

2022 INDUSTRY REPORT

The State of Global Preconstruction

In partnership with **PROCORE**



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Procore & FMI

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Introduction

Most companies are actively involved in preconstruction, but the approaches and returns vary greatly.

Investing in upfront planning has become critical to successful project outcomes in today's construction industry. Project complexities are increasing. Schedules are accelerating. Labor is in short supply. And to compound that, supply chain shortages and price escalations have complicated the delivery of construction.

Preconstruction holds the promise of predictability by avoiding costly mistakes and eliminating surprises throughout the project. Organizations with what we will define as “above-average” preconstruction are much more likely to experience these types of benefits as well as higher client satisfaction, fewer project delays, and higher profitability.

Procore teamed up with FMI to better understand the current state of preconstruction and the characteristics of those who do it well. The report covers three topics:

- Five Ingredients for Better Preconstruction
- Effective Preconstruction as a Force Multiplier
- The Use of Technology in Preconstruction

Our insights come from survey respondents, including project owners, general contractors and specialty trade contractors across North America (U.S. & Canada), Europe (U.K. & Ireland), and Australia & New Zealand. The results reveal that most of these organizations perform preconstruction to some degree, but only a few are fully investing to maximize all the benefits it has to offer. In this report, we will offer insights into how organizations are thinking about preconstruction and practical solutions that can be implemented to improve preconstruction outcomes.

Global Survey Participation

In 2022, Procore partnered with FMI to survey 979 construction industry stakeholders worldwide. Participants were asked to describe the preconstruction practices in their organizations, project experiences, outcomes, and employed tools and technologies.

Audience Breakdown

44% GENERAL CONTRACTORS

All types of specializations and projects, including residential, commercial, heavy civil/horizontal, industrial/manufacturing, energy and utilities, and governmental projects

30% SPECIALTY TRADE CONTRACTORS

Mechanical, electrical, plumbing, structural and finish trades for all types of projects, including residential, commercial, industrial, infrastructure, and governmental projects

26% OWNERS & PUBLIC AGENCIES

Real estate owners, developers, investment managers, private corporations, governmental entities of ground-up development, capital improvements and industrial projects

Geographical Representation

26% AUSTRALIA & NEW ZEALAND

25% UNITED KINGDOM & IRELAND

25% UNITED STATES

24% CANADA

Annual Construction Volume (ACV)/ Capital Spend Range

32% SMALL BUSINESS \$10M – \$100M (USD)

48% MEDIUM BUSINESS \$101M – \$500M (USD)

20% ENTERPRISE \$501M – \$1B+ (USD)

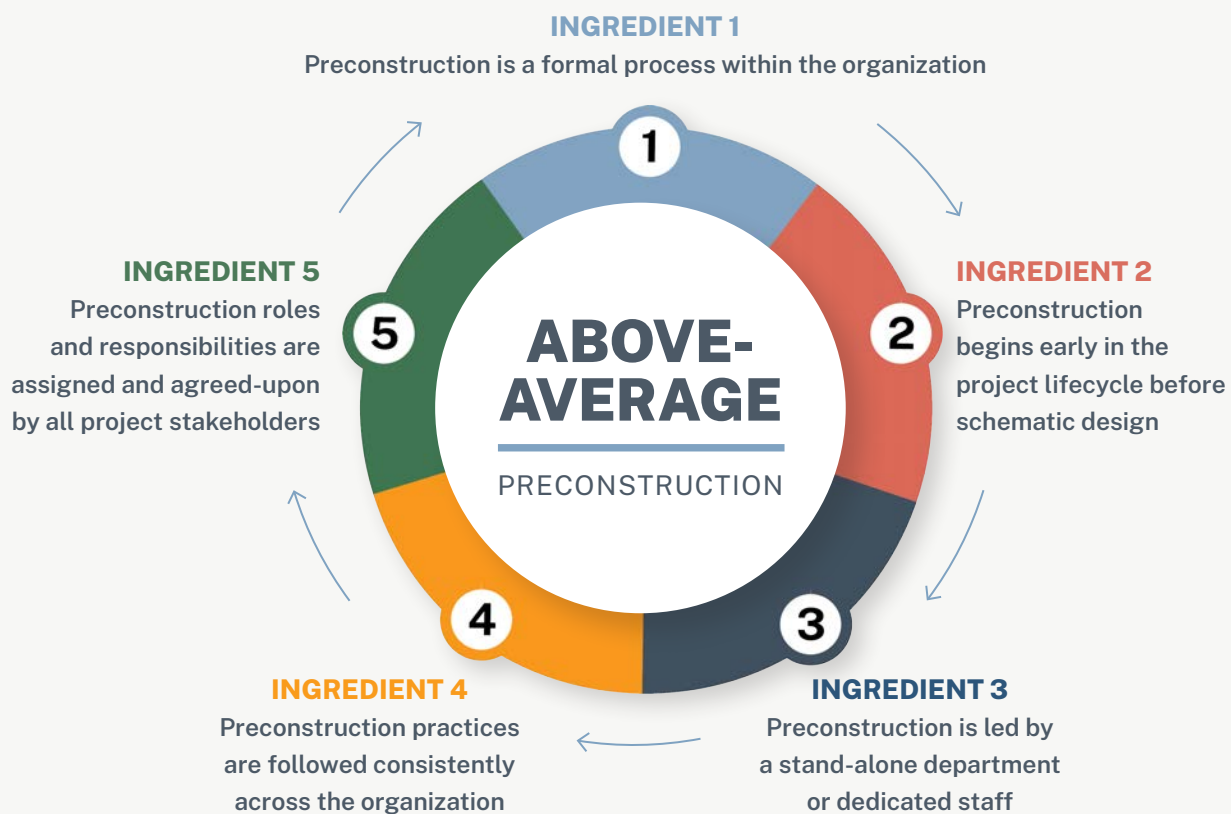
As this is a global report, we recognize the importance of adhering to the construction terminology used in each region. For example, when we refer to a “general contractor,” we are aware of its equivalent terms, “prime contractor” or “main contractor”, in different locales. Similarly, we may reference “punch list” as opposed to “snag list” or “deficiency list.” For the sake of redundancy, we will defer to the terminology most commonly used in the United States.

Five Ingredients for Better Preconstruction

The report finds that fewer than one-in-five survey respondents are conducting above-average preconstruction at a high level, based on our five ingredients.

To understand the current state of preconstruction, FMI needed to define the characteristics of organizations that do it well. We did this by examining five questions that we consider important to building a successful preconstruction process. These questions are based on FMI's 70 years of industry-specialized experience working with clients to evaluate their preconstruction processes. We realize that these characteristics are opinion-based and other functions can aid in the creation of an effective preconstruction processes.

We then aggregated the results in order to distinguish three groups — organizations leveraging **above-average**, **average**, and **below-average preconstruction processes**. Throughout this report, we will use these three groups to test and understand the current state of preconstruction and the impacts preconstruction processes are having on project teams and the industry. The ingredients for better preconstruction outcomes are as follows:



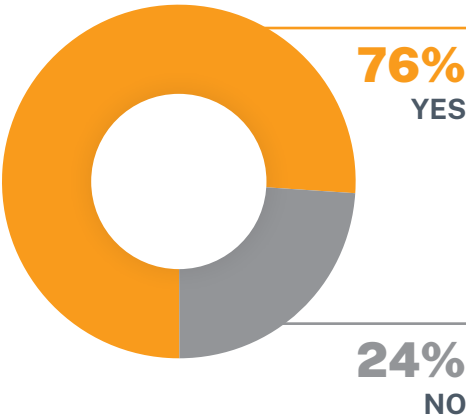
INGREDIENT 1:

Presence of a Formal Preconstruction Process

More than 75% of survey respondents claim to have a formal preconstruction process.

Regardless of stakeholder type, size or location, most survey respondents suggest their organizations have developed a formal preconstruction process. Eighty-two percent of project owner respondents indicate the presence of a formal preconstruction process in their organizations. Although fewer specialty trade contractors answered the same (71%), preconstruction is widely acknowledged as important given the high percentage of all survey respondent types that have a formal preconstruction process.

Does your organization have a formal preconstruction process?



Owners are more likely to have a formal preconstruction process than general contractors or specialty trade contractors.

Owners seem to agree that preconstruction is the best opportunity to add value to projects prior to the start of the project. This allows for avoiding rework and extra costs when developing their projects.

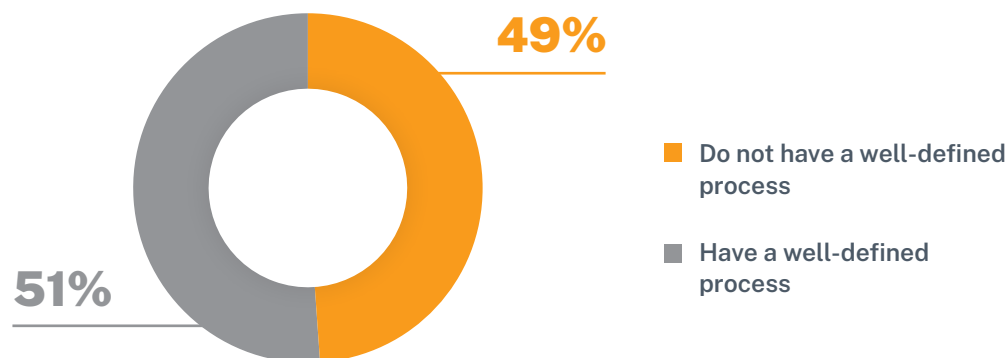
OWNERS	82%
GENERAL CONTRACTORS	77%
SPECIALTY TRADE CONTRACTORS	71%



Owners See Things Differently

Although 77% of general contractor respondents report having a formal preconstruction process, almost half (49%) of project owner respondents believe that general contractors they work with aren't using a well-defined preconstruction process.

Average estimated percentage of general contractors that have well-defined preconstruction according to project owners:



Quality of preconstruction is often a selection criterion for project owners. The survey results suggest that a significant percentage of general contractors may be overstating their capabilities in this regard and are at **increased risk of not being awarded the contract**.

INGREDIENT 2:

Engaging Preconstruction Teams Prior to Schematic Design

Preconstruction has the greatest impact on project outcomes when it's conducted early. However, 26% of all respondents wait until the construction documents phase to begin preconstruction. **At that time, much of the impact of preconstruction is lost.**

We looked at five different phases of preconstruction and asked respondents to report when they considered starting the preconstruction process.

Nearly 50% of respondents wait until design development phase or construction document phase to get involved in preconstruction.

Although a healthy percentage of all respondents begin preconstruction at the pre-concept phase, a greater percentage wait until the design development and construction documents phase. This may be due to owners wanting more control over the design and waiting until later to bring general contractors and specialty trade contractors into the preconstruction process with bridging documents. While this method might be needed on certain project types, it can limit the ability for project teams to capitalize on all the benefits of preconstruction.

When does preconstruction formally begin in your organization?





Specialty trade contractors engage with projects during the conceptual design phase.

Interestingly, a large percentage of specialty trade contractors engage with their preconstruction teams as early as the conceptual design phase. They may not be fully contracted by general contractors until much later in the process, but above-average specialty trade contractors are finding creative ways to add more value for designers and architects before projects are awarded.

SPECIALTY TRADE CONTRACTORS

When does preconstruction formally begin in your organization?



INGREDIENT 3:

Dedicated Preconstruction Department or Staff

Less than half of general contractor and specialty trade contractor survey respondents (45%) have a formal, standalone preconstruction department or dedicated preconstruction staff.


It is more common for general contractors and specialty trade contractors to assign preconstruction responsibilities to their project management staff. However, the downside to this is twofold. First, the quality of preconstruction often suffers because it is treated as an added workstep rather than a priority. In addition, the consistency of preconstruction suffers because the process is often determined by an individual. A formal, stand-alone preconstruction department or dedicated preconstruction staff guards against these potential downsides.

Who leads preconstruction at your organization?

GENERAL CONTRACTORS



SPECIALTY TRADE CONTRACTORS



- A formal, standalone preconstruction department
- A dedicated preconstruction individual
- A function or responsibility of the estimating staff
- A function or responsibility of the project management staff

INGREDIENT 4:

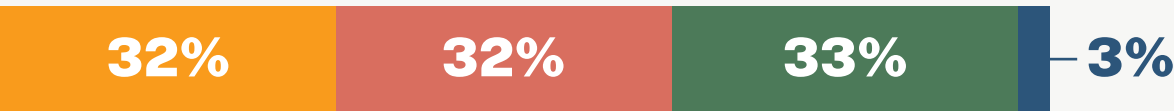
A Consistently Followed and Agreed-Upon Preconstruction Process

Less than 30% of general contractors and specialty trade contractors survey respondents consistently follow an agreed-upon preconstruction process.

FMI has validated that having an agreed-upon or formal preconstruction process fosters consistent delivery of preconstruction services. If not performed consistently, the preceding three practices may be undermined. We determined that above-average organizations consistently follow an agreed-upon preconstruction process, while average and below-average organizations do not.

Does your organization consistently follow an agreed-upon (or formal) preconstruction process, or is it determined by the individual?

GENERAL CONTRACTORS



SPECIALTY TRADE CONTRACTORS



- Consistently follow an agreed-upon preconstruction process
- Both equally
- Determined by the individual
- Neither



72% of specialty trade contractors allow some discretion by the individual in the preconstruction process compared to 65% of general contractors.

No single thing characterizes above-average preconstruction. As demonstrated so far, a combination of interrelated practices yield the best outcomes. This is exemplified by the percentage of specialty trade contractors that have a formal, stand-alone preconstruction department or dedicated staff (43%), but allow the preconstruction process to be determined in part or whole by the individual (72%).

INGREDIENT 5:

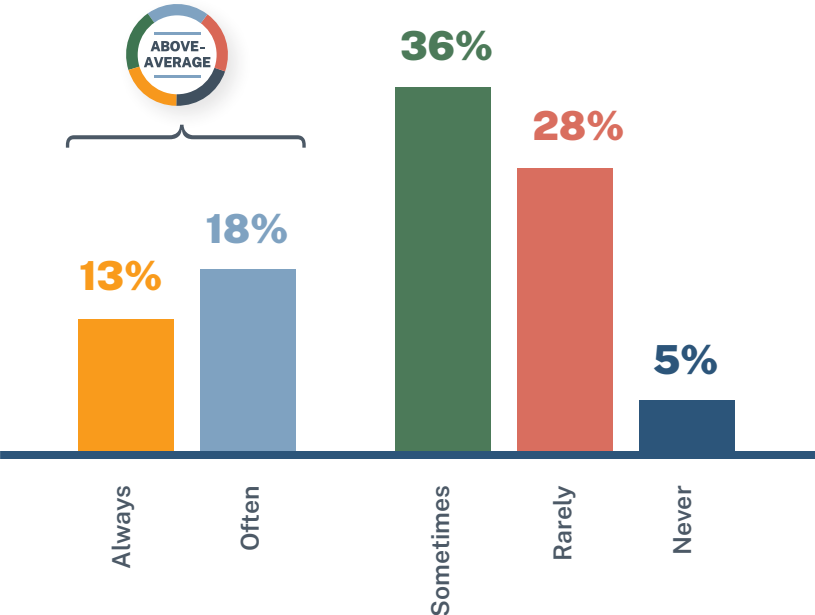
Assigned and Agreed-Upon Roles and Responsibilities For All Project Stakeholders

Less than one-third of survey respondents always or often have an agreed-upon assigned management plan.

While the presence of an “assigned management plan” suggests better preconstruction results, a respondent’s organization may have less control or influence over it. Above-average organizations always or often have an assignment management plan in place, while average and below-average organizations are less likely to.

How often do all stakeholders in a construction project have an agreed-upon “assigned management plan” to assign clear roles and responsibilities regarding areas of preconstruction?


ALL RESPONDENTS





41% of enterprise organizations always or often have an assigned management plan.

Enterprise respondent organizations are noticeably more likely to assign agreed-upon roles and responsibilities for all project stakeholders than small or medium businesses. This probably reflects the complexity and scale of projects characteristic of these organizations. While smaller projects may have fewer parties involved, having an assigned management plan remains an above-average practice.

Company size	 Report having an agreed-upon “assigned management plan” always or often
SMALL BUSINESS	31%
MEDIUM BUSINESS	28%
ENTERPRISE	41%

What these results suggest is that many contractors feel they are providing adequate preconstruction services, yet when compared to above-average contractors, they tend to fall short. For many, their deficiencies in preconstruction are not due to its absence entirely but rather a lack of standardization with roles and processes.

The decisions, efforts and investments organizations make in preconstruction have significant impacts on project outcomes, and how those outcomes vary can be markedly different.

Effective Preconstruction as a Force Multiplier

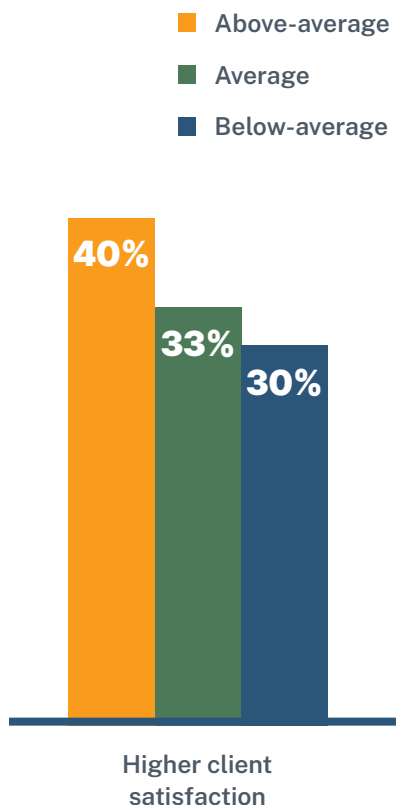
Throughout this report, we will use the methodology of above-average, average and below-average to help classify the survey results.

Better preconstruction drives better business outcomes.

Survey respondents with above-average preconstruction processes experience more benefits with more frequency than those with average or below-average processes. Most notably, contractors with above-average preconstruction processes cited experiencing higher client satisfaction and higher profitability. Owners, along with contractors, noted fewer project delays far more often than organizations with weaker preconstruction processes.

40% of above-average contractors report higher client satisfaction.

Higher client satisfaction typically results in more business. Above-average preconstruction for general contractors and specialty trade contractors results in an increase in client satisfaction 33% more often than below-average, giving them a competitive advantage. With respondents saying over 50% of their portfolio is repeat customers, investing in preconstruction should be considered a priority for better overall client satisfaction.



What percentage of your work is performed for repeat clients?



51% GENERAL CONTRACTORS



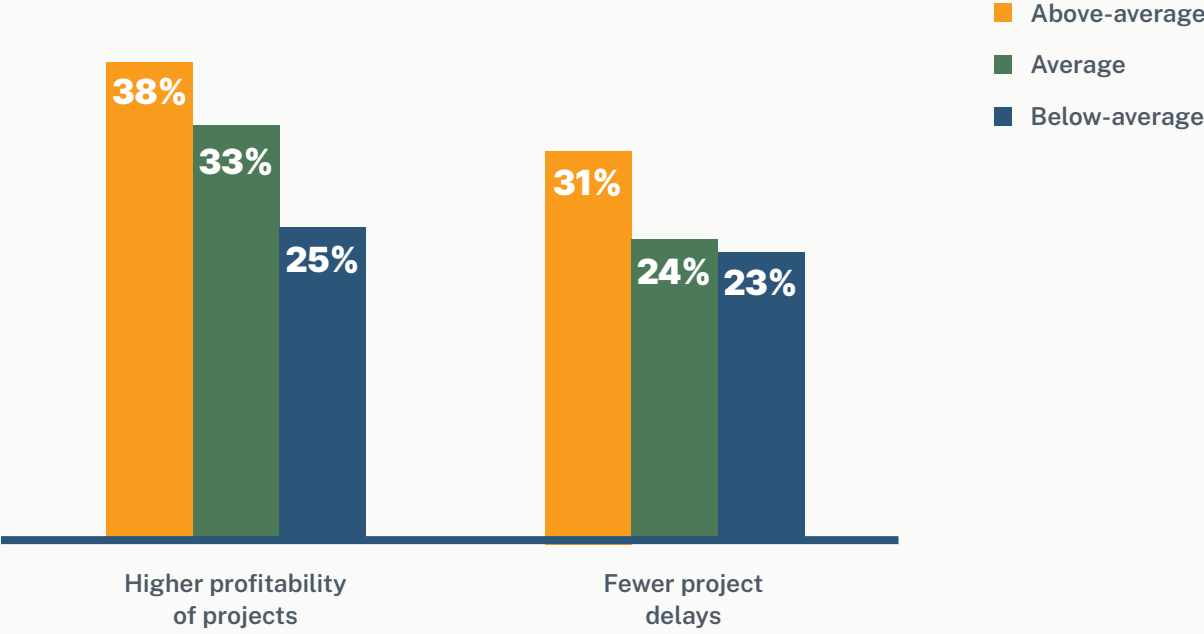
53% SPECIALTY TRADE CONTRACTORS



Above-average organizations are 35% more likely to report fewer project delays when compared to below-average organizations.

Strong preconstruction processes help contractors thwart avoidable problems more frequently and help to control risk more effectively. Additionally, above-average organizations are 52% more likely to report higher profitability than below-average organizations. For a business that operates on thin margins and with little room for error, reducing margin fade on projects has a tremendous impact on the overall bottom line for contractors. When well performed, preconstruction can defend against margin fade.

What benefits have you most experienced when preconstruction is done well?




48% of above-average organizations rarely struggle with “reinventing the wheel” on every project.

Constantly approaching projects differently is a productivity killer. It also negates the benefit of leveraging lessons learned on previous projects. A consistently applied preconstruction process can help eliminate much of this. As the number of experienced staff continues to decline, knowledge and experience can be institutionalized through a strong preconstruction process.

These issues represent the core elements of preconstruction. Failing to address these adequately often leads to poor project outcomes.

How often does your organization rarely or never experience the following during preconstruction?

WE RARELY OR NEVER STRUGGLE WITH:	 ABOVE-AVERAGE	AVERAGE	BELOW-AVERAGE	ALL RESPONDENTS
“Reinventing the wheel” on every project opportunity	48%	39%	30%	36%
Inefficiency in effort and expanding unrecovered overhead	48%	37%	34%	38%
Deficient quality of deliverables or level of service	46%	36%	36%	38%
Overinvesting resources in marginal opportunities	45%	35%	32%	36%
Project stakeholder frustrations with design/scope or budget/schedule issues during construction that should have been resolved during preconstruction	43%	38%	31%	36%
Runaway design and preconstruction scope of services “creep” (four budget iterations turn into eight)	38%	33%	35%	35%
Overburdened, frustrated and burnt-out preconstruction departments/resources	37%	38%	33%	37%

Percentage of respondents answering “Rarely” or “Never”

Rework amounts to 19% of the total project costs.

Owner respondents reported 19% of total project costs are rework and according to both general contractors and specialty trade contractors, only 30% of that is recoverable. This means 70% of rework is being absorbed by the contractor and eats into profits.


Organizations with effective preconstruction report they struggle with rework 65% less often than below-average organizations.

When performed well, preconstruction can also help avoid common project issues ranging from productivity to rework.

Not only do above-average preconstruction processes help organizations avoid problems early in the project lifecycle, but they also help organizations avoid unfavorable project outcomes. According to respondents, above-average preconstruction organizations are much less likely to struggle with rework compared to average and below-average respondents.

Furthermore, organizations with above-average preconstruction processes report that they struggle 47% less often with profitability and 27% less often with efficiency compared to below-average organizations.

To what extent does your organization rarely or never struggle with the following during your construction projects?

WE RARELY OR NEVER EXPERIENCE:	 ABOVE-AVERAGE	AVERAGE	BELOW-AVERAGE	ALL RESPONDENTS
Rework	51%	40%	31%	38%
Profitability	44%	39%	30%	36%
Efficiency / Productivity	42%	31%	33%	34%
Cash flow	40%	34%	34%	36%
Delays	38%	32%	35%	36%
Schedule	33%	31%	32%	32%

Percentage of respondents answering “Rarely” or “Never”

Preconstruction is considered strategically more important than other areas of the business.

Please rank the following according to their strategic priority within your organization.

TOP 5 STRATEGIC PRIORITIES:



Out of the top 5 strategic priorities, these respondents rank preconstruction as first or second priority:

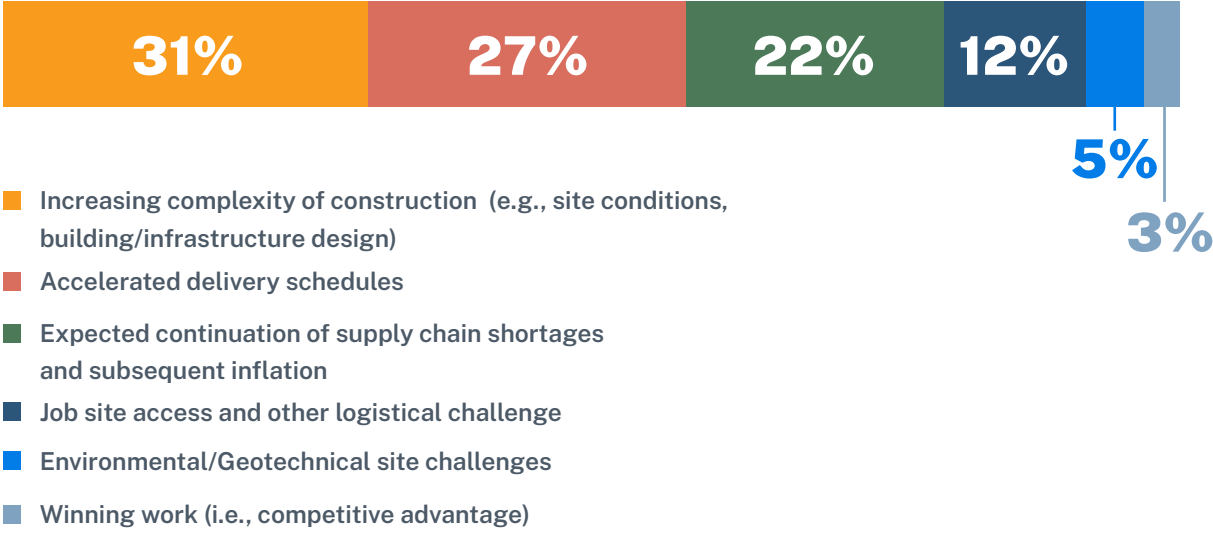
 **54%** GENERAL CONTRACTORS

 **63%** SPECIALTY TRADE CONTRACTORS

As projects continue to become increasingly challenging, industry stakeholders are placing greater emphasis on the preconstruction process to manage risk proactively. Thirty-one percent of survey respondents cited the increasing complexity of construction as the most important factor in making preconstruction an investment priority. Twenty-seven percent said accelerated delivery schedules were driving the need to prioritize preconstruction.



Respondents rank increasing complexity, accelerated delivery schedules, and supply chain as the most important reasons for making preconstruction an investment priority.



According to the survey, even though respondents view preconstruction as a strategic investment, they don't believe their firms will invest more dollars as a percent of construction costs (2%) over the next 3-5 years. This ultimately means preconstruction departments will have to get more value out of the investments they're making in things like technology solutions.



The majority of small/medium business contractors are devoting resources to preconstruction due to increasing complexity of construction.

Small/medium business contractors are more likely to make preconstruction an investment priority because of increasing construction complexity, while enterprise companies are more likely to prioritize preconstruction investment due to accelerated delivery schedules.

Please rank the following challenges for making preconstruction an investment priority.

	SMALL BUSINESS	MEDIUM BUSINESS	ENTERPRISE
Accelerated delivery schedules	24%	26%	31%
Environmental/ Geotechnical site challenges	3%	7%	4%
Expected continuation of supply chain shortages and subsequent inflation	22%	22%	21%
Increasing complexity of construction (i.e., site conditions, building/ infrastructure design)	40%	29%	23%
Job site access and other logistical challenges	8%	14%	14%
Winning work (i.e., competitive advantage)	3%	3%	6%

The Use of Technology in Preconstruction

Above-average organizations are leveraging technology for preconstruction, but there's still room for improvement.

Across the board, respondents say they rely on BIM more heavily than any other technology during preconstruction.

Effective preconstruction is a formal process that begins early in the project lifecycle, is led by a dedicated preconstruction group, follows a consistent process, and has an assigned management plan that outlines the roles and responsibilities of all stakeholders involved. This can be better coordinated and more effective when software tools and solutions are implemented. And some organizations are doing just that.

What technologies do you rely on for your preconstruction efforts?



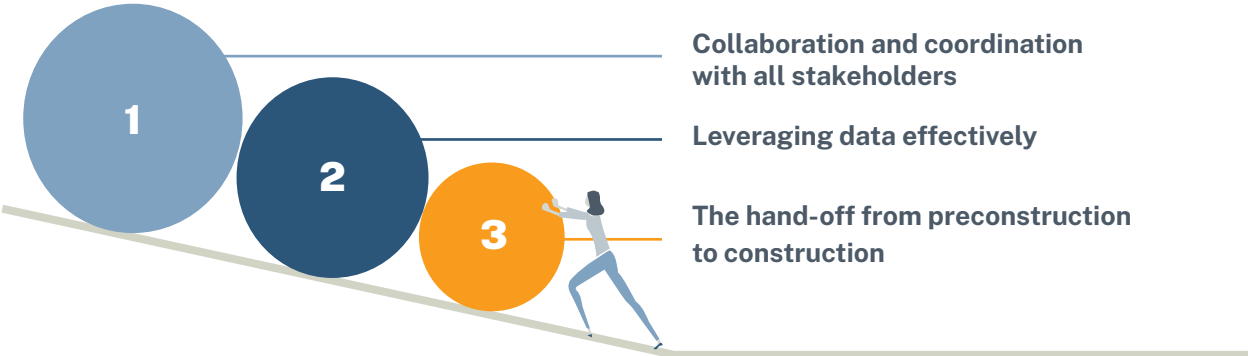
- 1 Building Information Modeling (BIM) or other Virtual Design and Construction (VDC) software
- 2 Independent (purchased) bid management software
- 3 Drone or satellite mapping and surveying
- 4 Independent (purchased) construction estimating software
- 5 Inhouse developed spreadsheet(s) and/or database(s)
- 6 Independent (purchased) scheduling software
- 7 Independent (purchased) document collaboration software
- 8 In-house developed software

Collaboration and leveraging data are among the biggest challenges for successful preconstruction.

We asked respondents to rank their top challenges regarding preconstruction, and all three cohorts landed on the same top choices.

Please rank the following from most to least challenging to executing a successful preconstruction process.

TOP 3 CHALLENGES:



Respondents believe that the biggest challenges for successful preconstruction are collaboration between stakeholders, leveraging data effectively, and the handoff from preconstruction to the course of construction. However, the survey data shows us that the majority of respondents said they are using isolated tools for preconstruction, which makes collaboration and the use of data difficult.

BOTTOM 3 CHALLENGES:

- Ability to leverage technology
- Consistent, formal preconstruction process
- Defined preconstruction roles and responsibilities

On the flip side, respondents ranked the ability to leverage technology as their least challenging aspect of preconstruction. This tells us the industry knows technology can solve many of the pain points around preconstruction, and they are willing to make preconstruction an investment priority, but technology has yet to deliver a collaborative solution that meets their needs.



Only 38% of respondents are highly satisfied with their preconstruction technology.

Across the board, owners, general contractors, and specialty trade contractors have moderate satisfaction with their current solution. The majority (62%) of respondents appear to be dissatisfied with the preconstruction solutions in the market, which aligns with the challenges around the complexity of projects and accelerated delivery schedules we saw in chapter two. Specialty contractors were even more dissatisfied with the preconstruction solutions at their disposal (69%).

How satisfied are you with the technology your organization currently uses as part of preconstruction?

	EXTREMELY SATISFIED	VERY SATISFIED	MODERATELY SATISFIED	SLIGHTLY SATISFIED	NOT AT ALL SATISFIED
General Contractors	11%	29%	33%	25%	2%
Owners	16%	26%	26%	30%	2%
Specialty Trade Contractors	5%	26%	28%	37%	4%



Above-average preconstruction organizations are more satisfied with their technology.

Above-average organizations are 44% more likely to report higher satisfaction (extremely or very) with their preconstruction solutions when compared to below-average organizations.


However, with only 46% extremely or very satisfied, over half of above-average organizations are still not satisfied with their current solutions and construction technology has room to improve.

How satisfied are you with the technology your organization currently uses as part of preconstruction?

	EXTREMELY SATISFIED	VERY SATISFIED	MODERATELY SATISFIED	SLIGHTLY SATISFIED	NOT AT ALL SATISFIED
Above-average	10%	36%	27%	24%	3%
Average	11%	26%	32%	28%	3%
Below-average	6%	26%	31%	34%	3%

Above-average organizations have a more digitized preconstruction process than below-average.

How digitized are your organizations processes and workflows in the following construction project areas?

	 ABOVE-AVERAGE	AVERAGE	BELOW-AVERAGE	ALL RESPONDENTS
Budgeting & scheduling	46%	42%	37%	41%
Project conceptualization & feasibility	46%	42%	32%	39%
Bidding or tender management	45%	39%	34%	39%
Design management & construction review	44%	43%	36%	40%
Preconstruction planning & estimates/analysis	41%	40%	34%	39%
Project handoff	39%	42%	33%	37%

Percentage fully or mostly digitized

The data shows that above-average respondents have digitized more components of their preconstruction process. Specifically, above-average organizations report being 20% more digitized in the preconstruction planning and estimating areas.

However, the digitization percentages for preconstruction do not vary widely across the three groupings, which is not surprising considering that preconstruction as a whole appears to be technologically underserved.


Above-average organizations report data centralization technology adoption 47% more often than below-average organizations.

Above-average preconstruction organizations prioritize technologies that improve their business operations, such as data centralization and workflow automation. This does indicate leadership places greater value on improving processes, communication, and overall collaboration across their organizations.

Typically, construction has fallen behind other industries with the adoption of technology that improves business operations, which can notably be attributed to the lack of great solutions in the space. However, among above-average respondents, the trends seem to be shifting ever so slightly towards investments in process improvement software as more technologies catch up with how work actually gets done in construction.

Respondents show us that only seeing half of the industry taking advantage of some of the key benefits preconstruction technology can offer means we have a ways to go. Both on the adoption side and the development of technology that works for the industry.

Which of the following technologies has your organization adopted or intends to adopt?

	 ABOVE-AVERAGE	AVERAGE	BELOW-AVERAGE	ALL RESPONDENTS
Data centralization technologies (e.g., project & cost data)	53%	42%	36%	40%
Software workflow automation (e.g., automation of RFIs, drawings, and other processes)	51%	46%	36%	41%
Modular construction	49%	46%	37%	42%
Green building / construction	48%	47%	41%	43%
Tools for greater collaboration during preconstruction	47%	43%	36%	40%
Building Information Modeling (BIM)	46%	43%	43%	42%
Predictive analytics for cost modeling	46%	40%	40%	40%
Digital twin	45%	38%	40%	39%
Connected supply chain (or other supply chain predictive analytics)	43%	41%	39%	40%
Prefabrication of components	37%	40%	37%	39%

Percentage of respondents already adopting or adopted

Conclusion

Investing in preconstruction can provide real returns. When these above-average functions work collaboratively, preconstruction offers one of the best ways to lessen project risk and creates more predictable and beneficial outcomes.

While there is clear ROI for an effective preconstruction process, the real story is around the industry continuously seeking a better technology solution to address the ever-pressing challenges of collaboration, leveraging data, and the preconstruction hand-off to construction.

As the story continuously goes for the industry—construction is not slow to adopt technology; they are waiting for the right technology that works for their businesses. The data shows us that organizations are willing to commit and invest in a formal preconstruction process. The good news is there are some great innovative technology solutions currently in market for preconstruction. The hands are raised—construction is seeking an all-in-one solution and it will be exciting to see the digital transformation as more of these technologies are adopted by the industry.

In light of our findings, FMI recommends the following:

- **Review your preconstruction processes** – Your organization has implemented a formal preconstruction process, but is it being followed consistently on each project and by each project team?
- **Start the preconstruction process early** – The ideal time to begin preconstruction is before schematic design. This results in fewer rework and delays, improving client satisfaction and greater profitability.
- **Invest in dedicated preconstruction resources** – Organizations with formal, standalone departments or dedicated preconstruction staff regularly outperform others.
- **Involve all project stakeholders** – Preconstruction is maximized when all parties to a project are involved. Assigning roles and responsibilities to the project owner, architect/engineer, general contractor and specialty trade contractors ensure everyone is on the same page.
- **Leverage technology to streamline the preconstruction process** – The volume of data and information shared during preconstruction has grown exponentially. Disconnected systems require manual re-entry and added risk of mistakes, especially between preconstruction and course of construction. Selecting a single platform will help increase collaboration, leverage data, and optimize the preconstruction hand-off to construction.



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