

TcpTunnel CAD – Demonstration Guide

Requirements

- AutoCAD 2012 or higher.
- TcpTunnel CAD 2.0 or higher installed. Check requirements at www.aplito.com

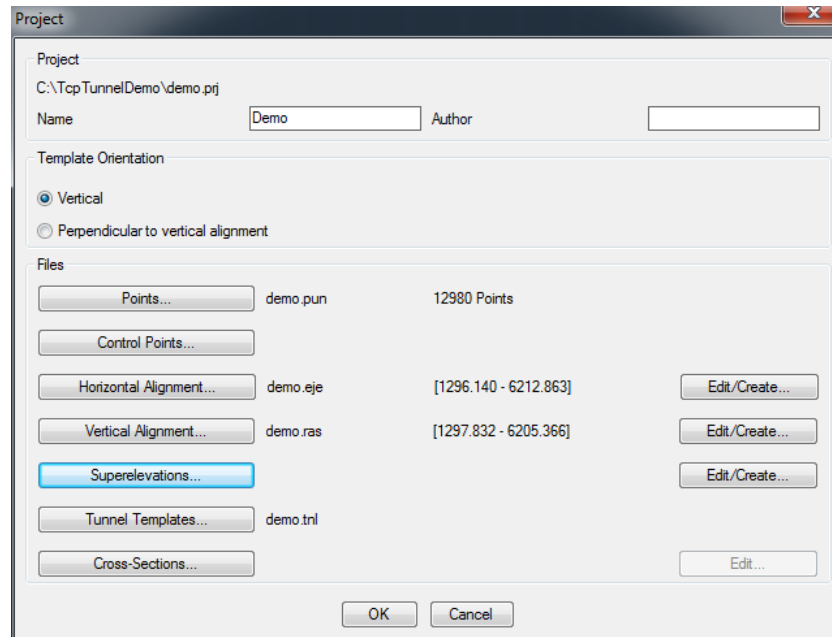
Installation of Sample Files Installation

Copy the following files at folder C:\TcpTunnelDemo

File	Format	Description
demo.eje	MDT	Horizontal alignment
demo.ras	MDT	Vertical alignment
demo.pun	Text	Coordinates file of points measured with total station
demo.dwg	DWG	Tunnel template definition

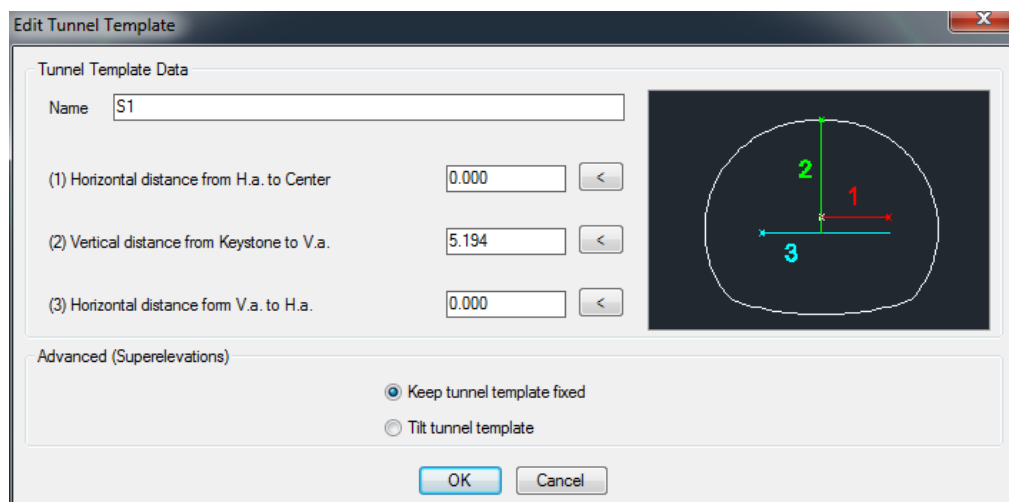
Project Creation

1. Run CAD and open drawing `Demo.dwg`
2. Run **Tcp Tunnel > Create Project**, and give as file name `demo.prj` in project folder
3. Now enter **Demo** as project name.
4. Select **Vertical** within the Template Orientation panel
5. Press button **Points** and select file `demo.pun`
6. Press **Horizontal Alignment** button and select file `demo.eje`
7. Press **Vertical Alignment** button and select file `demo.ras`
8. Press **Tunnel Templates** button and enter as new file name `demo.tnl` and press **OK** button

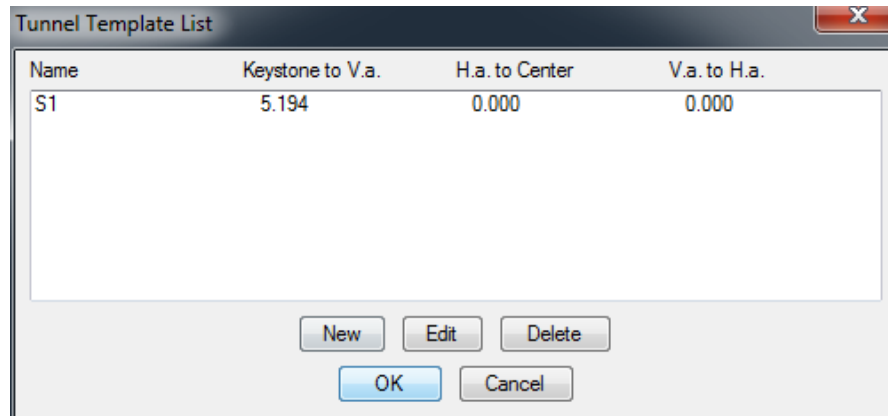


Template Definition

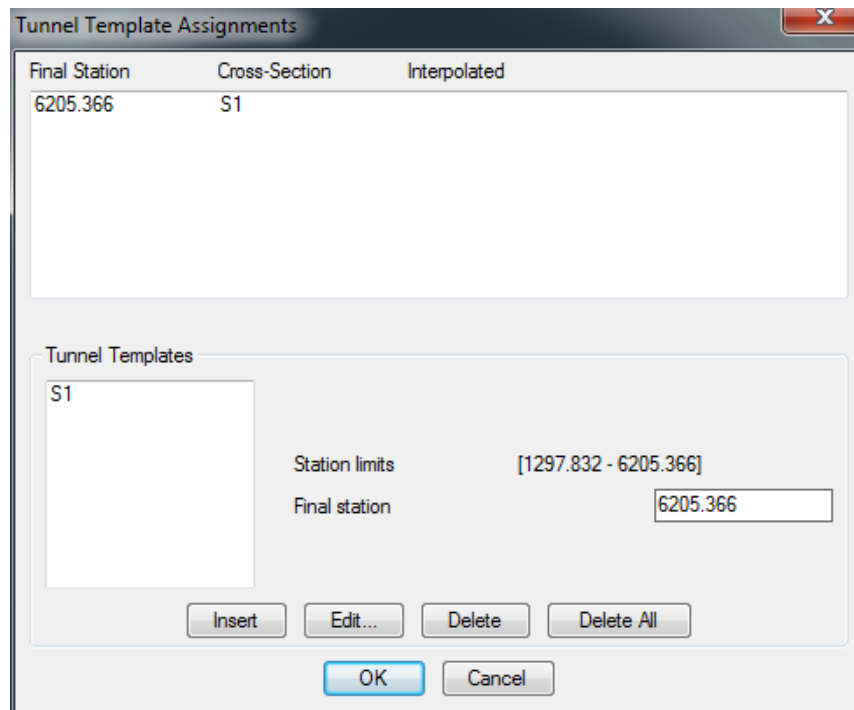
1. Run **TcpTunnel > Edit Tunnel Templates** and press **New** button
2. Select circular polyline
3. Validate data as shown in dialog and press **OK**



4. Validate again data pressing **OK**

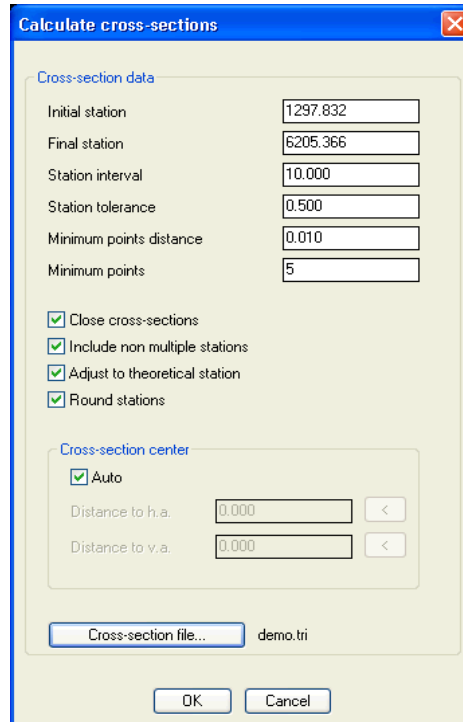


5. Now run command **TcpTunnel > Tunnel Template Assignments**. Check that the data are shown as show below and press **OK**



Calculating and Drawing Cross Sections

1. Run **TcpTunnel > Calculate Cross Sections**. Press **Cross Sections** button and assign as file name `demo.tri` and press **OK** for computing cross sections.



Calculate cross-sections

Cross-section data

Initial station: 1297.832
Final station: 6205.366
Station interval: 10.000
Station tolerance: 0.500
Minimum points distance: 0.010
Minimum points: 5

Close cross-sections
 Include non multiple stations
 Adjust to theoretical station
 Round stations

Cross-section center

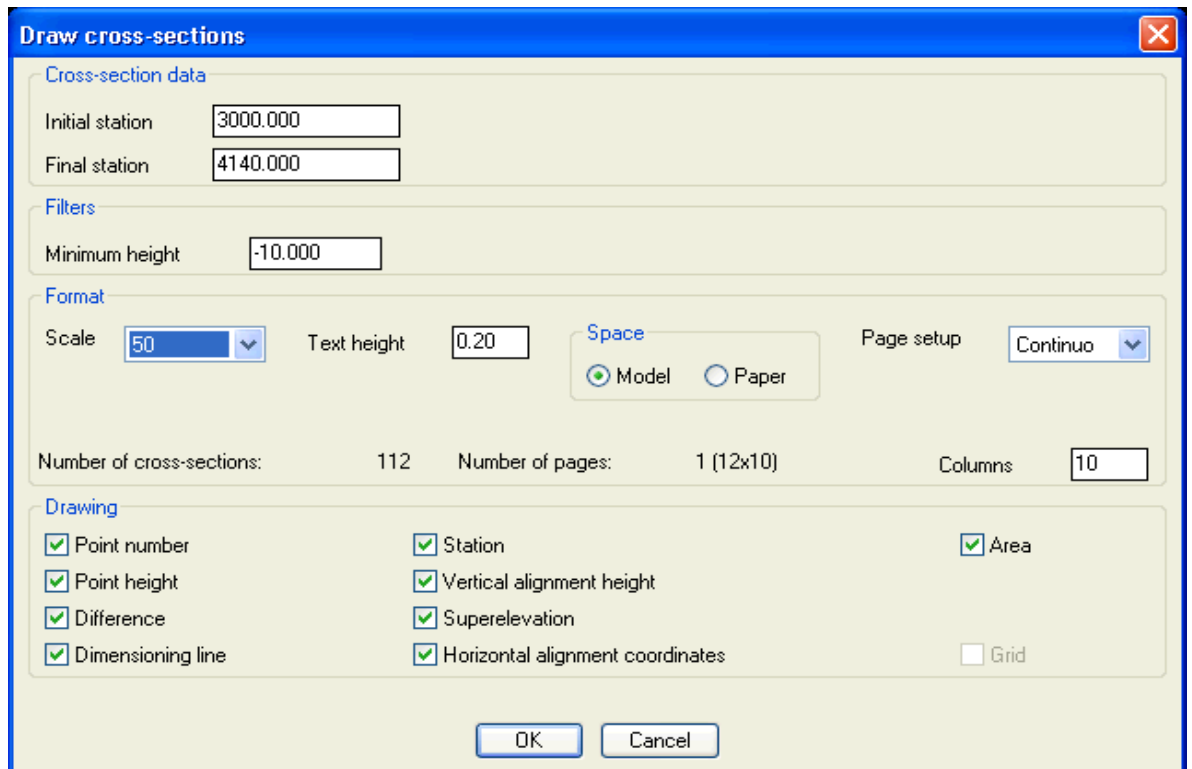
Auto

Distance to h.a.: 0.000 <
Distance to v.a.: 0.000 <

Cross-section file... demo.tri

OK Cancel

2. Run **TcpTunnel > Draw Cross Sections**. Setup parameters as shown in figure, press **OK** and give an insertion point in the drawing.



Draw cross-sections

Cross-section data

Initial station: 3000.000
Final station: 4140.000

Filters

Minimum height: -10.000

Format

Scale: 50 Text height: 0.20 Space: Model Paper Page setup: Continuo

Number of cross-sections: 112 Number of pages: 1 (12x10) Columns: 10

Drawing

Point number Station Area
 Point height Vertical alignment height
 Difference Superelevation
 Dimensioning line Horizontal alignment coordinates Grid

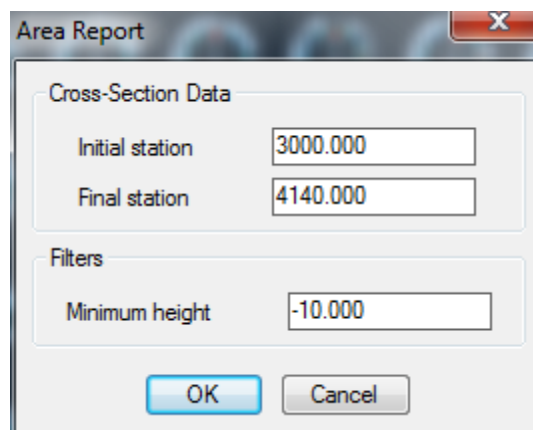
OK Cancel

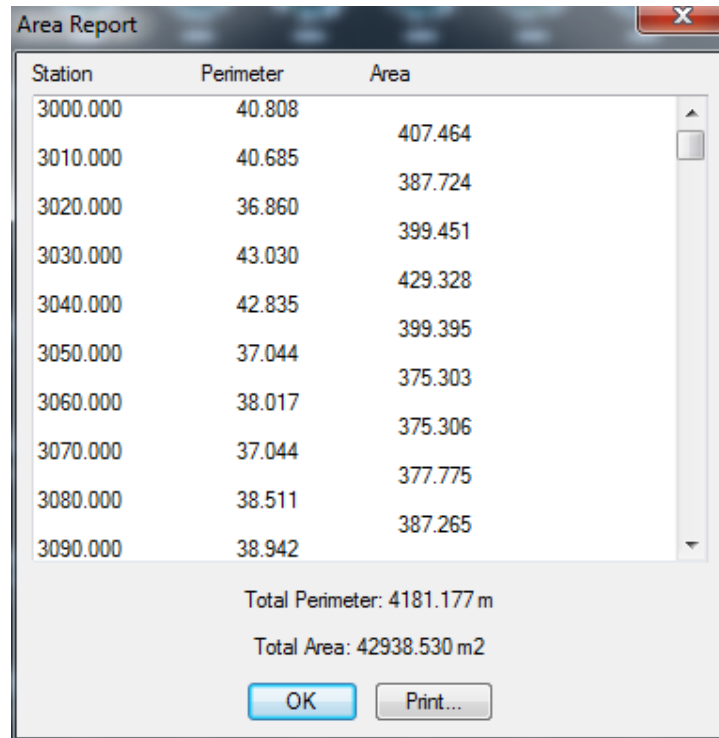
The drawing should be similar to the next figure:



Reports

1. Run **TcpTunnel > Area Report**, enter the following params and press **OK**



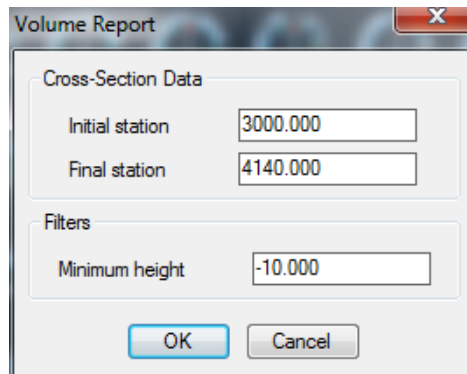


Station	Perimeter	Area
3000.000	40.808	407.464
3010.000	40.685	387.724
3020.000	36.860	399.451
3030.000	43.030	429.328
3040.000	42.835	399.395
3050.000	37.044	375.303
3060.000	38.017	375.306
3070.000	37.044	377.775
3080.000	38.511	387.265
3090.000	38.942	

Total Perimeter: 4181.177 m
Total Area: 42938.530 m²

OK Print...

- Likewise, run **TcpTunnel > Volume Report**, enter the following params and press **OK**



Volume Report

Cross-Section Data

Initial station: 3000.000

Final station: 4140.000

Filters

Minimum height: -10.000

OK Cancel

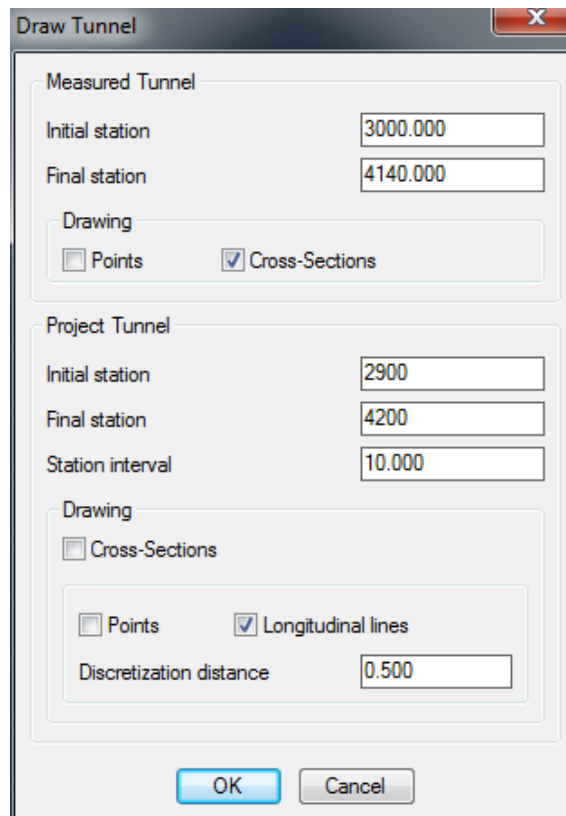
Station	Overexc. Area	Underexc. Area	Exc. Area	Overexc. Vol	Underexc. Vol	Exc. Vol
3000.000	11.525	12.801	83.431	101.865	137.347	811.590
3010.000	8.848	14.669	78.887	93.969	124.752	816.291
3020.000	9.945	10.282	84.371	89.126	104.232	831.981
3030.000	7.879	10.564	82.022	73.549	97.178	823.482
3040.000	6.830	8.870	82.667	72.474	79.751	839.867
3050.000	7.664	7.078	85.292	71.487	77.616	841.059
3060.000	6.632	8.443	82.896	64.886	73.986	838.141
3070.000	6.343	6.352	84.698	60.131	66.016	841.419
3080.000	5.680	6.848	83.539	59.121	67.733	838.766
3090.000	6.140	6.694	84.153			

Total Overexcavation Volume: 7800.341 m3
Total Underexcavation Volume: 7564.600 m3
Total Excavation Volume: 96834.532 m3

OK Print...

Tunnel drawing

1. Create a new drawing in CAD
2. Run **TcpTunnel > Draw Tunnel**. Validate parameters and press **OK**



Draw Tunnel

Measured Tunnel

Initial station: 3000.000
Final station: 4140.000

Drawing

Points Cross-Sections

Project Tunnel

Initial station: 2900
Final station: 4200
Station interval: 10.000

Drawing

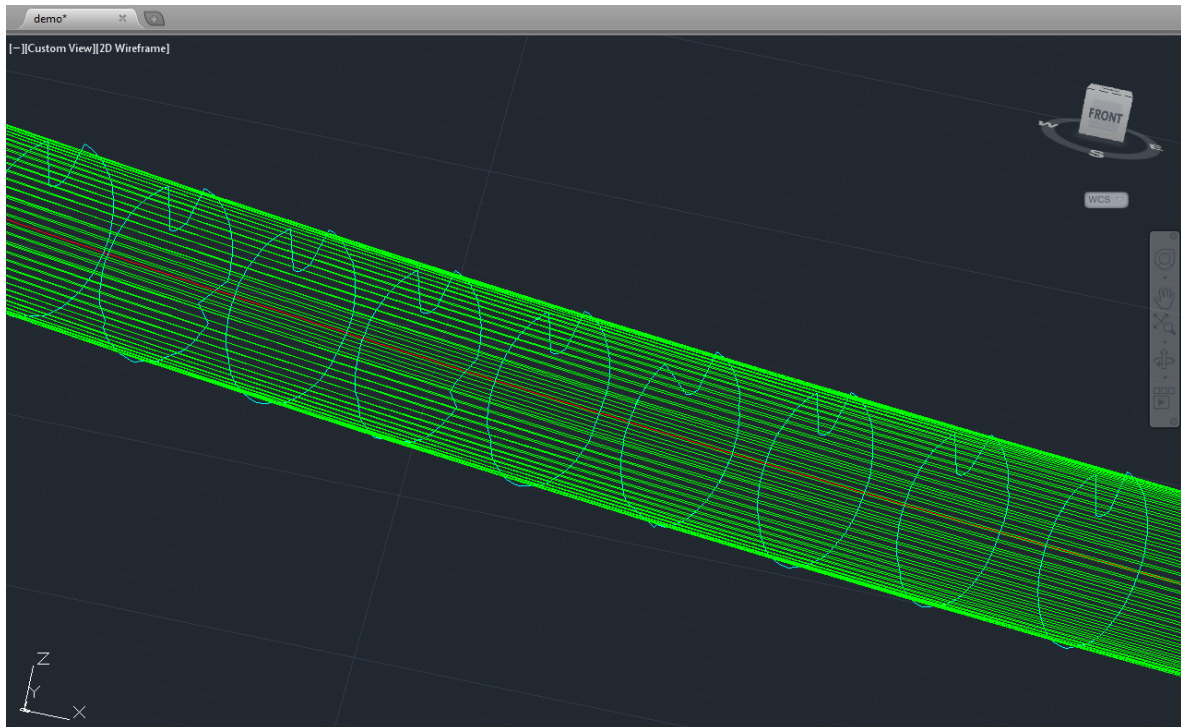
Cross-Sections

Points Longitudinal lines

Discretization distance: 0.500

OK Cancel

3. Run Orbit command and zoom in at interest area



Results

There are the following result files:

File	Description
cross_sections.dwg	Cross sections drawing
3d_tunnel.dwg	Tunnel measured and project templates in 3D
area_report.pdf	Cross sections area report
volume_report.pdf	Cross sections volume report