"Caveat Emptor" Does Mean "Beware"

Today's Coatings Usually Meet High Standards—But a Contractor Must Still be Wary About Accepting All Claims

By John Bucholtz, P.E.

Sometime in the late 60's and early 70's the idea climate must have been just right for the appearance of a 'copious quantity of exterior coatings to replace stucco or other finishes that were so popular. These new coatings were easy to apply, were touted as being crack-resistant, peel-proof, water-repellent, color-durable, and according to advertising literature were a panacea for all major and minor objections to anything currently used.

Prior to the 60's, there had been exterior coatings of different formulations, with excellent records of performance, and minuscule failures. These coatings were popular because they were reliable. It must have been their success and popularity that led the way for new coatings of sundry kinds. Those proved coatings continue to be used successfully, although during the "gold rush" of the 60's and 70's, they became "diluted" among all the coatings, making identification of the dependable ones extremely difficult.

Some of the innovative coatings have passed into oblivion for a variety of reasons. Among these were total failure on many projects; cracking of the worst kind, peeling and chipping that converted a structure's appearance to a Medusa, and water problems from cracking and faulty flashing. The cases of sheathing joint deformation became legion. Many of the coatings voluntarily ended their marketplace sojourns, while others were removed by authoritative aegis.

But some of those coatings even with their dismal record of performance are still manufactured today, and it is that type which the specifier and owner has to avoid. Even with such a poor record, it is astonishing to observe how some of the objectionable coatings gain specification for some high value construction.

At least one high-build coating (so named to distinguish the coatings from paint) had its ICBO Research Recommendation approval withdrawn after a series of installations and an equal series of failures. Major builders suffered losses running into the millions in the aggregate as a result of poor performance of some coatings and subsequent litigation. One huge project built by a major financial institution was sued in a class action for $50 million. Seeking to resolve the problems, among other measures, consideration was given to using another brand of coating over the existing one. This kind of thinking gave way to the decision to apply lath and stucco to all the buildings, an expensive undertaking but eminently less than might have been required by a court decision.

Copolymers and Portland Cement based coatings were touted with all their advantages. Some were to be applied over plywood, others over gypsum sheathing. In most cases, joints

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became visible and cracking occurred often accompanied by water penetration of the wall assembly. The innovative coatings usually had a lower price tag than the proved-performance coatings and thus were popular for that reason.

The coatings epoch was responsible in at least one instance for a specialized career by a former building official, who became "chief historian" of coating performances. One industry bureau research effort developed a film showing that among different kinds of exterior finishes, the one with a particular coating of the era allowed flame to spread from ground to soffit in a very few minutes. The film was shown for a while and was then shelved after threats from the coating manufacturer, and the disinclination to engage in a legal bout.

Coatings developed for today's exterior insulation systems generally meet high standards for performance and durability. Their use is well guarded by the system producer, who thoroughly instructs applicators on proper installation. This contrasts with the coatings which failed in that the producer sought mainly to get his material specified for a job without accepting responsibility for properly acquainting the applicator with its characteristics. Manufacturer's directions are not always read, and when read are not always interpreted the same way by every applicator. Misunderstandings can occur.

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the question of owner, architect, or applicator. Other producers made certain the successfully bidding contractor became intimately acquainted with their products and techniques.

The manufacturer should assume responsibility for making certain his product is applied properly by having available detailed step-by-step information incapable of misinterpretation by anyone. Having such data readily accessible assures a greater success on the job.

Publicizing Failures . . .

No one publishes lists of jobs that failed. Rosters of successful installations, on the other hand, are written up in glowing terms to point with pride to those particular jobs. This may be the case even if the ratio of success to failure is as high as 90% failure. The 10% success is what sells the job. The word about failures may not reach a specifier who has no knowledge of any reason for caution.

There should be a check list of criteria to be required in choosing an exterior coating material or system. Among the criteria would be such items as these:

1. Does it have a satisfactory record of performance on different types of structures in different climates? Are there reliable reference sources from performance, and for what period has performance proved acceptable?
2. Is it approved for use by code agencies, government agencies (such as HUD) and others?
3. Does it have a program to certify installers? Does the manufacturer accept responsibility for assuring proper application through acquainting applicators with all details and techniques?
4. Does the manufacturer maintain suitable quality control of materials? Is there assurance that all materials are compatible with the same material used early on the job? If repairs are necessary, does the repair material blend in well?
5. Does the manufacturer provide construction details showing where materials can be used, and how they are applied in such construction? Are the manufacturer's specifications complete and specific?
6. Are there fire resistive properties that can be documented? Have tests been conducted by recognized laboratories?
7. Does the coating meet ASTM or similar requirements? To what extent has testing been conducted on the product and are test reports readily available?
8. Is the product warranted to perform on the structure for an acceptable period?

The architect or contractor can implement his own check list to assure that the product is one that does not result in some future liability that could be extremely costly to all concerned.

The Right One . . .

Exterior coatings can perform well, but the right one has to be chosen for the job. Random choice is risky. Recommendations of other users can offer some assurance that the choice is good. A few inquiries can develop information that is vital. With one of

the excellent coatings, no problems need be anticipated. Choosing an inferior coating with no performance record is an invitation to all kinds of unforeseen problems.

Nature of Coatings

Many coatings are copolymers, using a two component mix. When blended, the coating material becomes both an adhesive and a membrane over the substrate. Often these copolymers have included in their formulation perlite or vermiculite. This minor quantity of lightweight aggregate in a thin coating does not equal insulation value, The degree of insulation provided is negligible. The copolymer (or epoxy type) coatings are usually trowel-applied, but some can be brushed on, others can be spray-applied. Tools must be washed with acetone in some instances, while in others it's possible to maintain cleanliness with warm, soapy water as long as the material hasn't attained sufficient set.

Copolymers may form vapor barriers on the exterior of a structure. Over plywood the creation of a vapor barrier is not critical except for the plywood sheet joinings. Here vapor can pass through the wood components, only to be halted by the coating. The vapor will not pass through the plywood exteriors readily (exterior plywoods form an excellent vapor barrier in themselves). However, the arrest of vapor by the copolymer coating at the sheathing joints results in deformation that becomes increasingly visible as time goes by.

Other coatings incorporate so-called resins and Portland Cement. These coatings are applied over sheathing, and depending upon the nature of the resinous ingredients, may result in the same joint deformation problems created by epoxy coatings. Many of these coatings are advertised as matrices or bedding coats for aggregate, to develop an exposed aggregate surface. There is little doubt the adhesive qualities of the formulation will retain the aggregate, but there is some doubt as to whether the coating will permanently adhere to the substrate. These factors have to be considered at the time a decision is made on choice of a coating material.

It is not prudent to expect a coating to be the only line of defense in weather protection for any structure. All components installed before the final coating should be installed in a manner to make the building weatherproof without the coating. The coating should provide an attractive appearance, and should serve as an added weatherproofing component. Expecting any part of an assembly to function as the only weatherproofing element is neither prudent nor logical.