

CONSTRUCTIONER



Frederico Construction & Development Reaches New Level of Efficiency with Machine Control Technology

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MOBILE MAKES THE MACHINE

Frederico Construction & Development Taps Innovative Machine Control Solution to Streamline Workflow *By Larry Trojak*

Like many other small- to mid-sized contractors working today, Frederico Construction & Development has found itself relying more and more upon smaller, compact machines. Unfortunately, for them, those units – particularly smaller excavators – while better suited to the tight job sites they often work, have not been able to provide the same level of 3D machine control benefits they get from their larger machines.

But, as if to prove out the adage, “Progress is impossible without change,” that situation took a positive turn at a recent project. There, they put a newly added solution from Topcon Positioning Systems called MC Mobile to work for them and discovered something of a “Holy Grail” in small equipment performance. Not only were they able to reap the 3D control benefits that had previously eluded them, but they could also use that same solution for the design and layout facets of the job. It took their operation to a level of efficiency they’d not foreseen, but more than welcomed.

Changes Abound

Established a highway heavy construction firm in 1967 in Rochester, New York, by the father and son team of Joe and Len Frederico, Frederico Construction & Development (FCD) is today co-owned by Len and his son, Lee. The company is a regional leader in sitework, utility, and concrete contracting, and, according to Lee Frederico, has seen significant changes take place in their more than half century serving the Rochester area.

“A lot has transpired in that time,” he said. “In fact, until fairly recently, we were also active in demolition, but we spun that part of the business off into a separate entity. That’s allowed us to focus on performing site and utility work. In addition to a regular slate of commercial and industrial developments, we are fortunate to be able to do a good deal of contract work for the major university systems here in the Rochester area, including the University of Rochester and the Rochester Institute of Technology (RIT).”

While not a big company – FDC currently runs with a staff of about 20 – they are a progressive one. They’ve been a proponent of GPS and GNSS-based solutions such as machine control for the better part of 15 years now, a fact that Frederico cites as key to their success.

“We first bought a Topcon HiPer receiver and used it extensively for utility layout and as-builts,” he said. “That was such a game changer for us that it was a natural progression to move into machine control, which we

did. And, while we appreciate how it’s dramatically changed our site work business, as we added compact machines to the fleet, we wished we could get similar results with those as well. Turns out, the job at RIT was a perfect opportunity for that to happen.”

Out to the SHED

The project to which Frederico refers is a \$150 million glass and steel structure that will spotlight students’ efforts in technology, the arts, and design. Initially called the Innovative Makers Learning Center, or IMLC, the university put the actual naming of the facility out to the students for their input and, according to Frederico, the SHED was born.

“The students’ theory behind the naming was that, when parents would come to visit on Parents’ Weekend, or for graduation, they’d be able to say, ‘We’ll take you over to the shed.’ When they got there, expecting to see an actual shed, they’d see this gorgeous glass structure. The kids were also clever enough to make it an accurate acronym for Student Hall for Exploration and Development.”

FDC has played an active role in the SHED’s construction, starting with a push in 2020 to place all existing utilities between the foundations of the two separate structures. “That relocation allowed actual construction to begin,” said Frederico. “After completing all the excavation and backfill for the foundations of the SHED and the adjacent Wallace Library, which is undergoing a major renovation of its own, we left the job for almost two years. But we came back this year to begin the restoration phase, which includes the landscaping, curbs, sidewalks, etc. That’s when things got interesting for us.”

A Site Difference

While FDC knew they could benefit from the use of GPS on the SHED project, they also anticipated that the jobsite they were returning to would be far different from the one they had left two years prior.

“We’ve encountered this on previous projects – coming back to a job only to find our ability to use GPS has been hampered,” said Frederico. “So, we knew it was going to be an issue here, particularly given the size of the buildings: four and six stories tall. But our crews have also become very reliant upon GPS, and the technical detail of all the curb work, the sidewalks, the grading coming down the center of the structure here, almost demanded its use here.”

Fortunately for FDC, a combination of seeing one of the trades working alongside them and a visit to a major trade show, opened their eyes to a real solution to the

impending GPS coverage issue. The fellow sub, a concrete contractor, was using a Topcon LN-150 3D laser to lay out foundation anchor bolts with amazing precision. Because FDC had so much layout to do at the SHED – a good deal of which was very intricate – Frederico saw that a total station would be a great investment for any project on which GPS was not an option. But it was a visit to World of Concrete that would provide the true sweeping change to FDC’s workflow.

Showing Mobile

Lee Frederico views trade shows as the ideal opportunity to see advances in technology designed to improve a company’s onsite performance and efficiency. And he hit paydirt at Topcon’s World of Concrete booth where the company was spotlighting MC Mobile, its newest solution targeted for customers – like him – using compact equipment.

“We were actually given a heads up by the sales rep for Admar Positioning Solutions, our Topcon dealer, that we had to see MC Mobile at work,” he said. “So, we did, and we were immediately impressed to see Topcon pairing that same LN-150 with an even smaller mini-excavator than the sizes we use. Since we already planned to add a total station for layout, we saw the ability to do that and get 3D machine control on our smaller machine as a huge step forward for us. We were pretty much sold on the spot.”

Modular in design, the MC Mobile solution draws upon key elements of surveying and machine control technology to boost efficiencies, while, at the same time, reducing staffing needs and costly wait times. FDC’s crew found the solution to be both easy to learn and to use. “What’s impressive is the ease with which we can use our tablet mounted to the rover pole to perform layout and other survey-based functions,” said Thad Anderson, FDC’s Superintendent. “Then, when we’re ready to get into the excavator and use machine control, we just unhook it from the pole, attach it to the bracket in the machine, switch from Pocket 3D to the machine control software and we’re up and running. It’s seamless and very efficient – a perfect fit for us.”

Double Duty

Frederico pulls no punches when citing the efficiency benefits as being key, particularly given the current impossibly challenging labor market – tighter than he’s ever seen in his decades of work in construction.



Left to right: Chad Gerhart, Positioning Support Specialist, Admar; Dan Jones, Operator, Frederico Construction & Development (FCD); Lee Frederico, Co-Owner, FCD; Thad Anderson, General Superintendent, FCD

"This is a situation we've never faced before," he said. "Though we don't have a lot of turnover, in times when we do need to add personnel, it's hard to find anyone who wants to work. So, I like to think that our use of MC Mobile, which maximizes the productivity of our crews, doesn't replace people, it solves the problem of having to find people. It's taken our 15- to 20-person company to a point where it feels like we are functioning with 30 or 40 people. And because it makes us so efficient, it also makes us more competitive. And the support we've gotten from

Admar with the new technology has – as always – been outstanding. They've been with us every step of the way."

FDC's on site versatility has seen a serious uptick as well since MC Mobile works well alongside their GNSS-based 3D solutions. Even on larger projects where they are predominately utilizing GPS, they can still tap into MC Mobile's LPS strengths when needed, according to Danny Smith FDC's Equipment Manager.

"In those cases, we use our base receiver for the bigger machines, then, if coverage becomes an issue, set the LN-150 up over

a control point and use it to run the mini excavator in areas with low GPS coverage. Our productivity goes up because we aren't waiting for someone on the ground to measure something then relay it to the operator. Gone too is the need to walk over to a trailer, find the print we need, and search for a particular detail. It's already there on the screen, in both GPS and MC Mobile."

I'll Have Another

How impressed were Frederico and his team that day at World of Concrete? Sufficiently so that they ordered a second

MC Mobile system on the spot – without knowing what machine it will call home moving forward.

"We immediately saw that, with a pair of systems, two people could go out and do layout on separate jobs," said Anderson. "Or a pair of separate two-person teams – one person doing layout, one operating the machine – can go out at the same time. In that way, it almost feels like two systems are giving us the benefits of four. MC Mobile truly does double our capabilities."

The SHED was opened and available to students with the onset of the fall 2023 semester.