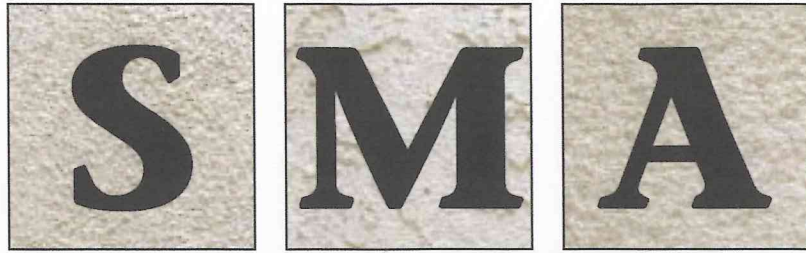


Stucco



Stucco Manufacturers Association

Stucco Crack Policy

The Stucco Manufacturers Association offers the following guidelines regarding stucco cracks.

Cracking overview with general repair guidelines:

The SMA and member plastering contractors are constantly striving to improve stucco. From time to time, even stucco manufactured and installed correctly will crack.

Certain fine or smooth textures accentuate cracks in stucco, while heavier textures tend to hide stucco cracks. Although not all cracks are objectionable, cracks in stucco acceptable to one person might be unacceptable to another person. Cracks can occur in stucco regardless of texture.

Cracks that appear within the first 30 days after installation and are larger than 1/16" (the thickness of a penny) can be filled or repaired with the same color coat material. Cracks that are patched and re-appear could indicate a structural or substrate movement problem, necessitating the use of an elastometric coating. If a crack is visible from more than 10' away or is a source of leaking, it should be patched. Patching small hairline cracks (smaller than 1/16") is not recommended. Small cracks will not accept material, and the resulting patch will detract from the natural beauty of the stucco and will serve no useful purpose. If these hairline cracks must be repaired, they could be fog coated.

Color coat stucco is not structural; it is a decorative finish. Plaster cracks form when a stronger force exceeds the restraint capacity of the stucco system. Cracks are "stress-related energy." The UBC and ASTM do not call for a required hard-

ness (PSI) for Portland Cement Plaster. Minor cracking at the corners of doors and windows and other stress points is reasonable and should be anticipated.

There are two primary reasons for stucco to crack:

Shrinkage cracks may develop as the excess water evaporates from the drying cement mix. Shrinkage cracks can occur very early on and cannot be seen after the finish color coat is applied. Hairline or egg shell cracking or "checking" in the finish color coat is also the result of a rapid dry out and most commonly occurs on hot, windy days.

Structural cracks can occur in stucco when stress is transferred to the plaster membrane from various external sources.

Examples of transferred stresses include:

Ground movement: Fill vs. cut. Does the site have proper compaction? Are there settlement and/or subsidence? Has seismic vibration (earthquake) been a factor?

Foundation settlement: Concrete creep and sag.

Frame/structure movement: Common frame trouble spots include offset loads, big spans, point loads, cantilevers, notching green lumber (as lumber is stabilizing with the outside; ambient humidity and temperature). For every 4% change in moisture, lumber changes 1% in size. As the lumber dries out, depending on the

direction of the grain, lumber will twist and warp in various directions. Water may cause swelling and buckling in plywood or OSB sheathing, especially when there is no gap between the sheets. Moisture that makes its way into the lumber during periods of heavy rain will cause the lumber to swell and put pressure on the stucco.

Shear paneling: Plywood or OSB not properly spaced or staggered at vertical horizontal joints. Plywood or OSB not run perpendicular to the studs. Plywood or OSB nailed closer than six inches at the edges may contribute to cracking in stucco by causing the lumber to move outwardly rather than laterally. Wood-based substrates should be gapped a minimum of 1/4".

Offset framing: Irregular, inconsistent, or offset framing can cause variations in the stucco thickness, subjecting it to random cracking. Variations in base coat thickness can cause color variations.

Heavy rain: If the framing lumber or sheathing becomes wet, more cracks are likely to appear because the lumber or sheathing may swell, putting pressure on the stucco and resulting in cracks in the stucco membrane.

Movement: Mechanical vibration and/or other movement.

Loads: Wind loads, live loads, and/or dead loads that exceed design specifications. Stucco is not a structural material; it will not hold up the building. If the building moves for any reason, the stucco will develop cracks at the weakest point in the stucco membrane.

Water Penetration: Minor cracking is not likely to contribute to water intrusion; however, large cracks may allow water to reach the back plane of plaster. A properly installed weather barrier will direct this incidental water to the bottom of the wall and allow it to exit at the weep screed.

Cause: A stucco expert can generally determine the cause of some cracks, but at the same time, some cracks can be puzzling. In some situations, it may take a structural engineer to evaluate how or why a building is moving.

Smooth Trowel Finishes: With smooth trowel finishes (also known as Santa Barbara or Mission

Finishes), even minor check cracking is more visible. Burn marks and catfaces can also occur in the process of troweling the material down to a smooth finish. This look is either desirable or undesirable, depending on the buyer. Prior to fog coating a smooth finish, the manufacturer should be contacted.

What can the General Contractor/Builders do to reduce the likelihood of stucco cracks?

- Verify ground compaction or don't build on fill.
- Over irrigation and lack of effective site drainage can induce damage to a structure.
- Designs should include roof overhangs.
- Proper lumber grades and moisture content.
- The structural engineer and architect should anticipate building movement and locate the expansion joints appropriately.
- Even up offset framing members such as ends of shear paneling, blocking that protrudes into the stucco plane or offset plate lines before lathing. Refer to APA "Installation of Stucco over Wood Structural Panel Wall Sheathing."
- Stagger the mid-span blocking to prevent studs from twisting.
- Refer to the American Plywood Association's recommended method of "Installing Wood Shear Paneling," including gapping and nailing six inches of O.C. to allow for lateral expansion when set.
- Verify that the framer correctly installs all structural members.
- Install continuous vent screed in soffit areas to provide extra ventilation.
- Flash all wall penetration per code (not just doors and windows).
- Refer to the Engineered Wood Association's Design and Construction Guide's method, of "Installing Stucco over APA Panel Sheathing."
- Load roof tiles five days prior to lathing installations.
- Drywall nailing prior to brown coat installation or screw attachment.
- Use licensed plastering contractors that apply stucco according to local building codes.
- If stucco is to be painted, allow 28 days for curing cementitious products prior to painting.

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