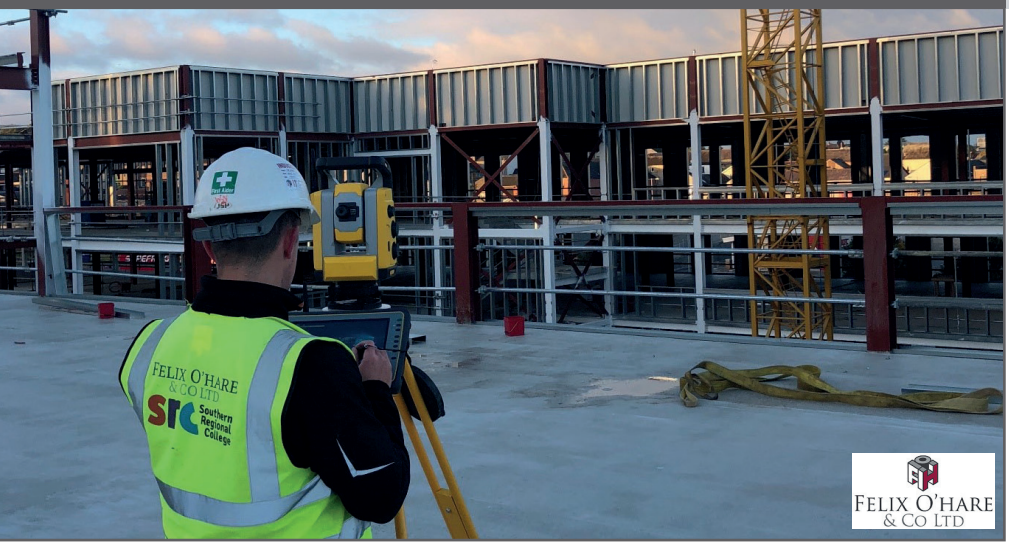
Customer:
Felix O'Hare

Project:
Southern Regional College, Armagh Campus

Solution:
Trimble RTS773 total station and FieldLink software

Case Study



Taking BIM to the field with Trimble FieldLink

A well-established policy of embracing survey technology has enabled Newry based contractor Felix O'Hare to position itself as one of the most enterprising companies in Northern Ireland for BIM and digital construction.

Armagh has been an educational centre since the time of Saint Patrick so it is fitting that building work on the town's new Southern Regional College (SRC) £35 million campus represents one of the largest construction contracts granted in Northern Ireland this year. On track to open within two years, the project is part of a £95 million investment by SRC and the Department for the Economy to create three new state-of-the-art educational campuses across the Armagh City, Banbridge and Craigavon area.

Undertaking the work for SRC's Armagh campus is Newry based contractor Felix O'Hare and Company, one of Ireland's most progressive construction companies, successfully combining a proud heritage of traditional craft skills and values with a strong commitment to new technology in construction and surveying.

Responsible for the planning and implementation of the setting out and survey work on the SRC project, and also a driving force behind the advancement of survey technology within the company, is Senior Site Engineer, Wayne Nolan.

This advancement began back in 2014 when faced with a demanding project combined with a company ethos of maintaining the highest possible standards of workmanship and data quality, all exacerbated by external conditions such as stricter budgets, cost control and time constraints, Wayne approached the company Contracts Director with a view to introducing new survey technologies and software that would immediately address existing challenges and also prepare the way for the company as a leading BIM enabled contractor.

Adoption based on performance

Wayne set up a meeting with Irish Trimble distributor KOREC and an initial investment was made in a Trimble S-Series Robotic Total Station with Access on-board software along with the accompanying office software, Trimble Business Center. This development immediately increased site productivity four-fold due to the 'one-man' operation and improved the company's workflows as well as allowing for a more formal method for Wayne to deliver final outputs to the client such as reduced dig and stockpile volumes along with detailed 'as-built' drawings.

As Wayne moved on to the next project, the success of the Trimble robotic technology led to the purchase of Trimble's R10 GNSS technology for integrated surveying where the field controller and Access software provide a common file and user interface. Again, increased productivity and a quick mobilisation period for the project justified the investment - a site set up that would normally have taken a few weeks was achieved by Wayne and his team in just a few days.

> "To us, KOREC's after sales technical support is as important as the instruments themselves."
>
> **Wayne Nolan, Felix O'Hare**

BIM and the introduction of Trimble FieldLink

Within Felix O'Hare, the feeling is that investment in technology is vital, not just to the success of its construction projects, but also during the rigorous tendering processes to maintain a healthy and steady workload.

Consequently, Felix O'Hare is one of the up and coming companies in Northern Ireland

▲ Trimble FieldLink running on the Kenai tablet

that has already embraced BIM and digital construction technology. The drivers on this project include the client's requirement for BIM technology and Felix O'Hare's own commitment to better project delivery using digital construction techniques. The goal is to use BIM processes and methods during technical design and construction delivery to improve quality, efficiency, and safety while reducing construction time, costs and defects.

An early step in this process was ensuring that the right survey technology was in place for the company to deliver on BIM-based construction projects. This investment also indicated to clients and designers a clear commitment to both the technology and being ahead of the game when it came to validation procedures on site and the assurance of high accuracy data collection.

Rori Millar, Felix O'Hare's Head of Digital Construction, agrees. "We see time and time again a breakdown in information sharing between the design team and the construction team. The design team spends a lot of time and effort producing these high quality BIM models and the construction team tends to only work with 2D drawings sections and elevations. We felt that this created a lot of wastage and that the construction team should have the capability of using the models. We had to find solutions for getting the most out of these models to produce a quality build in a cost effective, timely manner. The BIM process and the adoption of a common data environment allows for one single source of true information, i.e. current revision of drawings, models, etc. Trimble's products, along with BIM champions like Wayne, have allowed for a smooth adoption of these building methods and the benefits are there for everyone to see!"

The project team's dedicated approach to 3D technology supports all aspects of the SRC project - from the co-ordination to the logistics and planning, all aided with animations and virtual walk-throughs to provide support for decision making, the procurement of materials and production of laser accurate field layout with the Trimble FieldLink system.

Key requirements

Wayne had a clear idea of what he required from a BIM compatible digital setting-out system:

- Ability to handle and process the large files associated with the various federated BIM models
- Easy visualisation and accurate setting-out of hundreds of field points from federated BIM models at the click of a button without having to prepare other drawings as with CAD files
- A link between office and field as seamless as possible (in this case collaborative cloud-based platform Dalux is used)
- Ability to have the most up to date 'live' models in the field and office
- Exceptional visual verification and validation of work
- A system with the ability to reduce errors, improve accuracy and maximise output at its core

KOREC therefore arranged a demo for Wayne of Trimble's RTS773 3" total station and FieldLink software running on a Kenai ruggedised tablet. This system was found to meet all of Wayne's key requirements.

Trimble FieldLink enables contractors to import 3D models from a range of sources (eg REVIT, SketchUp and Tekla) and accurately lay out all the points to be marked. Wayne can use the RTS to pin-point locations from the 3D model, with 2mm tolerances, using the Kenai Tablet to select each point in turn and mark where the laser indicates. The end result is that Wayne has the ability to set out five times as many points as a two-person team would using manual methods. Incorporating these methods, along with Felix O'Hare's BIM strategy for this project, has allowed for greater accuracy of install creating fewer snags thus saving time and cost to the overall project.

Assessing progress

Six months into the project and as the primary user, Wayne has had sufficient use of the Trimble RTS773 and FieldLink system to have a clear idea of where its strengths lie. "For us the standout feature is the direct stake-out from the 3D BIM model data. The time saved with this operation not only reduces office time but also ensures site machinery is maximised to its full potential reducing any downtime! Tasks are completed quicker and more efficiently whilst maintaining our high standard of accuracies across a whole range of site operations."

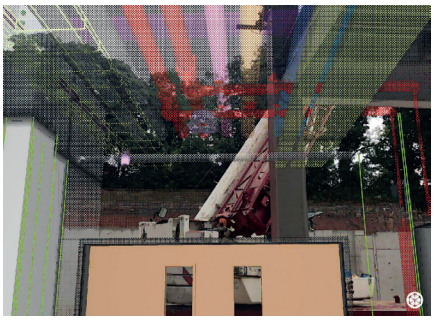
"As with our BIM models in the office, we can now view point attributes in the field and determine various components, sizes etc… reducing time spent in the office. For our designers, we can collect deviations in the field and export for use in the BIM detailing back in the office. Consequently, we have developed a more detailed and formal approach with our QA submissions as we have the 'live' survey data taken in the field which is backed up using the Trimble RTS's camera within our reporting schedules." (The camera is part of the instrument's VISION functionality)."

Wayne concludes, "As we all know, it isn't always possible to pick up and identify every problem within the models, so issues do occur on site with the best will in the world to try and prevent them. This is where Trimble Field-Link and the RTS773 play an important role for us. We can quickly identify areas of concern on site and bring the data into the model for further analysis and discussions in the office with the relevant parties to determine a suitable solution to try and overcome the problem without further delay. In short this is an awesome piece of kit in the BIM environment!"

Looking forward

The project will be entering the MEP installation process in the coming weeks. With ceiling voids being restricted and congested with the mass amount of services, ventilation ductwork and containment etc. required, the co-ordination of the MEP will be vital to the success and completion of the project. Wayne will be using the RTS773/FieldLink system to assist with the layout and validation of the MEP services, working from the federated BIM models and producing site reports to help overcome any issues that may arise. Using this, along with Dalux and its Augmented Reality feature, the Felix O'Hare team is able to validate the installation of services against the models that were designed in the office. ■■■

All information and pictures kindly supplied by Wayne Nolan, Senior Site Engineer, Felix O'Hare



▲ Image taken from Dalux showing the services set out in augmented reality

Contact us:

Please do get in touch for further information on any of the products or services mentioned in this case study, a demonstration, support or just a chat about your requirements.

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