Creating a Land Survey in TcpMDT from TcpGPS

This tutorial shows how to obtain with Aplitop TcpMDT the digital model of the terrain, contour lines and profiles from a topographic survey carried out with TcpGPS connected to Reach RS3.

Summary

TcpMDT is a surveying software created by Aplitop. It is installed as a plugin in a CAD and offers tools to create digital terrain models, profiles, calculation of volumes, roads, etc.

To integrate Emlid Flow data with the Aplitop TcpMDT application, you'll need the following:

- **TcpGPS for Android 2.7+**
- **AutoCAD v2007+** or **BricsCAD Pro v16+** or **GStarCAD Professional v2021+** or **ZWCAD Professional v2012+**
- **TcpMDT Standard v9.0+**

Consult the procedure for data collection in Integration of Reach RS3 with Aplitop TcpGPS for Android.

Workflow

Below is one of the possible workflows, which consists of drawing the survey points, creating the digital terrain model, generating the contour lines, creating an alignment and obtaining long and cross sections.
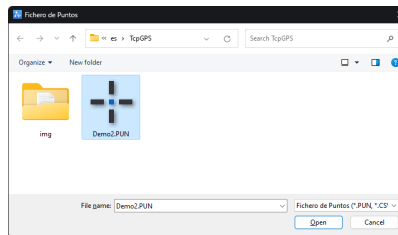
Importing Points

1. Start TcpMDT

2. Run MDT9 > Points > Import

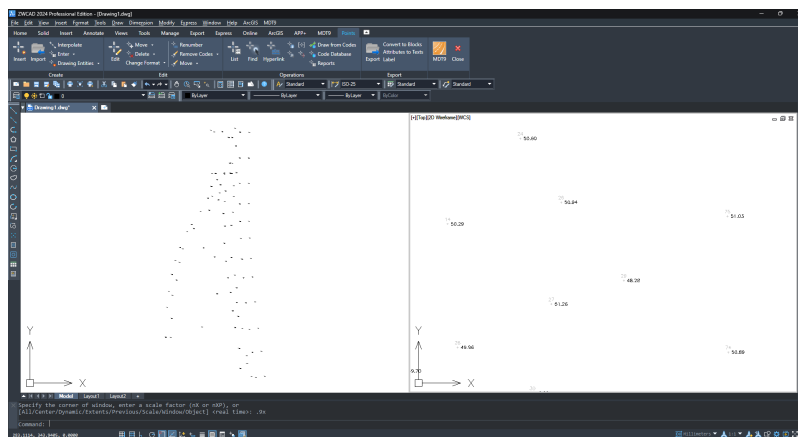3. Select format Generic and choose NXYZ
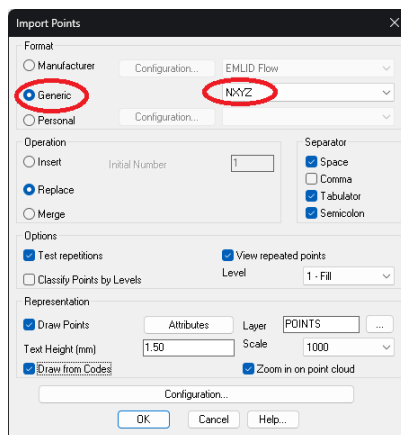
4. Choose a suitable Scale for the representation of the texts and uncheck the Draw from Codes option.
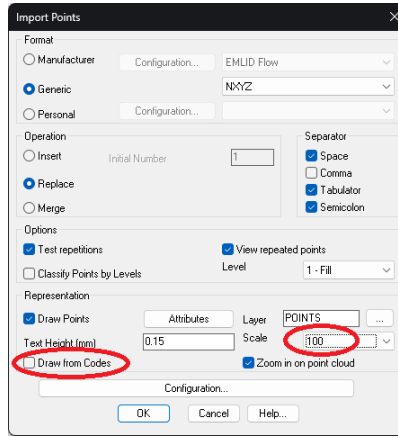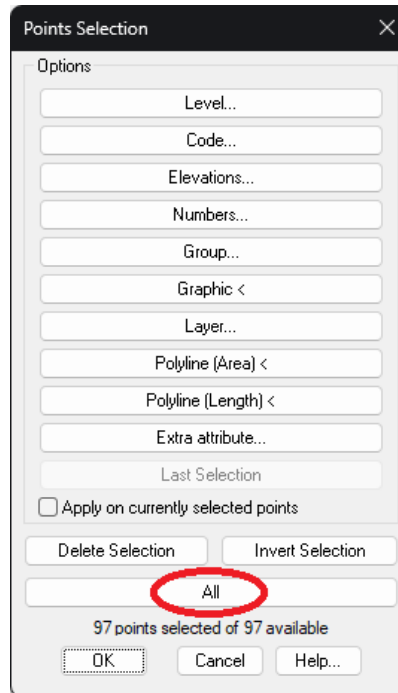
5. Click OK and choose the PUN file previously exported by TcpGPS in MDT format.

6. The points will be drawn with their numbering and elevations.

7. Run MDT9 > Points > List and verify that the points in the file have been imported

8. Press the All button and check that the point codes have been converted correctly. The ones with point geometry (e.g., TREE) appear as is, and the linear geometry ones are completed with the suffixes "S" for Start and "E" for End.


Drawing Break Lines and Blocks (Optional)

TcpMDT can generate the digital terrain model more accurately by drawing the terrain slope changes, known as break lines.

These can be drawn as polylines on different layers with CAD tools, or automatically generated if the points have been coded on the site. Blocks can also be automatically inserted from the codes (e.g. trees, manholes, posts, street furniture, etc.).
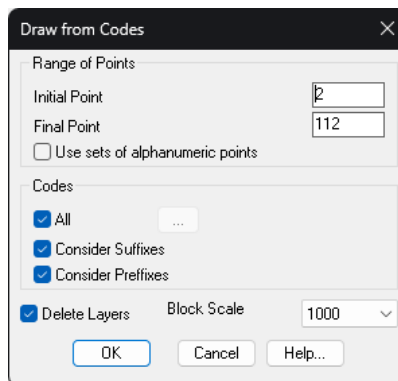
1. Run MDT9 > Points > Codes > Code Database
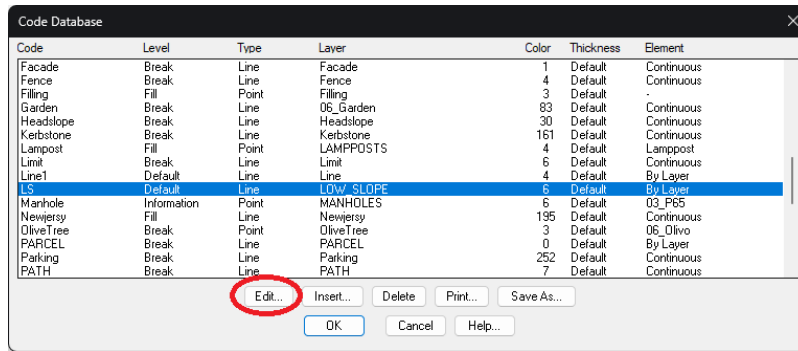
2. Select the item from the list to be modified and click the Edit button . The figure shows the LS code (Low Slope) which is of type Line and will be drawn on layer LOW_SLOPE in Magenta color.
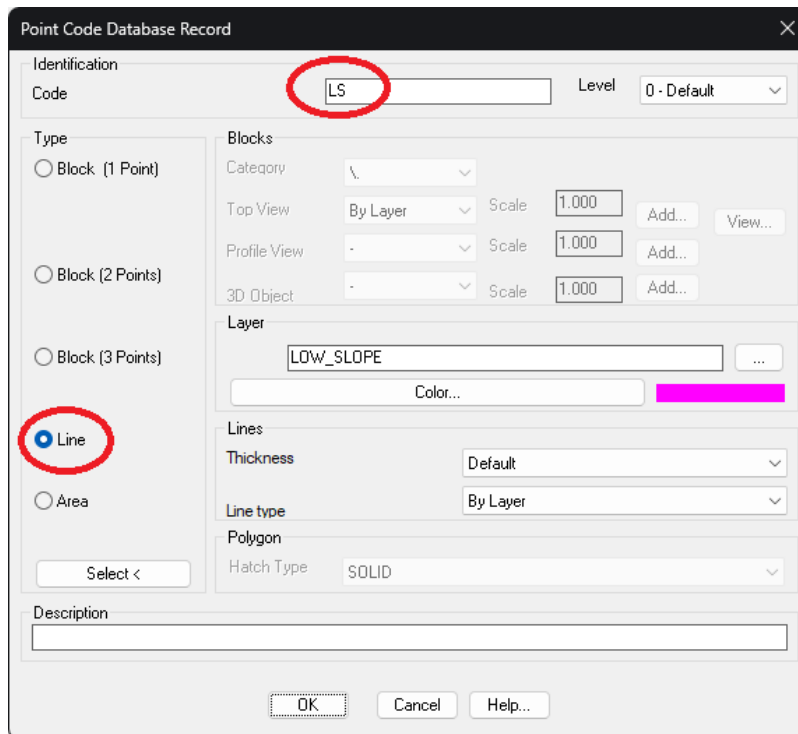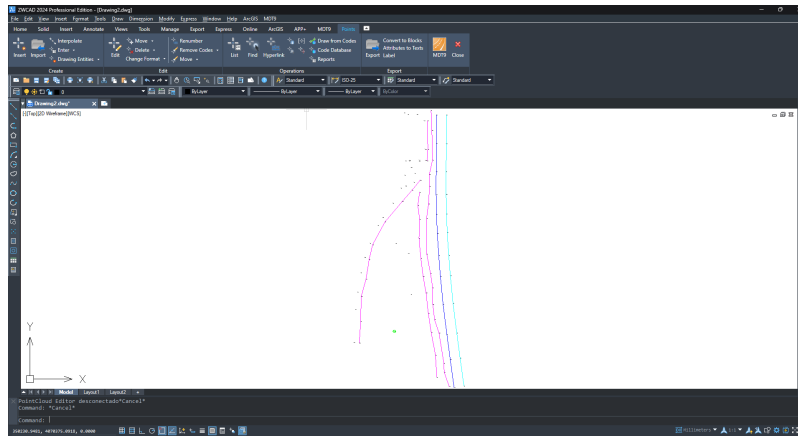

3. Press OK twice.

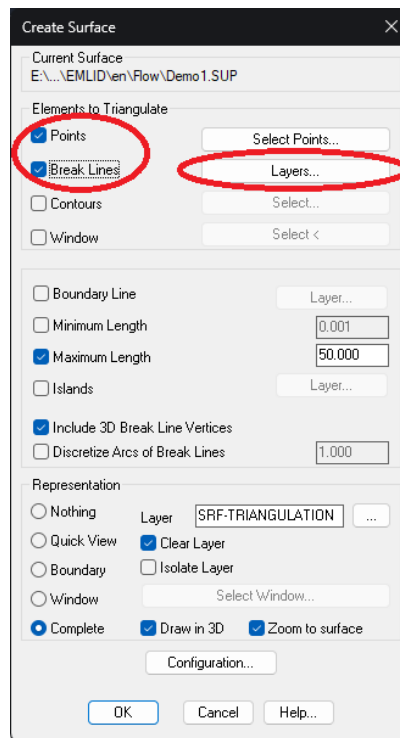4. Run the MDT9 command > Points > Codes > Draw from Codes

5. Click OK leaving all options by default

Creating Digital Terrain Model

1. Run MDT9 > Surfaces > Create Surface and accept the proposed file name

2. In the dialog, check that within the Elements to Triangulate there are the elements Points and Break Lines. Tap the Layers button

3. Choose the list of layers that should be considered as break lines, drawn automatically or manually, using the > button, and press OK
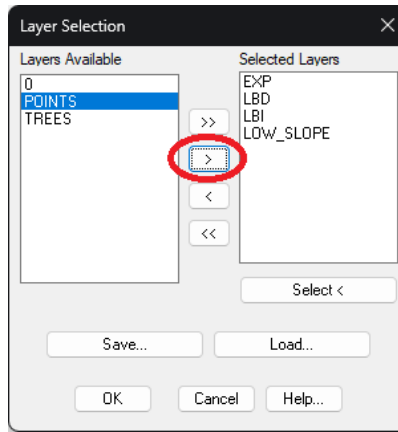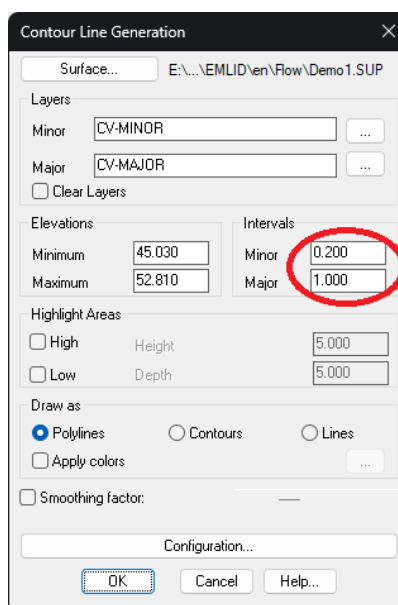
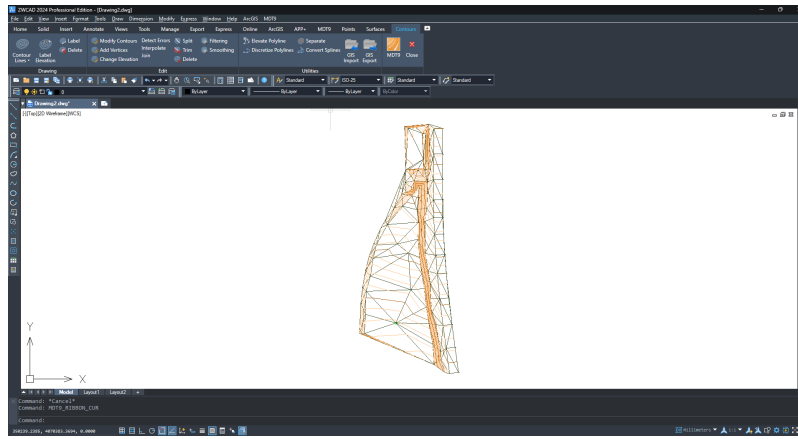4. Click OK again to generate and draw the triangulation
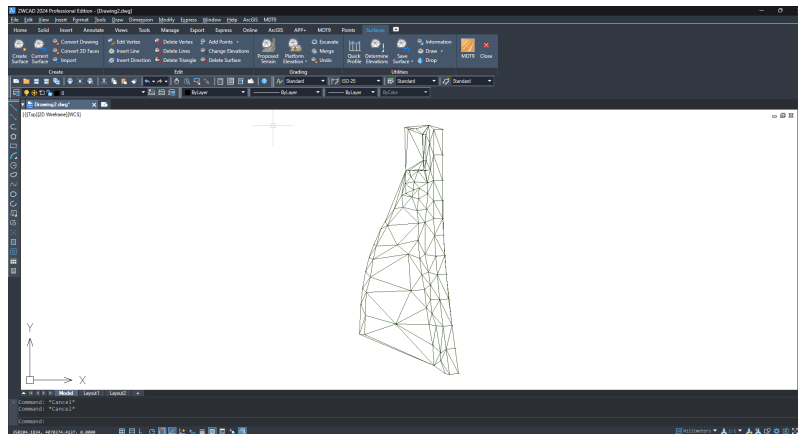
Generating Contour Lines

1. Run the command MDT9 > Contour Lines/Mapping > Create Contour Lines

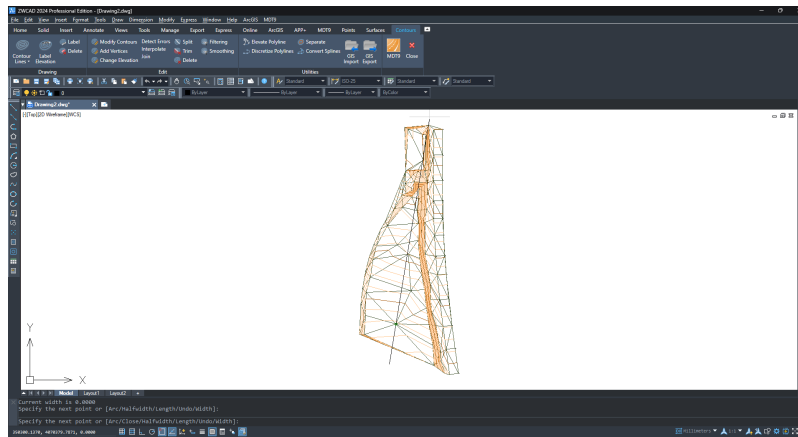2. Setting the intervals between Minor and Major contour lines

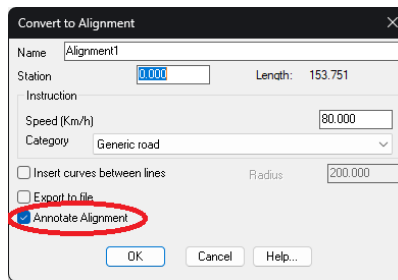3. Click OK to generate the contour lines
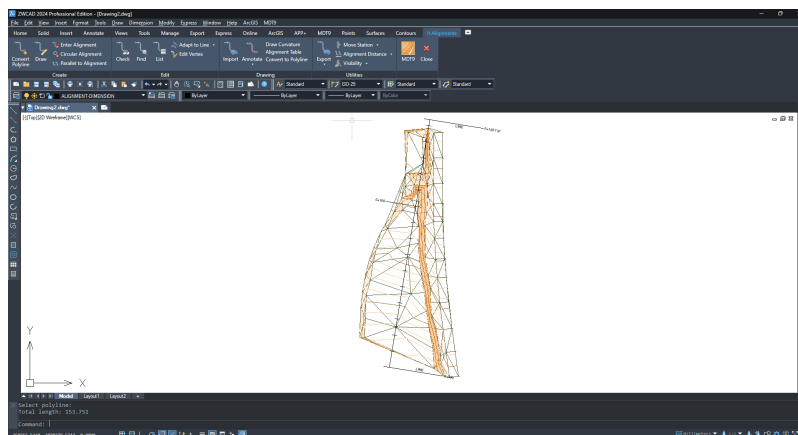
Creating an Alignment

1. Run the Draw > Polyline CAD command and draw an alignment that we'll use to create profiles.

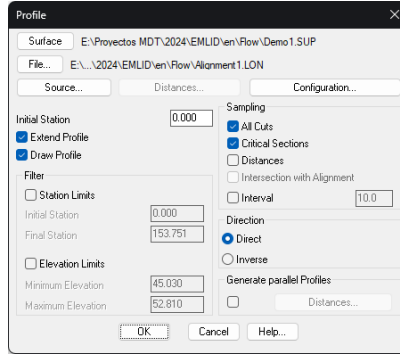2. Run MDT9 > Horizontal Alignments > Convert Polyline to Alignment and select the previous polyline

3. Enable the Annotate Alignment option and click OK two times

Creating Profiles

1. Run MDT9 > Long Sections > Create Long Section, and select the alignment created in the previous
   step

2. In the dialog, leave all options by default and press OK

3. Choose the appropriate values for Horizontal Scale and Vertical Scale. In the Vertices to Represent
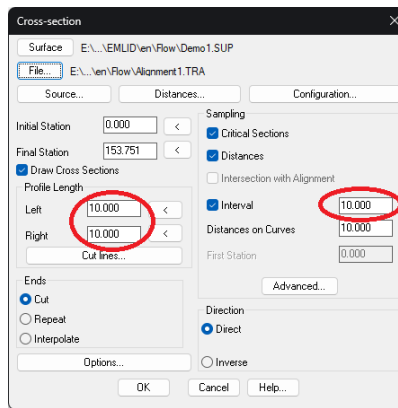   frame, choose Constant and set an interval.
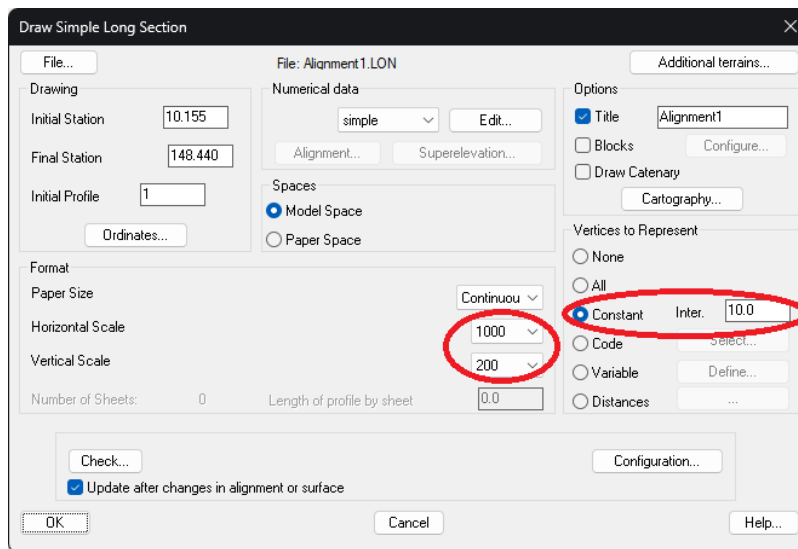
4. Click OK to draw the longitudinal profile in model space and choose an insertion point in a clear area of
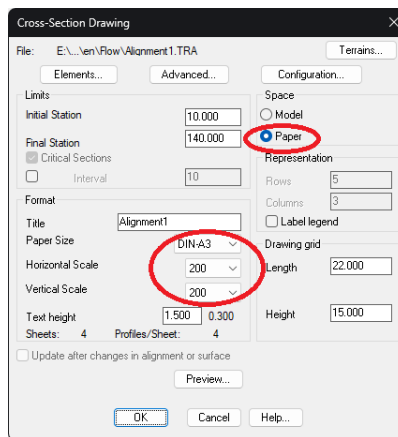   model space.
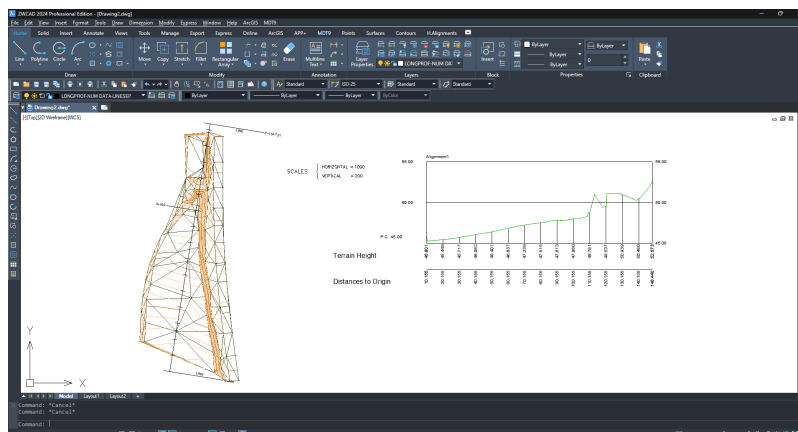
5. Run MDT9 > Cross Sections > Create Cross Sections, and select the alignment again

6. In the dialog, set the Left and Right Profile Lengths and the Interval between sections and press OK

7. In the dialog, choose Paper Space, Horizontal Scale, Vertical Scale and Paper Size

8. Click OK to proceed with the drawing