TRIMBLE CASE STUDY

Bituminous Roadways, Inc.

Connected Trimble technology paves the way to growth

Coordination, efficiency and real-time insight

As projects grew in complexity, Bituminous Roadways embarked on a strategic transformation. The goals: gain efficiency, increase production, improve workflows and optimize data.

From initial bid to project completion, hardware and software from Trimble now help the 79-year-old paving, utility and sitework company remain a leader in the Minneapolis/St. Paul, Minnesota metro area and deliver award-winning projects.

“We see technology as a way to get better insight into our productivity and a real-time view of where we stand, and there’s no data disconnect,” says Nate Larson, construction technologist.

Bituminous Roadways earned the 2024 Trimble Construction Innovation Award in the “Connected Construction” category. Pictured are Kim Scales, IS technology manager, and Nate Larson, construction technologist.

Trimble lineup drives efficiency and collaboration

- Viewpoint Spectrum
- B2W Estimate, Track, Schedule, Inform and Maintain
- SPS986 GNSS Smart Antenna rover
- TSC7 Controller
- Siteworks
- SPS930 Universal Total Station
- R750 GNSS Modular Receiver
- GCS900 Grade Control System
- Trimble Stratus drone technology

"Because systems are connected, data moves seamlessly. This allows us to ***collaborate more effectively*** *across departments and to eliminate redundant data entry and all the wasted time and opportunity for error that go along with that.*

"Our employee ***production hours have increased by 150 percent****, and equipment production hours are up by 117 percent."*

Kim Scales
IS Technology Manager

Unified estimating and operations with B2W

As bid volume grew, Bituminous transitioned from spreadsheets to B2W Estimate. Centralized resource databases, templates and cost structures standardized the process and allowed faster and more accurate bidding.

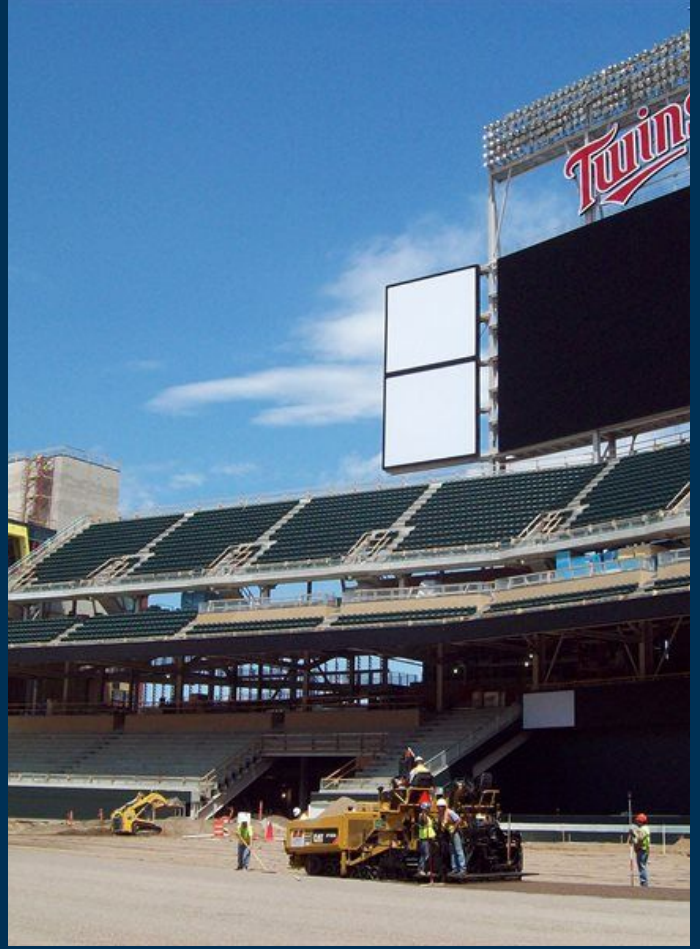
Once a project is won, bid data flows directly to B2W Track and B2W Schedule performance tracking and resource scheduling applications. This allows managers to establish daily field logs and assign resources according to how the job was envisioned in the bid.

“One key strength of B2W is the communication between different processes,” Scales explains. “B2W applications all run off the same operational database.”

Integration between B2W Track and Viewpoint Spectrum

Field teams at Bituminous capture data and analyze it daily with B2W Track. Labor hours, production quantities, and material and equipment utilization recorded on electronic field logs transfer directly into the Viewpoint Spectrum accounting system. There, the information is reconciled with final costs and invoices for overall analysis of project profitability.

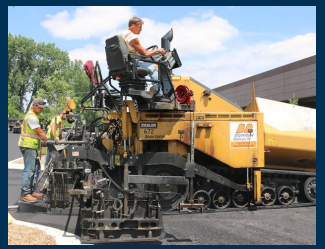
“Field teams document what they do each day, giving management access to real-time updates on work in progress.” says Larson. “We use B2W Track reporting to verify if jobs are proceeding according to plan. Daily visibility is especially important on long-term projects where scope creep can be a concern,” he explains. Recording and coding labor hours correctly at the source and exporting the information to accounting has also streamlined the payroll process.

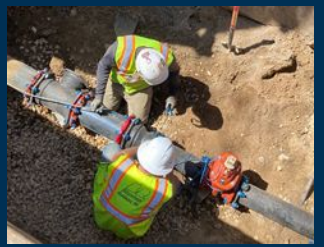


Real-time resource scheduling and dispatching

From job scheduling and equipment moves, to mass haul truck dispatching and plant material scheduling, B2W Schedule has transformed logistics at Bituminous. "Dispatchers, foremen and superintendents rely on the real-time updates and digital visualization of the scheduling software to coordinate crews, equipment, materials and trucks," explains Larson.

"This centralized view eliminates the need for manual coordination with multiple teams and gives us a true understanding of equipment status." he adds. "With the ability to visualize equipment location and status, dispatchers can identify routes that minimize travel distances, which improves operational efficiency by saving time, lowering costs and reducing unnecessary miles."





From 80 trucks per day to more than 200

Job and resource data go from B2W Schedule into a custom mass haul truck dispatching application that digitizes load ticket information for yard hauls and job-specific material.

“Our ability to dispatch over 200 trucks in a day, compared to 80 trucks in previous years, speaks to efficiencies we've gained,” according to Scales. “We now see real-time changes in trucking needs, which allows us to schedule material deliveries with precision, communicate effectively with independent truck owners and ensure material deliveries align with project requirements.”

Operators at four asphalt plants use the software to proactively address capacity, deliveries and the balance of inbound and outbound materials. Managers also strategize yard hauls and optimize mining plans and plant production.

Improving equipment uptime and maintenance

Moving from what Scales called antiquated software to B2W Maintain marked a big advancement in equipment maintenance. The B2W application connects maintenance, jobsite and scheduling workflows to coordinate asset utilization and maintenance efficiency.

With centralized data, Scales says Bituminous can track key performance indicators to make better decisions about maintenance, staffing and fleet investments. B2W Maintain also automates preventative maintenance and standardizes inspections, repair requests, work orders and parts.

"We now proactively schedule maintenance and track detailed equipment repair costs," says Scales. "Mechanic hours also transfer automatically to Viewpoint Spectrum for payroll."

Precise surveying and layout on the ground and from the air

Survey teams at Bituminous use a Trimble SPS986 GNSS Smart Antenna, a TSC7 Controller running Siteworks, and SPS930 Universal Total Stations to capture accurate positioning data for fine grading, paving and site measurements.

Trimble Stratus drone technology supplements surveying capabilities on the ground for mapping and measuring site conditions and job progress. That includes analyzing grades on location, verifying improper subgrade installation and grade breaks and creating the most efficient designs based on existing conditions. Surveying material stockpiles at asphalt plants at least once a month with the drone cuts a week's worth of time for a GPS technician down to a few hours, Larson says.

30% More efficient with accurate, automated machine control

Develop machine guidance files from project models

Transfer:
- **Files to machines in the field**
- **Data on completed work back to Trimble Business Center**

Automated blade control according to models
- **Dozers**
- **Graders**

A workflow delivering digital data from models to machines allows Bituminous to grade sites and install aggregates faster and with fewer people. With operators controlling steering and speed, while digital files controle blade height, efficiency has increased by 30 percent, Larson estimates.

“We’ve used machine guidance solutions on our equipment for so long that I think we often underestimate the value, particularly on a large paving job,” he says.

Award-winning FedEx project highlights technology advantages

Bituminous won the Minnesota Asphalt Paving Association Parking Lot Excellence Award for a large FedEx warehouse project completed in 2023.

“The project demonstrates the critical importance of a cohesive technology workflow and connected data, from bid to delivery,” says Scales. “Connected hardware and software have transformed the way we work and changed the way we deliver projects like this.”

- **2 Years**
- **282,000 Square yards of surface area**
- **200,000 Tons of rock**
- **63,500 Tons of asphalt**

Read about the project in *Asphalt Pro* magazine

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Bituminous Roadways, Inc.

Minneapolis - St. Paul, Minnesota

- Asphalt paving and maintenance
- Underground utilities
- Sitework
- Asphalt production