

Bentley®

Keeping Rail Projects on Track

Optimize how you plan, design, build, and manage
rail projects with BIM



Table of Contents

Page

3	Introduction
4	Get Your Rail Projects on the Right Track
5	How BIM Is Changing Rail Network Design
8	Lead the Way – Scope, Process
9	Rail and Bridge Conceptual Design
10	OpenRail™ ConceptStation Capabilities At-a-glance
11	Detailed Rail Design and Analysis
13	OpenRail Designer Capabilities At-a-glance
14	Rail Electrification Design and Analysis
15	OpenRail Overhead Line Designer Capabilities At-a-glance
16	Integrated Design and Data for Every Project Phase
17	Bridge Modeling
18	Tunnel Design and Analysis
19	Hydraulics and Hydrology
20	Capabilities At-a-glance
21	Engineers Like You Use OpenRail
22	Innovative Digital Solutions Will Keep You in the Driver's Seat, Enabling a Better Strategy
23	Getting Started



To Keep Your Rail Infrastructure on Schedule, You Need to Switch Tracks

The way we design and deliver contracts, as well as the way we plan our infrastructure, needs to change so that we can deliver the kind of modern, sustainable, and safe transportation systems that our communities need.

Designing rail infrastructure is complex, with input needed from multiple technical disciplines that work across dispersed teams, with differing national and international standards, construction specifications, and infrastructure operator requirements.

These challenges, combined with a critical need to incorporate sustainability and reduce carbon emissions throughout the infrastructure lifecycle, bring added levels of complexity to these projects for even the most experienced design teams. There is a better way. BIM for rail enables a better strategy: see potential problems and resolve them in advance, when project changes are easy and cost efficient.

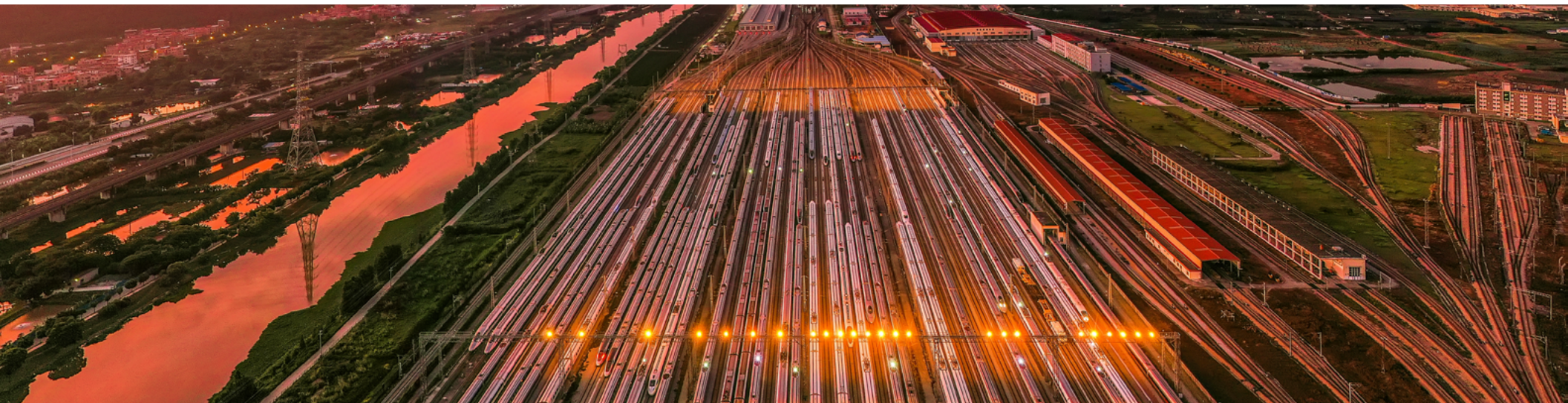


Get Your Rail Projects on the Right Track

With increased costs, shorter duration requirements, and a limited engineering workforce, capacity, design efficiency, and productivity are critical. The status quo no longer makes business sense.

The traditional design process is labor intensive, requiring multiple draftspersons to do manual CAD work to create cross-section drawings. That process makes change management difficult, with any change to the track design requiring significant rework. These 2D-centric workflows result in a lack of 3D modeling for design checks, clash detection, and BIM requirements. Automation is limited, and is often driven by spreadsheets and custom macros, which are prone to human error. These daily obstacles not only affect your workflow, but also your organization's bottom line. Making the move can be daunting, but like a lot of things, it sounds scarier than it is. Implementing BIM within your organization can improve design accuracy, and coordination, as well as help to find constructability issues earlier in the design process to avoid costly delays. By blending traditional engineering workflows for plan, profile, and cross-sections with 3D modeling and connected workflows, the right technology solutions work the way you work making the transition easier than ever.

Whether your company is working directly on a railway project, or you are partnering with another firm to get the job done, tailor-made software for the work you do is a game-changer.



How BIM Is Changing Rail Network Design

BIM is about more than just software. At its heart, BIM is people accessing the data they need to collaborate and work more efficiently throughout all phases of a railway project, from conceptual design through construction and into operations. Start-to-finish multidiscipline support helps teams stay on schedule and budget, reducing construction risk by considering design concepts in the context of the real and unique project conditions.



See the Complete Picture

You build and operate in a 3D world, so you need to design in an environment that best replicates those conditions. Optimize design while keeping projects on budget and schedule by enabling team members to collaborate in a connected data environment and shared design model that facilitates better coordination across multiple locations and disciplines. In the case of rail projects, rail engineers and designers can lead the process and work directly with the model to define the track components. Using this same model data, electrical engineers can design and analyze the catenary system using the same track geometry, while drainage and utilities engineers can work on ditch and culvert design and utility relocation. By using the same set of assumptions and information during every stage of the project, you can achieve better coordination, collaboration, and design consistency.

Many disciplines with one solution, one workspace, and one set of information produces one successful project.

Moving from 2D CAD to 3D BIM Workflows

Firms often delay the decision to employ 3D modeling. Many designers fear a big learning curve that will reduce their design efficiency. It does not have to be an all or nothing approach. By selecting 3D modeling software with an integrated approach to both 2D and 3D design, you can work using intuitive and traditional design methods while benefiting from the advantages of the modern technology. With a design-driven approach that connects your designs to plan set production, a connected workflow supports the production of high-quality drawings, including multidiscipline documentation sets which are consistent across the entire project, saving you considerable time and money.

Say goodbye to outdated paper plans and last-minute onsite change orders.



Avoid Expensive On-site Surprises

When designing safety-critical infrastructures such as railway networks, engineers must often deal with complex and large-scale designs. Yet most design reviews are done using paper plan sheets or PDFs. Traditionally, clashes are detected by the manual process of overlaying 2D drawings. However, BIM can bring models from all the disciplines together and compare them to detect clashes before they are detected on the construction site. Automatic clash detection is an important approach to determining design errors or omissions. Working in a 3D environment allows you to see potential conflicts immediately. Whether they are conflicts between design disciplines, utilities, physical constraints, or other areas, these potential problems are more apparent earlier in the project life.

Time is money, and automated clash detection saves you both.

Deliver for Today and Tomorrow

2D plan sets remains a key deliverable for your business. Connecting design to documentation with automated drawing production means that once the drawing sheets are set up, engineers can concentrate on the model without having to worry about the knock-on effects that last-minute design changes might have on documentation. Whether you need to produce traditional 2D deliverables, advance to 3D modeling, or leverage a full digital twin, having a complete digital replica of physical assets replaces the inefficient and inaccurate methods of record or as-built drawings. Understanding the future needs of infrastructure and existing conditions for future updates saves time and eliminates guesswork.

Limit rework and reduce the risk of human error with automated accurate drawing production.

Double the productivity of rail network design with software for streamlining design, analysis, and multidiscipline collaboration. We will show you how.



Lead the Way – Scope, Process, Results

As a rail professional, we know you wear many hats. Your scope of work includes an array of responsibilities across many phases and with a diverse group of stakeholders. Your digital solution needs to support an efficient, comprehensive, and collaborative workflow from start to finish. That is why Bentley created a complete set of rail design and engineering solutions.



Plan	Design	Analyze	Construct	Operate
<ul style="list-style-type: none"> ◆ Collect field data ◆ Generate conceptual design ◆ Coordinate with utility companies ◆ Provide quantities and costs in the planning phase ◆ Generate visuals for public involvement 	<ul style="list-style-type: none"> ◆ Create geometric design ◆ Perform regression analysis ◆ Design track, yard, and stations ◆ Perform cant calculations ◆ Design signaling and electrification equipment ◆ Design grading and drainage ◆ Design utility protection and relocation ◆ Design construction staging 	<ul style="list-style-type: none"> ◆ Complete site investigations ◆ Analyze earthwork and alignments ◆ Analyze drainage resilience ◆ Create 2D and 3D deliverables ◆ Deliver machine control guidance 	<ul style="list-style-type: none"> ◆ Supervise construction 	<ul style="list-style-type: none"> ◆ Streamline the maintenance, rehabilitation, and decommissioning

Rail and Bridge Conceptual Design



Design Faster with Intuitive Workflows

Designed specifically for rail design teams, OpenRail ConceptStation works the way you work, but without the need for tedious manual updates. Intuitive workflows mean you can quickly assemble your existing data, lay out your conceptual rail designs, analyze the results, and adjust your design for optimal outcomes in hours, not days. Present your design vision to stakeholders and respond to their change requests in minutes. Once approved, you can move your content to detailed design and kickstart the next phase of your project.

Optimize your Designs for Safety and Value

Help clients understand the financial implications of each design option early in the design process and make informed decisions. Mitigate project risk with accurate clash-free design models designed in real-world context before construction begins. Generate accurate financial projections with quantity and takeoff reporting direct from the model.

Simplify 3D Modeling

Simplify 3D modeling with easy-to-use engineering sketching capabilities to quickly conceptualize rail and bridge infrastructure. OpenRail ConceptStation offers railway and bridge design capabilities to help railway engineers create intelligent models in context.

Accelerate the Approval Process

Seeing is believing. Deliver real-time visualization of actual design content without the need for a dedicated visualization specialist. Traditional 2D layouts can be confusing for non-project team members and the general public. Shorten the review process and rapidly respond to change requests by easily making design changes on the fly that automatically update deliverables.

Check out the capabilities list to understand how easy concepting can be.

OpenRail ConceptStation Capabilities At-a-glance

Assemble Context Data	Conceptual Design Rail	Conceptual Design Bridge	Estimate Cost and Quantites	Interoperability with Detailed Design
<ul style="list-style-type: none"> ◆ Assemble context data including terrain models, raster, images, GIS and DGN ◆ Reference reality meshes ◆ Reality data services ◆ Incorporate aerial imageries with Bing Maps 	<ul style="list-style-type: none"> ◆ Place track and multi-tracks ◆ Edit horizontal and vertical alignment ◆ Design yard/station areas ◆ Create, edit, and modify turnouts ◆ Design overhead line systems ◆ Place masts and portals ◆ Create cantilevers ◆ Create wires ◆ Place railway signals using the provided library ◆ Place and edit city furniture ◆ Create visualizations with Bentley LumenRT™ 	<ul style="list-style-type: none"> ◆ Simple two-click bridge placement ◆ Number of supports automatically determined from the bridge length ◆ Set girder type, support type, abutment type, wing walls ◆ Set bridge deck template ◆ Superelevation determined automatically ◆ Easily edit conceptual bridge designs to change girder type, support type, abutment type, wing walls ◆ Change number of spans, supports, and girders ◆ Rotate supports, move/skew abutment ◆ Change bridge deck template ◆ Create visualizations 	<ul style="list-style-type: none"> ◆ Project cost overview ◆ High level overall design cost ◆ Includes allowance by default ◆ Detailed quantities/cost, cost item list, and associated quantities 	<ul style="list-style-type: none"> ◆ Export to OpenRail ◆ Export, DGN, TIN, ALG, IRD, ITL, RWK ◆ Supports geometry, template, template elevation, terrains, cross sections



Detailed Rail Design and Analysis



All the Capabilities You Need for Detailed Rail Design

Whether your next rail design project is metro, light rail, commuter, high-speed, or freight, intelligent track design and maintenance is key. OpenRail Designer simplifies how rail agencies, network owners, and engineering consultants plan, design, build, and manage their rail infrastructure and associated supply chains.

From routine track upgrades to mega infrastructure projects, OpenRail Designer improves the efficiency and reliability of rail infrastructure design. Its BIM-enabled capabilities and workflows for conceptual design, track design, electrification, signaling design, and maintenance save time and money for all types of rail infrastructure projects, regardless of size or complexity. Its detailed design options and BIM-enabled workflows are specifically developed for a wide variety of complex tasks including yard design, tunnels, corridor modeling, low-voltage assets/signaling, turnout, and switch placement.

Simplify Change Management

Work smarter with intelligent 3D modeling to enhance track geometry designs, reuse common design layouts, analyze rail and sleeper placement, perform rail track regressions, use speed table-driven cant design, create schematic views, automate plan production, and much more in one easy-to-use application.

Design using civil cells, preconfigured commonly used 2D and 3D geometric layouts, such as siding or yard layouts, to maintain all design, constraint, and relational intelligence. Civil cells can then be used repeatedly in designs to ensure standards are implemented, while accelerating design production.



Reduce Errors with Rule-based Design

To meet the growing industry and do more with less, engineers and designers need to work smarter. Do not spend your valuable time on manual, repetitive tasks. OpenRail Designer's rule-based design capabilities help you build associations and relationships among civil elements to ensure the design project is reflective of engineering vision. Compare the design of rail elements against recognized industry standards or client-defined standards.

The software also delivers comprehensive mathematical and associated cant transition algorithms to accommodate the horizontal transitions required on rail projects.

Connect Design to Documentation

Every contract is different, and you need the flexibility to efficiently produce a range of accurate deliverables. Incorrect interpretation of design intent made in the field because of unclear documentation can lead to delayed schedules, change orders, and RFIs after construction begins. When construction documents are generated directly from the design model, you ensure accurate, up-to-date deliverables. Create plan profile sheets with fully customizable layouts and annotation. Comprehensive, user-friendly reporting capabilities automate the production of a variety of standard and customizable reports, including horizontal and vertical alignments, quantity takeoffs, clearance reports, stakeout, legal descriptions, surfaces, and more. Whether you need traditional 2D plans and reports, 3D models, digital twins, or all of the above, OpenRail Designer does it all.



OpenRail Designer Capabilities At-a-glance

Survey	Site	Drainage and Utilities	Plan Production and Documentation
<ul style="list-style-type: none"> ◆ Read/write standard raw survey formats ◆ Survey data reduction ◆ Feature coding for custom survey ◆ Feature connectivity, display, and annotation ◆ Adjustments: least squares, compass, crandall, and transit ◆ Dynamic graphical and tabular editing of survey field book data ◆ Terrain modeling ◆ Export common data formats 	<ul style="list-style-type: none"> ◆ Reality data integration (point clouds, reality mesh, terrain data, imagery, geospatial information) ◆ Surface creation, design, and analysis ◆ Parcel layout ◆ Grading ◆ Horizontal and vertical alignments ◆ Profiles and cross sections ◆ Terrain modeling and analysis 	<ul style="list-style-type: none"> ◆ Allocate and estimate stormwater loads ◆ H&H modeling and analysis ◆ Culvert design and analysis ◆ Stormwater network design and analysis ◆ Sanitary network design and analysis 	<ul style="list-style-type: none"> ◆ Plan, profile, and cross section sheet generation ◆ Quantity and earthwork calculations ◆ Construction documentation ◆ BIM deliverables



Rail Electrification Design and Analysis



OpenRail™ Overhead Line Designer

Finally, BIM for Rail Electrification

OpenRail Overhead Line Designer is the first comprehensive contact line design modeling application for rail electrification that simplifies preliminary and detailed design with BIM-enabled workflows. With open collaborative design workflows for conceptual through detailed design and into construction, powerful design automation and standardization capabilities, and automated plan production in one easy-to-use application, you can save time and money on rail overhead line infrastructure projects of all sizes.

Purpose-built Capabilities for the Job You Do

Adapting to any rail design and maintenance workflow, OpenRail Overhead Line Designer is suitable for a range of electrification projects, including light rail, metros, heavy rail, and high-speed rail. It handles a wide variety of overhead line electrification design cases, such as long-track segments, complex yard/station areas, and tunnels, and enables design teams to effectively manage their project compliance and create their own standards and user-defined libraries with easy-to-use editing functions or built-in Siemens Sicat libraries.

Work with Anyone, Anywhere

You do not work in a silo, and neither should your software. From integrating existing track geometry, to working with other project partners, the software makes it easy to work with different data types, disciplines, and distributed teams. Work smarter, reduce risk, and avoid rework with direct access to track geometry information. This process does not require any new track creation, shortening design process while maintaining single point of track information.

Future Proof Deliverables

Whether you need to produce traditional 2D deliverables, advance to 3D modeling, support digital transformation, or all the above, OpenRail Overhead Line Designer does it all. It is the first comprehensive contact line design modeling application for rail electrification to deliver BIM compatible models and support the creation of digital twins.

OpenRail Overhead Line Designer Capabilities At-a-glance

Survey	Site	Track	Electrification	Plan Production and Documentation
<ul style="list-style-type: none"> ♦ Read/write standard raw survey formats ♦ Survey data reduction ♦ Feature coding for custom survey feature connectivity, display, and annotation ♦ Adjustments: least squares, compass, crandall, and transit ♦ Dynamic graphical and tabular editing of survey field book data ♦ Terrain modeling ♦ Export common data formats 	<ul style="list-style-type: none"> ♦ Reality data integration (point clouds, reality mesh, terrain data, imagery, geospatial information) ♦ Surface creation, design, and analysis ♦ Parcel layout ♦ Grading ♦ Horizontal and vertical alignments ♦ Profiles and cross sections ♦ Terrain modeling and analysis 	<ul style="list-style-type: none"> ♦ Horizontal and vertical geometry ♦ Profiles and cross sections ♦ Yard/station design ♦ Corridor modeling ♦ Turnout and switch placement ♦ Regression analysis ♦ Cant design ♦ Low voltage /signaling assets ♦ Earthwork and quantities ♦ Civil cells for standard compliance and templates and automation ♦ Real-time design visualization 	<ul style="list-style-type: none"> ♦ Process data module for material, environmental, and operating conditions ♦ Track layout-based copy-and-paste function of complex groups of overhead contact line objects ♦ Advanced calculation features for the wire geometry and pantograph limits ♦ Rule-based automatic and manual determination of material quantities 	<ul style="list-style-type: none"> ♦ Plan, profile, and cross section sheet generation ♦ Quantity and earthwork calculations ♦ Construction documentation ♦ BIM deliverables

Today's rail projects require more extensive capabilities for civil design, and water. Read on to discover integrated solutions to complete the scope of your project.



Integrated Design and Data for Every Project Phase

With a comprehensive set of capabilities, engineers can worry less about technology inefficiencies and focus more on engineering optimum solutions. Whether your team works directly on every portion of the workflow, or you need to work with other organizations, Bentley has a software solution for you and your partners that easily shares, consumes, and references data for a seamless and collaborative experience.



Plan	Design	Analyze	Construct	Operate
OpenRail ConceptStation	OpenRail Designer	OpenRail Designer	OpenRail Designer	OpenRail Designer
	OpenRail Overhead Line Designer	OpenRail Overhead Line Designer	OpenRail Overhead Line Designer	OpenRail Overhead Line Designer
	OpenBridge Modeler®	OpenTunnel Designer	OpenBridge Modeler	OpenTunnel Designer
	OpenTunnel® Designer	OpenFlows	OpenTunnel Designer	OpenBridge Modeler
	OpenFlows™		Use the applications to reference model/ documents to verify accuracy of construction.	Use the applications to hand off the digital model for future maintenance.

Read on to discover the capabilities you need across the project lifecycle, and how the right applications working together seamlessly enable an effective workflow.



Bridge Modeling

OpenBridge Modeler®

Reduce Tedious Manual Work with Dynamic Change Management

OpenBridge Modeler's built-in relationship between bridge components enables dynamic change management, saving time and preventing frustration. Have an alignment or profile change? Watch as it automatically updates the entire bridge geometry. Deck cross slopes change? Watch as the beam and elevations update automatically.

Work with Civil Geometry, No Data Translations Required

The application has direct access to Bentley's civil design data, allowing you to visualize and evaluate bridge geometry and how it interacts with the alignment, terrain, drainage, and surrounding structures from the start of your project.

The multidiscipline, consolidated project view makes it possible to identify constructability issues and conflicts prior to construction.

Create Physical Bridge Models Easily and Accurately

Gone are the days of needing scripting and visualization specialists. OpenBridge Modeler produces intelligent models with engineering content properties for various bridge components. These components include concrete compressive strength, structural steel grade, standard beam designations, rebar details, and more.

Automate Documentation and Reports

OpenBridge Modeler generates a variety of reports such as deck elevations, beam-seat elevations, material quantities, cost estimates, and Input Echo reports to facilitate the evaluation of multiple bridge alternatives, construction sequences, costs, and other elements.

Tunnel Design and Analysis

OpenTunnel® Designer

Comprehensive 3D Physical Tunnel Modeling

Designing tunnels is already complex without the added complications of using design software built for other industries. OpenTunnel Designer enables faster and more accurate modeling of the full excavation shape, excavation tracks, tunnel lining, and reinforcement with native modeling capabilities. These capabilities include concrete compressive strength, structural steel grade, standard beam designations, rebar details, and more.

Work with Civil Geometry, No Data Translations Required

OpenTunnel Designer allows direct referencing of DGN models from highway alignments, profiles, and ground information created with OpenRoads™ and OpenBridge® as LandXML and IFC files, allowing you to visualize and evaluate road geometry from the start of your project. With thousands of decisions and changes for design, aesthetics, structural integrity, material choices, and safety, it is essential for teams to have open access to data to reduce errors and complete projects efficiently.

Perform Geotechnical Analysis

Maximize productivity and save time by creating multiple analytical models in minutes, not days. Simply specify stations for the cross section as the basis of your 2D analytical model, or send entire tunnels from your 3D BIM model to PLAXIS® with the push of a button, no coding required.

Automate Documentation and Reports

Streamline your plan production process. Plan, profile, and cross section drawings can easily be created using OpenTunnel Designer's powerful drawing production capabilities. Keep your projects on track with tunnel-specific reports based on the latest changes for up-to-date accurate costing and quantities.

SR2.7

Hydraulics and Hydrology



Hydraulics and Hydrology Features for All Roads, No Matter the Complexity

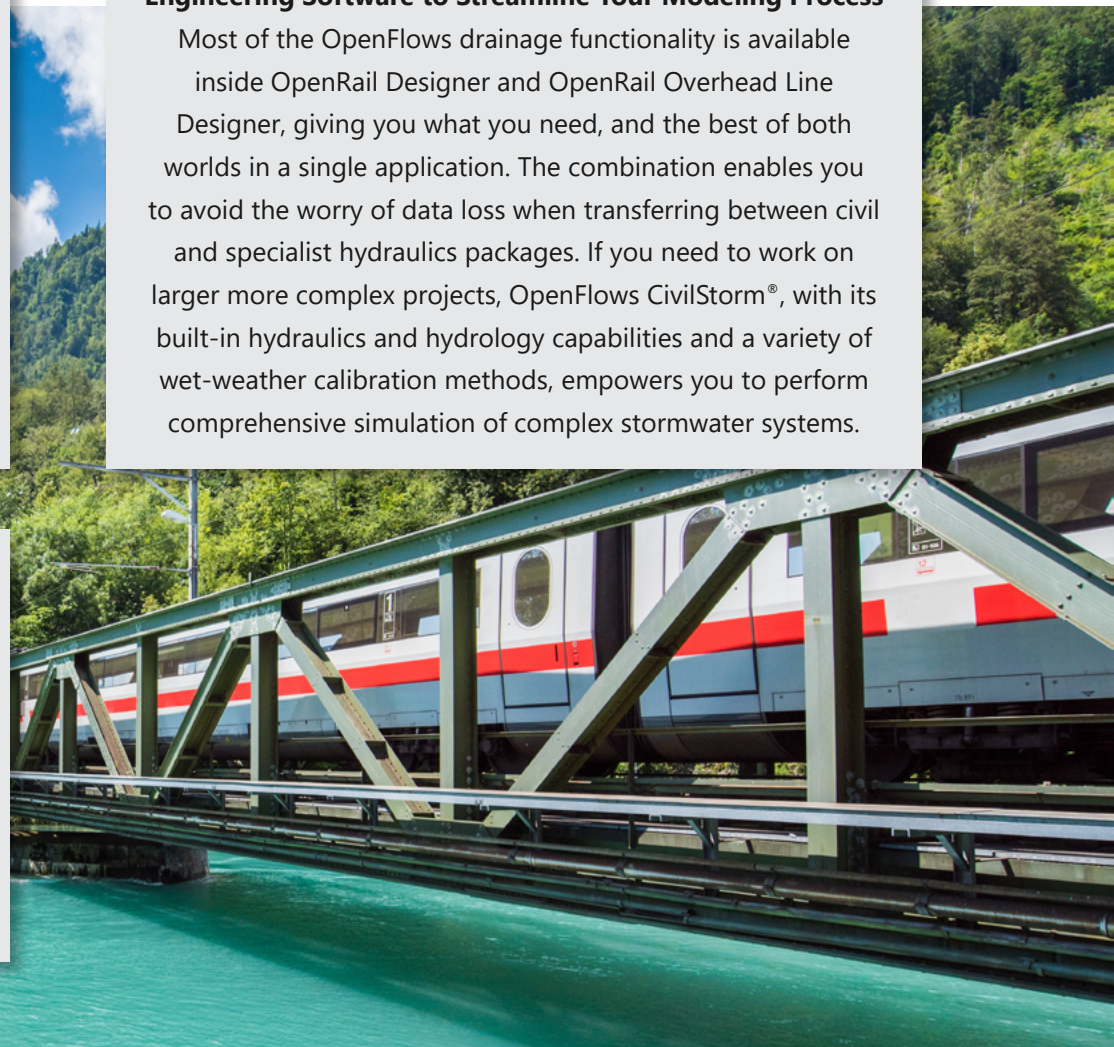
The hydraulics and hydrology aspect of a rail project can be a complex undertaking. Plan intelligently with interoperable hydraulics and hydrology features to ensure design accuracy and environmental impact mitigation by using OpenFlows for drainage design and analysis. Reference the proposed and existing drainage, and proposed and existing utilities, to perform the clash detection or to compare the position of, for example, storm water lines with water lines.

Engineering Software to Streamline Your Modeling Process

Most of the OpenFlows drainage functionality is available inside OpenRail Designer and OpenRail Overhead Line Designer, giving you what you need, and the best of both worlds in a single application. The combination enables you to avoid the worry of data loss when transferring between civil and specialist hydraulics packages. If you need to work on larger more complex projects, OpenFlows CivilStorm®, with its built-in hydraulics and hydrology capabilities and a variety of wet-weather calibration methods, empowers you to perform comprehensive simulation of complex stormwater systems.

User-friendly Calculators and Hydraulic Toolbox for Your Engineering Needs

If you do not need a full BIM solution, you can analyze cross-drain systems along with bridge and roadway overtoppings by using OpenFlows CulvertMaster's library of standard culvert shapes, materials, and entrance conditions. OpenFlows FlowMaster® provides reliable calculations on a wide variety of hydraulic elements such as pressure pipes, open channels, weirs, orifices, and inlets.



Capabilities At-a-glance

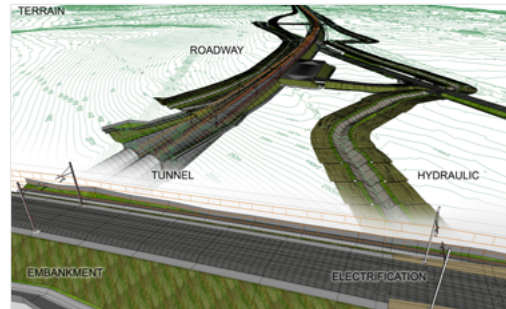
OpenBridge Modeler	OpenTunnel Designer	OpenFlows CivilStorm	OpenFlows CulvertMaster®	OpenFlows FlowMaster
<ul style="list-style-type: none"> ◆ Reference roadway information and ground data ◆ Comprehensive 3D physical bridge modeling for all bridge types ◆ U.S. customary and metric units ◆ User customizable libraries ◆ Cross section template for complex geometry ◆ Powerful modeling and visualization capabilities ◆ Superstructure and substructure modeling ◆ Model bridge components, including deck slab, girders, abutments, piers, and wing walls ◆ Parametric, intelligent bridge components ◆ Rule-based and constraint-driven modeling ◆ ProConcrete rebar modeling ◆ Clash detection ◆ Variety of reporting formats ◆ Lifelike rendering 	<ul style="list-style-type: none"> ◆ Comprehensive 3D physical tunnel modeling ◆ Full excavation shape, excavation tracks modeling ◆ Tunnel lining modeling for conventional and TBM tunnels ◆ Parametric, intelligent tunnel components ◆ Rule-based and constraint-driven modeling ◆ Solid and transparent views ◆ Material quantities report, input reports, cost estimate report ◆ Report formats: PDF, MS Word, MS Excel, HTML ◆ Direct data exchange with MicroStation®, OpenRoads, OpenRail, OpenBridge, ProStructures™, and PLAXIS ◆ Connect to PLAXIS 2D and PLAXIS 3D to perform geotechnical analysis ◆ Import geomodeling data from Leapfrog® ◆ File formats: DGN, XML, LandXML, IFC, and PY ◆ Automated plan production 	<ul style="list-style-type: none"> ◆ Comprehensive stormwater modeling and analysis ◆ Comprehensive analysis of all aspects of stormwater systems ◆ Analyze pressure and free-surface flow conditions for networks of channels and closed conduits, model complex pond outlets for a variety of tailwater conditions, and use weirs, orifices, culverts, risers, and inlet boxes in their design ◆ Provides support for multiple background layers ◆ Import/export OpenRoads Designer storm and sanitary file ◆ Easy model management with scenarios. ◆ Compare alternative designs or proposed rehabilitation methods for a variety of system conditions 	<ul style="list-style-type: none"> ◆ Culvert hydraulic analysis and design ◆ HDS-5 methodology ◆ Pressure or partial (free surface) flow conditions ◆ Gradually varied flow algorithm ◆ Flow profile methods ◆ Culvert section shapes ◆ Outlet channel sections ◆ Roadway or broad-crested weir ◆ Watershed area calculation ◆ Peak flow method: Rational Method, SCS Graphical Peak Method, user-defined peak flow rate ◆ Rainfall data input: Intensity Duration- Frequency (IDF) equations, IDF tables, Hydro-35 ◆ Summarized and detailed reports ◆ Rating tables 	<ul style="list-style-type: none"> ◆ Design and analyze any type of hydraulic structure ◆ Manage data easily using the Project Explorer and engineering libraries ◆ Hydraulic calculator ◆ Perform pressure pipe design ◆ Design and analyze inlet and gutter ◆ Design and analyze open channel ◆ Design and analyze weirs and orifices ◆ Flow algorithms ◆ Friction-loss methods ◆ Summarized and detailed reports of inputs and outputs ◆ Advanced tabular reporting with filtering and sorting capabilities ◆ Rating tables ◆ Rating curves ◆ Gradually varied flow profile graphs and tables ◆ Cross section plots

Engineers Like You Use OpenRail



Sweco Nederland B.V.
Bergen Light Rail Norway

- ◆ With approximately 40,000 to 50,000 travelers daily, the light rail extension is expected to reduce pollution and be a driving force for urban development and transformation for Bergen's suburbs.
- ◆ The project team used OpenRail Designer to create the alignment, plan, and profile drawings, facilitating development of over thirty different intelligent templates for double, single, and depot track alignments.



Italferr S.p.A.
High Speed/High Capacity
in Southern Italy: Napoli-Bari Route

- ◆ Italferr implemented BIM methodology to manage data and multidiscipline workflows within a federated model of the Apice-Bovino section of the Napoli-Bari railway.
- ◆ The application optimized design, facilitating the creation of a digital twin to be used for lifecycle management of the railway infrastructure.



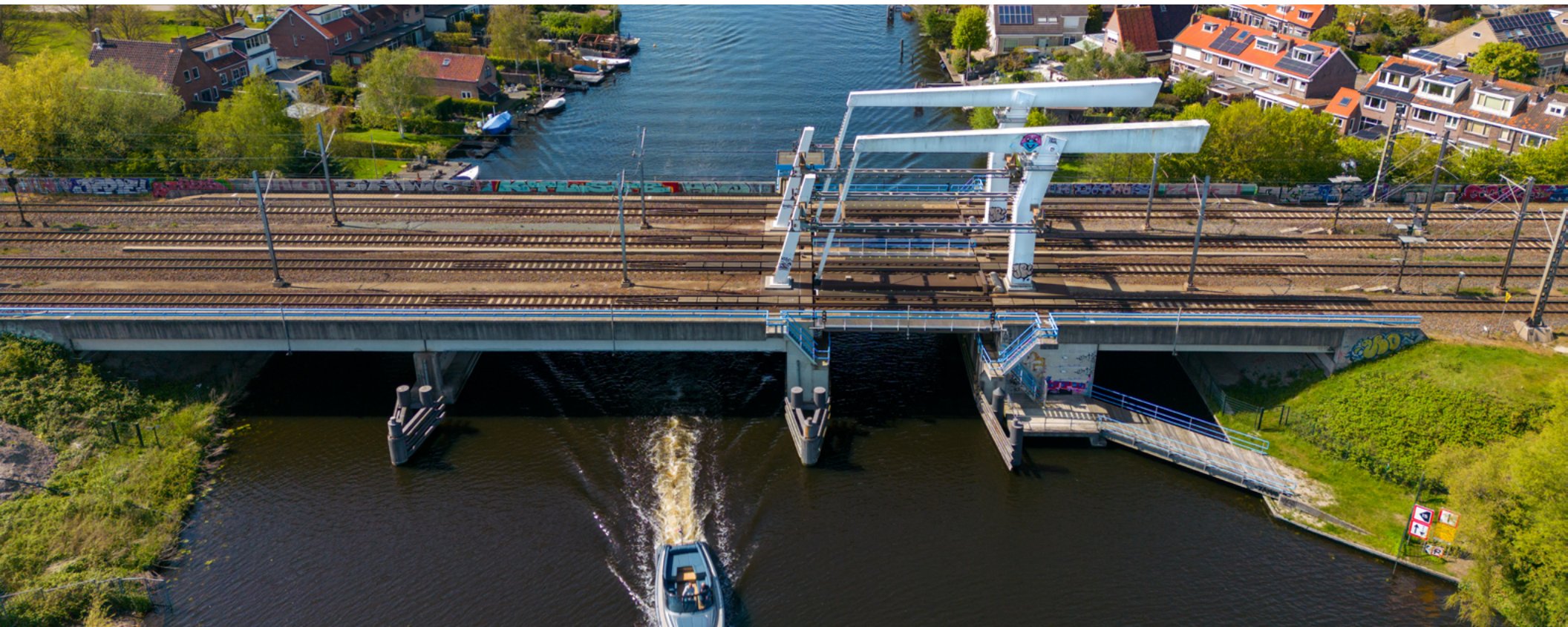
PT Wijaya Karya (Persero) Tbk
Integrated High Speed Rail and
Station Jakarta – Bandung

- ◆ The integrated high-speed rail between Jakarta and Bandung will reduce congestion between the two cities and foster a culture of public transportation in Indonesia.
- ◆ Leveraging Bentley's applications, WIKA developed a connected digital ecosystem and single source of truth.
- ◆ The integrated solution streamlined workflows, design quality and calculation, saving USD 185 million in construction costs and shortening the construction schedule by six months.

Innovative Digital Solutions Will Keep You in the Driver's Seat, Enabling a Better Strategy

See potential problems and resolve them in advance, when project changes are easy and cost efficient. We hope this e-book has inspired you with technology solutions that allow you to continue to build and advance your community's infrastructure through innovation.

Bentley's civil complete solution set provides all the capabilities you need in one place, from one company, designed to work together and to work the way you do.



Getting Started

Redefine how rail and transit infrastructure are designed, built, and operated with multidiscipline data exchange and handover to support construction through maintenance with Bentley's rail software.

Improve workflows, optimize project delivery, and improve overall service, safety, and reliability. Take your first step to preventing failures and unplanned downtime with Bentley.

Contact us to learn more.

Visit Us Online

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