EIIFS Innovation Helps Renovate Challenging Building

By Steven Pedracine
Parex, Inc.

The exterior insulation and finish industry has a sustained record of producing technical innovations to supply new markets with its systems. Systems are now available which have been optimized for the particular needs of one and two family dwellings, light commercial construction, industrial and institutional buildings, high-rises, and so forth, both for new construction and renovation.

The technical strategies for fitting the system to the application have involved variations in all of the elements of EIFS systems. The insulation board properties and method of its attachment, the reinforcing mesh characteristics and coating composition and thicknesses have all been selectively coordinated in systems to produce a variety of capabilities and cost ranges.

As the industry has advanced its offerings, it has steadily increased the range of construction to which EIFS are easily adapted. A recent retrofit project in New England highlights how the selection of an EIFS system was guided by the construction of the building and the system features.

A Challenging Building

Keny McCoole of E.I.F.S. Incorporated, an exterior insulation finish system distributor in Manchester, New Hampshire, was caught in the middle of a frustrating situation. Kerry explained that he and other E.I.F.S. distributors had been invited to present proposals for the retrofit of a mid-rise oceanfront condominium project. The rigidity of these panels had apparently proved to be too much for the deflation limits of the metal studs. As a result, the panels flexed beyond their capability, eventually cracking in various locations on the wall facade. Water infiltration and freeze thaw cycling began to take their toll on the panels. Rusting of the screws used in attaching the cement boards caused serious concern for their holding integrity. Spalling of the panels themselves called into question the adhesive bond of the epoxy coating to the cement board. Because of these factors it was determined that the only additional weight that could be added to the building, without structural reinforcement, was 3 lbs./sq. ft.

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According to Kerry, the response received from all the EIFS parties were screwed directly to metal studs to form the exterior facade of the building. No other exterior finish or water membrane intermediary was applied prior to the attachment of these panels.

According to the General Contractor, James McFarland of James O. McFarland Inc., the building had been constructed in 1987, but had remained unoccupied because of severe leakage problems. Compounding the situation was a harsh ocean environment of driving rains, strong winds and salt laden air.

The original cladding was composed of cement board panels covered by an aggregate in epoxy matrix. These panels were screwed directly to metal studs to form the exterior facade of the building. No other exterior finish or water membrane intermediary was applied prior to the attachment of these panels.

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involved was essentially the same. The conclusion was to mechanically fasten metal lath over the existing panels into the steel stud frame of the walls, after which an adhesively applied polymer based (P.B.) system would be installed. The consensus was that the P.B. system was the best solution because of its cost and flexibility.

Another solution that was considered was the mechanical attachment of a polymer modified (P.M.) system. The polymer modified system was an excellent choice for its impact resistance, water resistance, R-value and durability. However, the rigidity of a thicker base coat did not lend itself well to this application. “We would have replaced a rigid cement panel system with an EIFS system with similar physical characteristics,” said Kerry. “In addition, the higher cost for the quarter-inch coating, and extensive use of zinc accessories such as control joints was prohibitive.”

The concepts presented were all appealing, but in the end were rejected because of the cost. What was necessary was a low cost system that combined the benefits of both a P.B. system and a P.M. system. At that point it appeared that this solution could be technically out of reach.

EIFS Solution

Kerry McCoole, who distributes the Parex EIFS system, decided to put in a call to Parex technical services. “It was a real catch 22 situation,” explained Kerry. “Technically we were correct in our approach. However, we needed the benefits of a mechanically attached P.M. system but with the flexibility of a P.B. system. To my knowledge, there was nothing like that on the market which could take the windloads.”

Fortunately, the manufacturer had developed a system that addressed the project requirement and was preparing for its market introduction. “When Kerry contacted us, we had been working for about a year on the Insul/Crete Gold System” explained Peter Harrison, Parex Research and Development Manager. “We had identified a need for a cost effective system that combined the versatility
of simply applied polymer based systems with the advantages of extruded polystyrene mechanically attached to the substrate.”

When McCoole presented the system and its advantages to Mario Torroella of HMFH Architects, his dilemma was resolved. The mechanical attachment allowed direct connection to the steel studs, which were in good structural condition. Extruded polystyrene insulation board had the strength necessary to bear the high negative wind loads at the attaching washers, and the building would be protected by a thicker coating without metal joints.

The applicator, New England Synhetic Systems, Inc., of Berkely, Massachusetts, received the base coat as a two component product. One component consisted of a polymer emulsion, the other of a dry bagged factory blend of specially graded aggregate, cement and proprietary additives. Because the components were factory proportioned, consistent control of the mixture was assured at the job site.

To give the desired toughness and coverage of the attachment washers, the specified base coat thickness of the Insul/Crete Gold system is one-eighth inch. New England Synhetic Systems was able to apply this thickness of base coat without any special effort, because the system uses a unique combination of aggregate sizes and mesh embedment to create a self gauging base coat.

“I liked the system,” said Bob Arthur, Vice President of New England Synhetic Systems. “We did not have to mechanically attach the mesh or install any control joints. This saved a lot of labor.” According to Arthur, there are several upcoming projects that he will be bidding that would also benefit from the advantages of Insul/Crete Gold.

Parex President Francois Bouan was also pleased with the operation. “It shows the close relationship our applicators and distributors have with our technical services department. We feel we must keep it that way in order to be responsive to the market needs of our customers.”

Growth Opportunity

The real opportunities in today’s tight construction markets belong to those who look beyond the routine. Each member of the EIFS industry team--applicator, distributor and manufacturer--is indispensable in continuing to bring the innovation to construction for which the EIFS industry is recognized and justifiably proud.

About the author:

Steven Pedracine has worked in the EIFS industry as a technical representative at Insul/Crete and later Parex, Inc. His work has included published articles and technical presentations to both government and industry design groups. Prior to his work in the EIFS industry, Steve taught industrial arts for 10 years. He holds a degree in Industrial Education from the University of Wisconsin-Stout.