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Leica Geosystems **TruStory** Getting an edge in construction with the Leica iCON robot 50



■ Company

Frazier Masonry Corp.
<http://www.fraziermasonry.com/>

■ Challenge

- Efficient position layout of architectural drawings on various construction sites
- Position and height checks

Project period

- 2013 - to date

Location

- California / USA



Project

■ Instruments and software

- Hardware

- Leica iCON robot 50
- Leica CC60 field tablet as remote control
- Leica MPR122 robust 360° prism

- Software

- Leica iCON build field software using 3D design data

Objectives

- - Independently measure, layout and control points, lines and heights
- Save time and money by being more efficient
- Cut down project time

In early 2012, Frazier Masonry Corporation, serving the California and Nevada states, became one of the first multistate concrete companies to adopt robotic total station technology for standard layout tasks. Going robotic wasn't a casual decision. In fact, only approximately 10 % of concrete subcontractors are using total stations of any kind for layout – as opposed to using string lines and tapes – Frazier's leap to a robotic instrument, allowing just one single operator to control the total station from the prism by radio or Bluetooth, was ground-breaking. At the end of the selection process, Frazier decided on the iCON (intelligent CONstruction) system from Leica Geosystems, a suite of hardware and software designed

to work together seamlessly and to simplify as well as speed up construction layout.

"It's our policy to be progressive. For example, we used Laser Screed equipment early on," says Vice President of Concrete Mike Prascsak. "We make that a part of our presentations and interviews when preparing bids. Now, when we explain that we're using the same tools as surveyors to lay out points, and that we can even lay out lost points if needed, contractors are amazed." The major components are the Leica iCON robot 50 total station controlled by a rodman using the iCON CC60 tablet computer. Both components are rugged and designed for construction work, but are still sophisticated survey instruments. "We felt they had the right



Benefits

- Visual representation of the iCON robot on the tablet
- Digital layouts easy-to-use
- Fast and easy to operate
- Robust and versatile
- Easily adapted to the traditional line and tape method previously used
- Short learning curve
- Highly accurate positioning and ability to check actual against design
- Significant time and cost savings

system for our particular requirements.” explains Vice President of Operations Lonnie Herrell. “We were also impressed by Leica Geosystems’ responsiveness and their training arrangements.”

Fast and accurate

Working with the iCON robot offers many advantages. The most obvious is that most layout work can be done faster and using one person. “On one recent project, a 30,000 square-foot building, we had a total of 1027 points to lay out – that includes footing edges, pier locations, bolt locations – and one man, working with the iCON robot 50, was able to do the work in just two days,” says Prascsak. “Previously, that would have taken three days with a two-man crew.”

Another not so obvious advantage is the connectivity provided by the Leica iCON CC60 field tablet, which includes a 3G cellular modem. Frazier employs a CAD operator,

Jason Karpynec, in their Lancaster office, who can do all the calculations needed on all ongoing projects, and can email these points as needed, to be uploaded onto the iCON CC60 tablet. He can even respond to requests from the field that need a quick turnaround. “Occasionally, we find errors in plans when we do our initial checks in the field,” Prascsak explains. “And when that happens, we can call Jason, who usually does the calculations within an hour and sends us the points we need.”

No wasted time

Prascsak also appreciates the independence provided by the new equipment. “Before, if a control point had been knocked out by equipment or something, we were basically stuck until we could get surveyors to come out,” he says. “Now, we usually reset it ourselves. It makes a big difference, and we avoid a lot of wasted time.”

Enabling new services

There were other additional advantages that were more subtle, such as having better final results because the layout is more accurate. “We’ve always done very accurate work, so it’s not a dramatic improvement,” Prascsak says. “But, at the end of the day, if our floors are even a little flatter, that’s a very good thing.” Using the robotic instrument is leveraging Frazier’s previous investments in 3D CAD modelling, and may eventually lead to new services. “We keep learning how to do more with the system,” says Prascsak. “And that may enable us to do new kinds of work, like machine control.”

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