Analyse (DTM)

DTM · https://mes100.com/docs/analyse-dtm/

Click the ‘Calculate’ button (DTM) to compute the earthworks volume calculation. Go to Cut/Fill>> DTM>> Calculate

Digital Terrain Model (DTM) is a digital representation of the continuous surface of ground by field survey points or data points with known X,Y,Z coordinates.

Auto Balancing

Auto Balancing will balance all the platforms height (platforms proposed level) to minimize the amount of cut/fill volume, used to optimize the cost of import/export.

Auto balancing works if only there is a **boundary** because auto-balancing must happen within the boundary. To create a boundary, refer to Chapter 6.

The auto-balancing is only applied to the DTM method. Click on Calculate in DTM, and tick the box as shown below.

All the platform proposed levels will be adjusted accordingly, unless you fix the height. To fix the height, click on “Platform > Spread Input > Fix Height and change to Yes”.

To define the balancing earthworks volume, insert the Desired Cut/Fill in Boundary spread input section.

Auto Slopes & Retaining Walls

Software provides sloping modelling and retaining wall modelling at all the platform’s edges.

In order to allow the platform to have a slope or retaining wall, platform edges need to be assigned with a slope direction either ‘None, In, or Out’.

Select none if it does not require any slope.

Auto Slopes (Slope In or Slope Out)

Depending on the sloping direction, the starting and stopping point of

auto-slope will differ:

Slope Out:

Note: The starting point of a slope is always from the platform edge level

Slope In:

Retaining Walls

User can set retaining wall shape, colour, and other properties based on height from Platform Level to Existing Ground Level/Autoslope level

Wall shape dimensions can be modified by selecting the associated wall shape and modifying its values under Parameter>>Earthwork>>Retaining Structures>>Wall Shape.

Walls can be shown in cut/fill contour and cut sections

Retaining Walls & Slope Combination

Retaining Structure at Boundary

When a platform edge has been assigned both retaining structure and autoslope, a retaining structure will only be created at the end of the autoslope for the following situations below only for slope out.

Set the Slope Direction “Out” and tick “Retaining Structure”

Create a boundary. A retaining structure will be denoted at the boundary once the slope stops reaching the boundary

A retaining structure is created at the edge of the slope and stops at the boundary

Retaining Structure (straight wall)

To assign a retaining structure at the platform, change the slope direction to “None” and tick the retaining structure.

Set “None” to Slope Direction and tick Retaining Structure

Generate the slope and see cut section

The retaining structure is indicated in the Keyplan and Cut Section

Relative Height (length of the retaining structure)

- Slope after retaining wall start at the total of platform + height
- Eg: platform elevation (10) + Relative height (5) = retaining wall start at 15m
- Both of the sides of the retaining wall can be assigned with height

5 m height and 3 m height for the sides. If the height of both of the sides are equal., insert the same value

The corner number is shown once the platform is clicked.

See Cut Section

Slope continues 5 meter above the platform elevation

Absolute height (Elevation where the slope starts after retaining structures)

Eg: Platform height is assigned to be 20 m. The elevation of the slope starts at 25 m, therefore plug in 25 m in the absolute height.

Both of the sides can be assigned with height. If the height of the retaining are the same for both sides, insert the same value

The corner number is shown once the platform is clicked.

See Cut Section

Base Surface (Existing Ground) and Comparison Surface

Every DTM analysis compares two surfaces:

- **Base Surface** – the existing ground. This is a project-wide setting: it also drives slopes, contours, string lines, ground levels, soil profiles, boreholes, retaining walls, and the terrain boundary, not just Cut/Fill. It is edited from **Input > Surface**, since Input is where Generate Slopes and Calculate Cut/Fill are both launched. Cut/Fill shows the same value read-only, so Calculate is never run without seeing what it will measure from.
- **Comparison Surface** – what the Base Surface is measured against for this analysis (e.g. the as-built survey, or the proposed Platform). It is edited from **Cut/Fill > Surface**. Input shows the same value read-only.

Each picker offers a **<>** option, which is not a fixed survey point group but a pseudo-surface that always follows whichever survey point group is currently active in the Survey Point Group Manager. Selecting it means the Base (or Comparison) Surface updates automatically when you switch the active group in Terrain, instead of silently staying pinned to whichever group was active when you last set it.

- New projects default **Base Surface** to `<<Active Surface>>`.
- **Comparison Surface** still defaults to **Platform**.

Note: the Terrain tab no longer carries either picker. It’s back to being purely where survey point groups are managed — the Survey Point Group Manager lets you edit a group’s Color, Visible, and Point Size directly as columns, without needing to activate that group first (which would otherwise change the analysis surface and discard computed results).

If you open a project saved before this option existed, its Base Surface migrates automatically the first time it loads: if it already named the same group that was active, it now follows `<<Active Surface>>` and loads with identical results. If it named a *different* group, it is left pinned to that group as-is — MiTS can’t tell from the file whether that was a deliberate pin or the old inconsistency, so it won’t guess; the existing verification warning will flag it so you can resolve it by hand.

As-Built Calculations

As built calculations can be carried out by analysis using two survey point groups. Steps to create a survey point group can be referred to under section 1.2.2. Steps to carry out as-built calculations are shown below.

Firstly, survey points for existing ground level is imported (as ‘Survey Points 1’ survey point group in example below)

Survey points for as-built is imported (as ‘Survey Point 2’ survey point group in example below)

After importing both survey point surfaces, set the Base and Comparison surfaces as described above: on **Input > Surface**, set Base to the existing ground level group (or leave it on `<<Active Surface>>` and make that group active); on **Cut/Fill > Surface**, set Comparison to the as-built level group.

After analysis is completed, coverage area of ‘Contour’ is the area where base comparison surfaces overlapped, earthworks volumes computation is based on the coverage area of cut/fill contour:

3D view of the surface can be generate by click the ‘3D’ button in the Main windows. Make sure the desired surface type is selected in the terrain tab on the RHS panel. For example, this is the 3D view of Survey Points 1.

To change the surface type, use the Active Survey drop down menu. For example, this is the 3D view of Survey Points 2 within the as-built boundary.

Related



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I’m the Benevolent Dictator for Life for MiTS Software cum Editor of this website. Read more here.

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