tcpMDT **25**

Summary of New Features [1]

(1) There may be some differences from the final version when the product is released. This document has no contractual value.

Supported CAD Versions

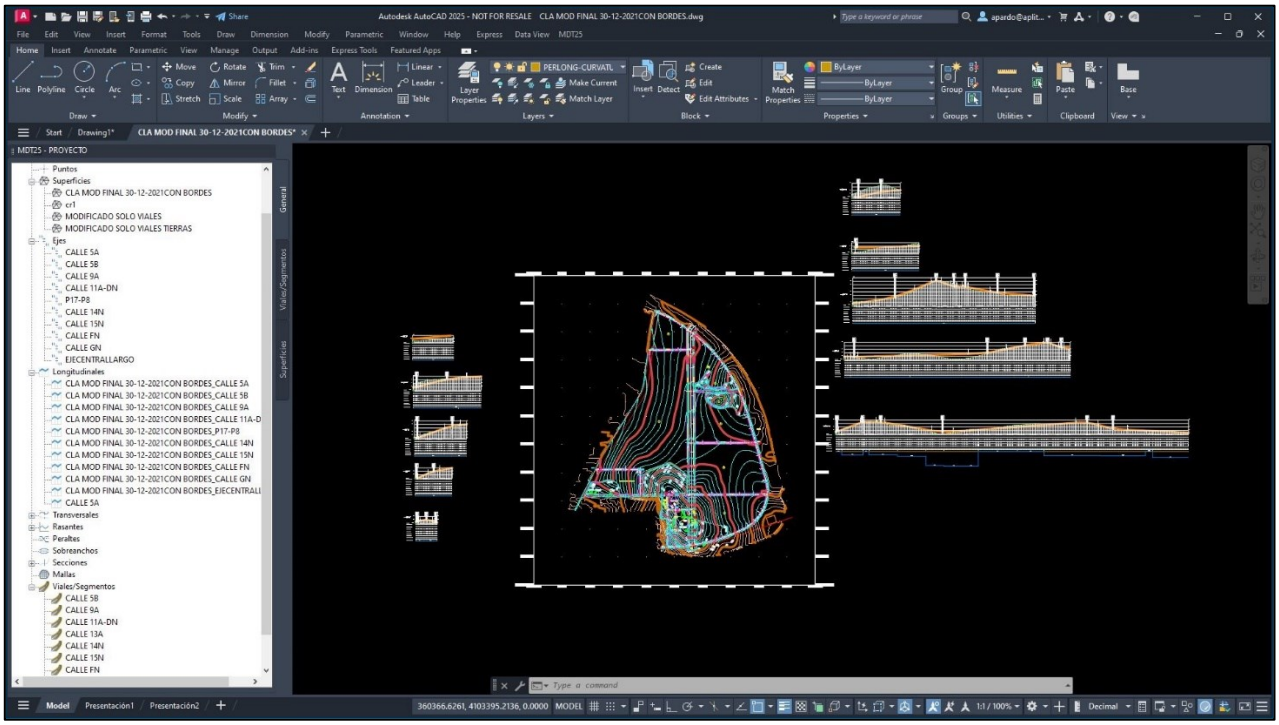
MDT 25 works with various versions of CAD systems, facilitating the exchange of information between users through drawings in DWG format. They are as follows:

- AutoCAD®. Versions 2019 to 2026 (64-bit)
- BricsCAD® BIM/Pro/Ultimate. Versions V.19 to V.25 (64-bit)
- GStarCAD® Professional. Versions 2023 to 2025 (64-bit)
- progeCAD® Professional 2025 (64-bit)
- ZWCAD® Professional/Enterprise. Versions 2019 to 2026 (64-bit)

General

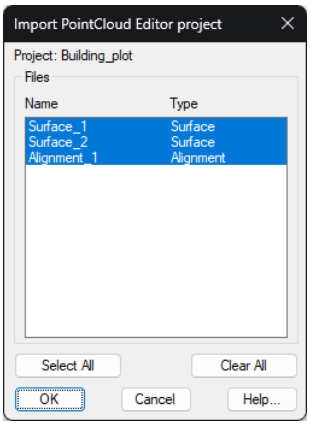
New Project Management Dashboard

We have created a new panel for managing project files, which is coupled with the CAD interface and offers a context menu with possible actions for each selected element.



File Integration with Tcp PointCloud Editor

A new command *Project > Add Data from Tcp PointCloud Editor* has been created, which allows you to add meshes, surfaces, and alignments made from point clouds to the MDT project, so that modifications made to them are reflected in the two applications.



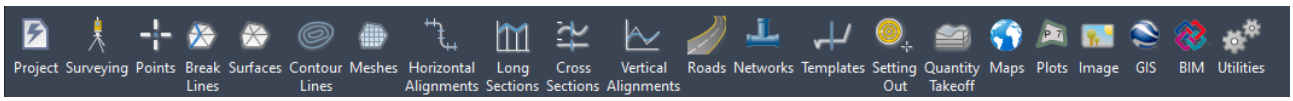
Project Properties

The dialog has been updated, so that from it you can directly edit the BIM properties.

Changes to Menus and Ribbons

The vertical menu has been updated, with a new GIS group, reorganization of some commands and elimination of those that have become obsolete.

The ribbon menus have also been updated, creating separate ribbons for BIM and GIS icons and adding new options.



Vision Control

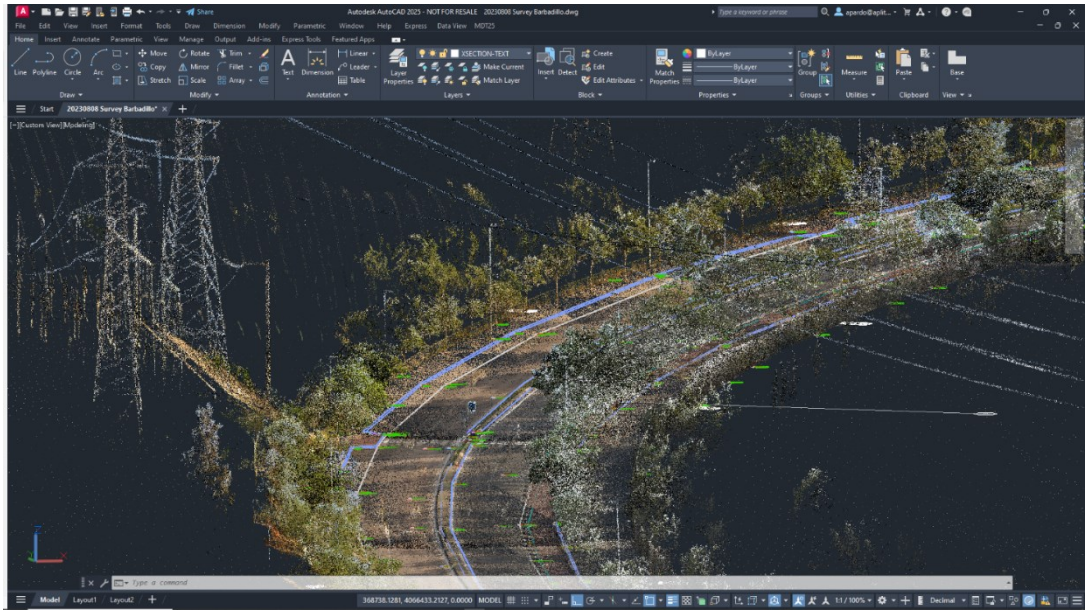
The dialog has been redesigned as a floating toolbar, allowing you to control the visibility of groups of point layers, break lines, surfaces, contour lines, profiles, alignments, maps, and networks with a single button.

Point Clouds

Insert Point Cloud

This command facilitates the insertion of point clouds in the formats supported by each CAD version, by invoking the specific command to link point clouds, so that it can then be used for creation of meshes or creation of surfaces.

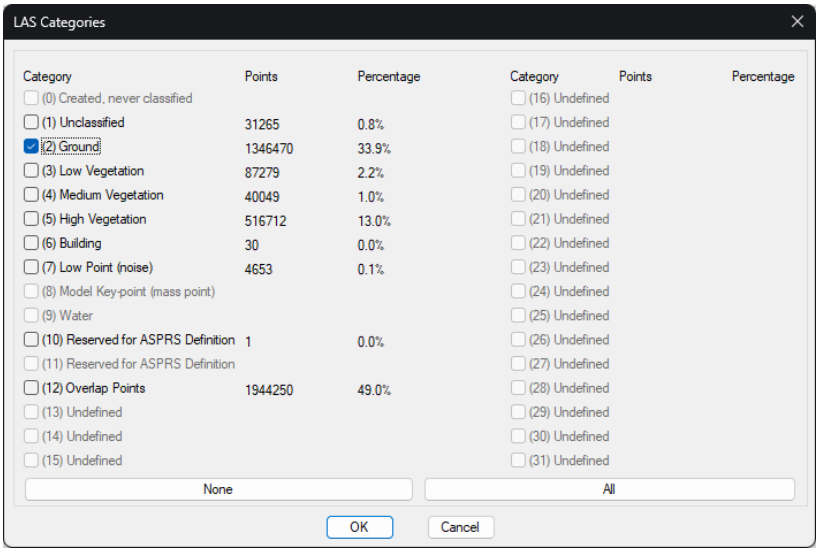
Consult the help of the CAD used for the formats supported by the POINTCLOUDATTACH command.



Importing LAS/LAZ files

Another alternative to working with point cloud files in these standard formats is to import points, selecting "LASer LAS/LAZ" as the manufacturer and choosing the desired categories (e.g. 2-Ground).

It is recommended to disable the option to draw points, so as not to overload the drawing.



Points

Point Formats

The point formats have been revised and updated.

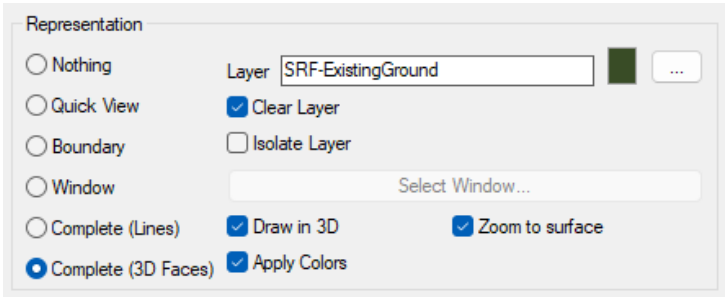
Assigning Coordinate Systems when Importing a TcpGPS Project

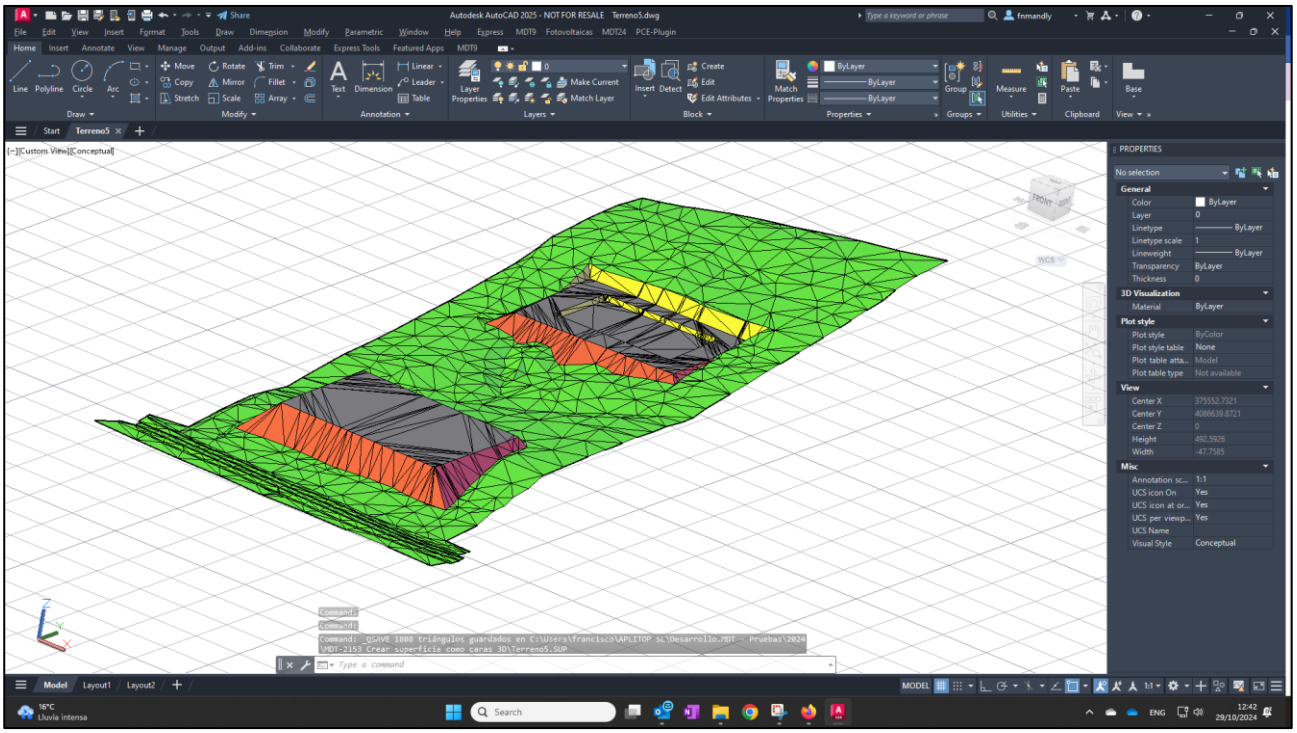
When importing a point file in PUN format captured by TcpGPS, if the raw data file with the same name and GPS extension is found in the same folder, the coordinate reference system is automatically assigned to the drawing.

Surfaces

Direct Representation as 3D Faces

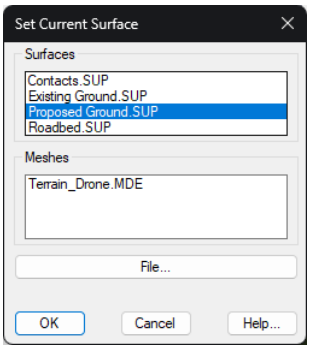
A new representation mode of triangulation as 3D faces has been added to the *Create Surface* command, being able to apply a color depending on the types of triangle (slopes, esplanades, etc.) easily achieving a more detailed and colorful representation.





Working with Multiple Surfaces with the Same Drawing

This version makes it easy to change the current surface of the drawing. The *Set Current Surface* command displays a list of the surfaces and meshes found in the project folder, and you can choose a different one.



In addition, multiple surfaces can now be maintained in the drawing, as they are managed by the "SRF-" prefix of the corresponding layer name.

Creating a Surface from Mesh

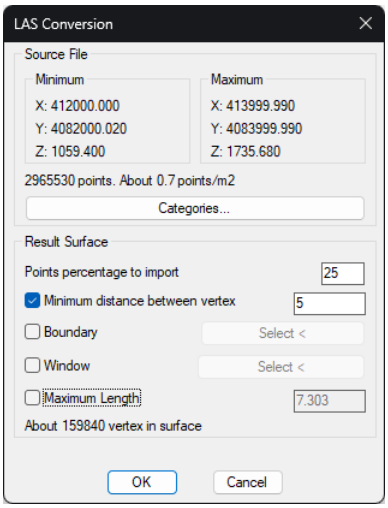
This new command makes it easier to create a surface from an existing mesh, precisely by creating 4 triangles per cell. In addition, you can control the size of the triangulation and specify a boundary.

Creating a Surface from Point Cloud

If a point cloud has been inserted into the drawing, it is now possible to generate a surface from a subset of its points.

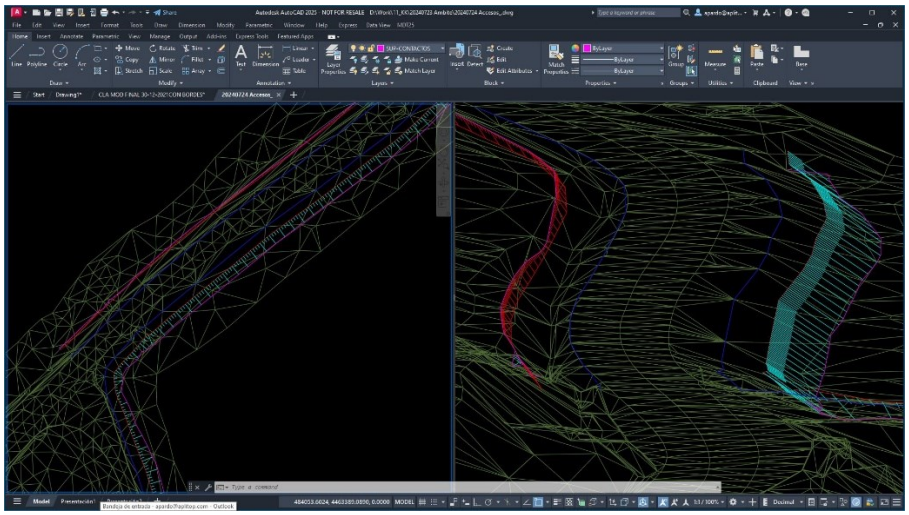
Creating a Surface from LAS/LAZ Files

The *Import Surface* command, if the "LASer LAS/LAZ" format is selected, allows you to create a surface from these, being able to select the appropriate categories. In order to reduce the size, you can specify the percentage of points to be imported and set the minimum distance between vertices.



Calculate Slope (Professional Version)

A new *Calculate Slope* command has been created, which from a polyline and direction allows you to calculate the points of intersection with the terrain, using the slopes specified by the user.



Merge Surfaces

This command has been simplified, and now allows you to merge multiple surfaces.

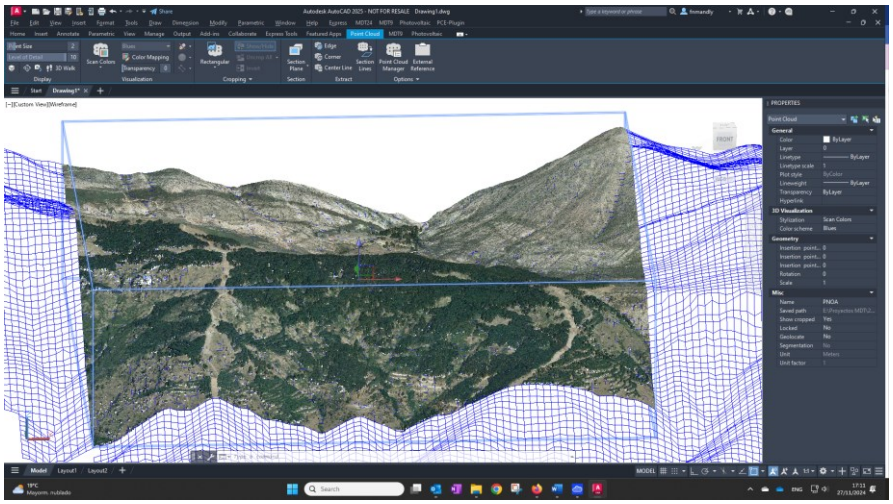
Earthwork by Slope Between Surfaces (Professional Version)

The nomenclature in the dialog has been changed so that the values of the ascending and descending slopes are indicated.

Meshes

Creating Mesh from Point Cloud

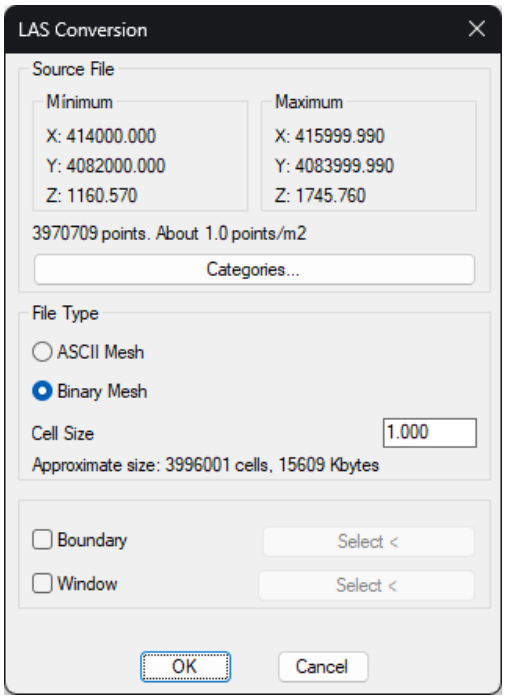
If a point cloud has been inserted into the drawing, it is now possible to generate a mesh from those points or a subset of them.



Creating Mesh from LAS/LAZ Files

The *Import Mesh* command, if the "LASer LAS/LAZ" format is selected, allows you to create a mesh from the points in the point cloud, being able to select the appropriate categories.

You can control the size of the resulting mesh by the dimension of the cell or by specifying a boundary or a window.



Merge Meshes

This command has been modified, so that it now supports multiple files to be merged into a single mesh.

Smoothing of Contour Lines by Boundary

The *Smooth Mesh* command has been improved, so that it can be applied to an outline, and more information about the modifications made is also displayed.

Creating Mesh from Points

The ability to specify a maximum interpolation distance has been included.

Profiles

New Cross-Section Presentation Library

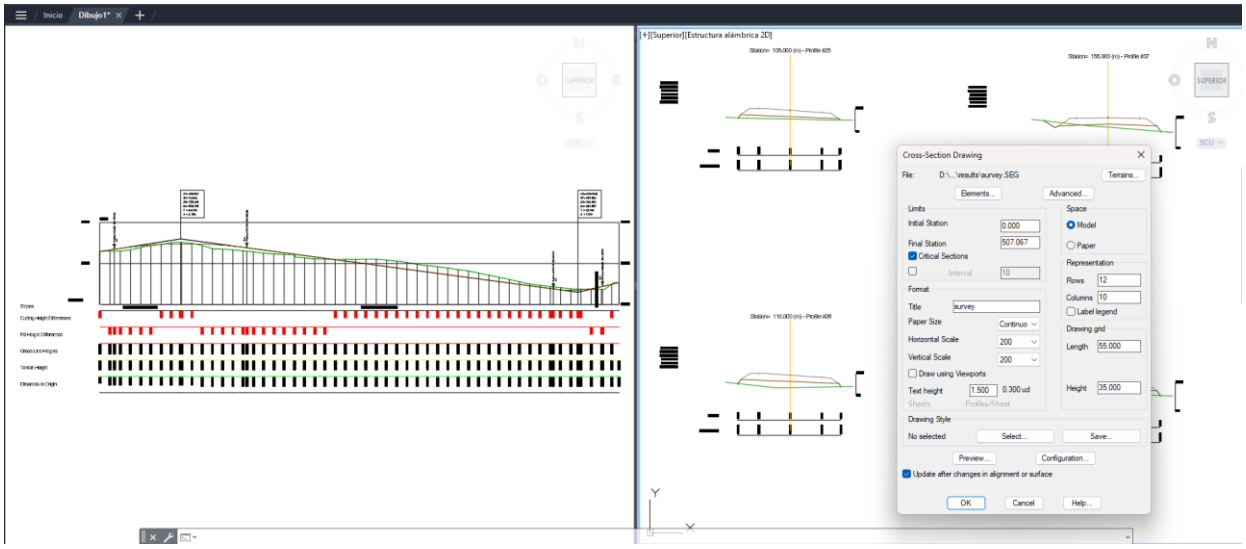
The *Draw Cross-Sections* command now allows you to name a presentation style that stores all the corresponding options, and also to quickly select previously saved styles.

Improvements in Representation of Longitudinal Sections

The possibility of setting the color of the data lines and the texts associated with these elements has been implemented, being able to choose a different configuration for each one.

Drawing Profiles in a Separate Window

A new option has been added to the dialogs for drawing long and cross sections, so that the drawing window is automatically divided into two vertical CAD viewports, making it easier to simultaneously view the plan and the profile.



Conversion from Cross Sections

This command now incorporates the possibility of obtaining a long section from cross sections, not only from the alignment position, but from a distance from it.

Add Profile to Already Drawn Long Section

A new *Add Profile to Drawing* command has been created , which allows you to add to an already drawn long section another profile that will be drawn on top of it, using the same comparison plane.

Additionally, a new "Ground Elevation" data element would be added for each of the added profiles.

Drawing of Multiple Long Sections

The *Draw Simple Profile* and *Draw Composite Profile commands* now allow the selection of multiple files for drawing.

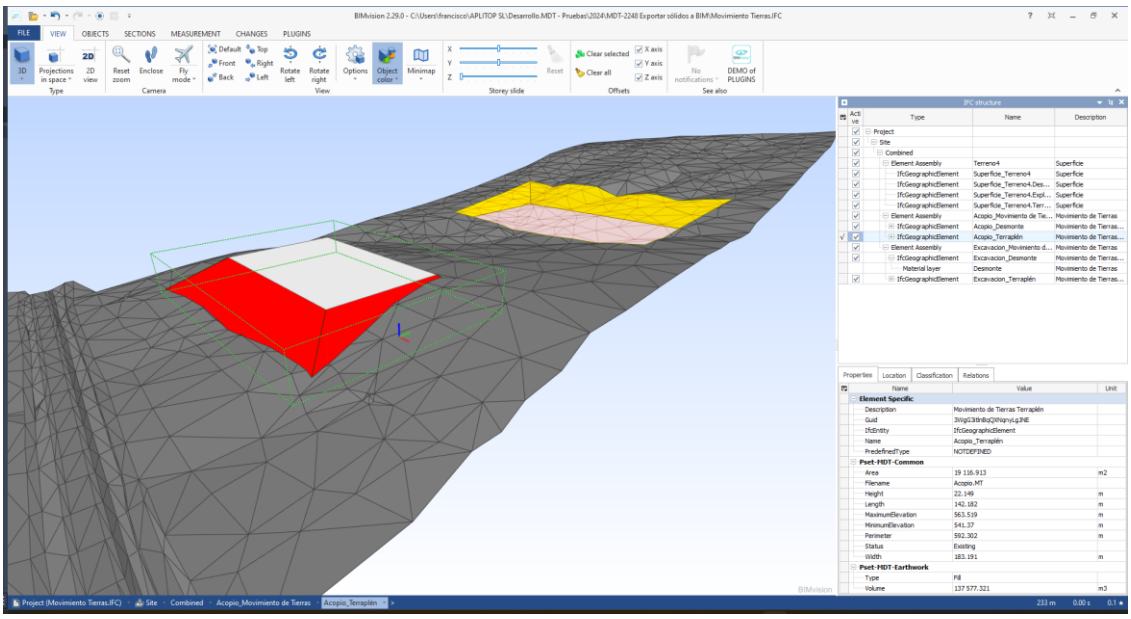
Project 3D Polyline in Longitudinal Profile

This command has been modified to make data entry more flexible and intuitive.

Quantity Take-off

Volume by Surface Difference

It now also generates an earthwork file and draws 3D solids, which can also be exported to IFC.



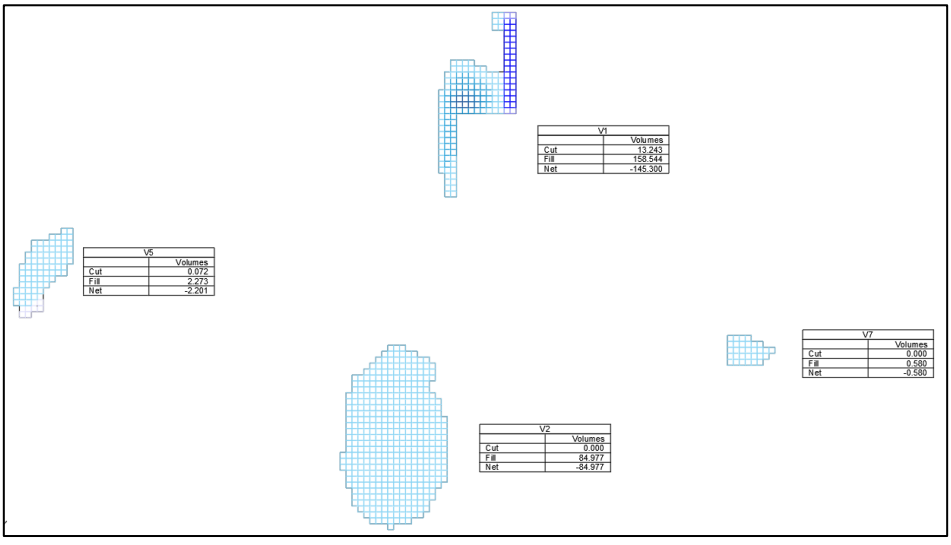
Volume by Mesh Difference

In this version, layers with different thicknesses can be defined, the results of which are indicated separately. In addition, the format of the report has been modified.

Identification and Grouping of Cut and Fill Areas

A new option has been implemented to group nearby areas of clearing and embankment.

In addition, an identifier is generated for each zone, which is labeled in the drawing and reflected in the report.



Volume by Plots

The format of the results report has been modified, so that the cut and fill areas and volumes, as well as the net volume, are indicated for each one.

Calculation of Multiple Stockpiles

This command now allows you to choose a layer with closed polylines representing the boundaries of each stockpile, subsequently generating a detailed report.

Area and Volume Report (Professional Version)

Various improvements have been implemented, such as displaying the information for each of the roads in the grouped report and separating the measurements by left and right sides.

GIS

New Menu

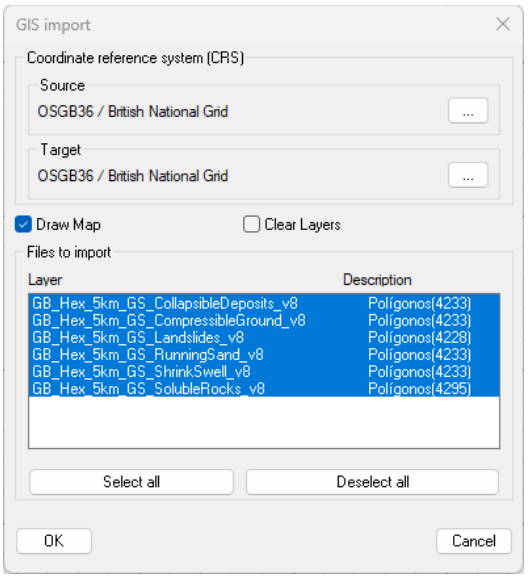
This new menu has been created that groups commands to import and export GIS files, and connect to WMS/WMTS, WFS, and WCS map web services.

ESRI Shape Format Import

Various improvements have been made, so that it is possible to import files in both geographical and projected coordinates. If the file projection is not the same as the current drawing, the entities are automatically reprojected.

GeoPackage Format Import

The *Import GIS* command can now convert files of this format, which can contain multiple layers, and you can select which of them to draw on separate layers.



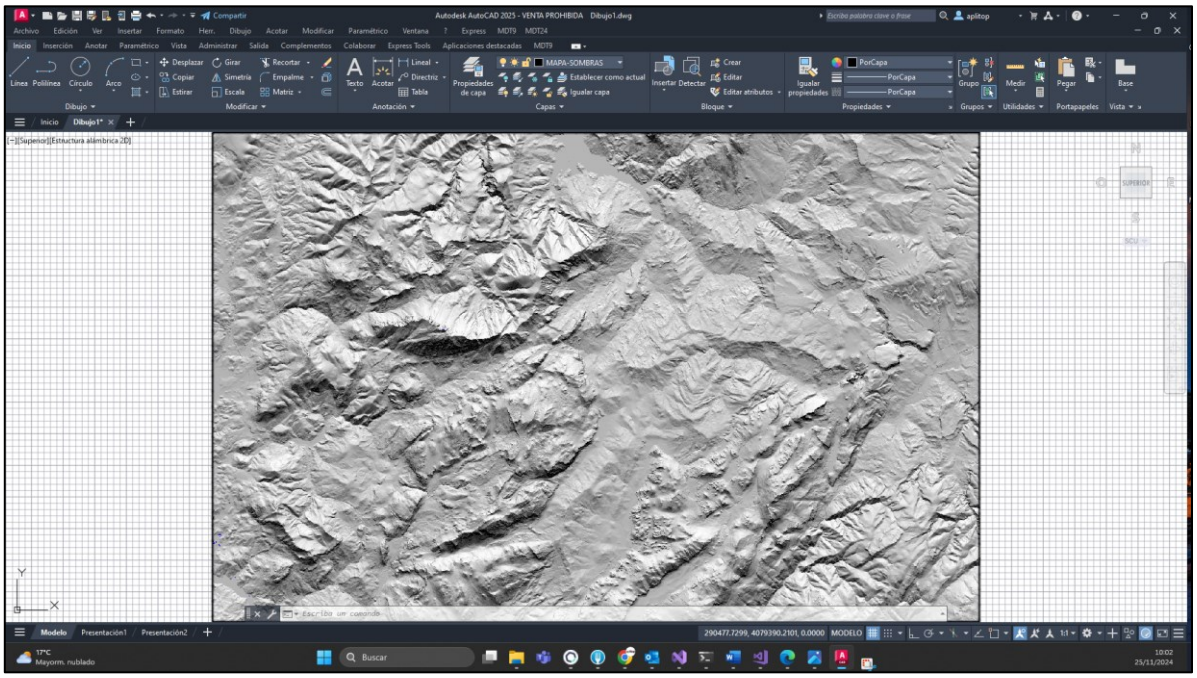
GeoJSON Format Import

The conversion of this format has been improved, making it more compatible with common files.

Maps

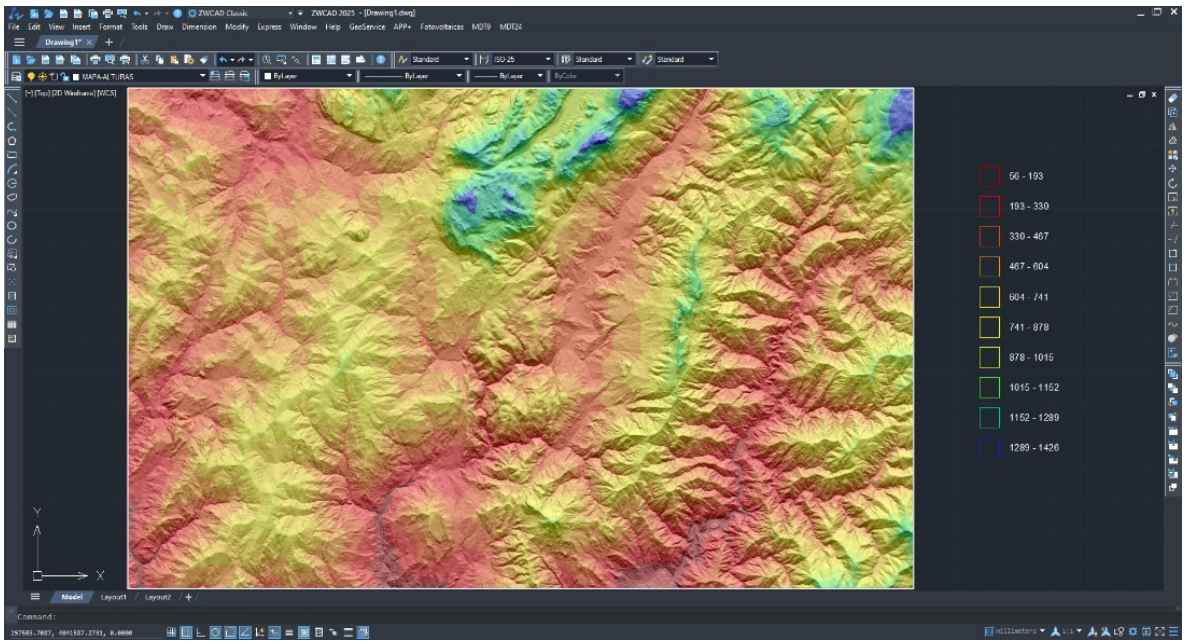
New Shadow Map

This new command draws a shadow map of the current surface or mesh, knowing the current location, date and time or specifying the azimuth and altitude of the Sun.



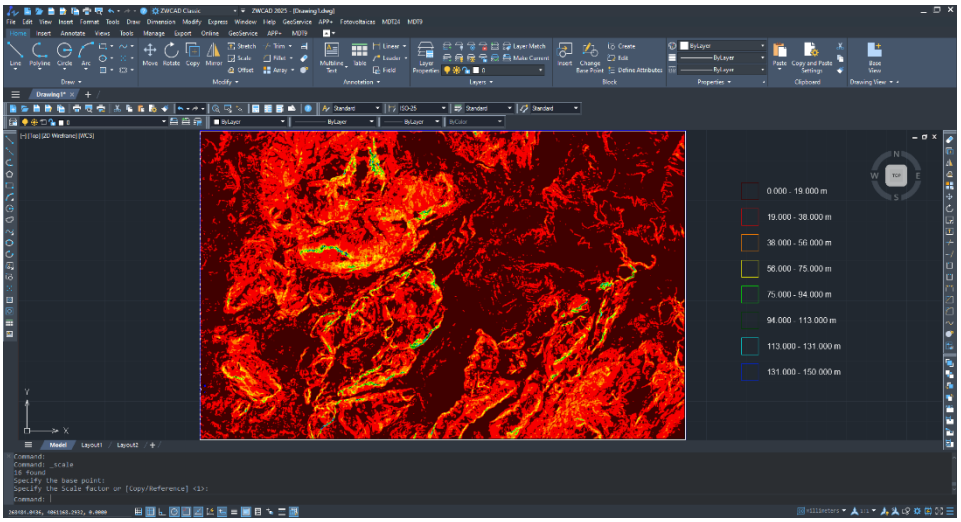
Transparencies on Maps

If you combine the shadow map with maps of heights, slopes, etc., applying transparencies, you get more eye-catching and realistic presentations.



New Roughness Map

This new command generates a map of surface roughness or degree of irregularity. It is calculated by the largest difference between cells in a central pixel and its surrounding cell.

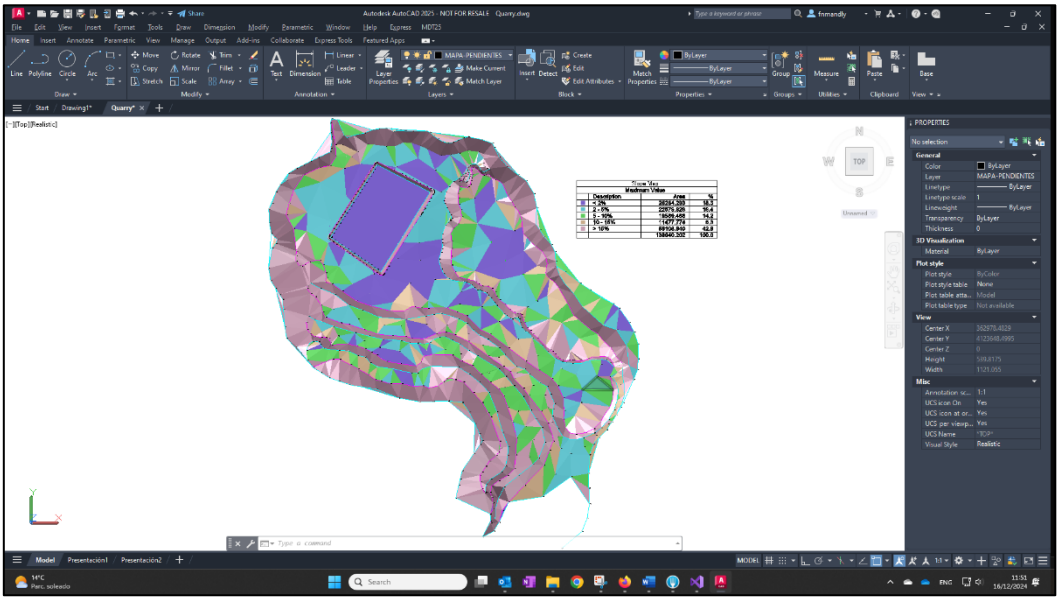


Slope Map

Multiple improvements have been made to this command over the previous version:

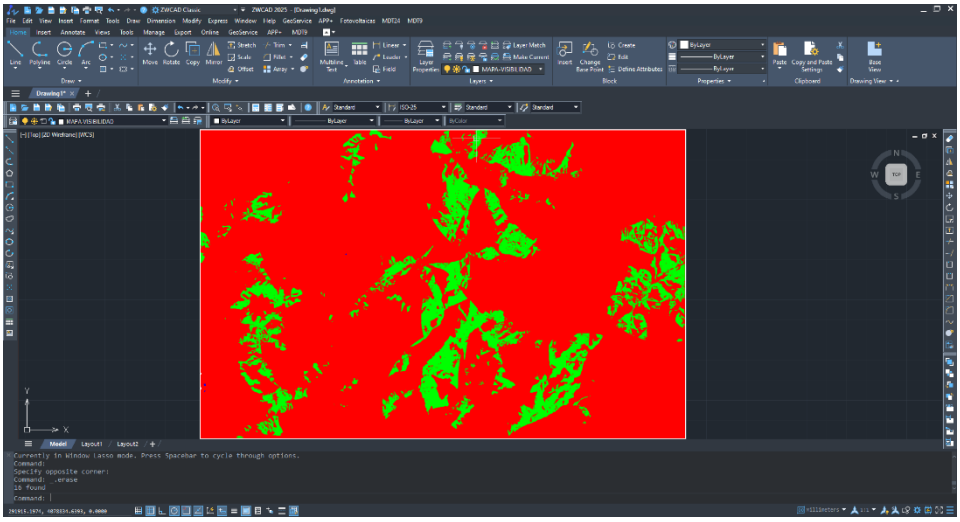
- Calculation of the maximum slope or North-South, South-North, East-West, West-East
- Ability to draw only areas in a given slope range
- Different color palettes for positive and negative values
- Optional drawing of zone contours in specific slope ranges
- Transparency application

- New legend with labeling of areas and percentages with respect to the total



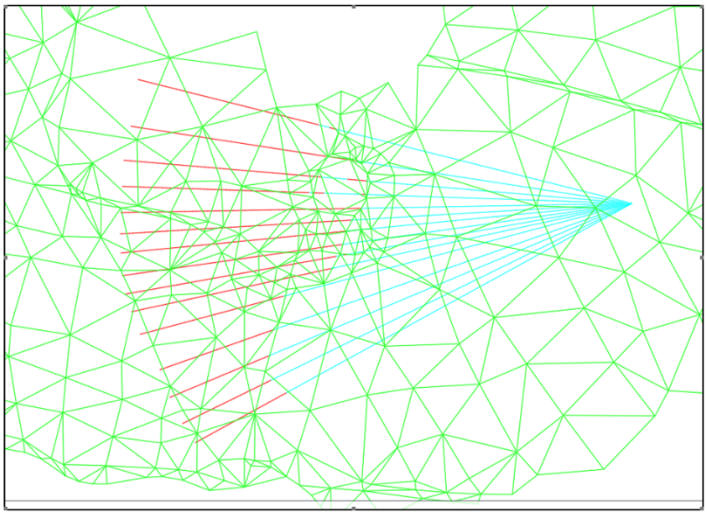
Visibility Map with Multiple Observers

Multiple observation points or a layer where they are drawn can now be indicated, in addition to the height of the observer and the maximum observation distance.



Line of Sight

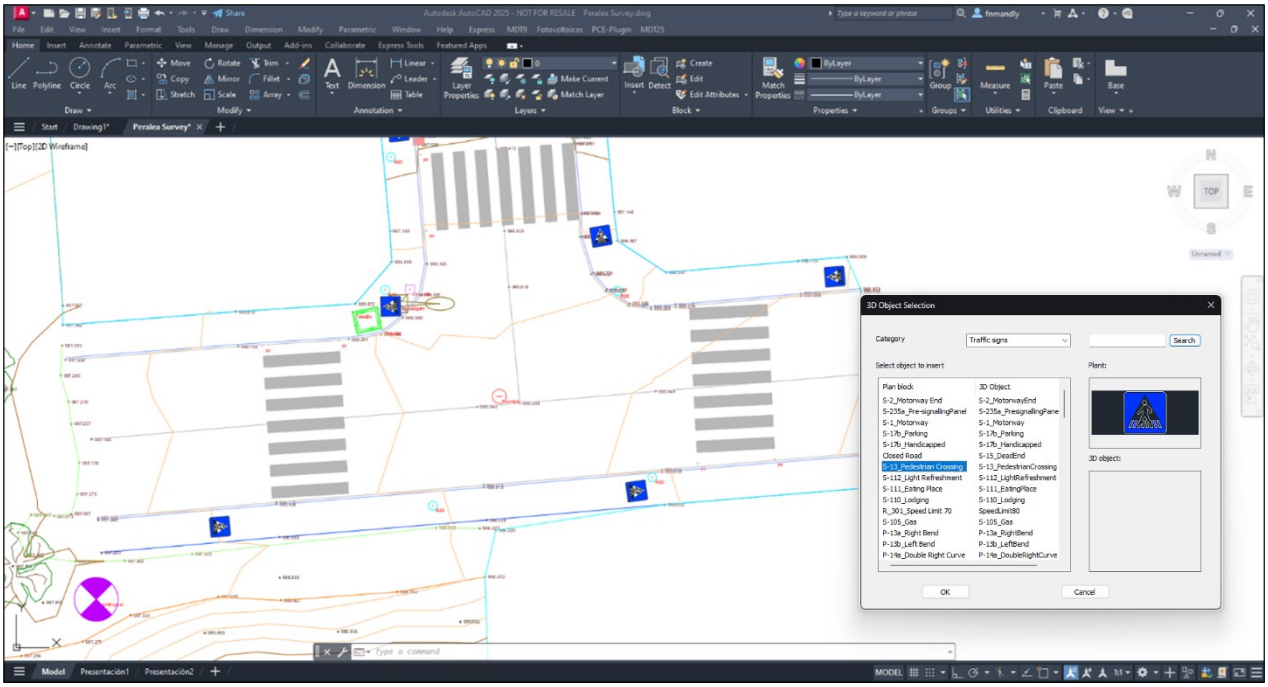
This new command draws a line between two user-specified points, showing visible and non-visible sections in different colors.



Inserting 3D Objects

The command has been redesigned to make it more versatile, with the following improvements:

- Selecting objects with plan and elevation preview
- Manual mode to insert objects into the desired position
- Station mode to insert them into specific station on an alignment
- Interval mode that allows you to specify start and end stations, interval and offset



Material Configuration

Command has been improved so that materials can be represented by texture or color.

BIM

Project Properties

From the project panel, you can view and edit the project properties.

Grade Lines (Professional Version)

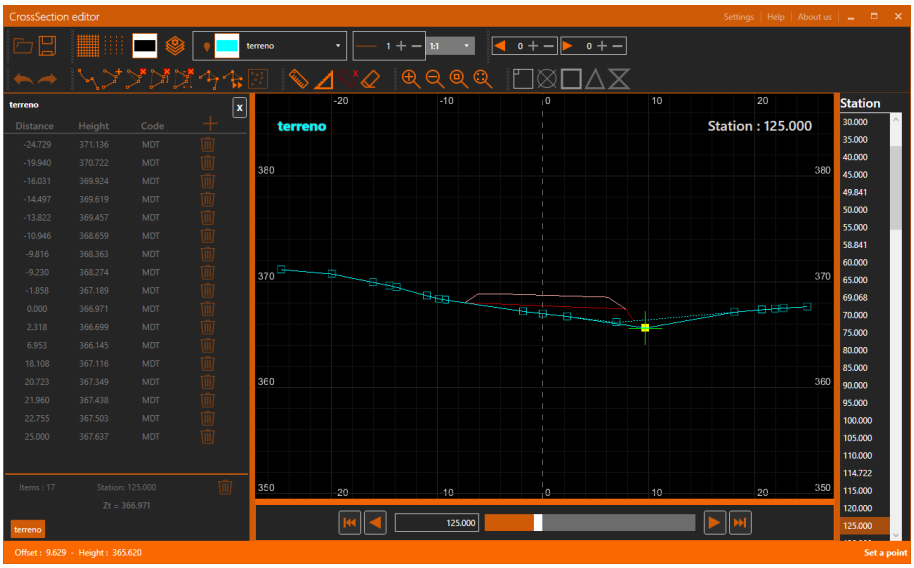
Representation of Vertices

Now the vertices without agreement are represented with the same structure as those with it.

Type Sections (Professional Version)

Natural Terrain Modification

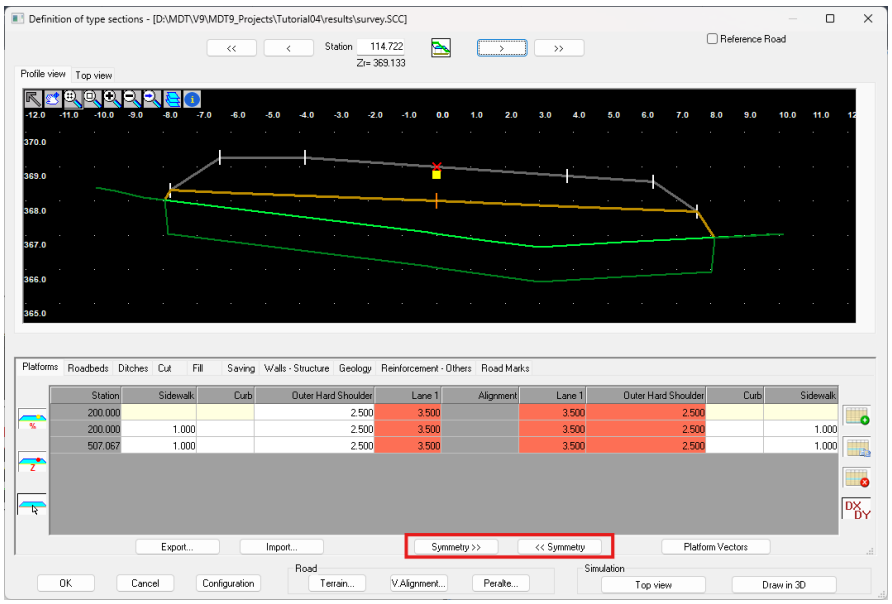
From the editing of sections, it is now possible to modify the natural ground.



Defining Platforms

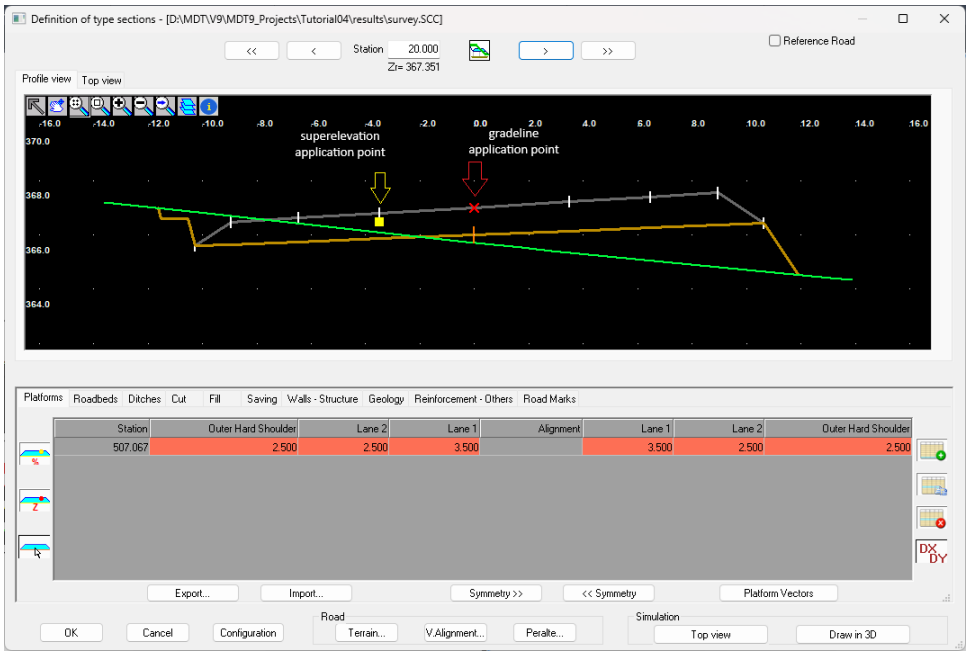
The following improvements have been made:

- Two buttons with the symmetry function have been added, to copy vectors from the right to the left or vice versa.
- Ability to assign the pivot vertex by selecting the column.
- When creating new platforms, it requests the station by keyboard, so that it is more intuitive and you do not have to use the mouse. With the *Enter key* it is validated.
- In the same way, this improvement has been implemented to copy the platform.
- On platforms, in the cell the possibility to display DY and DY
- On platforms, in the cell the possibility of also entering the DY, the following formats are used: (DX - DX,DY - DX DY - DX;DY)



Application of Superelevation

This version allows you to specify the vertex where the superelevation is applied as a reference, which does not necessarily have to be on the alignment.

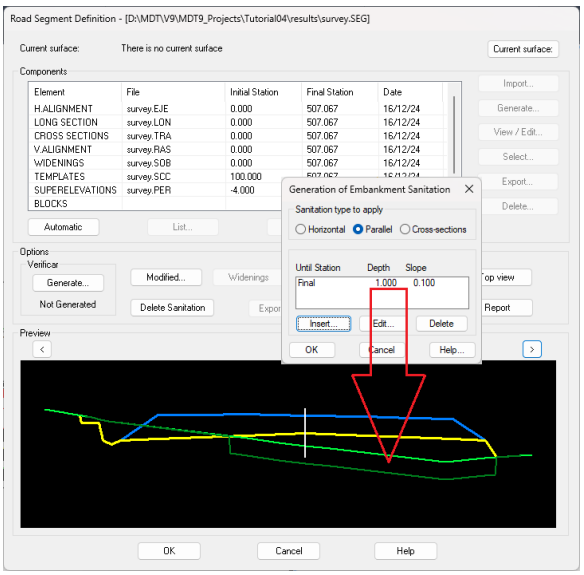


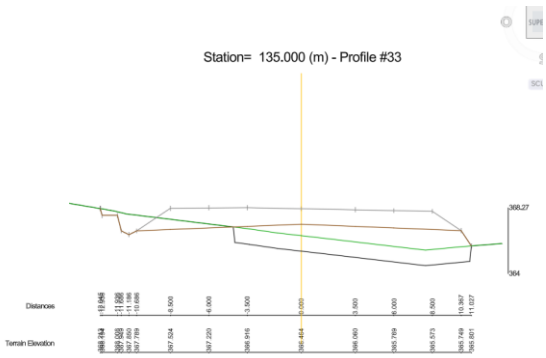
New Definition of Slopes

On variable-type slopes, vectors can now be defined by setting slope/slope conditions. For example, if the head of the clearing is known, the foot is calculated by keeping the head, the slope fixed and the slope fixed from the subgrade.

Definition of Embankment Sanitation

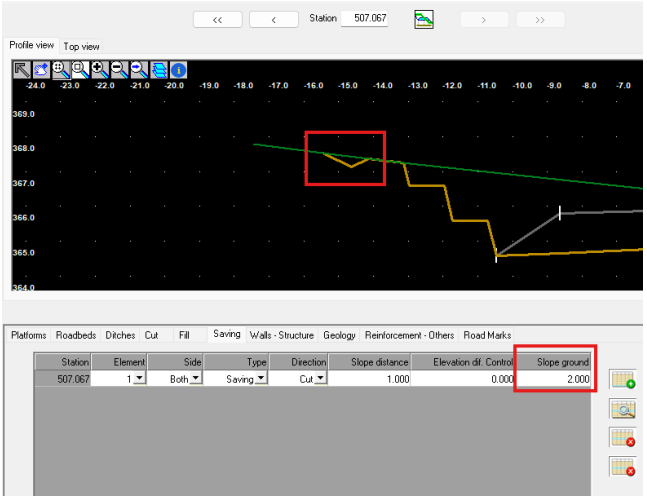
A new button with this functionality has been added in the segment definition dialog.





Closing the Safeguard Ditch

In the safeguard ditch definition, you can now specify the slope of the closure slope.



Wall Assignment

Now you can specify whether you want to apply them to clearing and/or embankment areas.

Roadbed layers in Selected Soil

In the pavement definition, you now have the possibility to specify different layers in the selected soil, the measurements of which can be obtained with the *Roadbed Layer Measurement Report* command.

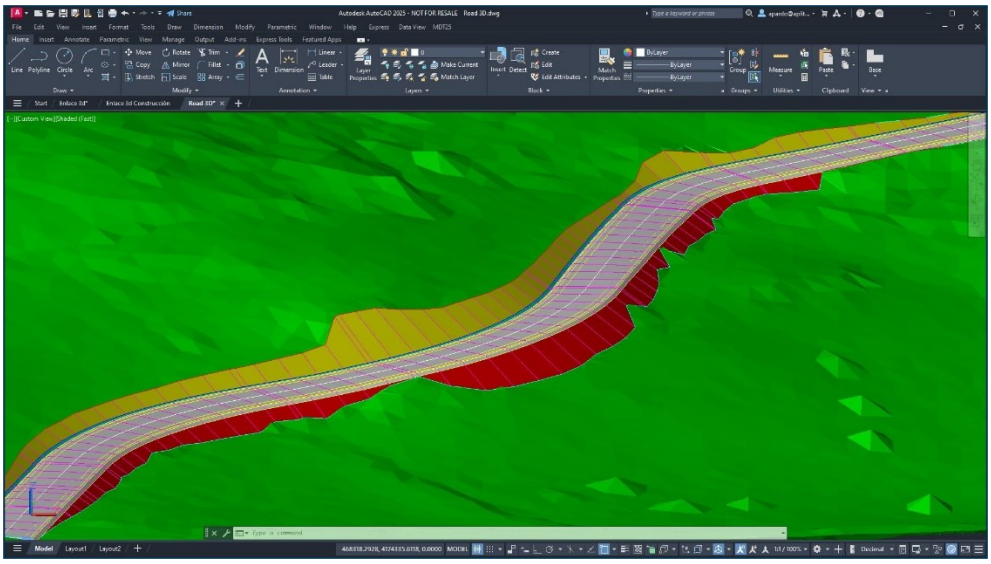
Application of Geology to Standard Section

By means of codes, the vectors for application or exclusion of geology layers to the type section can be specified.

Roads & Roads (Professional Version)

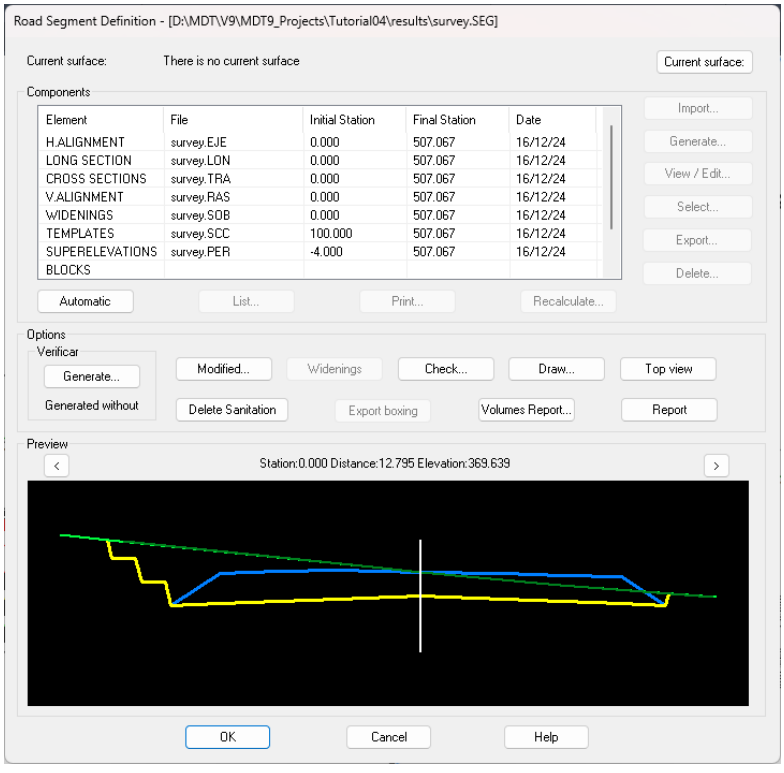
Rendering with 3D Faces When Obtaining Proposed Surface

A new option has been added to this command to render the resulting proposed surface as 3D faces, with the material mapping predefined.



Road Editing Improvements

Various improvements have been made, such as allowing the creation of the long and cross sections, and grade profiles from the dialogue itself, as well as surface selection, creation of widenings, etc.



Viewing Road Files from Outside MDT

Now you can simply double-click on a segment file with Windows Explorer to open the segment editor.

Pipe Networks (Professional Version)

Selection of Multiple Pipe Segments

The *Check Pipes* command now allows you to select multiple pipe segments, generating a report for each one.

Pipe Vertices in Non-Node

Pipe nodes can now be visible or not.

Angles Report

This new command generates a list of the vertices of the pipe and their interior angles.

Staking Out (Professional Version)

Coordinates of Overlaps of Roadbed Layers

This new tool generates a report with these coordinates, which can be exported for staking out.

Geodesy (Surveying Module)

Assigning the Coordinate Reference System from the Drawing

If the geographical location for the drawing has been set in the CAD versions that allow it, the coordinate reference system is automatically inferred.

View commands for working with geographic locations.

Updating the Coordinate Reference Systems Engine and Database

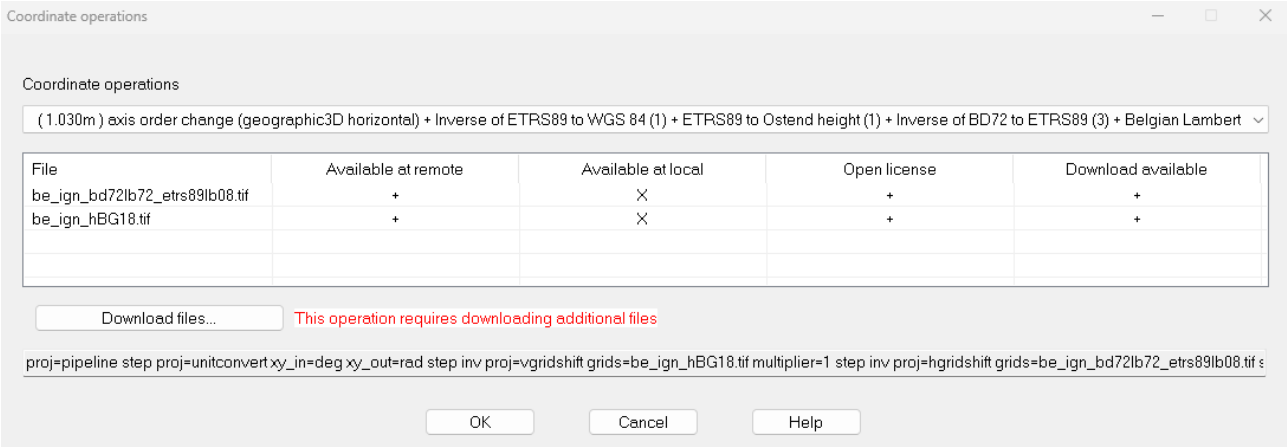
Both the calculation engine, based on PROJ, and the geodetic database have been updated, which further expands the possibilities of working with the coordinate reference systems of different countries. The authorities considered are EPSG, ESRI and the National Geographic Institute of France.

New Coordinate Reference System Search Modes

They can now be located interchangeably by name, code, or area.

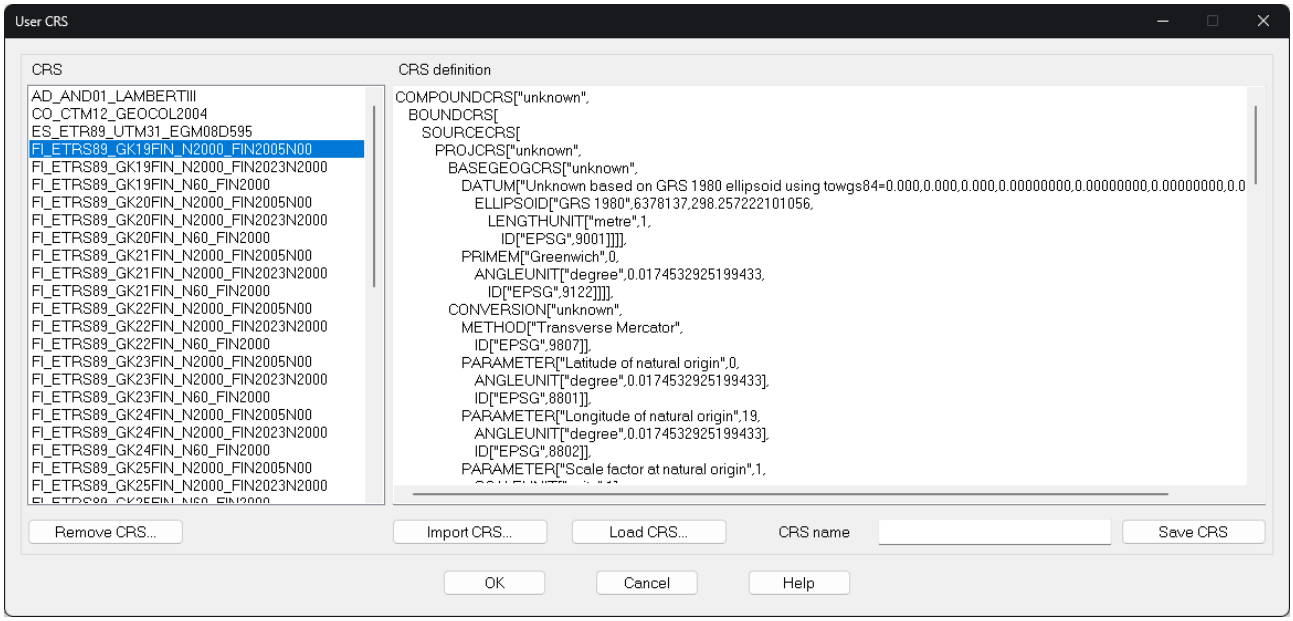
Possibility to Download Geodesy Files

If manual selection of coordinate operations is enabled and additional grid or geoid files are required, the application offers the possibility to download them automatically.



Defining User Coordinate Reference Systems

This release allows you to directly load and use user coordinate reference systems that are not included in the PROJ geodetic database.



Photovoltaic Module

A series of improvements have been implemented that facilitate the work in photovoltaic installation projects, such as:

- Slope Maps
- Shadow Map
- Volume by mesh difference
- Identification and grouping of clearing and embankment areas