



# The Construction Management eBook

by  ProjectManager



# Contents

Bidding & Contracts	5
Construction Schedules	14
Budget	19
Quality Control	26
Reporting Needs	29
Managing a Team	34
The Construction Project Management Process	38
Risk Management	43
Construction Project Management Tools	46
The Best Construction Management Software	49
Construction Project Management with ProjectManager	51

Construction projects are highly structured endeavors. Whether the project consists of building a shopping mall or a single-dwelling residence, each project has many moving parts that must be precisely coordinated.

Just like any other project, construction project management has phases. From designing to planning to scheduling to the build itself, each phase is complicated and part of a more complex overarching process.

Utilize the information in this eBook to learn more about construction project management and the tools you can utilize to complete your projects on time and under budget.

## What Is Construction Project Management?

**Construction management** is the process of managing construction projects. When comparing construction project management to other types of projects, the main distinction is that construction is mission-based. That means that the project's organization ends with the completion of the project build. Construction management usually includes a wider variety of constraints to consider that are specific to the design and build of construction projects.

## Construction Sectors

There are a variety of different types of construction projects that depend on the construction sector. The two sectors in construction are residential and commercial and there are four different types of projects:

- ✓ Residential home building and renovation
- ✓ Heavy industrial construction
- ✓ Commercial and institutional construction
- ✓ Engineering construction

Construction project managers oversee the beginning and end of a project build, often managing on-site to ensure safe, successful construction.

Now that we've explored the basics of construction project management, let's examine some helpful templates to help you kickstart your construction projects.

# | Free Templates

Templates are an easy way to kickstart your construction project and reduce wasted time. ProjectManager offers pre-built templates that can be used both in Excel and in our software. Click on each free template below to download it.



Construction proposal template



Construction schedule template



Construction estimate template



Risk tracker template



Change log template



Construction daily report template



# Bidding & Contracts



# | What's Included In a Construction Bid?

There's no one-size-fits-all style to a construction bid, however, certain elements are required when submitting one. When making a construction bid, include the following:



**Contact Information:** A bid will be discarded if there's no contact information. The basic information is name, address, phone and/or email and a place for signatures. Include the location of the construction project as well.



**Scope:** Next comes an overview of the project before getting into the details of pricing. Here, outline the scope of the project, the services provided, the schedule for the work, necessary materials and other features required to get the job done.



**Existing Conditions:** This is where to describe the job site as it currently is after conducting a preliminary site assessment. List the conditions of the site as it stands now, what action will be taken to respond to these conditions and who will be responsible for what.



**Cost:** Estimate the price for the entire project here. Break down the total cost into subsections, including labor and materials.



**Terms of Payment:** Detail the manner in which you'll get paid for the job if selected by the customer. Most will not pay the total cost upfront, so decide what down payment you require and the frequency of installments for the balance.



**Relevant Documentation:** It's critical to the bid that any and all sub-projects are identified, detailed and an owner who is responsible for them determined. This will help the customer know who is responsible for what when the project begins.



**Schedule:** The work schedule will be detailed here, from the start to the end and all milestones in-between. It's a good idea to determine the extent to which you're liable for any events that cause delays in the execution of the project.

# The Construction Management Bidding Process

Most construction projects follow the design-bid-build model. First, the project owner gets the design from architects or engineers. Once the project owner has blueprints and a **material take-off (MTO)** for the construction project, the next step is to select the general contractor through the bidding process.

Then, general contractors present their bids, which include details like the statement of work, payment terms and how much it will cost.

Project owners usually issue two types of bids:

- ✓ **Open bid:** These bids are publicly advertised and are used on public projects. Any general contractor can submit a bid.
- ✓ **Closed bid:** The project owner selects a group of contractors and only receives bids from them for the construction project.

Once project owners receive the general contractors' bids, they choose the best by any of these selection methods:

- ✓ **Low-bid selection:** Consists of selecting the contractor with the lowest price bid.
- ✓ **Best-value selection:** This selection method evaluates both the contractors' qualifications and the price to choose the contractor with the best price-quality relationship. The project owner also closely examines the request for proposal (RFP) submitted by contractors to make a decision.
- ✓ **Qualifications-based selection:** This selection method focuses on the contractors' qualifications. To do this, project owners analyze each contractor's request for qualifications (RFQ) to decide which is the most qualified contractor for the project.

Once a contractor is chosen, a payment agreement contract must be signed.

# Steps In Construction Bidding

When involved in the construction bidding process, have accurate estimates and a low bid. Many customers will only look at the bottom line and go with the lowest bidder. However, don't bid yourself out of business.

Keeping that in mind, it's best to follow these steps in the construction bidding process.

- ✓ **Solicitation:** Referred to as a request for proposal (RFP), this is when an owner puts out a request for bids for a project they want to execute. This means asking companies to bid with all materials factored in.
- ✓ **Subcontract:** The general contractor will solicit bids from subcontractors for parts of the project, though this can often wait until the contractor has won the bid.
- ✓ **Submission:** The proposal will have a deadline. Once the contractor has detailed the information required by the customer, they submit the bid prior or on the deadline.
- ✓ **Selection:** There's a period of time when the customer goes through all the submitted bids. They will then choose the one which best fits their needs, which will be the winner of the bid.
- ✓ **Contract:** Because of the bid's details, both parties can use it as a legally binding contract once agreed upon. However, it is more likely the customer and the winner of the bid will finalize the terms and conditions sketched out in the bid and create a legal contractual agreement they both sign.
- ✓ **Project Begins:** After all this, the project will begin, following the agreed-upon schedule and pricing of the bid.



# | How to Win a Construction Bid

The construction bidding process is highly competitive and there can be dozens of businesses vying for one job. How do you differentiate yourself and win the work without losing money in the process?



## **Know the Competition**

Know the competitors and what they're doing. It doesn't hurt to network or join building trade groups to keep updated on what others in the construction industry are doing.



## **Be Judicious With Your Bidding**

Although it helps to be the first to bid, it's not ideal to bid on every job out with a proposal. Spend time making the best proposal for the job while also ensuring it fits what your organization can accomplish at a profit.



## **Build Relationships**

Business is better executed on the foundation of a strong relationship, so strive to build relationships with people who are in a position to make decisions on awarding work to your company.



## **Accentuate Your Strengths**

When in the construction bidding process, don't be bashful. Promote the qualities your business has that make it the right fit for the customer. Show off the team, and be sure to let them know you have the experience necessary to do the job right.



## **Take Your Time**

Take time when making the bid. Do the research and explain how you can give them the best return on their investment. If you know anyone who has worked for the customer in the past, talk to them to get an idea of what the customer wants.

# What Is a Construction Contract?

A construction contract is a formal agreement of terms between an owner seeking to outsource work and the independent contractor or specialist who intends to take up the job. A construction contract should include details about the construction project, the project's scope and a breakdown of the outsourced tasks. It should also detail contingencies between the contractor and the owner for situations in which issues affect the project timeline.

## Why Is a Construction Contract Necessary?

Construction contracts protect both parties in the agreement. These documents detail what work will be completed, when it will be completed and how much it will cost. They also outline methods of communication and how disputes will be handled if they arise.

Ideally, project risks have been anticipated and the contract outlines how best to proceed. A construction contract is, first and foremost, an agreement, but it serves as a roadmap of sorts as well.

## Who Is Involved in Construction Contracts?

Construction contracts involve two parties; owners and contractors. Owners need a job outsourced and the contractor executes the job. The two parties work together to draw up a contract and agree on the terms of completion and payment.

Owners contract builders when they need to execute a specialized job they cannot perform on their own. They may also contract builders when the scale of the project is too large for them alone.



# | Types of Construction Contracts

Because construction projects take many forms, different projects require contracts with different characteristics. Before creating a construction contract, it's important to know the type of contract that best suits your needs:



## **Lump-Sum Contract**

A lump-sum contract (also called a fixed price contract) names a total price for the entire job. This price accounts for all time and materials regardless of changes or issues. This type of contract protects owners against unforeseen changes and setbacks.



## **Cost-Plus Contract**

Cost-plus contracts are made of two parts: a predetermined fee and accumulated costs. This fee is the agreed price owners will pay contractors. It can be a dollar amount, a percentage of the total project cost or another form of payment. The defining characteristic of a cost-plus contract is it reports expenses as they occur rather than deducting costs from a set budget.



## **Time and Materials Contract**

Time and materials contracts are a fitting choice when the scope of a project is completely unknown. In this case, contractors will charge an hourly rate for labor and for materials as needed. Because this leaves uncertainty, these contracts must be specific and prepare for almost anything. An owner should include incentives for construction projects completed ahead of schedule and/or under budget.



## **Unit Pricing Contract**

A unit pricing contract is used when an owner wishes to buy a large quantity of a certain product. Each product is a unit and costs a set price. These items can also often be charged in bulk quantities for a reduced price.

# Best Practices for Writing Construction Contracts

No matter what type of construction project you're planning, these best practices ensure your contract is a clear, detailed arrangement:

## Include Incentives

Incentives are useful when the scope is undetermined and budget, time and labor costs are up in the air. Incentives encourage both contractors and owners to work efficiently and complete a project on time and under budget.

## Clearly Outline Expectations

Be clear when conveying expectations on how expenses will be reported, how communication will be maintained, or how any other aspect of a construction project is managed. Outline a contract and break it into key points to which the contractor can refer back.

## Create Contingencies

The best construction contracts have contingency plans. When construction contracts have contingencies, both the owner and the builder have a roadmap of what to do when something goes wrong.

Now that we've discussed construction bidding and contracts, let's look at construction schedules.





# Construction Schedules

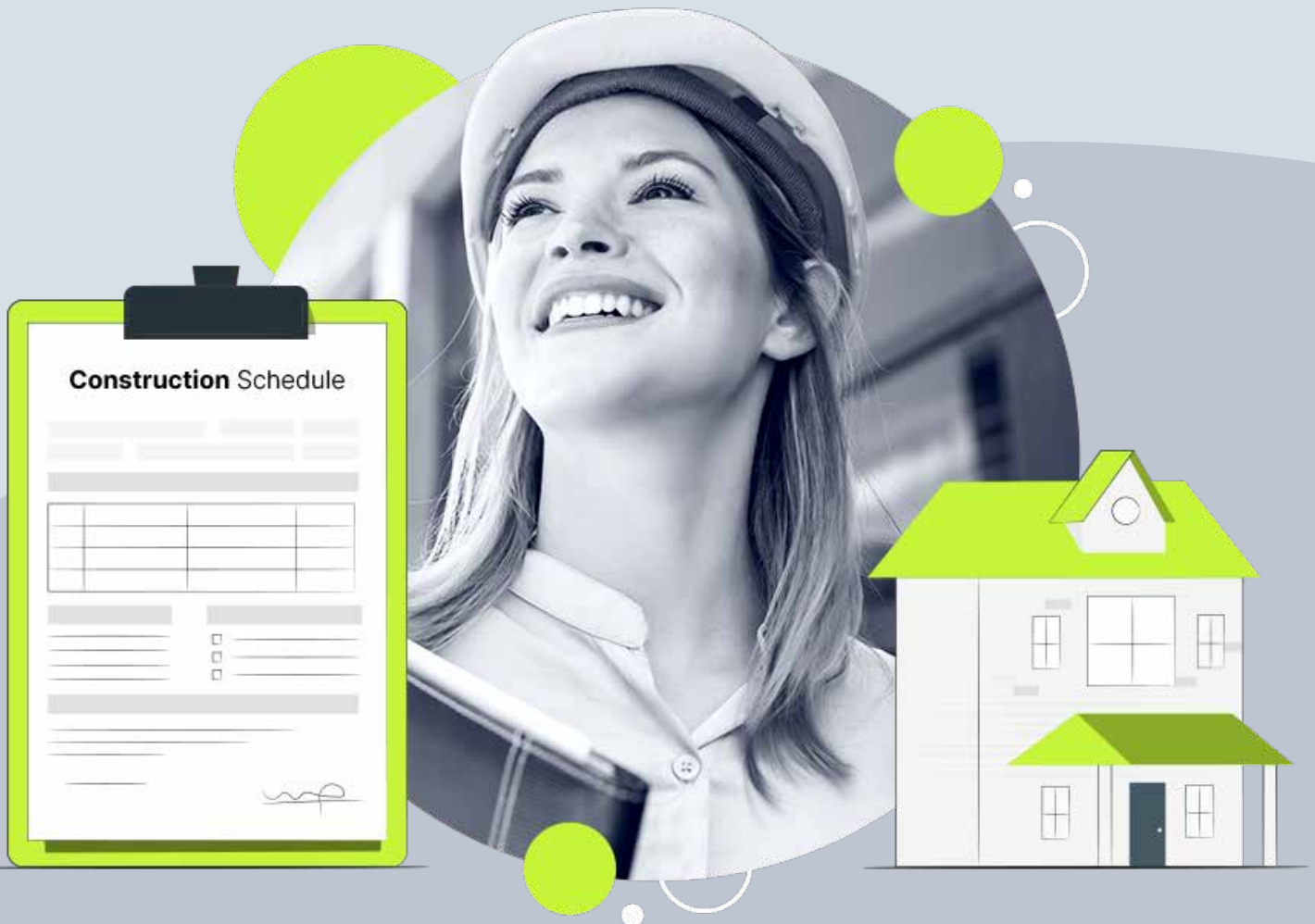


# Construction Schedules

The construction schedule is the backbone of any successful project management for construction. The more time you put into the construction schedule, the less issues you'll have when you execute the project plan.

## What Is a Construction Schedule?

A construction schedule is a timeline for every task and event in a construction project. It's a fundamental part of the **project planning phase** as it also defines the resources needed and the teams responsible for each task in the construction process.



# 5 Steps to Make a Construction Schedule

If you follow these five steps, you'll hit all the major points that need addressing when creating a construction schedule.

## 01

### Gather Info and Tools

Construction scheduling involves different types of resources, stakeholders and participants. Begin by listing all subcontractors involved in the job as there are always many in a construction project. Once you have the list, reach out to them and ask how much time it'll take to procure materials. Then, ask how long their part of the project is estimated to take. This is key for sound time estimation on your part.

You'll also need to speak with the local code office and get a list of requirements and what inspections will be needed throughout the build.

When it comes to budgeting your project, you'll need to go through the process with your bank and determine when they'll release funds. You'll need a steady influx of cash to keep the project moving forward so it's key to have an understanding of your bank and its process of disbursing money.

## 02

### Collect and Prioritize Tasks

You have context and tools, but now you need to break the project down into the steps that will lead it from a construction plan to a completed project. These are the tasks. You can't have an accurate construction schedule until you have a thorough listing of every task that results in a successful project.

You can use a **work breakdown structure (WBS)** to get a handle on the size and scope of your project. You can think of this tool as a way to visualize your deliverables by starting with whatever you're going to construct and then breaking it down level by level until you're at the most basic parts.

Once you have your task list as complete as possible, you'll next need to put those tasks in order. The WBS can help with this, as it takes a complex project and boils it down to the essential parts and when they need to be worked on. You can use Gantt chart software to spread these tasks over a project timeline.

# 03

## Add Duration

Now take each of the tasks and give them a start and finish date, which will create a bar chart on the Gantt that represents the duration of the task. These determinations must be realistic. A construction schedule is impacted by climate and weather forecasts are only so accurate, especially long-term. Therefore, look at historical data about the weather to get an estimation of how the climate might impact the work.

Depending on how long-term the project is, you'll need to calculate your construction schedule holidays and consider sick and vacation days for employees. If there are other seasonally related or personal issues that might come up, then be sure to use them as a ruler when measuring your schedule's duration.

It's important to make the schedule realistic. You might want it done at a certain date, but to achieve that goal, you have to cut corners and sacrifice quality. This is not possible in construction. The repercussions are too serious. So, be honest with yourself and give everything enough time in your construction schedule to be completed correctly.

# 04

## Allocate and Execute

Tasks won't get done by themselves, but allocating that work to teams can get confusing in your construction schedule when you have so many subcontractors to keep track of. By color-coding tasks, you can easily distinguish the different teams and work.

You should have already made estimations on the length of work from your teams and have a detailed profile of their skills and experience to assign them appropriately. After allocating your resources, a project management tool like ProjectManager can send alerts when new tasks are assigned and deadlines are due.

Once you have the people assigned to the work, the construction schedule is ready to venture into the real world. Make sure that your resources are balanced. You don't want to over-allocate one team while another is twiddling their thumbs. ProjectManager has workload calendars to help with this process.

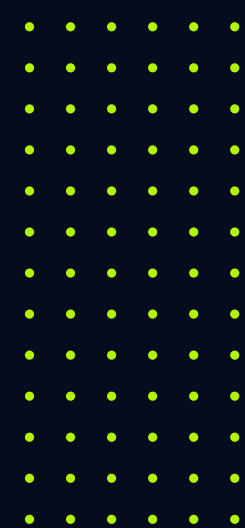
# 05

## Review, Review, Review

Construction scheduling is highly complex and requires permanent monitoring. Things change, and if you're not monitoring and reviewing throughout the project, those changes will send you off track—or worse.

You'll need to look over the construction schedule throughout all phases of the project to make sure your actual progress is in line with your plan. Look at your schedule daily and depending on your time, update frequently. You can use our construction daily report template to keep track of the progress of your construction project.





# Budget



Without the right financing, construction projects will never get off the ground. Creating a construction budget is one of the most important pieces of developing a construction plan.

## What Is a Construction Budget?

A construction budget is an estimate of the money required to take a construction project from initiation to closure, including all associated costs and expenses that are accrued during the building process. While the budget is an attempt to forecast all costs in a construction project, you should leave some wiggle room to account for any emergencies or unexpected building costs.

Construction project managers start with the project plan, most likely a blueprint, in order to assess what materials will be required.

As the project execution begins, other costs begin to appear. There are labor costs and safety requirements for all on-site workers. Transportation can be another cost. Residential and commercial construction projects will also have unique costs.

## Why Is Construction Budgeting Important?

Chances are, you don't have an unlimited fountain of money to work with. Instead, you have stakeholders that have invested in the construction project and want to get a profit—and going into any project without a budget is a sure way to spend too much money. That's why you need a budget baseline that defines how much you can spend. Having a budget and construction project plan go hand-in-hand for any successful project.

A construction budget is also a great way to keep your project on track during execution. The more unaccounted expenses in a project, the longer it's going to take to finish. Making a budget lets you take account of as many construction costs as possible and helps you stay on schedule.

# What's Included in a Construction Budget?

First, it's important to understand construction project costs, which fall into three basic categories:

- ✓ **Direct Costs:** This includes heavy equipment, materials and labor.
- ✓ **General Conditions:** These are indirect costs, which fall into three types: preconstruction costs, construction organization costs and project operation costs.
- ✓ **Profit and Overhead:** Profit is the difference between what you earned and spent, while overhead is operating expenses associated with running a business.

In terms of what to include in your construction project budget, that depends on the project you're working on.

In general, a construction budget should include the following:

- ✓ **Property:** This cost is dependent on where you are building and the scope of your project. This includes the lot price, real estate fees, financing and taxes.
- ✓ **Professional Fees and Services:** These costs relate to professional consulting, including permitting, surveying, testing, architectural and design, master planning, structural, electrical, mechanical and civil engineering, accounting, banking and real estate fees.
- ✓ **Materials:** Unlike other costs, materials expenses can be negotiable, especially if you have a relationship with your suppliers. Material costs tend to be a large portion of your construction budget and are usually broken down into two categories: site preparation and building structure.
- ✓ **Labor:** This is the cost of your tradespeople, subcontractors, equipment operators and other human resources. Keep in mind not only hourly wages but also workers' compensation, vacation and sick time.
- ✓ **Equipment and Tools:** The material and labor costs will inform the selection of equipment and tools, which helps you determine what you'll need to rent for the job. Remember to include delivery, operating, fuel and maintenance costs.

- ✓ **Project Management:** Project management methodologies help organize and monitor a budget to avoid overspending.
- ✓ **Insurance and Bonds:** All construction projects are legally required to carry insurance.
- ✓ **Utilities and Taxes:** This includes gas, water, sewer and electric costs associated with the building site.
- ✓ **Contingency:** Here is where you provide breathing room for your budget to absorb unforeseen costs and unexpected expenses. Some things that fall under this include changes in scope, design or material upgrades, machinery malfunctions, accidents and acts of God.



# Hard Costs vs. Soft Costs in Construction

## What Are Hard Costs in Construction?

Hard costs are costs that are directly related to your construction project. Some refer to these as brick-and-mortar costs, because these costs include the structure, construction site and landscape.

When it comes to budgeting, hard costs are easier to estimate. They're tangible and revolve around labor and materials. While labor and **materials** are not set in stone, those prices are less likely to drastically change. If they do, there are usually red flags that indicate their volatility, and you can address that in the budget.

## Examples of Hard Construction Costs

Hard costs are building materials associated with the actual building of your construction project. These can include:

- ✓ **Any Material for the Construction Project:** This includes wood, steel, glue, siding, roofing, nails, screws and so on. They can also be labor costs for your team and the contractors you hired on the construction site.
- ✓ **The Building Site:** This includes utilities, cement, life safety systems, equipment, paving, grading and heating, ventilation and air conditioning (HVAC) systems.
- ✓ **Landscaping Costs:** This includes the price of planting trees and grass, adding mulch to the site, flowers, bushes, etc. Site improvements are also included, such as walkways, gazebos, permanent or fixed benches and other outdoor furnishings.
- ✓ **The Interior:** These hard costs include wallpaper, paint, trim, flooring, etc. Life safety systems fall under this umbrella, too, such as fire alarm and sprinkler systems, fire escapes and other related systems.
- ✓ **LEED Certification for Commercial Real Estate Projects:** As sustainable buildings become more in demand, you may need to acquire a LEED certification. There are governmental incentives, such as loans, grants, tax, credits and fee waivers for adhering to green building practices.

## What Are Soft Costs in Construction?

Soft costs are costs that are indirectly related to materials, labor or the physical building of the project. As you can imagine, these intangible costs will prove far more difficult for you to estimate as you build a budget for your project.

Soft costs can persist long after the project has been completed. Some of them will be ongoing and regular costs related to maintenance and maintenance insurance. They can occur anytime in the life cycle of a project. It doesn't mean these soft costs are impossible to estimate and track—but they are definitely moving targets. A construction estimate template can help.

When forecasting a budget, it's important that you are thorough and think through everything from pre- to post-construction. It can be easy to miss soft costs but expect them to be 25 to 75 percent of the total construction budget.

## The Importance of Identifying Hard Costs vs. Soft Costs

The terms hard costs and soft costs are used to help project managers estimate the budgets for their construction project management builds. They differentiate costs associated with the project, and the proportion of hard costs vs soft costs can vary wildly from one construction project to the next.

Once you have accurate accounting for your construction project budget in place, you'll need to track those expenses as you move through the project life cycle.

# | How to Create a Construction Budget

To create a construction budget that's an accurate forecast of how much the work ahead will cost, construction project managers follow these three steps.

## Project Research and Analysis

Review historical data for similar construction projects, speak to suppliers and understand the project you're about to start. Set realistic expectations by looking at resources, design options, etc.

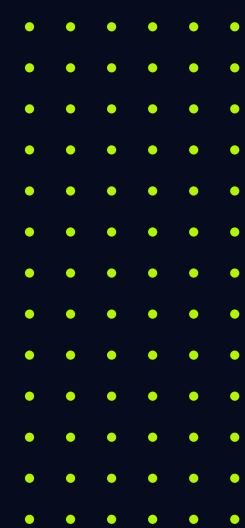
## Project Development

Research leads to the project owner or architect choosing a final design. The project manager uses this information to create a requirements list, which includes materials and estimations of costs.

## Pre-Construction and Documentation

Now the project manager should speak to the stakeholders. This highlights potential issues that can be resolved before executing the project. By documenting the **pre-construction phase**, the project manager has a paper trail to show where unexpected costs can come up.





# Quality Control



# Quality Control

Managing construction projects is complex and stressful. But if your project doesn't meet quality acceptance criteria, then you're not just going to upset your stakeholders; you might face lawsuits.

## What Is Construction Quality Control?

Construction quality control is a management system aimed at ensuring the final deliverable meets the standards and guidelines set by the client. That includes completing the project within the scope of work and avoiding disputes throughout the life cycle of the project. Quality is defined by the client, regulatory agencies and environmental and policy guidelines. All these quality assurance requirements and procedures are documented in a construction quality management plan.

There are two aspects of quality in construction: quality assurance (QA) and quality control (QC). Quality assurance sets the quality management expectations and how quality will be achieved. Quality control is the plan to achieve it. The construction quality control manager drives this quality management plan throughout all phases of the project.



# Why Construction Quality Matters

Construction quality control is important because it improves client satisfaction. A happy client is one who will work with you again, and even give recommendations to others.

More practically, doing quality work means less rework. Not needing to redo work that should have been done right the first time reduces costs. Most important is that construction quality control leads to a successful project. Everything done in construction project management rests on the quality of your work. Focusing on quality means fewer problems and changes, while also saving time and money.

## Quality Control Procedures in the Construction Industry

When working on construction quality control, there need to be quality control procedures to bring clarity to the work. To do this, follow these five steps:

- ✓ **Define What Done Means:** This includes completing the project with no defects, satisfying code requirements and conforming to client's specifications.
- ✓ **Have an Inspection Plan:** Conduct a thorough inspection to see if completed work meets your quality acceptance criteria. Create an inspection plan to decide what is inspected and let the team know when it's inspected.
- ✓ **Create Quality Control Checklist:** Prepare a quality control checklist to make the process of inspection thorough and less likely to overlook items. Be specific. The checklist should be shared with the crew for pre-task conversations on how to execute the work.
- ✓ **Correct Work:** When a task doesn't meet the standards of the quality management inspection, the work needs to be corrected. Mark the work that needs fixing (photograph it, if necessary), correct the problem and document the correction to verify that it now meets your quality standards.
- ✓ **Review and Revise:** When you discover a deficiency and fix it, the work isn't over yet. Review why it happened and discuss with your crew how to avoid repeating the problem. Whatever the conclusion, it should be shared with the whole construction crew to make sure the issue doesn't show up elsewhere.

A black and white photograph showing a close-up of a person's hand holding a black pen, pointing at a bar chart on a document. The background is blurred, showing a person in a suit. A vertical yellow bar is positioned to the left of the chart.

# Reporting Needs



# Reporting Needs

Documentation is required in any project, but even more so when it comes to construction project management. Construction projects demand regular, detailed reporting during execution, so you can review and analyze your progress. This data is delivered in the form of a construction daily report.

This daily construction log is usually handled by the site manager and will be repeatedly created and delivered over the course of a project. It's an important aspect of construction project management, so you'll want to make sure you're doing it correctly!

## What Is a Construction Daily Report?

A construction daily report is a list of everything that happened on the job site of your construction project over the course of a workday, including tasks that have started and their statuses by day's end. A daily report also details the materials and equipment on-site and the remaining inventory.

This construction report must collect pertinent information about the job site—from the weather conditions to a list of visitors that day at the site. It's therefore a complete record of the day's work that provides a log of everything that has transpired.

## Why Submit a Construction Daily Report?

The construction daily report is essential to getting work started quickly and accurately for the next day. It lets subcontractors know where their tasks left off and if they have the equipment and supplies necessary to continue the next day. This is critical for keeping your construction project on schedule.

Additionally, a construction daily log protects workers and managers on the site. If there's a delay, for example, that is captured in the report and explained. That paper trail prevents blame from falling on an undeserving party. This is important if there are any legal issues, as you have a record to support your defense.

## Why Are Construction Reports Important?

Keeping a record of events offers insight into what is going on in the project, and thereby allows you to tweak resources to get things done more effectively. Construction sites are complex, with lots of activities taking place at once. Reporting keeps everyone aware of what's going on, so workers and subcontractors can do their jobs better, without getting in the way of others.

The daily report also communicates the status of the project, so it updates all those with a vested interest in the construction and keeps them informed.



# | How to Create a Construction Daily Report

Creating a construction daily log can seem intimidating. There is so much to cover, and you don't want to overlook anything that might be crucial to proper documentation. But daily reports have been a normal staple of construction sites for almost as long as there have been construction sites, so there's a roadmap you can follow.



## Use a Template

Since the report is daily, it's good to have a template with all the information you need to capture already built-in. This way all the vital data is already laid out and you just have to fill in the details. We offer a **construction daily report** that you can download and customize as needed.



## Identify the Person Responsible

The first thing you'll want to do is identify the person on your team who is responsible for making the daily report and filling it in each day. This is usually a foreman or the site manager.



## Include Everything

Print a copy of the template to save time and make the task of filling it in easier. If you're creating your own, it's basically a list of items. Make sure you include considerations such as the weather that day, what work was done, the crew on-site, how long they worked and if there were any visitors. These people should be identified by name and title. Also, list the equipment on-site and if it's in use, idle or out of order. Write down how many hours the equipment was in use if it was used.

## Best Practices When Keeping a Construction Daily Log

As useful as a construction daily report is, creating one is not without its challenges. The first thing is to be consistent. Don't do a daily report every other day: it loses its purpose. These daily reports are named for a reason and need to be filled out at the end of every workday.

Keep good records because taking the time and effort to fill out a daily report is wasted if you can't find it when you need it. Make it part of the process to file away the work.





# Managing a Team



# | Managing a Team

All construction projects require a project owner, construction project manager and general contractor.

## Elements of a Construction Project Management Team

### Project Owner

The project owner commissions the project and directly or indirectly finances it. The owner also supervises the project from a high-level view and makes important decisions such as defining the bidding process, selecting the contractor and choosing the project delivery method.



## Construction Project Manager

Construction project management is run by a construction project manager. This person plans, coordinates, budgets and supervises the construction project.

The construction project manager is responsible for the following tasks:

- ✓ Estimating and negotiating project costs
- ✓ Formulating the construction budget
- ✓ Managing the construction scheduling and work timetables
- ✓ Managing work orders
- ✓ Determining which project management methods and strategies are appropriate for the project
- ✓ Communicating with the project owner and stakeholders, re. budget, progress, etc.
- ✓ Leading or interfacing with job site workers, teams and other construction professions on technical and contract details
- ✓ Working with building, construction and regulatory specialists

The construction project manager is usually a Project Management Professional (PMP) certified by the Project Management Institute (PMI). The Project Management Body of Knowledge explains the different roles and responsibilities of a project manager in depth.

## General Contractor

A general contractor oversees the daily operations of the job site and provides the equipment, materials and labor required for the execution phase of the construction project. General contractors usually hire subcontractors to execute specific tasks.

# Managing Subcontractors

Construction projects are complex in nature. They demand extensive planning, manual labor, and they call for various specializations. Realistically, no individual on the team has all of these specialized skills and, even if they did, it would be impossible to do it all themselves. This makes construction subcontractors a necessity for most modern construction projects.

## What Is a Subcontractor?

A subcontractor is a free agent employed on a job-by-job basis when their skills are needed. Usually, these skills are specialized, rather than generalized.

Subcontractors are oftentimes self-employed and choose the jobs they wish to take, which can make it difficult to find work when they don't already have a large network of clients. Even then, if these clients don't have projects to complete, there is no demand for a subcontractor's skills. One solution to this problem is finding contractors to work for, rather than independent clients.

## Subcontractor vs. Contractor: What's the Difference?

To fully understand the relationship between contractors and subcontractors, we must define what a contractor is. Contractors are people or organizations hired by owners to "build" a project, or at least some part of it. More often than not, contractors are used for construction projects where they are responsible for physically building something.

Subcontractors are then hired by contractors to work on a project when the contractor doesn't have the time or expertise to do the tasks themselves. Subcontractors are hired and paid by the contractor.

The ideal relationship between contractors and subcontractors is a symbiotic one. Contractors need subcontractors for their skills and hard work, and subcontractors need a contractor's large network of clients.



# The Construction Project Management Process



# The Construction Project Management Process

Construction project management requires a broad variety of skills, along with the ability to interface with a diverse range of agencies and people in order to lead the project from concept to build. It's important that construction project managers follow the principles of project management during every phase of the project life cycle.

## Project Initiation

First comes the due diligence to determine if the project is even feasible. You want to go through a feasibility study or what is often called a business case, in which you look at the goals, cost estimates and timeline to see if you have the resources to reach a successful project end within those constraints. You also want to define the reasoning behind the project and make sure it's sound. If so, then you create your project charter to help initiate the project.

## Project Planning

You have approval, now how are you going to achieve success? Outline the tasks within the timeline, noting project milestones, and the resources needed to do those tasks within the budget allotted. Be transparent in your **project plan**, so everyone is on the same page and understands what needs to be done over the life cycle of the project. That includes detailing the cost, scope, duration, quality and communications used in the project.

The planning phase is probably the most important project management phase because you'll create the documents that will guide the project execution. Here are some of them:

- ✓ Work breakdown structure
- ✓ Risk management plan
- ✓ Project schedule
- ✓ Scope management plan
- ✓ Cost management plan and project budget

The project schedule is a big part of the planning phase in construction project management. Once you've completed the work breakdown structure, you'll add your tasks to the left-hand side of the construction schedule template. You can add subtasks, add resources and costs, deadlines and more.

On the timeline side of the Gantt chart, you can link dependent tasks, set milestones and a baseline to capture the project plan to compare to your actual progress when the project is being executed. There are a lot more features to play with on the Gantt chart that will help you plan and control your project.

Once you have a construction plan that includes all the information you need to manage costs, scope, risks, time and other aspects of your project, it's time to execute.

## Project Execution

At this stage, you're executing the project and taking the project plan and implementing it while factoring in the changes and work management issues that can arise during such a process. Whatever deliverables you promised must come through in the timeframe you noted.

## Project Monitoring and Control

You'll want to have a way to note the progress, which is why you need to set up key performance indicators for cost control, **time tracking** and quality assurance. If you can stay on top of these figures, it's less likely you'll manage a failing project. Stay flexible and communicative throughout so you can adapt quickly to change.



# The 4 Stages of Construction Project Management

Just like in any project, you accomplish overall project success by breaking it down into phases. The following are four steps you can take to organize a successful construction project management project.

## 5

### Design

There are four parts to designing a construction project. It's the project manager's responsibility to make sure your design meets with building codes and other regulations.

- ✓ **The concept:** What are the needs, goals and objectives of the project? You'll be making decisions based on the size of the project, the site allocated for the build and the actual design of what you're building.
- ✓ **The schematic design:** This is a sketch that identifies the various parts, materials, sizes, colors, textures, etc. It includes the floorplan, elevations, etc. and even a site plan.
- ✓ **Develop the design:** This requires research. What are the materials to use? What equipment will be needed? How much are the materials? What is the material take-off? You'll be refining the original drawings from the previous stage now to reflect these decisions. Knowing local building codes and adhering to them will be important at this stage.
- ✓ **Get the contract documents together:** These are the final blueprints and construction specs. These will be used by outside contractors to bid on the job.

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## Preconstruction

Once the general contractor bids are accepted, but before ground is broken, you'll want to work on these three steps.

- ✓ **Assign a project manager:** If the project manager hasn't already been determined, you'll want to establish it now.
- ✓ **Determine the rest of the personnel:** Find a contract administrator or the person who helps the project manager. A superintendent is also needed to keep everything on schedule in terms of the materials, deliveries and equipment. Finally, you want to have a field engineer, which is more of an entry-level position to deal with paperwork.
- ✓ **Investigate the job site:** Check to see if anything is needed as the job site must be ready for construction. This might include dealing with environmental issues such as the suitability of the soil for construction.

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## Procurement

By this point, you've established your team and you've planned for the construction and materials necessary to complete it. Now you must **purchase those materials and equipment**. Depending on the organization, this might be the responsibility of the general contractor or subcontractors.

This is the stage you'll be working with purchase orders, which are used as an agreement between the buyer and the seller.

# 04

## Construction

Finally, you're ready for the build! But first, set a preconstruction meeting to deal with work hours, the storage of materials, quality control and site access. Then get everyone on the construction site and set up as needed.

The last part of the project is after the construction is complete and the occupants move into or take ownership of the site. You must make sure all their requirements have been met, and usually provide a warranty period to make that arrangement official and binding.



# Risk Management



# Risk Management

Few things are as risky as construction projects. There is heavy equipment, crews working in precarious situations and complicated logistics, safety hazards and risk factors to manage.

## What Is Construction Risk Management?

Construction risk management is the process of evaluating and implementing procedures to reduce the impact of risks in construction projects. This risk management process involves thorough planning to create a risk management plan that allows project managers to identify, monitor and mitigate risks as they arise.

A construction risk management plan is developed in the early stages of the construction planning process. It details what project risks might occur and the risk response to resolve them. This includes designating someone on the crew to own the issue and address it.

## What Are the Types of Risk in Construction Projects?

In general, risk is anything that will delay the project or create further costs. There are many sources for risk on a construction site. To create a better risk management plan, it's essential to know what risks there are, and where they will occur:

- ✓ **Safety Risk:** Your crew is your most valuable resource. They are subject to safety hazards as many of the tasks assigned to them can be dangerous.
- ✓ **Financial Risk:** Any factors that can interrupt your cash flow need to be identified. This can include a cost increase for materials, competition in the market and so on.
- ✓ **Legal Risk:** Managing a construction project involves more than the constraints of time, cost and scope. There are legal constraints, such as regulations, code violations and contract terms disputes with your clients, vendors and subcontractors. Any of these things can send your construction project off track.

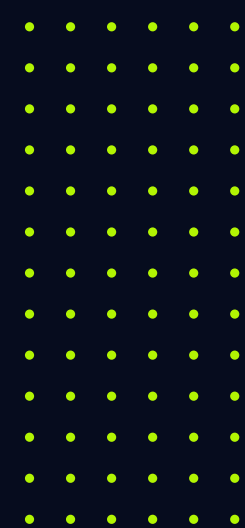
- ✓ **Project Risk:** Project risks are universal project management risks associated with managing any project. These include poor management of the resources, missing deadlines and falling behind schedule.
- ✓ **Environmental Risk:** AKA an “act of God,” such as floods, earthquakes and other kinds of natural disasters.

## The Risk Management Process

The process of mitigating risk for a construction project is no different than any other project. Here are the five steps of the risk management process:

- ✓ **Identification:** First, make a list of every possible issue that could arise. Do the research, talk to your crew and explore historical data from past construction projects that are similar to yours.
- ✓ **Assessment:** Not all risks are equal. One way to assess your list of risks is to use a risk assessment matrix, which charts the likelihood of each risk and the size of the impact it can have on your project.
- ✓ **Mitigation:** This is where you implement a contingency plan that will reduce the likelihood and impact of the risks you identified earlier. The top priority is those you defined as highly likely and having the greatest impact.
- ✓ **Monitoring:** This step is always ongoing, as you attempt to identify these risks when they show up. That includes monitoring the effectiveness of your mitigation plan. Also, stakeholders should be consulted and kept updated on these project risks.
- ✓ **Reporting:** Your construction risk management plan should be analyzed and shared with the crew and stakeholders. These reports on risk mitigation allow you to evaluate the effectiveness of the contingency plan. While this can be done with an Excel spreadsheet, using project management software is more efficient.





# Construction Project Management Tools



# Construction Project Management Tools

Just as you need the right tools to build a structure, you need the right tools to manage that construction. ProjectManager provides construction project scheduling, construction project planning, construction vendor management, cost management in construction projects and other features that allow you to work more efficiently and productively.

When you work with an interactive online construction management software like ProjectManager, project management becomes that much easier. You create a platform on which teams can collaborate and assigning them tasks and tracking progress becomes that simpler. You need a construction management solution that has the following features:

- ✓ Cloud-based
- ✓ Gantt charts
- ✓ Team scheduling
- ✓ Dashboards
- ✓ Resource allocation & management
- ✓ Task lists
- ✓ Timesheets
- ✓ Online file storage
- ✓ Email alerts
- ✓ Mobile app

## Gantt Charts

ProjectManager has an online Gantt chart maker, which provides a visual timeline for your construction project. It also makes editing construction project schedules super easy. You simply drag and drop a task bar to change the task's deadline, and you can also see the actual progress in real time as the task bar is shaded each time the status is updated.

Look for a Gantt chart with task dependencies, so you can connect dependent tasks like steel delivery with the build phase automatically. That way, everyone knows the status of the different phases and aspects of the project. Gantt charts also allow you to find the critical path, which is essential for keeping your project on schedule.

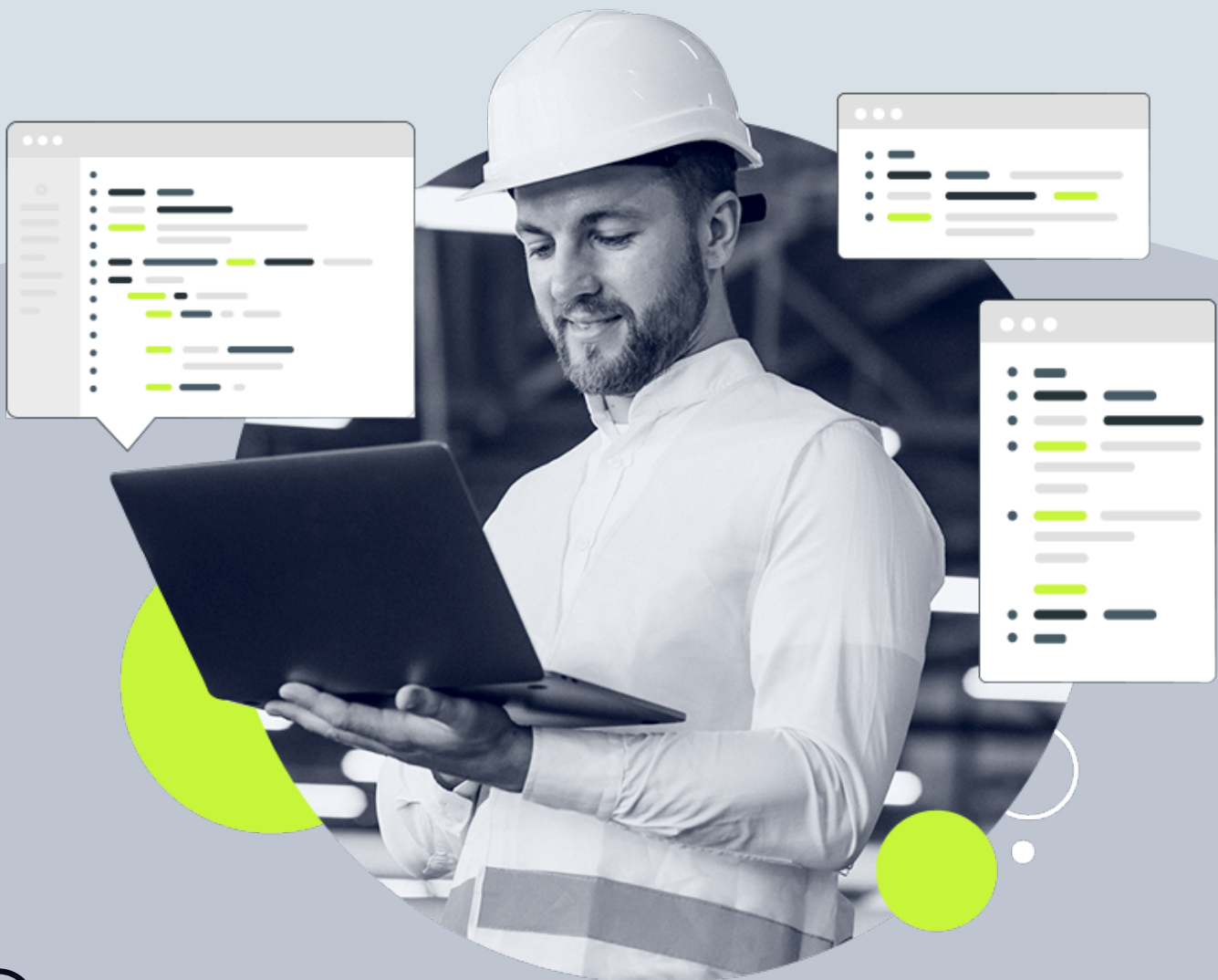
## Resource Management

Team scheduling and **resource management** are other essential features you'll want, to help you chart the availability, skill set, cost and allocation of your workforce and your construction materials in real time.

You can also monitor their workload and create calendars to help you manage team members' hours, knowing when they're going to be out, so you can plan. It also helps with tracking other resources and their costs, such as construction equipment rentals to keep your projects on budget.

## Timesheets

Another way to manage your team's hours is through timesheets. No matter where your team is located, either onsite or in the office, they can update their timesheets fast. They submit in seconds, and managers can easily review and approve all with a keystroke. And you can notify them that timesheets are due with automated emails.





# The Best Construction Management Software



# The Best Construction Management Software

Construction project management software organizes the planning, scheduling, building, resources and reporting associated with construction projects. It streamlines the process and improves productivity—all while keeping to a tight schedule and budget.

## Desktop vs. Online Construction Management Software

Once you've made the decision to manage your construction project with a software tool, you next have to decide what kind. Before you think about features, there's the question of whether a desktop or online version is best for you and your company's needs.

There are certainly advantages of a desktop application compared to online cloud-based software, which boils down to two main considerations: speed and security. Desktop applications are not tied to the speed of your internet connection, and the lack of connection to the internet also imbues a certain level of security.

Connectivity is also a pro for online construction project management software, however. Cloud-based software can work in the field as well as in the office.





# Construction Project Management with ProjectManager





## Build Your Construction Project Plans on Gantt Charts

**Gantt charts** organize your tasks and display them on a visual timeline so you can see the entire construction project in one place. This helps you estimate duration, schedule resources and link dependent tasks that might otherwise create bottlenecks later in the project. Gantt charts are great for task management, time management and construction scheduling.



## Manage Your Work & Your Teams

Using construction management software with multiple project views gives you more flexibility to use the right tool for the job. Task lists are great to organize your own work in daily to-do lists, or for teams that need a punch list for walkthroughs on the job site. Task lists, Gantt charts and calendar views are great task management and time tracking tools for construction project managers, general contractors and subcontractors.



## Keep Track of Your Team, Gear & Costs

Having a resource calendar to keep track of your labor costs, equipment and manage your team's availability is how you stay on budget. You need to know what hours your crew can work and when they're on holiday or PTO. Construction management software helps you manage workload, rates and overages for accurate cost estimation.



## Stay on Schedule & Avoid Slippage

Monitoring your project execution phase is essential to the project performing as planned. **Dashboards** give you a high-level view, collecting data and calculating that information into graphs and charts that show a number of project metrics to keep you on track.



## Get Details & Keep Stakeholders Informed

Reporting features go further than the dashboard, focusing on project variance, tasks, cost and more. You want a reporting tool that can filter your information to show what you want to see and also target it for stakeholders.



## Log Hours On the Job Site

Know the hours your on-site crew and subcontractors are working. Let them log their hours whenever and wherever they are. A timesheet feature gives you transparency and your team flexibility. Make sure the timesheets are easy to import, review and secure when approved. File storage and file sharing capabilities allow you to quickly access your timesheets and other documents like purchase orders and contractor invoices.

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