12d Model

12d Synergy Enabled

Earthworks / Volume Calculation

For the Construction Surveyor, Engineer, Project Manager and Cost Manager, when confidence in the accuracy of quantity calculations are paramount. It provides information critical to cost and material management, on the project.

12d Model Understands this Important Requirement, and Has Developed The Earthworks / Volumes Option To Cover All Requirements On Site.

The 12d Model Base product is the tool for generating Digital Terrain Models (12d Model TINs). The TINs provide the 3 dimensional surfaces for both visualisation and volume calculations. The TINs are traditionally built from the design surface model and the existing or natural surface surveyed data (option Survey).

Super TINs

A unique feature of 12d Model is the Super TIN. A Super TIN is a hierarchy of tins (that can overlap) and remain as a single object.

Essentially surfaces can be dynamically combined so that if one or more of the surfaces change, the Super TINs automatically update.

Since 12d Model 9, Super TINS support has been extended to almost every option including exact volumes, contouring, and visualisation.

For example, you may want to create a Super TIN that consists of survey data and road design data (two individual TINs) . If a new survey has been completed, then you can simply read in the new survey data and the Super TIN will be updated accordingly.

The Tin Model Provides The User With Many Options For Volume Calculations

- 2d or 3d data can be draped onto a TIN to match the model levels.
- TINs can be adjusted vertically to provide additional layers (sub-grade or Bore log depths)

In Addition to the TIN option for surfaces 12d Model is string based this allows cross sections to be cut through the design model at any location required.

12d Model provides many options for Tin analysis including:

- Aspect analysis
- Slope analysis
- Surface areas
- Surface flow
- Ridges and valleys
- Depths
- Polygons

Flexibility

The 12d Model Volume option provides the user multiple option methods to calculate, cross check and validate quantities. Calculation Methods include:

- **The Exact Method.** This method provides the exact volume between surfaces i.e. the total cut, fill and balance. This method has cost implications as it impacts on whether a job needs to import/export fill.
- **The End Area Method.** This method uses the traditional end area to calculate the volume and sectional data can be cut by multiple methods, including along an alignment,

Provides confidence and flexibility through multiple calculation options

between nominated points or cardinal to the screen view. Section intervals are user definable.

- **End Area Report.** 12d Model produces a detailed report by section (interval) with the area, volume and cumulative calculations so that users can be aware of the changes and understand exactly where the cut/fill is located.
- In both the above methods **volumes can be calculated to nominated depths or the user can prepare the unique 12d Range file** to provide volumes within various depth ranges to a surface or level. This option is invaluable for material management.

The above options and more are available to the user to ensure cost and material management is maximised.

Stockpiles

With stockpiles, 12d Model users can easily measure a volume without requiring a Tin or surface. This is achieved by calculating the data around the base of the stockpile to subsequently find the volume of the stockpile. Users can then generate reports to find the exact volume multiple stockpiles.

Confidence

12d Model users have confidence with volume calculation results. Through visual observation using the unique 12d Model interactive views, anomalies (level spikes) can be viewed through the interaction of the plan, section or perspective views.

This combined with the multiple calculation option provides users the ability to cross check with the **Earthworks/ Volumes module option**.

Earthworks and the Volumetrics option

Simple fast and efficient project or site material management is the key to for managing material movement and costs. Use 12d Model Earthworks/Volume option to measure, manage and cost.

- Confirm volumes during the tender phase (subject to surface models provided)
- Material stockpile measurement
- Manage unsuitable material measurement at the source
- Quantify topsoil layers both pre construction and in stockpile
  after removal
- Bulk earthwork quantity measurement Pavement material measurement
- Input bole log depths and manage material layer measure.
- Utilise volumes and surface tins to build mass haul diagrams for earthworks planning with 12d Models new Mass Haul Analyser

The Volume Option is proven to enhance the surveyor and engineers management of earthwork and pavement material quickly, efficiently and with confidence.

Why Choose 12d?

- **Powerful data processing & intelligent functionality.**
- **Modular, easy to update & completely customisable.**
- **Seamless integration with major industry software & hardware.**
- **Used in over 55 countries worldwide.**
- **Friendly support & training from industry experts.**

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