

FORENSIC INVESTIGATIONS OF STUCCO VENEERS

Bart Barrett, P.E.
Central Florida Branch Director

NELSON
ARCHITECTURAL ENGINEERS, INC.

INSTRUCTOR BACKGROUND

- B.S. in Civil Engineering
 - Emphasis in Structures
- Design and Forensics
 - Over 15 years of practice in the design and forensic fields
- Professional Engineer
 - In Florida, 20 other states, and the island territory of Guam
- ASTM C-11
 - Governs Plastering Standards
- Florida Lath and Plaster Bureau
 - Promotes the use of traditional plaster in Florida

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Forensic Engineering and Technology Team NAE

- Engineering and Forensics
 - Experts in Structural, Civil, Electrical, and Mechanical Engineering
- Forensic Architecture
 - Building Enclosures
 - Field Testing and Investigation

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Stucco

BASIC DEFINITION

- Exterior application of full thickness Portland cement-based plaster

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Stucco

BASIC DEFINITION

- Exterior application of full thickness Portland cement-based plaster
 - Exterior
 - Full thickness
 - Plaster

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WHAT IS PLASTER?



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WHAT IS PLASTER?



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WHAT IS PLASTER?



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TRADITIONAL STUCCO

- Cementitious Layers
- Reinforcing
- Trim Accessories

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NON-STUCCO VENEERS

▪ EIFS

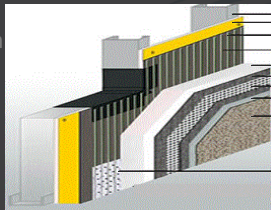
- Insulating foam panels
- Thin finish
- Veneer or accent features

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NON-STUCCO VENEERS - EIFS

Exterior
Insulation
Finishing
System



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NON-STUCCO VENEERS

▪ Cementitious Coating

- Thin coat of cementitious material
- Does not conform to building standards



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CODES AND STANDARDS

- FBC Section 2512 / FRC R703.6
 - Minimum requirements for exterior plaster
 - Refer to two ASTM standards
- ASTM C 926
 - Standard for application of stucco
 - Mix, thickness, and design considerations
- ASTM C 1063
 - Reinforcing and support of plaster

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STUCCO VENEERS - METAL BASE PLASTER

Substrate

- Wood/steel framed
- Sheathing
 - Gypsum board
 - Plywood/OSB
 - Open framed

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STUCCO VENEERS - METAL BASE PLASTER

Vapor Barrier & Lath

- Two layers of vapor barrier
- Self-furring metal lath

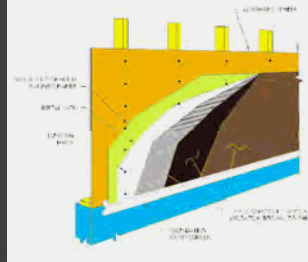
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STUCCO VENEERS - METAL BASE PLASTER

Three Coats

- Scratch
- Brown
- Finish



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STUCCO VENEERS - DIRECT APPLICATION

Solid substrates

- Concrete
- Masonry

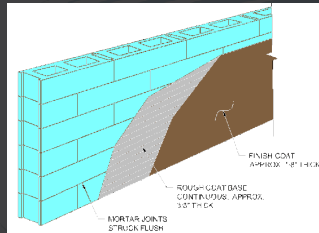
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STUCCO VENEERS - DIRECT APPLICATION

Two Coats

- Brown
- Finish



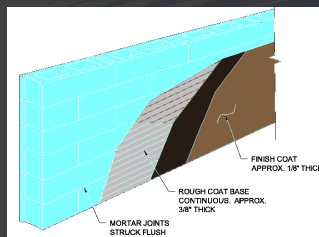
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STUCCO VENEERS - DIRECT APPLICATION

Three Coats

- Scratch
- Brown
- Finish



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STUCCO VENEERS - ACCESSORIES

- Casing Bead
- Control Joint
- Corner Bead
- Weep Screed

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COMMON PERILS™ IN STUCCO VENEERS

Discoloration

- Alkali Burn
- Corrosion
- Efflorescence
- Surface Staining

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Discoloration

- Alkali Burn



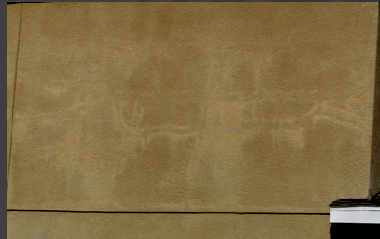
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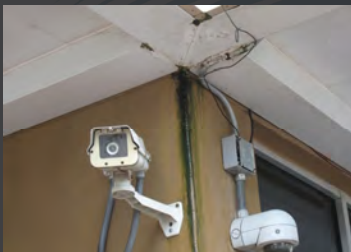
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COMMON PERILS™ IN STUCCO VENEERS

Coating Failures

- Deterioration
- Bubbling



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COMMON PERILS™ IN STUCCO VENEERS

Separations

- Delamination
- Debonding
- Buckling



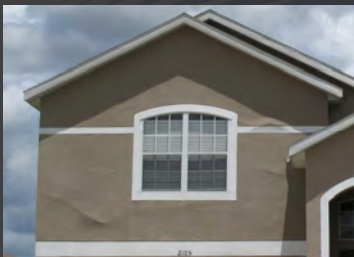
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COMMON PERILS™ IN STUCCO VENEERS

Fractures

- Shrinkage
- Structural



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Fractures

- Shrinkage
- Structural



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COMMON PERILS™ IN STUCCO VENEERS

Water Intrusion

- Roofs
- Balconies
- Walls
- Windows



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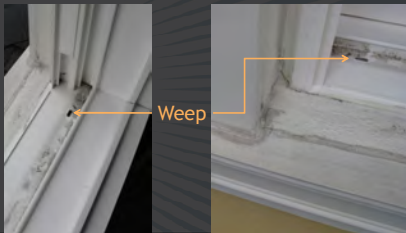
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COMMON PERILS™ IN STUCCO VENEERS

External Forces

- Impacts
- Negative Wind Pressures

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STUCCO TESTING METHODS

Forensic Investigations

- Observations
- Soundings
- Distress Mapping
- Infrared Imaging
- Moisture Surveys

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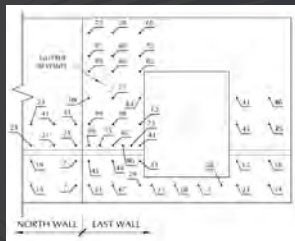
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