



SUITE

Widespread Prefab & Modular Construction Adoption

An MSUITE eBook

Overview

As the MEP & Modular industry recognizes the incredible cost savings of integrating pre-fabrication into commercial construction, at the core is enabling teams to track, manage and collaborate using lean manufacturing and fabrication best practices and powerful, innovative technology to improve performance. The latest research from Dodge Data & Analytics on BIM and Pre-fabrication reveals that contractors around the U.S. are seeing extraordinary value from its use.

The Time Is Ripe for Widespread Prefab & Modular Construction Adoption

The need for adopting prefab and modular construction means your becoming more competitive. With an industry-wide labor shortage and other circumstances beyond our control – everything from weather to COVID-19 – it is simply not efficient or economical to stick-build everything and delaying adoption will ensure contractors will eventually fall behind competitively.

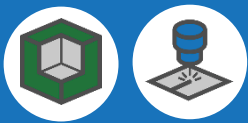
Key Learnings

- Advantages of Prefab and Modular Construction
- BIM Adoption for Pre-fabrication Assemblies
- Impact Improvements of Model-Based Prefabrication
- Advanced Technology for MEP Contractors and Modular Builders



Leveraging building modeling and pre-fab to improve field operations.

Connecting BIM, Fab and field teams in a connected workflow is crucial for success.



BIM & FAB

Accelerating design and improving prefabrication and modular processes to deliver shorter schedules at reduced costs.



FIELD

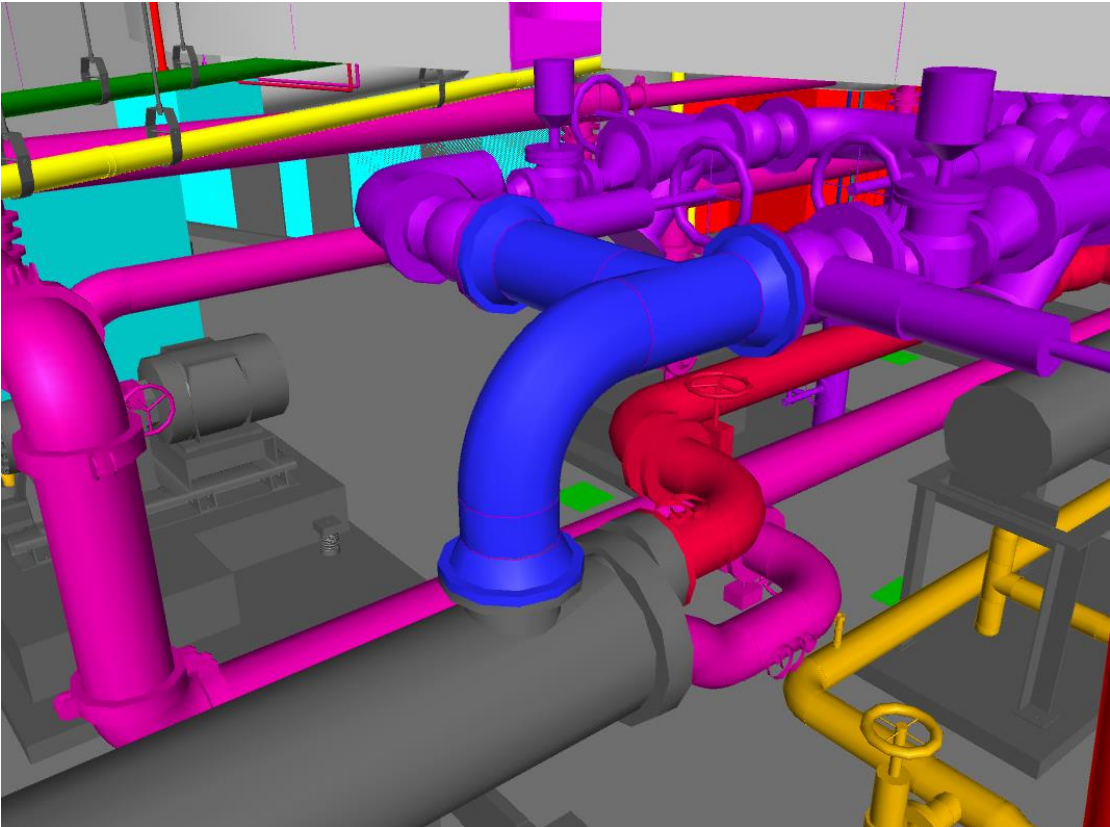
Increased communications, resource planning, and reduced costly mistakes on the jobsite.

Advantages of Prefab and Modular Construction

Embracing Building Information Modeling (BIM) and virtual construction is extremely effective in terms of function, quality, time, cost, operative safety and productivity. Fabrication shops run nearly around the clock, producing customized materials that simplify job-site construction. In addition to prefabricating ductwork and other materials, the fab shop team can assemble entire skids, such as bathroom batteries, sized and ready for fast, easy installation.

The construction industry's push into lean manufacturing and fabrication coupled with advanced technology offers substantially better project delivery outcomes - increased safety, improved quality, higher efficiency, and reduced costs to name a few.

Improving the entire construction build process.

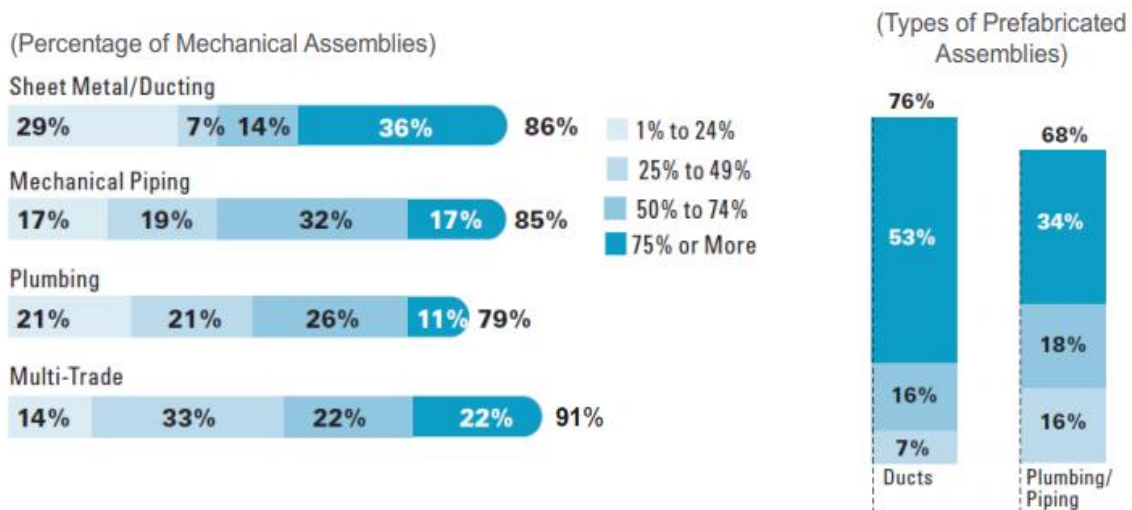


Virtual construction does more than reduce errors; it finds efficiencies.

Technology improves the entire construction process thru close-out. Using technology to move projects from design through delivery – tying together Building Information Modeling (BIM), Fabrication, and Jobsite construction – involves:

- » Obtaining manufacturing data
- » Importing the data and designing a model
- » Creating modular pieces
- » Coordinating all the trades
- » Delivering materials to the job site
- » Having the right technology to connect the workflow

Using BIM to Prefabricate Mechanical Assemblies



Source: Dodge Data & Analytics

Major growth expected for prefab and modular construction

Dodge Data & Analytics, North America's leading provider of analytics and software-based workflow integration solutions for the construction industry, recently released the Prefab and Modular Construction 2020 SmartMarket Report.

The report provides a comprehensive examination of the current state and future expectations for prefabrication and modular construction, and focuses on the architects, engineers, and contractors that are already using prefabrication and permanent modular construction methods to better understand the benefits and key drivers of use, as well as the obstacles.

The benefits of use indicated in the report are striking. About 90% of users report improved productivity, improved quality, and increased schedule certainty when using these methods compared to traditional stick-built construction. At least 80% of users also reported improved cost predictability, reduced waste, and increased client satisfaction.

Impact Improvements of Model-Based Prefabrication

Material Waste

+90%

Avg.

Type

Sheet Metal/Ducting
Mechanical
Plumbing
Multi-Trade

Impact Improvement of 10% or More.

+27%
+53%
+58%
+45%

- An average of 90% report major improvement on material waste compared to traditional stick-built construction.
- Waste reduction on the job site includes cost savings and safety.
- Reduced debris = reduced trip hazards on a job site.
- Owners also appeal to construction sites that are cleaner than expected.

Labor Cost

+88%

Avg.

Type

Sheet Metal/Ducting
Mechanical
Plumbing
Multi-Trade

Impact Improvement of 10% or More.

+60%
+49%
+58%
+45%

- An average of 88% report decreased labor costs. A top driver for increased use of prefab and modular construction.
- Sheet Metal/Ducting and Plumbing report the highest impact improvement among Mechanical and Multi-trade assembly types.

Single-trade and multi-trade assemblies

Prefabricating single-trade and multi-trade assemblies are seeing substantial growth in construction projects. Equally dramatic growth is seen among those doing modular construction in the use of the full volumetric approach, in which entire parts of buildings are delivered preconstructed onsite and assembled.

Impact Improvements of Model-Based Prefabrication

Quality of Installed Work

+86%
Avg.

Type

Sheet Metal/Ducting
Mechanical
Plumbing
Multi-Trade

Impact Improvement of 10% or More.

+40%
+58%
+64%
+45%

- An average of 86% indicate the Quality of Work improved.
- Manufacturing empowers expanded training opps and quality control.
- Automated equipment and mitigating weather issues leads to improved productivity and quality of work at the jobsite.

Avoid Purchase of Extra Pipes and Fittings

+85%
Avg.

Type

Sheet Metal/Ducting
Mechanical
Plumbing
Multi-Trade

Impact Improvement of 10% or More.

+20%
+50%
+50%
+38%

- An average of 85% credit Model-Based Prefabrication with avoiding the need to purchase extra pipes and fittings on the jobsite.
- BIM improves the accuracy of prefabrication and modular processes.
- Mechanical contractors indicate a substantial 50% impact improvement.

Eliminates many time-draining issues

Advanced work conducted in the controlled manufacturing environment eliminates many time-draining issues of frequently running out of materials on the job site. Supply chain issues, RFI responses, and labor schedules are all streamlined to avoid delays.

Impact Improvements of Model-Based Prefabrication

Schedule Performance	Type	Impact Improvement of 10% or More.
+84% <small>Avg.</small>	Sheet Metal/Ducting	+20%
	Mechanical	+44%
	Plumbing	+58%
	Multi-Trade	+46%

- An average of 84% indicate improved schedule performance.
- Increased schedule certainty – control, materials, and labor on the jobsite.
- The impact of poor weather is mitigated with fabrication offsite.

Worker Safety	Type	Impact Improvement of 10% or More.
+79% <small>Avg.</small>	Sheet Metal/Ducting	+50%
	Mechanical	+55%
	Plumbing	+91%
	Multi-Trade	+53%

- An average of 79% report Worker Safety improved across all trades.
- Reduces fatigue, potential for accidents and optimizes worker scheduling.
- Fab Shops offer controlled and safe environments.

BIM optimizes the prefabrication and modular construction process

Construction trends such as shorter project schedules and labor shortages are a couple of the reasons why building professionals plan to increase their use of prefabrication and modular building.

Impact Improvements of Model-Based Prefabrication

Site Logistics Cost

+71%
Avg.

Type

Sheet Metal/Ducting
Mechanical
Plumbing
Multi-Trade

Impact Improvement of 10% or More.

+33%
+46%
+64%
+35%

- An average of 71% report Site Logistics Cost improvement.
- Pre-planning with BIM and prefabricated models helps control costs.
- Reduces costly rework on the jobsite where changes create costly delays.

Source: Dodge Data & Analytics

Charting a new course in the industry

Dodge's research clearly shows that prefabrication and modular construction are providing significant improvements and efficiencies.

Post Covid-19, MEP Construction firms are pushing the envelope to increase productivity, reduce costs, and increase communications.



One of the most important factors to control cost and quality in the mechanical contracting industry is to enable multiple teams to work together in a seamless workflow.

“It comes as no surprise to us that more developers and GCs plan to use modular construction over the next few years,” said **Tom Hardiman**, executive director of the **Modular Building Institute**. “The lack of adequate housing and the shortage of skilled labor, coupled with chronic cost and schedule overruns are leading more people towards this process.”

Corporate Overview

TRACK | MANAGE | SHARE



Seamlessly Connecting BIM, FAB, and FIELD teams.



MSUITE empowers MEP and Modular Construction firms to connect the BIM-to-FAB-to-FIELD workflow with easy-to-use, scalable, and industry-focused software that provides real-time status updates, and valuable tracking and estimating information.

Trusted by contractors across North America, MSUITE's mission is to continually provide contractors with superior client services and best-in-class revolutionary technology that transforms construction.

The Management Suite



DESIGN

Revit Based Productivity Tools

- ✓ Automated Spool generation
- ✓ Auto Sheet Creation w/ dimensions and tags
- ✓ Smart Dimensions
- ✓ Hanger Tools
- ✓ Layout Points
- ✓ Fabrication Schedules



FABRICATION

Fabrication & Productivity Tracking

- ✓ Mobile Application
- ✓ Real Time Fabrication Tracking
- ✓ Automated Time Sheets
- ✓ Material Tracking & Shipping BOL
- ✓ Barcode Functionality
- ✓ Nesting/ Machine Control
- ✓ Reports and Power BI capable



JOBSITE

Field Installation & Productivity Tracking

- ✓ Advanced Work Packages
- ✓ Material Receiving
- ✓ Track status and time of installations
- ✓ % complete complete reports

As MEP and Modular firms look for ways to come out of the economic downturn, many are adopting disruptive technologies with the potential to provide the **efficiency, productivity, and safety** breakthroughs the industry has sought for decades.

MSUITE's SaaS platform revolutionizes how disparate teams in design, fabrication, and jobsite construction collaborate to increase productivity and reduce construction costs.

MSUITE empowers our design team to efficiently collaborate with fabrication and construction teams at an unprecedented rate.
John Trammell, Director of VDC Technologies
The Brandt Companies

MSUITE allows our staff to manage pre-fabrication operations at a distance and build efficiently.
Chris Canter, Director of VDC and Fabrication
Shapiro and Duncan

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MSUITE | We connect BIM-FAB-Field teams.

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