

INTRODUCTION TO STUCCO FACADE

A stucco facade is an exterior plaster façade that consists of cement, aggregate, and water. Stucco resembles concrete and can be applied in many different colors and textures. It provides many advantages over other facade systems due to its aesthetic value, fire resistance, easy maintenance, and durability. A stucco facade can last over 50 years, depending on the local environment and if it properly installed and maintained. There are two types of stucco as described below: 1) Direct Applied Stucco and 2) Stucco Applied over Lath.

DIRECT APPLIED STUCCO

Direct applied stucco is applied directly to unit masonry or concrete. While typically applied in two coats or layers, direct applied stucco may be two-coat or three-coat stucco. Two-coat stucco refers to a single coat of stucco applied to the substrate followed by a thin finish coat that can be applied in many different colors and finishes. In three-coat stucco, two coats of stucco are applied before the finish coat.

ASTM provides standards for stucco application including the thicknesses to be used for each layer of stucco, the proportions of aggregate to cement in stucco, preparation of substrate to receive stucco, and other standards for stucco application.

Because direct applied stucco is directly applied to the substrate behind it, it must be designed as a *barrier wall* system. In a barrier wall system, the exterior surface of the stucco is the primary resistance to moisture penetration and is typically coated with a waterproof coating. The wall is solid with no cavity or furring to drain water that penetrates the exterior surface. There are certain problems with barrier wall systems. Since the exterior surface is the primary resistance to moisture penetration, maintenance of the stucco facade is imperative. Any cracks can lead to leaks to the interior of the building.

STUCCO APPLIED OVER LATH

Stucco applied over lath is three-coat stucco. The first coat applied to the lath is referred to as the “scratch coat”. The scratch coat is scored horizontally to provide a key for the second coat (referred to as the “brown coat”). After the brown coat has been applied to provide a smooth, even surface, the thin finish coat is applied.

The lath may be attached to wood or steel studs, unit masonry, or concrete substrate. ASTM provides the standards for the materials to be used as lath and furring; installation of the lath and furring; lapping of lath; attachments to wood framing members, metal framing members, masonry, and concrete; spacing of attachments; accessory standards; control joint spacing; etc.

Stucco applied over lath often has a weather barrier installed between the lath and the structure of the building. Such stucco is a drainable stucco system. A drainable stucco system should have proper flashings and weep screeds to allow water that accumulates at the drainage plane to drain to the exterior. Drainable stucco systems are preferred as the building is protected should water penetrate the exterior stucco surface.

Similar to other building components in service and exposed to the elements, stucco facades need to be maintained, inspected, and repaired. There are several problems that can occur with stucco facades in service.

TYPICAL PROBLEMS WITH STUCCO FACADES

Cracking is a typical problem of stucco facades due to the brittle nature of stucco. Cracking can be caused by:

- Improper and varying thicknesses being used (often due to improperly installed substrate in direct applied stucco)
- Improper mixing of materials at time of placement
- Excessive drying shrinkage due to stucco not being properly moisture cured
- Lack or improper spacing of control joints

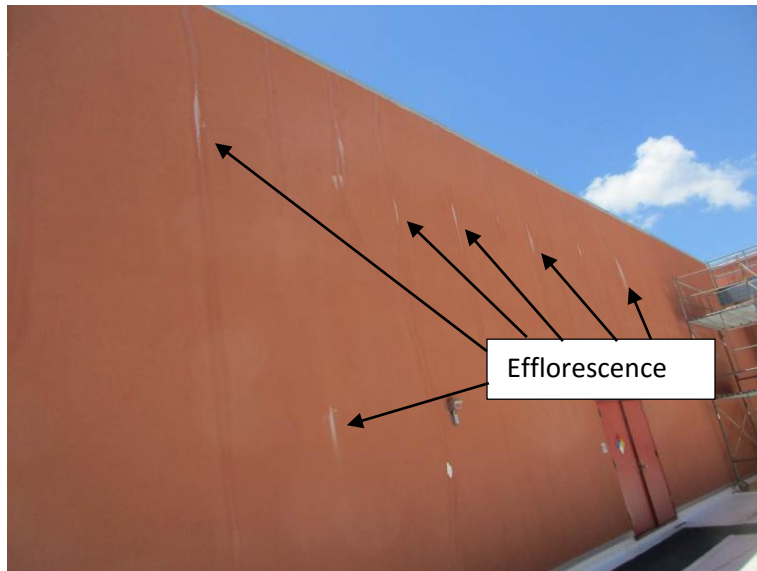


Typical map cracking due to excessive drying shrinkage



Typical map cracking due to excessive drying shrinkage

Efflorescence is a common problem with stucco. Efflorescence typically occurs at cracks in a direct applied stucco system, or at cracks in a drainable system that does not drain properly. While on its surface it may appear to only be an aesthetic concern, the cracks at areas of efflorescence can lead to leaks inside the building or deterioration of the lath and lath fasteners.



Corrosion and failure of lath fasteners is another common problem of stucco facades. The failure of lath fasteners can lead to large areas of stucco falling from buildings. Corrosion and failure of lath fasteners can occur due to:

- Lack of maintenance. Leaving stucco cracks unsealed
- Wrong type of fasteners being used
- Fasteners improperly installed (lack of embedment depth, spacing too far apart)
- Lack of drainage provided behind stucco



Stucco displaced due to failed lath fasteners



Corroded and failed lath fastener



Failed lath fastener



Severe corrosion of lath found at large unsealed crack in stucco

Maintenance and upkeep is vital for continued service and longevity of stucco facades. Deterioration of stucco facades can result in leaks inside the building and can create life safety issues. Building owners should have stucco facades examined periodically by a consultant qualified in stucco repair. The condition survey will assess the condition of the stucco facade and water resisting elements, make recommendations for repair and maintenance, and help owners prepare budgets accordingly.

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