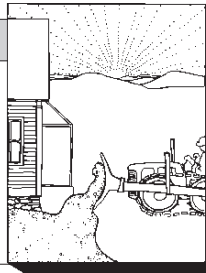


The Funny Papers

by Harris Hyman, P. E.



Our world of work is changing. The buildings we build are changing, the electrical and mechanical systems are changing, our methods are changing, our clients are changing. Our attitudes toward our plans—drawings and specifications—are one of the real indications of the change.

We are a long way from the master carpenter who carried his plans as a series of pencil marks on a single seven-foot board. However, we're not yet to Manhattan, where a full set of stamped working drawings is carefully checked before a building permit is issued, even for a simple house.

We are somewhere in-between, and much to the irritation of a number of us, probably headed for Manhattan. It has its effect on the way we work.

To many builders, a full set of drawings is almost an affront to their skill and craftsmanship. They have been building their whole lives, and they know how to build from a sketch—or even from a few scratches in the dirt to mark out the corners—and some casual discussion with the owner. The master builder is the designer and has no real need, or even use, for the "ak-tek feller."

The strange thing about this is that the builders with the most disdain for the professional designers are not the older ones, but men in their late twenties with eight or 10 years' experience and a brand new truck with their name painted on it.

These plans are considered "the funny papers"—a sort of paper offering to the gods who look down on builders, designers and owners. They are considered only a suggestion of form, a casual guide to the design that is not to be followed with any seriousness.

After all, what do the pencil pushers know about real building? The plans (billed at 10 percent of the project cost, no less!) are a sinful rip-off.

I'm a pencil pusher who learned building a little late. From our perspective, carpenters are a pack of Neanderthals who recently learned that a steel lump at the end of a femur makes driving in the nail a little easier.

We carefully try to depict the needs and desires of the owner, and we carefully bow to our legal obligations by putting enough stuff down on paper so the owner can sue the builder if the roof leaks. We do our best, visiting the site each week to look over the job and keep the builders from going too far off the beam.

The Builder and Designer as Adversaries

So what really happens? First, the builders lie all of the time. They hustle on Wednesday to build it the way they think it should be built, and we're confronted with wood and concrete on our regular Thursday visits.

Then, when we point out how they've screwed up and ask them to fix it, the builder calls the owner and tells her how incompetent we are and how they've made a highly desirable change that is well worth the additional price.

Next, we go to our attorney, who writes she owner a letter disclaiming our responsibility for any of the builder's design changes. Then the owner becomes a little worried and tells the contractor to follow the plans.

The builder's knuckles turn white, and the voice goes up an octave into a stutter while he politely agrees to the change, all

the while vowing to get even with the designer. Then we move on to the next floor.

In Manhattan, the roles of the players have better definition. The designer designs, the engineer engineers, and the builder builds. "Of course I knew that the stairway had only 5' 10" headroom, but I was just following the plans." Even there, life isn't perfect.

The fact is that the builders are right. Construction documents are often either badly done or inappropriate to the project. The architectural schoolbooks describe the "proper" contents of a set of working drawings and specifications, and the designers slavishly do the "proper" job. But the real point of the construction documents is often missed.

Working drawings form a set of instructions for accomplishing the job. They are nothing more, and should be nothing

what's going on, but she's convinced that the volume of paper *has* to represent a thorough effort, so she signs according to the etiquette of contractual theatre.

The contractor, meanwhile, has seen the plans and elevations, a wall section and a couple of details, but he has no idea of what is in the spec book because the bid was rushed. (Of course, he covered this by an overbid of 25 percent.) And he keeps a straight face to cover the usual mild panic of a contract.

The other height of inappropriateness is two sheets of plans and elevations with a bunch of interesting details that the owner wanted—like some unbuildable roof intersections. Some changes have been pencilled in, and a set of specs ("oak fl., pk.tl. in dg. rm., 2d-3d clear shg.," etc.) is listed on the back of an envelope. There is a fixed-cost contract.

Implicit in the contract is a promise to

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less. They should *help* the builder by providing useful information that would have to be scaled, discussed or otherwise figured out.

With a reasonable set of working drawings, the builder should be able to build what the designer has in mind, accomplishing the program objectives and aesthetic effects. It really is the designer's job to determine these objectives—the builder should not impose design objectives or provide aesthetic sense. If they are followed, the working drawings should help the builder apply this knowledge to the project at hand.

The Need for Appropriate Specs

The designer and the builder are not adversaries. We are a team attempting to provide a satisfactory and sometimes elegant building for the owner at a cost that is reasonable and sufficient to allow us to continue to give service. An inappropriate set of construction documents often blows this relationship.

One extreme of inappropriateness is the "full" set of plans and specifications for an 1,800-square-foot house. Here we have 32 pages of drawings and an inch-and-a-half document of specifications churned out from the word processor.

At the contracting ceremony, the owner and contractor carefully initial a set of prints and the spec book. The designer feels confident that all of this paper represents a super effort and serves to protect everyone.

But the designer knows the specs only casually. He has no idea that the door hardware is available only in Southern California, that the roof shingles were phased out five years ago and that the plumbing code has been changed.

The owner doesn't know much about

deliver the building according to the builder's best ideas. The designer is nowhere to be found when the contract is signed. This is the normal course for much of the residential construction in New England.

The first extreme sets up an almost immediate adversarial relationship between the builder and the architect. The complexity of the documentation demands excessive study on the part of the builder to become familiar with the style of the designer.

It also demands a lot of interaction between the designer and the builder. If the designer is unwilling to put in this time—or if the builder is unwilling to ask for and/or accept explanation—the job has a real potential for turning sour.

The second extreme, the job with no working drawings, has at least as much potential for going wrong. *All jobs of any complexity must have working drawings.* These drawings solve the construction and detailing problems and ensure that the parts of the building fit together correctly and gracefully. In an orderly job, the drawings are completed in the designer's office, where the rest of the drawings can be cross-checked for conformity.

When the working drawings are not on paper, they end up being drawn on a 2x6 on the job while the crew waits around for the foreman to figure things out.

This places a tremendous burden on the foreman, who must either keep a lot of details in his head or make things extremely simple so the other parts of the building can go together properly.

The elaborate documentation of the first case might be appropriate for a job like a small theatre, and the simple documentation of the second case may be suitable for a garage or summer camp. But

neither is quite right for an \$80,000 house.

So how does a designer develop a "reasonable" set of working drawings? By obtaining guidance from this basic principle: that the drawings are to help the builder to construct the building the designer intended. To this are applied two other principles: that the builder is skilled and knows how to put pieces of wood together in a conventional manner, and that the builder should not design or detail the project.

Drawings for a typical house involve plans and elevations, building sections that illustrate how the spaces relate to each other, large-scale wall sections and details that show the construction, and sufficient pictures of any fussy details that are important to the project. With these are included the subcontract drawings for sitework, masonry, HVAC, plumbing and electrical work.

On top of these are schedules and specifications. Most specification books frighten me a little. It seems almost like these are litigational tools rather than construction tools, designed to protect someone when something bad happens. (Having had a couple of bad experiences, however, I'm not sure that *anyone* is protected.)

Standard specifications can be purchased ("Masterspec" or "Library of Specifications"), but these seem to play at being legal forms and are often obscure or repetitious.

Far worse than this are the "aggressive" specs that set builders against owners and designers. I can't believe that the authors intended them this way, but they often seem to take on a combative attitude.

There are certain jobs where they are expected, of course, such as public-works and institutional jobs with formal, competitive bidding, and all projects over a certain size. These call for the use of formal project manuals.

But for residential work and smaller projects, I personally like to place the schedules and specs among the drawings and skip the book altogether. This eliminates one more set of papers to frighten the contractor (and raise the price), and it allows the total package to remain together.

Some designers boilerplate their details onto sheets of standard typewriter paper and include a set of specifications that is customized a little for each job with the word processor and CAD system. I like this idea, but I find it useful to copy the sheets onto transparent film and stick them onto the large drawings. To each his own; do whatever is helpful.

It's Getting Easier

Things actually are becoming easier; despite all the changes, we may have a good thing going. In the 15 years I've been working in New England, builders have become a lot more sophisticated, and the designers have become a lot more appreciative of the problems builders face.

I've been fortunate to work on some projects where the builder, owner and designer cooperated with some respect and consideration for one another. These have been some of the most wonderful experiences of my life.

While this column has provided more advice for designers than builders, I hope it has given builders some insight into the problems we designers must confront. We want to describe our ideas in a way that provides sufficient information for proper execution—not to burden the builder with paper, paranoia, fear and loathing.

It isn't easy. Sometimes it helps to remember that we are in these projects together—and that they fly or die as a result of our joint efforts. ■

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