EIFS INDUSTRY ISSUES FORUM:

Problems and Solutions

We asked six experts to tackle the EIFS industry’s hottest issues in an open exchange of ideas. These participants were chosen for their extensive and varied experience in the EIFS industry. Each participant answered three questions, then the six reviewed each other’s answers and expressed their agreement or offered a rebuttal.

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CONTRACTORS

MARK NABITY is President of Grayhawk Corp. in Lexington, KY, an exterior wall prefabrication facility and interior/exterior subcontractor. He has been involved in the sales, estimating and installation of over six million square feet of prefabricated and field-applied EIFS during the past 11 years.

Mr. Nabity served as President of the Blue Grass Chapter of the Construction Specifications Institute (CSI) in 1990-91 and is active in the Association of the Wall & Ceiling Industries—International (AWCI), chairing AWCI’s Technical Subcommittee #1 on Prefabricated Exterior Wall Systems, leading the taskgroup which developed AWCI’s “Guide Specifications for Panelization,” and a member of AWCI’s Technical Subcommittee #5 on Interior/Exterior Steel Framing Systems.

JUDITH E. TURNER is President of Banfill Plastering, Inc., a plastering, EIFS and sprayed fireproofing contracting company located in Clayton, OH.

She currently serves on AWCI’s Technical Subcommittee #2, Portland Cement Plaster, as Vice Chairman of Technical Subcommittee #3, Gypsum Board, Gypsum/Metal Lath, Gypsum Plaster, and Secretary of Technical Subcommittee #7, Exterior Insulation & Finish Systems. She is active on ASTM’s C11 Committee on Gypsum and Related Building Materials and Systems.

CONSULTANTS

ARCHIE EUGENE ERWIN, President of Wall/Ceiling Consulting, Inc., worked 12 years as a journeyman plasterer and apprenticeship instructor and served on the technical and administrative staffs of AWCI and the Southeast Lathing and Plastering Bureau.

Formerly Chairman of the ASTM C11 Committee on Gypsum and Related Building Materials and Systems, he remains active on C11 as well as ACI’s Committee 524 on Portland Cement Plastering.

J. DICK HOPKINS is principal of J. Dick Hopkins Associates, Ltd., a consulting firm specializing in EIFS. He has more than 19 years of experience in EIFS, textiles, expandable polystyrene foam manufacturing and high performance coatings.


MANUFACTURERS

COURTNEY ROBERTS of Pleko Corp. has been involved with Pleko systems for nine years, with the last three and a half years as General Manager of Pleko. He is an active member of the Exterior Insulation Manufacturers Association (EIMA), CSI, AWCI and the SSCT.

DR. VINCENT TAMBURRINI is Executive Vice President of Dryvit Systems, Inc. Currently President of EIMA, Dr. Tamburrini is a member of the American Chemical Society, Society for the Plastics Industry (SPI), CSI and AWCI.

QUESTION 1:

Several speakers at the September 1992 ASTM EIFS Symposium presented case studies of EIFS failures. They agreed on the causes of these failures but disagreed on who is responsible for them. What is the major cause of EIFS failures, who is responsible and what solutions do you propose to avoid failures?

NABITY: The majority of EIFS failures are due to improper application. This might be the failure to mix the material as directed by the manufacturer, failure to backwrap the EPS when installing reinforcing mesh or installing the system in temperatures below 40° F.

Improper system applications also can be more complex. The system may have been detailed improperly as it interfaces with adjacent systems and materials. This can be seen in lack of expansion joints, parapet cap details, lack of effective flashing in window systems, improper placement of window frames, incompatible sealants and insufficient substrate support.

Who is responsible for these problems? Is it the architect who detailed and specified all of the various systems and materials? Is it the
GC who accepted the low bid without checking the bidder’s qualifications? Is it the glazing subcontractor who unknowingly installed a window system that didn’t allow for the peculiarities of the EIFS? Is it the Owner who scheduled construction in the dead of winter but wouldn’t pay for proper tenting and heating? Is it the system manufacturer who sold material to an untrained applicator? Or is it the applicator who mixed materials from different manufacturers?

The answer might be any one or all of the above.

The solution is that we, as an industry, must formulate a plan to work together and address the negative issues facing us. We must educate building owners, code officials, design professionals, related building trades and our own applicators.

Manufacturers and trade organizations must quit giving lip service to industry training and initiate effective training programs that bring professionalism to the EIFS industry.

Applicators must take an aggressive position on all projects to assure that bad details and system interfacing aren’t jammed down our throats. All applicators must install the systems by the rules or risk being “cut off” by the manufacturers producing them.

ERWIN: I agree. Manufacturers and trade associations (of both producers and applicators) seem to give lip service only. They are more concerned with competing with each other and with other exterior cladding systems.

TURNER: I agree that the major cause of EIFS failures today is application error. To eliminate these problems, you must apply the products as instructed by the respective manufacturer.

In the US alone, these products are 20+ years old, and just about every shortcut has been tried. Most didn’t work; however, those shortcuts that did work have been incorporated into the manufacturers application instructions.

The manufacturers listened to the field, so applicators should respect that compilation of knowledge by:

1. Fully understanding the manufacturer’s application instructions;
2. Maintaining reliable crews who understand why shortcuts don’t work;
3. Pointing out architectural details that don’t conform to proper application methods;
4. Holding your position with GCs that make demands based on lack of knowledge;
5. Involving your manufacturers’ field representative; and
6. Using logic. If it doesn’t look right, it probably isn’t.
ROBERTS: The major causes of EIFS failures that I have seen have definitely been from the incorrect application of an EIFS. The individual components of an EIFS generally do not fail, and when applied correctly in a system, they have demonstrated for 30+ years that they work successfully.

ERWIN: I disagree with that last statement. The systems with 30+ years experience Mr. Roberts refers to are not identical to what is being sold and installed in the US.

ROBERTS: Although most of the failures are from an incorrect installation of the system, there are times when a building is not designed correctly for an EIFS, resulting in a design-related failure.

The solution: increase education to contractors, architects and building owners. Continued education of applicators on correct application techniques using a quality product will eliminate the majority of system failures.

ERWIN: I agree that education is the ultimate solution, but no one will accept responsibility for education and training!

HOPKINS: AWCI and EIMA should develop and direct educational resources specifically to architects and GCs. The tremendous technical knowledge within the two groups should go to architects and GCs through technical training, not sales presentations!

TAMBURRINI: I agree that the major causes of EIFS problems (I prefer the word problems rather than failures) is improper use and application. All the cases cited at the ASTM Symposium referenced a deviation from general design considerations and application methods promulgated by the EIFS industry.

The papers delivered at the Symposium that drew the most attention focused on problems, not successes. This is not to say that problems do not arise, but they are usually traceable to the instance above. In my opinion, 99% of all EIFS projects are successful.

ERWIN: I don’t have access to Mr. Tamburrini’s statistics, but I don’t believe that 99% of all EIFS projects are successful.

TAMBURRINI: Recognizing some job problems exist, EIFS manufacturers continue to work with the design community and within their own association, EIMA, to develop performance standards that clearly define the methods and the results that one can expect by adherence to these standards.

ERWIN: All parties are responsible for EIFS failures:

1. The Applicator: fails to communicate necessary details to installers and insure they understand why the details are important;
2. The Installer: attitude plus inadequate training;
3. The Architect: uses materials improperly and provides poor specifications and drawing details, depending on the GC and /or subcontractor to know all code requirements and design requirements. They fail to understand the systems sufficiently to adequately inspect progress.
4. The Manufacturer and his distribution arrangement: depend too much on the distributor and his sales reps, providing inadequate quality control in blending products and examining raw materials and their sources.
5. GC /Developers: ignorant of requirements, fail to coordinate trades, exert pressure to substitute less than equal products. Bid shopping.
6. Code officials: unfamiliar with system requirements and conduct
poor or no inspections.

(7) Owners/Managers: fail to maintain exterior walls when defects are observed and fail to inspect on a regular basis.

ROBERTS: I must disagree with Mr. Erwin’s comment about inadequate quality control and examination of raw materials. At Pleko we have very stringent quality control procedures and do not allow product to be shipped that does not meet our quality standards.

HOPKINS: Most of the case studies presented at the ASTM Symposium were the same projects we’ve heard about for several years. The presenters imply these jobs are a representative sampling of EIFS projects, but, the Symposium covered less than 300 projects out of 250,000+ EIFS projects completed in the US in the last 20 years. This is not a representative sampling!

ERWIN: There are more problem jobs than suggested at the ASTM Symposium. Mr. Hopkins’ point about the Symposium is correct, but I think his figures are inaccurate.

HOPKINS: Don’t get me wrong. There are problems, but let’s be realistic about the magnitude of the problem.

Put the Symposium in perspective. Many of the speakers were directly involved in the projects, either in an investigative capacity, in at least one instance, or, in at least one instance, the actual construction of some of the projects that failed. Unfortunately, learned speakers presenting factual information on long-term performance of EIFS were at the end of the program after many attendees were gone.

Let’s examine the resources responsible for failures, starting with the products. While there are occasional lapses, EIFS products perform extremely well on a variety of projects under a broad spectrum of environmental conditions. The products themselves are much more forgiving than many other products under very adverse conditions, such as poor design, improper use and poor application. Properly designed, detailed and installed EIFS materials are responsible for a very, very small number of failures.

ERWIN: While I agree that any type of cladding system can fail due to poor design or application, we are interested in EIFS here, not other claddings. We can’t use this argument as an excuse to avoid overcoming our own problems. Finally, I disagree that EIFS products are more forgiving than other products. They are generally less forgiving.
HOPKINS: Manufactures contribute to job problems when they sell, or allow their distributor to sell, their products to a contractor because he “has the job” regardless of the contractor’s qualifications or ability to properly complete the project. They must evaluate to whom they sell their products and how much control they are willing to exercise over their distributors. EIFS manufacturers must ensure installation by the best qualified applicators available who demonstrate a consistent commitment to quality. They should not reward poor application, inadequate design and detailing or misuse of their products by picking up the tab for failures caused by these deviations.

Manufacturers must take steps to see that their sales forces, whether direct or through distributors, support conformance with application instructions, details and specifications. The “sell at any cost” attitude must be changed.

It is becoming prevalent for salespersons to recommend that an architect or applicator deviate from the manufacturers’ published details or good construction practice. A few months ago I attended a presentation made by an EIFS distributor salesperson and manufacturers’ rep. When my client (an architect) asked about expansion joints, the salesman boasted that his system did not require them. The manufacturers’ representative backed up the salesperson’s claims.

I later checked their literature. The manufacturers’ published specifications recommended expansion joints at locations where substrates changed, etc.

ERWIN: I know of instances similar to the example Mr. Hopkins describes.

HOPKINS: Architects contribute to failures when they don’t: ensure appropriate use of EIFS in design; provide details specifications; devote attention to and provide clear, accurate details of how the EIFS interfaces with other materials and components and how these interfaces are constructed; fully investigate changes suggested by the construction team to ensure their appropriateness; use good construction practices.

Too many architects don’t properly incorporate EIFS into the project design or providing adequate details. They erroneously assume someone else will take care of the details. Manufacturers should assist and guide but make it perfectly clear that they are not responsible for the design or application on any project. The architect is the party responsible for the design of the project, not the EIFS manufacturer or applicator.
ERWIN: Technically the architect is responsible for building design; however, no architect can know everything about all materials and systems. He depends on the data provided by manufacturers when designing a material or system into his overall building design. When that data is inadequate or nonexistent, is he totally responsible? Manufacturers don’t provide all the data necessary to enable architects to correctly design the system into the structure.

HOPKINS: What about the GC? He’s employed to see the project is constructed in accordance with plans and specs. It’s his job to select qualified applicators and supervise the construction of the project and the subcontractors. Often when I investigate job problems, the GC left the EIFS to the subcontractor with little or no supervision, let alone inspecting the work for conformance with the project specs.

GCs cause failures by coercing applicators to take shortcuts. For example, under the threat of liquidated damages, the GC forces the applicator to install an EIFS under improper environmental conditions in order to maintain the project schedule.

Applicators are responsible for a large number of failures because they ignore or deviate from the manufacturers’ published instructions. Application instructions cover most conditions, although, of course, they can’t cover every situation. When issues arise not covered in the instructions, the applicator should call the manufacturer for written instructions to address the issue.

ERWIN: I agree with you in general, except about the adequacy of the instructions provided by the manufacturers.

HOPKINS: It is the applicators responsibility to install the EIFS in accordance with the contract documents. It is not the applicators’ responsibility to review plans and specifications for design intent, proper detailing or correctness. However, if an applicator sees errors in details or something that won’t work, he should call these errors to the attention of the GC in writing.
NABITY: I don’t support the theory that if an applicator doesn’t take shortcuts, he’d never get any work. It is this mentality that has led to EIFS failures and the negative image our industry receives. EIFS applicators who don’t follow installation instructions will get caught sooner or later.

Competition in our industry is intense, and we must be creative in gaining the edge over our competitors. But the way to get that edge is by improving production, increasing the knowledge of our workforce, controlling payroll and overhead expense, being innovative in the way we scaffold and man a project, or, in a nutshell, being better managers.

I am a strong supporter of installing EIFS “by the book.” This belief might provide some short-term disappointments, but in the long haul, you reap the benefits and sleep better at night.

TURNER: To cope with the competition, you must know your market. Knowing who is bidding against you determines your bidding process, or if you should even bid the job.

I suggest two ways to balance your bid:

1. massive involvement by your distributor; and
2. the architect should insist upon a product whose manufacturer has an approved applicator policy.

Several Symposium attendees claimed that installation practices for EIFS are inadequate, unrealistic and that compliance with them costs too much. They argued that if applicators don’t take shortcuts, they’ll always be high bidder and never get any work. How do you balance the need for stringent application guidelines against the competitive “real world” in which applicators must work?
ERWIN: Having the architect insist on using a product who manufacturer has an approved applicator policy is small insurance. It will not be real insurance until manufacturers improve their training programs and stop selling their products to whomever ends up with the job.

TAMBURRINI: I reject the premise that installation practices for EIFS are incomplete, unclear or unrealistic. The fact of the matter is that EIFS are relatively easy to install. As with all construction materials, proper installation requires skill and craftsmanship. The necessary steps for proper installation of EIFS are extremely simple to perform, but need the hand of an accomplished plasterer to ensure proper performance and an attractive finish. It is no more expensive to do it properly, than to take shortcuts.

There are no shortcuts, and there is only one right way to install the system. At Dryvit, we have a number of literature pieces, specification guides and videos that detail proper installation requirements. Ideally, all contractors should be bidding from the same set of guidelines, specifications and details.

Shortcuts have to do with the quality of workmanship of the applicator. If an applicator is properly trained and continues to use “shortcuts,” that remains a matter between him and his conscience. In my experience, the overwhelming majority of contractors take pride in their application skills and closely follow all the guidelines at their disposal to insure a finished project that enhances their reputation as well as that of the designer and the manufacturer.

ERWIN: If it were true that EIFS installation practices are clear and realistic, why has it been necessary to change installation guides?

True, most contractors take pride in their application skills, etc. However, I don’t believe this is true of the “overwhelming majority.” Do you mean 51%?

ROBERTS: A manufacturer cannot reduce the installation requirements of an EIFS because a GC has taken a bid so low that it can’t be installed correctly. Some applicators know the correct installation procedures but are forced by the GC to skimp on them when the general takes the low bid and then continues to “shop” and “negotiate” for an even lower price.

“You get what you pay for.” If you know what a system should cost and you are purchasing it for 20% or more below market price, investigate where the savings are coming from. Many times it is com-
ing from the application process, thus resulting in a substandard finished product. Contractors, architects and building owners must realize that the EIFS system is the main protection that the building has from the outside elements, and that it is not a good area to try to cut costs on.

There is no difference between purchasing an EIFS and having it installed incorrectly and purchasing a brick wall that is installed incorrectly and falls off the wall. Both systems can involve costly repair procedures. The failure in both situations is not a function of the product but how it was installed. Educating the architects, contractors and building owners that this is not an area that should be marked for cost cutting on their projects will help reduce the shortcuts in installation.

ERWIN: I agree with the speakers at the Symposium who said that existing guidelines are incomplete and unclear. I have plenty of “real world” experience, and I know the manufacturers’ data is incomplete. This problem can be corrected through education, communication, phase inspection, training and improved details provided by manufacturers and by architects.

HOPKINS: To infer that competitive balance is somehow an excuse for poor applications is ludicrous. The application procedures provided by the manufacturers are more than adequate. Instructions are provided in words and pictures and video as well as basic hands-on application training. The fact that several hundred thousand projects are performing as advertised is strong evidence of the adequacy of the manufacturers’ instructions.

ERWIN: I don’t agree that existing instructions are adequate. I think more stringent instructions are needed.

HOPKINS: The real need is for stricter enforcement of published procedures, including a policy that contractors who habitually provide shoddy workmanship should be removed from the approved applicators list. The construction team member or members who have contractual responsibility for inspection and local building inspectors should enforce compliance with the manufacturers’ application instructions.

ERWIN: Okay, but who will train the inspectors to know what to look for?
QUESTION 3: What is the EIFS industry’s biggest challenge today?

TURNER: For all concerned, the profit margins are too low. From manufacturers through distributors to contractors, the margins are too low.

NABITY: First, the EIFS industry has only seen the “tip of the iceberg” in its first 23 years of development in the US. Our challenge as an industry is to maximize our potential in the coming years and to not lose ground as a result of an untrained workforce, competitive attacks or building code legislation.

Second, the companies that manufacture and sell EIFS must quit selling to every Tom, Dick and Harry that wants to use their product and start concentrating on developing a dependable and quality-oriented applicator network.

Third, we must successfully stave off the movement that would required third party inspections of all EIFS installations. This would only drive the in-place cost of EIFS up and create a logistical nightmare that drive would reduce our job site control.

Fourth, the EIFS industry can and should police itself. If we don’t, we risk the danger of stunting our growth and never realizing our true potential. We need to quit pointing our finger at the other guy and work together to become an industry of professionals who are beyond reproach.

ERWIN: I agree with most of Mr. Nabity’s statements, but we can’t have it both ways. Until your first, second and fourth points are achieved, the only way to reasonably assure the owner that he has received a successful installation is by having a knowledgeable, unbiased inspection at various stages.

TAMBURRINI: The biggest challenge facing the EIFS industry today is for the industry to develop performance standards by which all systems are measured. The industry must take the lead in this regard so that the subjectivity of claims resulting from inspections and diagnoses is replaced by the objectivity of performance and design criteria.

EIFS is one of a very few new cladding materials to appear on the market over the last 25 years and has been under very close scrutiny. EIFS has successfully withstood the many challenges before it and still remains one of the most cost-effective building projects on the market today. The development of performance standards will force all manufacturers to adhere to certain minimum requirements and allow designers and specifiers to use these standards in their considerations of EIFS as a building material.

An accompanying challenge is to address the need for continuing education by the EIFS manufacturers and EIMA to designers, applicators, code bodies, building inspectors, building owners and sales personnel. There have been several changes and improvements in the application methods over the years, and it is important to communicate these changes to all interested parties. It is also important to “review the basics” on a regular basis to ensure that everyone involved with EIFS has a clear understanding of the methods and practices required for successful projects. It falls back to the manufacturers to be in the forefront of education and training.

I feel that the industry will successfully address these challenges and enjoy significant growth over the next five years.
ROBERTS: The biggest challenge of the EIFS industry is to continue to promote the benefits and long-term use of EIFS by addressing negative outside influences, the standards of application requirements and the standards of EIFS manufacturer products. EIFS manufacturers through third party organizations such as EIMA will need to demonstrate to the general population (against the wishes of individuals that would like to earn a living by saying that EIFS do not work) that EIFS have worked for over 30 years and that they continue to work today. They must also continue the work with testing and standards agencies to set minimum requirements for the systems and products to ensure against the use of substandard products and application techniques.

ERWIN: I agree in general with Mr. Roberts but feel the first priority should be the education of the installers. Promoting should be second. What good is accomplished if the industry continues to promote and sell something it cannot deliver?

The underlying problems for the EIFS industry are the same as for other industries: ignorance of cause and effect, lack of pride, greed and inarticulate communication. These apply to all of the disciplines (including owners) that I mentioned earlier.

HOPKINS: Independent third party inspections will be the next major issue facing our industry.

Having manufacturers conduct the inspections won't work. Regardless of what their literature says, manufacturers couldn't possibly inspect every project thoroughly and regularly. And with all due respect, having the EIFS manufacturer inspect the work is like having the fox in the hen house.

Having architects or GCs do the inspection won't work because many of them aren't knowledgeable enough about EIFS.

Having the applicator perform inspections won't work. While there are a lot of applicators who take great pride in installing EIFS in a workmanlike manner, applicators are only human and will make mistakes.

Local building officials would seem to be the ideal people to conduct inspections because they have authority to stop the job until non-conforming work is corrected. There are two problems with relying on these local officials: (1) municipal budget constraints have created a shortage of building inspectors; and (2) most local inspectors are not knowledgeable enough about EIFS (through no fault of their own) to perform meaningful inspections.

We can't solve the manpower problem, but we can solve the knowledge issue. EIMA has an excellent training program for building officials. EIMA should present this program to as many building officials as possible.

This leaves the owner, the party who has a long-term interest in the performance of the project beyond the warranties provided by the contractors and the manufacturer. The owners are in the best position, and it would be in their best interests, to employ a qualified, independent party. The owner holds the purse strings, the key to the motivation to get the job done right the first time.

Independent inspections are needed — perhaps not forever, but at least for the time it will take to resolve other issues that result in EIFS failures. AWCI and EIMA should develop a program for independent inspections, including an incentive for owners to hire them. Manufacturers could offer an extended warranty. If an owner chooses not to employ an independent inspector, manufacturers would offer only a short-term materials warranty or no warranty at all. Applicators would offer the same for workmanship.

NABITY: We must resist any movement toward independent third party inspections. Third party inspections would create a police force for all of the industry because of a few “bad apples.” What possible benefit would there be for the applicators who now properly promote and install EIFS? Do we need outside involvement when we could be addressing our problems from within?

Consider the source of the move toward independent third party inspections. Those who promote it are the industry consultants who stand to benefit financially from its adoption.

Independent third party inspections would:

1. Drive in-place costs up and average production down. The cost of third party inspections would have to be borne in some fashion by the owner. EIFS installation
crews would be less productive because they would be constantly waiting on an inspector to verify a portion of their installation before proceeding to the next step. Our bottom line as subcontractors and/or panel manufacturers would be affected by a process over which we have minimal control.

(2) Dilute the liability issues we now face on a project in the event of a problem. Inspectors would give the industry one more person to confuse the issue.

(3) Increase the potential for prejudicial treatment of applicators, opening the door to corruption among the inspectors themselves.

As an industry, we must move forward rather than creating an industry treadmill where we take one step forward and two steps backward. Let’s eliminate the “bad apples” and move on.

HOPKINS: EIMA should develop an enforceable industry applicator qualification and training program. Distributors must be part of the program and held accountable. Although most manufacturers already have programs in place, they are not enforced. The industry must develop consensus performance and application standards through ASTM. (Individual membership is only $50 per year, you choose your committees, and meeting attendance is not required. Standards are voted on by letter ballot.)
