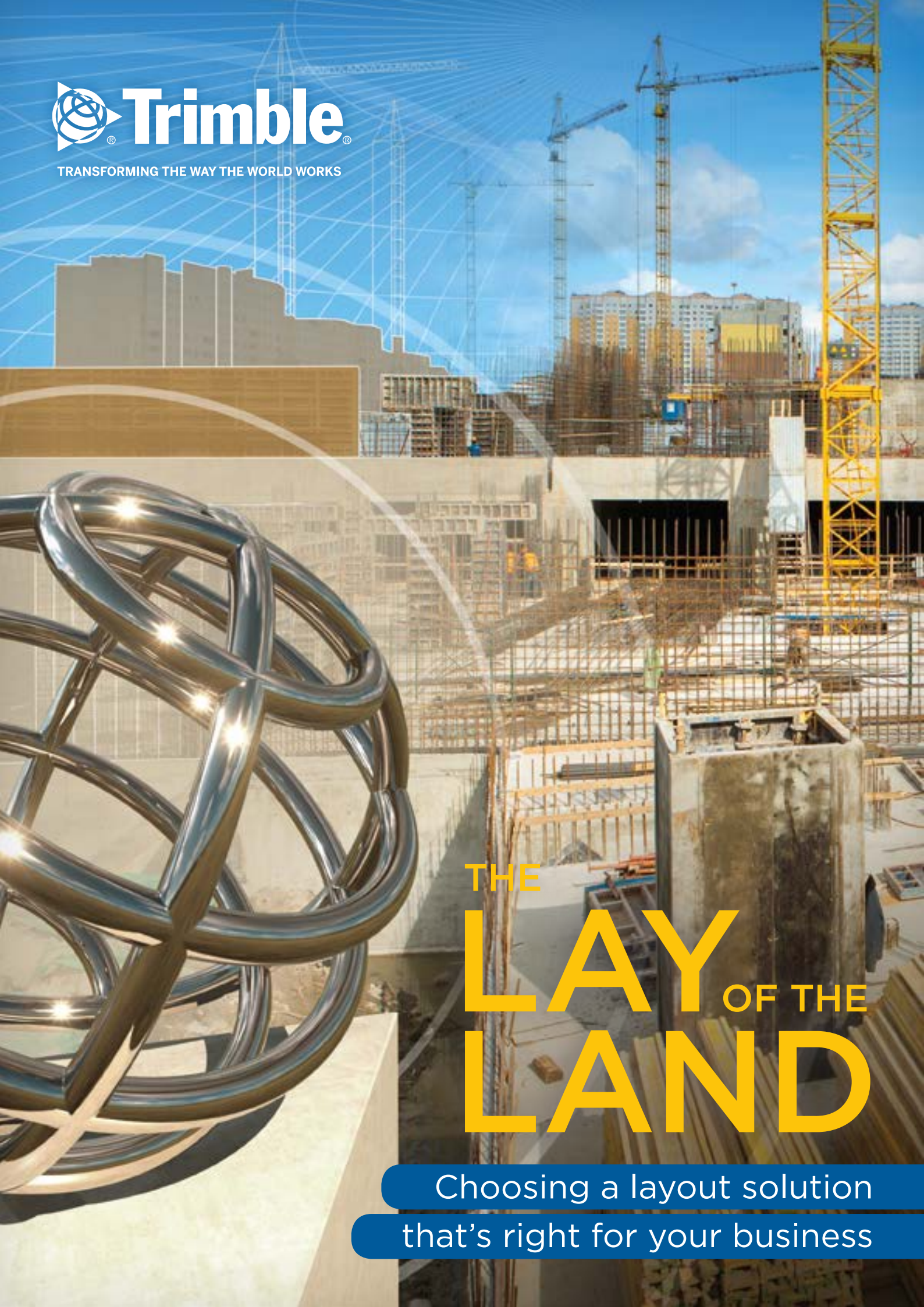




TRANSFORMING THE WAY THE WORLD WORKS



THE
LAY OF THE
LAND

Choosing a layout solution
that's right for your business

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Accurate layout information up front, at the start of a project, is an essential component for project success and offers a clear advantage for MEP contractors in a competitive business climate.


Whether the project is an interior floor layout or an extensive underground utilities project, having the right layout information sets the framework for project efficiencies and accuracy and ensures smoother work across the duration of the job. The good news is that the best solutions today are usable by anyone and don't require surveyor capabilities to get started. Plus, many

products are designed to suit the needs of a greater representation of contractors, so whether you have a CAD department that prepares the layout drawings up front for use in the field or work directly from the data gathered from the instrument, layout tools can suit the needs of nearly every contractor.

Efficiency is everything

The real advantage of layout tools is gaining efficiencies in both time and resources. In a Cool Tools: Laser Layout Tools article published in Electrical Contractor, the author quoted a professional in the field of layout solutions as saying, "Most electrical, mechanical and plumbing contractors tell us they are seeing roughly a one-and-a-half to two times increase in productivity on complex projects with compressed schedules. Using a laser system (layout tool) with direct office-to-field functionality, one person can accurately layout hundreds of points in a single work day." The efficiency gained with layout tools was confirmed by David Burczyk, the Segment Manager-Field Solutions, MEP Division for Trimble. He said contractors have told him that "laying

out 300 or more points previously took three or four days but can now be done easily in one day with layout technology." When you consider that nearly 25% of an MEP contractor's work is layout, gaining 50% or more in efficiency on this large task can have a significant impact to the bottom line of a project.



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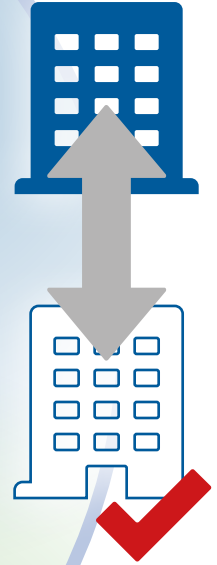
Efficiency

Layout tools should enable you to reduce reworks later, utilize staff more efficiently and deliver a fast return on investment.



Quality control and assurance

Layout tools should provide the added security of documented layout data against the original building design or model.



The big 4 BENEFITS TO CONSIDER

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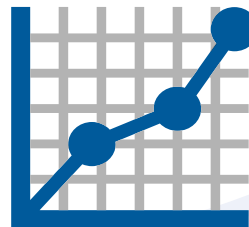
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Round trip BIM (office) to field for exceptional accuracy

The right layout tools should deliver your in-the-field crews up-to-date coordinated models and as-laid-out points that are easily documented and sent to the office, reducing error and miscommunication.

Scalability



When considering a layout product to purchase, make sure the company has instruments for each level of your growth that still utilize the same software. This way, you can scale up without losing data or expertise as you adapt to the product best suited for your size.

When reviewing which solution to buy, think about how you plan to use the tools, the types of jobs and what requirements you have for layout.

Then you'll want to consider the other important details like visibility on the jobsite, durability of the product itself and of course, price. There are several layout solutions available today but when considering which one is right for your business, ensure the product you choose offers these four important benefits above everything else.

Choosing the right option

With a foundation and understanding the importance of layout tools for delivering exceptional time-savings and accuracy over traditional tape measure layout techniques, it really comes down to choosing the right option for the requirements and size of your business.

Fortunately, today's leading manufacturers of layout tools and software have developed products for contractors of nearly every size and requirement. In the following section, I'll share the types of products available based on the size of your organization and the features or benefits of each type to help you determine which direction to turn when you're ready to implement or upgrade your layout capabilities.

*In the following section,
I'll share the types of
products available...*

Small to mid-sized contractors

There comes a time when every small to mid-sized MEP contractor decides that relying on a field worker with a tape measure to layout hundreds of points on a common floor, electrical or formwork job is wasting valuable time and costing the company money in frustrating reworks.

That's when they begin to look at easy-to-use technology options best suited for common layout jobs that produce accurate data in a rapid timeframe and don't require a large workforce to operate. The best products on the market that fit into this category do offer premium features

at a lower price point, making it a viable option for growing, budget-conscious contractors who want a tool that can scale and grow as they grow. The features and benefits to consider in a layout solution if you're a growing MEP contractor include:

Mobility



Look for a solution that is small enough to be carried and moved around by one field worker. It should be part of a "station" that includes the software, a rugged, protected tablet for viewing and controlling and extra batteries and power sources all packaged in a strong carrying case.

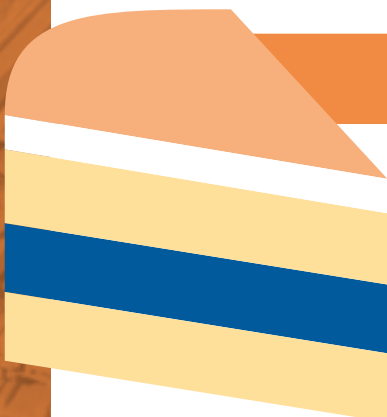
Ease-of-use

The last thing you want with a new layout solution is a lengthy learning curve to get team members up to speed. Look for leveling or "auto-stationing" functions that set-up automatically so your field team doesn't have to level manually. Also, focus on solutions that have guided workflows that are quick and easy to learn. Last, being able to control the instrument remotely contributes to the ease and efficiency of the layout process.



Logical workflows

The software associated with the tool should guide you through measurement steps that are simple to follow for anyone on your team.



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Range

Even though the scope of your projects may be smaller, you'll still want a solution that has at more than 30 meters (around 100 feet) of range. Many of the better solutions offer a range of 50 meters (150 feet). Overall, you can expect that the range will be smaller than layout products developed for larger contractors but should provide plenty of range for the most common jobs.

Minimal resources required

A layout solution should only require one person to operate in the field, freeing up your valuable resources to be focusing on other tasks, and moving the project forward faster.



Flexibility

You'll feel limited if your layout tool doesn't let you create points and a plan on the job as well as work directly from a model or drawing. Since many small to mid-range contractors don't have CAD departments, this is an important feature to consider.

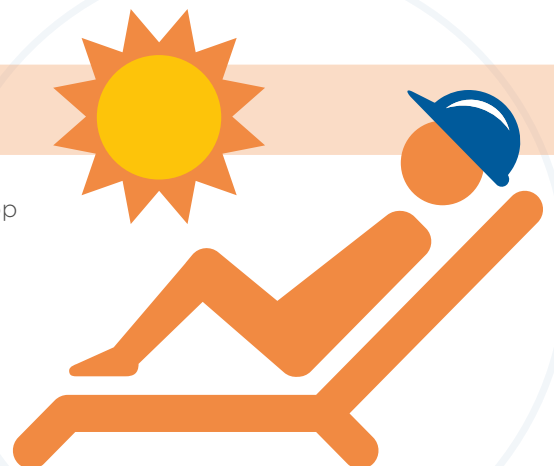
Visibility

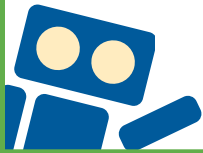
Eyepieces can be frustrating. Try to find a solution that let's you view from the controller for a clear picture. The laser should also be clear and bright and green if possible, allowing you to measure without a prism on a wide-range of surfaces.



Lower cost

It is possible to "have it all" at a lower price point. The top providers of layout solutions in the industry are making it possible to have many of the powerful features of larger scale solutions available in solutions designed for smaller contractors.





Mid-sized to larger contractors

As MEP contractors grow, the demands and scale of project size and complexity increase. You're looking at much larger projects that require a layout solution with a wider range and better accuracy.

Every millimeter counts and the small margin of error allowed on complex jobs could have a cascading effect on your projects. These days, MEP contractors taking on large mechanical projects – like a 50 story commercial office tower – are requiring line-of-site layout solutions that perform accurate layouts of up to 500 points/per floor with exceptional accuracy. A measurement

tool, designed for optimal speed, accuracy and reliability – commonly called a robotic station – is necessary for projects of this caliber. The features and benefits to consider in a robotic station if you're a mid-sized to large MEP contractor include many of the same points listed for the small to mid-sized contractors with some notable additions. These include:

Advanced laser point

You should be considering solutions with an autofocus laser that's easy to see on a tablet or through an eyepiece and features the ability to autocorrect its focus on even surfaces. Green beams work best.



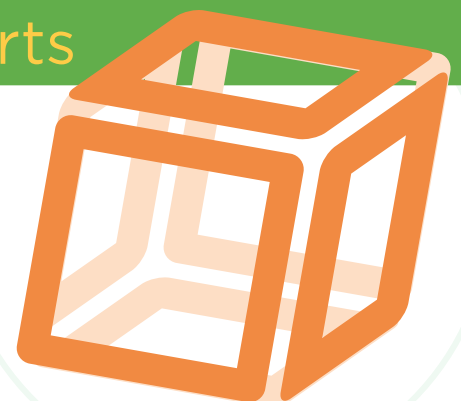
Precision robotic range

As projects grow bigger, so do the range requirements of your layout tool. Top manufacturers offer auto-locking, robotic products with video display and a layout range of up to 700 meters (nearly 2300 feet). This capability opens up a wide array of large-scale projects that can be laid out in days rather than weeks.



2D & 3D model exports

Look for solutions that allow you to export 2D and 3D MEP Models that include wall penetrations or hanger points and cable tray attachment locations to the field teams speeding up the layout process – three times as fast in some cases.



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Integrated camera

Consider options with an integrated camera. An integrated camera can come in handy for capturing images of issues or data/line/points overlay with photo documentation. When viewing and controlling these cameras remotely from a tablet interface, users have the ability to observe and document the actual jobsite condition from the perspective of the instrument when performing layout, collecting data or generating field reports.

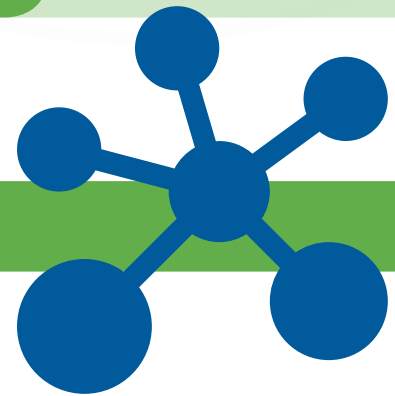


Multi-tracking

Look for tools that have the flexibility of passive or active tracking capabilities.

Equipped for complexity

When projects call for retrofit work rather than new builds, the job can be more complicated and time consuming. Seek layout solutions designed for the needs you require.



Resiliency

Resilient construction is important for lengthy large-scale projects in a variety of outdoor conditions. Ensure the product you choose is protected by a durable casing and continues to operate seamlessly in extreme heat or freezing temperatures.

Better accuracy

Projects of this size cannot afford to have errors. Look for solutions that have accuracy down to 2mm.



Faster ROI

With greater efficiency comes a greater ROI. With digital layout, one person can operate the instrument while another installs the hangars or performs another job task, greatly speeding up the layout portion of a job. Contractors have reported saving north of \$2000/week shortly after the deployment of layout tools to the field.

Large Scale contractors

Jobsites that have complex utility systems demand precise information to ensure delivery of the critical services that buildings depend on.

MEP Contractors who work on these types of projects need to map out extremely accurate points for their site work and utility layout. Giant campus-wide projects – such as placing cable or fiber optics underground for a massive datacenter - can require thousands of points to be staked with near perfect accuracy. Additionally, complex projects in a multi-building or highway setting may feature obstacles that make line-of-sight solutions difficult to use.

For projects of this scale with visibility concerns, you'll want a wide range solution that uses Global Navigation Satellite Systems (GPS technology) that supports signals from existing and planned satellites. Again, many of the features listed previously that smaller MEP contractors should consider are applicable here, but large contractors need even more functionality from their layout tools. Here are some things to look for:

Satellite tracking

As mentioned, large MEP contractors are faced with complex and occasionally massive projects that cover a wide range of surface or land area. Across these job sites could be obstacles that make line-of-sight options ineffective. Look for solutions based on GPS technology that have clear visibility to the sky. Satellite tracking also means minimal setup times so there could be additional efficiency gains.

Workflows for the work you perform

Seek solutions that have workflows designed specifically for large MEP contractor type jobs that support common project types. These jobs include top of deck layout, equipment pads, underground utilities, light pole placement, excavation and trenching locations. Make sure the solution you choose can import your point data once back in the office.



Unparalleled accuracy

Mistakes aren't an option on most large-scale projects. A simple measurement error can affect the entire project with slowdowns and re-works. GPS solutions provide the highest level of sub centimeter accuracy.

More efficient, more productive, more profitable

By choosing the right layout solution for your mechanical, electrical, or plumbing business, you'll quickly increase productivity and simplify the layout of sleeves, hangers and other points of data.

It's amazing to watch the transformation from cumbersome to efficient as one person on your field team can accurately lay out hundreds of points in a single day - even with the most complex designs. With specific language and workflows common to MEP trades, today's best layout tools maximize the existing skill sets of your field personnel without requiring lengthy learning processes.

Regardless of your business size, when selecting a layout tool, you'll know you've made the right choice if it quickly increases efficiencies and productivity by reducing labor costs and eliminating mistakes that result in costly rework. The right tool should also greatly improve accuracy by bringing 3D positional data to the field and allowing the collected data points on the project site to be imported back to the office CAD or MEP software. Once in the office, you can harness the data for progress reports or to create communication updates.

With contemporary digital layout tools specifically designed for MEP contractors, accurate, efficient layout has never been easier or more accessible to contractors of every size. Take a look at what's available and what these systems are capable of doing. You might find yourself wondering what you've been waiting for all this time.





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