

# THE GUIDE TO CHATGPT FOR DESIGN AND CONSTRUCTION: A PREVIEW



---

June 2023

ConstructionIndustryAI.com

©2023 WPL Publishing Co., Inc.

**This “Preview” contains excerpts from *The Guide to ChatGPT for Design and Construction*, a 75-page, in-depth report containing details and examples of using ChatGPT for the A/E/C community. The complete report is available for purchase at [ConstructionIndustryAI.com](https://ConstructionIndustryAI.com) or free with a subscription to [AI Construction News](#). The Table of Contents for the full guide appears at the end of this Preview Report.**

## **Abstract**

The construction sector grapples with communication, collaboration and decision-making intricacies among its numerous stakeholders. This guide investigates ChatGPT, a state-of-the-art AI language model and its potential to transform stakeholder interactions, decision-making and overall construction management. Beyond its integration into messaging platforms and specific construction management apps by tech firms, this guide decodes the mechanics of AI language models, demonstrating their practical utility for everyday activities.

This guide presents examples demonstrating these applications and the benefits of ChatGPT. It can be leveraged to improve business development and drafting contracts; generating estimates, bill of materials and purchase orders; producing cost-loaded schedule data to import to CPM scheduling software; and facilitating communication among team members. ChatGPT will also write code, such as HTML pages, that, combined with back-end development, can be used for shared data, such as change order logs.

This guide is intended to help you better understand and benefit from this exciting new technology tool.

## Table of Contents

<b>Introduction .....</b>	<b>2</b>
ChatGPT Overview .....	2
ChatGPT in Construction Project Applications .....	3
How to use this Guide .....	3
<b>Personal Productivity and Communication .....</b>	<b>4</b>
Simple Writing Tasks – Draft an Email, Job Description, Outline or Form.....	4
Draft an Email or Letter .....	4
Create an Outline for a Monthly Progress Report.....	5
<b>Project Design and Development.....</b>	<b>7</b>
Project Conception Report .....	7
<b>Bidding and Procurement .....</b>	<b>10</b>
Compare Two Estimates .....	11
<b>Project Management and Contract Administration .....</b>	<b>13</b>
HTML Change Order Log .....	13
Resource-Loaded Critical Path Schedule.....	14
<b>Operations and Training.....</b>	<b>17</b>
How to read a job cost report .....	17
<b>Business Development and Marketing.....</b>	<b>19</b>
Communicating technical expertise .....	20
<b>Summary and Conclusion .....</b>	<b>21</b>
Recap.....	21
Going Beyond Interactive Use of ChatGPT.....	21
Conclusion: ChatGPT’s Future .....	21
Construction AI and <i>AI Construction News</i> .....	22
Full guide Table of Contents.....	23

# Introduction

With an emphasis on applications in the construction industry, this comprehensive guide outlines the practical uses of ChatGPT for beginners and experienced users alike. It isn't meant to propagate the buzz around ChatGPT. Instead, the goal is to share with you the concrete benefits it offers along with its limitations. Broadly speaking, ChatGPT enhances efficiency in tasks involving writing and communication, of particular importance in the document-intensive environment of a construction project, as well as performing analytical tasks.

## ChatGPT Overview

ChatGPT, developed by OpenAI, is an extensive language model based on a vast amount of publicly accessible material from the internet. Unlike traditional search tools, ChatGPT provides a structured response in a conversational manner. It is accessible for free via Bing.com on Microsoft Edge, chat.openai.com on Safari, Chrome, Edge, Firefox, and as an app for iPhones (with an Android version soon to be launched).

Using ChatGPT could not be easier. Simply ask it a question or to perform a task, commonly called a “prompt.” In response, you receive a formatted, concise result rather than a typical list of internet search results mixed with sponsored ads. The range of questions or tasks can span from simple inquiries to more intricate assignments, such as write an email, create an RFI form, request a change order or draft a contract.

Communicating with ChatGPT is remarkably user-friendly, tolerating typos, misspellings and accommodating multiple languages. The AI also accepts various types of natural language inputs, including text, speech, images (via OCR technology), symbols, and commands.

### To start a chat

#### **In any browser:**

Go to  
[chat.openai.com](https://chat.openai.com)

Then sign-up for an  
account.

#### **In Microsoft Edge:**

Go to [Bing.com](https://bing.com)

## ChatGPT in Construction Project Applications

The construction industry is rampant with documentation and communication needs. ChatGPT comes in handy for writing documents, forming lists, creating forms and facilitating team communications. For this guide, we categorize its utility into six broad sectors with an example for each category<sup>1</sup>:

1. Personal Productivity and Communications
2. Project Design and Development
3. Bidding and Procurement
4. Project/Construction Management & Contract Administration
5. Business Development and Marketing
6. Operations and Training

### How to Use This Guide

The methodology of this guide is to briefly describe usage and benefits of each of the six categories followed by actual examples. Ranging from simple to complex, these examples are designed to provide insight into the types of output ChatGPT can produce, including outlines, documents, forms, tables and computer code. By extension, we hope these examples will give you ideas how you may personally benefit from using ChatGPT, as well as improve the success of your projects.

---

<sup>1</sup> The Preview edition of the guide is limited to 1 or 2 examples. The full guide is has multiple examples for each category.



# Personal Productivity and Communication

## Simple Writing Tasks – Draft an Email, Job Description, Outline or Form

Serving as a virtual assistant, ChatGPT can be immediately employed by first-time users to streamline and improve the writing process. The AI model is capable of generating coherent, grammatically correct sentences and can help brainstorm ideas, draft and edit content, and proofread for errors. It can also suggest more effective ways to phrase thoughts, making your writing more engaging and clearer; in other words, ChatGPT can help you articulate your ideas more effectively and with greater efficiency. ChatGPT can even format information into lists, tables or outlines. Additionally, ChatGPT can assist with language translation and learning.

### Draft an Email or Letter

The first example has ChatGPT drafting a letter to notify an owner about a changed condition on a jobsite. Note, if a previous prompt already had contact information for the parties on project B10034, it would have been inserted in the letter. Also note that in this letter, ChatGPT took the liberty to make up some facts about site boundaries and maintenance convenience. This is a good example why its output needs to be carefully scrutinized, but it did refer to the contract document requirements about giving notice, advising of the possible effect on project cost and schedule.


	Draft a letter to the project owner notifying of a pending change order to move the outdoor HVAC unit. Reference project B10034.
	<p>[Your Name] [Your Title/Position] [Your Company Name] [Your Company Address] [City, State, Zip Code] [Date]</p> <p>[Project Owner's Name] [Project Owner's Company Name] [Project Owner's Company Address] [City, State, Zip Code]</p>

	<p>Subject: Notification of Pending Change Order - Project B10034 - Relocation of Outdoor HVAC Unit</p> <p>Dear [Project Owner's Name],</p> <p>I am writing to inform you of a pending change order regarding the relocation of the outdoor HVAC unit for Project B10034.</p> <p>The specific issues that prompted this change order are as follows:</p> <ol style="list-style-type: none"> <li>1. The original location for the outdoor HVAC unit is in close proximity to property boundaries and does not meet the minimum required setback distances as specified by local zoning ordinances.</li> <li>2. The initial location also presents challenges for future maintenance and accessibility of the unit, potentially leading to increased long-term operational costs.</li> </ol> <p>To address these concerns and mitigate any potential complications, our team proposes to relocate the outdoor HVAC unit to a new location on the project site. We have identified a suitable area that meets all regulatory requirements and allows for improved accessibility for maintenance purposes.</p> <p>In accordance with our contract, we will submit a formal change order request outlining the necessary modifications to the project scope, schedule, and cost. We understand the importance of maintaining the project's timeline and budget and are committed to working closely with you to minimize any potential disruptions.</p> <p>Please expect to receive the detailed change order request within the next week. Once received, we kindly request your prompt review and approval to enable our team to proceed with the revised project plans as soon as possible.</p> <p>We apologize for any inconvenience this may cause and appreciate your understanding and cooperation in this matter. Should you have any questions or require further clarification, please do not hesitate to contact me directly at [your phone number] or [your email address].</p> <p>Thank you for your attention to this matter, and we look forward to your prompt response.</p> <p>Sincerely,</p> <p>[Your Name] [Your Title/Position] [Your Company Name]</p>
--	--

This particular example happens to be a bit wordy. Emails will also be shorter as they will not contain all the contact information at the top.

## Create an Outline for a Monthly Progress Report

Let's say you're performing contract administration functions and want to prepare a monthly progress report and need an outline to work from. You can give ChatGPT some parameters, like the number of sections needed for the report.

WP	Prepare a 10-part outline for a monthly progress report.
	I. Executive Summary
	<ul style="list-style-type: none"> <li>• A brief overview of the progress made during the month.</li> </ul>
	II. Objectives
	<ul style="list-style-type: none"> <li>• A review of the established goals for the month and the project as a whole.</li> </ul>
	III. Accomplishments
	<ul style="list-style-type: none"> <li>• Details of what has been achieved during the month, including completed tasks and milestones reached.</li> </ul>
	IV. Key Performance Indicators (KPIs)
	<ul style="list-style-type: none"> <li>• Measurement of progress towards objectives using pre-determined KPIs.</li> </ul>
	V. Current Work In Progress
	<ul style="list-style-type: none"> <li>• Description of ongoing tasks and their current status.</li> </ul>
	VI. Challenges & Issues
	<ul style="list-style-type: none"> <li>• Discussion of any difficulties encountered, setbacks, or issues that arose during the month.</li> </ul>
	VII. Problem Solving and Actions Taken
	<ul style="list-style-type: none"> <li>• Description of how challenges were addressed, including any corrective actions taken.</li> </ul>
	VIII. Resource Utilization
	<ul style="list-style-type: none"> <li>• Analysis of resources used, including manpower, materials, and finances.</li> </ul>
	IX. Projections for Next Month
	<ul style="list-style-type: none"> <li>• An outline of plans for the upcoming month, including goals and tasks to be undertaken.</li> </ul>
	X. Conclusion and Recommendations
	<ul style="list-style-type: none"> <li>• A summary of the overall progress and any recommendations for improvement or changes moving forward.</li> </ul>



# Project Design and Development

During the design and development stage of a new construction project, ChatGPT may offer insights, generate ideas and enhance collaboration. ChatGPT can help write project descriptions, solicit letters of interest to architects/engineers, contractors and design/builders, develop contracts and special conditions, and help compose RFPs and Invitation to Bids.

Table 1 lists typical activities that may occur during the design-development stage of a project that might benefit from using ChatGPT. Some of the items listed provided by ChatGPT itself may not really be viable, but we included them to illustrate some of ChatGPT's shortcomings.

Preliminary Design Report	Conceptual Design Drawings	Project Scope Document	Site Analysis and Feasibility Study	Architectural Design Guidelines
Design Development Drawings	Preliminary Construction Cost Estimates	Preliminary Construction Schedule	Value Engineering Analysis	Design Review Meeting Minutes
Design Change Request Form	Environmental Impact Assessment	Testing and Commissioning Plan	Design Risk Assessment	Produce Contract Documents
Regulatory Compliance	Research Building Codes & Zoning Regulations	Zoning Analysis	Permit Applications	Permit Tracking
Project Charter	Budget	Communications Plan		


**Table 1 - Design-Development Activities**

For our example for this report, we had ChatGPT prepare a project conception report.

## Project Conception Report

Any owner planning a project of any size needs to begin somewhere. It is easy to say, for example, I want to build a 2-car garage and start calling around for a contractor. Sometimes this works. Using the 2-car garage as an example, let's see what ChatGPT will say for Harry

homeowner who decides he wants to add a garage but doesn't know where to begin, what it will cost and if it's going to be worth the effort.

WP	Please prepare a project conception report to build a two-car attached garage.
	<p><b>Project Conception Report: Two-Car Attached Garage Construction</b></p> <p><b>I. Executive Summary</b></p> <p>This report outlines the concept for the construction of a two-car attached garage. The envisioned garage will be designed to accommodate two standard-sized vehicles with additional storage space. This project aims to increase the property's value, provide additional storage space, and protect the vehicles from external weather conditions.</p> <p><b>II. Project Description</b></p> <p>The project involves the construction of a two-car attached garage, directly connected to the existing house. The garage will be approximately 24x24 feet in dimension, allowing ample space for two vehicles and extra room for storage. It will include an automatic garage door, a pedestrian side door, windows for natural light, and electrical installations for lighting and outlets.</p> <p><b>III. Project Justification</b></p> <p>The construction of a two-car attached garage comes with multiple benefits:</p> <ol style="list-style-type: none"> <li>1. <b>Improved Home Value:</b> An attached garage can substantially increase the home's resale value, making it a worthy investment.</li> <li>2. <b>Vehicle Protection:</b> A garage will protect the vehicles from harsh weather conditions, potentially extending their lifespan and maintaining their value.</li> <li>3. <b>Increased Storage:</b> Aside from parking, the garage will provide additional storage for tools, bicycles, and other household items.</li> <li>4. <b>Convenience:</b> An attached garage provides direct access to the home, increasing convenience, particularly in bad weather conditions.</li> </ol> <p><b>IV. Project Scope</b></p> <p>The project scope will include:</p> <ol style="list-style-type: none"> <li>1. Architectural design and planning</li> <li>2. Securing necessary permits and approvals</li> <li>3. Site preparation and foundation laying</li> <li>4. Construction of the garage structure</li> <li>5. Installation of garage door and side door</li> <li>6. Installation of electrical system</li> <li>7. Installation of windows and ventilation system</li> <li>8. Interior and exterior finishing</li> <li>9. Clean up and final inspection</li> </ol> <p><b>V. Estimated Timeline</b></p>

	<p>The estimated timeline for the project from design to completion is approximately 4-6 months. This duration includes securing permits, construction, and the completion of finishing work.</p> <p><b>VI. Estimated Budget</b></p> <p>The average cost for a basic two-car attached garage can range from \$35,000 to \$45,000, which includes costs of labor, materials, permits, and the garage door system. This estimate is subject to change based on the design preferences, materials chosen, and any unforeseen challenges encountered during construction.</p> <p><b>VII. Risk Assessment</b></p> <p>Potential risks include delays in permit approval, bad weather conditions, possible increase in material prices, and unforeseen site conditions that could increase project costs or extend the timeline. A contingency plan and budget will be established to mitigate these risks.</p> <p><b>VIII. Conclusion</b></p> <p>The construction of a two-car attached garage is a valuable addition to the property. It will provide more storage, protect vehicles, and increase the property's resale value. With a carefully planned design, budget, and timeline, this project will enhance the functionality and aesthetics of the property.</p> <p><b>IX. Next Steps</b></p> <ol style="list-style-type: none"> <li>1. Finalize project design and specifications.</li> <li>2. Secure financing for the project.</li> <li>3. Apply for necessary permits.</li> <li>4. Hire a reputable construction company.</li> <li>5. Begin construction as per the timeline.</li> </ol> <p>This report is an initial conceptualization of the project. Detailed planning, design, and cost estimation will follow after securing financing and permits.</p>
--	---

# Bidding and Procurement

Bidding and procurement, traditionally time-consuming and complex processes, can greatly benefit from automation. When it comes to analyzing project specifications, contracts and pricing data, ChatGPT can read and understand these text-based documents due to its language understanding capabilities. It can summarize long, complex construction project specifications, highlighting key aspects such as material requirements, design parameters or unique project challenges. ChatGPT can also analyze past contracts and pricing data, recognizing patterns and trends to provide more precise and competitive bid estimates.

Table 2 contains a summary of some of the Bidding and Procurement activities where ChatGPT can help. As noted in the previous section, the actual use/benefit case for some of the topics may or may not be viable. These topics will be discussed further in more detail in future reports or newsletters.

Write RFQs, RFPs and RFBs*	Reviews of RFQ, RFP and RFB Responses	Bidder Evaluation Form	Cost Estimates	Market Analysis Reports
Purchase Orders	Delivery Schedules	Invoice Processing	Supplier Evaluations	Inventory Management
Vendor Communications	Negotiation Strategies	Bid/Tender Documentation	Compare Bids	Recommend Vendor Selection Advice
Procurement Policy Reviews	Procurement/Bidding Audit Report	Price Forecasting	Project Specifications	Vendor Contracts
Regulatory Compliance Checks	Risk Assessment Reports	Contract Reviews		
* RFP – Request for Proposal, RFP – Request for Quote, RFB – Request for Bid (Tender).				

**Table 2 - Bidding and Procurement Activities**


For this section, we asked ChatGPT to compare two estimates for some residential renovation work.

## Compare 2 Estimates

In a previous chat, not shown, estimates from two contractors were fed into ChatGPT. Note how ChatGPT neatly formatted the response and created a comparison table complete with borders.

WP

Can you make a comparison table type report and summarize the differences as well as your recommendation



**Sure, here is a comparison table and summary of the differences, followed by a recommendation.**


	Estimate 1	Estimate 2
<b>Total Cost</b>	\$20,600	\$23,315
<b>Duration</b>	3 weeks	16 days
<b>Start Date</b>	Not specified	12/22
<b>End Date</b>	Not specified	1/7/23
<b>Materials Included</b>	Except new countertop or plumbing fixtures for kitchen	Except countertop, kitchen faucet, disposer
<b>Work Scope</b>	Interior wall painting (excluding closets), master ceiling painting, baseboards replacement, wall and closet construction, guest bathroom renovation, kitchen plumbing and electrical reattachments, garage closet construction	Interior and garage painting, door painting, baseboard and casing installation, master bedroom and guest bathroom renovation, demolition of unwanted decor, wall and door unit construction, kitchen island rebuild and granite installation, alteration of outlets and switches, plumbing rebuild, faucet installation, ceiling work in Den, cleaning upon completion
<b>Payment Structure</b>	Payment as work progresses	Not specified
<b>Additional Notes</b>	Contractor will personally work on site every day	Includes maintaining a clean and organized job site

**Summary of Differences:**

- **Cost:** Estimate 1 is cheaper by \$2,715 compared to Estimate 2.
- **Duration:** Estimate 2 offers a quicker completion time by approximately a week.
- **Start and End Dates:** Only Estimate 2 provides specific start and end dates.

	<ul style="list-style-type: none"> <li>• <b>Scope of Work:</b> Estimate 2 appears to offer a more comprehensive scope of work, including cleaning upon completion.</li> <li>• <b>Materials Included:</b> Both estimates exclude certain materials, but Estimate 2 specifies that it includes all other necessary materials.</li> <li>• <b>Payment Structure:</b> Only Estimate 1 specifies a payment structure.</li> </ul> <p><b>Additional Notes:</b> Estimate 1 mentions the contractor's personal involvement in the daily work, while Estimate 2 emphasizes the maintenance of a clean and organized job site.</p>
--	--

# Project Management and Contract Administration



As we referenced in the beginning of this report, ChatGPT can help with various processes, such as comparing bids and suggesting tasks to accomplish certain construction activities. It can even compute the critical path in a CPM schedule! Like the dozens of tasks we perform during the week, the functionality and potential of ChatGPT is limited only by the imagination of the user and his/her ability to coax the information out with properly worded prompts. We have already shown above an example of a process – comparing bids, which also applies significantly once a project has started, since throughout the project there will be ongoing procurement of subcontracts, material, equipment and services. The rest of this section will focus on ChatGPT's use for creating and managing documents, forms and records on a construction project.

## HTML Change Order Log

For this example, we asked ChatGPT to write the code for a Change Order Log that could be posted on the internet. To be clear, having an interactive form on the internet involves more than just writing the code. It needs to be placed on a hosting service with backend management capabilities. But we wanted to see how much functionality we could place in the log. What we produced will work on a local browser. ChatGPT also provided an overview of the steps necessary to place the page on the web.

We wanted our change order log to have the capability to be able to be maintained and updated. That is, we want to be able to add new change orders to the log as well as update the status of past change orders. In this preview guide, we omitted the HTML code but do show the finished page. (Detailed instructions to create the back-end interface will be included in a future edition of *AI Construction News*.

Below is what the functioning webpage looks like. It is somewhat rudimentary, lacks a status code (accidentally omitted from the request) and does not have an edit button to update line items. Several more iterations would be necessary to have all the features desired, but it is pretty impressive that it was able to write the code.

## Change Order Log

Order Number	Date Created	Description	Team Code	Date Closed
006	2023-05-12	Relocate HVAC Unit	Owner	2023-05-25
007	2023-05-13	Add 3-way switch to laundry room and hallway	Contractor	

### Add New Change Order

Order Number:

Date Created:

Description (max 120 characters):

Team Code (max 10 characters):

Date Closed:

Add Change Order


## Resource-Loaded Critical Path Schedule

This is an example of a fairly simplistic schedule with manhours for each activity. More detail could be obtained by specifying that activities are broken out by resource and/or by location, i.e., floors and rooms. Finally, while the prompt did request different relationship types, the prompt should have been more specific and asked that the schedule show which activities could have a start-to-start and/or finish-to-finish relationship. For brevity, we omitted part of the ChatGPT conversation.



WP

Show a detailed task list to build a 2,000 sq. ft., 2-story house (1,000 ft per floor) plus a basement and attached 2-car garage. Include durations and resources for each task and relationships for all activities. relationships can be SS, FS or FF. Format to export to an excel spreadsheet. Please include manhours for the resources.



Task Name	Task Description	Resources Needed	Estimated Manhours	Estimated Duration (Days)	Task Dependency	Task Relationship
Site Analysis	Conducting detailed site analysis and soil testing	Surveyor, Soil Engineer	30	7	None	None
Site Preparation	Clearing, excavation, and leveling	Excavation Crew	80	10	Permits & Regulations	FS
Foundation	Pouring of basement and foundation	Foundation Crew	150	15	Site Preparation	FS
Framing	Build the frame of the house, including walls, floors, and roof trusses	Framing Crew	800	40	Foundation	FS
Roofing	Install roof sheathing, underlayment, and shingles	Roofing Crew	280	14	Framing	FS
Plumbing Rough-In	Installation of water supply lines, sewer lines, and vents	Plumbers	100	10	Framing	FS
Electrical Rough-In	Installation of electrical wiring and panels	Electricians	100	10	Framing	FS
HVAC Rough-In	Installation of heating, ventilation, and air conditioning systems	HVAC Technicians	100	10	Framing	FS

	Insulation	Installation of insulation in walls, floors, and roof	Insulation Crew	105	7	Roofing, Plumbing Rough-In, Electrical Rough-In, HVAC Rough-In	FS
	Drywall	Installation of drywall	Drywall Crew	300	15	Insulation	FS
	Interior Finishing	Installation of doors, baseboards, casings, window sills, and other interior finishes	Carpenters	400	30	Drywall	FS
	Exterior Finishing	Installation of siding, trim, and exterior finishes	Exterior Finish Crew	200	20	Drywall	FS
	Painting	Painting of interior and exterior surfaces	Painters	400	20	Interior Finishing, Exterior Finishing	FS
	Flooring	Installation of flooring	Flooring Crew	200	10	Painting	FS
	Cabinetry and Fixtures	Installation of kitchen and bathroom cabinets, fixtures, and appliances	Carpenters, Plumbers, Electricians	225	15	Flooring	FS
	Final Plumbing	Installation of fixtures and fittings, connection of water supply	Plumbers	20	5	Cabinetry and Fixtures	FS
	Final Electrical	Installation of light fixtures, switches, and outlets	Electricians	20	5	Cabinetry and Fixtures	FS
	Landscaping	Landscaping and outdoor works	Landscaping Crew	120	15	Final	

# Operations and Training

Another general category where ChatGPT may play a role is in everyday operations and training tasks. Some scenarios might include developing documentation to provide explanations on how mechanical equipment specified in an RFP operates, and point out any special precautions in delivery, handling or installation. ChatGPT can often generate its own installation guidelines and instructions. Another area where ChatGPT can help is training, particularly for new or temporary employees. An extension of this would be generating company policies and procedures, both technical and administrative. Here's a shortlist, followed by some actual ChatGPT examples.


- Software operating instructions
- Equipment operating instructions
- Develop procedures
- Training – develop manuals, slide decks and videos; transcribe videos

As we have done in the preceding sections, we have provided some very simplified examples to give you food for thought on using ChatGPT for operations and training.


- How to create a schedule in a CPM software application (Primavera P6)
- How to import an activity list in the CPM software application
- How to read a job-cost report
- Get a summer employee introduced to a position on a soils survey crew
- How to create a Building Information Model (BIM)
- Write a project manual

## How to Read a Job-cost Report

One of the best ways for a contractor to manage a construction project, or an A/E firm to manage a design project, is to track costs by work activity. This helps develop production rates that can be compared to historical data to know if an activity is running over or under budget and is one of the fundamental principles of project controls. This next example would be useful to introduce new employees who have never worked for a contractor or A/E firm to get started with a job cost report.

WP	How about instruction on how to read job cost reports?
	<p>Job cost reports are an essential part of financial management in any construction project. These reports allow project managers to understand the current financial position of the project and make informed decisions. Here's a simplified guide on how to read job cost reports:</p> <ol style="list-style-type: none"> <li>1. <b>Budget vs Actual Cost:</b> This is one of the most important aspects of the job cost report. It tells you how much was budgeted for a particular job or task and how much has actually been spent. If actual costs are significantly higher than the budgeted amount, it indicates a problem that needs to be addressed.</li> <li>2. <b>Cost to Completion:</b> This section gives an estimate of the cost required to complete the job. It is usually calculated by adding the actual costs to date to the estimated costs of the remaining tasks.</li> <li>3. <b>Projected Final Cost:</b> This is an estimate of what the final cost of the project will be based on current spending. This figure is arrived at by adding the costs to date and the estimated cost to completion.</li> <li>4. <b>Over/Under Billings:</b> This represents whether you're billing too much or too little compared to the work that has been completed. Over billings mean you've billed for more than the cost of the work done, under billings mean you've billed for less. These numbers should be closely monitored to maintain healthy cash flow.</li> <li>5. <b>Labor Hours:</b> This shows the number of labor hours worked on the job. Comparing budgeted vs actual labor hours can give you insight into the efficiency of your workforce.</li> <li>6. <b>Equipment and Material Costs:</b> These sections will detail the cost of materials used and the cost or depreciation of equipment used on the project.</li> <li>7. <b>Indirect Costs:</b> These are costs that aren't directly tied to a specific job, like overhead costs. This section will detail those expenses and they will typically be distributed across all projects.</li> <li>8. <b>Profitability:</b> This section provides the profit margins on the job. This is calculated by subtracting the total costs from the total revenue. Negative profitability means that the job is currently operating at a loss.</li> </ol> <p>Remember, each company may have a unique way of reporting these costs, so it's important to understand the structure of the report you are working with. Also, it's recommended to review job cost reports regularly (such as monthly) to catch potential issues early and keep the project on track financially.</p>

# Business Development and Marketing



A large percentage of contractors win jobs by competitive bidding, particularly in the public sector. For the architect/engineering community and private-sector contractors, getting work depends in large part in developing working relationships with potential clients. To the extent marketing and business development is often document-intensive and time-consuming, ChatGPT inherently offers the promise of substantial time-savings. In addition, ChatGPT brings analytical and computational skills to the table. Here are a few of the challenges that face the A/E/C marketing community and ways the ChatGPT might provide some help:

- Differentiation
- Communicating Technical Expertise
- Finding Qualified Leads
- Building Trust
- Researching and Gathering Information
- Creating Proposals and Presentations
- Social Media Marketing
- Recruiting and Training Talent

Remember, AI tools should complement human effort, not replace it. The human touch is still necessary for strategic decision-making and building personal relationships with clients.



To illustrate some of these aids for marketing and business development, we created some prompts for ChatGPT to digest, as follows:

- Business development plans for converting office buildings to residential buildings
- An architect's business development plan for getting work on office conversions
- Communicating technical expertise
- Create a proposal to design the lobby and retail spaces in a 20-story building

As with any ChatGPT response, it is up to the user to carefully scrutinize the responses for accuracy, plausibility and effectiveness, as well as make necessary edits and modifications to more reflect your company's voice and values.

## Communicating technical expertise

Proposal writing will often need to describe complex technical terms or unique solutions that need to be properly conveyed to the client. This next prompt emphasized a unique design solution the A/E wants to emphasize in its proposal for design of a new building.

	<p>For a marketing proposal on a 20-story office building, please explain how the use of interstitial space between sections of walls and floors can be used to save energy, improve air quality and reduce maintenance costs.</p>
	<p>Interstitial spaces are essentially "spaces between spaces." In the context of a building, they can refer to areas between walls or between the ceiling and floor of different stories. These spaces are often used to run wiring, plumbing, and HVAC (Heating, Ventilation, and Air Conditioning) systems. Here's how they can be utilized to save energy, improve air quality, and reduce maintenance costs in a 20-story office building:</p> <ol style="list-style-type: none"><li>1. <b>Energy Saving:</b> Interstitial spaces can be used to route well-insulated HVAC ductwork and plumbing pipes. This is particularly useful for keeping hot water pipes and heated air ducts from losing heat during transit, thus saving energy. Moreover, the insulation in these interstitial spaces can also prevent thermal bridging, reducing heat loss and gain through the building's structure.</li><li>2. <b>Air Quality Improvement:</b> These spaces provide a concealed route for air ducts of the HVAC system, which helps in maintaining good air quality. The HVAC system can bring in fresh air, filter out pollutants, and control humidity levels. If designed with access panels, the ductwork can be regularly inspected and cleaned, thus preventing the buildup of harmful particles and ensuring cleaner air inside the building.</li><li>3. <b>Reduction in Maintenance Costs:</b> Interstitial spaces allow for easy access to building systems like electrical wiring, plumbing, and HVAC for maintenance or upgrades, reducing labor costs and time. In a traditional setup, these systems might be embedded within walls or floors, requiring substantial work for access. But with interstitial spaces, the maintenance and upgrade process becomes less invasive and disruptive to the building occupants. Furthermore, if issues arise with the building's systems, they can be more easily identified and remedied, avoiding more extensive and costly damage.</li></ol> <p>In your marketing proposal, you could highlight how the use of interstitial spaces in the building's design reflects a commitment to long-term sustainability and occupant health. It may also demonstrate foresight in reducing future maintenance costs, presenting the building as a smart investment for prospective buyers or tenants.</p>

# Summary and Conclusion



## Recap

This guide shows how ChatGPT works and explores a myriad of uses. The intent, which we hope we have fulfilled, is to alert readers what ChatGPT is all about and to stimulate your own thoughts about how you might put ChatGPT to work. Whatever your role is at your place of business, be it marketing, design, management, supervision, field engineering or consulting, there are numerous documentation, communication and transactional processes that occur during the lifecycle of a construction project that may realize the time-savings benefit of ChatGPT. Most of the examples emphasize personal use. Large firms might look into ChatGPT deployment across the organization, particularly as software developers release apps that can be shared across the internet.

## Going Beyond Interactive Use of ChatGPT

This guide focuses strictly on interactive use of ChatGPT via the ChatGPT interface. OpenAI provides APIs (Application Programming Interface) for use by developers to work with other software or as browser extensions. There are already thousands of these apps developed that interface with ChatGPT and thousands more are on the way. It's beyond the scope of this guide to go into detail, but there will be extensive coverage of advanced usage in future issues of *AI Construction News* ([aiconstructionnews.com](https://aiconstructionnews.com)).

## Conclusion: ChatGPT's Future

As suggested early on, we're at the forefront of a new technological era and it's impossible to predict where all this will lead. The sooner one understands what ChatGPT is, and starts to use it, even minimally, the easier it will be to grow with AI going forward while managing its risks and without the fear of being left behind.

## ***Construction AI and AI Construction News***

*Construction AI*, an information website serving the A/E/C community at [constructionindustryai.com](http://constructionindustryai.com), was founded to introduce, explain and instruct on how new technologies like ChatGPT can transform and enhance the performance of a construction project. This guide is but the first of a number of information products that will cover AI in construction in the coming months and years. This coverage includes the *AI Construction News* newsletter, e-books, special reports, user interviews, webinars and instruction guides.

The complete 75-page guide can be purchased for \$95 from the *Construction AI* website at [www.constructionindustryai.com](http://www.constructionindustryai.com). The complete guide is included free with an annual subscription to *AI Construction News*, keeping you up to date with new developments and improvements as they happen. The full table of contents for the guide is found on the next page.

**Visit [ConstructionIndustryAI.com](http://ConstructionIndustryAI.com) to subscribe today.**

Group and corporate subscriptions are available, as well as discounted government rates.

Send email to [subscriptions@aiconstructionnews.com](mailto:subscriptions@aiconstructionnews.com) for more information.





## Table of Contents

### Introduction

- ChatGPT Overview
- Using ChatGPT
- ChatGPT in Construction Project Applications
- How to use this Guide

### Personal Productivity and Communication

- Simple Writing Tasks – Draft an Email, Job Description, Outline or Form
- Draft an Email or Letter
- Write a Job Description
- Create an Outline for a Monthly Progress Report
- Create a Form
- **Project Design and Development**
- Project Conception Report
- Write a Contract
- Find Information for a Building Permit

### Bidding and Procurement

- Compare Two Estimates
- Locate Vendors
- Supplier/Vendor Evaluation Table

### Project Management and Contract Administration

- Documents, Forms and Records
- Ten Most Important Forms on a Construction Project
- RFI Form
- HTML Change Order Log
- Resource-Loaded Critical Path Schedule
- Jobsite Safety – Safety Management and Improvement
- Jobsite Safety – Toolbox Meetings

### Operations and Training

- How to create a schedule in a CPM project scheduling application
- Instructions for importing activity lists into Primavera P6
- How to read a job cost report
- Introduction to the work of a soils survey crew
- How to Create a Building Information Model
- Write a Project Manual
- How and why to write a Project Manual

### Business Development and Marketing

- Business development plans for converting office buildings to residential
- An architect's business development plan for getting work on office conversions
- Communicating technical expertise
- Create a proposal to design the lobby and retail spaces in an 20-story building

### Summary and Conclusion

- Recap
- Going Beyond Interactive Use of ChatGPT
- Conclusion: ChatGPT's Future

### Appendix