TECHNIQUES and COMMENTS

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John J. Bucholtz, P.E. CONSULTING ENGINEER

PLASTERING INFORMATION CENTER * DIVISION OF CONSTRUCTION QUALITY ENGINEERS, INC.
TECHNICAL CONSULTANTS * LATH, PLASTER, STUCCO, DRYWALL, WALLS & CEILINGS

SPACE THE PLYWOOD!

When someone's face turns blue, what does it mean? Too much grape juice? The weather is extremely cold?

No, no no! It means we have been hollering so much about plywood, especially OSB and other wood based sheathing that we just turned blue!

Plywood, OSB, and stucco don't get along with each other too well unless the sheathing is spaced a minimum 1/8-inch at all ends and edges just as stamped on every panel.

Finding a building under construction with the plywood spaced the APA (American Plywood Association) 1/8-inch minimum at all ends and edges, is the rare exception-certainly not the rule.

Who applies the sheathing? Generally it's the framing subcontractor. His specifications may even spell out that sheathing is to be properly spaced, in addition to the large letters on each panel that are obvious to anyone with vision of 20/80 or worse.

When plywood is not spaced, there is a dramatic proclivity for stucco to crack from stresses generated by the plywood. These cracks have their own distinct pattern and are immediately recognizable to the stucco expert who knows anything about plywood behavior.

Why don't framers space plywood? We've heard a number of reasons. First, they say that they run out of "wiggle room" when they nail panels because eventually there is no support into which nails can go. This means having to cut off a strip of the plywood on the long edge so they don't run out of studs before plywood overlaps.

Right here we encounter a problem. APA requires the spacing stamp. Next time you look, you'll also see in big letters "SIZED FOR SPACING".

We've checked any number of job sites and sure enough, panels are 4 feet by 8 feet on the button. How is this, then, "SIZED FOR SPACING"?

So we recognize the complaint of the framer, but it does not exonerate him from the requirement to space plywood under stucco. One option is to install an additional stud where needed. Another is to install all sheathing, then use a Skilsaw to inscribe a saw kerf between panels at ends and edges.

There is also no "almost" when it comes to spacing of plywood or OSB panels. Two sheets cannot be butted together and excused simply because an adjacent pair of panels is spaced.

As previously published, if plywood sheathing is not spaced, let us know and we'll issue a guarantee that stucco over it will crack.

It is a fact that at least 75% of cracking in stucco today is attributable to behavior of plywood that is not spaced. It well may be more than 75%, but that figure is reasonable.

What does the plastering subcontractor do when he encounters a job where plywood is unspaced? Knowing that cracking is highly probable, and knowing that unspaced plywood is a condition that can adversely affect performance of his installed work, he has an obligation to notify the builder, owner, or architect of the need for spacing.

If real life is consistent, in many cases he will be

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told to mind his own business (which this happens to be), and proceed with his work. If he refuses to do so, he runs a risk of having the work performed by someone else and then being back charged for the difference in cost.

Or, he could well face a lawsuit for delay of the job. In a lawsuit, it doesn't matter if someone is right or wrong. When the suit is filed, it must be reckoned with- which is costly in itself.

About the only option he has is to advise that he will proceed but that he must first have a signed agreement that he has notified proper authority of the spacing requirement and is proceeding to comply with directions.

If a hostile situation arises, it is good sense to have three or four unbiased people present at a meeting where facts are laid out and the owner is requested to sign the agreement. If the owner refuses, the subcontractor has witnesses that he was directed to proceed. This should be of value in case of a lawsuit or in case stucco cracks and the plasterer gets the blame.

Cracked stucco can serve as a primer for a construction defects case. There are some who "scout" new developments. About the only really obvious part of construction they see is the stucco finish. If it is cracked in a number of places, it is probably an easy matter to excite new home buyers who envision great rewards from a construction defects lawsuit.

Quoting William Richardson, AIA, well experienced in construction defect litigation, "Some defects consultants make things up. Those made up things become a court case that has a life of its own. You can't kill it with a stick".

Plastering industry members have been targeted in virtually all cases as culprits whose work is responsible for most of the alleged construction defects. Often, in fact, they are virtually blameless, but their insurance carriers pay out big bucks because someone testified that stucco is to blame.

And all this from failure to space plywood. It's why plywood spacing is so critical in the business of building today.

OSB Is The Worst Performer

OSB (oriented strand board) is rated for performance equivalent to plywood. Yet it is NOT plywood and does not act like plywood.

It has a dramatic tendency to be affected by moisture, even ambient humidity. Spacing at least 1/8-inch at all ends and edges is absolutely essential.

There's no "rescue" by control joints, either. Stresses generated by OSB have no regard for control joints. Cracks will run from one panel, right across the control joint, to the adjoining plaster panel. How can this be avoided? Simply SPACE THE SHEATHING as recommended.

In its publication "DATA" American Plywood Association has this to say about plywood (and OSB as well):

APA recommends leaving a 1/8-inch space at panel edges and end joints, unless otherwise recommended by the panel manufacturer. This allows panels to expand if they are subjected to higher moisture levels during construction or after installation. Use 6d nails to fasten panels that are ½-inch thick or less, and 8d nails for panels over ½-inch thick. Space nails 6 inches o.c. at panel edges and 12 inches at intermediate studs. Closer spacing of fasteners or other nail sizes may be necessary for engineered shear wall applications.

APA recommendations apply equally to all veneer plywood, oriented strand board (OSB), or composite (APA COM-PLY) panels.

But the bottom line is that all plywood panels are affected by moisture- water or even ambient humidity. Spacing helps it accommodate swelling.

Control Joint?

When plywood misbehaves, no number of control

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joints (or "expansion joints" as they are so frequently referred to) will rescue plaster from cracking. Cracks are contemptible and will ignore the control joint. This becomes another example of the myth of control joint use.

THINGS OBSERVED WITH PLYWOOD

We have viewed plywood that has bent so much from moisture and no spacing that it left more than a half inch of space from plane between studs. Not only once, but a number of times.

In the APA Design/Construction Guide for residential and commercial in 1986, it was specifically recommended to "**allow 1/8" spacing at panel ends and ¼" at panel edges**." We like this better than the current 1/8" at ends and edges recommendation.

An important aspect of plywood and cracking in stucco is that the crack does not necessarily occur over the plywood joint. Stresses, generated in all structures, radiate through the plaster membrane and find relief at inherent planes of weakness by forming cracks, breaks, or fissures. These planes of weakness may be far removed from the plywood juncture, so the fact that cracking occurred away from the joint does not mean plywood is not the source of stresses.

Moisture was the predicate for the code required **two** layers of Grade D building paper over plywood.

PLYWOOD RULES APPLY TO EVERYONE-THERE ARE NO EXCEPTIONS

That stuff about plywood spacing does not apply to me. It only applies to other builders.

This may sound strange, but it's a comment made by a small builder. It would be great if it were true, but unfortunately, he has no divine dispensation that excuses him from the results of unspaced plywood.

Stucco is wonderful stuff, but it faces a tough world when it is born. Its nature is to crack, and cracks usually occur within the first six to eight weeks after completion of application.

That's because fresh plaster has little strength. Construction, over which it is applied, on the other hand, generates significant stresses as framing members and other components "find themselves" and then stabilize.

So to start out, you have the tough bully of new construction, and the new baby stucco. Stresses lead to cracking during the early period, but as stresses diminish and plaster gets strong, the plaster can accommodate those stresses.

That's the main reason very few cracks develop after the first six or eight weeks. There are stresses in the structure, but they are not capable of exceeding the strain capacity of the plaster because it is now strong enough to resist the diminished stress forces.

But cracking attributable to plywood behavior can occur just about any time when water or moisture reaches the plywood. If the building has been weatherproof for several years, for instance, and water finally finds a source of intrusion, it can affect the plywood in such a way that cracks will develop as a result of plywood behavior.

A Story from the Past

The building was a new one at Stanford University. An official with the building firm and I went to the job site, to confer with the job superintendent at the trailer.

The super commented: "There's the building, and everything humanly possible has been done to make sure the stucco doesn't crack".

My comment: "Not quite"! The superintendent was shocked. I then handed him a copy of the APA flyer about spacing plywood and pointed out that plywood on the large building was unspaced. He asked, "When did this come out"? I told him it was probably before I learned to read.

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Anyway, he had the required 1/8-inch installed between ends and edges of each panel with a Skilsaw. The plaster was applied, and to date- about 15 years later- there are no cracks.

However, had he not spaced the plywood, cracking would have occurred, probably not excessive, but enough that the Stanford architects would have been very unhappy.

Another noted phenomenon: Where plywood type cracking has occurred, asking the builder if he spaced the plywood will illicit an answer that “yes, all plywood was spaced”. Frequently, investigation shows it to be otherwise.

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