

The Ultimate Guide to Construction Submittals

How Streamlining the Submittals
Process Yields ROI in Construction



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Submittals are an essential part of pre-construction and construction that can sometimes get disjointed. With the volume of documents used for clarifying material selections and ironing out details like color choices, it's easy to assume they're low priority and have little impact. Yet a mistake on a submittal form can lead to unimaginable accidents and losses, such as what occurred in the 1981 Hyatt Regency Skywalk collapse.¹

The skywalk collapse was caused in part by submittal documents offering a suspension option that wasn't approved by the engineers. If a better process for handling submittal documents had been in place, the skywalk collapse and resulting losses could've been prevented. With a better understanding of the importance of the submittals process, let's explore how to optimize it and the workflow producing them.



The Importance of Accurate Submittals

Before construction begins, one of the most important aspects of any contractor's job is construction submittals. These documents ultimately determine the accuracy of project completion, the success of the proposed timeline, and the nitty-gritty details of the budget. Each submittal form should outline a single material or supply choice that needs approval from high-level team members like architects, engineers, project owners, and general contractors.

These documents are generally sent by trade contractors, subcontractors, and suppliers. Sometimes they are also generated internally between team members to determine specific design choices. Unlike as-built drawings, which are meant to be submitted after construction is complete to show the final form of the project, submittals are furnished beforehand to guide how the project will actually be built.

They're especially important in buildings utilizing prefabrication and modular construction techniques. Each of these units may generate a dozen or more submittal forms to hammer out the details.

Whether they're traveling up the chain of command or laterally, there's always a chance of a submittal missing one or more important checkpoints during approval. Inaccurate submittal forms are also behind many of the delays that add up throughout a construction project.

What Should a Submittal Contain?

Before construction begins, every piece of equipment, building material, and even design details such as the exact color of paint need to be reviewed and approved. This is accomplished via submittals. Depending on the size and complexity of an individual project, construction submittals can involve thousands of different items. These include:

- Product cut sheets that identify the manufacturer, specifications, and model number of each piece of equipment or material option
- Shop drawings that lay out the dimensions of such prefabricated products such as trusses, cast concrete, windows, appliances, and millwork
- Color and finish selections
- Material data sheets
- Variations on engineering options to take advantage of prefabricated and modular units

These documents are essential to successful construction because they show the project at a very granular level, and allow design professionals to approve every aspect individually. Approval needs to happen before items are fabricated and delivered because these processes can take weeks. Manufacturing new trusses or structural units due to a slight mistake can add weeks or even months onto a project's total timeline.

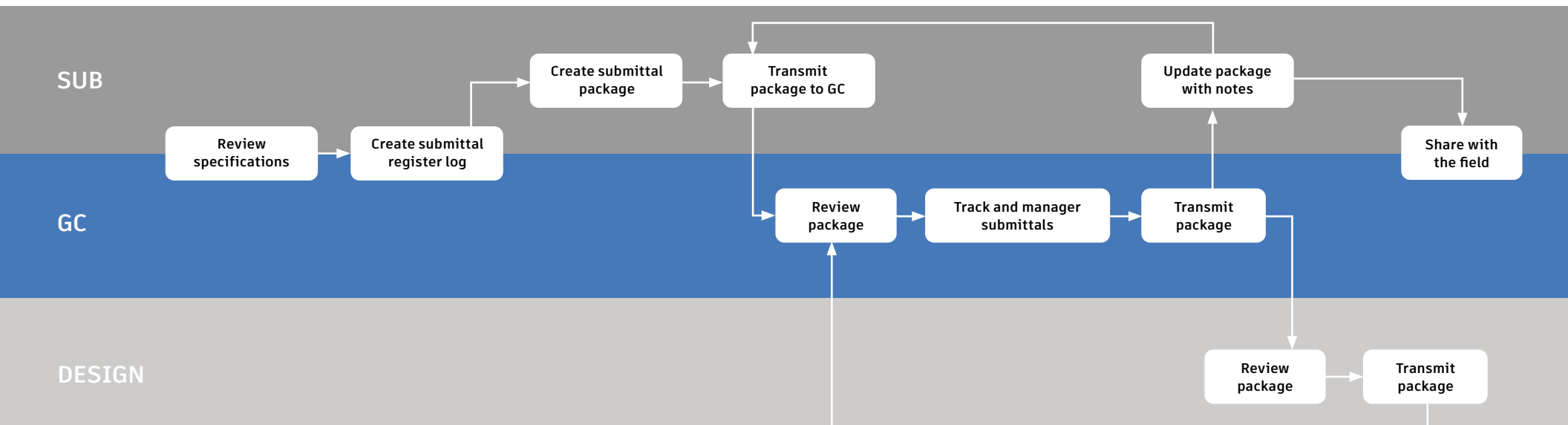
The more detail that is included in construction submittals, the better the chance of an accurate budget and schedule. Due to the sheer volume of submittals produced by the average construction project, keeping them organized and accessible by the right parties is a major undertaking. Only a construction technology solution can keep up with the growing demand for more data during the pre-construction and design phases.



Building an Efficient Submittals Workflow

The submittals review process has traditionally been long and arduous. First, all submittal items must be aggregated from subcontractors, ensuring you have detailed data and specifications for each facet of the project. In the past, this meant a time-intensive manual entry process, ripe for inaccuracies and mistakes. After submittal items are collected, the architect and design team must review everything

for compliance, while the general contractor reviews them all to ensure they have the right products and specifications. Missing review steps can lead to extra costs, building failures, and losses. Documents also tend to get misplaced, mislabeled, or lost altogether during multiple stages of the workflow. This graphic demonstrates a typical submittals workflow optimized for both efficiency and safety:



Building an Efficient Submittals Workflow (Cont.)

Any construction company that doesn't already follow a procedure close to this one should adopt one as soon as possible. Informal and uneven handling of important documents often causes them to become lost or ignored entirely. Ideally, implement a system capable of tracking each document from its first stages of creation to completion. This allows you to benchmark the company's handling of each submittal, which reveals important weaknesses and suggests how to solve them all at the same time.

Research from Emerson shows that up to 30 percent of all documents generated during the construction process are lost by the end of the project.² That's a lot of important data going missing. Submittals may seem like they're only important during pre-construction and construction, but they actually form the backbone of close-out documentation given to the owner or tenant of the building. The same cut sheets and manufacturing forms used to make

decisions about equipment, materials, and design elements give the owner important insight into the maintenance and repair of the building. If nearly a third of those documents go missing on every project, customer satisfaction during the close-out process is likely to suffer.

Manual methods for tracking and organizing submittals are ill-equipped to handle the volume of paperwork created by modern projects. Only construction management software like Autodesk Forma™ can optimize this process. By automating as much of the data tagging, tracking, and security as possible, managers and engineers are freed up to reveal and approve submittals instead of just organizing them. Delays are prevented, the work flows smoothly, and the project overall is completed on time rather than behind schedule.



5 Steps to More Effective Submittals

Crafting effective submittal forms is the first step to optimizing the workflow. Even if you're only responsible for receiving and approving them, providing templates for the various types of forms will help standardize the process. Here are five concrete steps to take to improve the submittals process at any stage.

1. Track the submittals from the very beginning and make this information as transparent as possible. Each team member involved should be able to see where the item is in the process and what actions are needed next from each party. PlanGrid's [Automatic Submittal Log](#) is ideal for this.
2. Control visibility with accurate roles for various team members rather than trying to set permissions individually. Delays in giving access to submittal forms are a constant cause of unnecessary lost time in manual submission processes.

3. Reduce errors and cut down on manual labor by automating as much of the workflow as possible. Subcontractors and suppliers should be able to jump into a template, insert the relevant data or drawings, and submit without spending hours on formatting or document conversions.
4. Ensure compliance with all review processes to ensure errors are caught before submittals are approved. It's costly to reverse a submittal and reopen the process, and those costs increase if inspectors or approval committees are involved. Make sure any important changes are approved by structural engineers or other design team members with proper qualifications.
5. Standardize sample handling so it's directed to the right teams instead of languishing in shipping and receiving departments. Samples of prefabricated assemblies can require heavy equipment to move, so designate space and time for organizing and storing these units so they're not damaged or degraded before they're inspected.

Submittals are harder to completely digitize like RFIs because they often include concrete components like samples. Photos and drawings help convey important specifications, but they don't compare to actual window units or room assemblies being shipped for direct inspection by the team engineers or general contractors. Make sure your construction technology solution can adapt to track these physical artifacts as well as the digital files so that materials stay organized and easy to access during the decision-making process.

Building a Strong Routine for Submittals

Even with the help of software and automation, construction teams must commit to following the same routine every time they receive a submittal. By handling even the smallest issues like paint color or finish choice as seriously as those involving design and material changes, nothing will slip by unnoticed. This greatly reduces the chances of rework and change orders that slow down project completion and increase the total costs. Encourage the team to see submittals as an important stepping stone on the path to a productive and profitable project. Changing the mindset surrounding these documents is just as important as implementing software solutions. Good adoption of new construction technology begins with managers highlighting its benefits to every member of the contracting team.

References:

- [1] [Bernhardt, Randall P. "Hyatt Regency Skywalk Collapse Remembered."](#)
STRUCTURE Magazine, Aug. 2016
www.structuremag.org
- [2] ["Operational Readiness: Bridging the Gap Between Construction and Operations for New Capital Assets."](#)
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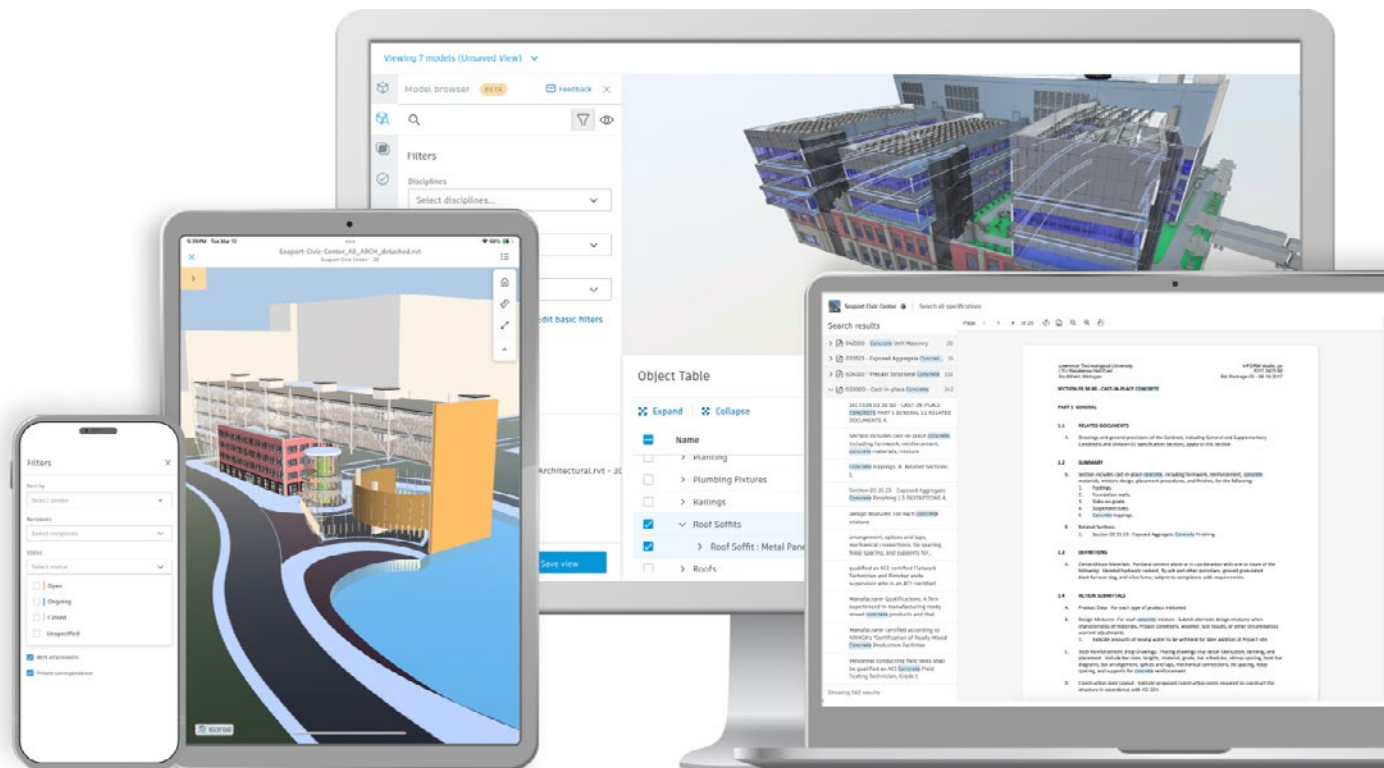


See the Future of Connected Construction

Our industry requires solutions that connect their information, teams, and technology –breaking down data silos and disconnected processes that hinder true transformation. As we navigate the ever-present push to do more with less, we need to uncover new ways of working, enhance connected digital workflows, and incorporate advanced analytics. To support us on this journey of transformation, we must lean into tools that connect construction – from design to plan, build, handover, and operations.

Built on a unified platform and common data environment, Autodesk Forma is a powerful and complete portfolio of construction management products that empowers general contractors, specialty trades, designers and owners to drive better business outcomes. Autodesk Forma combines advanced technology, a unique builders network and predictive insights to connect teams, workflows and data across the entire building lifecycle.

While the industry experiences unprecedented transformation, our mission remains the same: to help construction teams meet the world's rapidly expanding building and infrastructure needs while making construction more predictable, safe, and sustainable. And we've remained steadfast in our promise to deliver the industry's most compelling solutions, connecting data, teams and workflows from the field. This is our commitment to connected construction.





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