12d Track

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.

12d's integrated railway design module can be utilised to develop detail railways designs. It is fully customisable to meet any design standard with numerous tools to assist with design automation.

Turnout Create/Edit

The "Turnout Create/Edit" panel allows the user to enter parameters for turnouts such as Lead Length, IP to Heel Length and Turnout Angle.

This tool will also be developed to include all special trackwork elements that may be required by a rail designer such as Similarflexure, Contraflexure, Tangential and Dual Gauge turnouts.
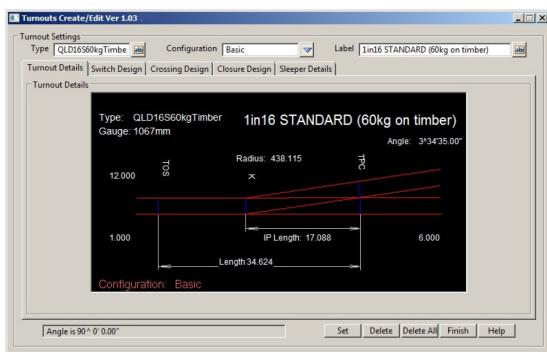
The "Turnout Place" panel to setout turnouts along an alignment will then use the parameters entered. The gauge and rail radii are also entered and these can be plotted for visualisation purposes.

Setout tables for sleeper sets can also be added to a turnout to allow sleepers to be plotted by setout distances along the stockrails and is useful for visualisation purposes.
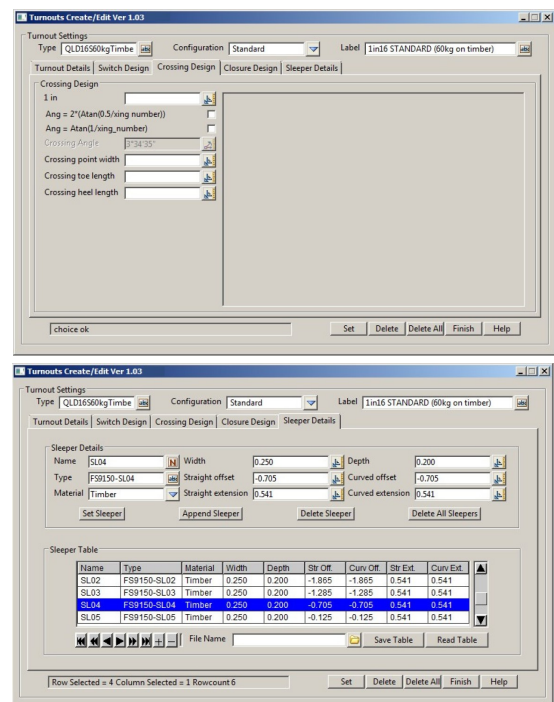
Turnout Reader/Writer

Tools for writing turnout parameters to an ASCII file and reading them back in to another project are provided.
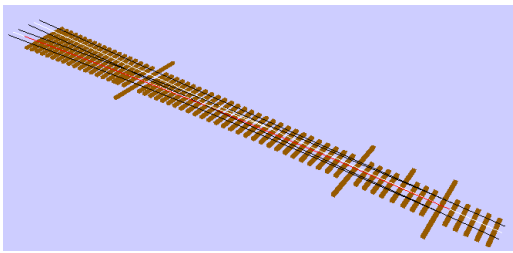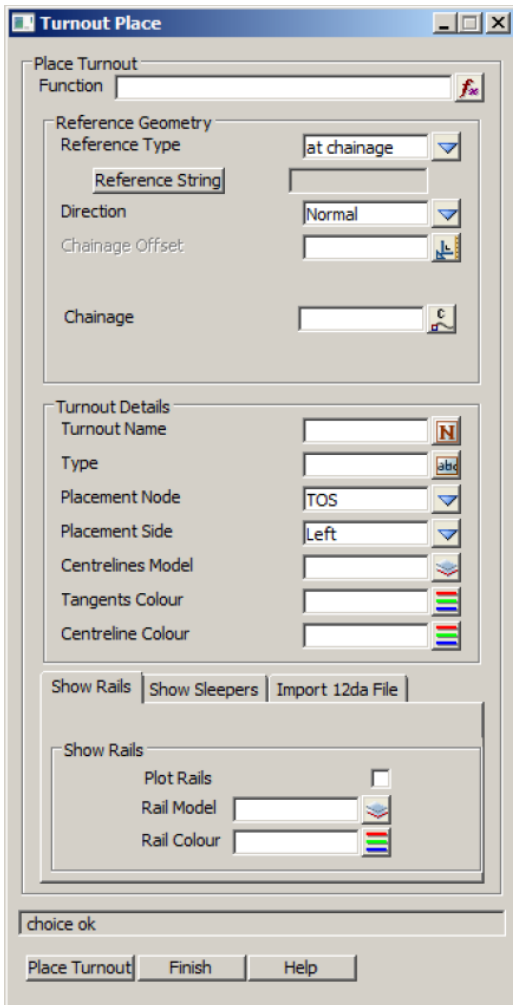
Place Turnouts

The "Place Turnouts" panel allows the rail designer to place a turnout into an alignment using a 12d function.

The positioning of the turnout is based on the chainage and direction of the turnout and the insertion point can be varied between the TOS, IP or one of the two APC points.

Turnouts can be places by various geometric "Reference"

✓ Extensive railway tools in 12d Track allow the rail designer to quickly and easily design their projects

alignment opposite the "Theoretical Crossing point".

The turnouts are placed as functions so they automatically select the Horizontal Bearing and Vertical Grades directly off the chosen Alignment String.

They can be placed either in the same direction or opposite direction to the Alignment String.
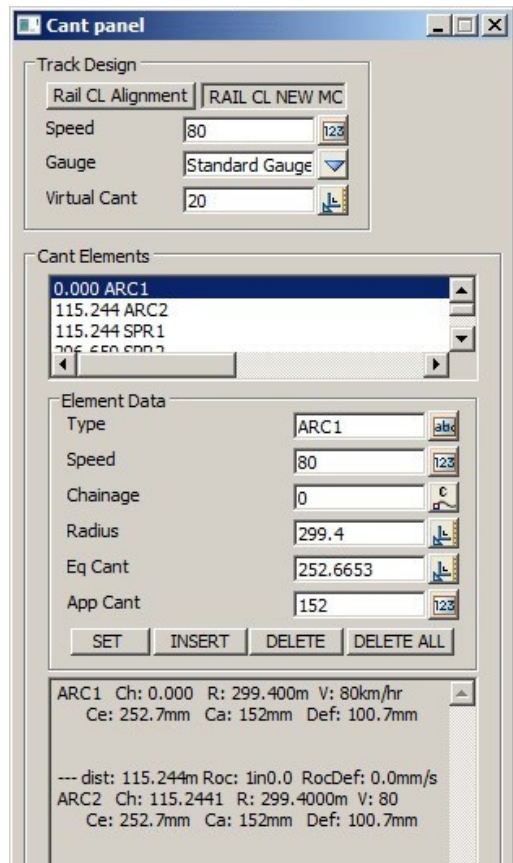
Cant Calculation

The "Cant Calculator" panel is used to calculate cants along an alignment. Rate of change of Cant and Cant Deficiency are calculated based on the gauge constants entered into the panel.

Particular curve constants for any gauge can be entered into the panel or one of three typical gauges can be selected. The data can also be exported to an excel spreadsheet.

Plot Rails

Rails can be plotted using the "Plot Rails" panel. This option uses the cant calculations and gauge to plot the rail levels at a regular interval along the alignment. Rail extrusion techniques can be used in 12d to produce a visualisation of the project.

calculations relative to alignments such as "by chainage", "by vertex" and "by dropped point". The turnout is positioned according to the geometric data provided and should an alignment move the turnout will move also.

The "Place Turnouts" option is also able to plot the rails and sleepers for visualisation purposes.

Turnouts placed with functions can be self-positioning using several insertion "nodes" such as "Toe of Switch", "Intersection point" or on
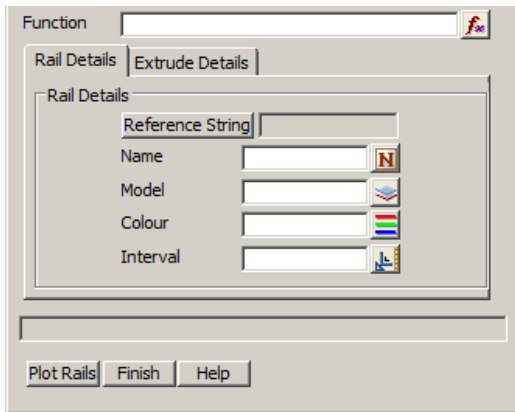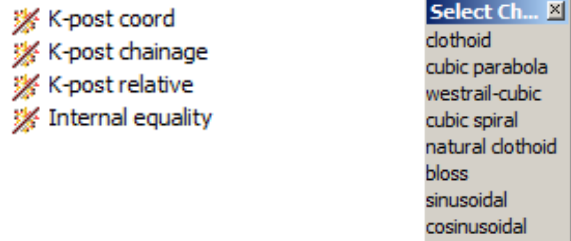
Advanced Rail Alignments

12d alignments also have the ability to be generated by joining elements that are fixed in position or can have various degrees of freedom to float into place relative to adjacent elements whose positions have been resolved based on their own location parameters.

Computed rail alignments are alignments that are positioned relative to other rail alignments. These alignments have the ability to reposition automatically should the reference alignments move.

In conjunction with the turnout placement tool a group of rail alignments can be generated that are self calculating based on the choices of turnouts made.

Chainage Equalities

Chainage equalities can be placed at any point along an alignment using several methods of definition. These can be point equalities at any chainage or offsets calculated from Kilometre posts.
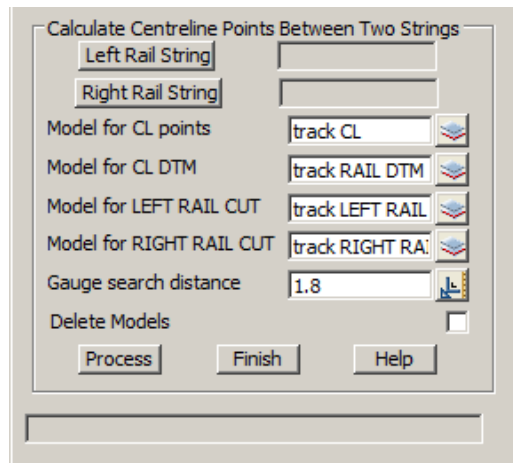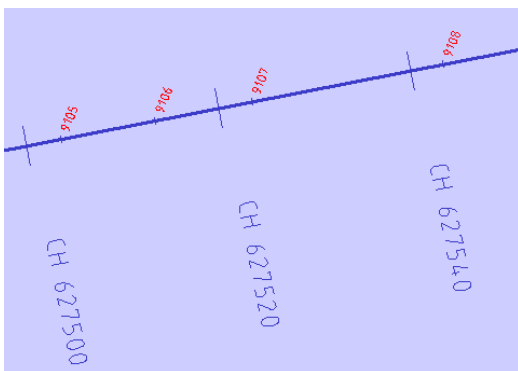
Rail Transitions

12d calculates various Rail Transition types such as Clothoid, Cubic spiral and Cubic Parabola.

Calculate Centre from Rails

The "Calculate centreline points from rails" panel generates a sequence of points between two surveyed rail strings. These points can be used to check slew and best fit between alignments generated by 12d and the original surveyed rail alignment.


The tool also develops strings across the rails representing the "Low Rail Height". These can be viewed in a long section of an alignment to determine the track lift and lower along the alignment. The "Slew-Calculation" panel also plots the radius at each point based on the versine of surrounding points.

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

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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.
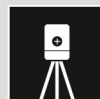
Surveying

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.
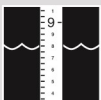
Rivers, Dams and Hydrology

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.**

12d Model