Establishing reliable positions with speed

by Lucas Baumgartner

Working on a multifamily housing project in Colorado, USA, covering six three-story apartment complexes, 25 townhomes and a club-house with a pool successfully kicked off a business relationship between Golden Construction and a local client. Leica Geosystems' iCON products enabled the construction crews on this project to work efficiently and consequently to bring big savings in time and money.

Golden Construction, LLC provides general construction services to clients in major industries including medical, commercial, industrial, multi-family and educational fields. Based in Birmingham, Alabama, Golden Construction has been a customer of Leica Geosystems for almost two decades.

The multifamily housing project going up in Fort Collins, Colorado, is one of the largest multifamily projects under construction in the area and consists mainly of more than 300 one-, two- and three-bedroom units, to be completed by the end of summer 2016. One of Golden Construction's main tasks on this project, before concrete was poured, was to verify that plumbing and electrical items were in their correct positions. Another task was to establish control lines on floor slabs for the framing contractor to layout and build the wooden framework.

Laying out positions accurately with the Leica iCONstruct field solution.

Reducing potential errors

Making sure all of the plumbing is in the correct location has certainly been one of the largest tasks of this year-long project. All totalled, there are roughly 1,900 pipes to be installed throughout the buildings. The complex's plumbing and electrical contractors were using string lines and measuring tapes to carry out their layouts. With a project of this size, this method of layout is likely to contain errors causing substantial problems in the building process, leading to higher costs.

In order to be certain everything is built as designed, Golden Construction opted to use Leica iCON robots. Golden Construction has confidence using Leica Geosystems iCON products because the results are very reliable. Since this was the company's first business venture into the state of Colorado, the project played an important role. Successful verifications of plumbing, electrical lines and framework control lines was important to the completion of this project.

The vast amount of items to be checked and laid out represented a major challenge. Not only was accuracy important, but also speed. Should the concrete contractors be delayed in pouring the concrete, it would be costly. Golden Construction decided on the Leica iCON robot 60 running the latest iCON field software. Also, the Leica iCON CC80 controller was used to facilitate point collection and transfer the data back to the office.

Speedy verifications with cost savings

Steven Denney, project support at Golden Construction, specialises in building layout and supports most project crews on-site with CAD drawings, point files and by establishing control points. Steven points out, "The ability to quickly find the problems and get that information back to the related trades helped them save time and money. If concrete pours were delayed because of time spent verifying the work, it would be costly to all parties involved and any rework after concrete has been poured could be detrimental."

Also commenting on the Leica iCON build field software, Steven went on to say "We found the Reference Line command to be really helpful checking points. This field software allows real-time distance readings that are relative to building lines – parallel and perpendicular instead of just referenced to the position of the instrument. Information transferred this way is much more helpful and practical for field crews to know."

Using Leica iCON robot total stations enabled just one person to control all the work, fast and effectively and Golden Construction's assistant Chris Dixon, a student at Auburn University in Alabama, was able to check the work extremely fast. Chris could then also quickly pass the information on to the subcontractors, in the event that something needed to be corrected. Autodesk's AutoCAD® software was used to take the information recorded in the field and overlay it with the building plan to verify everything was in its correct position and further used in the office to help with layout across all of Golden Construction's projects.

Project superintendent Lynn Spradlin adds "We could train a less experienced up-and-coming employee to perform layout like a seasoned veteran and repurpose our experienced superintendent to lead subs instead of staying behind the equipment collecting points."

Bonding a new, strong business partnership

Golden Construction has been able to grow its geographical footprint thanks to this first-time project with its new partner in Colorado. The firm's commitment to fast and reliable professional services as contractors has been the basis for the development for a new, strong business relationship. ■

About the author:
Lucas Baumgartner is product marketing communications manager for machine control and construction tools at Leica Geosystems based in Heerbrugg, Switzerland.
lucas.baumgartner@leica-geosystems.com