Ferrovia by CGS plus

ver. 2017

BIM-ready Railway Design Solution

Professional software solutions for Civil Engineering

CGS SOFTWARE

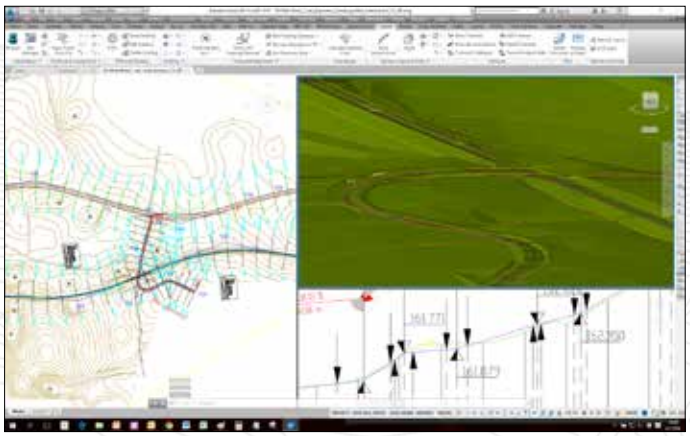
Solution for Railway Design & Rail track Analysis

Ferrovia 2017 is a professional, BIM ready, 3D railway design and rail track analysis solution. It supports a number of country-specific guidelines and provides tools for alignment and profile design, detailed cross section design and editing, applied cant, turnouts and rail connections, 3D modeling, and documentation production. Ferrovia alignment and profile regression analysis tools provide users with options for comprehensive rail track realignment and tamping machine guidance capabilities. Using its flexible, dynamic data model, Ferrovia supports BIM (Building Information Model) workflows and processes. Carefully designed UI and workflows are consistent with the railway design engineering practice. This makes Ferrovia fast-to-learn and easy-to-use.

Ferrovia
by **CGS plus**

Fields of use

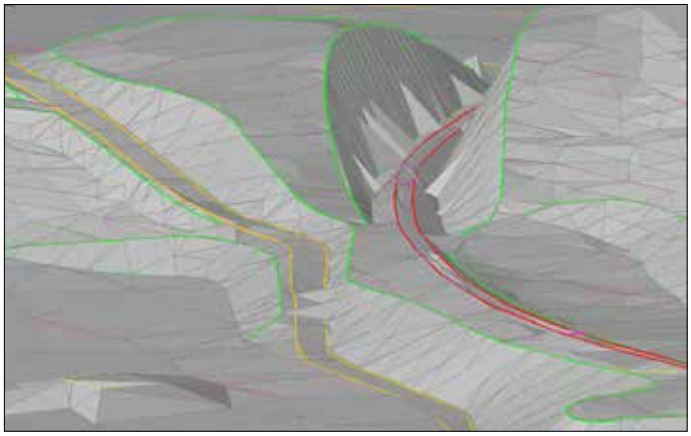
- Design of conventional rail tracks,
- High-speed rail tracks,
- Light rail,
- Industrial rail tracks,
- Underground rail tracks, and
- Metro rail tracks.
- Rail track realignment,
- Rail track rehabilitation, etc.



Design features

Digital Terrain Modeling

The Surface Creation Tool is included in CGS plus software to produce detailed Digital Terrain Models (DTM) based on various surveys or other input data: total station data files, points, break lines, blocks, etc. This offers the possibility to use Ferrovia on plain AutoCAD or BricsCAD.



Grading

By creating complex slopes with multiple conditions in cut or fill users can cover various design scenarios and geometry requirements for all kinds of rail track projects, from simple single track design to complex double or multitrack geometry design. Furthermore creating platforms, ponds, parking areas, roads, river channels, and other objects is easier and faster with CGS plus grading.

Some Ferrovia references:

ADT ΩΜΕΓΑ · UVATERV · PROTA · DB Mobility Networks Logistics · Slovenske železnice

Ferrovia is ready for quick and effortless integration into BIM processes and workflows!

Create 3D Solid rail track models, attach extended data, and transfer the project to AutoCAD Civil 3D, Autodesk Infraworks, or Autodesk Navisworks. The Ferrovia rail model is ready for IFC data integration.

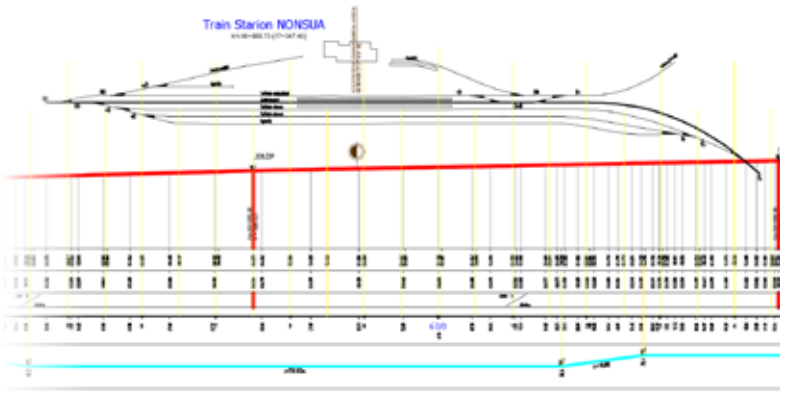
AUTODESK AUTOCAD CIVIL 3D 2017 Compatible

AUTODESK AUTOCAD 2017 Compatible

DEVELOPED FOR BRICSCAD

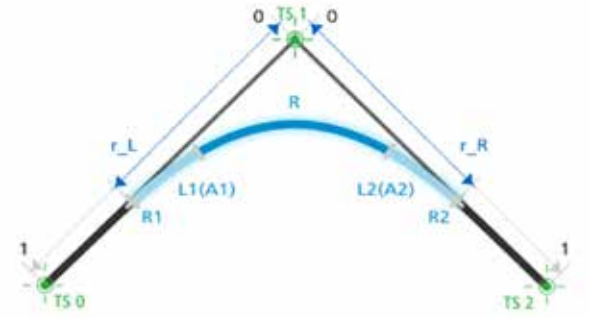
Railway Geometry Design Tools

Ferrovia provides a wide set of advanced alignment, profile geometry design, and editing tools. They include P(V)I design, floating and fixed elements design, parallel alignment design, and alignment design created from the existing polyline, or ultimately creating a best-fit alignment based on existing rail track survey data. Various alignment labeling, reports, and data export options provide the flexibility needed to cover a wide range of user requirements.



Transition Curves

Ferrovia supports a number of linear and nonlinear transition curves: Clothoid and a range of cubic parabolas, including; cubic parabola, modified cubic parabola, Czech parabola and Romanian parabola Imbonatatita. Supported nonlinear parabolas include sinusoidal, Cosines, Bloss and S–curve parabola. Transition curves apply uniformly to horizontal transition curves and to cant gradients areas.

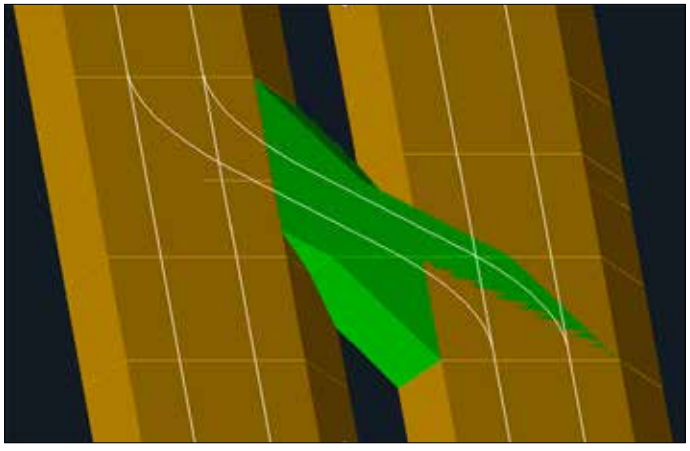


Turnouts

In turnout design you can take advantage of automatic turnout insertion, turnout parameter editing, and automatic turnout repositioning when alignment geometry changes apply. Included are various turnout types: straight-line turnouts (non-transformable), curve turnouts, symmetrical, and turnout crossings. Alongside predefined turnout geometry, a turnout catalogue provides users with the ability to edit or add custom geometry turnouts. Turnout reports provide the user with the tools to list turnout parameters and values in turnout tables, either in drawing or in external table files.

Rail Connections

Create rail connections interactively between parallel or non-parallel rail tracks in tangent or in curve with the geometry preview option. Having the advantage of using the same or different turnout types for rail connection gives users a wide range of geometry options to fit rail connections within constraint areas and limited design possibilities. Detailed design and editing of vertical connections in profile view add value to the comprehensive yet comfortable use of Ferrovia rail connection tools.



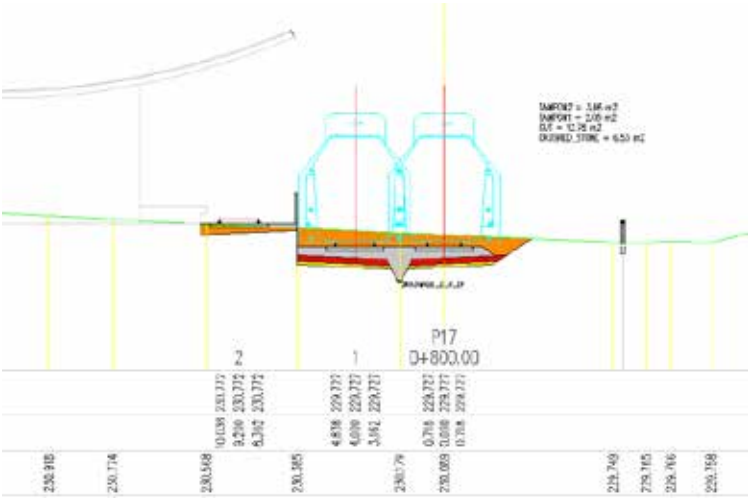
CGS plus software licensing and purchase options

CGS software can be purchased as perpetual license, with or without subscription or it can be rented for various time periods. Single and network licenses are available. CGS plus also offers a very attractive CGS plus financing option (PAY1/ USE5) which allows instant use of sufficient number of licenses, payment in monthly rates at a longer time-period, thus significantly increasing the value of your investment.

PAY 1
USE 5

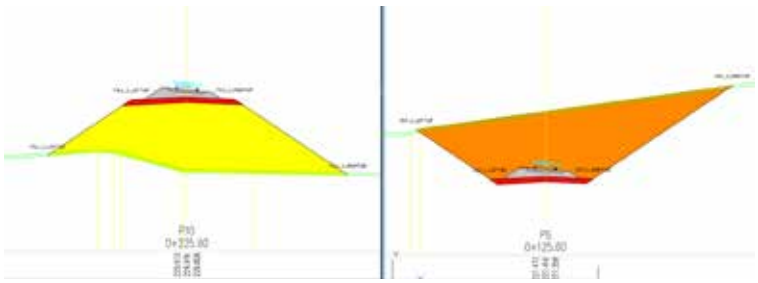
3D Surface and 3D Solid Models

Rail track 3D models can be created as a 3D surface or 3D solid model. 3D rail track surface models can be generated automatically from 3D rail-track cross-section geometry and terrain model, or it can be built with the grading function. The 3D solid model is created based on cross-section areas, where materials and volumes can be defined as extended data. With 3D solid tunnels, bridges and similar objects can be represented as well. Solid objects can be aligned with arcs and transition curves. All solid models, including extended data, can be imported into Autodesk Infraworks, Navisworks and then used in various BIM workflows.



Cross Section Design and Editing Options

Ferrovia makes it possible to design and edit rail track cross sections in a detailed way with almost no geometry limitations to the final project design. Adding multiple rail tracks to a single cross section gives users control over the geometry between various rail tracks, rail tracks and roads or other infrastructure objects your project requires, and lets you define these areas with great accuracy and detail.

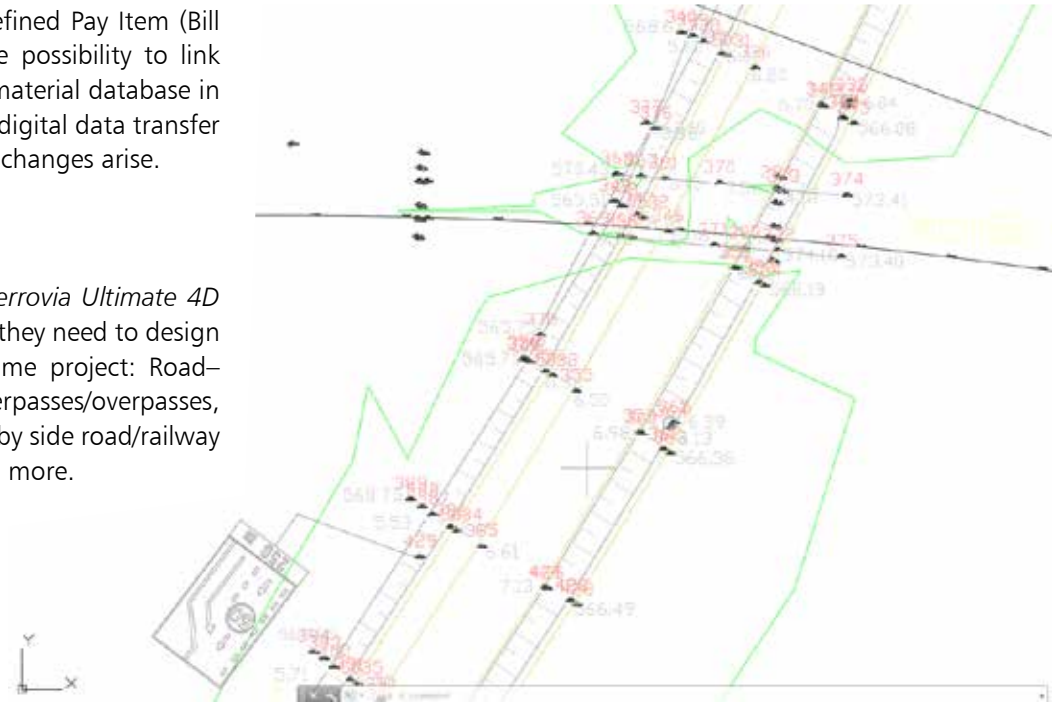


Quantity Take-off (QTO)

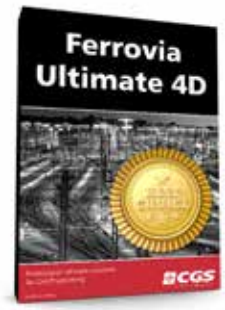
Ferrovia calculates material quantity take-off and features a QTO data export tool with custom defined Pay Item (Bill of Materials) options. It gives users the possibility to link material defined in the drawing with a material database in cost estimate software, thus supporting digital data transfer and fast cost recalculation when project changes arise.

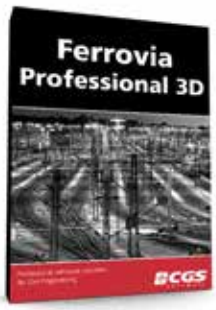
Road Design

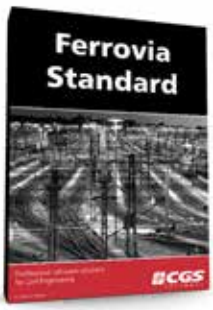
Road design tools are included in the *Ferrovia Ultimate 4D* software suite to provide users the tools they need to design roadways and rail tracks within the same project: Road–railway intersections for example, underpasses/overpasses, rail track construction access roads, side by side road/railway design, urban roads with tram lines, and more.



Select Ferrovia package that meets your needs!







	Ferrovia Ultimate 4D	Ferrovia Professional 3D	Ferrovia Standard
Survey data import	+	+	+
Digital terrain modeling tool (DTM)	+	+	+
3D Grading	+	+	+
Alignment design	+	+	+
Profile design	+	+	+
Cross sections design	+	+	+
Turnouts design	+	+	+
Linear and nonlinear transition curves	+	+	+
3D Railway modeling	+	+	+
Points/Lines projection to profile/cross sections	+	+	+
Labeling and dimensioning tools	+	+	+
Quantity Take-off & Mass Haul diagrams	+	+	+
Interfaces (Civil 3D objects <-> Ferrovia, export to Google Earth)	+	+	+
Horizontal and Vertical Regression Design	+	+	+
Horizontal and Vertical Regression Analysis	+	+	X
Side-Track Objects Offset Analysis and Insurance Data Calculation	+	+	X
Export to Plasser&Theurer	+	+	X
Support for 3D solid objects	+	+	X
Rail Connections design	+	+	X
Road Design Tools: - road alignment, profile & cross-sections design, - road superelevations, - road/rail intersections design, - roundabout design, - curb return fillets, - visibility and stop sight analysis, ...	+	X	X
Support for BIM (LandXML data import/export, IFC ready)	+	X	X

Extend rail track design with static and dynamic clearance analysis and 3D animation software - AutoTURN Rail 3D

Rail track analysis software lets you analyze 3D clearance envelopes based on alignments and profiles designed with Ferrovia.

AutoTURN Rail 3D lets users set a range of envelopes parameters and dimensions for static and dynamic envelopes. The tool also makes possible the definition of vehicle contours based on manufacturer's specifications for detailed analysis purposes at platforms, light rail analysis, and more.

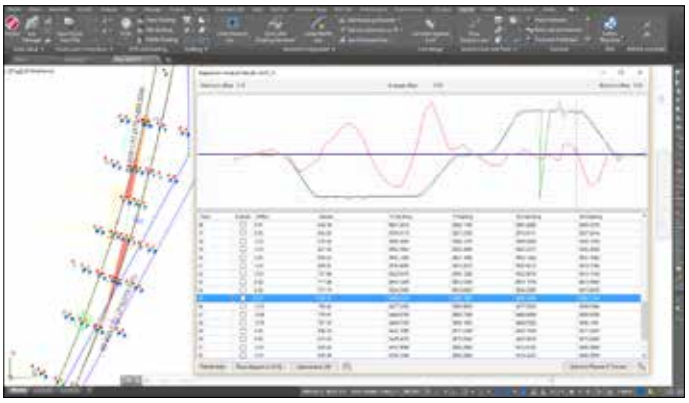
Simulations of vehicle movements in 2D and 3D are available, plus other features like setting tracking points along the length of a vehicle simulation, enabling users to inspect specific vehicle part offsets in horizontal and vertical axes, e.g. vehicle doors, pantograph height, and much more.

AutoTURN Rail 3D is available as a Ferrovia add-on (bundled) software solution.

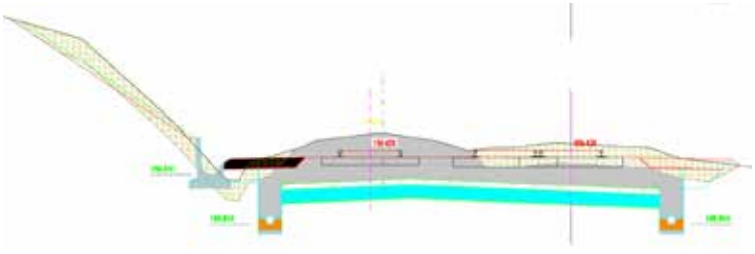
Rail Track Maintenance / Realignment (RTM)

Horizontal and Vertical Regression Analysis

Ferrovia provides advanced and comprehensive technology for alignment and profile regression analysis and geometry optimizations options. Based on various input survey data and multiple editable parameters, alignments with appropriate transition curves are generated automatically, giving users the possibility to create realignment projects of any scale. Single regression elements are supported as well.



Options for converting surveyed rails to centerline review and edit regression points with point exclusion or inclusion in regression analysis lead to significant improvements in alignment or profile best-fit geometry. Multiple diagram options give users detailed information on curvature, transition areas, applied cant, and slew. All regression data is dynamically updated when changes occur.



Side-Track Objects Offset Analysis and Insurance Data Calculation

The side-track objects offset analysis tool give designers the tools to inspect any objects position alongside any alignment investigated in order to get offset data from side track masts, platform edges, retaining walls, tunnel contour, side track or road edges, etc.

For rail track realignment purposes insurance values can be calculated between fixed side objects (like overhead power line masts for example) and surveyed rail track position data in order to get absolute track layout data.

General features

Dynamic Data Model

Ferrovia stores all design data inside a .dwg data file, making for quick geometry updates and data exchanges within CGS plus software solutions, and Autodesk software. LandXML and AutoCAD Civil 3D data exchange interfaces are available. Dynamic updates to all geometry changes or design parameters are supported within single or multiple drawings with separated layout/profile and cross sections data.

Supporting Large Projects

Ferrovia easily handles large projects with very long alignments and thousands of cross-sections within seconds. Projects are neither limited in size nor is the performance critically affected while working on large-scale projects, including extra-long and multiple alignments, profiles, and cross section views. Cross sections can provide a high level of details with on-demand synchronization options, great processing speed, and consistent data.

Collaboration Capabilities

Easily and efficiently, divide up large rail track projects among multiple team members, who can then work simultaneously. Projects can be developed as a single drawing, or split into several drawings, separating layout, profile, and cross sections.

Languages and country specific Design Standards

Ferrovia is available in several languages and supports country specific rail design standards, drawing layouts, etc. Customers are entitled to use any country specific version of the software in case of designing projects for the foreign countries. Currently supported country/language versions are:

- English (International)
- Austria
- Czech Republic
- Germany
- Hungary
- Poland
- Serbia
- Slovenia

Supported platforms

Ferrovia 2017 runs on top of 2017-2013 versions of AutoCAD Civil 3D, AutoCAD or AutoCAD Map 3D as well as BricsCAD V16-V13. Only 64-bit versions are supported!

Extend Ferrovia's functionality with point cloud data processing software - 3Dsurvey

3Dsurvey is a standalone software solution for point cloud data processing. Use any UAV with Lidar, a digital camera, DSLR, or a GoPro to capture images and process them in 3Dsurvey. Create orthophoto data or digital terrain models, calculate volumes, profiles, and much more.

Export digital terrain models to Ferrovia to create rail projects based on detailed surface models, calculate material volumes, and export 3D rail surface models from Ferrovia back to 3Dsurvey to create stunning aerial or drive-through visualizations.

3Dsurvey is available as a Ferrovia add-on (bundled) software solution.

About CGS plus and its software solutions

Founded in 1990, CGS plus is an innovative IT company, focused on civil engineering, transportation and environmental technologies. With its products Plateia (roadway design), Ferrovia (railway design), Aquaterra (river engineering works design), Autopath (vehicle swept path analysis) etc. CGS plus is among worldwide leading civil engineering software developers. CGS plus is also developing customized OEM CAD and BIM solutions for renowned software vendors. With its offices in Slovenia, Germany, and USA and with its wide reseller´s network, it serves more than 8,000 customers in 33 countries.

CGS | AUTODESK Authorised Developer | BRICSCAD SOLUTION PARTNER

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