TECHNICAL NOTES

STUCCO CRACKING

Stucco, like all cement-based building materials, is susceptible to cracking as it tries to accommodate various stresses imposed upon it, including shrinkage, movement, and loading.

Shrinkage cracking is a natural occurrence in all portland cement-based materials, such as sidewalks, patios, and driveways.

Such cracking should be viewed as a normal and common event, rather than indicating a product or installation defect.

CRACKING CAUSES

There are diverse reasons for stucco cracks, and it can be challenging to pinpoint the exact sources of stress in a completed stucco application.

1. Settlement and Movement: Newly constructed buildings, especially those with wood framing, may undergo settling and movement in their initial years.
2. Vibrations from Heavy Equipment and Ongoing Construction.
3. Shrinkage: Stucco experiences a natural process of shrinkage as it cures and dries, similar to other portland cement-based materials.
4. Thermal Expansion and Contraction: Temperature fluctuations during installation and curing can lead to stucco expanding and contracting.
5. Improper Installation: Inadequate mixing, improper thickness, inadequate overlapping of lath, or insufficient curing time during stucco application can weaken the material.
6. Dissimilar Materials: Cracks will also often form where two dissimilar materials meet and an expansion joint is not installed.
7. Building Movement: Buildings can experience structural movements over time due to factors like settling, improper framing or sheathing installation, wind loads, foundation issues, or seismic events.
8. Impact or External Forces: Physical impact or external forces like earthquakes.

DOING IT RIGHT

While these installation practices may not entirely prevent stucco cracking, they can significantly reduce the extent and size of the cracks.

STRUCTURAL/STRUCTURE:

1. Ensure correct sheathing installation. Wood-based sheathings must be spaced 1/8” apart according to the APA.
2. Buildings should carry at least 90% of their final load before plastering.
3. Install drywall and roofing before stucco application.

CONTROL/EXPANSION JOINTS:

1. Control and/or expansion joints should be designed and installed per industry recommendations.
2. Control Joints shall be installed to minimize stress due to stucco curing and drying shrinkage and minor movement. Contact FacadesXi technical services for specific control and expansion joint installation locations.
3. Expansion joints should be designed and installed at building joints, floor line deflection joints, dissimilar materials, and other locations where building movement is expected.

NOTE: Correct placement of expansion joints and control joints, however this is the responsibility of the designer and not the stucco applicator

STUCCO MIX/MIXING:

1. Avoid using excessive water in plaster mixing, as it affects the cement’s ability to bond and results in shrinkage due to evaporation.
2. Use mixes with an appropriate balance of cement and sand, as cement shrinks while sand does not.
3. Never use poor-quality sand. The sand must have the correct gradation and type as per ASTM standards.

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STUCCO CRACKING

LATH INSTALLATION:

1. Furr the lath to enable effective stucco keying behind it.
2. Ensure proper lapping of lath edges.

STUCCO INSTALLATION:

1. Avoid installation in very hot, cold, dry, wet, or windy conditions.
2. Maintain a consistent stucco thickness to prevent stress concentration and potential cracks.
3. "Hard" float the brown coat to densify the plaster membrane.

MOIST CURING:

Moist cure the stucco as per the product datasheets and applicable building codes. Cement needs to set and harden through hydration, and excessive or rapid water evaporation can cause shrinkage cracks.

AFTER CONSTRUCTION:

Avoid pounding and other vibrations to the plaster membrane during the curing period.

REPAIR OPTIONS AND PROCEDURES

Although minor cracking in a stucco assembly does not indicate an improper stucco application, there are methods to repair or address these cracks.

Keep in mind that fixing individual cracks or patching small areas on a wall may result in visible and non-aesthetically pleasing outcomes. Typically, for color uniformity, entire elevations will need to be coated after repairs.

Hairline Cracks: Patching, caulking, or painting just the crack may leave a noticeable "scar" that can appear more obtrusive than the hairline crack itself. For color uniformity, it is advisable to paint the entire panel, but be aware that the paint may affect the stucco texture and may not match an finish coats on other elevations.

The easiest option to cover small hairline cracks is to coat the entire wall with Elastomeric Coating.

For larger cracks, patching materials consisting of a slurry coat of stucco finish and a bonding agent should be used. This material should be forced into the cracks, and any excess material should be brushed from the surface. To avoid the appearance of a scar, the entire panel should be refinished with the appropriate finish coat material, depending on the desired texture.

In severe cases or if the cracking may persist, the wall could be coated with a base coat, reinforcing mesh, and finish (lamina).

NOTES: Patching should be performed by an experienced plasterer who can consistently achieve good results.

It's important to note that while stucco installations may develop cracks, this does not necessarily indicate that the stucco assembly has failed, was improperly installed, or designed incorrectly. Hairline surface cracking usually does not cause leaking problems or affect the overall performance of the plaster skin; it is primarily a cosmetic or aesthetic consideration.