

PARTNERING



**WITH DISTRIBUTORS
FOR EFFICIENCY**

By Dr. Perry Daneshgari and Dr. Heather Moore

Construction industry members often assume all the tasks performed on a jobsite are necessary, and therefore firms focus on improving those tasks to improve the efficiency of the project.

However, this assumes the tasks being performed represent the best way of completing the work. In reality, a company can perform a value-losing task very efficiently. Efficiency is output, whereas effectiveness is the goodness of output or the actual outcome.

Take materials handling as an example. Walk through any jobsite to see evidence of the constant movement of materials from one location to another until they get to the point of installation. At first glance, all looks fine, but more than 40 percent of skilled tradesmen's time is spent on materials handling. Now, look at the jobsite with a different set of glasses, not unlike what can be seen in manufacturing. What if materials received on the jobsite have only one objective: to move to the point of installation upon arrival. With that mindset, all other movements are considered unnecessary and wasteful.

Fortunately, contractors don't need to look far to find organizations that specialize in moving materials. Distributors and suppliers, and even manufacturers, can be considered part of the food chain.

Who, What, When and Where

So, how can contractors partner with distributors to improve efficiency? First and foremost, identify what laborers must do for the construction project to be finished. Ask who does what, when and where? And then ask the question why. Generate "work cubes" out of the work breakdown structure (WBS) for each trade and tie these cubes into the total project. To create overall project-level efficiency:

- start with the project schedule;
- create a WBS and "work cube" for each trade;
- include the BIM requirements;
- identify the tasks that can be performed offsite by trade vendors, the manufacturer or via prefabrication;
- create each trade's schedule for installation, procurement and document management; and
- use the WBS to track project productivity using ASTM E2691, Standard Practice for Job Productivity Measurement. Cross-check for trade performance variation due to special and common causes, and then feed back the discrepancies to the trade and project schedule. Correct and adjust as needed.

The key to using a vendor's logistics management capability is knowing what material is required when, where and how. This information is embedded in the project's WBS at very detailed levels.

Price Is Secondary

Even though contractors constantly fight for the lowest material price, in reality, price is secondary. Regardless of the price, contractors often are unable to recover from the labor losses associated with handling the materials instead of installing. Remember, field workers spend more than 40 percent of their time on moving, ordering, receiving, returning, looking for and sorting/organizing materials.

To quantify the true cost of these activities, assume that a particular jobsite has 10 skilled tradesmen for one subcontractor. The jobsite contains an inventory consisting of most of the anticipated commodity items. The project manager ordered 80 percent of the materials identified on the estimate at the start of the job; however, the estimate was neither broken down in detail, nor reviewed by the foreman running the job. Therefore, each day, a small shipment of miscellaneous items is required to keep things moving effectively and match the work environment. Additionally, assume that most of the deliveries are received as expected and as ordered, and that the loaded cost for labor is \$40 per hour.

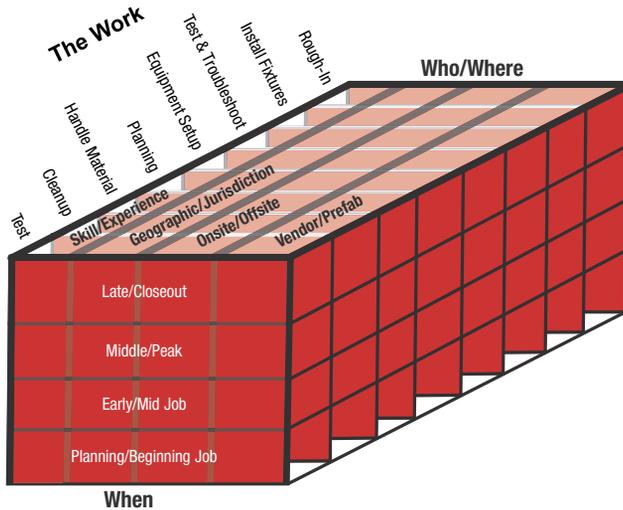
If inconsistencies and last-minute changes to the order receipt at the jobsite cause the interruption and realignment of workers, resulting in a loss of productive effort equal to one hour per week per man, then this can be used as a basis for calculation for each trade. One hour per week per man means allowing 12 minutes per man each day to finalize whether he will be working on his primary plan, alternate plan, contingency plan or emergency plan for that day, and allowing him to gather the correct materials to get started.

One hour per week per man (12 minutes per day per man), for a 10-person crew at \$40 per hour, equates to \$20,000 per year in lost productivity on just one project.

This same example can be expanded to measure the entire project for all the trades. If the project employs 200 craft professionals at an average of \$40 per hour, then the resulting cost of lost productivity is \$400,000 per year.

Compare these savings with the savings contractors may receive on the same project for a "good materials buyout." Assume this is a 10-person project for a subcontractor and the materials cost is \$100,000, and with a good buyout, there was a 2 percent savings on materials price. At best, the savings is around \$2,000, which is burned up in a few weeks by losing time on materials handling.

Sample Work Cube Showing How Electrical Work Is Identified for the WBS



Agile Procurement

To combat the labor wastage on materials handling, agile procurement was developed as one of the pillars of agile construction. The goal of agile procurement is to reduce jobsite materials handling and other waste, rather than reduce the price of the materials. For this reason, suppliers should be selected based on what they can do to provide the correct materials, at the installation location and at the time that the labor is ready to install it.

The term “partnership” is adopted from the Japanese term for keiratsu, which is relied on heavily in the Toyota production system. The term is best translated as “family,” or a true partnership of mutual benefits without contractual obligation. However, this level of partnership takes a high level of trust and commitment. Following is an outline of various levels of service vendors can provide at different commitment levels.

- **Non-partner, preferred service provider:** Provides vendor-managed inventory and other value-added services generally associated with unique lighting, gear or other packages. There is no purchase commitment beyond the individual service, and the contractor is responsible for all productivity improvement.
- **Descriptive partner:** Provides value-added services for a complete project. A project-level purchase

commitment takes place in return for shared accountability of project productivity.

- **Selected partner:** A limited number of partners actively participate in all aspects of all of a company’s projects. This entails large-scale multi-project purchase commitments, including commodity items in exchange for shared accountability for both project productivity and company backlog.

The process of selecting a full vendor partner can take up to six months and should be done very carefully and deliberately. Following is a brief overview of the steps that need to be taken.

- **Define vendor requirements:** What are the business objectives? What are the operational objectives? What are the functional requirements?
- **Evaluate vendors:** Gather team input on services. Can candidates provide the service? Have they provided the service before?
- **Develop a shortlist:** Narrow down the number of potential partners based on evaluation rankings. Develop a statement of work.
- **Gather detailed input:** Determine what all parties want for various aspects of the partnership. Arrange vendor presentations and onsite visits.

Choosing a vendor solely based on price will not reduce materials handling costs. If the goal is to reduce jobsite materials handling, then the cost of the material is far less important than the effective use of labor.

Goal: Lowest Installed Cost

To enable construction vendors to help improve project effectiveness and efficiency, an Integrated Material Logistic Solution (IMLS™) process includes management planning functions (the procurement plan), project team planning functions (procurement schedule, job delivery, and materials movement and management), and project team management functions (materials returns, lessons learned and post-mortem).

Using this process on a renovation retrofit project, a supplier provided an electrical contractor with materials aligned for the crew per floor and area of the jobsite. In short, materials were delivered to shelves dedicated to each crew. These and other services were identified through a dedicated procurement planning session, including the electrical contractor’s project team (project manager, superintendent, foreman and procurement manager), as well as the vendor’s team, not just the salesperson.

On another project, the team set aside an area of the jobsite for prefabrication materials, which the vendor picked up from the contractor's shop as requested, along with other commodity items flagged and color coded to go along with the same phase of installation.

Some contractors and vendors may look at these simple examples and say "we already do that," "we have better carts available" or "we do that better by using QR codes." However, more value comes from the IMLS process, which promises the lowest installed cost, but not necessarily the lowest priced material. With the lowest installed cost method, contractors can manage the tradeoff between materials costs and labor savings to provide higher value to the customer, higher sales to the supplier and higher profits to themselves.

With an efficient partnership, based on mutual understanding of each other's business needs and operations, contractors and vendors find a win-win solution that is not only doable, but almost unavoidable. 

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The following calculation shows the return on a modest 2 percent investment in materials price, resulting in a vendor partner helping the contractor reduce materials handling labor costs by 25 percent.

Assume:

Contractor annual revenue:	\$10,000,000
Contractor annual labor cost:	\$3,750,000
Contractor annual materials cost:	\$3,500,000
Other direct, indirect, G&A	\$2,650,000
Contractor net profit:	\$100,000

Invest 2 percent in materials logistics management:

\$3,500,000 x 2 percent =	\$70,000 added cost of materials
Contractor's new materials cost:	\$3,570,000

Current labor cost for materials handling:

\$3,750,000 x 40 percent =	\$1,500,000
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Vendor services achieve 25 percent reduction in materials handling labor:

\$1,500,000 x 25 percent =	\$375,000 labor savings
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Additional net profit achieved:

\$100,000 original net profit
-\$70,000 added materials cost
+\$375,000 labor savings
= \$405,000 new net profit
Net profit increase of more than 300 percent
Return on investment of more than 400 percent

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