

# The State of Stucco

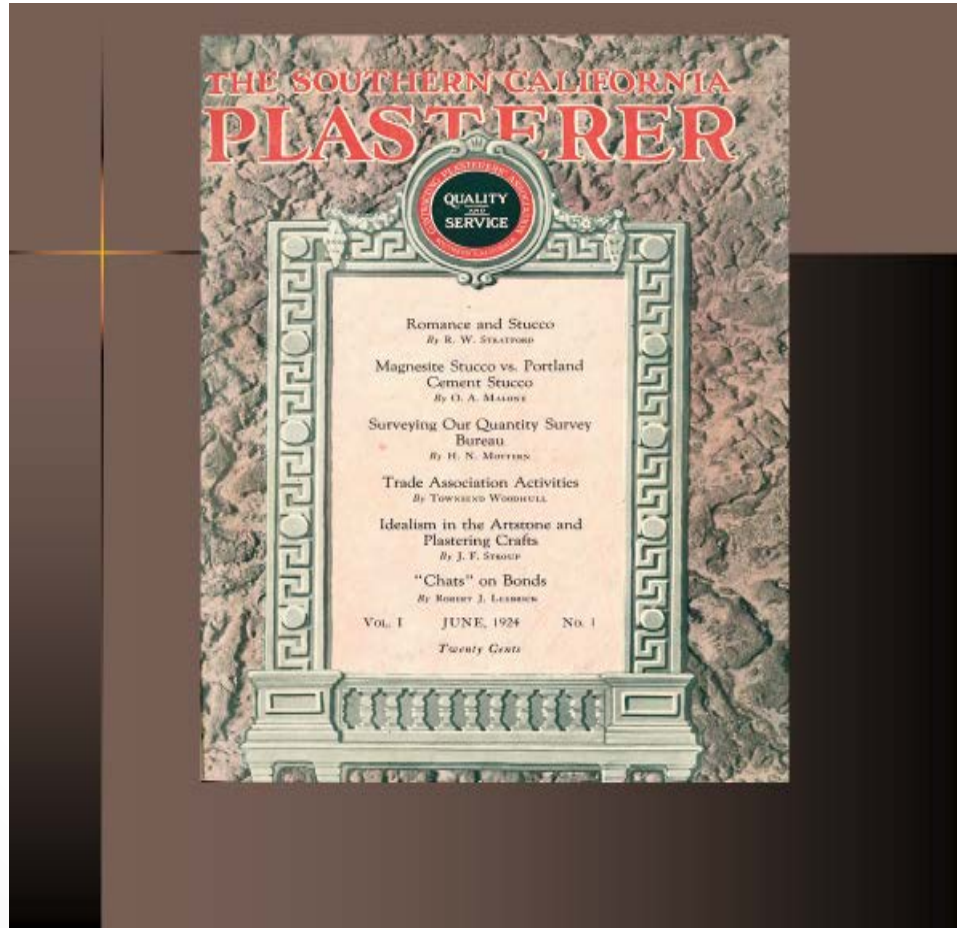
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Chief Executive Officer  
WACA / WCB

# Trials and Tribulations

- Performance
- Durability
- Complexities
- Ease of

Portland  
Cement Plaster  
(Stucco)  
Systems & Application

# History of Lath & Plaster Bureau's





# Plastering

- ASTM C926 – 11 Standard Specification for Application of Portland Cement- Based Plaster
- EIFS and One-Coat Systems Standards are based off of C926

# Sequencing

1. Load roof prior to plaster application
2. Stock and preferably hand drywall prior to plaster application
3. Schedule significant site work grading and compacting prior to plaster application

# Environmental Conditions

1. Portland cement – based plaster shall not be applied to frozen base or to a base containing frost. Plaster coats shall be protected from freezing for a period of not less than 24hours after set has occurred. ASTM C926
2. Portland cement plaster shall be protected from uneven and excessive evaporation during dry weather and from strong blast of dry air. ASTM C926
3. For exteriors, plaster shall be applied when the ambient temperature is higher then 40 degrees, unless the work area is enclosed and heat is provided. ASTM C926
4. Scaffold shading is good practice during month where the sun is at its highest.



# Application of Stucco



# Prior to application of PCP -Pre-inspection



Final chance to review

1. Flashings
2. Lath Attachment
3. Control joint layout
4. Laps in WRB and/or lath
5. Construction Team walk the site



# Control joints per specs and/or Industry recommendations



# Base Coats

1. Scratch Coat.
  - A. Sand for Base Coats – Specification ASTM C 897
  - B. Perlite ASTM C 897 4.4.2
  - C. Water ASTM C 897 4.5
  - D. Admixtures ASTM C 897 4.6
  - E. Fibers ASTM C 897 4.7 Specification C 1116 on alkali-resistant fibers, glass fibers, nylon, polypropylene or carbon fibers.
  
2. Pre Made – Engineered Cement Plaster Base Coats
  - A. Require written certification of compliance with ASTM C 926
    - Concrete
    - Complete mix with sand
  - B. Advantages
    - Guaranteed compliance with specifications
    - Should provide consistent mix which should accept color and result in less cracking

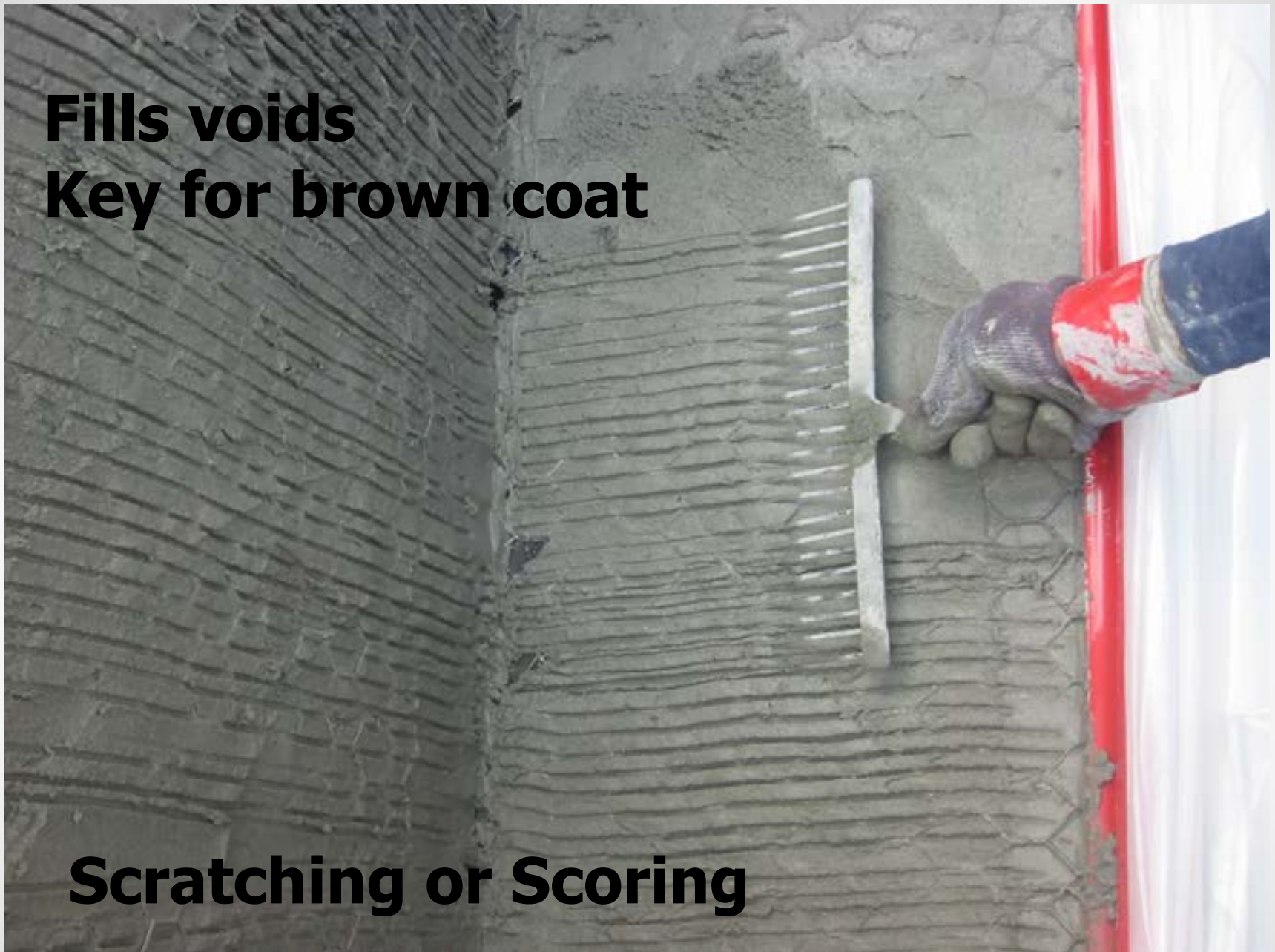
# Base Coats

- The first coat shall be applied with sufficient material and pressure to ensure tight contact and complete coverage of the solid base. As soon as the first coat becomes firm, the entire surface shall be scored in one direction only.  
ASTM C 926



**First ( Scratch coat)**

**Fills voids  
Key for brown coat**



**Scratching or Scoring**

# Brown Coat

The brown coat shall be applied using the same procedures, bring the surface to a true, even plane with a rod or straightedge, filling any defects in the plane with plaster and darbying. The surface shall be floated uniformly to provide a surface receptive to the application of the finish coat. ASTM C 926.



# Hand-applied Brown Coat



1. 48 hours
2. “Double-Back” Method
3. 3/4 inch minimum

# Finish Coat

1. Job-mixed or factory-prepared finish coats shall be applied, by machine or by hand. ASTM C 926
2. The use of excessive water during the application and finish-coat plaster shall be avoided. ASTM C 926
3. Fog-Coat Application-Job mixed or factory-prepared fog coats shall be applied in accordance with the directions of the manufacturer. ASTM C 926

# Tolerance for Flatness & Thickness

1. Plane tolerances of a solid base not to exceed  $\frac{1}{4}$  inch in 10 feet
2. Plaster nominal thickness shall be measured from the back plane of the metal base.
3. Nominal thickness of three coat plaster over a metal base shall be  $\frac{7}{8}$  inch.
4. Nominal thickness may vary do to Framing, sheathing, windows, doors and Etc.

# Curing

1. Hydration is key to maximum strength and easing stress that may lead to cracking.
  - A. Provide sufficient moisture in the plaster mix or by moist or fog curing to permit continuous hydration of the cementations materials.
  - B. Moist curing is accomplished by applying a fine fog spray of water as frequently as required, generally twice daily.
  - C. Moist curing is recommended twice a day for the first 2-3 days depending on climate.
  - D. Moist curing can benefit from shielding provided by tenting.

# Curing

## Time between Coats

Sufficient time between coats shall be allowed to permit each coat to cure or develop enough rigidity to resist cracking or other physical damage when the next coat is applied

# Owners expectations

1. Good stucco does not crack
2. It is a Defect
3. Getting worse



Contractor:

My Stucco  
Cracks

I Guarantee  
it!



# Cracks in stucco

1. Stucco as a brittle material is subject to an occasional crack when subjected to enough stress
2. Minor cracking should be expected / anticipated
3. Excessive cracking should not





# Plastering

- Cracks
  1. Conditions lending to plaster cracks
    - A. Foundation settlement and wall displacement.
    - B. Sheathing application/joints.
    - C. Sheathing swelling/water absorption.
    - D. Lath application. Not lapping or joining edges.
    - E. Inadequate panel sizes/control joint placement.
    - F. Inadequate integration of lath and building paper with reveals.
    - G. Inadequate plaster mix.
    - H. Wrong/poor materials.
    - I. Inadequate control of proportions.
    - J. Mixing times too short.
    - K. Retempering too often.
    - L. Inadequate curing.
    - M. What amount of cracking is acceptable? Tolerable crack sizes.
    - N. Tolerable quantities of cracks.



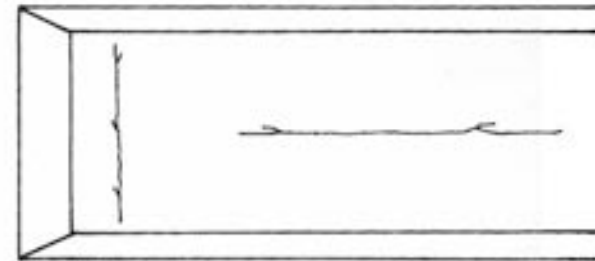


# Cracks

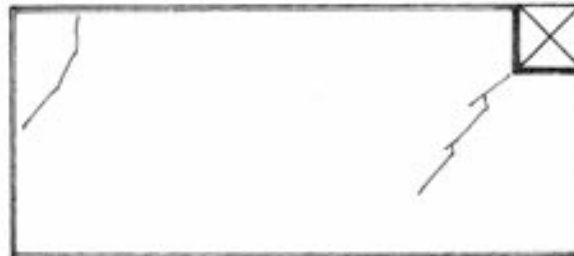
1. Structural
2. Shrinkage
3. Settlement
4. Plywood
5. Framing
6. Racking
7. on and on



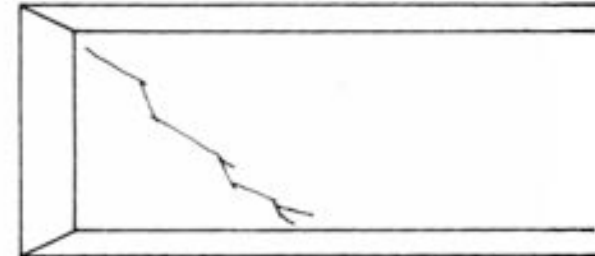
Perimeter Cracks



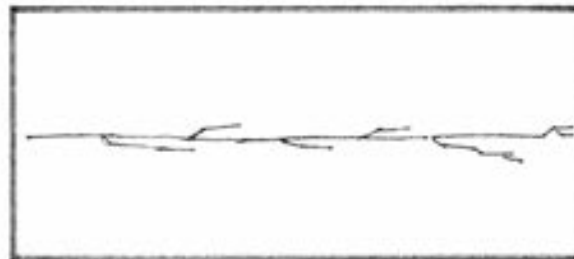
Warped Stud Cracks



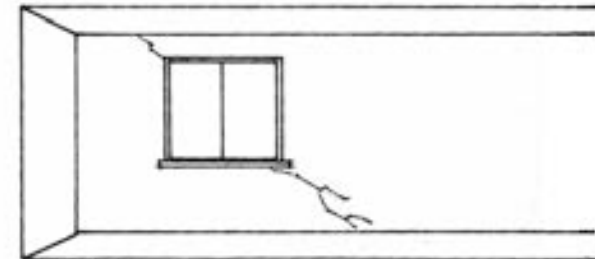
Cracking at Reentrant and Projecting  $\angle$ s



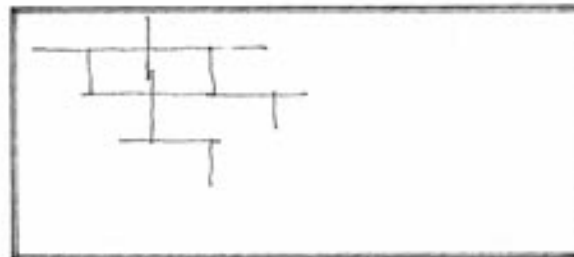
Racking Cracks



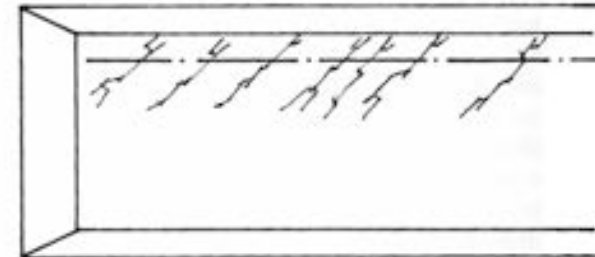
Deflection Crack



Racking Crack



Grid Cracking (At Lath Joints)



Differential Movement Cracks

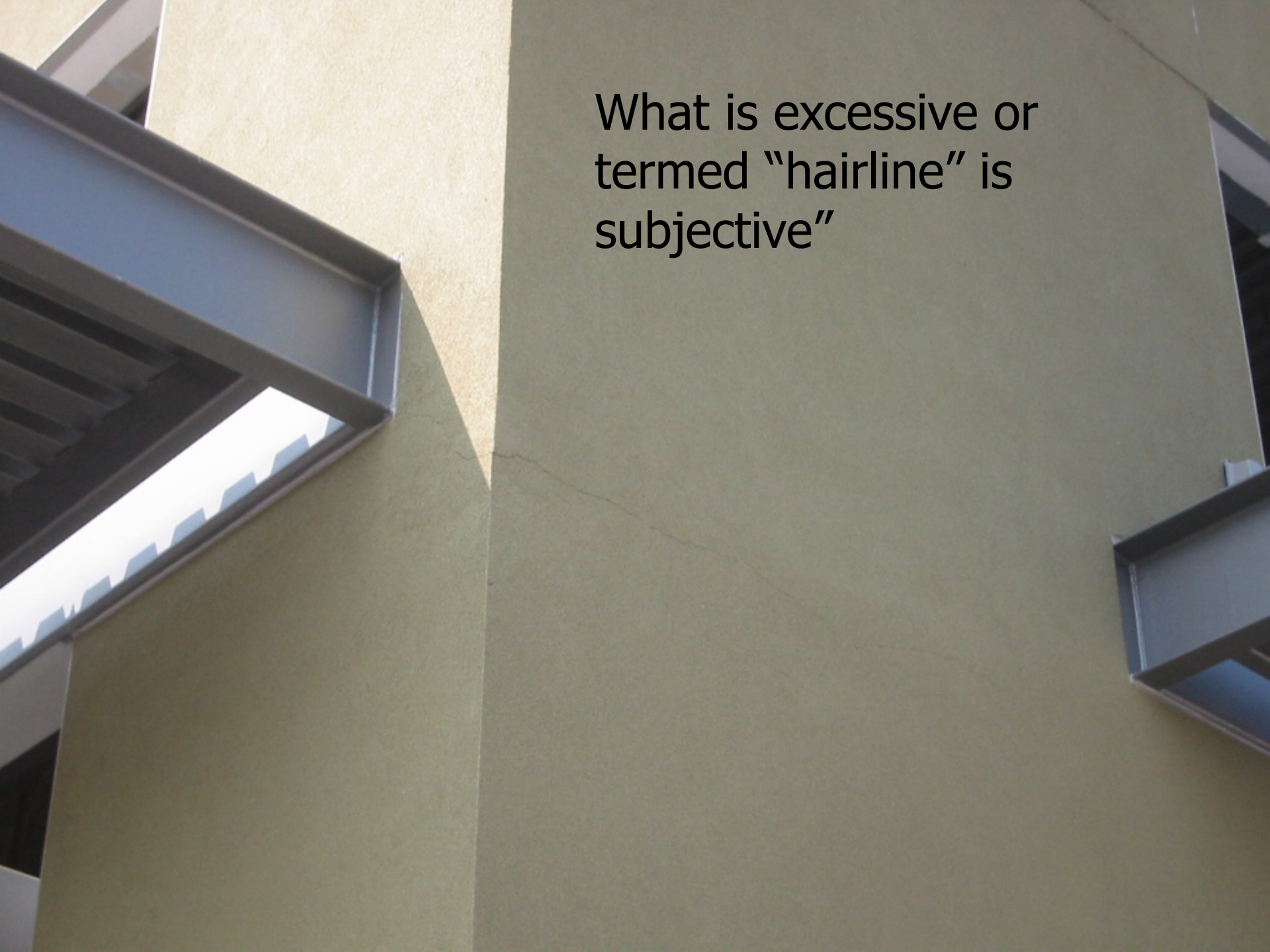
CEILINGS

WALLS

Fig. 3 – Typical Locations of Structural Cracks







What is excessive or termed "hairline" is subjective"

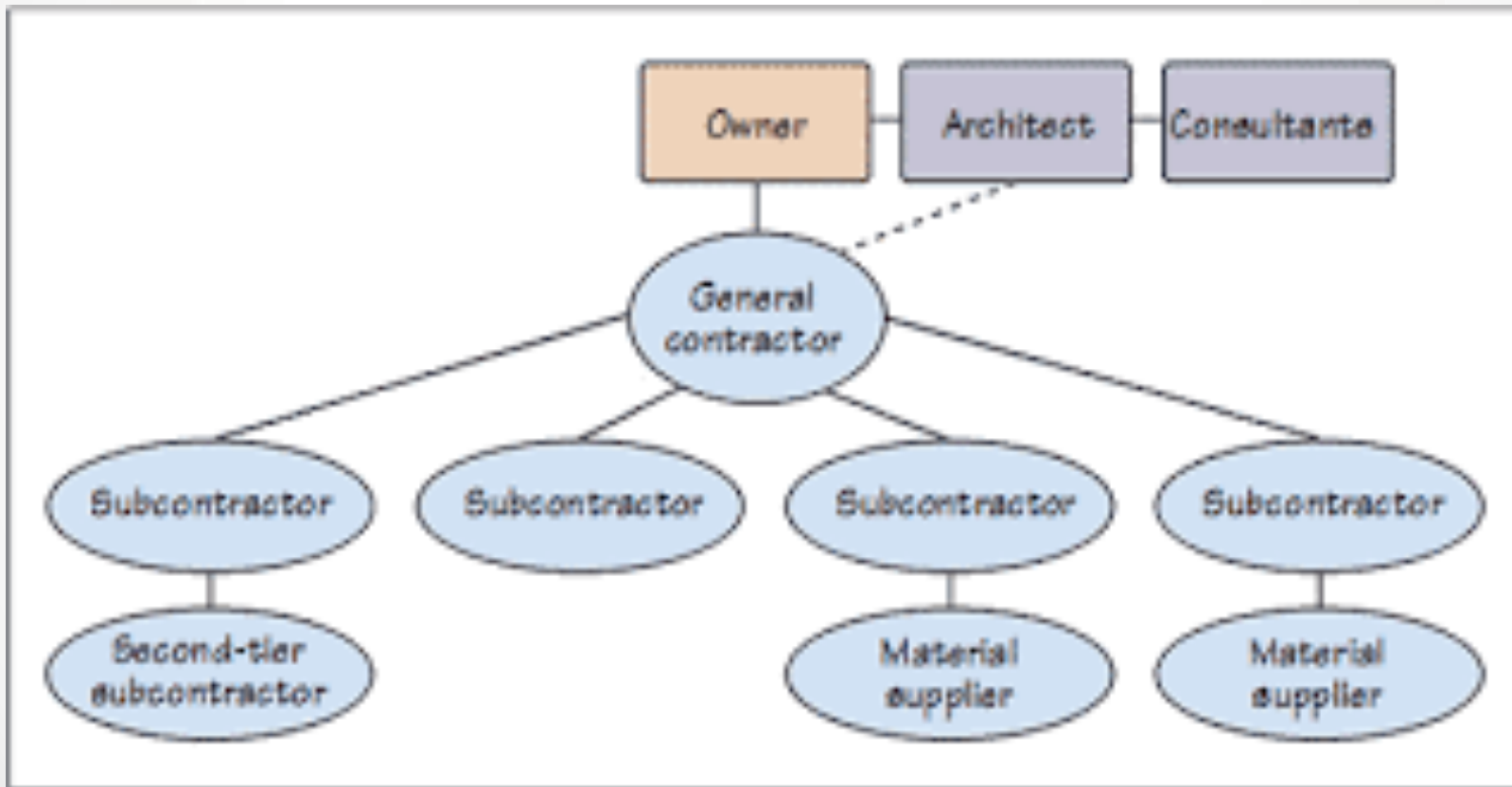
# Hairline Cracks

1. SMA - less than 1/16" inch wide
2. PCA less than .38 mm
  - A. Business card .2 to .25mm
  - B. Credit card .76mm
3. Texture effects the outcome





# Construction Team



# Constructability

- System
- Product
- Detail

# Craft of Lath Installation





# Plastering

## Questions