



## Stucco Troubleshooting Guide--Part 1

| No. | Problem                                                             | Possible Cause(s)                                                            | Remedy or Prevention                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----|---------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | Stucco stiffens immediately upon application to concrete or masonry | Substrate too dry                                                            | Dampen substrate prior to application of stucco                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 2.  | Separation of stucco from accessory                                 | Lath continuous beneath expansion joint accessories                          | Cut or separate lath beneath expansion joint accessories to make discrete, independent panels before installing stucco                                                                                                                                                                                                                                                                                                                                                                                            |
|     |                                                                     | Lath improperly lapped and wire tied at accessory                            | Lap lath over accessory flange to inside corner of flange and wire tie no more than 7" (178 mm) oc                                                                                                                                                                                                                                                                                                                                                                                                                |
|     |                                                                     | No keying of stucco into accessory                                           | Install stucco into accessory key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|     |                                                                     | Cementitious material in cavity of accessory restricts movement of accessory | Remove cementitious material from accessory while still wet                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3.  | Weak bond or delamination from concrete or masonry                  | Substrate too dry                                                            | Dampen substrate prior to application of stucco                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|     |                                                                     | Rapid loss of moisture/poor cement hydration                                 | Damp cure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|     |                                                                     | Substrate too smooth and non-absorbent                                       | Provide slightly scarified surface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|     |                                                                     | Surface contamination                                                        | Remove surface contaminants by sandblasting, water blasting or attach metal lath                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 4.  | Rusting at corner accessory                                         | Too little stucco cover at corner accessory                                  | Apply uniform thickness of stucco at corner and cover accessory                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 5.  | Water damage to materials in wall assembly                          | Omission of or improper use of flashing                                      | Incorporate flashing in the wall assembly in accordance with code requirements—above window and door heads, beneath window and door sills, at decks, roof/wall intersections and at lower to higher wall intersections—such that water is directed to the exterior, not into the wall. Seal penetrations or junctures with other materials with appropriate backer rod and sealant. Provide appropriate moisture barrier behind stucco in wall assembly. Provide proper clearance of stucco above finished grade. |
| 6.  | White chalky deposit on surface of stucco (efflorescence)           | Excess lime in stucco mix (conventional stucco only)                         | Omit or minimize lime in mix (conventional stucco only)                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|     |                                                                     | Moisture transport through the stucco                                        | Eliminate source of moisture                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|     |                                                                     | Application during cold and/or damp weather                                  | Provide protection of stucco from adverse weather conditions or heat stucco ingredients if weather is cold                                                                                                                                                                                                                                                                                                                                                                                                        |
| 7.  | Rusting in exterior finish                                          | Use of aggregate with iron ore particles                                     | Select aggregate that conforms with ASTM C 897                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 8.  | "Ghosting" or telegraphing of studs through finished wall surface   | Thermal bridging of studs                                                    | Provide exterior insulation over studs                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |



## Stucco Troubleshooting Guide--Part 2: How and Why Stucco Cracks

| No. | Problem                                                                                                                   | Possible Cause(s)                                                                                                         | Remedy or Prevention                                                                                                                 |
|-----|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | Map cracking                                                                                                              | Excess water or lime (conventional stucco) added to stucco mix                                                            | Reduce water or lime (conventional stucco), select aggregate that conforms with ASTM C 897                                           |
|     |                                                                                                                           | Poor aggregate/cement ratio                                                                                               | Adjust mix ratio by increasing sand content                                                                                          |
|     |                                                                                                                           | Poor aggregate gradation                                                                                                  | Select aggregate that conforms with ASTM C 897                                                                                       |
|     |                                                                                                                           | Rapid loss of moisture                                                                                                    | Damp cure, protect from wind and/or hot, dry weather conditions                                                                      |
| 2.  | Straight line cracking parallel to studs along stud line                                                                  | Stucco too thin at stud line because of wavy wall condition                                                               | Provide straight, plumb wall with solid backing                                                                                      |
| 3.  | Diagonal cracking at openings in wall                                                                                     | No expansion or control joint at corners of opening                                                                       | Provide expansion or control joint at corners of openings or diagonal metal lath strips                                              |
| 4.  | Random cracking in middle of wall                                                                                         | Lath too high in spots creating non-uniform stucco thickness                                                              | Install lath correctly                                                                                                               |
|     |                                                                                                                           | Stucco too thin because of improper lathing                                                                               | Provide lath properly spaced (furred) from wall or pull lath tight between supports to prevent non-uniform thickness of stucco       |
|     |                                                                                                                           | Lath not fastened to structural supports                                                                                  | Fasten lath into structural framing at appropriate intervals                                                                         |
|     |                                                                                                                           | Poor consolidation                                                                                                        | Correct rodding and floating procedures                                                                                              |
|     |                                                                                                                           | Poor aggregate/cement ratio                                                                                               | Adjust mix ratio                                                                                                                     |
|     |                                                                                                                           | Poor aggregate gradation                                                                                                  | Select aggregate that conforms with ASTM C 897                                                                                       |
|     |                                                                                                                           | Rapid loss of moisture                                                                                                    | Damp cure, protect from wind and/or hot, dry weather conditions                                                                      |
|     |                                                                                                                           | No or too few expansion joints installed in wall                                                                          | Install expansion joints at proper location/intervals in wall assembly                                                               |
| 5.  | Repeated vertical or horizontal straight line cracking at discrete intervals or cracks that emanate at discrete intervals | Lath improperly lapped                                                                                                    | Lap lath minimum 1" (25 mm) at ends and 1/2" (13 mm) at edges (along the length of the sheet)                                        |
|     |                                                                                                                           | Lath fastened to sheathing, not wire-tied at edge overlaps causing poor keying of stucco and non-uniform stucco thickness | Wire-tie lath at edge overlaps with lath taut.                                                                                       |
|     |                                                                                                                           | Paper-backed lath lapped paper to lath causing non-uniform thickness of stucco at overlap                                 | Lap paper-backed lath, lath to lath                                                                                                  |
|     |                                                                                                                           | Vertical lath lap not attached at structural support                                                                      | Attach vertical lath laps at structural supports                                                                                     |
|     |                                                                                                                           | Improper lath used, i.e., rib lath, creates non-uniform stucco thickness                                                  | Select appropriate lath for spans and application                                                                                    |
|     |                                                                                                                           | Shrinkage of wood-based sheathing                                                                                         | Keep wood dry during and after installation. Use adequate moisture protection to prevent moisture from stucco being absorbed by wood |
|     |                                                                                                                           | No gaps between wood-based sheathing                                                                                      | Provide 1/8" (3 mm) gap between wood sheathing.                                                                                      |
| 6.  | Straight line cracking at floor line                                                                                      | Omission of expansion joint at floor line                                                                                 | Provide expansion joints at floor lines                                                                                              |
| 7.  | Straight line cracking at discrete location                                                                               | Omission of expansion joint at dissimilar construction                                                                    | Provide expansion joints at dissimilar construction                                                                                  |
| 8.  | Cracking at corner accessory                                                                                              | Stucco tapered from thick to thin section at nose of corner bead                                                          | Apply uniform thickness of stucco at corner                                                                                          |