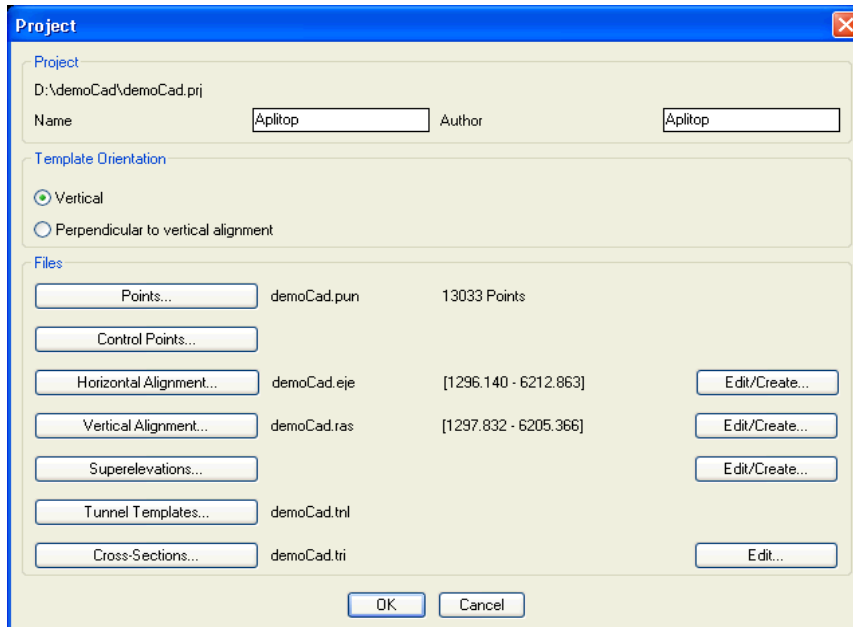


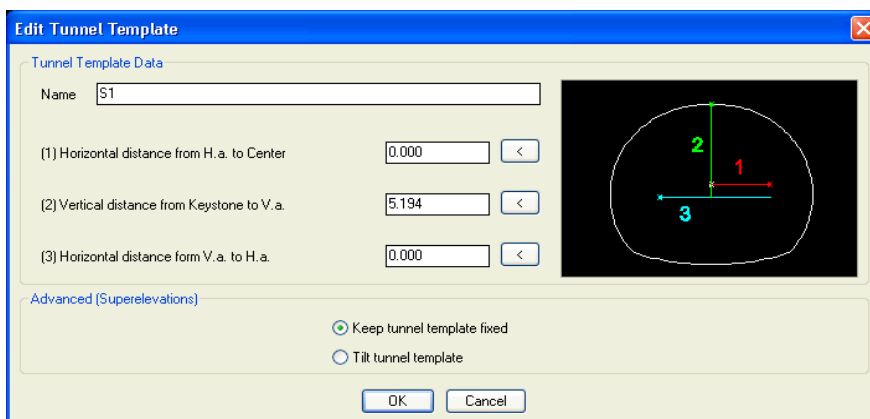
# TcpTunnel CAD

## Tunnel data processing

This software, working under AutoCAD, allows to process data gathered from total stations running TcpTunnel or other programs. Every project is compound of a horizontal and vertical alignment, superelevation, templates and point files, supporting different formats.

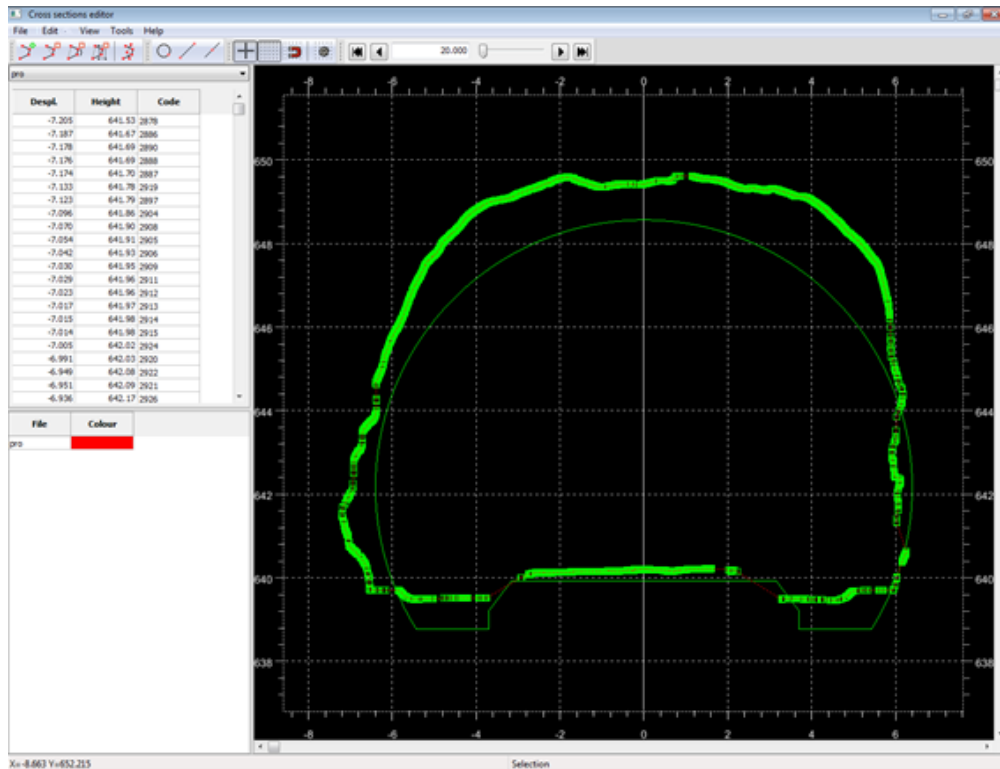


**Template Definition.** Templates can be defined by parameters or selecting a polyline in AutoCAD. The distances from the center of template to alignment and superelevation criteria must be given. It is possible to apply different templates to intervals of alignment and interpolate their dimensions.

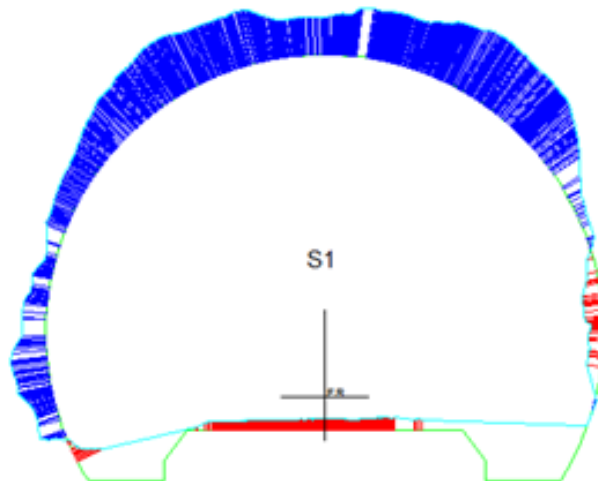


**Cross section calculation and editing.** The measured cross-sections can be computed from points, giving the chainage interval, minimum number of points, undercut and overcut tolerances, etc. For generating the cross-sections, the measured points are analyzed regard to hozirontal alignment of the project, supporting even spirals and alignments with crossed sections.

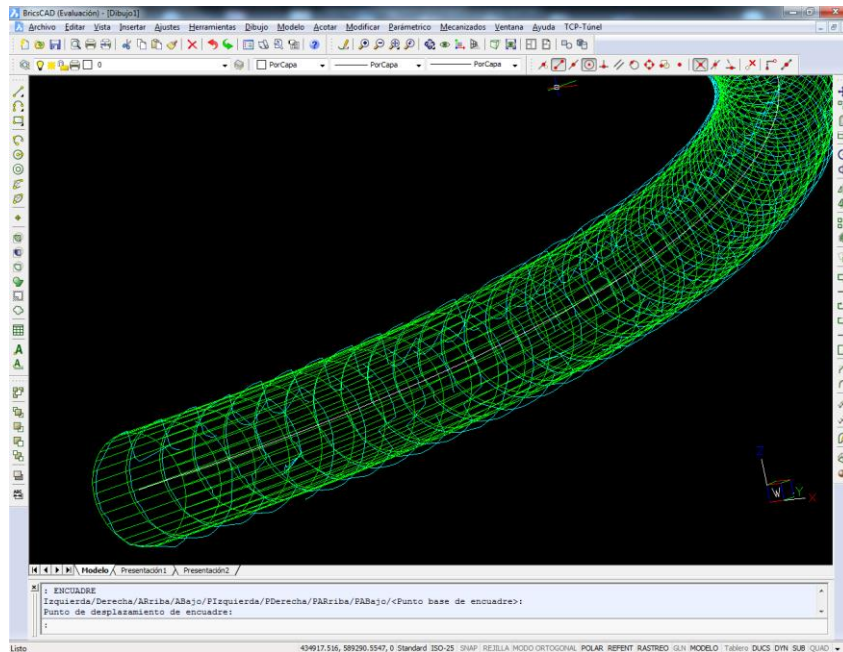
Also with the editor are included tools for removing, adding or moving points before drawing, comparing with the theoretical tunnel template.



**Cross-section drawing.** It is possible to draw cross-sections in CAD, in individual mode or by sheets. There are options to label differences between project and measured cross-sections as well as station, heights, areas, etc.



**Tunnel Drawing.** It is possible to create a 3D view of measured cross-sections as a wireline drawing. There are options to draw measured and project cross-sections, the alignment in 3D, longitudinal lines, etc.

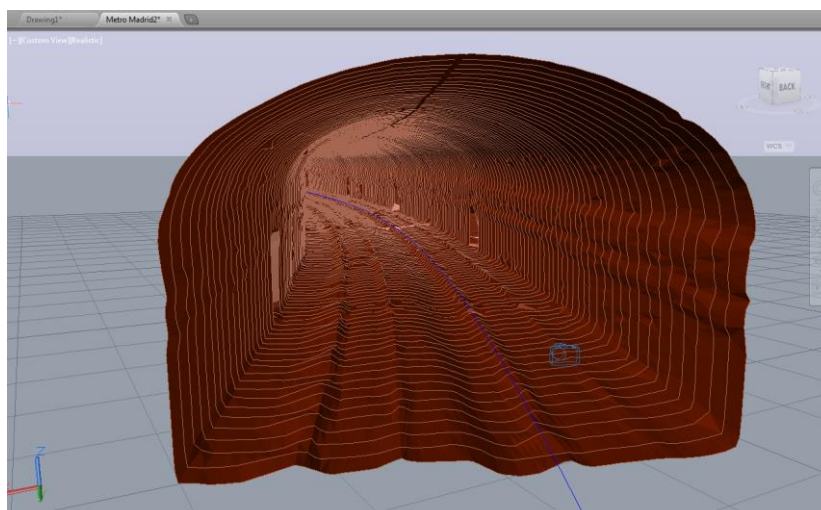


**Volume Calculation.** The program computes volumes of infra and over-excavation by comparing project and measured cross-sections. Reports can be generated and sent to printer, ASCII or HTML files and exported to Word or Excel.

| Chainage | Overexc. Área | Underexc. Área | Exc. Área | Overexc. Vol | Underexc. Vol | Exc. Vol |
|----------|---------------|----------------|-----------|--------------|---------------|----------|
| 3004.983 | 11.983        | 10.821         | 85.869    |              |               |          |
| 3010.003 | 8.668         | 11.645         | 81.730    | 51.826       | 56.383        | 420.620  |
| 3014.995 | 9.069         | 12.445         | 81.816    | 44.270       | 60.130        | 408.219  |
| 3019.952 | 4.432         | 24.596         | 64.543    | 33.460       | 91.802        | 362.732  |

Total Overexcavation Volume: 129.557 m3  
 Total Underexcavation Volume: 208.316 m3  
 Total Excavation Volume: 1191.571 m3

**3D Model.** The program allows to generate a 3D triangulation of the tunnel, take a tour inside it and export to several file formats of geometrical definition, are as OBJ and OFF.



## System Requirements

- CAD: AutoCAD 2010 to 2018
- Operating System: Windows 7, 8, 8.1 and 10 (32 and 64 bits)

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