Job Closeout

Finishing on schedule and within budget demands careful planning at the start

by Stephen Mead

Like a bad dream, a prybar tumbled from the mantel in slow motion, shattering the Italian marble hearth below. This is exactly how a good job goes bad.

Blame it on poor communication. My company had been doing a large interior woodworking project. We were almost finished and anxiously looked forward to our next job, when the owner asked us to build a fireplace mantel. After sketching a few ideas on the wood subfloor, we agreed on a design and a price.

A week later, just as the second coat of varnish had begun to harden, the owner returned to inspect the project. With a look of horror on her face she told me that it was much too large. I started to motion toward our original sketch, but realized that it had vanished beneath the marble hearth that had been set the day before. We argued, but in the interest of a peaceful settlement, I agreed to change the size of the mantel. In my haste to make the change I guess I was careless: the prybar fell, and the nightmare began.

The tile setter informed me that it would take six weeks to get a new marble hearth. Weeks stretched out into months, however, and three months later a frustrated contractor—myself—received final payment less drywall, paint and marble repairs from an equally frustrated owner. There's an old saying among builders that all jobs reach 90% completion and then stay there forever. This job seemed to prove it. Why is it so hard to finish?

Starting out right—As builders, we focus most of our attention on getting and managing the work. As a result, we give too little thought to the final stages of the job. This lack of planning costs us dearly. We spend countless hours either correcting work that should have been done right the first time, or modifying designs that weren't quite right, or waiting months for light fixtures that we thought we'd get right away. This excruciating process of trying to finish is called "job closeout."

The firm that I work for recently studied job closeout. We discovered that we spend 20% of a typical project's overhead on the final 5% of the work. A marketing survey also showed us that our inability to finish jobs promptly affected our clients' perceptions of us. They likened a contractor who spends too much time on the job to a child who won't leave home. In other words, our poor performance at job close-

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out was costing us money *and* references. We discussed the problem with clients, subcontractors, accountants, architects, engineers—even our spouses—and concluded that the real trick to finishing on time is getting started properly. That means scheduling intelligently and taking time to educate clients and subcontractors about the job schedule and the building process. It also means actively managing quality at all stages and controlling the final punch list (a list of items to be corrected or completed before the job is considered complete). The big payoff comes at the end because the more time you spend up front, the easier it is to finish.

Setting and managing schedules—It is said that time expands to meet a task. If you're given four weeks to complete a project requiring

The start-up checklist. This simple form can be adapted to fit a particular job or builder. Organizing routine tasks leaves the builder free to focus on the more complicated aspects of a project.

JOB START-UP CHECKLIST

ITEM	DATE
1. Set up project directory	_____
2. Set up files	_____
3. Project schedule	_____
4. Job buyout	_____
5. Write subcontracts/purchase order	_____
6. Accounting budget	_____
7. Order long lead items	_____
8. Job meeting	_____
9. Temporary utilities/telephone	_____
10. Trash hauling/dumpster	_____
11. Job sign	_____
12. Change order system	_____
13. Requisitions	_____

two weeks of work, you'll generally finish in four weeks. Most of us put things off until we're forced to meet a deadline, and that's why scheduling is so important.

Scheduling involves estimating the time needed for various tasks and then setting realistic deadlines. On large commercial projects, several employees do nothing but keep track of the job schedule. But good scheduling is as important for the small builder as for the large one, because the efficient use of time can mean the difference between profit and loss. We make scheduling part of our standard job start-up checklist (chart, facing page).

Making a schedule forces you to build the job mentally and to solve problems early. To schedule successfully, you need to understand the project from start to finish. Separate each task, determine the time involved, and try to develop an understanding of how each part of the job relates to the others. Ask your subcontractors how long their work will take. If subcontractors aren't available, you can use published estimating guides to estimate production rates. A good schedule lets everyone anticipate the future. We use a bar-chart schedule (chart below). The bar chart helps you decide when to order materials, and how to most effectively schedule manpower. It also makes potential scheduling conflicts easy to spot. We use a computer-generated schedule called Micro-Trak (Primavera Systems, 1574 West, 1700 South, Suite 26, Salt Lake City, Utah; 801-

973-9610), but the bar-chart format is simple enough to be generated by hand, also.

To be effective, a schedule should be optimistic, yet realistic. Build extra time into your schedule for bad weather, delivery delays and inspection problems. Professional estimators call this "float," and it gives you flexibility in getting tasks completed. After estimating the total length of the job, subtract two weeks from it. Everyone will finish early, and you'll have two weeks to handle inspections, push stragglers and clean up.

After setting the final schedule, manage it aggressively. Make sure all deadlines are met. When subcontractors fall behind, ask them to add more workers, or to work weekends. As a last resort you may have to bring in other subcontractors to help complete the work (you may want to include a clause in your original contract that lets you charge the original sub for any extra expenses). The idea is to manage time so that it doesn't expand.

Educating the players—We've found that most jobs go much more smoothly if our clients understand the construction process, so we hold a preconstruction meeting with clients and architect. Some clients know just enough to make them dangerous. For example, even though I've hung hundreds of doors, I had one client tell me I was doing it wrong—they had seen a brother-in-law do it differently. A preconstruction meeting lets you deter-

mine how much your clients know about the job and about construction. It also allows you to educate them about the problems you're likely to encounter. But keep in mind that most people don't speak the language of construction. For instance, most people won't know what you mean by "coping" a piece of trim; it's better to explain the process in simple, everyday language. The goal is understanding.

We typically start with the plans, taking our clients on a guided tour of the project. We "walk" them through each room, reviewing details, elevations and sections, and making final material choices (many jobs are delayed simply because the clients can't make up their minds). It's tedious and time-consuming, but it can head off many potential problems.

This is also a good time to review the clients' expectations. Few people seem to understand that there are different levels of craftsmanship, that painted wood trim doesn't demand as much care or time as stained architectural millwork. We use photos of our previous work, drawings, magazine photos and actual mock-ups (of trim or hardware, for instance) to show how things will look.

Clarifying expectations at the beginning will help minimize midstream design changes. Doing so is crucial, because even simple changes can have a profound effect on job completion. Changes not only raise costs; they can also lower quality. We've found that we get the best quality on the jobs with the fewest changes.

A sample schedule. Effective scheduling demands that you understand the project from start to finish, which forces you to solve problems early. The bar chart format lets you see the entire project at a glance and helps people understand how their particular task relates to the whole.

No.	Description	1989	Dec. 18	25	Jan. 01	08	15	22	29	Feb. 05	12	12	26	Mar. 05	12	19
1000	Notice to proceed															
1010	Submittals															
1020	HVAC controls															
1030	Lighting															
1040	HVAC submittals															
1050	Plumbing fixtures															
1060	Sprinkler drawings															
1065	Glass railing															
1070	Fire alarm															
1075	Kitchen equipment															
1076	Arch. submittals															
1090	Final drawings															
1100	Final hardware schedule															
1110	Hollow metal frames															
1115	Mobilize/layout															
1116																
1117																
1118	P-2 level															
1119																
1125	Fab/install ductwork															
1126	Elec. rough-in															
1127	Masonry															
1145	Plumbing rough-in															

Tradespeople take pride in their work when they do it right the first time. When a client demands that something be taken apart and built differently, job morale can head downhill, dragging craftsmanship with it. We discourage change orders by charging aggressively for them, and by making it clear that the client must compensate us for overhead if excessive changes make the job run over schedule.

Finally, it's a good idea to spend time reviewing the job schedule with clients. Clarify which items, if any, they'll have to coordinate, and include these in the schedule. Permits and surveys are often handled by clients, as are utility fees and deposits. Beware of the client who lacks a sense of urgency. Set deadlines together and strive to meet them.

The next step is to hold a final meeting with subcontractors. Again, review the job schedule and ask for delivery information on materials. We note this information in a project control log. This is simply a document that contains information on materials, such as what was ordered, when, and from whom. It's kept with the job schedule. The preconstruction meeting with the subcontractors is a good time to review policies on billing, change orders, punch-list items and payments. We require all subs who work with us to attend this meeting.

Defining and maintaining quality—A big part of getting finished is reducing repairs. This requires an ongoing quality control effort.

Each day our superintendents walk the job like detectives, checking and rechecking the work. We also try to anticipate problems before they occur. Will that outlet be in the way of the backsplash? Are the doors undercut properly and sealed to prevent warping? We pay particular attention to details, such as roof flashing, foundation waterproofing and drainage, backfill and compaction, that can cause big problems later on if not done right.

Before hiring new subcontractors, make sure that they meet your standards. Check their references, ask their suppliers if they pay their bills, and try to determine if they're eager to do a quality job. Remember, *you* are ultimately responsible for their work. Enforcing high standards early will improve the overall quality of the project and reduce repair and warranty problems.

Packaging the results—Finishing a construction project means tying up a lot of loose ends. To help with this process, we've developed a job closeout checklist (chart below). We also assemble all maintenance information, equipment warranties, guarantees and installation information. We package these and other important documents—including the names, addresses and phone numbers of all subcontractors used on the job—in a three-ring binder. During the final walk-through, we turn the binder over to the client, along with the rolled-up construction drawings. Our cli-

ents are impressed by such attention to detail and are much less likely to call us later with minor questions.

Controlling the punch list—After the final walkthrough, there's still one hurdle: the punch list. This is a list of problems that must be corrected before the job is considered complete. Paint touch-up, hardware adjustments and final cleanup are standard punch-list items. It sounds simple enough, but a poorly managed punch list can turn into a builder's nightmare.

Part of the problem is human nature. Once subcontractors leave a job, they feel that their work is complete. Bringing them back to make repairs can be difficult, particularly if they did their work early in the project. To overcome this resistance, discuss the punch list with subs during the preconstruction meeting. Make it clear that they have a set period of time after receiving the punch list to make their corrections (two weeks works well for us), and that if they're unable to do so you'll hire someone else—and charge them accordingly.

Clients can also be a problem. Some clients see the punch list as their last chance to make changes or remedy design problems. For this reason, you'll need to set some standards early. Ask the clients to be specific about punch-list items, and keep changes separate. Don't allow general notes like "touch up paint as required." Fixing something "as required" can take days, weeks, even years.

The gist of all this is that you need to control the punch list, rather than letting it control you. On most jobs, the client and architect assemble the punch list, then hand it over to the contractor. But we always insist on participating in the process. Many punch-list items are misunderstandings that can be easily resolved. For instance, one client complained that a wall had been built in the wrong place. We explained that we had to move the wall to clear a heating duct leading to the second floor. The problem never made it to the punch list. And because most punch-list problems are simply a matter of paint touch-up, cleaning or final adjustment, we try to include in the walk-through a painter, cleaner and carpenter in the punch-list party. This lets us solve many problems on the spot.

It's important that the punch list be written down and that it be understood by everyone. When the punch list is complete, a copy of it should go to each of your subcontractors. On larger jobs, we use stick-on circles, like the ones used in grocery stores, to show exactly where the punch-list items are. The circles help direct each trade to the problems they need to deal with.

A former boss of mine once said that the trick to finishing is to be both cop and psychologist—in short, to do anything necessary to get the job done. You may step on some toes in the process, but you'll have happier clients, a thicker wallet and fewer nightmares. □

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Tying up loose ends. A closeout checklist can make the end of a job much smoother. Note the amount of documentation delivered to the owner. This includes information on cleaning and maintaining appliances and materials.

ITEM	DATE
Preliminary punch list	
Request to subs for owner documents	
Request to subs for final invoice	
Final inspections	
Certificate of Occupancy	
Documentation to owner	
Equipment warranties	
Outstanding change orders	
As-built drawings	
Subcontractor list	
Keys	
Certificate of Occupancy	
Final release	
Punch-list sign-off	
Materials	
Equipment transfers	
Store job records	
Subcontractor change orders	
Sub final release and lien waiver	
Job closeout report	