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BPA INTERNATIONAL

JLC's

Letters

More Markup Math

To the Editor:

I appreciate Sal Alfano's explanation of gross profit (*Strictly Business*, 7/98). There is another way to calculate markup that avoids the confusing "subtract from 1 and divide by the remainder" math.

You calculate overhead costs the same as usual: Add up all costs that can't be applied to a specific job, including your time spent off the job site, office costs, vehicles, marketing and so on. Then calculate the total direct, or "hard," costs for all jobs in the same time period — your time on the site, labor, materials, subs, and miscellaneous costs. All costs for the period should be included, either as overhead or as a hard cost. Divide overhead by hard costs, and you get a "direct" overhead percentage that can be used as a simple multiplier in your estimates.

For example, if overhead is $60,000 and direct costs are $240,000, you get an overhead multiplier of 60/240 or 25%. For a job with hard costs of $10,000, you'd then add a simple 10,000 x 25% or $2,500 to cover overhead.

This isn't the "retail" way to calculate markup, but I think a direct multiplier works better for construction for two reasons: The math is easier, and when you're computing it, it's easy to pull direct costs right out of your accounting records. Using past revenues to calculate markup won't work if you haven't been bidding correctly. Mathematically speaking, both approaches should end up exactly the same.

Dennis Kolva
Turtle Creek Software
Ithaca, N.Y.

Plywood Orientation in Shear Walls

To the Editor:

Scott McVicker has some good points on shear walls ("Frequently Asked Framing Questions," 4/98), but I must disagree with his main premise regarding horizontal vs. vertical sheathing for shear walls.

A footnote in the 1997 *UBC* Table 23-II-I allows increasing the shear in 3/8- and 7/16-inch plywood if it is oriented horizontally *or* if it is applied to studs 16 inches or less on-center. McVicker states that veneer plies whose grain runs parallel to the applied force have greater shear strength than perpendicular plies. He goes on to say that horizontally oriented plywood makes a stronger shear wall because it has more plies with grain oriented horizontally. If you use basic engineering principles to analyze any one-foot square element of a shear wall, you find that all four edges of the square have exactly the same stress in them. In a perfect shear wall, the same is true of a 4-foot by 8-foot panel — each panel edge has the same force per unit length. This is why it is so important to nail *all* edges of *all* panels in a shear wall, installing blocks under otherwise unsupported edges, as McVicker says.

Thor Matteson, S.E.
Mariposa, Calif.

JLC E-MAIL FORUM

To participate in this free discussion group, send an e-mail message to **JLCforum@bginet.com**. All questions and comments about construction-related topics are rebroadcast weekly to the entire group.

Scott McVicker responds:

Thank you for writing in response to my article. As you are probably well aware, this year has been very hectic for engineers in the Golden State, which has delayed my reply.

As you cite from the code, stud spacing does affect allowable shear in shear walls. But keep in mind that the original question (horizontal vs. vertical orientation) did not ask about stud spacing, only about the sheathing. Horizontal sheathing vs. vertical sheathing on studs of equal spacing is stronger for the reasons cited in my article. A thin panel applied to studs on 16-inch centers may use the higher strengths for thicker sheathing, but that same panel applied horizontally will have an even higher (non-published) value.

Again, you are correct regarding the unit shear forces in each direction — this is basic statics. But the allowable shears for plywood do not derive directly from allowable strength of sheathing and nails. They are colored by panel testing that sought to meet certain empirically-derived deflection limits. Plywood installed with a majority of fibers oriented horizontally will have a lower shear deformation due to the lower unit stresses in the fibers. Shear deformation in the vertical direction is all but zero due to the presence of the wall studs. Therefore, horizontally oriented plywood can resist higher forces before the wall assembly reaches the proscribed deflection limits. This explains why a wall with the same sheathing but different panel orientation can resist two different shears.

Foam Form Tips

To the Editor:

Ralph Woodard's article "Building Above Grade With ICFs" (6/98), though informative, didn't do justice to the user-friendly nature and labor-saving features of foam forms. I assume this is because, as Mr. Woodard writes, this was his first ICF job. He's therefore going through the learning curve. Several techniques he described are labor-intensive and unnecessary to an experienced ICF installer. The intent of this letter is not to criticize him but to try to convey more accurately the ease of using ICFs.

I've installed Polysteel forms for more than two years on nearly a dozen projects, some quite big and complicated. Here are some tips I'd like to share with you that make a world of difference.

First, I always set the first course of forms in the wet footing. Though this is not recommended for first-time users unless somebody who's done it before is there to assist you, this is a tremendous labor and materials saver. I use batter boards and strings and set them 15 1/2 inches higher than the projected top of the footing. By placing the top of the first course of forms (which are 16 inches tall) even with the string as the concrete is still wet, the bottom half inch of the form is stuck in concrete. You can place gravel and install the slab on the inside of that first hollow form the very next day and be confident it won't move.

Also, as I wet-set the forms, the location of the vertical cores (for vertical rebar placement) becomes obvious without any additional measuring. So, I place a short piece of precut bar (20 to 22 inches) in the middle of the cores that will require vertical reinforcement.

Thus, wet-setting eliminates the need for grade stakes (because I measure down from the string as I pour the footing); the need for a perfectly level footing (within 1/2 inch is good); the 2x4 plate next to the bottom forms, attached with Ramsets; and having to drill hard concrete the next day and use epoxy to set the rebar pins.

Wet-setting on big jobs or hot summer days requires one or two more men for the short time the footing is installed. Otherwise, the concrete will set before the forms are placed.

Second, Mr. Woodard says he thinks leveling the top course of forms before pouring the walls is counterproductive and recommends a very level footing. But the reality is that no matter how careful you are, after stacking six to nine courses of forms, it's not unusual to have height variations of 1/2 to 3/4 inch at the top. And leveling the top course is fast and easy. So you don't have to be overly picky while stacking

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because you know, at the end, you'll quickly cut the walls level.

Another big time saver is a "saddle" — a short piece of stiff wire that holds the rebar in place. Proper use of saddles eliminates the need to install rebar before you stack the forms. The saddles allow you to drop the bars from the top, after the walls are stacked all the way up. They simultaneously save you the pain of feeding the forms from the top of the bars downwards to stack the walls, as well as the risk of injury from steel sticking up everywhere.

Marc Gauthier
Ramtech Polysteel
Sandy Ridge, N.C.

And Now, For a Word to Our Advertisers

To the Editor:

When I think of the unpleasant discussions I have had to get a builder to have his framer remove the nails clamping the bottom chords of trusses to the top plates of interior partitions, and the photocopies of your own articles on the subject I have sent along with the drawings to try to prevent it from happening, it frustrates me to no end to see the Senco ad showing the versatility of their new nailer by showing a framer nailing the bottom chord to the top plate of a nonbearing partition.

How about asking your technical department to contact your advertising department to ask them to get Senco's marketing department to get in contact with the real world?

Terrence Watson, Architect
Seattle, Wash.

I am an architect and I have subscribed to *JLC* for several years. I value the publication as a periodical that provides topical and useful information. In my 34 years in the practice, I have always maintained a working personal and corporate philosophy that architects are team members working with the construction community to deliver successful projects to our clients. This concept works, and our clients agree.

However, I found the July issue with its Bosch ad (page 23) to be offensive, counterproductive, and in contrast to the quality standards of your publication. What, may I ask, is the corporate goal in the production of a tasteless, stereotypical message which states that architects are "pencil pushers" whose "pie in the sky" ideas require a tradesman's salvation? "Save the architect's butt"? Bosch "quality" indeed! I believe that they haven't made a product in Germany since the late '60s. Apparently their referenced "tradition" of quality is too distant a memory to preclude base marketing.

Come on *JLC* — this ad is unprofessional and demeaning. I hope that your thirst for revenues will have some improved filtering of future advertising effluent.

Jerry McDonnell, AIA
Eugene, Oregon

To the Editor:

I'll make this brief because I don't have time to waste on cheap shots at my profession. I would just like someone from Bosch to ask the more than 20 tradesmen that receive nearly half a million dollars at my firm's direction every month, who's saving whose butt?

As I recall, on our job sites the Milwaukees and Makitas outnumber the Bosches by a significant margin. Could it be you need to resort to mudslinging for attention? Please get out of the gutter and into the real world with your advertising.

George J. Donovan, AIA, President
Donovan, Phillips, Lavalle
Construction Managers
Doylestown, Pa.

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