Joint Requirements of PB EIFS in General Industry Practice

by William O. Bishop

One of the architecturally desirable attributes of PB EIFS is the systems’ freedom from an inherent need for joints. PB EIFS are oftengenerically referred to as “synthetic stucco” because of the similarity in appearance and in the fact that both are installed by the plastering trade.

One of the most powerful selling features of PB EIFS versus stucco is that these EIFS are not in and of themselves required to have control joints to limit the size and shape of portions of the facade. Unlike PB EIFS, stucco has a known propensity to crack if installed in too large an area and, therefore, an associated and known requirement for joints that define the shape and limit the area of an otherwise unjointed stucco wall portion. In many cases, these required joints are architecturally undesirable. PB EIFS overcame the stucco’s intrinsic joint requirement and capitalized upon this benefit in promotion of these EIFS to the architectural community. In fact, PB EIFS came to be promoted as a cladding which, unlike stucco, did not need joints. The key phrase in that statement is “unlike stucco.” This is understood in the industry to mean that PB EIFS do not have an inherent requirement for joints.

The fact remains, however, that under certain conditions PB EIFS do require joints. This fact is clearly evident in industry literature. In all such cases the requirement for a joint is associated with either a discontinuity or penetration of the system, or with the location of potential relative differential movement of the structure substrate to which the PB EIFS is attached. One such location where joints are required occurs in wood framed construction at the floor lines. PB EIFS cannot accommodate the structural movement associated with cross grain shrinkage of the lumber.

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The fact that sawn lumber is subject to dimensional changes due to variation in its moisture content is wellknown. (Ref. 1,2,3). The change in dimension is particularly pronounced in the width and thickness of the lumber and much less in the length of the member. Industry literature makes recommendations for wood framing with respect to moisture content at the time of construction, protection and storage of lumber and detailing to accommodate potential shrinkage movement. While platform framing (see Figure 1) which utilizes full depth members at floor lines maybe more common construction and perhaps exhibit higher potential movement, floor systems that incorporate wood trusses and several thicknesses of sills and plates can also experience structural movement in the area of the floor line.

Many manufacturers’ literature clearly identifies that their system requires joints in locations where relative movement of the substrate/structure, to which the system is attached, occurs. It is understood to be the responsibility of the design professional to familiarize himself with the system and its performance, design and detail requirements, and to make an informed decision as to the potential of movement on his building and the associated need for joints in the PB EIFS cladding. The value of this knowledge to the applicator/contractor is also obvious.

Manufacturers’ warranties typically disclaim coverage for defects due to “improper installation. Im-

Joint - Cont’d on page 47
RECOMMENDED JOINTS IN THE WALL SYSTEM (Wood Frame Construction)

Typical Platform Framing (no scale)

- Rafter
- Top Plates
- Stud
- Sub Floor
- Sole Plate
- Header/Joist
- Plates
- Joint
- Header/Joist
- Foundation

Section at Floor Joist (no scale)

Joint to be at mid-height of headers/joist.

Note: Joint is in both Wall System and the wall sheathing.

WALL SYSTEM JOINT AT HEADER/JOIST (NO SCALE)

- Approved sealant and sealant primer.
- Sheathing plywood or gypsum.

Note: Do not fasten sheathing which is continuous onto members above and below the header to the header.

Closed cell backer rod.

Header/Joist
Joint - Cont’d from page 42

proper installation includes design and application of the system without joints in locations where structural movement can occur, such as at floor lines in wood framed construction.

Such improper design and application can result in a compressive failure of the PB EIFS coatings regardless of base coat/meshsystem or finish texture utilized. The failure is evidenced by horizontal wrinkles or cracks on the finish surface of the PB EIFS in the area of a floor line. In particular, these wrinkles occur in the locale of a horizontal joint in the wall sheathing (typically plywood or gypsum) and/or near a horizontal joint in the insulation component of the EIFS.

Generally, repairs are made as for a crack in the PB EIFS. It may be wise, however, to additionally install a new horizontal expansion joint which incorporates a backer rod and sealant. This allows for further movement and relaxation of built-in deformation of the PB EIFS. The new joint must be designed and constructed in accordance with the PB EIFS and sealant manufacturers’ details and requirements. In some cases the wall sheathing will also have been damaged and therefore must be replaced. The new sheathing should not be fixed both above and below the floor depth over which further movement can occur.

References
2 1989 Sweet’s Catalog File, Selection Data 5/Wo.
3 Wood Engineering Handbook, U.S. Forest Products Laboratory.

About the Author:
William O. Bishop earned his masters degree in structural engineering from MIT and is a licensed professional engineer in several states. An independent consultant, Bishop was Director of Technical Services for ISPO, Inc., and has been involved in the EIFS industry for over 11 years.