



# Boosting Profits with a Materials Management Program



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*Most builders would be shocked to learn how much poor materials management is costing them. A customized change program can have an immediate payback.*

On the jobsite, the words “set it over there for now,” are a red flag, a sign that the builder does not have a plan for how to manage material shipments. It may not sound like a big deal, but this planning gap can bleed significant profits from a job.

The problem is far from an isolated one. Over the past year, FMI Corporation has worked with multiple divisions of the nation’s top home builders to optimize hundreds of house plans. While we have been able to take thousands of dollars in cost out of each home by creating and implementing more accurate takeoffs, we have also identified other ways that builders can save money. One of these is by better managing their material shipments.

Of course, good management can take different forms, and what works for one builder may not work for another. The point is that when materials shipments are well managed, subcontractors are more efficient, and are able to reduce their costs. This saves the builder money.

Unfortunately, many builders pay scant attention to how and when materials are delivered, or even how they are used on the jobsite. However, those same builders would be shocked at the money they are losing by not doing so. We have found that this oversight can add as much as five percent to total materials costs, as well as five to ten percent to labor. If a subcontractor knows that the builder is inefficient, the subcontractor might raise costs by \$1500 – say, from \$15,000 to \$16,500 – on each home in the community to compensate for the extra time the job will take. If there are 35 homes in the community this could add up to an additional \$50,000. And that’s just for one sub.

*Inflated materials costs.* Not only are materials seldom delivered at the right time, but rarely does anyone confirm that deliveries are complete, or make sure they are dropped in the right spot on the jobsite. This raises the chance that materials will be scavenged for other jobs, or stolen.

In addition, with little or no site supervision, trade partners use whatever piece of stock is easiest to grab, whether it’s the correct length or not. Dumpsters fill up faster than they ought to and extra purchase orders are generated to supplement lumber shipments that were more than adequate in the first place. The result is that it becomes impossible to gauge the real costs of a floor plan.

**Recoverable Lost Time (32%)**

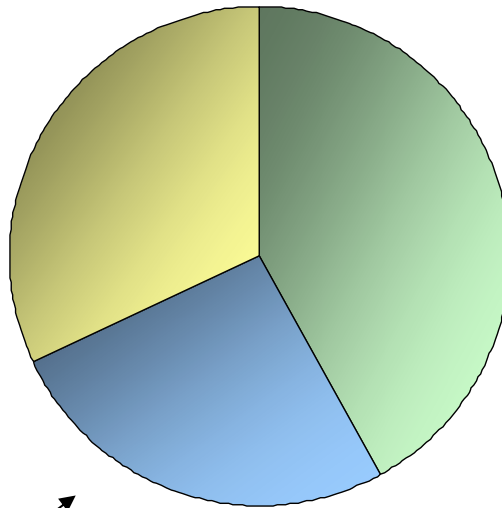
Waiting for information, materials, equipment, tools, manpower or other trades. Rework on items already installed.

**Primary Time (42%)**

Installing units of work for the first time.

**Secondary Time (26%)**

Planning, scheduling, material handling, lay-out, set-up, mobilization, etc.



**Figure 1:** How workers spend their time.

*Lost hours.* Most builders would also be surprised at the number of unproductive labor hours they are indirectly paying for. FMI has studied workers from different building trades, observing them over long periods of time and recording their activities several times per hour. As shown in Figure 1, we found that nearly one-third of the average worker’s time is wasted on what we call “recoverable lost time” – activities that do not move the job toward completion, activities that the builder could reduce or eliminate with good management.

Of course, most workers on a job site are on a subcontractor’s payroll, but smart builders understand that wasted effort by *any* member of a build team will raise build costs and lower quality. The solution is a plan for helping subcontractors become more efficient. A good materials management system has to be part of that plan.

These activities include time spent waiting on late deliveries, and handling materials that the supplier delivered too early or dropped in the wrong place.

## The Solution

In our work with production builders, we have had great success plugging these drains with a behavioral change program that involves all of the managers and subcontractors on a job. The program starts at the beginning of the supply chain, when the materials are ordered, and continues until the last piece of trim is nailed to the house. Rather than simply telling subs that they have to cut costs, we find it more effective to bring the builder and its subs together to map out specific cost reductions that make sense for everyone. This is usually accomplished by introducing efficiencies that will remain in place when business picks up. It is a cooperative approach that helps ensure good relationships with quality subs for the long term.

This is not an off-the-shelf program. Materials, suppliers, distributors, shipping methods and storage requirements vary from builder to builder and project to project. So do procurement strategies; some builders buy materials directly, others are predominantly turn-key and still others use a combination of the two. Because of these various product and delivery mixes, the program has to be customized from the ground up for each builder.

The key to making the program work is building cooperation between purchasing and construction, as well as between the builder's site superintendent, the subcontractors' job foremen and the various vendors. For instance, if the purchasing agent learns to work with the site superintendent, then the agent can address site issues during purchase order negotiations. These issues could include the order in which the supplier loads stock on delivery trucks (which will affect the ease of unloading), when the builder will receive each shipment, where on the job those shipments will be dropped and what unloading capability (a crane or a boom truck, for example) the supplier will provide.

Plugging these drains also requires controls on how workers use materials in the field. Superintendents, who best understand the construction plans and how pieces of the home (HVAC, electric, plumbing) fit together must learn to include material use in their efforts to synchronize and manage subcontractors. Superintendents must also learn to identify problems they may not have seen before. When there are five extra sheets of OSB left over after a job, for instance, the smart superintendent will recognize that as a symptom of inefficiency, will understand that there is probably even more waste going on, and will be motivated to look closer.

The program is generally not a hard sell, because it makes life easier for everyone. However, making it work does require some training and reinforcement. We accomplish this by creating a team at the beginning of the job that includes the builder, subcontractors and suppliers, and then continuing to help the team to put systems into place and keep them working. Our methodology for doing this includes regular planning meetings, as well as site training with the builder's staff and subcontractors.

*Planning meetings.* Regular planning should include a bi-weekly meeting between the builder's site superintendent, the subcontractors' job foremen and the supplier. Participants should use this "look-ahead" to review and verify material, labor and subcontractor needs for the coming two weeks (Figure 2). The agenda should include details such as delivery dates, how the supplier will stack material loads and how materials will be moved from site to site.

The discussion should also include other ways to make the job go smoothly. For example, rather than having a whole framing package delivered at once, it may be better to have it delivered over several days. During these meetings, some builders have decided that it would be cost effective to buy shingle loading equipment, or a crane truck. One builder we worked with was getting walls from a panel manufacturer and

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decided to ask the panel manufacturer to add Tyvek to the walls before they were shipped. That would not be appropriate for all builders, but construction is a dynamic and localized industry and so each builder inevitably formulates their own unique solutions.

Project: \_\_\_\_\_ Project Number : 00-127 Date: 9/30/01  
 Foreman: Billy Evans Week of : Sept 24 - Sept 29

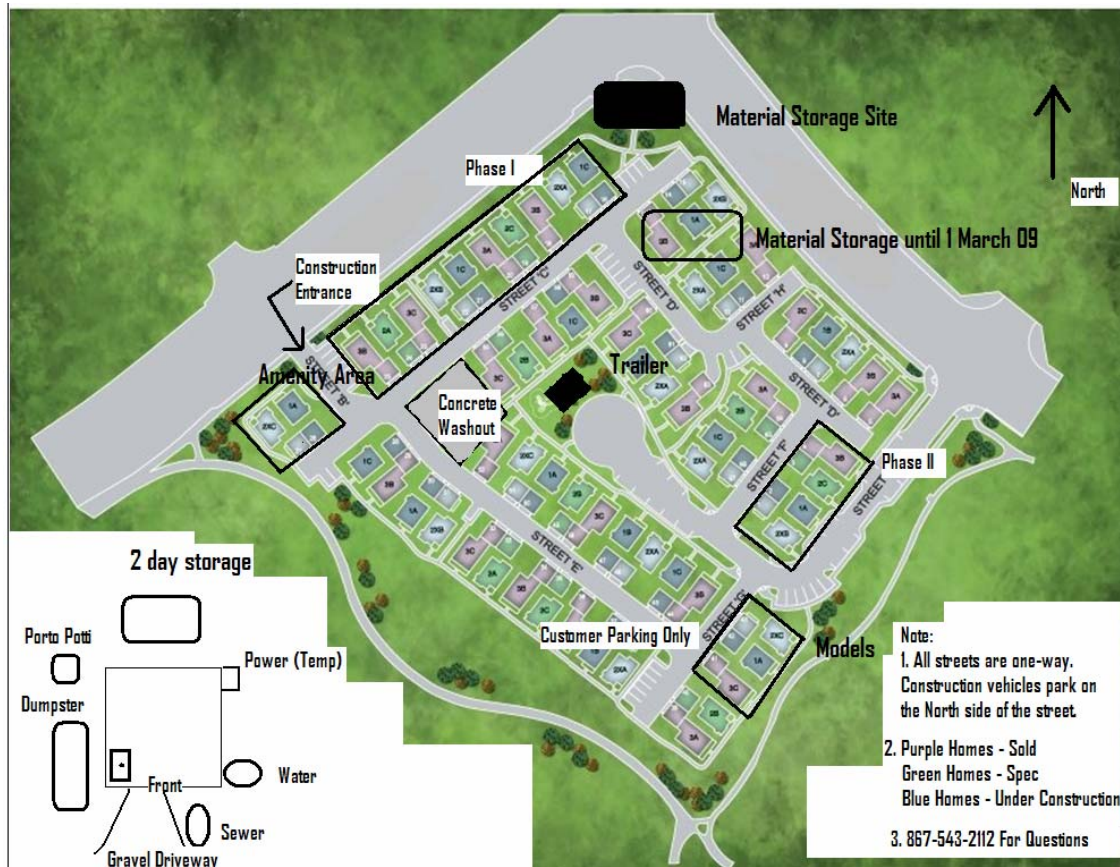
What work do you have planned for next week?	Manpower / Duration						What materials & equipment are needed to complete planned work?	Are materials on site?		R e p e a t
	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep	29-Sep		Yes	No	
	Mon	Tues	Wed	Thur	Fri	Sat				
Install "B" skylight nailers	4	4					Treated 2x4's	X		
Lay-out depressed slab			2				Laser		X	
Dig depressed slab			2	2			Hoe, Bobcat	X		
Stone depressed slab				2	4		Bobcat	X		
Poly & wire depressed slab						4	2 X12's, 2X4's	X		
<b>ALTERNATE WORK</b>										
Set more masonry door frames										
<b>MANPOWER TOTAL</b>	4	4	4	4	4	4				
<b>Which subcontractors do you need next week?</b>										
None										
<b>What issues need resolutions or answers? From whom do you need answers? When is it needed?</b>										
Need resolution on window change order - Tim - by 10/07/01										
<b>What plans should we be making beyond the next week? Who should be planning? When will it be critical?</b>										
Will need tile contract finalized and follow-up on delivery of bathroom partitions - Tim - by 10/6/01										

**Figure 2:** Bi-weekly meetings between the builder and subcontractors are a good way to plan materials shipments. A worksheet like the one shown here helps the builder and its subs review what work is scheduled, and decide what materials should be delivered when.

*Site training.* On the jobsite, we work with the site superintendent as well as with the builder and subcontractors' job foremen. We help them create tailored systems for verifying and counting shipments, for positioning materials correctly on site, for handling short or damaged materials packages, and for securing materials that are prone to theft. We also work to tighten delivery triggers and lead times so that material does not sit around long enough to be stolen. For instance, we have found cases where deliveries were triggered ten days before they were needed, even though the supplier was able to work on a five-day lead time. Shortening the trigger to five days reduced the amount of time that materials were sitting around the jobsite.

We work with everyone to devise systems that will ensure that the right amount of material gets delivered to the right location, that field staff can easily verify the amounts, and that subcontractors use the material as efficiently as possible. Solutions we have seen include breaking out materials takeoffs by how and when they will be delivered – first floor, second floor, roof, etc. – and placing these quantities in a three-ring binder so that they are easy to count.

We also help the builder create a plan for where to stage materials (Figure 3). The situation is dynamic and needs to be updated as the job progresses; a good spot at one point in the process might not be good at another point. Some contractors may want to do this electronically, but we have found that a manual system is as effective, if not more so. You can take the total site plan, put acetate over the plan and code laydown areas with different colors. The plan can be posted in the construction trailer where everyone can see it, and it is easy to update as the job progresses.



**Figure 3:** The materials management system should include a plan for where to stage various material shipments. This plan can be electronic or paper-based, and can be updated as the job progresses.

*Working with subcontractors.* Much of what we do with subcontractors is to help them learn use materials efficiently. Assume that a house will require a number of LVLs, including two that will span 20 feet each. The delivery might include a pair of 24 footers specifically for those long spans, but if the framer's crew is not told, they may end up cutting those long lengths into shorter pieces. The same thing often happens with plywood; we have seen more than one job where the takeoff specifies 50 sheets of sheathing, but the framer comes up short. Then when we visit the site, we see a dumpster full of scraps.

When working with subcontractors, we get into specific details on how to avoid this waste. In some cases, this has led to a policy where the job supervisor must authorize the use of certain key pieces of lumber, which are identified by spray paint. If the framer uses those pieces without asking and comes up short, the framer has to make up the shortfall.

### Putting it into Practice

Making these processes work means getting everyone involved in creating them. For instance, if we want to develop a process for reducing the number of extra purchase orders, we start by assembling a trade partner council that includes purchasing and construction, along with representatives of the seven biggest trades. We suggest some best practices that have worked for other builders, with the understanding that those practices will need to be customized.

The council picks a pilot project to test the new purchase order process, and then meets weekly to refine and tailor the process. The result will vary by builder. (One builder division we worked with ended up



creating stringent guidelines for generating extra purchase orders, that included random site visits by the purchasing agent to personally confirm that the additional material was needed. The result has been fewer requests.) Whatever the result, the fact that everyone on the council has a hand in building the process means that they will work to spread it vertically and horizontally across the company.

## **Overcoming Resistance**

Again, we find it relatively easy to get everyone on board with the program. In a difficult market, everyone understands that if they want to keep their jobs they will need to keep a lid on costs. Even so, superintendents sometimes complain that they lack the time to implement all of the needed changes.

We address the time issue by helping the builder to clearly define responsibility for each task. The purchasing agent may be responsible for submitting blueprints to the building supplier, while the site super may have to call and confirm delivery dates. Responsibilities will vary by builder, but have to be understood by everyone. That understanding will go a long way toward creating buy in: people are more likely to cooperate if they understand what everyone else is doing and where they fit in.

The planning steps we advocate here will add a bit of time to the supervisor's day, but they will save more time than they require. In builder divisions where we have implemented these steps, we see better cost control, less waste, a better flow of construction schedules, a huge reduction in extra purchase orders and higher profits. This has been the case for nearly every builder we have worked with.

Some builders give their superintendents incentive by tying compensation to waste reduction. Builders have long made bonuses dependent on customer satisfaction, production or safety, but we have found that tying bonuses to a cost reduction program that includes materials management is very effective. One builder we know set a maximum monthly dollar value for extra purchase orders; a percentage of any money not spent was added to the bonus program. Another builder used overall construction costs; superintendents who reduced build costs from \$120,000 to \$115,000 would receive a bonus for doing so.

The point is that, if done right, good material and process management can save companies a lot of money. The challenge is that these savings are transparent to most builders, who are too close to their inefficiencies to clearly identify them. FMI's experience, perspective and proven best practices can help bring those inefficiencies into focus and eliminate them.

## **About FMI**

FMI is the largest provider of Management Consulting and Investment Banking to the worldwide building and construction Industry.

Founded in 1953 by Dr. Emol A. Fails, FMI delivers innovative, customized solutions to contractors; architects and engineers; construction materials producers; manufacturers and suppliers of building materials and construction equipment; private owners, managers and developers; residential builders; utility companies; surety companies and industry trade associations.

FMI creates value through enhanced performance of companies, teams and individuals and by mitigating risk.

FMI's management consulting practice provides a wide array of services, including strategy, training and talent development, leadership and organizational development, marketing and related research, business development; compensation consulting and project delivery improvement. FMI's investment banking practice provides merger and acquisition advisory services, capital placement and financial advisory services.