

# 9 Best Practices for Preconstruction Success

Tips and tricks from the trenches on how preconstruction teams can collaborate to succeed.





# Table of Contents

- 3** Introduction
- 4** What Is Preconstruction?
- 5** Best Practices, Best Results
- 7** Environmentally Focused Preconstruction Teams
- 9** How Preconstruction Fits Into Project Delivery Methods
- 12** The Power of Preconstruction





# Introduction

Planning is key for just about any large undertaking. But it is never truer than with construction projects.

A construction job has to run like the most well-oiled of all well-oiled machines. Every detail from the design up through hand-over to the client has to be attended to. A slip-up in drafting, a flaw in a design or any of a thousand other mistakes can cost teams time and money if a feature must be redesigned or torn out and rebuilt.

To avoid these catastrophes, construction firms are focusing more and more on impactful preconstruction practices in order to clearly define these details before breaking ground. How that process gets integrated into the overall build varies, but the goal is always the same: meticulous planning that will head off problems before they turn a smooth-running project into a nightmare.





# What Is Preconstruction?

Preconstruction is the phase of a project in which the client and the contractor work together to define the scope, schedule and cost of the entire venture.

We can break this down a little further since the scope of a build will go a long way towards determining the schedule and costs. Defining the project's scope can include any or all of the following processes: design decisions, environmental studies, land and permit acquisitions, engineering evaluations, risk analysis and more.

Thorough and accurate evaluations during the preconstruction phase help set client expectations, as well as identify possible efficiencies and cost-saving measures that builders can implement when moving on to the construction phase. All of this work also helps a client determine if a project is viable, or if it is too complicated or expensive to undertake.





# Best Practices, Best Results

Any large construction project will have unforeseeable challenges during construction. Fortunately, there are steps you can take during preconstruction that will help you avoid, or at least minimize, these pitfalls. Here are some of these best practices that can help you plan for success.

## **Clear lines of communication and accountability**

The design team wants to avoid redesigns and delays. The construction management team wants to avoid production delays and cost overages. Everyone wants the client to be happy. This is possible only if everyone is held accountable for hitting clearly defined goals and deadlines. It is essential that a preconstruction team set clear objectives for the project's design, and realistic goals for delivery with the general contractor. Clear lines of communication starting with the owner to the construction team, from project managers and engineers down to the subcontractors and their workers, mean any problems that come up during the build will be handled efficiently by those tasked with that responsibility.

## **Collaborative scheduling**

To create realistic schedules, a preconstruction team needs to work with everyone involved in the project—including designers, engineers, contractors, subcontractors, vendors and supporting staff. This step does not simply cover scheduling the construction activities, but includes everything else such as acquiring permits in order to set realistic timelines for completing all phases of a project. Accurate budgeting and cost tracking A project's budget covers more than just materials and labor. There are always potential hidden costs that can be identified ahead of time and tracked to make sure they don't blow up your budget. Make sure your team puts together the most robust budget and cost-tracking system as possible to ensure complete coverage for the job.



### **Site logistics**

Hundreds of workers. Thousands of tons of supplies, materials and machinery. Everything is packed into what is often a relatively small laydown area. Organizing it all is a significant factor in completing a project on time and budget. Efficiently laying out and scheduling the logistics of moving all the labor and materials in and out of the project site is a critical step of preconstruction.

### **BIM**

Of course, following all these best practices requires the right tools. One tool more preconstruction teams are using is building information modeling (BIM) to achieve their goals. In fact, a 2016 survey of the top global members of the construction industry found that 49% of teams now use BIM to plan projects<sup>1</sup>.

BIM was initially used in the design phases of a project. But now, advances in software programs allow for much more detailed information to be built directly into the building's model. Some of that data includes critical information such as equipment loads, the impact of transportation and other factors on the jobsite, budgets, schedules and any regional costs or requirements that affect the project.

All of the information available in BIM allows for better advanced planning. It also means that various parties responsible for the completion of a project, from architects to engineers to subcontractors, can and should get involved in the planning at an earlier stage<sup>2</sup>. Doing so helps head off unforeseen problems.

### **Escalation and budget forecasting**

Inflation makes budget forecasting difficult, especially since it tends to run several percentage points higher in the construction sector than in the economy at large. This is especially true for subcontractors, where individual vendors can pick and choose projects based partly on where they can charge the highest fees.

One method of keeping inflation from wrecking your budget is to use a cost index. With a cost index, a subcontractor is not being handed a blank check. Instead, subcontractors must quote the price of their materials when bidding a project. When the materials are eventually purchased, the contractor compares the actual cost to the cost index. If the cost of a material goes up 1 to 2 percentage points, the subcontractor may have to absorb it. If the cost increases by more than that, it becomes the builder's responsibility.

Either way, a cost index helps to track these price increases so they do not come as a show-stopping surprise during construction.

### **Permitting and local ordinances**

Navigating the bureaucracy of government entities in order to obtain all necessary permits is just part of the job. Proactively gaining an understanding of all ordinances and codes and possible variances of them that might affect approval is a time-consuming but important step of preconstruction. Meeting with officials at the local, state and federal levels ahead of time to get clear direction goes a long way towards smoothing out the process so nothing gets overlooked.



# Environmentally Focused Preconstruction Teams

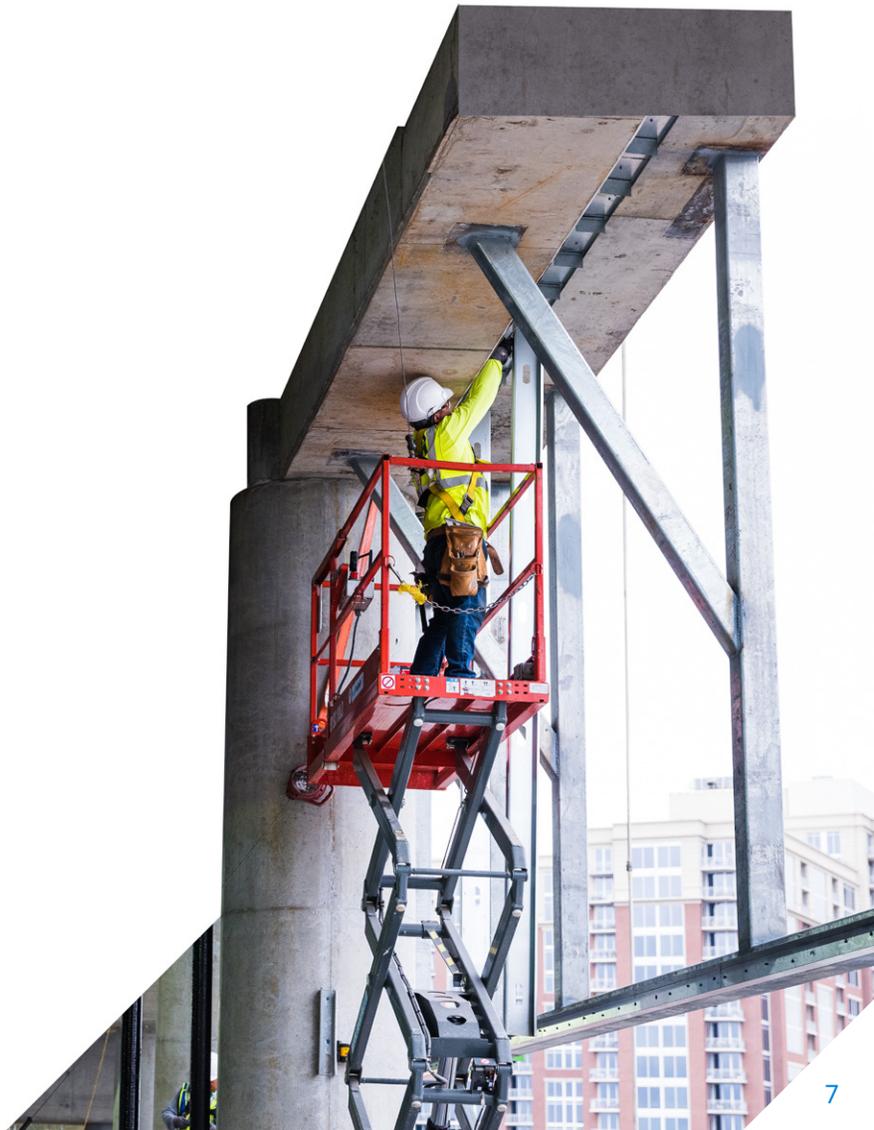
## **Make it sustainable**

An increasing number of owners want green, sustainable buildings, which means that more and more construction professionals need to know how to address sustainability goals. An inability to do so will be a handicap for anyone looking to attract new business or even maintain long term relationships with past clients.

What is a sustainable building? Generally, a sustainable building has been constructed with materials that come from natural, renewable resources<sup>2</sup>. They have energy systems based primarily on renewable sources, such as solar technology. They minimize water use by installing efficient appliances such as low-flow toilets and they use rainwater or gray-water catchment systems to capture and recycle naturally occurring water. Finally, they are made of non-toxic materials that do not degrade air quality and are resistant to dangers such as mold and spores.

All of these sustainable practices also lead to efficiencies that save money over the long term<sup>3</sup>. A building that uses solar to power it will have lower energy costs. Non-toxic materials help keep the people using the buildings from developing asthma or other respiratory problems, which lowers healthcare costs.

Buildings using these practices have to hit certain ratings benchmarks to be considered green. It is now a near-universal requirement for construction companies to know these benchmarks and incorporate them into their initial design.





### LEED the way

The most widely used sustainability certification in the world is known as LEED, or Leadership in Energy and Environmental Design<sup>4</sup>. LEED has become so pervasive in the United States that many federal agencies, along with state and local governments, require construction projects to be LEED-certified. Only four states – Alabama, Georgia, Maine and Mississippi – use a different rating system, one that is much more lax. And even then, federal regulations mean many buildings in those states are LEED-certified anyway.

Due to the widespread use of LEED, it is in the best interests of builders to facilitate the certification process. That process begins in the preconstruction phase of a project. It is critical that designers incorporate environmentally friendly features in a building and that contractors plan for those features during preconstruction. Doing so will save the owner money in both the short and long term, since there will be no need to make project changes after building has begun in order to meet LEED standards.

As part of the preconstruction process, companies determine the LEED level an owner wants to achieve. Then the contractor can incorporate those sustainability goals into the project and price them out, showing exactly how much time and cost each will add to construction.

Some builders now have dedicated LEED teams that understand the requirements and are experts in navigating the maze of paperwork required for certification<sup>5</sup>. These teams work from the beginning of a project to help the owner decide what certification level they want to reach, along with the most efficient and cost-effective ways to reach it.

As a bonus, these teams can take what they have learned on one project and apply it to other jobs their companies bring in. A good LEED team is an asset not just to a builder's current clients, but to companies that want to make incorporating good sustainability practices part of their pitch to future clients as well.





# How Preconstruction Fits Into Project Delivery Methods

Preconstruction is an important phase in any project, but its viability can depend on the project delivery method chosen. Not every method will easily accommodate a preconstruction phase that is robust enough to uncover and plan for all the contingencies that might crop up during the life of the project.

Here are the five most common project delivery methods, and how preconstruction fits into each one.

## **Design-Bid-Build**

Design-Bid-Build (DBB) is the most common project delivery method in use today, and it begins with an architect designing a project to completion. The building owner then selects a general contractor from a number of bids submitted against the completed design. Building is the final step.

DBB offers owners the chance to have a great deal of input on the design, since they are working closely with the architect to finalize the plans before taking bids.

The drawback is that the general contractor has little to no input during preconstruction on incorporating the best, most efficient materials and building methods into the design. This can mean higher costs if the general contractor is not given the flexibility to find less expensive materials after being awarded the project. It can also mean construction delays or design changes in the middle of the project.



### Design-Build

Design-Build (DB) is a more straightforward project delivery method. In DB, design and construction are handled by the same firm. This minimizes risks of litigation and makes it easier to build a team that is focused on the end result.

The benefit of DB is it is a more collaborative process. With everything under one roof, a preconstruction team can be more intimately and thoroughly involved in a project right from the beginning. Members of that team can give input to the design team, so that a building's final design will incorporate more cost-efficient materials and timely methods. Any changes to design or conflicts between the design and construction teams can be sorted out before the first shovel hits the dirt.

### Integrated Project Delivery

Integrated Project Delivery (IPD) is a project delivery method that emphasizes teamwork and collaboration. IPD allows for more integration between the design and construction teams by creating a "mini-organization" for the duration of the project. The idea is to streamline the entire process from design to closing, reducing waste and costs for the owner.

IPD makes all contracted participants available to an owner from the very beginning of the process. This allows for a stronger preconstruction team, starting from the initial design phase right up until the builders break ground. As with DB, the preconstruction team will have the opportunity to consult with all the stakeholders in order to minimize costs and schedule delays.

In other words, IPD allows for a very robust preconstruction phase, which will have enormous benefits over the life of a project where incentives are already being maximized.





### **Construction Manager at Risk**

Construction Manager at Risk (CMR) can be used when an owner needs a defined completion date and price. It is a slimmed-down delivery method. An owner has only two contracts, one with a designer and one with a construction manager who acts like a general contractor, overseeing subcontractors and taking on the risks of cost overruns and meeting schedule deadlines.

With CMR, the owner is the party most liable for accuracy of the design plans and completion of the project. Like DBB, they work closely with the designer and are involved in the entire building process from the beginning.

The drawback from a preconstruction team's perspective is that, as with DBB, it may be more difficult to be involved enough in the design phase to head off potential problems. It may also be hard to exercise influence over a construction manager's decisions before building begins. This lack of integration into the project's management could lead to a preconstruction team having less influence, and thus unable to head off the problems it is designed to prevent.

### **Public-Private Partnerships**

The Public-Private Partnerships (P3) delivery method is gaining popularity as all levels of government invest in infrastructure improvements<sup>6</sup>. In the case of a P3, public projects are financed, built and managed by private entities. This method works for government officials who are skittish about committing taxpayer dollars to projects that might run over their budgets. The drawback is that these same officials have little to no input over the operation of those projects.

The main obstacle to P3 projects, however, is simply that private and public entities might not share a common goal. A private entity wants to maximize its revenue, while the public one might be concerned with voters' perceptions.

In this case, it is very important that both the public and private entities are aware of all possible risks in undertaking a project, including cost overruns and schedule delays. A preconstruction phase becomes even more important in these situations, as it tries to align all the stakeholders' goals and risks.



# The Power of Preconstruction

It is clear that preconstruction can fit into any project, no matter the delivery method the owners use. What is less clear is how effective it can be. Nothing is foolproof, and there are often unforeseeable problems – cost inflation, environmental catastrophes or a client who changes their mind.

When preconstruction is thoughtfully managed, it will head off many of these curveballs. The more a preconstruction team is integrated into the build from planning and design to the day the owner takes delivery of the project, the better the chances that the entire enterprise will come in on time and budget. Preconstruction is planning. And planning is the key to success.





## References

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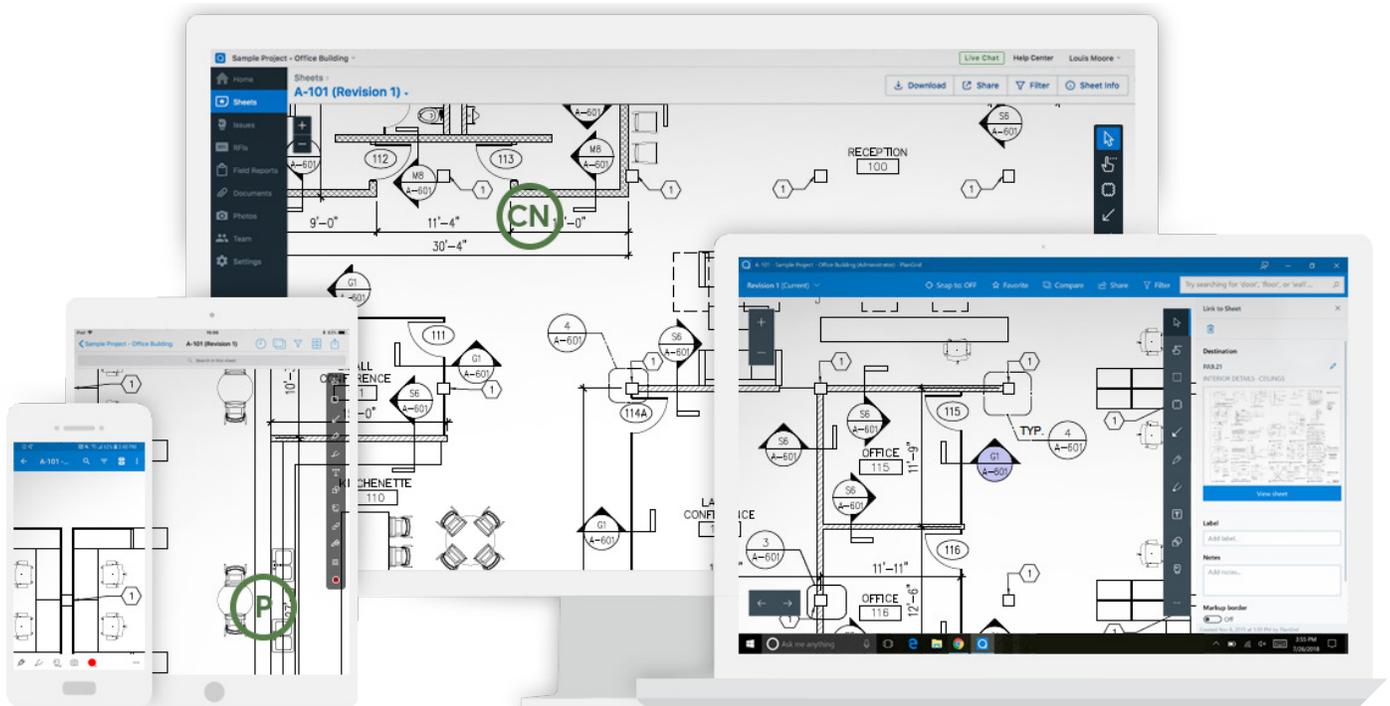
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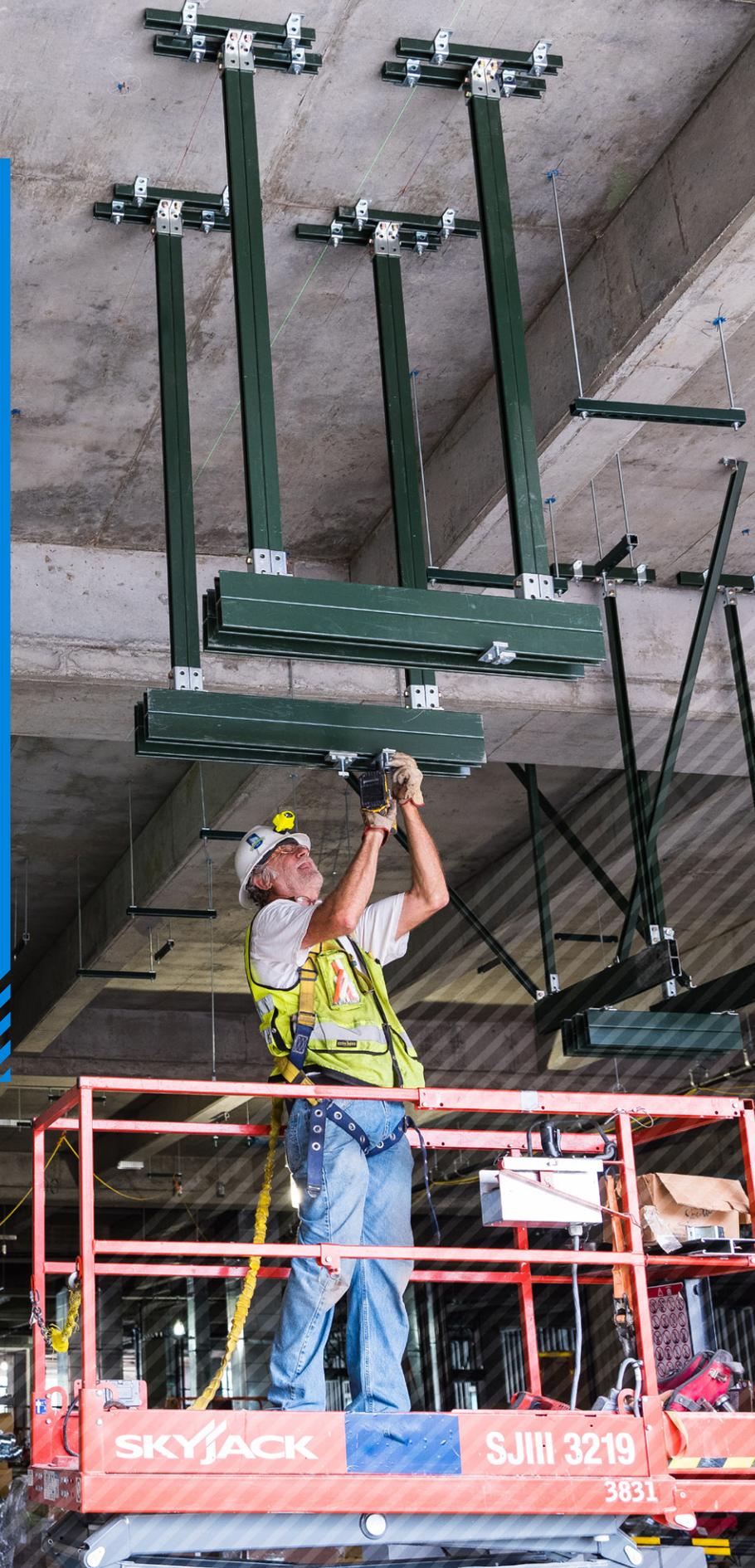
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Australia  
AUS 1800 316 406  
[www.plangrid.com/au](http://www.plangrid.com/au)  
[apac@plangrid.com](mailto:apac@plangrid.com)

United Kingdom  
+44 (0) 20 3695 0292  
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Canada  
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