



*For the Construction Surveyor, Engineer, Project Manager and Cost Manager, when confidence in the accuracy of quantity calculations is paramount.*

*It provides information critical to cost and material management, on the project.*

**12d<sup>®</sup> Model™ Understands This Important Requirement And Has Developed The Earthworks / Volumes Option To Cover All Requirements On Site.**

***The 12d<sup>®</sup> Model™ Base option is the tool for generating Digital Terrain Models (12d<sup>®</sup> 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).

**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<sup>®</sup> Model™ is string based this allows cross sections to be cut through the design model at any location required.

#### **Flexibility**

***The 12d<sup>®</sup> Model™ Volumetrics 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



Provides Confidence And Flexibility Through Multiple Calculation Options

volume between surfaces.

- **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, between nominated points or cardinal to the screen view. Section intervals are user definable
- In both the above methods **volumes can be calculated to nominated depths or the user can prepare the unique 12d<sup>®</sup> 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

#### **Confidence**

***12d<sup>®</sup> Model™ users have confidence with volume calculation results.***

Through visual observation using the unique 12d<sup>®</sup> 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/Volumetrics 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<sup>®</sup> Model™ Earthworks/Volumetrics 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



# EARTHWORK / VOLUME CALCULATION

- Input bore log depths and manage material layer measure.
- Utilise volumes and surface tins to build mass haul diagrams for earthworks planning with 12d<sup>®</sup> Model™'s new **Mass Haul Analyser**

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

## 12d<sup>®</sup> Earthworks/Volumetrics Is A Module Of The 12d<sup>®</sup> Model™ Suite.

*12d<sup>®</sup> Solutions has developed a complete and integrated product for the industry. Surveyors and engineers now have a complete solution at their disposal.*

The core functionality of 12d<sup>®</sup> Model™ is in the powerful BASE module. Optional modules can be included for the following areas:

- Road & Rail Design
- Utilities & Urban Drainage
- Flood Modelling
- Survey
- Field (12d<sup>®</sup> Survey Required)
- Data Exchange
- Visualisation

## High Quality, Responsive Local Support.

*Support is provided by someone who knows the industry, the type of work you do and your clients requirements.*

All support personnel are expert 12d<sup>®</sup> Model™ operators, have industry experience and are able to provide practical, relevant solutions to technical problems.



## Why Choose 12d<sup>®</sup> ?

- ✓ Powerful data processing & intelligent functionality.
- ✓ Modular, easy to update & completely customisable.
- ✓ Seamless integration with major industry software & hardware.
- ✓ Used in over 60 countries worldwide.
- ✓ Friendly support & training from industry experts.

