
Mechanical Fasteners For EIF: Locating the Responsibility

Until Inherent Problems of Gypsum Sheathing Are Eliminated, the Decision to Use Mechanical Fasteners For EIFS Installation Becomes a Matter of Liability, Conscience and Responsibility

The issues surrounding proper installation of exterior insulation and finish systems are becoming increasingly complicated for contractors and specifiers since the Gypsum Association announced its position on requiring the use of mechanical fasteners.

The Gypsum Association, representing all gypsum product manufacturers, recognizes the use of either adhesive or mechanical fasteners for EIFS attachment:

“. . . Exterior Insulation Finish Systems incorporating gypsum sheathing may be used with either mechanical fasteners or adhesives.” [“Fire Resistant Gypsum Sheathing” Brochure GA-252-86]

Prior to this year, it recommended only the use of mechanical fasteners:

“Exterior Finish Systems applied over gypsum sheathing should be applied with mechanical fasteners through the sheathing into the wall framing.”

The association’s new position also states that performance of EIFS and the recommendation of proper attachment methods are the sole responsibility of the EIFS manufacturers—and,



**By John Lamb
Sales/Marketing Manager
SUREWALL Architectural Products
and Systems
W.R. Bonsal Company**

in effect, not that of the gypsum sheathing manufacturers or the Gypsum Association itself.

It stands to reason that the manufacturers who market systems not requiring mechanical fasteners are happy—after all, many of them had lobbied for the new position to accept adhesives and now the outside pressure to adopt the additional step of

fasteners for their systems has been somewhat relieved. And as it would be for any manufacturer, having the Gypsum Association’s approval is a strong selling point.

It would be an oversimplification of the situation to say that EIFS manufacturers who already require mechanical fasteners for their systems are, on the other hand, unhappy. After all, both the Gypsum Association and the Exterior Insulation Manufacturers Association do approve the use of mechanical fasteners when properly installed. The problem facing the industry is much greater than this.

The Problem Facing the EIFS Industry . . .

The Gypsum Association’s new stand comes at a time when the EIFS industry, now a decade into hard-coat system use and over 3/4 billion square feet and 100,000 projects later, has a better handle on the actual and potential delamination problems created by moisture degradation of the paper facing of gypsum sheathing and also by external environmental stresses, such as

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wind loads, structural movement and impact. Furthermore, the association's new position comes at a time when the industry should be looking further ahead to preventing any possible non-performances, or failures, of exterior walls.

It is understandable why the Gypsum Association would not want to become involved in a situation that points out the susceptibility of gypsum sheathing facing to degradation, or softening, as a result of moisture exposure. It would highlight a negative aspect of a product, which unless exposed to moisture for extended periods

performs most satisfactorily and according to design.

Yet at the core of the delamination problem of EIFS is the facing of gypsum sheathing. Gypsum sheathing was never designed to withhold the dead or dynamic loads of adhesively attached exterior insulation and finish systems. In addition, water condensation action within the exterior wall does eventually erode the bond between the gypsum matrix and its paper facing, thus reducing EIFS adhesion capacity to zero.

Yet, until the gypsum manufacturers eliminate the need for mechanical

fasteners by producing nondegradable, moisture-resistant facings for their gypsum sheathing, the problem of potential delamination must be dealt with by the specifiers, building code authorities, applicators, contractors and owner/developers for every EIFS-specified project.

All of us in the industry must assume this responsibility, regardless of the Gypsum Association's new position on attachment and the fact that no other industry association has taken a decisive position at all.

Ultimately, all of us in the EIFS industry want our buildings to have an



Mechanical fasteners provide exceptional strength for attaching EIFS to gypsum board, and allows the foam to be attached quickly.

aesthetically pleasing exterior—the architect, the owner, the general contractor, the system applicator, the facility user and even the onlooking public. The building's character and overall acceptance will be more often evaluated over the years by its outward appearance.

A Matter of Conscience and Responsibility . . .

The general public, the facility user and the owner all trust that we, as specifiers and manufacturers, have performed our roles reliably—that we have made the right technical and ethical decisions that will ensure not only the looks, but the performance and safety of the structure.

The issue of mechanical fasteners for EIFS installations is an issue of ultimate responsibility that all of us in this industry must assume as a matter of conscience as well as business professionalism—this is no different from the decisions we make for any other aspect of building construction.

If we consider only budgets and cost-effectiveness to guide our deci-

Four Contractors Comment on Mechanical Fasteners for EIFS

Four contractors were interviewed on their opinions concerning the practical use of mechanical fasteners for EIFS. Although their experiences varied according to the type of job specified and the area, there was a consensus that mechanical fasteners do provide additional security against possible system failure.

Art Ricks (*Vice President, Ricks Construction Company, Inc., Wilmington, NC*):

“Mechanical fastening just gives you a little extra insurance as far as the system's staying on the wall is concerned. If there was ever any moisture penetration, the exterior wouldn't fall off because of its just being laminated as a surface bonder.

“We don't consider the cost of mechanical fasteners a disadvantage, because we're able to attach foam pretty quickly.

“Mechanically fastened hard-coat systems are being used for schools in our area. The architects like the rigidity of a hard-coat versus a soft-coat system. What they are looking at is the impact resistance from above.

“Mechanically fastened EIF systems will hold their own in the future. There is a market there for them.”

Ken Diehl (*former Superintendent for Damrich & Howard Coatings, Mobile, AL*):

“Obviously, the main advantage of mechanically fastened EIFS is the system is not going to be subject to failure if you get water intrusion behind your mud material that you put over the Styrofoam. And it also enhances, of course, the wind strength, especially down here when you have hurricanes. Those mechanical fasteners are certainly going to hold that system much better than if you just glue with some type of bonding agent. If you

get water intrusion and it gets in to the paper on the gyp board, that paper coating on the gyp board is what lets go.

“The only disadvantage to using mechanical fasteners is the time factor. It adds a little bit to the cost, but I certainly wouldn't let that stop it. I wouldn't think about using a system without mechanical fasteners. And when you start putting a quarter inch of mud all over a large surface, those mechanical fasteners serve to hold that weight.

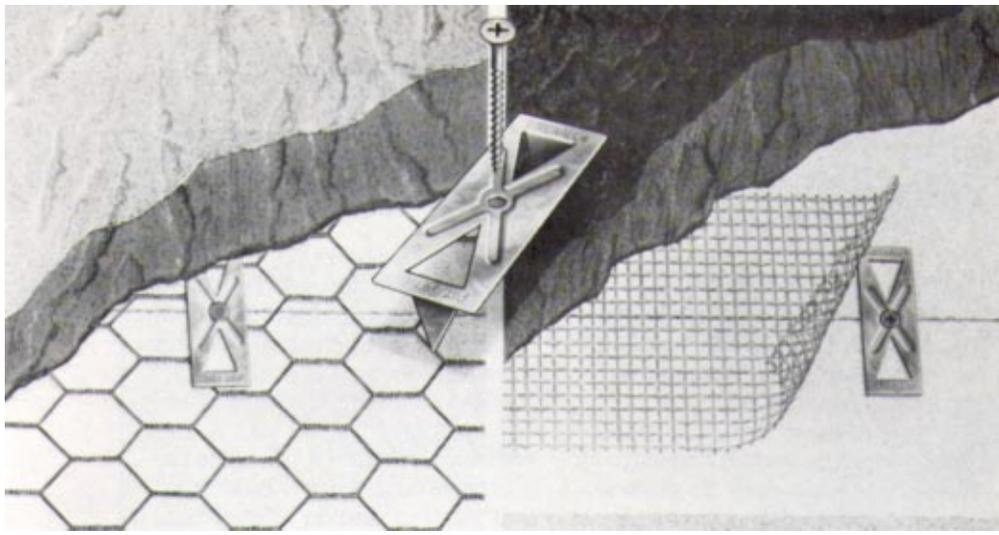
“I haven't heard of any system failures where mechanical fasteners were used. The buildings would have to collapse before that would happen, There is no way that foam is coming off the wall with fasteners. Another good thing is that these fasteners keep the system from shifting and moving on the wall any more than absolutely necessary.”

Ken Slagle (*Partner Jen-Car Inc., Louisville, KY*):

“Mechanical fasteners are really superior as far as applying expanded polystyrene itself. One problem in our area has been with grocery stores where carts and construction equipment have actually run into the exterior walls and torn holes, causing failures due to wicking and moisture problems. If the polystyrene does wick, it will pull moisture in. The freeze/thaw cycle is a big problem here also.”

Bill Smith (*Owner, Specialty Stucco & Stone, Woodstown, NJ*):

“Mechanical fastener installation is faster for us than when we're mixing up adhesives. It's also more secure. The structure comes out a little bit more durable, I think . . . The only problem is that some mechanical fasteners are extremely more expensive than others.”



As additional attachment insurance, the mechanical fasteners are screw applied through the sheathing into the wall framing and then covered by the finish coats.

sions, we have lost sight of the more important considerations—that delamination of the exterior cladding can have serious consequences. Call it preventive medicine, but the liabilities can't be ignored. Although research laboratory tests cannot in all cases simulate actual environmental conditions that contribute to delamination and guide our decisions, we must take a harder, more realistic look at what is actually happening in the field. And there are reported instances—ranging from minor crumbling of finish coats to losses of entire wall sections. Since

so many projects are relatively new and exterior wall problems are not always newspaper headlines, the industry has found it difficult to form a consensus. Yet the manufacturers and their contractors know about project failures where their own systems have been specified without mechanical fasteners. What we don't know yet are the delamination problems that only time and repeated exposure will reveal.

At present, numerous soft-coat manufacturers are taking steps to combat this potential problem by integrating mechanical fastening into

their systems. Most hard-coat systems, as designed, already require some type of mechanical fastening.

Interestingly, 10 years ago when hard-coat systems were first introduced, the manufacturers recognized that the reported delamination problems of some soft-coat systems over gypsum sheathing could become a realistic concern for hardcoat systems as well.

At that time, the inclusion of mechanical fasteners for the new hard-coat systems was viewed more as the answer to the potential problems facing the soft-coat systems at that time and as a future safeguard—there simply had not been enough hardcoat EIFS projects installed to prove the need for mechanical fasteners one way or another. The manufacturer's selling job was much tougher then. Today, it's much easier, but the battle is far from over.

The decision on how to attach exterior insulation and finish systems is not an either/or situation—knowledge of potential delamination dictates otherwise. Unless there is a major development in sheathing technology, mechanical fasteners are the answer to long-term performance and are our only protection against future liabilities. 

"The opinions expressed by Mr. Lamb in this article about the EIFS and gypsum board attachment controversy are, for the most part, accurate and represent the issue quite well," says A. Victor Abnee, Jr., President of the Gypsum Association.

"I think, though, it is important to emphasize that the Gypsum Association has not changed or reversed its position about mechanical fasteners. What is being described as a 'new' or 'changed' position is merely a restatement of our existing policy.

"As for the use of adhesives, we have only conceded our recognition that adhesives are being used to attach EIFS to gypsum board. As Mr. Lamb points out, gypsum board was never designed to accommodate the extensive loads or conditions which lead to delamination of adhesively attached EIFS. It is important to keep in mind that the mere fact that we recognize that this is being done can not—and should not—be interpreted to mean that we are in any way responsible for our product being used that way."