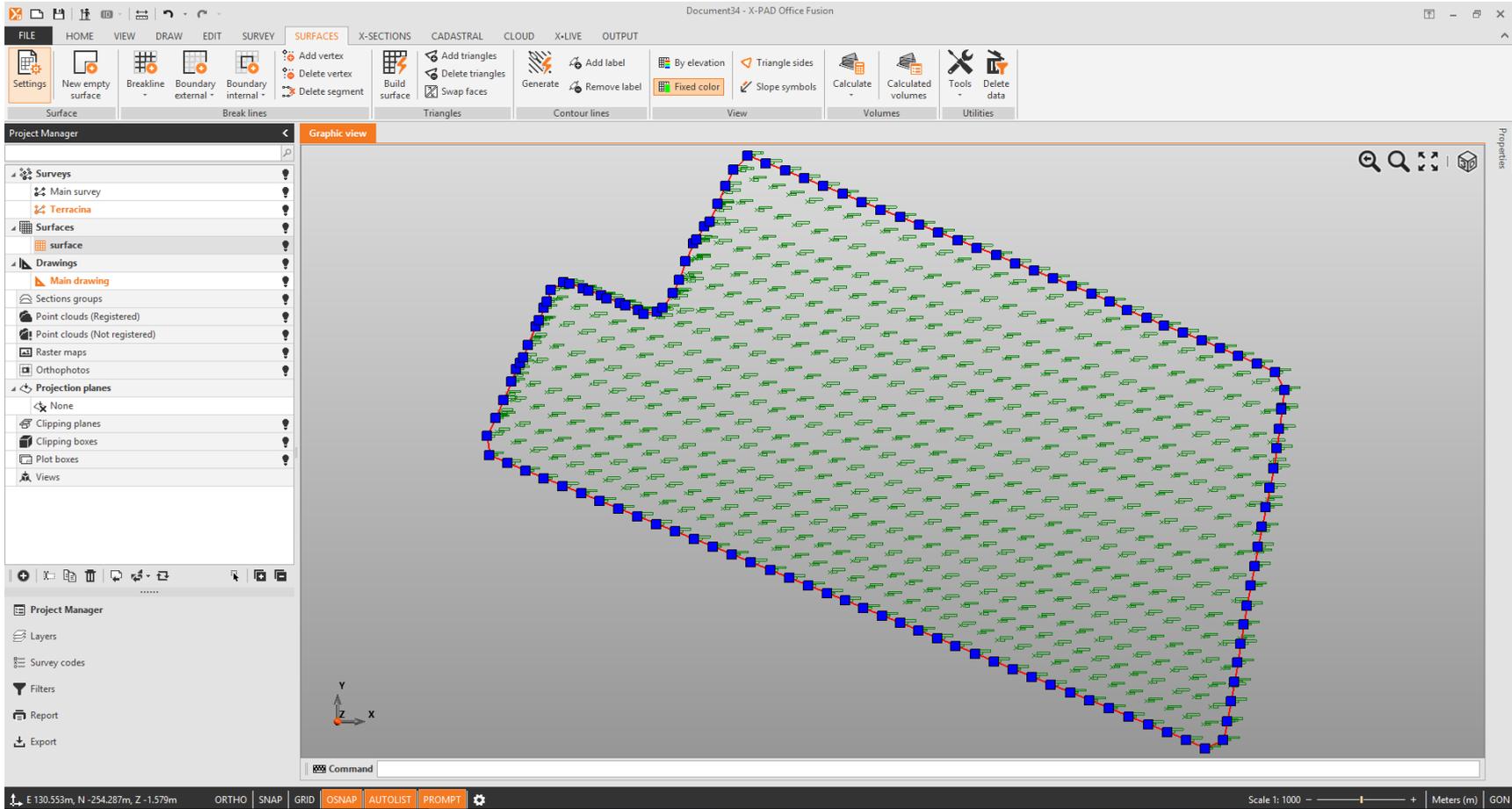
From ***SURFACES*** menu it is possible to select Breakline or Boundary line to be used in creating a surface.

It is possible to use an existing polyline or create new elements directly on the points of the current survey.

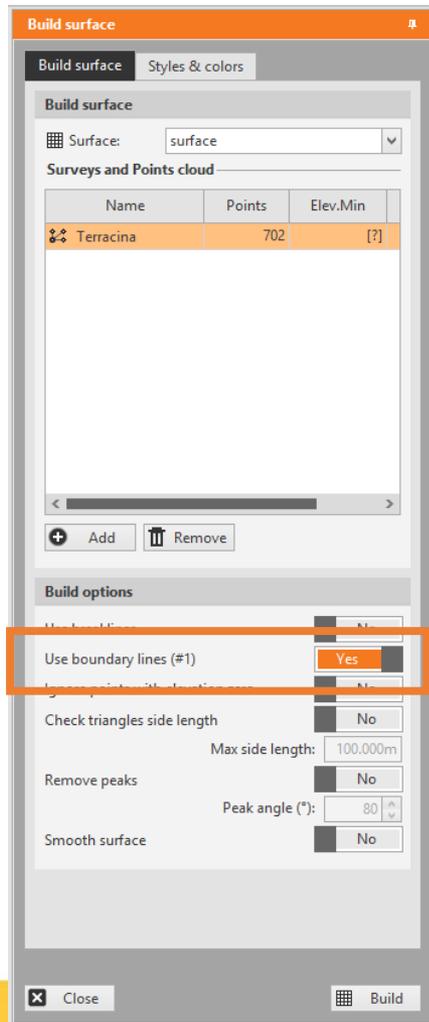
Select ***Boundary external*** to draw a contour line directly on the points of the current survey.



# New Surface – Break Line



# Build a new SURFACE



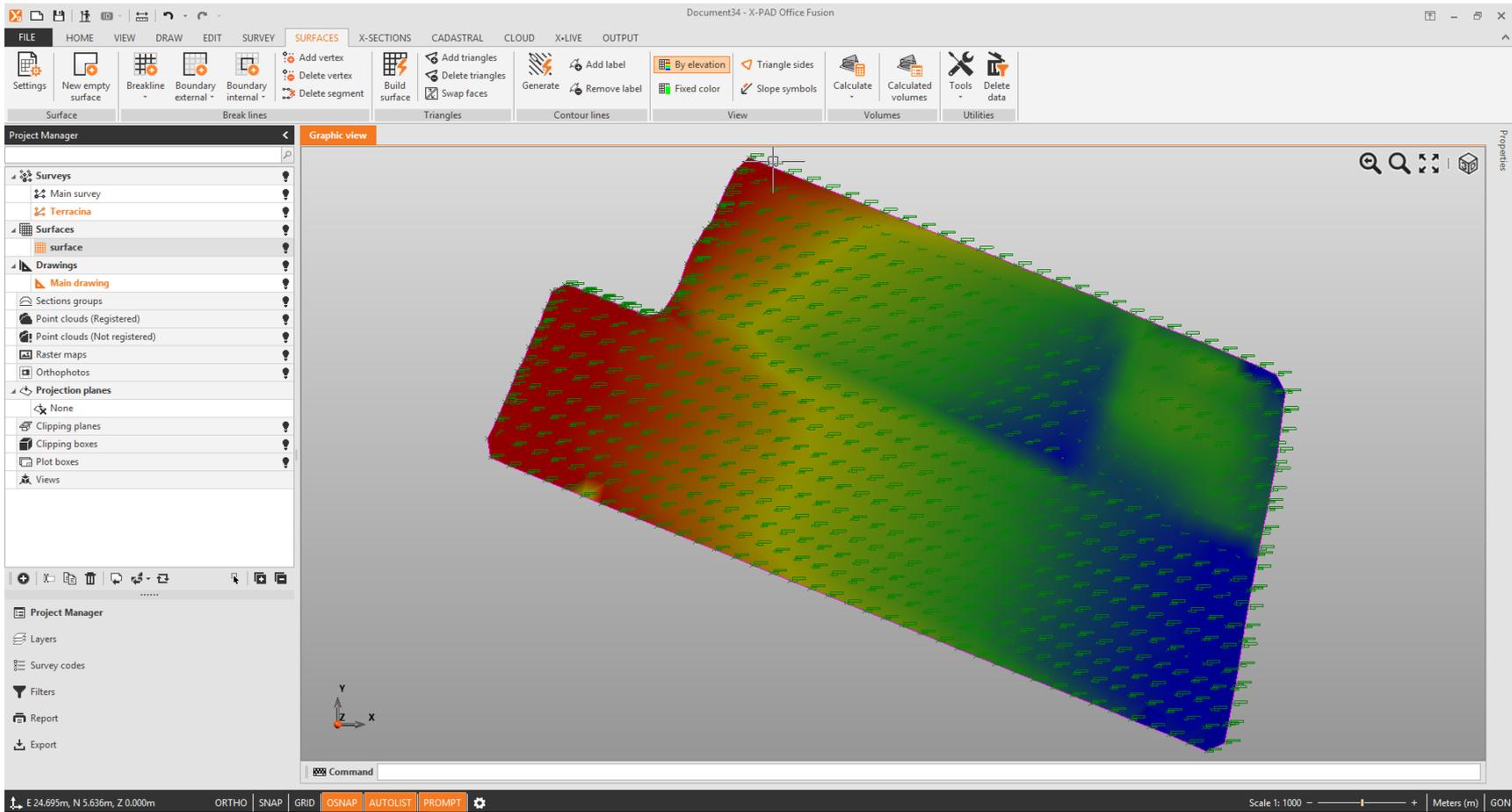
From **BUILD SURFACE** menu it is possible to select:

- Survey data to be used, in this case only the current survey **Terracina** will be visible.
- Breaklines or Boundary lines
- Check for the maximum triangles side length
- Remove peaks
- Smooth surface

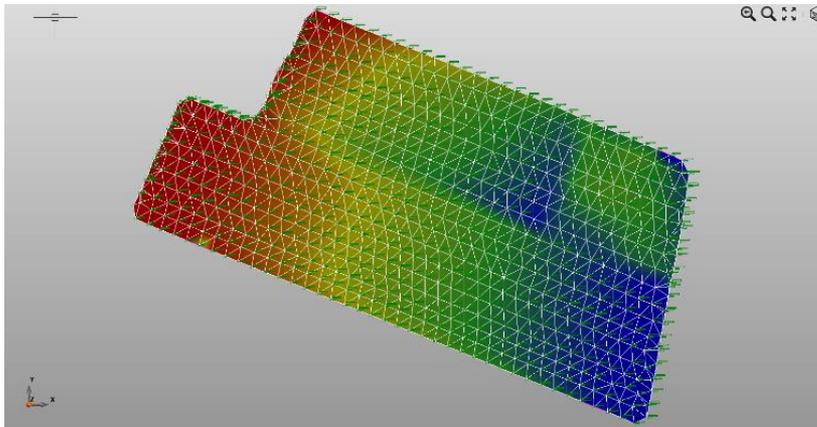
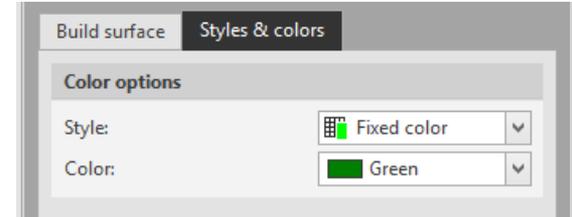
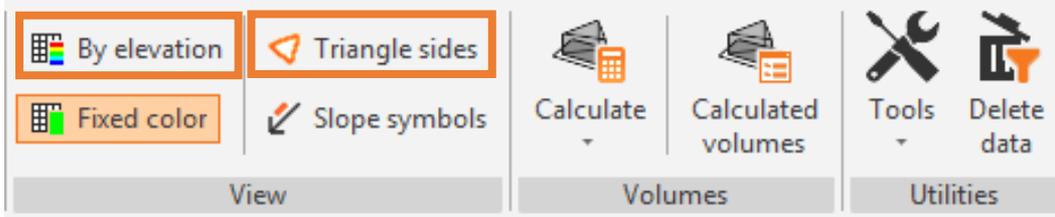
Select boundary lines and **BUILD**



# New Surface



# New SURFACE - View

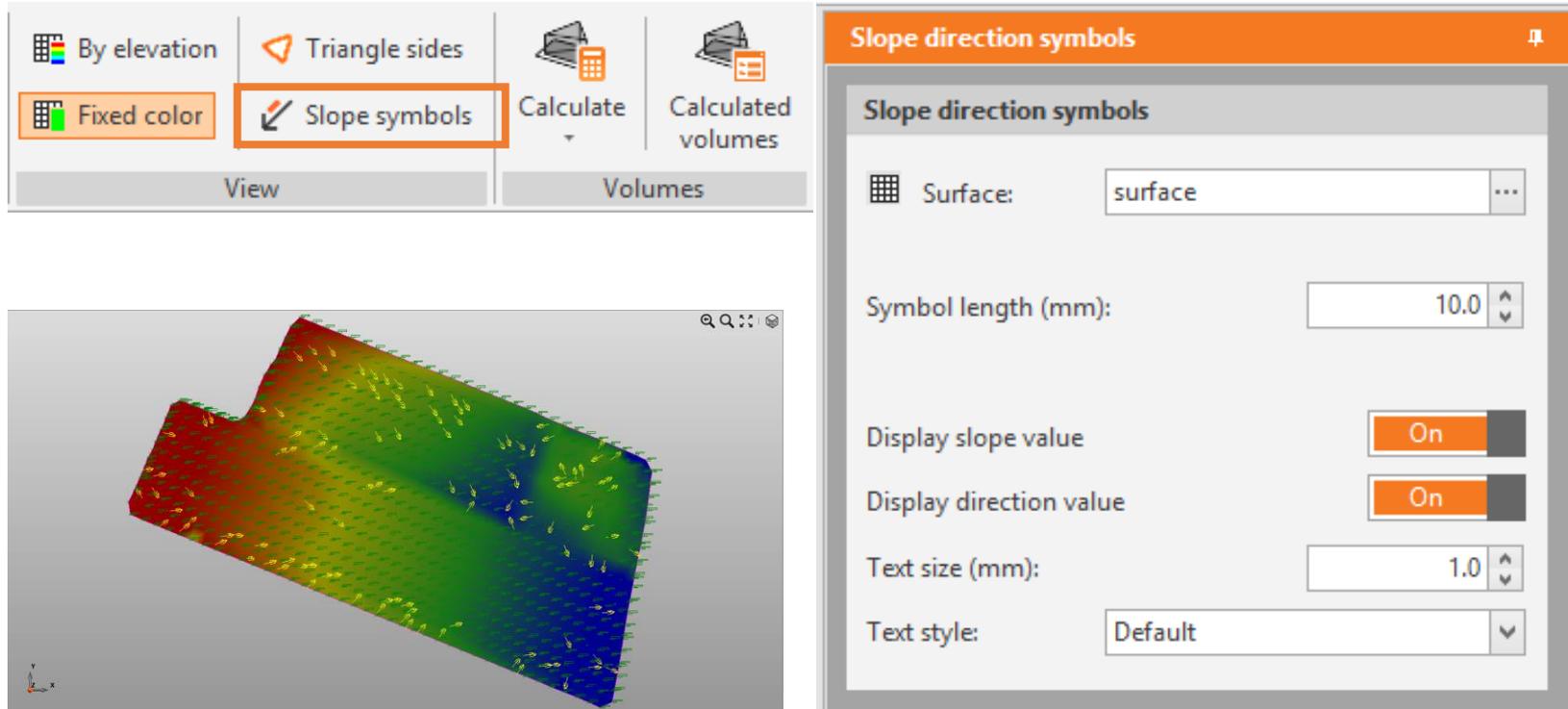


From the **VIEW** panel of the **SURFACES** menu it is possible to select:

- Color options of the surface, the option can also be selected during the built of the surface
- Triangle sides, to show the sides of the triangles of the surface
- Slope symbols



# New SURFACE - View



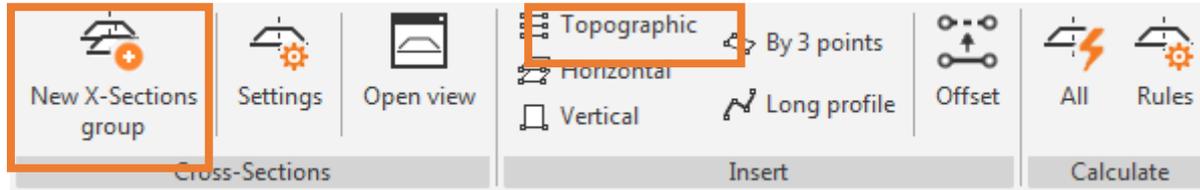
The screenshot displays the software interface for the 'SURFACE - View' tool. The top toolbar includes options for 'By elevation', 'Triangle sides', 'Slope symbols' (highlighted with an orange border), 'Calculate', and 'Calculated volumes'. Below the toolbar, the 'View' and 'Volumes' tabs are visible. The main 3D view shows a surface with a color gradient from red to blue, overlaid with small arrows representing slope directions. To the right, the 'Slope direction symbols' settings panel is open, showing the following configuration:

- Surface: surface
- Symbol length (mm): 10.0
- Display slope value: On
- Display direction value: On
- Text size (mm): 1.0
- Text style: Default

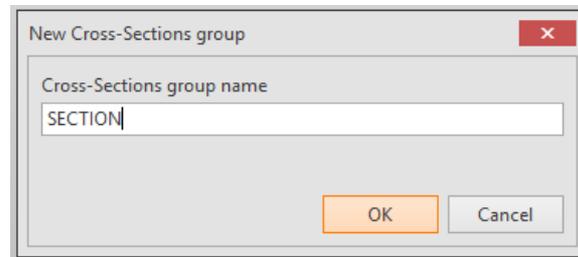
Selecting ***Slope symbols*** it is possible to show the value of the slopes of the surface with the relative slope direction



# Cross section



- **New X-Sections group:** creates a new group of cross sections in the project manager
- **Insert:** Create the cross sections (topographic, horizontal, vertical, by 3 points or long profile)



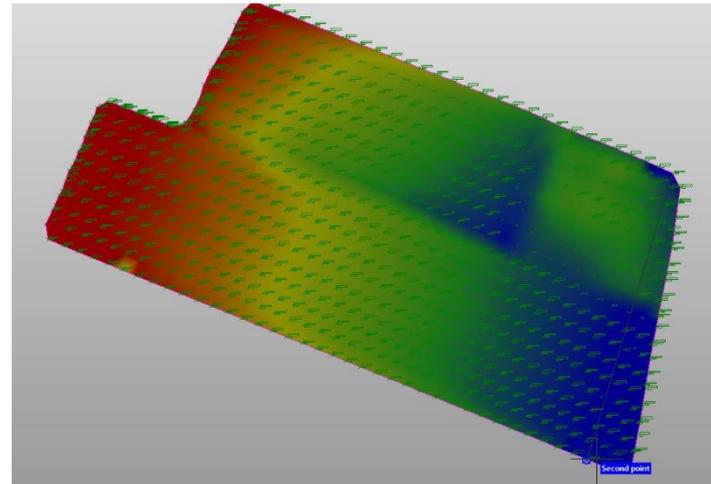
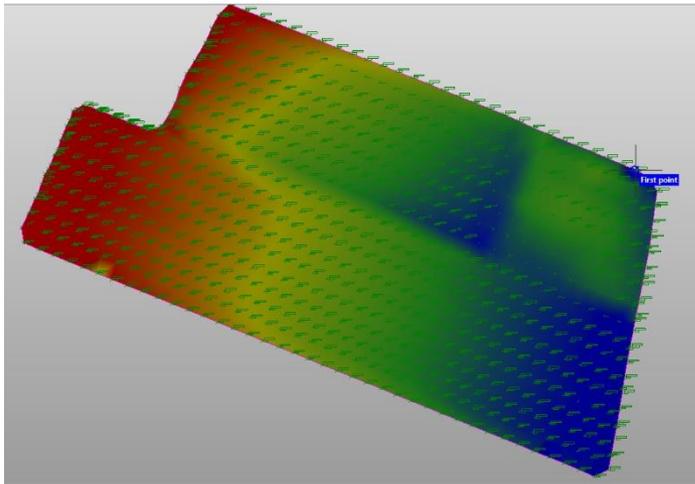
Select ***TOPOGRAPHIC*** sections



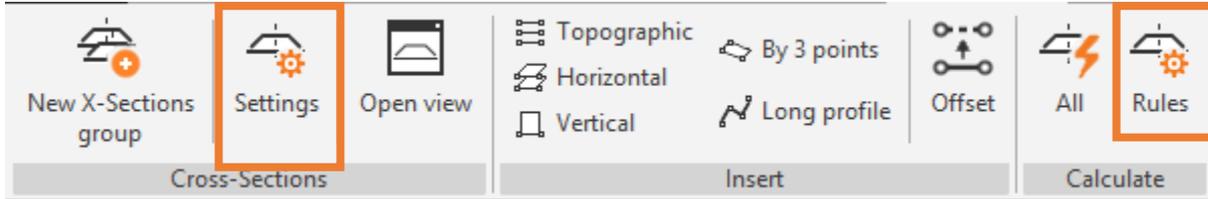
# Section

Once the section has been selected, it is necessary to insert the name of the single section and to graphically define the two initial and final points.

The points do not necessarily belong to the survey, but you can also set two graphically external points

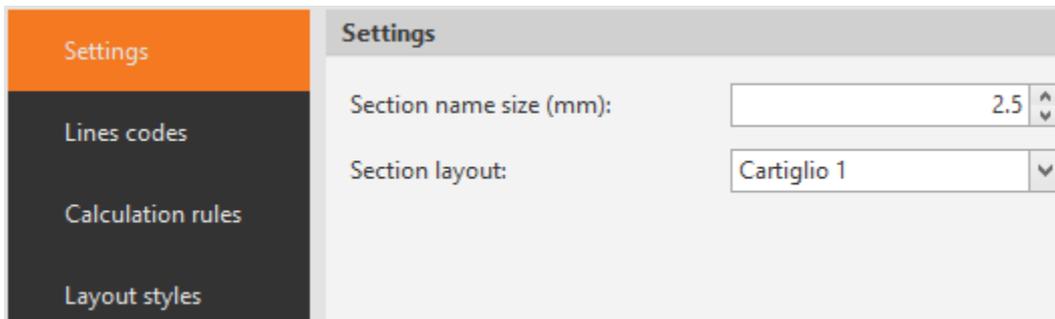


# Sections Settings - Settings



**SETTINGS:** Define the parameters for the group of sections (Settings, Lines codes, Calculation rules, and Layout style)

It is possible to select **SETTINGS** and **RULES** both before and after the graphically selection of the section



# Sections Settings – Lines code

**Settings**

Lines codes

Calculation rules

Lines codes						
	Code	Description	Layer (main)	Layer sections	Symbol	Vertical
▶	TER	TERRENO	SEZIONI-TERRENO	LINEA-TERRENO	<input type="checkbox"/>	Continuo
*					<input checked="" type="checkbox"/>	

**Layer (principale)**

SEZIONI-TERRE... ▼

LINEA-TERRENO

- SUPERFICE-CURVELIVELLO-PRINC
- SUPERFICE-CURVELIVELLO-SUB
- SUPERFICE-TRIANGOLI
- SUPERFICE-PENDENZA-SIMBOLI
- SEZIONI TRASVERSALI
- SEZIONI-TERRENO
- SUPERFICE-LINEE-STERRORIPORTO
- ORTOFOTO
- PLOTBOXES
- 0
- CAPOSALDI
- MISURE
- PARTICELLE
- PUNTI

**Layer sections**

LINEA-TERRENO ▼

- Default
- LAYOUT-BORDO
- LAYOUT-TABELLA-LINEE
- LAYOUT-TABELLA-TESTI
- LAYOUT-TITOLI
- LINEA-TERRENO

**Vertical lines**

None

Continuos

Dashed

Start/End

**Lines codes:** used to define:

- Code
- Description
- Layer (main)
- Layer sections
- Vertical lines



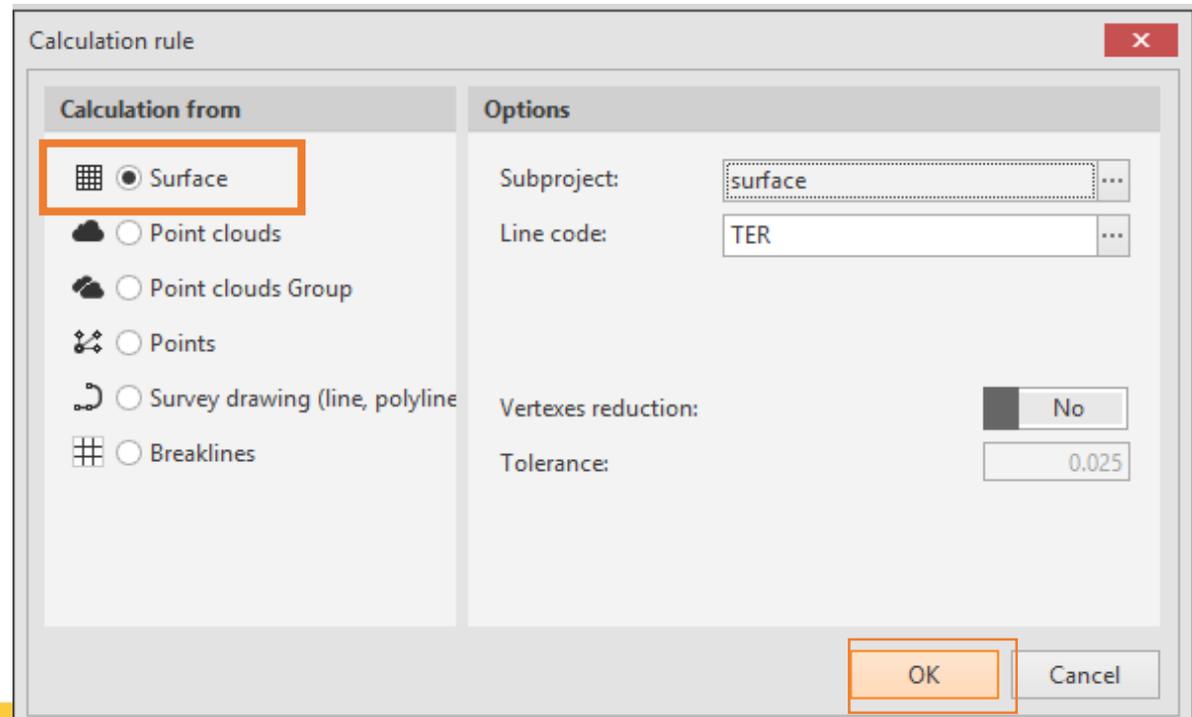
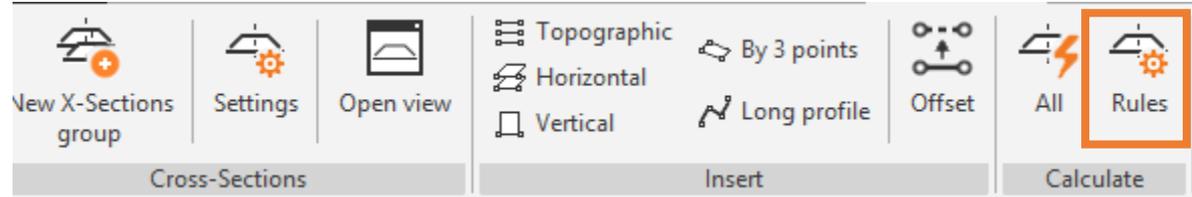
# Sections Settings – Calculation rules

**Rules:** used to define the sections rules. It is possible to create sections from:

- Surface
- Point cloud
- Punts
- Survey Drawing

Select:

- Subproject
- Line code
- Vertexes reduction
- Tolerance



# Sections Settings– Layout styles

Settings

Lines codes

Calculation rules

Layout styles

Layout styles					
	Name	Scale distance	Scale elevation	Sheet width	Sheet
▶	Cartiglio 1	1 : 200	1 : 200	420.0mm	

Drawing layout

Layout rows

Layout name and scale

Layout name:

Distance scale: 1:

Elevation scale: 1:

Sheet settings

Sheet width (mm):

Sheet height (mm):

External margin (mm):

Internal margin (mm):

Drawing margin (mm):

Drawing settings

Border mode:

Grid header width (mm):

Vertex symbol size (mm):

Dashed line size (mm):

Texts size and styles

Title height (mm):

Annotations:

Headers:

Titles:

**Layout styles:** used to define the drawing layout settings and the layout rows



# Sections Settings– Layout styles

Drawing layout

Layout rows

Layout rows										
	Visible	Code	Type	Description	Label position	Row height (mm)	Description height (mm)	Label height (mm)	Code 2	Color
ℓ	<input checked="" type="checkbox"/>	TER	Type			20.0	10.0	2.0	--	Default
*	<input type="checkbox"/>								--	

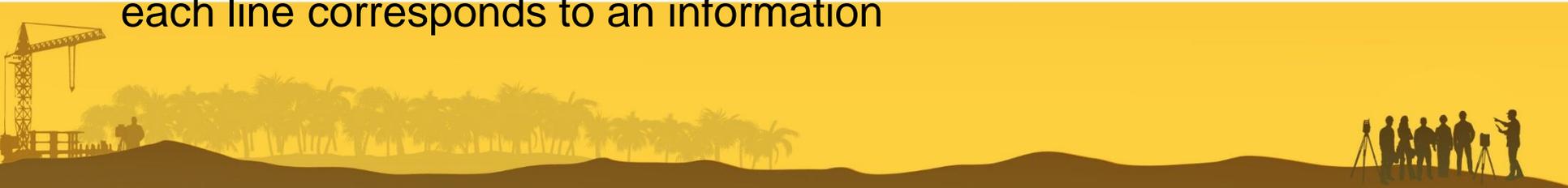
Type

- Point number
- Point name
- Coordinates X
- Coordinates Y
- Elevation
- Station
- Station sloped
- Partial

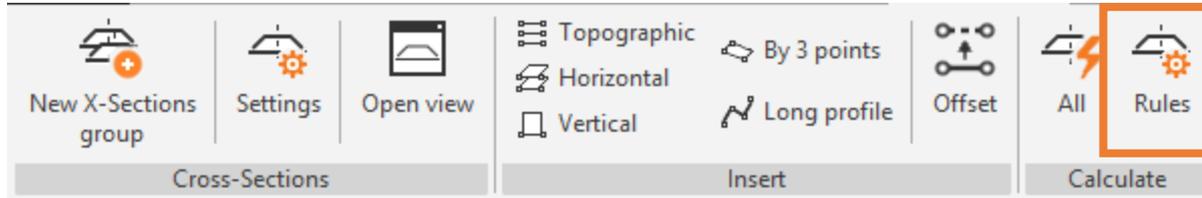
Label position

- Horizontal
- Vertical

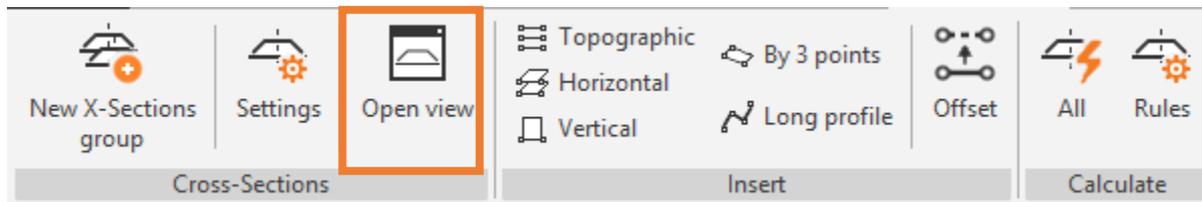
**Layout rows:** used to define the information for the sections calculation, each line corresponds to an information



# Sections



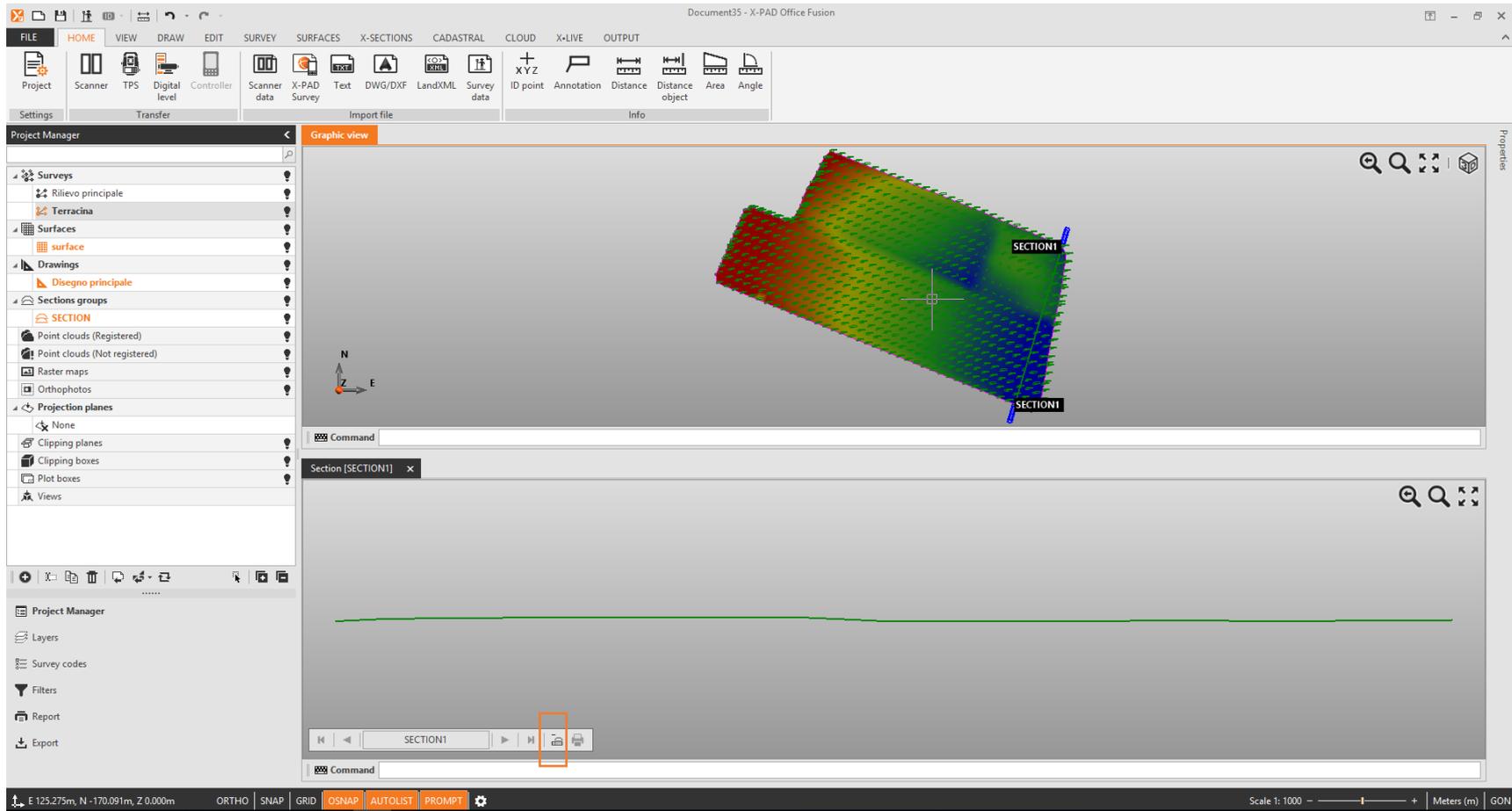
**Calculate:** Once the settings and the calculation rules have been established, click on **ALL** pto generate the sections



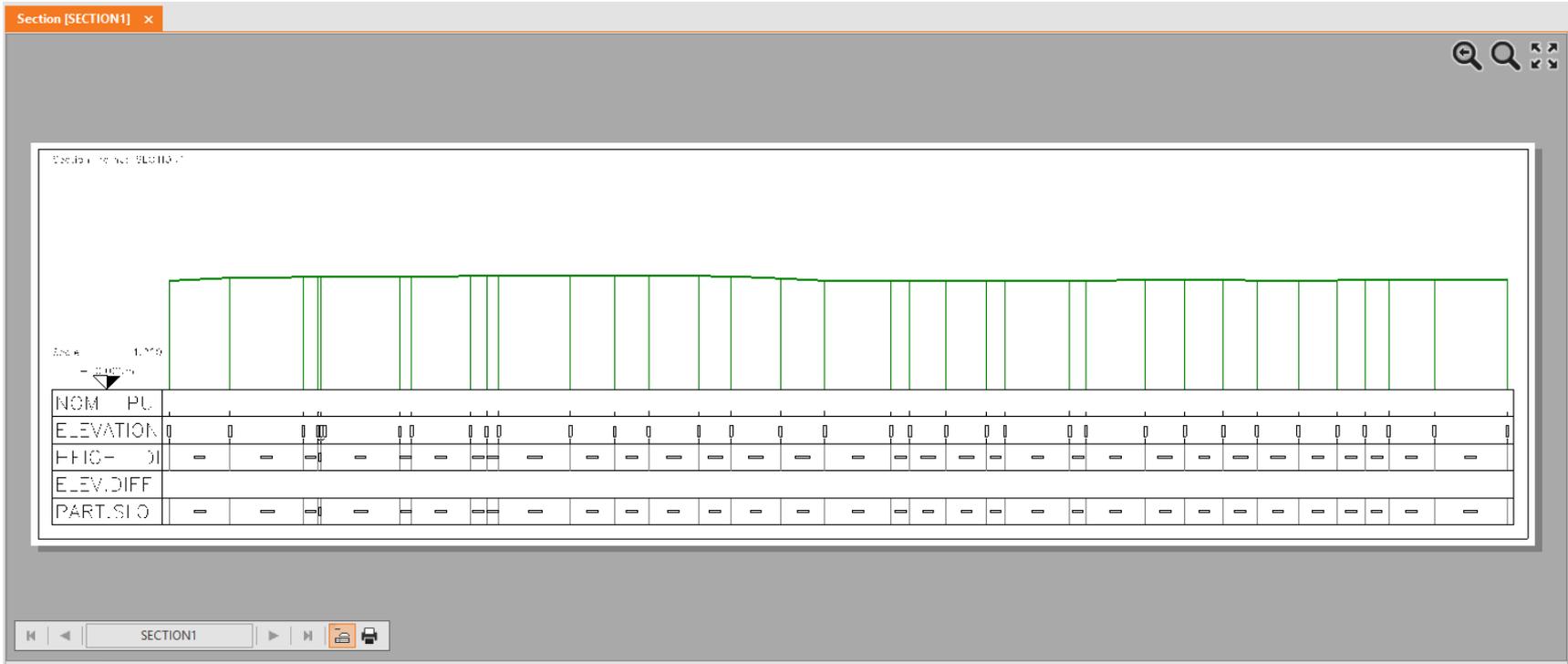
**Open View:** Allow to have a trasversal view of the calculated cross-sections



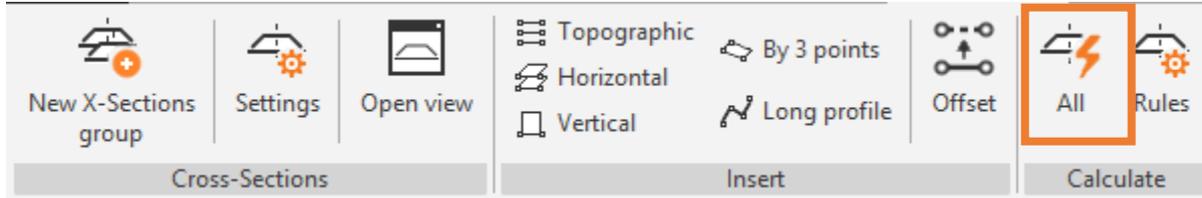
# Sections



# Sections



# Sections Offset

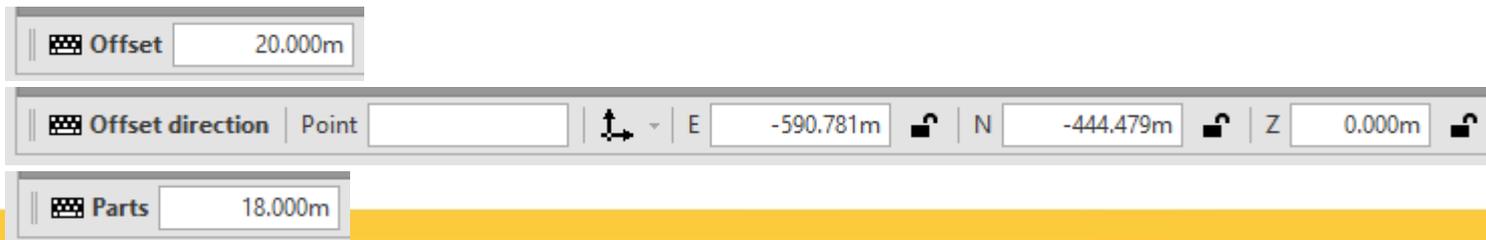


**Offset:** it is the function used to generate sections offset related to a reference section.

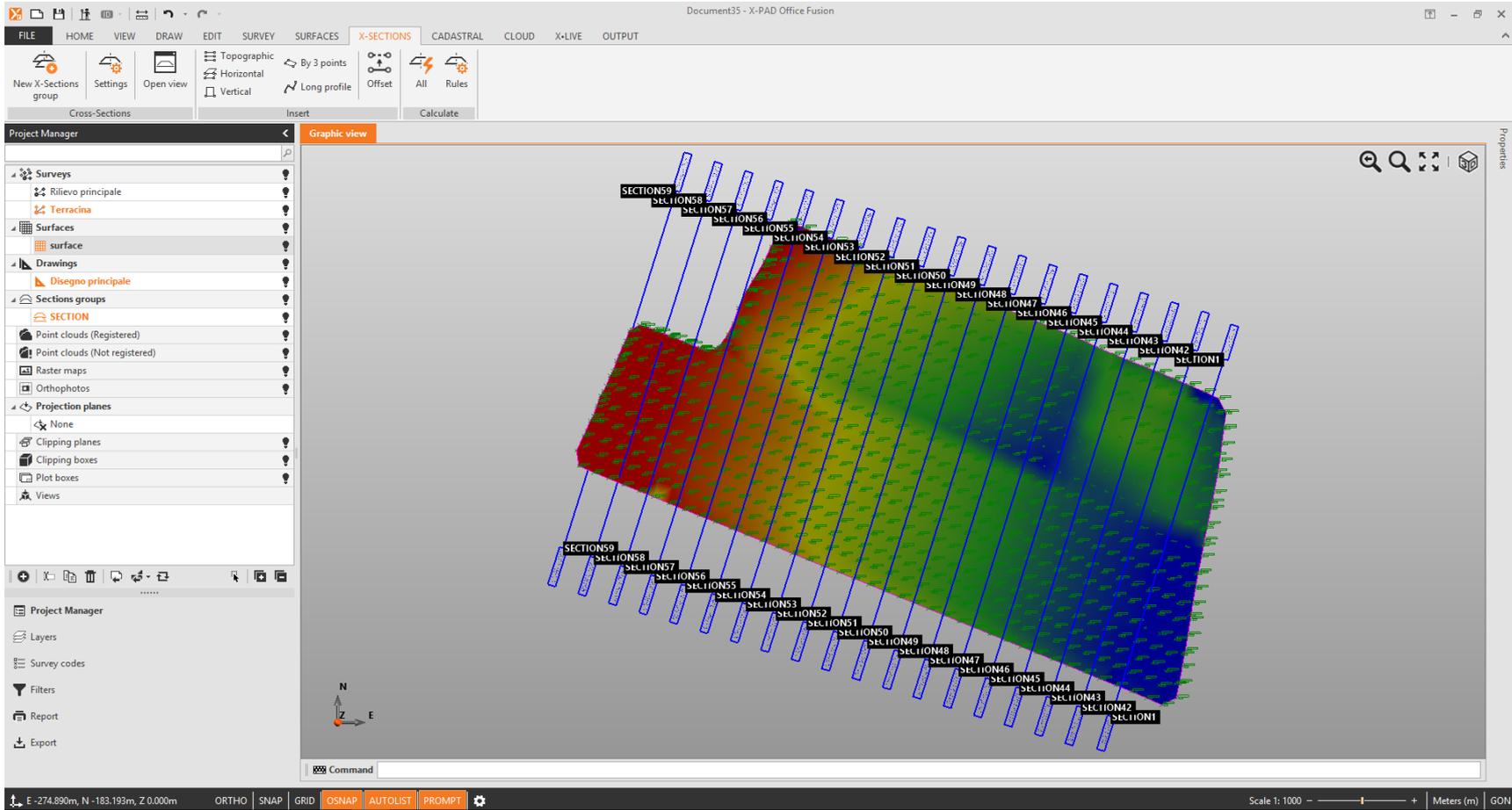
Once the reference section has been selected, it is necessary to insert:

- Offset distance
- Direction
- Parts

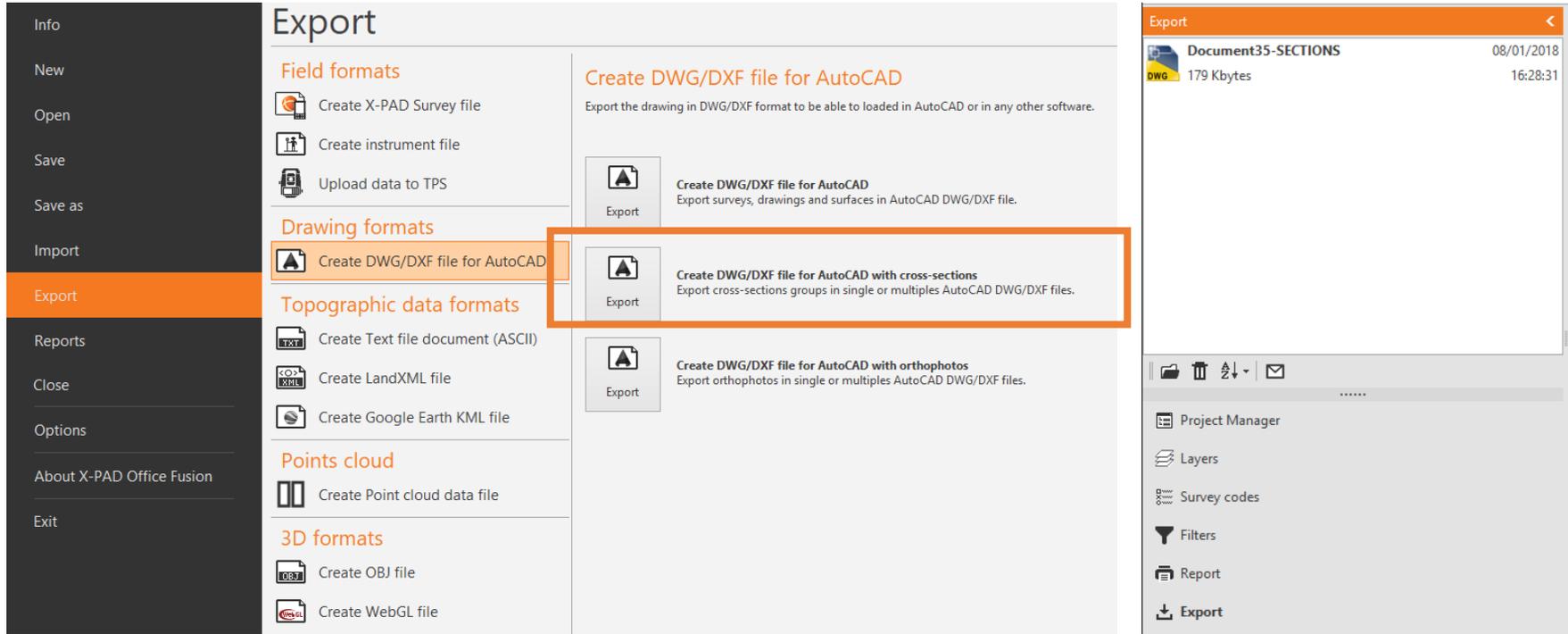
Click on **ALL** to generate the sections with the same calculation rules



# Sections Offset



# Export



The screenshot displays the 'Export' menu in the X-PAD Office Fusion software. The menu is organized into several categories:

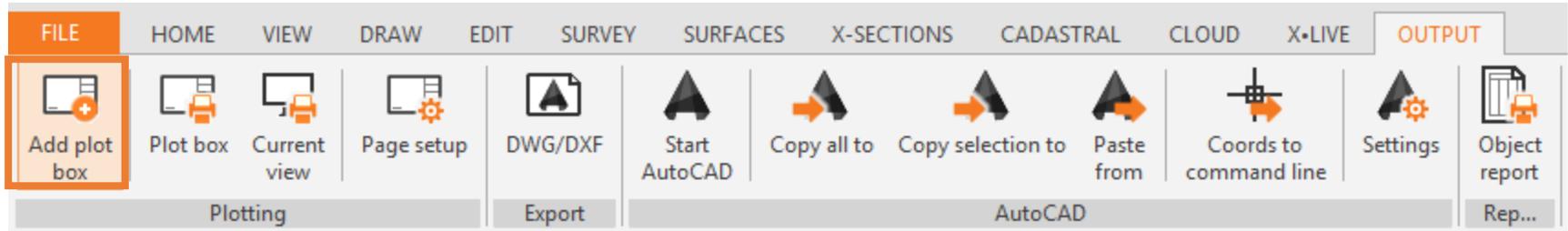
- Field formats**
  - Create X-PAD Survey file
  - Create instrument file
  - Upload data to TPS
- Drawing formats**
  - Create DWG/DXF file for AutoCAD** (highlighted with an orange box)
  - Create DWG/DXF file for AutoCAD with cross-sections
  - Create DWG/DXF file for AutoCAD with orthophotos
- Topographic data formats**
  - Create Text file document (ASCII)
  - Create LandXML file
  - Create Google Earth KML file
- Points cloud**
  - Create Point cloud data file
- 3D formats**
  - Create OBJ file
  - Create WebGL file

On the right side of the interface, a window titled 'Export' shows a list of exported files. The first entry is 'Document35-SECTIONS', which is 179 Kbytes and was exported on 08/01/2018 at 16:28:31. Below this list is a 'Project Manager' panel with options for Layers, Survey codes, Filters, Report, and Export.

From **FILE** menu it is possible to select **EXPORT** to create a **DWG/DXF** file with the calculated sections.  
 The export data are always visible from **EXPORT** in the Project Manager.



# Plot



From the **OUTPUT** menu it is possible to select **ADD PLOT BOX** to create print area selecting:

- Name
- Scale
- Sheet type
- External margin
- Rotation
- Project informations

**Add plot box**

**Plot box parameters**

Name:

Scale:

Sheet type:

Width:

Height:

External margin:

Rotation:

**Plot options**

Draw border

Print project name

Print date time



# Plot

