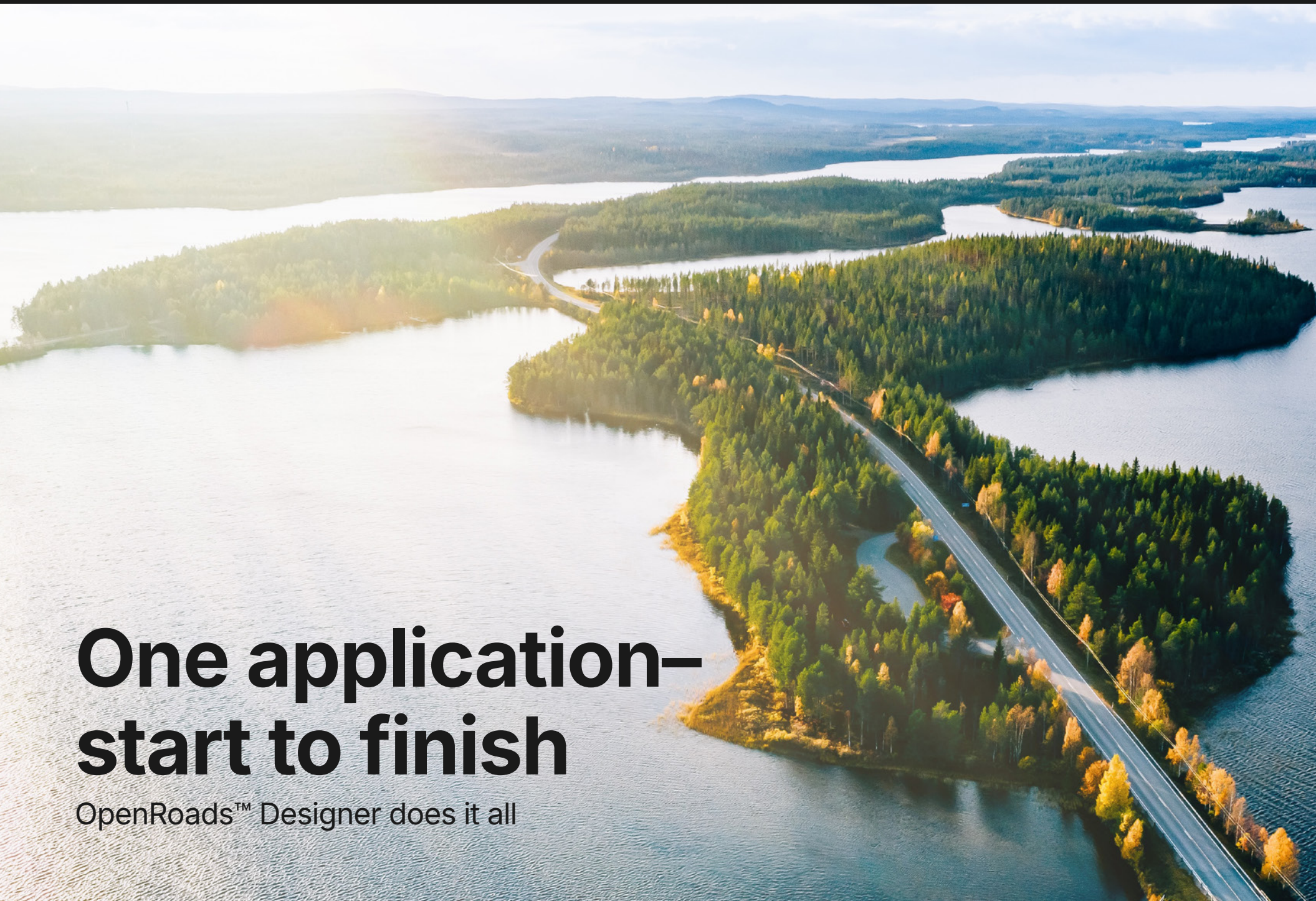


One application–start to finish

OpenRoads™ Designer does it all

Table of contents

As engineers, we get it.

Each day, you face increasing demands for engineering accuracy, contract compliance, and the production of a variety of deliverables, all within firm deadlines. No pressure!

You need an application that makes your job easier, not harder. That's why we built OpenRoads Designer—with all aspects of road design in one application—so you can easily meet project requirements on time, every time, regardless of change.

Engineering is complicated. Your software doesn’t have to be.

- Why does it have to be so manual and tedious?
- How can I ensure accuracy across thousands of components every time there is a design change?
- How do I know what will work with other team members on the project?
- Why do I need multiple applications and data translations for one project?

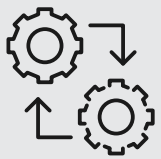
There is a better way...

Meet OpenRoads Designer to improve efficiency and productivity

Traditional 2D methods are manual and tedious, as well as full of communication and data gaps, leaving you frustrated, exhausted, and with a project that is costing you resources, time, and money.

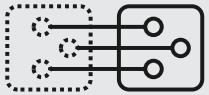
De-stress with OpenRoads Designer.

It is one design application for surveying, site, road, drainage, utilities, plan production, and more, featuring:

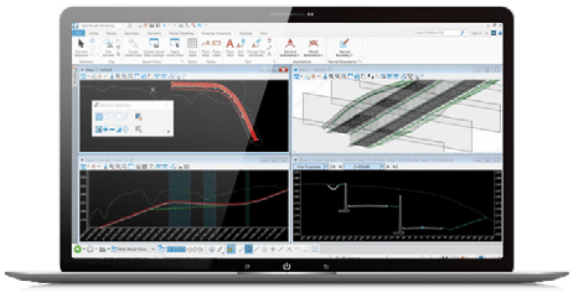


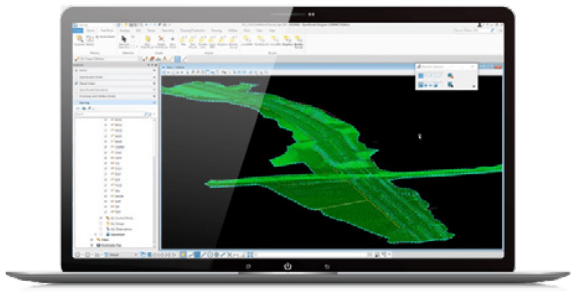
Dynamic change management

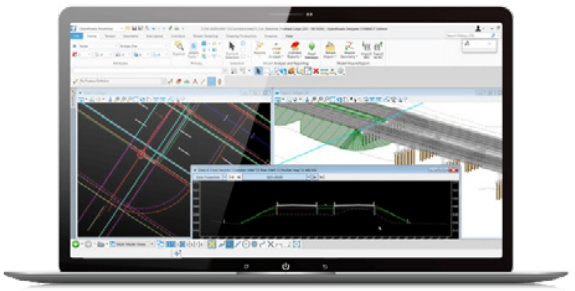
Open modeling environment



Automated drawing production







One application from start to finish

Data and Design Integration
You don't work in a silo and neither should your software. From integrating existing real-world conditions, to working with other project partners, OpenRoads Designer makes it easy to work with different data types, multiple disciplines, and geographically dispersed teams.

Detailed Road Design
OpenRoads Designer is all you need for geometrics, surveying, drainage, utilities, quantity takeoffs, cut and fill, site grading, lane configurations, and mobility.

Drainage and Utilities
From creating models based on 2D artifacts and external data, to addressing steady and unsteady state hydraulics and hydrology, to BIM and plans production, you'll reduce design time with a complete set of resources in one application.

2D, 3D, and Beyond
Whether you need to produce traditional 2D deliverables, advance to 3D modeling, support digital transformation, or all of the above, OpenRoads Designer does it all.

Data and design integration

OpenRoads Designer makes collaboration on 2D and 3D models easier and more efficient than ever. From team-level and work-in-progress collaboration, to project-level multidiscipline coordination, project managers, reviewers, site workers, and inspectors can view designs, perform virtual walkthroughs, query model information, and analyze embedded property data. These tasks can all be done directly in the application or using a web browser.

Open modeling environment
Project team members can incorporate data types across multiple disciplines, which means less manual work and errors. Users benefit from full data/design transparency.

Manage data with ease
The software's flexibility offers team members the ability to organize project files and data as needed, further removing discipline and organization silos.

Maintain design intent
Easily maintain rules and relationships because every design update will automatically reflect the most recent and accurate representation of your project.

Share the wealth of data
OpenRoads Designer accommodates today's project needs and provides users with accurate information that benefits team members throughout the asset lifecycle.

Watch the video >

Detailed road design

Roadway designers and engineers require software that seamlessly collaborates across disciplines, addresses growing industry demands, and includes automation to remove tedious manual work. Whether you need to produce traditional 2D deliverables or advance to 3D modeling, OpenRoads Designer is the single application that addresses all your critical business issues so you can meet project requirements for your road design and maintenance projects.

Start with real data
Create accurate, georeferenced 3D designs with real-world context through the seamless integration of reality data and design information.

Create, reuse, and save time
Create commonly used geometric layouts that can maintain constraints and relationships. Make modifications at any time and watch your design update.

Win them over
Dynamic change management and visualization capabilities give you the confidence to make any design change and obtain stakeholder buy-in.

Mitigate risk
Reduce errors, omissions, and changes during construction with streamlined design, reviews, and approvals associated with a model-based project approach.

Watch the video >

Drainage and utilities

3D models of drainage and utilities are quickly becoming a necessity. However, road design, drainage design, and utilities modeling are often completed by separate team members that utilize different software applications. Working in a vacuum leads to lack of coordination across disciplines, costly mistakes from out-of-date data, and missed opportunities to address conflicts.

Existing utilities
Model existing utilities using the Extract from Graphics feature or leverage ModelBuilder to import utilities from a variety of external file formats and databases.

Proposed drainage
Changes made to the road project automatically and accurately update the drainage design to include new, modified proposed drainage system designs.

Steady state flow analysis
Compute peak flows for an analysis scenario or compute a design scenario. Switch between scenarios and see your model update.

Unsteady state flow analysis
Conduct critical storm analysis, show overflows, see pond hydraulics, compare scenarios with graphs and symbology, and utilize analytic symbology.

Watch the video >

2D, 3D, and beyond

Even as the transportation industry moves toward 3D modeling, the need for a variety of deliverables continues to be part of the project workflow. With OpenRoads Designer, you can create the deliverables you need. Whether it's 2D or 3D, plans or models, digital or paper, the application is designed to allow you to work in all these mediums simultaneously, leveraging information from one to help populate the other.

Plans and profiles
Create profiles and cross sections from any point within your design. Reflect design changes automatically, and include details like surface features.

Digital deliverables
Export digital deliverables to support industry BIM workflows. Include component attribution for a more efficient, data-rich design, while having the ability to create traditional 2D and 3D design deliverables.

Digital twins
OpenRoads Designer is a digital twin authoring environment. Your federated 3D models serve as the foundation for digital twins, and with Bentley Infrastructure Cloud™, your assets will have an ever-evolving, reliable audit trail.

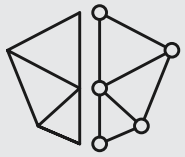
Today and tomorrow
3D models can be leveraged for 4D scheduling and 5D cost estimation, bringing your design to constructed fruition on time and within budget.

Watch the video >

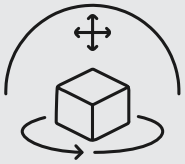
Survey	Site	Road	Drainage and Utilities	Plan Production and Documentation
Read/write standard raw survey formats	Reality data integration, including point clouds, reality mesh, terrain data, imagery, and geospatial information	Horizontal and vertical geometry	Allocate and estimate stormwater loads	Plan, profile, and cross section sheet generation
Survey data reduction	Surface creation, design, and analysis	Profiles and cross sections	Hydraulics and hydrology modeling and analysis	Quantity and earthwork calculations
Feature coding for custom survey feature connectivity, display, and annotation	Parcel layout	Advanced roundabout design	Culvert design and analysis	Construction documentation
Adjustments: least squares, compass, and transit	Grading	Roadway and site feature modeling and analysis	Stormwater network design and analysis	BIM deliverables
Dynamic graphical and tabular editing of survey field book data	Horizontal and vertical alignments	Earthworks and quantities	Sanitary network design and analysis	
Terrain modeling	Profiles and cross sections	Civil cells for standard compliance, templates, and automation		
Export common data formats	Terrain modeling and analysis	Real-time design visualization		

Infrastructure sector trends

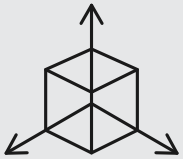
Why Move Now?



Engineering firms and contractors are seeing more than half of new business requests requiring digital project delivery.



Most users report that they are experiencing value from the application of 3D modeling techniques.



Users see a very high influence from BIM on their ability to offer better services and increase their win rates for new work.

Bentley applications support multiple data exchanges, benefitting the entire project lifecycle.

OpenRoads Designer

Software of choice for road design

35+ Years experience	**44** U.S. DOT agencies	**37** European countries
50% Canadian MOTs	**29** Chinese provinces	**50%** Australian states

See what leading design firms have accomplished

CDOT alleviates severe bottlenecks along interstate, connecting Major Mountain Resorts

Bentley technology provides a digital visual environment, saving 50,000 work hours and USD 7 million in project costs.

> “The Bentley suite of products enables the presentation of AtkinsRéalis projects with reality modeling to convey design intent, project impacts, and community integration, which is critical to project success.”

Samuel Worthy, National BIM Manager of Roads and Highways, AtkinsRéalis

Image courtesy of AtkinsRéalis

WSP drives Victoria's Transformational and Sustainable Transport Initiatives with Parkdale Level Crossing removal

Bentley's digital twin technology optimized material usage, reducing resource hours by 15% and the carbon footprint by 30%.

> "Utilizing Bentley's software solutions—such as OpenBridge Modeler®, OpenRail™, and ProjectWise®—proved to be a game-changer for our multidiscipline rail project."

Matt Gillard, Design Area Manager for Parkdale Level Crossing, WSP Australia Pty. Ltd.

Image courtesy of WSP Australia Pty. Ltd.

AFRY helps scania drive toward sustainable transport with new autonomous vehicle test track

OpenRoads Designer and Bentley LumenRT™ optimize constructability, reducing environmental impact

> “Bentley software provided the AFRY team with a collaborative and interoperable design environment [where] engineering ideas were relatively easily introduced to the 3D data rich models [...] and then communicated to the project stakeholders with eye-catching visualizations.”

Adam Wieczorek, Group Manager, AFRY

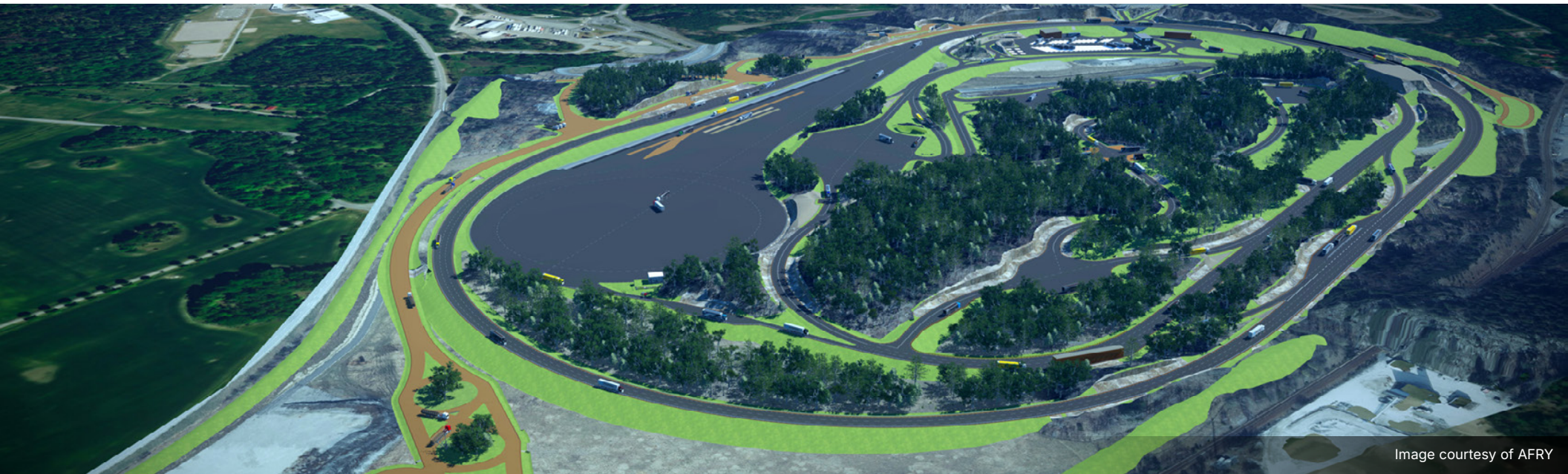


Image courtesy of AFRY

Additional solutions for road design project delivery

Solution for Project Managers

Bentley Infrastructure Cloud Design Review powered by iTwin®

You no longer need native desktop applications to share and review design files.

Run reports any time and view historical changes

View civil quantities from within the application

Have one less deliverable to print

Make it accessible to all team members

Solution for Bridge Design

OpenBridge Modeler

The cyclical relationship between roads and bridges is why they should be modeled together.

Design and model any type of bridge

Work in a user-friendly environment for roadway engineers

Work with Bentley's library of civil data

Be interoperable with OpenRoads Designer, OpenTunnel® Designer, ProStructures™, MicroStation®, and more

Solution for Collaboration

ProjectWise® 365

A cloud-based connected data environment that allows you to easily manage, store, and share information.

Leverage Microsoft 365 technology

Make collaborative BIM accessible and affordable

Eliminate paper-based workflows

Include third-party PDF review capabilities

End-to-end solutions for infrastructure projects

Solution for Surveyors/Inspectors

iTwin Capture Modeler

Rapidly capture the as-built condition of an existing site or asset using iTwin Capture Modeler to quickly produce engineering-ready 3D models from photographs.

Solution for Construction

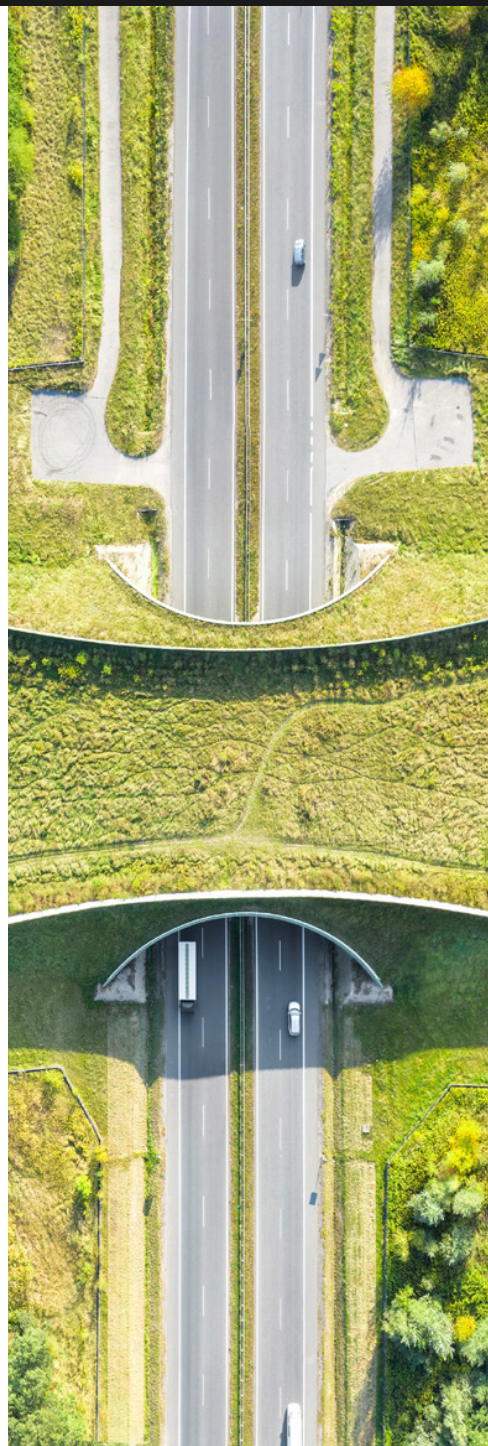
SYNCHRO™

Improve safety, reliability, and predictability of construction projects with SYNCHRO, saving time and money by avoiding rework and identifying schedule issues ahead of time.

Solution for Asset Management

AssetWise®

Collect, analyze, and control relevant asset information with AssetWise, mitigating risk, increasing operational efficiency, and ensuring regulatory compliance.



Getting Started

OpenRoads Designer makes it easy to work the way you want, leaving you time to do what you do best.

Experience the power of OpenRoads Designer.

Buy Now Contact Us