

# Trimble MEP

## CASE STUDY



## Mechanical Contractor Drives Robotic Efficiency on High-Rise Tower

A fast-track, 54-story commercial office tower currently under development in Australia has become a technology proving ground for the Triple 'M' Group, a leading Australian mechanical contractor.

For the first time, the firm applied a unique combination of robotic laser technology to better link design concepts and the jobsite, thereby ensuring 100% install of ducts, hangers and pipes per design specifications.

The high-rise project requires separate runs of ductwork for heating and cooling and includes the latest in high efficiency air conditioning, heating and water systems. Triple 'M', a wholly owned subsidiary of BSA Limited, is the coordinating contractor for the high-rise, even as it also designs, fabricates and installs the required HVAC systems.

Peter Szach, project manager for Triple 'M' says, "The mechanical system is complex, to say the least. Per design, we must locate as many as 540 points per floor to direct the installation of the ducts, hangers and pipes—and we must do it very quickly to minimise contractor traffic on each floor and increase efficiency during construction."

### Robotics to the rescue

Using conventional methods, such as tape measure, plumb bob, stationery laser, Triple 'M' would measure grid lines, getting the duct close with duct lifters and install hangers to suit. Quite often installs did not match design specifications.

For the high-rise project, Triple 'M' calculated that it would take three people three days per floor to locate, mark and drill hangers.

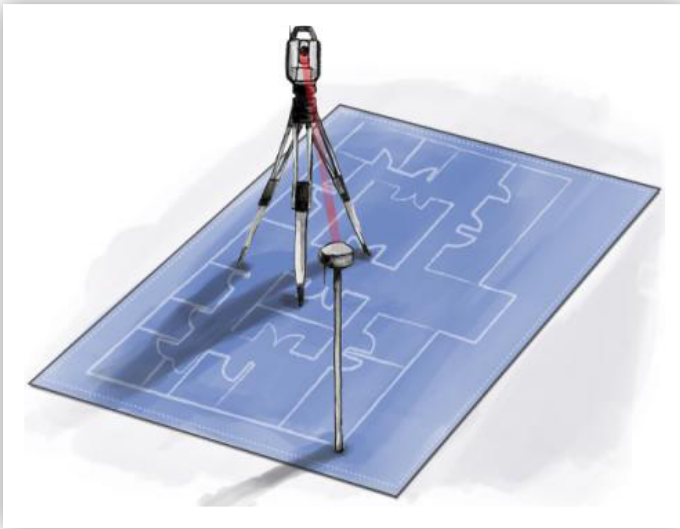
Szach added, "Since we follow the concrete contractor, we can locate, drill and install hangers on one floor per week. The minute that the concrete supports are stripped off the floor, our layout and installation crews are there to do our job before other contractors cloud up the workspace."

At the recommendation of SurePoint Australasia, a construction services company and Trimble MEP distributor for the Australian region, Triple 'M' opted to try the Trimble® MEP Layout Solution with impressive results. The Trimble MEP Layout Solution includes the Trimble® RTS Series Robotic Total Station, Trimble Nomad and Trimble® MEP layout software. The combination provides precise location of pipes, duct and cable tray hangers and pipe and electrical conduit sleeves for floor and wall penetrations.

Once the 3D ductwork design and hanger locations were complete by the Triple 'M' design team, the Triple 'M' crews download the hanger locations to the Trimble MEP Layout Solution for use in the field. The robotic solution allowed the team to locate all hanging bracket locations in one day and then drill and install the hangers the following day.

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"The Trimble MEP Layout Solution creates perfection," says Szach. "It ensures 100% install per design since every point is accurately located at the site precisely as directed in the model. It negates all clashes with other services. We have become very quick to get onto clear decks before other contractors to utilize the speed of the MEP Layout Solution before other trades clutter the workspace. The time savings on layout for this project was AU\$70,000—and that's just the savings during layout!"

Szach believes the team realized intangible benefits because of the lack of rework and extra site measures that were not needed as well as the ready availability of accurate as-built information at the site and in the office.

## Technology shift

To justify the purchase of the Trimble MEP Layout Solution, Triple 'M' had to demonstrate a return on investment within one year.

Szach says, "The actual payback achieved is closer to 8 months. Looking back, I was sceptical at first, thinking the robotic solution is a good idea, but would prove impractical to use on a day-to-day basis. I also thought it was too complicated to be understood by our workers. I was wrong—this technology helps us deliver greater quality, in less time with tremendous accuracy.

We'll use the technology on all future projects. In fact, I believe that all mechanical contractors operating in the medium to large construction space will be using the robotic technology very soon."

