CIVIL DESIGNER

Survey + Terrain

Our digital terrain modelling program provides inter-active and dynamic strings-based earthworks design and calculations. It also includes extensive survey transformations, reduction routines, calculations, error figures and control surveys. The functions in the Survey Module allow you to gather, compute and edit data from a variety of sources. The Terrain Module functions create a 3D mathematical model of one or more surfaces and allow information such as contours, volumes, and sections to be derived from it. Data can be manipulated from the basic collection stages all the way through to final contract drawings.

Powerful DTM

Civil Designer's DTM engine is the strongest in the industry. There are no issues with modelling, and break lines do not change from the original validated DTM after importing. The module has been optimised to import 4 million points in under a minute and can further handle 95 million points with ease.

Fast Accurate DTM Creation

Create an accurate DTM model, with break or feature lines, from a CAD drawing and an associated survey. The new model, which is generated from only the survey points at the beginning and end of each CAD line, is stored in its own new destination surface.

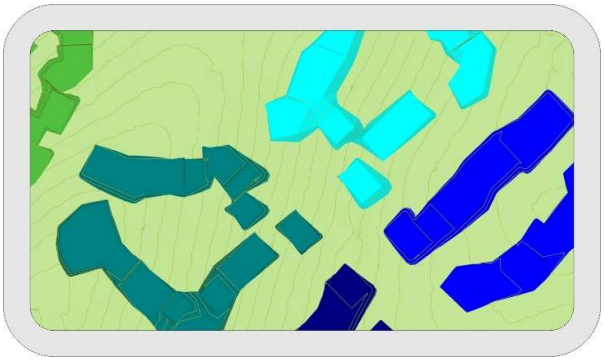
Strings Based Earthworks Design

Civil Designer's strings-based earthworks design functionality supports multiple child strings on both sides of the master string, thereby offering more flexibility in the design of complex multi-level platforms.

Multiple Terraces

Create a terrace in several ways - by importing, typing, or graphically defining the corner co-ordinates. To generate the terrace banks and toe points with fixed or variable slopes, simply specify the bank criteria.

If you do not like the terrace, change the layout or simply drag it to another position on the site. You can even manipulate an individual terrace on a multi-terrace site.

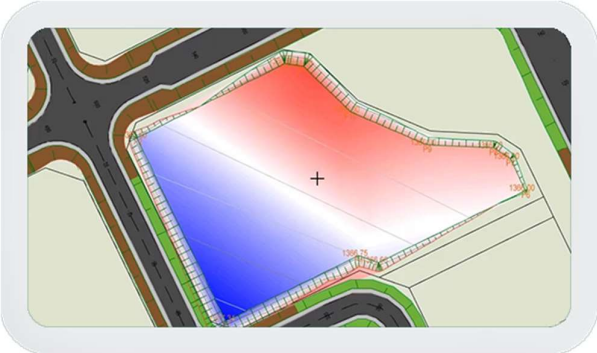


Cut/Fill Optimisation

Design more cost effectively by calculating the volumes and optimising costs before projects are built. You can calculate the volume of a terrace in seconds. Use the optimisation function to balance the cut and fill volumes to the percentage you require.

Cut/fill Shading

Draw the height difference between two surfaces, or the height difference between a surface and the road or terrain strings model, in shaded bands.



Flood Zones

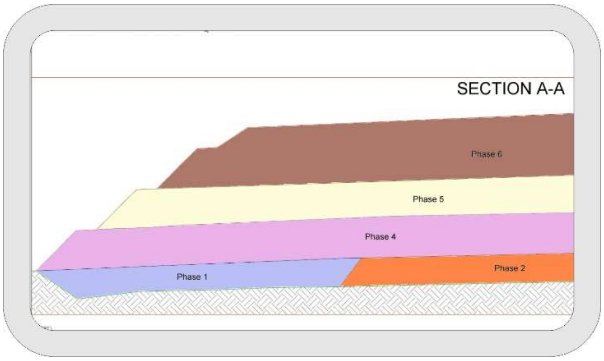
Calculate flood zone volumes in a few clicks, with options to shade the different volume bands or display them with multi-coloured polylines.



Earthworks Volumes

A database of 255 terrain surfaces allows you to keep track of earthwork volumes between month end surveys for the duration of a project, with the ability calculate cut and fill volumes between any two surfaces.

Choose to have the volumes reported in various formats, with user-defined depth categories, topsoil stripping and compaction or bulking factors.



For graphical representations of earthworks progress, view cross-sections of multiple surfaces simultaneously.

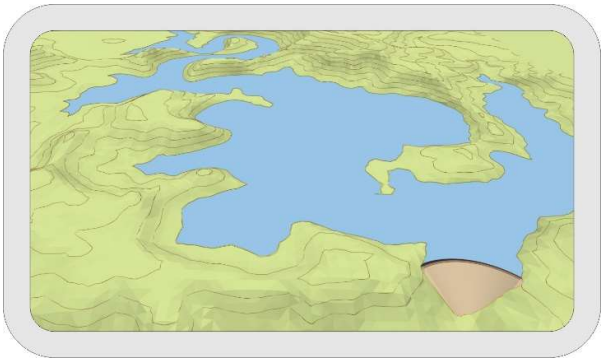
Once you have finalised your design, merge the terrace(s) with the underlying ground profile to create a final site model quickly and easily.

Catchment Area and Drainage Flow Path Analysis

The Flow Directions function uses the 8-point pour algorithm to determine the route that water would flow from a given position. The Drainage Network function uses the flow accumulation algorithm to determine the dominant water routes over an entire surface. Defining the end of a water course allows the program to determine the corresponding catchment area.

Dam Wall and Water Extents

Design a dam wall with terrain strings and generate a merged model with contours, dam water volume (taking into account any islands), earthworks volume and the dam flood line. You can then export to Google Earth to visualise the water extent.



Parcels

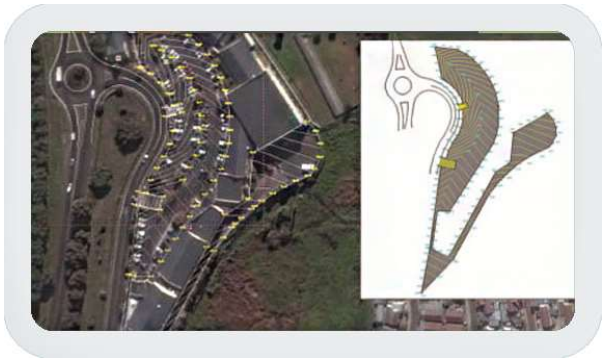
Parcels denote a single property, which can be created from a cadastral layout drawing containing stand numbers or imported via LandXML.



Once parcels have been defined, you can automatically add connections to the foul water and clean water networks using the Sewer and Water modules, respectively.

Property Dimensions

Dimension multiple parcels by specifying the relevant parcel number range.



Pipe Long Sections

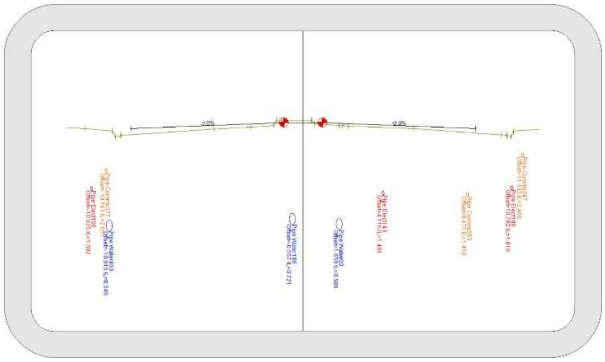
The pipe functions allow you to generate pipeline long and cross-sections with pipes between manholes, pipes defined by length or pipes parallel to the ground profile.

Trench Volume Calculator

Calculate the earthworks volume for the pipeline trench, separated into various material types and pay depths. Trench lengths for each depth increment are also determined. You also have the option to set pay depth increments. When the information is entered, the function produces a listing of volumes for each depth increment from one manhole to another.

Crossing Services Displayed on Plan, Long and Cross-Sections

Pipe and services databases (sewer pipes, storm water culverts, water networks, electrical layouts and telecommunication cables, etc) can be imported or added into Civil Designer to indicate crossing positions of the pipes/cables on road, sewer, storm and water services.



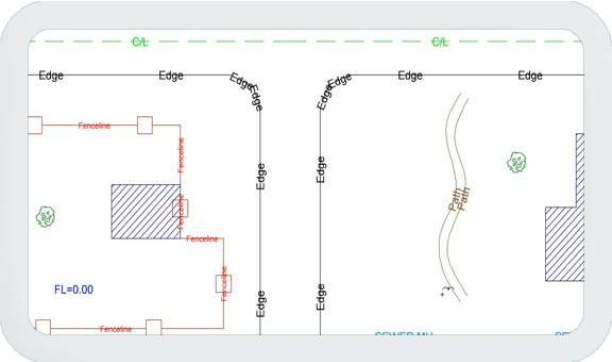
The crossing services are displayed and plotted on all layout plans, as well as long and cross-sections.

Survey Point Screening

Civil Designer's Manual and Automatic Screening functionality allows for the intelligent reduction of the number of points in a large data sets by specifiable height tolerances and point proximities.

Draft Expert

Generate CAD entities for topographic drawings according to defined point name rules, which can then be re-used as required. Point to point linkage can be automated and is made faster and easier.



Layer names, colours and styles can also be stored as template settings for future drawings.

Raw Survey Point Name Classification

This feature is particularly useful when working with DTM data from LiDAR surveys. Civil Designer sequentially names points with an optional feature line between renamed points, to allow for easy classification of raw survey data.

Survey points can also be named automatically within a specified distance from CAD lines, arcs, or polylines, in order to identify features such as road centre lines, road edges, shoulder break point lines, toe lines etc.

Observations & Figures Database

Our easy interface for managing total station records allows you to perform survey calculations from these records. Import and store measurements with your drawings, for use with all associated survey calculations.

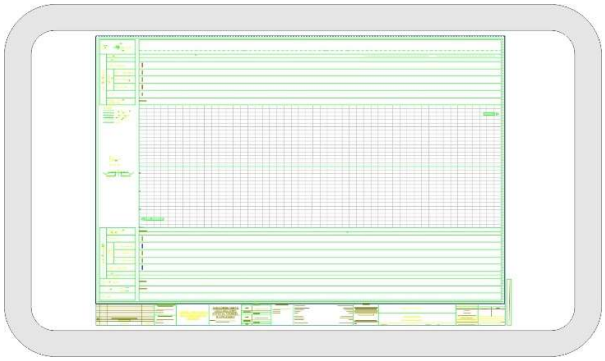
Helmert And Geo-Topo Transformations

If more than two points have known coordinates on both systems, there is redundancy and a least square (Helmert) system can be used to obtain the final parameters.

Geo-Topo transformation converts geographical co-ordinates (in the form of degrees, minutes and seconds of latitude and longitude) to Y and X coordinates in the project projection, in Civil Designer format. An ASCII file is read and another one is written. The converted coordinates can be set relative to any standard line of longitude.

Drawing Templates

Our powerful drawing templates (sheet files) allow you to define exactly what the final production drawings should look like, saving you hours of post-production CAD editing.

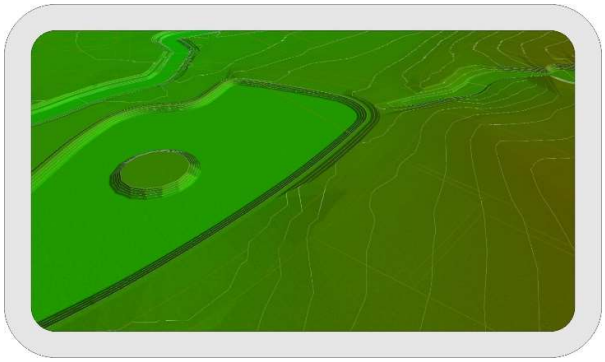


You can generate production drawings with detailed title blocks, north signs, grids, company logos, annotations, data lists, scale bars and more, so your plotting requires little, if any, CAD editing.

Furthermore, you no longer need to cut and paste your design into your title block. Our flexible sheet files allow the precise placement of all the design elements in your title block, with customisable settings.

Rendered 3D Views, Image Overlays, Contours & Fly-Through

To see the bigger picture, visualise the final project in a rendered three-dimensional view with light source, textures, and image draping. You can also do a virtual fly-through of the site if desired.



Faster Survey Reductions

There is no need to classify surveyed information in groups, descriptions and setup settings, which can be confusing and time consuming.

The Survey module includes powerful reduction functions for:

- Tache reduction
- Flat traverse
- Full traverse
- Slope traverse
- Spirit level reductions

Survey Calculations, Error Figures and Control Surveys

The Error figures features adjust a provisionally fixed point that has redundant observations by means of a Least Squares solution, or a graphical fix of the error figure, or both. A rough fix for the point should be calculated prior to using this routine and is usually done under Survey Calculations. The data for the calculation must be provided in the form of a field book.

Use Control Surveys to perform a least-squares adjustment of a network of 2D points and associated distance and direction observations. You are given the resultant error statistics.

Supports Ascii, Booker, Logger, Wild, Geodos, Ceaser And Sokkia

Import many different data formats (field books) into Civil Designer. Terrain point co-ordinates can also be exported to total stations or to WILD equipment. All ASCII file imports offer improved speed, and multiple ASCII files can be imported into the DTM in one operation.

Survey Diagrams

Generate survey diagrams from survey points and figures, with customisable drawing scale and title block.

Did you know:

- We have a library of FAQ support videos for your reference: www.civildesigner.com/videos/
- You can book online Civil Designer training: www.civildesigner.com/training-centre/
- We provide introductory self-learning videos: www.civildesigner.com/training-centre/

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