

## EIFSs: A cause for concern

by Mark S. Graham

**M**ost roofing professionals are familiar with exterior insulation and finish systems (EIFSs)—synthetic, stucco-like materials that have gained popularity as exterior wall cladding systems. They primarily are used for newly constructed commercial buildings. However, some roofing professionals may be unfamiliar with the complexity of EIFSs and the considerations that need to be evaluated when designing roof systems that interface with these systems.



### Background

EIFSs were developed in Europe during the 1950s and introduced to the United States during the late 1960s. According to the EIFS Industry Manufacturers Association, EIFSs account for 17 percent of the U.S. commercial exterior wall market for new construction and about 3.5 percent of the residential exterior wall market.

Currently, EIFSs are available from a number of manufacturers; Dryvit, Parex and Senergy are some of the popular brand names associated with EIFSs.

### System description

EIFSs consist of four primary components: insulation board, reinforcing mesh, and base- and finish-coat materials.

To construct an EIFS, an insulation board, typically expanded polystyrene, is secured to an exterior wall substrate with an adhesive and/or by mechanical attachment. Reinforcing mesh—typically fiberglass scrim—is applied over the insulation boards in a troweled application of a base-coat

material. The base-coat material, a polymer-modified cement mixture, is used to embed the reinforcing mesh and provide a skim coat (i.e., leveling surface) over the insulation. A finish-coat material, which is an acrylic polymer with integral pigment and sand aggregate, typically is troweled over the base coat and provides the finished exterior surface.

The method by which EIFSs resist water penetration into buildings is based on one of two fundamental wall construction concepts—barrier wall or rain screen—depending on the system specified.

For a barrier-wall EIFS, base and finish coats and any related building sealants (e.g., sealants around windows) are intended to create a surface that serves as a barrier against water penetration. Any water that penetrates this barrier and infiltrates the wall assembly effectively has leaked into a building's interior. This design is the original EIFS concept that was brought to the United States and is the most common method used on existing EIFS-clad buildings.

For a rain-screen EIFS, an insulation board is manufactured with drainage channels that are installed against an exterior wall substrate. In this case, any incidental water that penetrates the EIFS' exterior barrier surface is intended to drain through the drainage channels and media at the EIFS' base before it can leak into a building's interior. This concept, which is similar to that used in masonry cavity wall drainage construction, is beginning to be used more frequently.

### Concerns

However, there are some problems associated with EIFSs that are widely recognized in the exterior wall cladding industry. These problems include cracking, surface degradation, impact damage, inadequate closure (e.g., sealants at windows) and system delamination. Each of these problems can result in water leaking into a building's interior, which

sometimes is confused with roof system-related leakage.

NRCA is aware of numerous complaints of leaks, insurance claims and lawsuits relating to water penetration of EIFSs. In some instances, roofing professionals have been blamed for the leaks. This appears to occur most frequently in situations where a roof system interfaces with an EIFS and the exact source of a leak may be unknown by a claimant.

Also, several class-action lawsuits have been filed relating to problems with EIFSs. A recent nationally broadcast television report on "Date-line NBC" brought a North Carolina state class-action suit to the attention of the general public. The lawsuit involves leakage into buildings, and the suit still is pending.

### Recommendations

Roofing professionals are urged to exercise caution when designing roof systems that abut either new or existing EIFSs. Base flashing details that interface EIFSs are of particular concern.

Surfaced-mounted base flashing and counterflashing details applied below properly terminated EIFSs may be acceptable for barrier-wall EIFSs. However, for a rain-screen EIFS, this flashing detail may not be appropriate.

For a rain-screen EIFS, a base flashing and/or counterflashing that extends to the exterior wall substrate behind the EIFS is suggested. Such a detail configuration will permit water in the drainage channels and media of the EIFS to drain out of the wall cladding and over, not behind, the roof flashing.

Designers are urged to carefully consider situations where roof systems abut EIFSs and clearly detail their intentions in plans and specifications. Manufacturers of the specific EIFS and roof system being installed can be consulted for their particular detail recommendations for these situations. **PR**

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