

How to Make Off-Site Material Storage Decisions

Tools to help ensure material is available and free from damage where you want it and when you need it

By Phil Nimmo, MCA, Inc.

More than two decades ago, research conducted for the electrical construction industry identified that the ideal amount of inventory on a job site equals about three days of installation-ready material. The conclusion stated that having less than three days of material added the risk of starving the crew if they were more productive than planned or faced unscheduled changes and redirection. It also stated that having more than three days of material adds waste by having material that likely would not be installed when expected due to uncontrolled schedule changes, which would then drive up handling costs, damage, and loss.

For most jobs, making space to store and manage material comes at a premium or it's nonexistent. The supply chain can be long and unpredictable while delays and expedited material fees can quickly become overwhelming. The answer is clear: Material must be nearby but not in the way. The material must be available within three days and verified to be correct and damage-free. This all sounds simple — but be careful not to trivialize the work and expertise needed to ensure this simple solution is effective.

To make an off-site storage solution effective, several questions need to be answered, and the answers aren't always the same. Things to address include:

- What type of material needs to be stored? How much material do you need? How large and fragile is the material?
- What storage facilities are needed? Can this be stored on the floor, stacked, or racked?



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- How far from the job site should this location be? How will it be transported to the site? Who will transport it? What equipment is needed? How long will it take to get it there?

- Who will manage the logistics? Who will know that the material was ordered and shipped to/from the storage location? Who will track the amount of material available at the storage location? How will this be tracked and communicated?

These few simple bullet points are only the starting point for this type of solution. If you read that list of questions carefully, you may notice that none of the answers are taught to apprentices during their training to be an electrician — and none of those are routinely taught to new foremen either.

In fact, for most contractors, training in these skills isn't even provided to the project managers they promote from the field. The effectiveness of off-site material storage is often less about the material and the cost of storage than it is about managing the information and knowing where the material is at any point in time.

Over the past several decades, many contractors have been increasing their reliance on vendors to help with logistics management. For many of these contractors, the eye-opening reality is that the vendors are mostly interested in selling in large volume and turning their warehouse inventory frequently. The vendors simply do not have a consistent process or supporting tools for managing your material in their facilities. Issues arise from having committed and separate inventory,

Task Name	Work	Start	Predecessor
Sample Project	3,262h	Fri 12/17/21	
Electrical Work	3,240h	Mon 8/1/22	
Phase 1	3,240h	Mon 8/1/22	
First Floor Pipe Completion	1,800h	Mon 8/1/22	
First Floor Lighting	1,200h	Mon 8/8/22	
Second Floor Temp Lighting	80h	Mon 9/5/22	
Second Floor Temp Power for Equipment	160h	Mon 1/2/23	
Materials	22h	Fri 12/17/21	
Vendor #1	22h	Fri 12/17/21	
Pipe and Wire	11h	Fri 12/17/21	
Contract	1h	Fri 12/17/21	
Submittals Approved	3h	Fri 1/18/22	
PO	1h	Fri 2/4/22	
Manufacturing Complete	0h	Tue 5/10/22	4SS-12w
Received at Storage Warehouse	1h	Wed 5/25/22	14FS+2w
Billing	1h	Mon 11/21/22	15FS+3d
Inspection	2h	Mon 11/21/22	16SS
Release to Job Site	1h	Tue 7/26/22	4SF-3d
Received at Job Site - Date Needed	1h	Thu 7/28/22	4SF-1d
Luminaires	11h	Fri 12/17/21	
Contract	1h	Fri 12/17/21	
Submittals Approved	3h	Fri 1/28/22	
PO	1h	Fri 2/4/22	
Manufacturing Complete	0h	Tue 5/17/22	5SS-12W
Received at Storage Warehouse	1h	Wed 6/1/22	24FS+2W

Table 1. Project schedule with material planning. Note that the material movement is tied to the installation tasks.

unique billing and tracking processes, and separate storage facilities. This can be easily exaggerated by inventory that isn't theirs and isn't really in their WMS. Suddenly, you — and your preferred vendors — realize that their expertise in managing your material is based on the organization and communications skills of a few individuals. These vary widely from project to project, customer to customer, and business to business.

So, what is the real solution? The real solution to off-site material storage lies in the process — a process that is designed with the intent of knowing what your material is, where it is, and when you will have it where you need it. Again, this may start to sound trivial because it isn't difficult. But for most contractors, it also isn't followed through.

In preconstruction and early construction, most project managers and

foremen do a great job at setting up the material lists and even getting the POs in place. Things typically start to fall apart when it comes to tracking the status of submittals and, of course, the release and logistics planning for the material movement. We can't blindly rely on the vendors to just make it all happen. After all, most jobs don't stick to a rigid schedule, and the dates the vendors have at the start will (at best) loosely match when you are ready for the material on the job site. The material management solution for off-site material storage needs to be owned by the project team — the only people who know the latest and most realistic needs of a dynamic job site.

Foremen don't have to make calls and spend their days negotiating manufacturing dates and carrier schedules, but they do need to share the changing needs

of the job site in a language/manner that the supply chain can respond to appropriately. That means the foreman needs to have a running and real-time picture of both the project installation progress and where the material is located. Continuing from the preconstruction BOM and corresponding POs, the project manager and foreman will need to have a simple tracking mechanism. Gathering the information and putting it together in one place for the project manager and foreman means reviewing an up-to-date project schedule to provide two to three weeks look ahead of the planned work areas, tasks, and materials, combined with a short interval scheduling tool, such as SIS®, to show the short-term work two to three days ahead. And last, you'll need a running tally of the ordered material, its current location, and its condition.

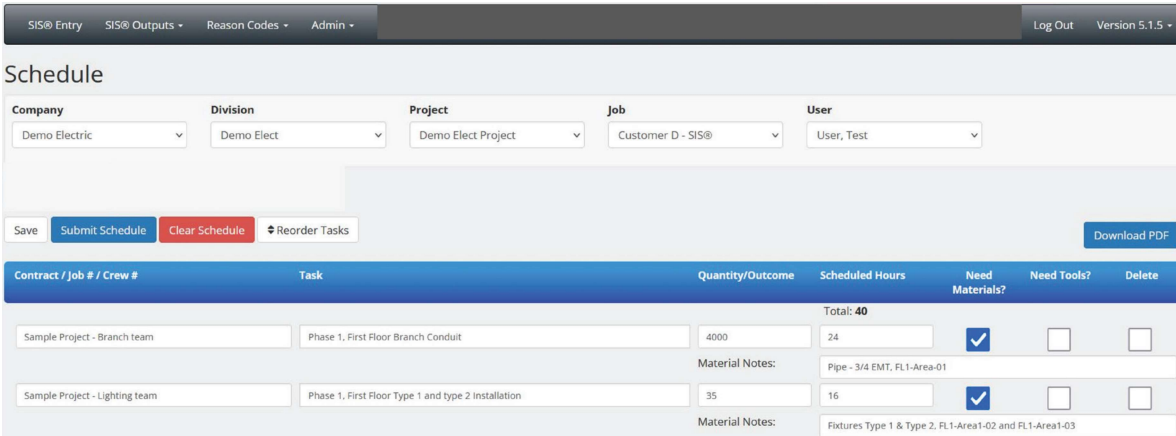


Table 2. SIS® showing planned and scheduled task with material needs and date needed.

Project	Type	Shipping Skid	Description	PO	Order Qty	Status	Shipping Release	Ship To	Date Needed
Sample	Pipe - EMT	Samp - 01	3/4 EMT	SAMP-V1-01	20,000	LCL Whse	FL1-Area1-01	Crib07	7/28/2022
Sample	Wire - Branch	Samp - 02	12ga Black	SAMP-V1-01	25,000	LCL Whse	FL1-Area1-01	Crib07	7/28/2022
Sample	Wire - Branch	Samp - 02	12ga White	SAMP-V1-01	25,000	LCL Whse	FL1-Area1-01	Crib07	7/28/2022
Sample	Wire - Branch	Samp - 02	12ga Green	SAMP-V1-01	25,000	LCL Whse	FL1-Area1-01	Crib07	7/28/2022
Sample	Fixture - Light	Samp - 03	Type 1	SAMP-V1-01	25	LCL Whse	FL1-Area1-02	Rm110	8/4/2022
Sample	Fixture - Light	Samp - 04	Type 2	SAMP-V2-02	10	LCL Whse	FL1-Area1-03	Rm110	8/4/2022
Sample	Fixture - Light	Samp - 05	Type 3	SAMP-V2-03	100	LCL Whse	FL1-Area1-04	Rm125	8/4/2022
Sample	Fixture - Light	Samp - 06	Type 4	SAMP-V2-04	5	Enrte to LCL	FL1-Area1-05	Rm110	8/4/2022
Sample	Fixture - Light	Samp - 07	Type 5	SAMP-V2-05	8	Enrte to LCL	FL1-Area1-05	Rm110	8/4/2022

Table 3. Tracking spreadsheet showing material quantity and location (red text shows potential issues).

Here's what that looks like. The project schedule is the contractor's work, not just the phases and milestone dates provided by the GC, but the actual installation schedule. The schedule also must be updated regularly to show progress, which should be updated weekly to allow the three-week look ahead to be accurate. The lookahead is used to ensure that material has arrived at the local off-site storage facility and has been inspected before its actual transfer date to the job site.

SIS® is used to coordinate the ship dates from the local storage to the job-site point of installation. Last, although many more sophisticated and capable tools exist, such as DCI Construction®, most project managers and foremen can track the location of material with a simple spreadsheet.

Above are illustrations showing the specific tools for support of the off-site

material storage solution. **Table 1** on page 16 shows an excerpt from a project schedule that includes material breakdown, filtered to provide a three-week look ahead. **Table 2** shows an example of the SIS® that allows for material needs to be identified by the installers. **Table 3** is a spreadsheet illustration of the material tracking needs.

For many jobs — and nearly all large projects — off-site material storage is the only practical solution. We have touched on the idea that neither contractors nor distributors has historically focused on the information flow and communications management needed to ensure the success of this model.

In conclusion, MCA has been a long-time advocate of vendor services and partnering for the purposes of material management. This is still an effective solution because partnering

with the right vendor can provide access to storage space, transportation, and enhanced relationships with manufacturers and their reps. As the industry continues to evolve, so must the solutions. We are at the point where job sites and contractors installing on those job sites need more information and a complete picture of their material throughout the supply chain. But most importantly, you must stay one step ahead of the job site. You need to know where the material is and have a proactive plan to get it to the job site when it's needed. That plan comes from updated project schedules with both three-week and three-day planning and scheduling for material needs.

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