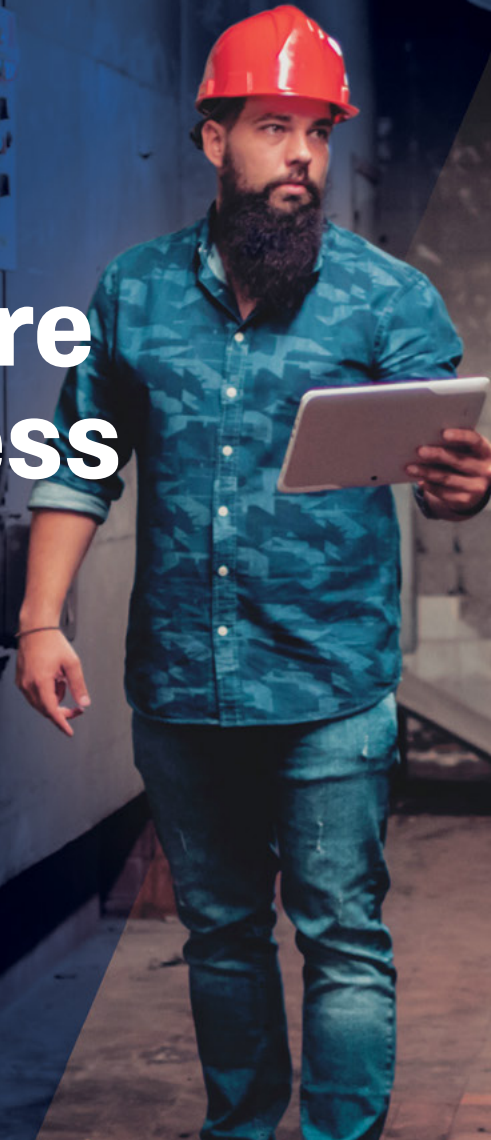




AUTODESK  
CONSTRUCTION  
CLOUD™

# How Plumbing Contractors Can Leverage Software for Better Business Outcomes



# Table of Contents

## **3 Introduction**

## **4 The Current Plumbing Contractor Landscape**

## **5 Common Challenges Plumbing and Pipe Fitting Contractors Face**

Challenges During Preconstruction

Challenges During the Construction Phase

## **7 The Benefits of a Technology Strategy for Pipe Fitters and Plumbing Contractors**

Standardize Workflows

Mitigate Risk

Win More Work

## **9 Case Study: Cannistraro Uses Software to Create Lean Construction Process**

Enabling Efficiencies With Technology and Collaboration

Tangible Results From Embracing Lean Principles and Software Systems

## **10 The Pipe Fitter and Plumbing Contractor's Software Solution**

## **11 Add Software to the Pipe Fitter's/Plumbing Contractor's List of Skills**

# Introduction

Plumbing contractors are the lifeblood of construction sites. With construction projects getting more complex and opportunities for more work increasing globally, plumbing contractors need to streamline workflows and scale with ease in order to succeed. Not only do project owners expect a certain level of efficiency, but any productivity gains made by plumbing contractors on their own can result directly in profit. By harnessing software, plumbing contractors may deliver higher-quality work, communicate better with their teams, and deliver ahead of or right on time.



# The Current Plumbing Contractor Landscape

Specialty contractors are the primary labor force that completes work on a construction site, providing trades that make large construction projects possible. Plumbing contractors require their own set of drawings, plans, documentation, and workflows. On top of that, they need to work with other specialty contractors on-site, as well as general contractors and project owners, to ensure everyone is on the same page.

In the US alone, the ENR Top 600 specialty contractors generated \$135 billion in revenue in 2018; that includes electrical, mechanical, plumbing, utilities, concrete, excavation, and drywall. In addition, most of the work for specialty contractors in the United States comes from the general building segment, supplying 49 percent of the total projects' specialty contractors undertake.

In addition, the plumbing contractor industry revenue is expected to increase from 2019 to 2024, as downstream construction market expansion and increasing economic activity are predicted.<sup>1</sup>

Per the 2019 Specialty Trade Contractors Global Market Report, the global construction market reached \$12.56 trillion in 2018 and is expected to continue to grow.<sup>2</sup> With this in mind, plumbing, pipe fitters, and mechanical contractors, as part of the building equipment contractors' segment, are estimated to gain an additional \$836.8 billion in annual sales by 2022.<sup>2</sup>

As the spend on construction projects continues to increase, the demand for plumbing contractors and pipe fitters will rise simultaneously. Anything plumbing contractors can do to improve efficiencies, scale with ease, and better communicate will help to expedite these projects – allowing contractors to take on more work, capitalizing on the predicted market growth.



# Common Challenges Plumbing and Pipe Fitting Contractors Face

In today's market, plumbing contractors face many challenges during both the preconstruction and construction phases. Challenges across the project lifecycle make it difficult for plumbing and pipe fitting contractors of all sizes and disciplines to take full advantage of the opportunities in the market.

## Challenges During Preconstruction

Plumbing contractors spend a lot of time and effort in the bidding process before a project has even begun. In any project, this stage is crucial because it ensures there is both work in the company's pipeline and a steady cash flow.

### Tracking Bid Information:

There's often a lack of standardization when a general contractor sends an invitation to bid (ITB). There's typically no centralized database or easy way to see all the bids in the office at one time, often resulting in missed opportunities.

### Lack of Communication and Collaboration:

Currently, plumbing and pipe fitting contractors who have multiple offices and departments often find it difficult to communicate effectively as a team during preconstruction. Additionally, it's difficult to keep track of the bid process. Teams need organized systems for monitoring and recording addenda, as well as learning who won the job.

### Lack of Performance Insight:

After the bidding process is over, it's nearly impossible for plumbing contractors to learn why they did or did not win the bid. Without that valuable feedback, they may have little understanding of how to improve outcomes on future bids.

# Common Challenges Plumbing and Pipe Fitting Contractors Face (cont.)

## **Challenges During the Construction Phase**

Once a plumbing or pipe-fitting contractor has won the bid for a construction process, the planning, management, and communication required for the next phase can take center stage. Teams must be managed to maximize retention, hiring must be completed as required, and the volume of documentation and information that must be stored and quickly accessed rapidly increases.

## **Employee Satisfaction and Safety:**

Pipe fitters and plumbing contractors perform some of the most dangerous work on a job site. This means proper safety procedures, equipment, and training are top priorities. In addition to the importance of keeping employees healthy and happy, general contractors will consider safety records when choosing a plumbing contractor.

## **Skilled Labor Challenges and Shortages:**

Employee safety and satisfaction are key aspects of retention, as pipe fitters and plumbing contractors rely heavily on skilled labor. When there are labor shortages, plumbing contractors are hit the hardest. To compound the challenge of employee retention, attracting and finding the right talent is difficult. With a lack of skilled workers comes expensive recruitment costs and high levels of competition between firms.

## **Managing Plans and Documentation:**

With multiple projects across different job sites, plumbing contractors need to ensure all team members have the latest plans, changes, and updates in real time. Analog processes add the additional challenge of keeping all of the projects updated, often leading to teams working from outdated plans.

## **Cash Flow Management:**

Another common challenge for pipe fitting and plumbing contractors is paying for materials upfront, and then later invoicing for reimbursement. Teams need to be able to bill immediately in order to manage cash flow. Thorough documentation is key to getting paid quickly. Plumbing contractors need a single system for documenting materials purchased, work done, dates of project changes, and when billing can occur.

## **Adoption of New Technology:**

Many pipe fitters and plumbing contractors know there is software in the marketplace that can help address these challenges, but they struggle to figure out how to implement such a large change. New technology can be a significant investment and it's often difficult to know which software will help achieve the desired improvements for their processes.



# The Benefits of a Technology Strategy for Pipe Fitters and Plumbing Contractors

There is a solution to the common challenges faced by pipe fitters and plumbing contractors today: A well-thought-out technology strategy. A key aspect of this strategy might start with choosing the right software. Powerful cloud-based software platforms can house project plans, drawings, workflows, communication, progress tracking, and billing information. By finding the right software solution for the construction industry, plumbing contractors can see substantial gains in efficiency, profit, and customer satisfaction.

## **Standardize Workflows**

Choose mobile technology that teams can use from project to project, regardless of what the general contractor might choose to use. Most of the time, plumbing contractors and pipe fitters have no say in the software requirements of either the general contractor or the project, so they need to adapt on a project-by-project basis. But when it comes to internal workflows, software standardization can help in the field.

Plumbing contractors know what resources, processes, and people are required for any given workflow. By standardizing workflows in one software platform that contractors can take into the field to reference, efficiencies are gained with every project that is completed on the platform. As team members get used to using the technology and seeing how much easier it makes their jobs, some projects can be completed faster and more accurately by using a standard workflow.

## **Mitigate Risk**

When teams use the same software, everyone has access to one source of truth. The software ensures the most up-to-date plans and documents are always available. Software solutions built to support mobile devices, like cell phones and tablets, also ensure that the latest drawings are available no matter where the plumbing contractors are located. No one needs to drive back to the office or make a call to determine what drawing to use.

Without mobile platforms, teams in the field may be less likely to check on drawing markups by making multiple trips to and from the office because of the time that would be wasted. Not only does the software ensure efficiency and quality work, but it can also reduce the amount of rework required. Software can help plumbing and pipe fitting contractors build things right the first time.

# The Benefits of a Technology Strategy for Pipe Fitters and Plumbing Contractors (cont.)

Working from old drawings isn't just a quality/rework concern; it can also be dangerous. As built drawings often include updates to utilities and infrastructure that took place over the years. By making it easy for on-site plumbing contractors to mark up drawings and access the latest source of truth, they can perform their jobs more safely, with less risk of hitting an unmarked utility line when working.

## **Win More Work**

Once pipe fitters and plumbing contractors become comfortable using software, the data collected and the systems within the program can be used to streamline the preconstruction process as well. By capturing more data using the software on previous projects, plumbing contractors have the information to potentially quote on future jobs more accurately.

The software can take some of the guesswork out of bidding and may offer solutions to up the process. Pipe fitters and plumbing contractors can also use the software to increase the number of bids issued, meaning more opportunities for work.

As an example, specialty contractor Innovative Mechanical harnessed software to improve their bidding process. The company moved from a manual whiteboard process to an online bid board. The whiteboard of the past kept track of everything, from due dates and job walks to bid contacts and more. The problem was that people could simply walk past the board clumsily and erase valuable project data. It became a project management nightmare for the company.

Innovative Mechanical decided it was time to invest in software and put Autodesk's Bid Board Pro to work for them. The software centralized all information and ensured that every team member was looking at the most up-to-date data. Every task had a calendar invite associated with it, so nothing was left to chance.

Team members now don't have to waste time looking through emails or paperwork to find valuable bid information. Innovative Mechanical estimates that they are saving about one day per week by streamlining their process with Bid Board Pro. With that time saved, the company has been able to better keep up with the competition, eliminate missed deadlines, minimize double-booked job walks, and increase the number of bids won.





# Cannistraro Uses Software to Create Lean Construction Process

Cannistraro is a mechanical and plumbing contractor based in Boston. As an early adopter of lean principles, the company has embraced prefabrication across its areas of expertise; namely, engineering, plumbing, sheet metal, and piping. By bringing all aspects of their construction projects under one roof, in a controlled factory environment, Cannistraro has been able to produce complete skids ready for delivery to the construction site, resulting in large efficiency gains.

## Enabling Efficiencies With Technology and Collaboration

Continuous improvement is encouraged at Cannistraro with every single employee. Two examples of technologies that have made it much easier for the company to innovate and improve quality are:

- T-Drill equipment, which maximizes efficiency when cutting and sorting pipes
- BIM 360 within Autodesk's Construction Cloud™, which facilitates seamless sharing of up-to-date information across the team

Because the Cannistraro team is multidisciplinary, any software solution needed to be easy to adopt by all project stakeholders and contractors. When all team members began using BIM 360 and Navisworks, tangible, bottom-line results were found in each and every project.

## Tangible Results From Embracing Lean Principles and Software Systems

To showcase the prefabrication process and results on a key project, Tyler Alston, a Project Manager for Cannistraro, used tailored construction software systems both to ensure efficient work and to communicate the results to the larger team.

During preconstruction, Navisworks was used to visualize the project scope and logistics, allowing for the entire prefabrication process to be understood by stakeholders.

During construction, BIM 360 was used to model the final skid in 3D and coordinate between teams. It was also used on-site to streamline reviews and installation, due to its built-in ability to be used on mobile devices.

The project delivered one prefabricated skid to the construction site, rather than delivering and craning in multiple components to be installed by contractors on-site. The results were wide-ranging:

- Reduced waste
- Decreased on-site installation time
- Increased job site safety
- Reduced the footprint of the mechanical system

# The Pipe Fitter and Plumbing Contractor's Software Solution

Autodesk's solution for plumbing and pipe fitting contractors is one option that demonstrates the benefits of using software to get the job done more efficiently. When evaluating software solutions for business, be sure that the chosen platform also has the following benefits:

- Easy to use from start to finish, maximizing adoption
- Secure data solution for cloud collaboration
- Trusted by leaders of plumbing contractors

Look for testimonials in your trade. For example, Autodesk's Construction Cloud is used by the world's leading plumbing contractors. By reading through case studies or asking colleagues about chosen software systems, plumbing contractors can gather information quickly on which options to investigate.

A cloud-based platform is a must because it allows plumbing contractor teams to access plans on the job site using a mobile phone or tablet. The ability to quickly access the latest drawings in the field not only keeps teams working to the right specifications, but it also reduces rework, which delivers exceptional work quality and better business outcomes.

Additionally, cloud-based platforms eliminate the constant back-and-forth of pipe fitters and plumbing contractors to different job sites. Because all communication is centralized and plans can be uploaded right to Autodesk's Construction Cloud, there's no need for constant updates on plan changes or new directions. Instead, all project information is contained in one program.



# Add Software to the Pipe Fitter's/ Plumbing Contractor's List of Skills

While adding a software platform to the list of things plumbing contractors must manage, the return on investment far outweighs the time and money put into acquiring, implementing, and adopting the software. Technology is just another tool, like channel locks, that plumbing contractors and pipe fitting professionals can add to their repertoire.

Gaining the skills necessary to wield the job-specific tools is an understood and accepted upfront cost. But after the technology or tools are implemented, the job can be better done to higher quality standards with much less rework. Software solutions such as Autodesk Construction Cloud are no different.

Because the platform was designed for ease of use and implementation, teams can reap the benefits quickly, including winning more work by better tracking of bid invites, deadlines, and workloads; increased work quality and less costly rework through instant access to the latest drawings and plans on mobile or desktop devices; and faster payment by standardizing and centralizing communication and documentation throughout the project.

## References

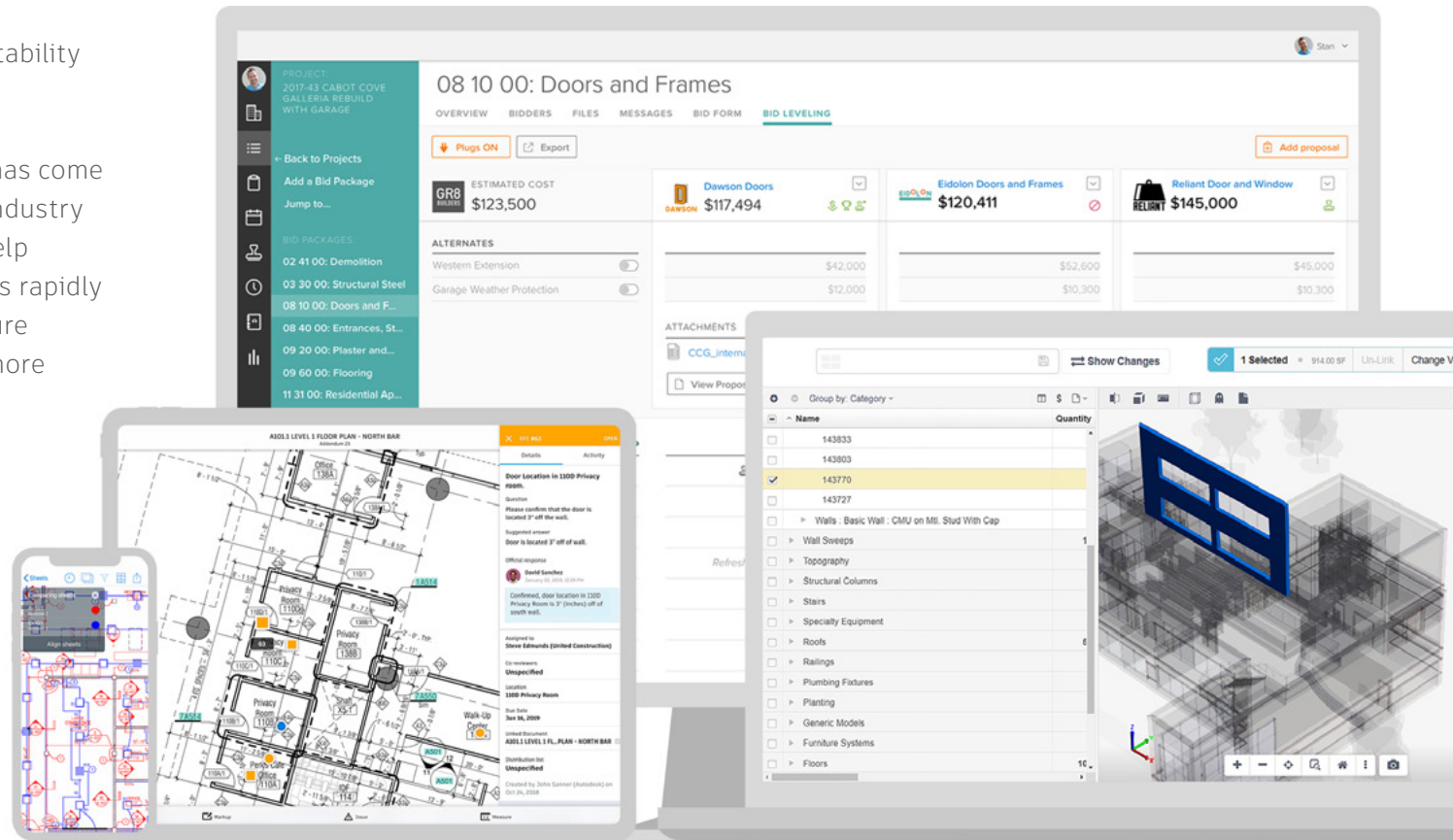
- [1] [Plumbing in Canada – Industry Market Research Report.](#)  
Market Research.com,  
IBISWorld, Nov. 2019
- [2] [Construction Market Global Opportunities and Strategies to 2022.](#)  
The Business Research  
Company, Oct. 2019

# See the Future of Connected Construction

[construction.autodesk.com](https://www.construction.autodesk.com)

In 2018, Autodesk announced that construction would be a key focus area to help our customers on their design and make journey. To capitalize on the opportunity, Construction became its own CEO-staff level organization, Autodesk Construction Solutions. This unique structure is comprised of product development, customer success, marketing, and field operations. The organization is designed to move at the speed of the market and serve customers on a level playing field with other solution providers. Autodesk Construction Solutions offers products that cover the entire construction lifecycle, from design through plan to build and operate, including the Autodesk Construction Cloud which brings together our cloud-based solutions Assemble, BIM 360, BuildingConnected and PlanGrid.

Our vision is to create a vibrant construction industry where predictability and productivity are exponentially increased, while jobsite waste is proportionately reduced. The time has come for platform that will empower an industry transformation. Our mission is to help construction teams meet the world's rapidly expanding building and infrastructure needs, while making construction more predictable, safe and sustainable.





With Autodesk software, you have the power to Make Anything. The future of making is here, bringing with it radical changes in the way things are designed, made, and used. It's disrupting every industry: architecture, engineering, and construction; manufacturing; and media and entertainment. With the right knowledge and tools, this disruption is your opportunity. Our software is used by everyone - from design professionals, engineers and architects to digital artists, students and hobbyists. We constantly explore new ways to integrate all dimensions of diversity across our employees, customers, partners, and communities. Our ultimate goal is to expand opportunities for anyone to imagine, design, and make a better world.

Connect with ACS



© 2020 Autodesk. All Rights Reserved.

United States  
+1 (866) 475-3802  
[construction.autodesk.com](https://www.construction.autodesk.com)

Australia & APAC  
AUS +61 1800 314 435  
[acs.apac@autodesk.com](mailto:acs.apac@autodesk.com)  
[construction.autodesk.com/au](https://www.construction.autodesk.com/au)

UK & EMEA  
+44 808 1892 253  
[acs.emea@autodesk.com](mailto:acs.emea@autodesk.com)  
[construction.autodesk.com/gb](https://www.construction.autodesk.com/gb)

