

Baseline Group Ltd

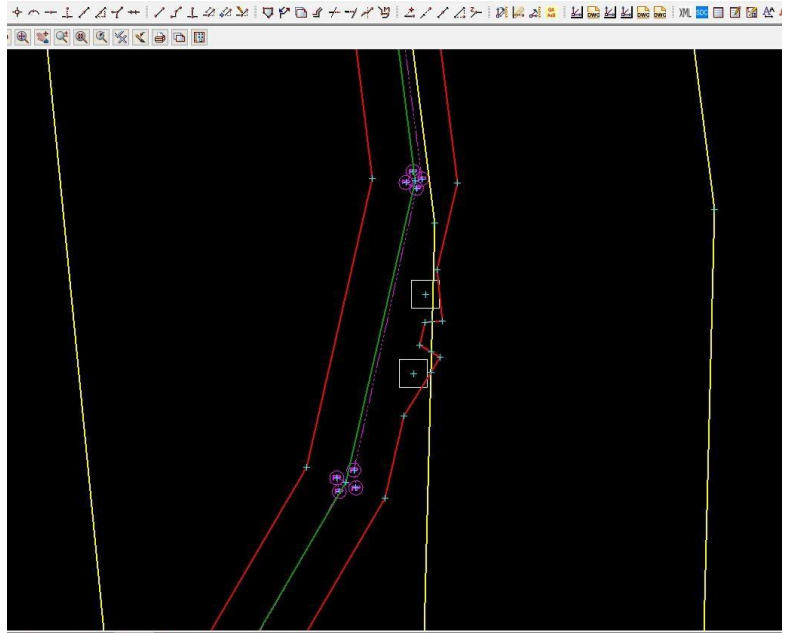
Overhead Power Easements

CLIENT: Mainpower NZ Limited

12d DIMENSIONS:

- Surveying

Overhead Power Easements



Result of running the macro: The green line is the final centreline string of power poles. The red lines are the required strings to be traced into the Traverse spreadsheet and are all spit at the boundaries and have unique identifiers associated with each vertex.

Project Summary

The creation of easements for overhead power lines at multiple sites in Canterbury, New Zealand.

The Challenge

The jobs involved the surveying of power poles and their stays, with the creation of easements a certain width from the centre of the power poles and including areas covering the anchoring stays and blocks. Generally, these were reasonably long runs (up to 50 power poles with stays at every significant bend). This meant that calculating the easement lines and entering the data into a traverse spreadsheet for importing into Landonline was quite time-consuming.

The approach in the field for surveying the poles differed for each staff member – some would do a single offset shot, some would take two shots equal distance

either side of a pole, and some would observe four points around the pole. The stays were always measured as a single point where they enter the ground, and always connected to the pole at the top.

As a result, calculations involved the creation of a string for the main centreline of the power line, creation of the string representing the stay. The required lines would then be calculated by offsetting or extending these strings as necessary, splitting them wherever they crossed existing boundaries in a traverse spreadsheet. The strings were then traced into the traverse spreadsheet and unique identifiers typed into the traverse spreadsheet for each point created.

For more information

To find out more about how you can create better designs faster with the 12d Model solution for civil engineering design, visit www.12d.com.



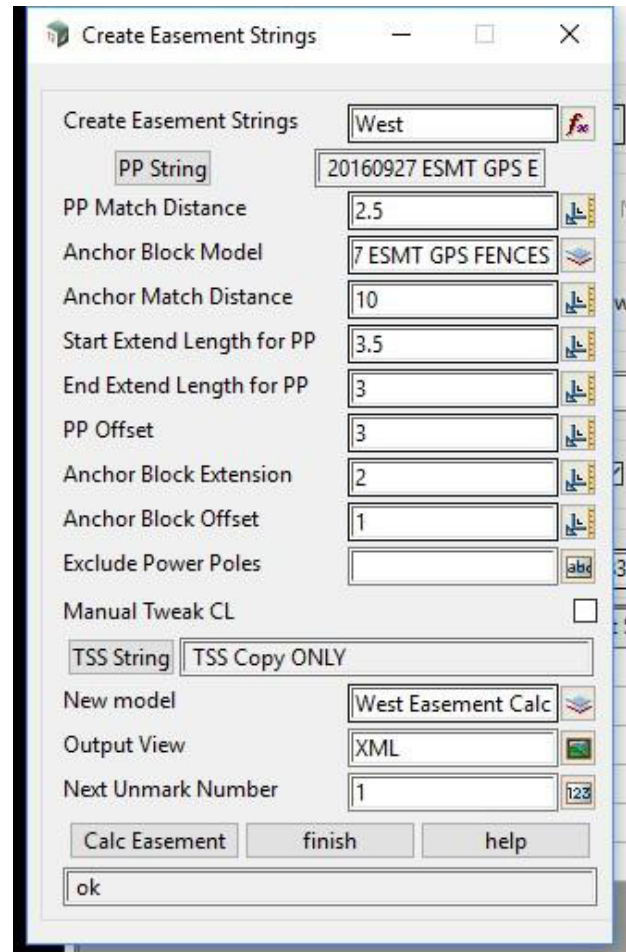
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The Solution

A macro was written which carried out all of the abovementioned calculations, except for the tracing of the strings into the traverse spreadsheet - *i.e.* the macro calculates the power pole centreline and stay strings, creates the strings for the easements and assigns a unique identifier to each of the vertices, calculates the intersections with the boundaries in the traverse spreadsheet, and splits the strings as necessary.

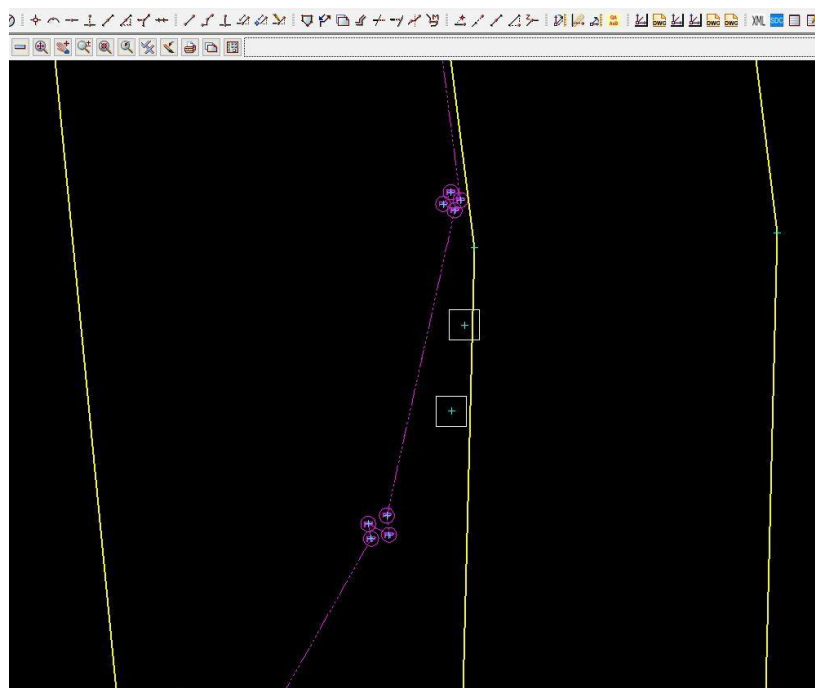
The Result

The macro resulted in a considerable time saving for the firm, as the calculations could all be completed in the time it took to fill in the macro fields. The client was very pleased with this expedited process.



The screenshot shows a software window titled "Create Easement Strings". It contains various input fields and buttons for configuring easement calculations. The fields are organized into sections: "Create Easement Strings" (with a dropdown set to "West"), "PP String" (set to "20160927 ESMT GPS E"), "PP Match Distance" (2.5), "Anchor Block Model" ("7 ESMT GPS FENCES"), "Anchor Match Distance" (10), "Start Extend Length for PP" (3.5), "End Extend Length for PP" (3), "PP Offset" (3), "Anchor Block Extension" (2), "Anchor Block Offset" (1), "Exclude Power Poles" (empty), "Manual Tweak CL" (unchecked), "TSS String" ("TSS Copy ONLY"), "New model" ("West Easement Calc"), "Output View" ("XML"), and "Next Unmark Number" (1). At the bottom, there are buttons for "Calc Easement", "finish", "help", and an "ok" button.

The macro panel.



Field observations (four shots around power poles) and stays (squares) with existing easements/ boundary lines (yellow) - see headline image for result.



Roads and Highways

12d Model's design option is the smarter solution for the design, modification and maintenance of Road and Highway projects.

Enjoy advanced 3D tools to design local and major roads, intersections, roundabouts, highways, interchanges and much more.



Ports and Dredging

12d Model is the solution for port infrastructure and dredging, easily managing the very large datasets and complex volume calculations often required by these projects.

A complete range of flexible and customisable volume calculation tools allow teams to extract and present the information quickly and easily.



Land Development

12d Model is the most versatile solution for the creation of sustainable land development projects, including residential, commercial and industrial developments, recreational areas, landfills, and agriculture projects.

Easily manage all aspects of your land development project from earthwork quantities, road design utilities and drainage design.



Airport Infrastructure

12d Model provides a solution for the design, construction and analysis of new airports, as well as the upgrade and maintenance of existing runways and airport infrastructure.

Easily manage large airport infrastructure projects and share data across multi-disciplinary teams.



Rail

12d Track has been specifically designed for the survey, design and construction of light, heavy and high speed rail projects.

Extensive railway tools in 12d Track allow the rail designer to quickly and easily design their projects. These options are built on the existing 3D modelling and design tools available in 12d Model.



Mining Infrastructure

12d Model's powerful set of exploration, site investigation, survey and analysis tools are crucial for the initial design, construction and ongoing operation of mining projects.

Comprehensive tools for the survey, design and construction of access roads, railways, earthworks and services allow for the coordinated design and management of mining infrastructure from within 12d Model.



Drainage, Sewer and Utilities

12d Model provides comprehensive tools for the design, analysis and optimisation of stormwater and sewer projects using rational, dynamic (hydrograph) and 2d drainage methods.

Powerful clash detection management allows for efficient 3D modelling of service networks such as gas, electricity, telecommunications and water prior to construction.



Surveying

12d Model is a complete surveying package providing the tools to manage all facets of surveyed data including LIDAR, topographical, as-built, conformance, traversing, geodetics, data mapping, labelling and much more.

The 12d Field option runs on a ruggedized tablet and gives the user access to full 12d Model functionality, allowing you to take the entire project into the field with the most comprehensive pick-up and set-out tools.



Oil and Gas

12d Model assists with the design, construction and mapping of oil and gas pipelines, original site exploration and the wide range of infrastructure required for oil and gas projects.

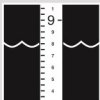
Accurate 3D modelling and the ability to share data between users allow teams to quickly and easily coordinate designs.



Construction

12d Model is the ultimate software for construction with powerful set-out options, direct interfaces to machine control and detailed conformance reporting and auditing.

Manage 3D data and control volumes, quantities and progress claims with 12d Model. Set-out your project and undertake conformance and as-built surveys live on-site using 12d Field.



Rivers, Dams and Hydrology

12d Model handles very large datasets and interfaces with a wide range of analysis packages, making it perfect for flood studies and the management of rivers and dams.

12d has partnered with industry leading analysis software, allowing users to apply 2D drainage analysis from within 12d Model.



Environmental

12d Model's ability to handle very large datasets combined with flexible and comprehensive 3D analysis and modeling tools make it perfect for a wide variety of environmental projects.

Existing workflows can adopt 12d Model easily as it allows users to directly interface with GIS systems and most software packages and file formats.

Why Choose 12d?

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

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