

The Envelope, Please

For a building's 'envelope' to be a success, the

By definition, "an envelope" is an encapsulating covering such as an outer shell or membrane. And by definition, an envelope's purpose is to provide protection from external elements, which in building construction means protection from moisture, air and temperature ingress and egress.

The definition sounds simple enough, but in reality—because of the thousands of complex products and systems specified, and the multiple trades involved—the chance of error is high.

A successful building envelope requires a strong quality control program. Good communications are essential throughout all levels of construction—good design and specifications, proper materials and performance criteria selection, as well as quality workmanship and installation.

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Therefore, ensuring an effectively weather-proofed building envelope requires cooperation between the design

and construction teams, and an overriding commitment to designing and building to meet the original intent.

The building team includes manufacturers, general contractors, builders, developers, subcontractors, applicators, architects, engineers, and construction specifiers. The contractor team itself may include waterproofers, plasterers, painters, window installers, glazers, plumbers, and even sign installers.

Furthermore, all trades involved should thoroughly understand the responsibilities and requirements of the other team members. Preventing building failures requires knowing if the project on all levels is being designed and built as specified, and that the various products used are compatible and form a harmonious and functional whole.

First-line responsibility lies with manufacturers who must prepare and distribute accurate product specifications—including all performance data, and detailed descriptions of product limitations. This information—whether published in literature and directories, or programmed into software—must be accessible to specifiers, general contrac-

tors, and subcontractors.

Every project has variables that affect the use and performance of every product. So manufacturers—when called upon for technical assistance—should help specifiers evaluate conditions that could affect a product's performance, and then help make necessary recommendations.

Although design professionals must stay abreast of new product information and technologies, their knowledge at times should exceed existing building



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code criteria. Codes only require the minimum criteria for performance and acceptance. (However, more current versions of the same reference standard do not replace codes that must be strictly enforced, unless an appeal for variance is accepted.)

Designers also have a responsibility when specifying water-proofing products, to verify the integrity of the manufacturer. The selection process should consider field and laboratory tests, company track records, and warranties and product limitations.

The key issues regarding product compatibility, are appearance, adhesion, design impact, chemical effects, ease of application, and waterproofness—all which should be addressed early in the project. Designers must be willing to compromise aesthetics for product compatibility, structural integrity, and performance.

Contractors and applicators also should be trained by each manufacturer in the proper use of its products. On the job, contractors should: expect specific written or verbal instructions from the specifier about product applications; keep spec printouts or instruction sheets updated continually; and know exactly what codes and what logic have guided each design step.

If specifications are incorrect or products are incompatible, contractors at some point stand to inherit problems. Therefore, if contractors are more knowledgeable about the total specifying, installation and building process, they're in a better position to resolve problems before they occur.

Leaky roofs and sagging walls cause most losses suffered by buildings.

When buildings fail due to moisture problems, everyone starts finger-pointing. But if all members of the building team work closer together—knowing assigned responsibilities and understanding the entire construction process and intent—the risk of building failures can be reduced. 