

# Rail Construction Planning Solution

Connect People and Data to Optimize Construction



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## Bentley's Rail Construction Planning Solution

With governments around the world significantly investing in rail and transit projects and major network upgrades, digital technology will be key for combating the challenges that the transportation industry currently faces, such as shorter deadlines, tighter budgets, rising material costs, and skilled labor shortages.

This solution provides rail and transit owner-operators and specialist contractors with the ability to advance beyond traditional deliverables, such as moving from PDFs to 3D/4D model-based workflows, and enhance collaboration between design and construction teams. By turning your design models into construction models, you can optimize project and possession/blockade plans, schedules, and resources while increasing jobsite safety. From the office to the field, the result is less disruption to existing rail services and members of the public through increased visibility, predictability, and productivity on your projects.

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## Capabilities at a Glance

As the demand for infrastructure continues to grow, so do challenges, such as inflation, rising material costs, and workforce shortages. Without adopting more efficient digital workflows, it will become harder for rail and transit owner-operators to deliver successful projects quickly and safely.

The rail construction planning solution provides 3D/4D digital design and construction workflows to connect people and data to optimize construction.

### **3D/4D Construction-focused Planning and Collaboration**

Leverage model-based workflows and cloud technology to create a secure, single source of truth that aligns design and construction for better project outcomes.

### **4D Construction Modeling, Visualization, and Simulation**

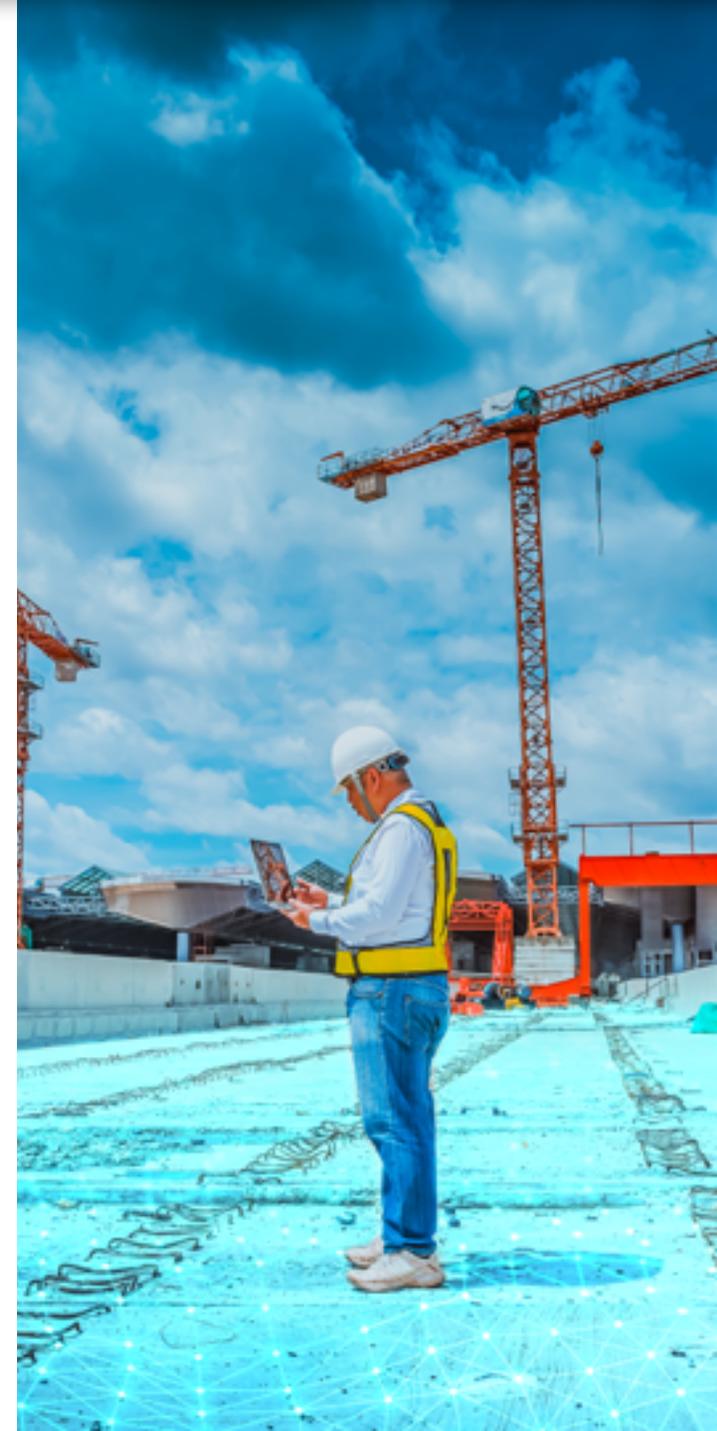
Turn linear design models into construction models to improve the use of data and to better optimize project plans, schedules, and resources.

### **Cost Projection and Automated Quantity Takeoffs**

Utilize 4D workflows to break horizontal projects into constructible components with auto-calculated quantity takeoffs (QTO) for more accurate cost projections.

### **Electronic Data Capture in the Field**

Extend the value of the 4D model into the field for status checks, work planning, and inspections.





## Benefits of Better Construction Planning

Disconnected workflows between design and construction teams are a big reason to make the shift to 3D/4D model-based workflows. Traditionally, design teams flatten their 3D design models to 2D PDFs for construction planning and coordination. This practice loses much of the design intent and leads to lengthy review processes, costly change orders, and schedule delays. But as contractors adopt digital technology, 3D design models are becoming more valuable throughout development, as they enable teams to capture additional project data, which will improve the coordination between design delivery and construction planning.

During construction or maintenance repairs on rail projects, there is a strict adherence to time on the tracks by staff, which can mean fines for not meeting timelines. Our solution can help plan for time needed to perform the work, across multiple parties, firms, contractors, and stakeholders, as well as enable teams to:

- ◆ Improve design quality and intent
- ◆ Streamline design and construction review processes
- ◆ Optimize project schedules while keeping original design intent
- ◆ Anticipate impacts on traffic flows within time and spatial contexts
- ◆ Increase transparency to inform the public and meet regulations
- ◆ Improve safety planning to reduce jobsite accidents and injuries
- ◆ Plan sustainability into projects and lower carbon footprint
- ◆ Visualize and resolve conflicts before construction begins
- ◆ Reduce change orders and rework on projects

# Industry Leaders Are Using the Rail Construction Planning Solution

## ACCIONA Helps Modernize Melbourne's Rail Infrastructure by Removing Dangerous Level Crossings

SYNCHRO™ Helps Drive Digital-first Approach to Reduce Construction Staging Time and Ensure a Safe Work Environment

Tasked with removing dangerous level crossings and constructing new stations in Melbourne, Australia, ACCIONA knew a fully digital approach was key to delivering successful planning, design, and project delivery. The project required meticulous and efficient planning, design, and project delivery—and temporarily shutting down rail lines and stations. ACCIONA leveraged Bentley to drive digital-first approach to reduce construction staging time by 67% and ensure a safe work environment.

[Read the Case Study](#)

## PT Wijaya Karya Develops High-speed Rail to Bring Reliable Public Transit to Indonesia

Bentley's Open Applications and Digital Twin Technology Accelerates Construction Schedule

The USD 7.8 billion project stretches 143 kilometers in length and features 55 subgrade sections, 13 tunnels, 46 bridges, and four integrated central stations. When complete, it will reduce congestion and cut the journey time between the two cities from three to 10 hours by automobile. By streamlining workflows and improving efficiency and design quality, PT Wijaya Karya saved USD 185 million in construction costs and shortened the schedule by six months.

[Read the Case Study](#)





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## Getting Started

For many firms, the thought of implementing new processes can seem overwhelming. But with the rail construction planning solution, teams will have the capabilities to future-proof their technology adoption step by step.

**With these digital design and construction workflows, you will be able to connect people and data to optimize construction and deliver more projects, faster and safely.**

- ◆ 3D/4D construction-focused planning and collaboration
- ◆ 4D construction modeling, visualization, and simulation
- ◆ Cost projection and automated quantity takeoffs
- ◆ Electronic data capture from the field

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**Contact us to learn more about the rail construction planning solution.**

[Learn More](#)