

Creating a Land Survey in TcpMDT from Emlid Flow

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 Emlid Flow 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:

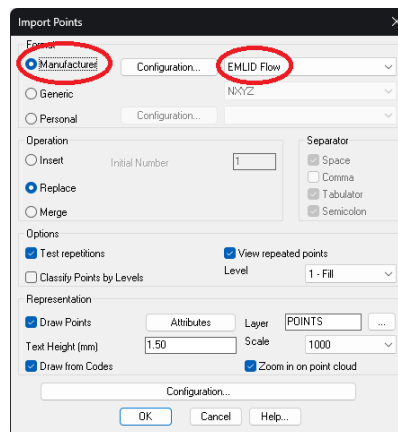
- **Emlid Flow v9.2+**
- **AutoCAD v2007+** or **BricsCAD Pro v16+** or **GStarCAD Professional v2021+** or **ZWCAD Professional v2012+**
- **TcpMDT Standard v9.0+**

Workflow

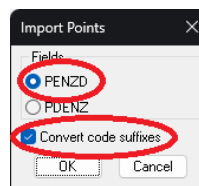
Below is one of the possible workflows, which consists of drawing the survey points, creating the digital terrain model, generating the contour lines, creating an alignment and obtaining long and cross sections.

Importing Points

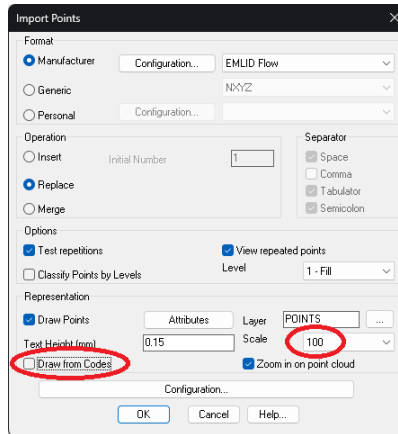
1. Start TcpMDT
2. Run MDT9 > Points > Import
3. Select format Manufacturer and choose EMLID Flow



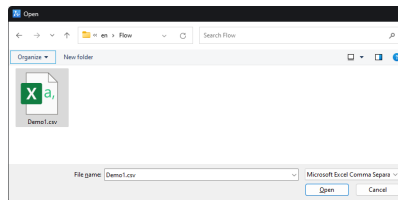
4. Press the Configuration button and choose the PENZD option (Point Number, East, North, Z, Description). Also leave Convert code suffixes checked. Click OK.



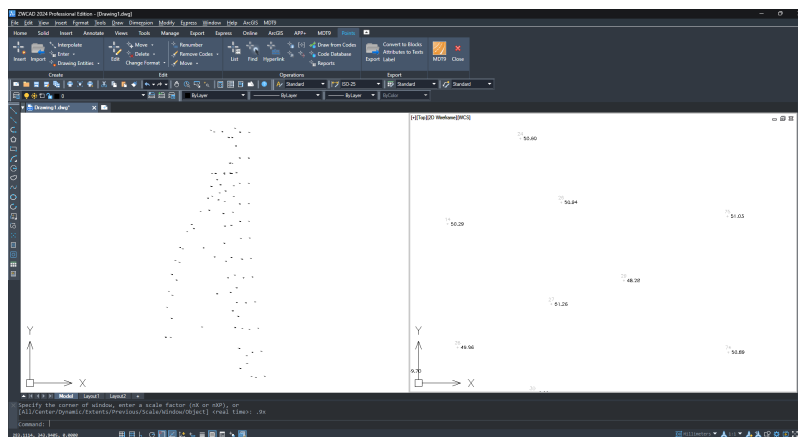
5. Choose a suitable Scale for the representation of the texts and uncheck the Draw from Codes option.



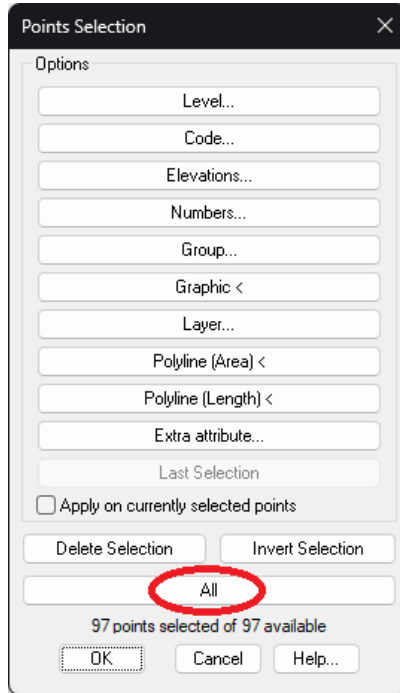
6. Click OK and choose the CSV file previously exported by EMLID Flow.



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



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



9. 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.

Name	Level	X Coord.	Y Coord.	Z Coord.	Code
29	1 Fill	293.550	336.082	48.280	LS S
30	1 Fill	289.114	330.595	48.280	LS
31	1 Fill	283.615	324.281	47.820	LS
32	1 Fill	274.145	313.060	47.650	LS
33	1 Fill	267.333	300.542	47.180	LS
34	1 Fill	265.398	292.393	46.730	LS
35	1 Fill	263.682	281.514	46.310	LS
36	1 Fill	261.106	272.171	46.120	LS
37	1 Fill	260.662	258.043	45.690	LS
38	1 Fill	260.012	246.336	45.440	LS E
39	1 Fill	279.269	252.746	45.540	TREE

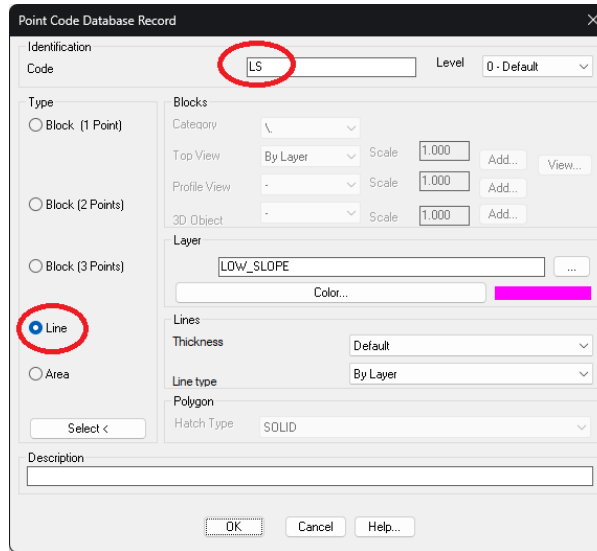
Drawing Break Lines and Blocks (Optional)

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

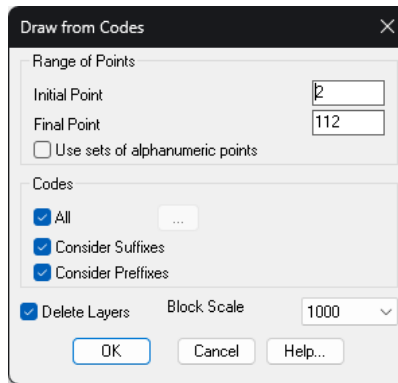
Code	Level	Type	Layer	Color	Thickness	Element
Facade	Break	Line	Facade	1	Default	Continuous
Fence	Break	Line	Fence	4	Default	Continuous
Filling	Fill	Point	Filling	3	Default	-
Garden	Break	Line	06_Garden	63	Default	Continuous
Headlope	Break	Line	Headlope	30	Default	Continuous
Keystone	Break	Line	Keystone	161	Default	Continuous
Lampost	Fill	Point	LAMPPOSTS	4	Default	Lampost
Limit	Break	Line	Limit	6	Default	Continuous
Line1	Default	Line	Line	4	Default	By Layer
LS	Break	Line	LOW_SLOPE	6	Default	By Layer
Manhole	Information	Point	MANHOLES	6	Default	03_P65
Newertry	Fill	Line	Newertry	195	Default	Continuous
Olive tree	Break	Point	Olive tree	3	Default	06_Olivo
PARCEL	Break	Line	PARCEL	0	Default	By Layer
Parking	Break	Line	Parking	252	Default	Continuous
PATH	Break	Line	PATH	7	Default	Continuous

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.

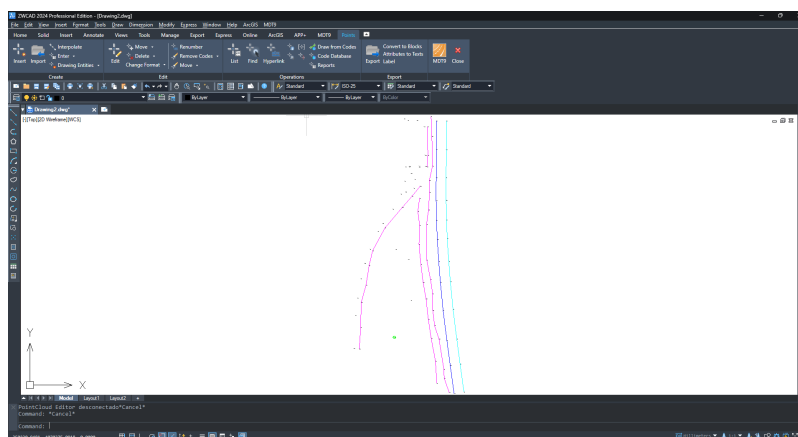


3. Press OK twice.

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



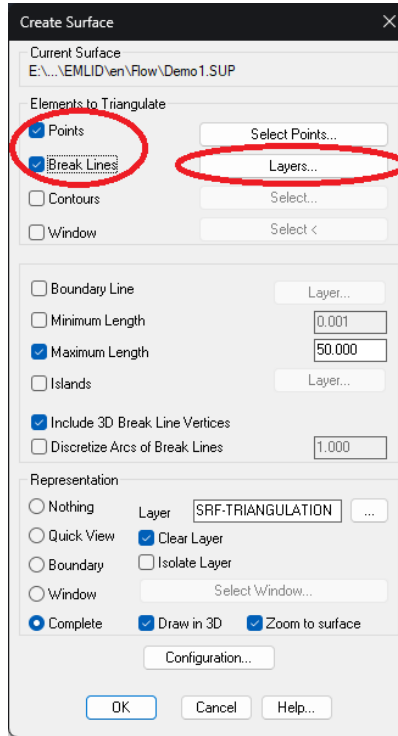
5. Click OK leaving all options by default



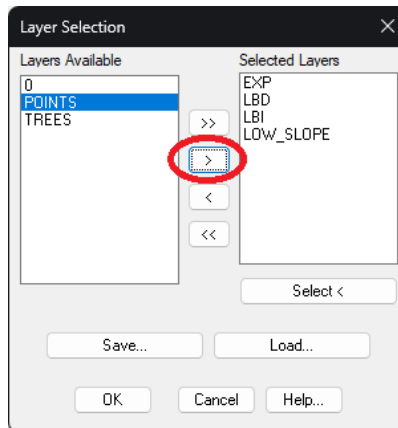
Creating Digital Terrain Model

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

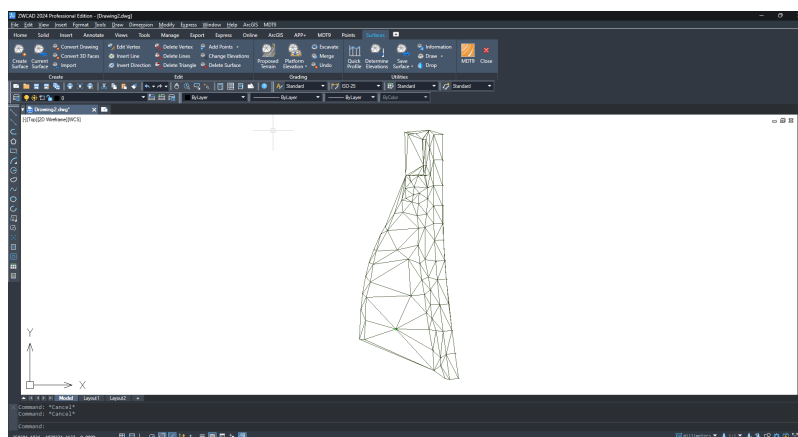
2. In the dialog, check that within the Elements to Triangulate there are the elements Points and Break Lines. Tap the Layers button



3. Choose the list of layers that should be considered as break lines, drawn automatically or manually, using the > button, and press OK

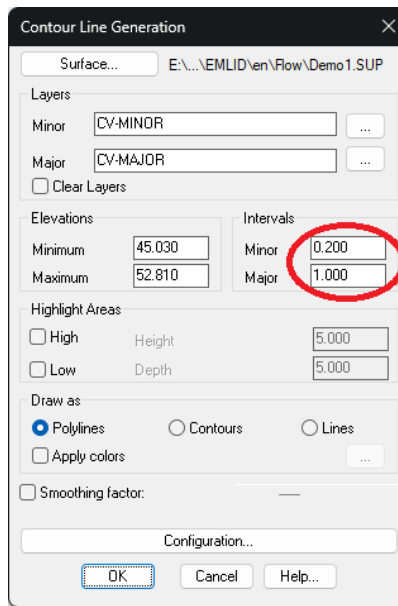


4. Click OK again to generate and draw the triangulation

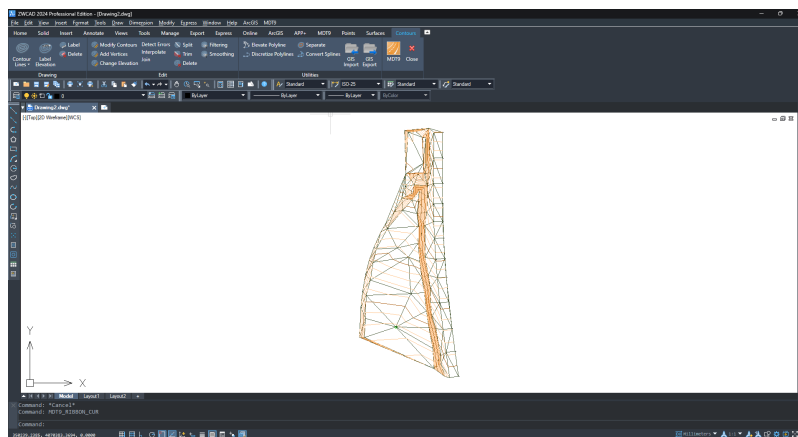


Generating Contour Lines

1. Run the command MDT9 > Contour Lines/Mapping > Create Contour Lines
2. Setting the intervals between Minor and Major contour lines

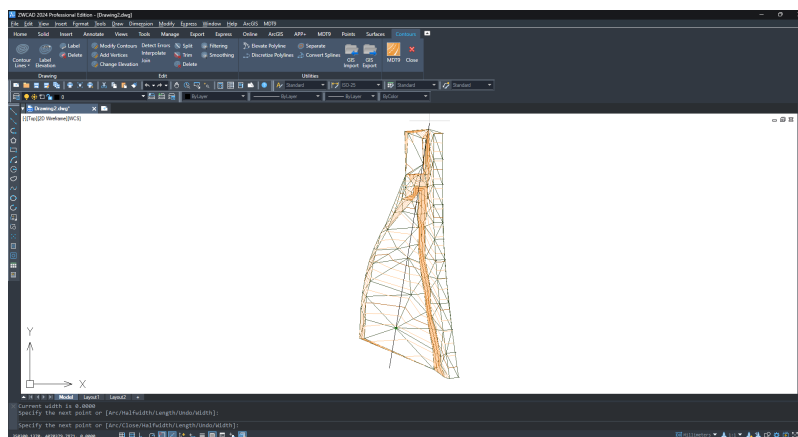


3. Click OK to generate the contour lines

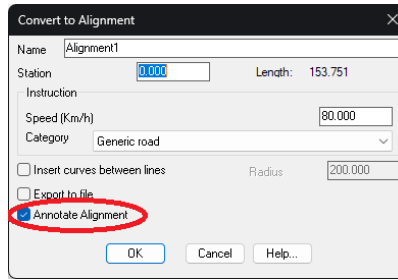


Creating an Alignment

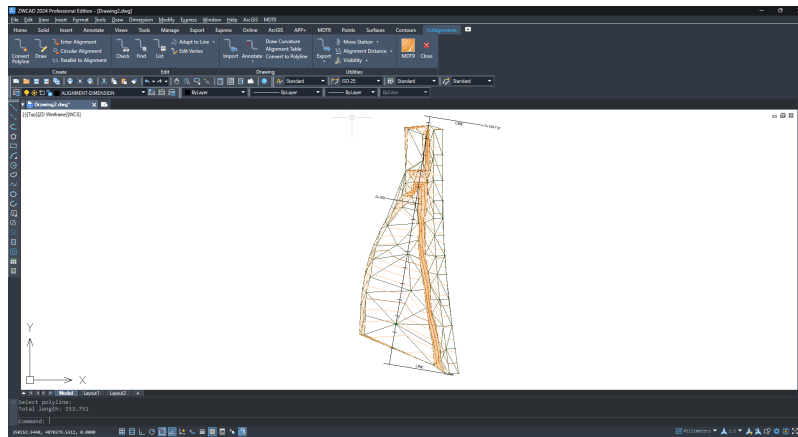
1. Run the Draw > Polyline CAD command and draw an alignment that we'll use to create profiles.



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

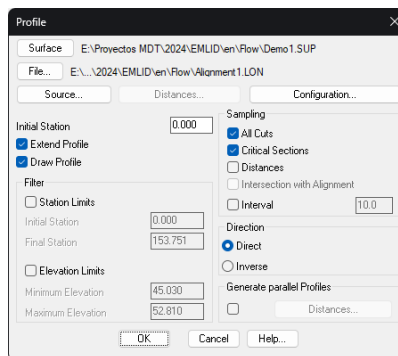


3. Enable the Annotate Alignment option and click OK two times

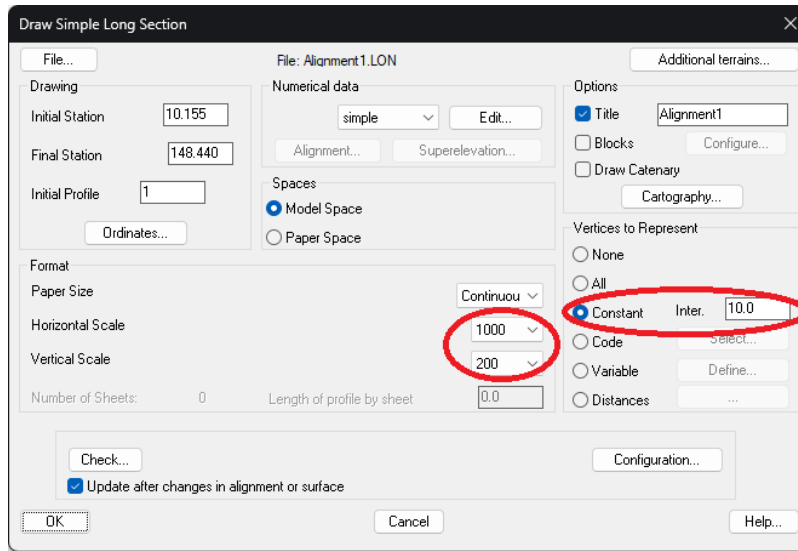


Creating Profiles

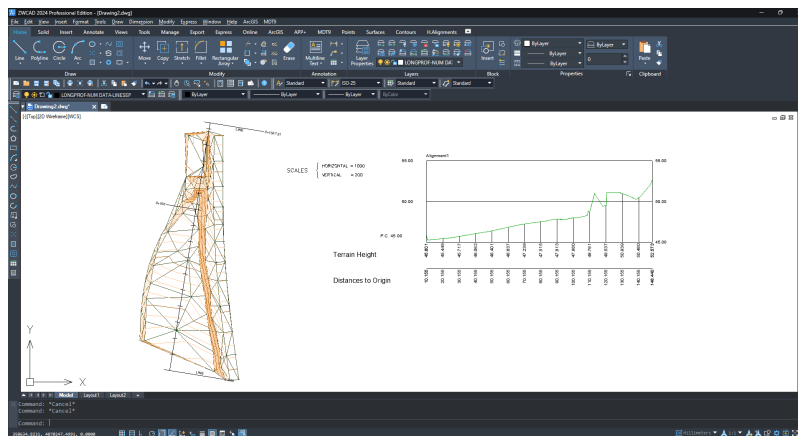
1. Run MDT9 > Long Sections > Create Long Section, and select the alignment created in the previous step
2. In the dialog, leave all options by default and press OK



3. Choose the appropriate values for Horizontal Scale and Vertical Scale. In the Vertices to Represent frame, choose Constant and set an interval.

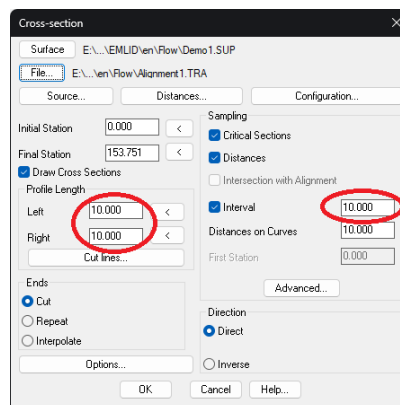


4. Click OK to draw the longitudinal profile in model space and choose an insertion point in a clear area of model space.

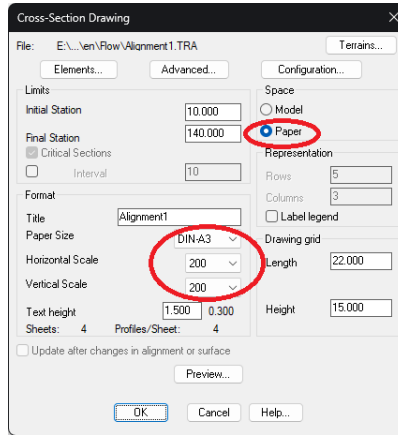


5. Run MDT9 > Cross Sections > Create Cross Sections, and select the alignment again

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

