



How to Harness the Power of Connected Construction





THE PAIN POINTS ARE MANY ON A CONSTRUCTION PROJECT. The pipe scheduled for installation this week is still in transit. Two crews are short of machine operators. The concrete you poured yesterday will need to be redone.

One person becomes the go-to source in a company or on a site, and their phone never stops ringing: When is the fuel truck coming? Can we get a rental to replace the down excavator? What needs to be done next?

Time is wasted. It's wasted chasing down information, doing a task that someone else has completed, dealing with rework.

Why construction wastes so much time...

Many times, what's worked in the past continues to be done even if there is clear evidence it is no longer working. You may feel that your frustrations are uniquely your own, but there's a high likelihood that they are repeated to some degree throughout the construction industry.

“Everyone’s trying to do more with less,” says Steve DiBenedetto, Trimble Civil Construction field solutions software product manager. “Contractors want to know how they are performing. Where are there gaps? Where are we not being efficient?”

Editor's Note: This is the second in a series of articles on Connected Construction. To view the first story, “[How not being connected hurts your business,](#)” [click here.](#)

7 Unmistakable Signs of Jobsite Disconnects

- 1 Misalignment between labor/equipment/materials and schedules
- 2 Slow payables/receivables
- 3 Errors and inefficiencies
- 4 Low margins
- 5 Duplicate work
- 6 Lack of visibility
- 7 Too much downtime

Source: “The AEC Professional’s Guide to Connected Construction,” Trimble.

Construction is a highly fractured activity. In addition to organizing a project with several outside entities – including owners, engineers, and subcontractors – each internal role has its own priorities. What’s important to an equipment manager may be lower on the list for a project manager, a crew leader or estimator.

Because of this fragmentation, linking office management, field operations, finance/accounting, administrative/payroll and estimating offers immense opportunities.



Construction is a highly fractured activity but by using digital workflows to link the various departments, contractors can enjoy increased efficiencies and better-informed decision making.

...and why it doesn't need to.

Despite the different roles on a construction site, there is a common goal: to get a quality project done on time and on budget. And not on just one project, on all of them.

Making good decisions underlines that goal.

When asked to name the top benefits of using digital workflows, contractors cited “increased efficiency” and “better-informed decision making,” according to a [Trimble/Dodge Construction Network survey](#).



Contractors who've taken the connected construction journey would agree.

When Veit, a civil construction firm out of Rogers, Minnesota, realized it was taking an unorganized approach to office and field collaboration tools, it began to form a more standardized approach. A digital plan collaboration tool allowed the company to shift from paper drawings, making them easily shareable across teams. The company created standard templates used on every project, containing information on how the project was bid, and all subcontractors, RFIs, submittals and field reports, along with contact information.



A common goal on a site is to have the project done on time and on budget - for every project.

While Veit had used its field management software to track man-hours, by standardizing inputs it was able to get the data it needed to take the most cost-efficient approach and add automation to the payroll process. The latter saved the company an estimated eight hours a week, estimates Britton Lawson, director of construction technologies at Veit.

The company's fleet management software also gave visibility to submitted repair requests. Low-priority maintenance items could be planned, and parts ordered. While on a dispatched call, this allowed field technicians to tackle minor items along with critical ones. This and other features allowed Veit to save another eight to 10 hours per week.

All of this has changed how Veit manages projects, Lawson says. Everyone understands what "was envisioned, what kind of equipment, how many yards per hour, what benchmarks," he adds. "If I know that I'm supposed to hit 400 yards an hour, I can set myself up for success to do that."



For S. J. Cantwell, Newington, New Hampshire, it was important to have a system that communicated on several levels, from machine to office and back again. “We can see the production of a machine and what it’s doing every day,” says Jeff Sparkowich, lead estimator. “Our operators are able to see what they’re building while they’re doing it instead of having to get out and look at a plan. You save tons of time there. You don’t need to have extra labor because your grades are right there in front of you.”

S. J. Cantwell’s software captures labor and equipment hours, what material was used, machine use and production rates for each job. This data provides insight for scheduling and moving labor between jobs. Management can quickly see whether things are on track and adjust. Change order processing has been simplified. Using a tablet, a team member can present change orders to GCs to sign on site, which then goes to the estimator.

Pat L’Heureux, project manager with Severino Trucking, Candia, New Hampshire, says going to a cloud-based survey and construction model has been a huge time saver. Troubleshooting an issue used to take as much as three hours including travel time. The same task can now be accomplished in five minutes.

“Design changes are quickly sent to field devices, providing connection throughout your organization,” L’Heureux says.

The image displays a grid of seven icons, each with a corresponding text label below it. The icons are arranged in two rows: the first row contains four icons and the second row contains three. The labels are: DIGITIZE PLANS (gear and document icon), STANDARD TEMPLATES (document icon), PRIORITIZE REPAIRS (crossed wrench and screwdriver icon), MULTI-LEVEL COMMUNICATION (three speech bubbles icon), SCHEDULING & MOVING LABOR (calendar icon), CHANGE ORDER APPROVALS (checkbox with checkmark icon), and FASTER TROUBLESHOOTING (gear with checkmark icon).

- DIGITIZE PLANS
- STANDARD TEMPLATES
- PRIORITIZE REPAIRS
- MULTI-LEVEL COMMUNICATION
- SCHEDULING & MOVING LABOR
- CHANGE ORDER APPROVALS
- FASTER TROUBLESHOOTING



“[A connected workflow approach] has been one of the greatest successes for us because we’ve been able to keep our survey headcount down. I wouldn’t want to live without it.”

—Britton Lawson

What can connected construction do?

Think of connected technology as an accelerator. It gets rid of silos and information disconnects. It lets you know the score of the game as it’s being played.

Lawson says Veit adopted the connected workflow approach around seven years ago. “The problem was always getting data into the field efficiently, and then with addendums and job changes, getting that data back,” he says.

Now, Veit equipment is connected to the Internet. When a design changes, those changes are pushed through the cloud to machines and rovers. “It’s become the expectation that when a machine pulls up on a lowboy they can get a design fast,” Lawson says.

“It’s opened up mapping data and as-builts to come back fast, so we can turn those things around,” Lawson says. And it has helped the company manage its manpower. “It’s been one of the greatest successes for us because we’ve been able to keep our survey headcount down. I wouldn’t want to live without it.”

Aldridge Electric, Libertyville, Illinois, used a cloud-based workflow to install 1.2 million feet of conduit along with cable, duct banks and manholes at a data center in Dekalb, Illinois. Starting

with grade control platforms for two excavators, the company quickly added systems for two more machines.

“It’s important that we are clear about where we’ll be and how long it’s going to take,” says Jeff Buckley, Aldridge PreFab/BIM program manager. In addition to machine grade control, surveying systems and 3D modeling, the company has added augmented reality that enables the team to see spatial data in a real-world context.

“What we really like about it is the connectivity and the communication between the office so everyone knows they’re using the latest drawings,” Buckley says. “While the AR is still a new technology for us, we are already seeing value.”

AR has become a visual representation of what’s in the model versus what’s in the field, allowing Aldridge to show team members how an installed item should look. “It’s a great way to make sure there aren’t any obstacles or concerns, which minimizes the chance of delays,” says Devin White, BIM coordinator at Aldridge.

Working from the same to-do list

Connected construction – again, making sure your people are working on the same to-do list – will not look the same from contractor to contractor.

And it’s not just for big companies. Although the software/hardware solutions used will vary, the cost savings, process and workflow alignments can be applied to contractors of any size.

Next up: Taking the First Steps Toward Connected Construction



Connected construction is useful for contractors of every size.



Prepared by **Randall Reilly** for



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