

***Stucco: Past, Present and Future
or Drainable EIFS: You are my Hero***

phius con new york
October 14, 2021

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Terracon

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Today's Presentation:

Part I

- ***History of Stucco and Variants***
- ***Questions***

Part II

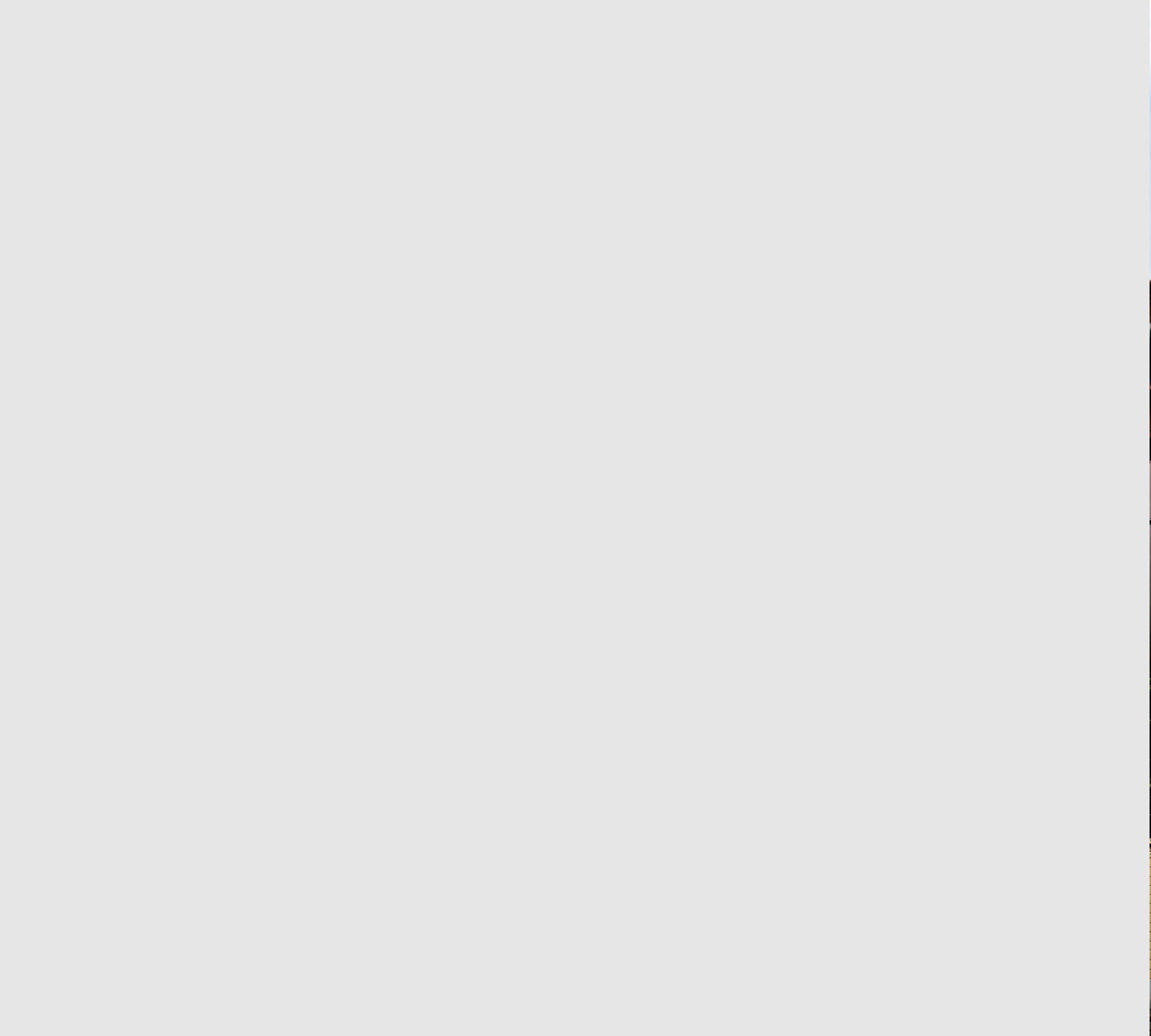
- ***Stucco Best Practices***
- ***Questions***

Part III

- ***EIFS Myths***
- ***Questions***

How we think of stucco...













CDR 1 MARIANO
LOBOS







Sforno

Trattoria Romana

Sforno Trattoria Romana





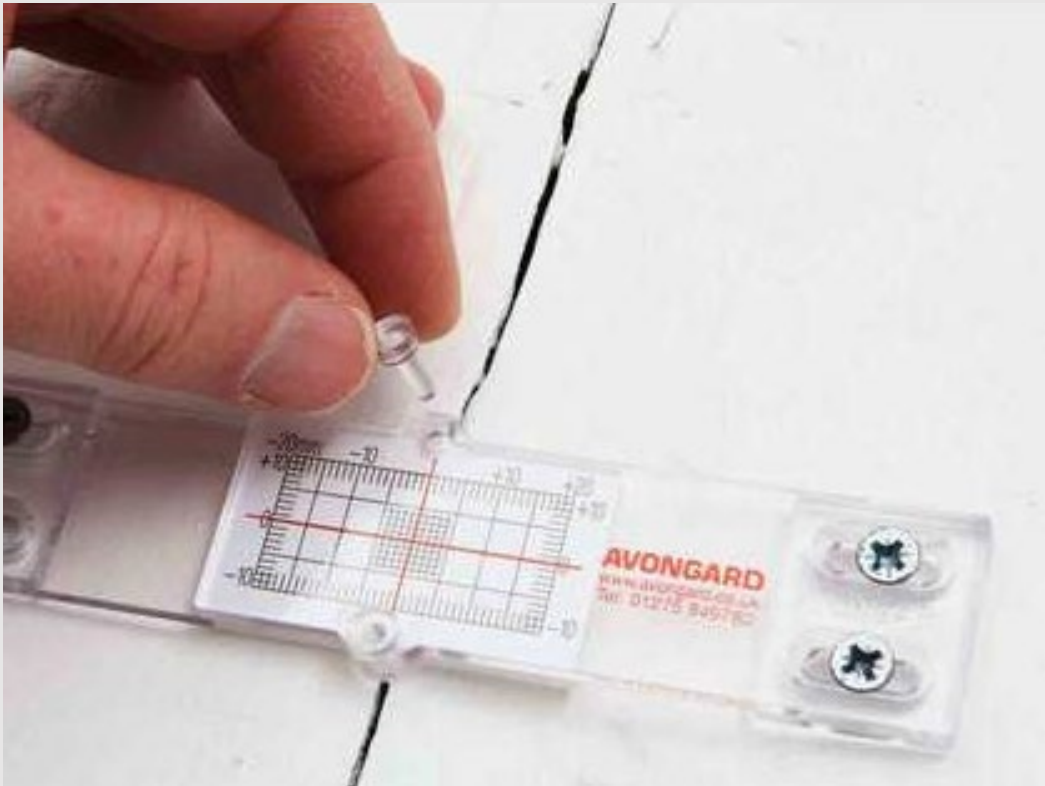
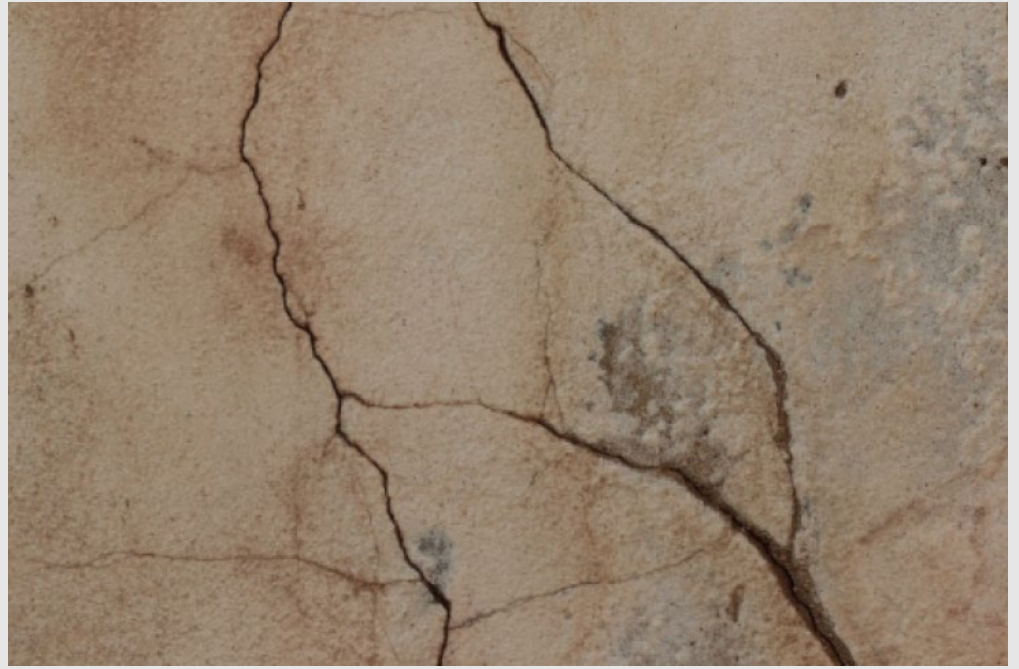
And yet failures everywhere...













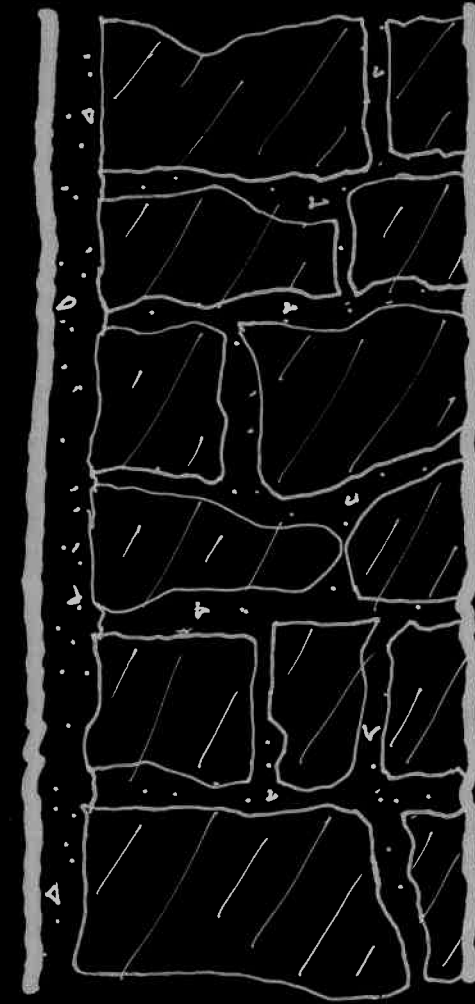




Thousands of years old...

Babylonian/Egyptian/Greek/Roman

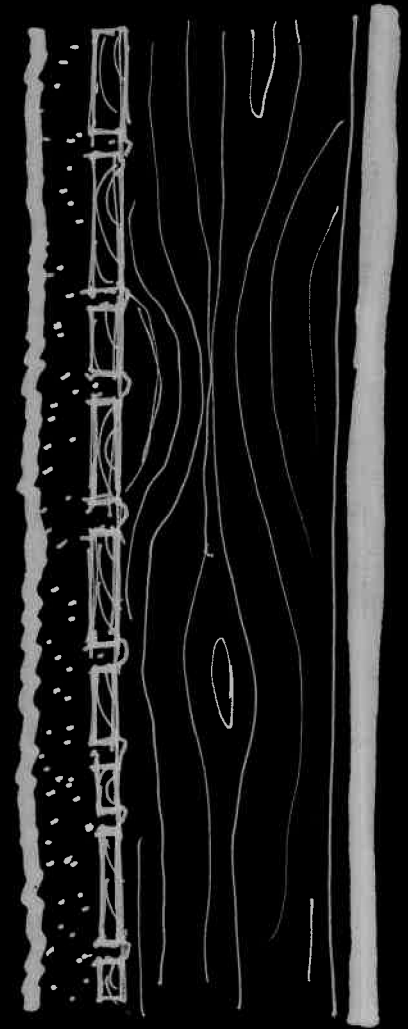
- Traditional lime-based stucco
- Direct-applied to masonry wall
- Monolithic section
- Greater than 20 perms
- Vapor permeable
- Wall section more permeable as move towards exterior
- Durable materials and very high drying potential (no insulation).



Hundreds of years old...

Stucco over wood lath, timber frame

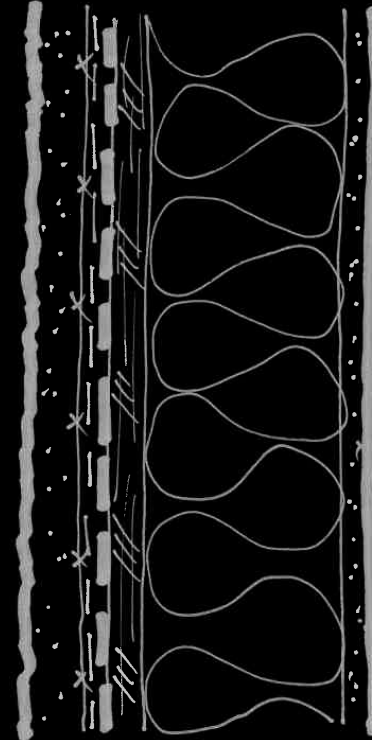
- Lime-Portland cement-based stucco
- Direct applied to wood lath
- Timber structure
- 5-10 Perms
- Class III vapor retarder
- Materials still durable
- High drying potential (no insulation).



Within the last 100 years or so...

Modern “Stucco” (Portland Cement Plaster)

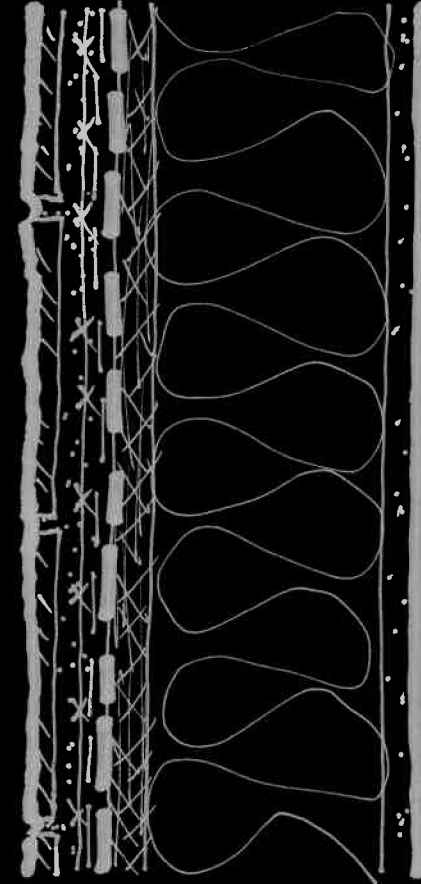
- 3 coats: metal lath, scratch, brown, finish
- Introduction of WRB(s)
- 1-5 Perms
- Class III vapor retarder
- Increasing insulation levels
- Lower drying potential
- Plywood, OSB sheathings
- Less durable.



Decades old...

“One” Coat Stucco & “Sticky Stone”

- Is actually two-coat stucco:
 - lath, scratch, and finish
- Half the thickness of 3-coat
- Half the strength and durability
- 2x the speed at half the cost!
- Polymer-modified stucco
- Less permeable towards exterior
- Less than 1.0 perms
- Class II vapor retarder.



Where are we going now?

Where the water-resistive barrier is applied over wood-based sheathing in Climate Zone 1A, 2A, or 3A, a ventilated air space shall be provided between the stucco and water-resistive barrier.

The screenshot shows the ICC International Code Council website. The left sidebar contains a navigation menu for Chapter 25, Gypsum Board, Gypsum Panel Products and Plaster, with sections 2501 through 2508. The main content area is titled "2018 International Building Code" and "CHAPTER 25 GYPSUM BOARD, GYPSUM PANEL PRODUCTS AND PLASTER". It includes sections 2510.5.3, 2510.6, and 2510.7. Section 2510.6, "Water-resistive barriers," is highlighted, and its second exception is circled in red. The text of the circled exception is: "2. Where the water-resistive barrier is applied over wood-based sheathing in Climate Zone 1A, 2A or 3A, a ventilated air space shall be provided between the stucco and water-resistive barrier."

All Codes » I-Codes

ICC INTERNATIONAL CODE COUNCIL®

Search Codes About premiumACCESS™ Free Trial What are Building Codes?

☰ 2018 International Building Code ♥
CHAPTER 25 GYPSUM BOARD, GYPSUM PANEL PRODUCTS AND PLASTER
Third Printing: Sep 2019

SECTION 2501 GENERAL

SECTION 2502 PERFORMANCE

SECTION 2503 INSPECTION

SECTION 2504 VERTICAL AND HORIZONTAL ASSEMBLIES

SECTION 2505 SHEAR WALL CONSTRUCTION

SECTION 2506 GYPSUM BOARD AND GYPSUM PANEL PRODUCT MATERIALS

SECTION 2507 LATHING AND PLASTERING

SECTION 2508 GYPSUM CONSTRUCTION

SECTION 2509 SHOWERS AND

2510.5.3 Backing not required.
Wire backing is not required under expanded metal lath or paperbacked wire fabric lath.

2510.6 Water-resistive barriers.
Water-resistive barriers shall be installed as required in Section 1403.2 and, where applied over wood-based sheathing, shall include a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of *water-resistive barrier* complying with ASTM E2556, Type I. The individual layers shall be installed independently such that each layer provides a separate continuous plane and any flashing (installed in accordance with Section 1404.4) intended to drain to the *water-resistive barrier* is directed between the layers.

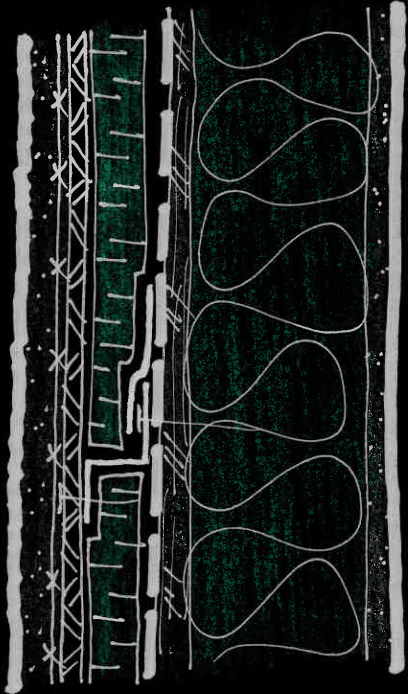
Exceptions:

1. Where the *water-resistive barrier* that is applied over wood-based sheathing has a water resistance equal to or greater than that of a *water-resistive barrier* complying with ASTM E2556, Type II and is separated from the stucco by an intervening, substantially nonwater-absorbing layer or drainage space.
2. Where the *water-resistive barrier* is applied over wood-based sheathing in Climate Zone 1A, 2A or 3A, a ventilated air space shall be provided between the stucco and *water-resistive barrier*.

2510.7 Preparation of masonry and concrete.
Surfaces shall be clean, free from efflorescence, sufficiently damp and rough for proper bond. If the surface is insufficiently rough, *approved* bonding agents or a Portland

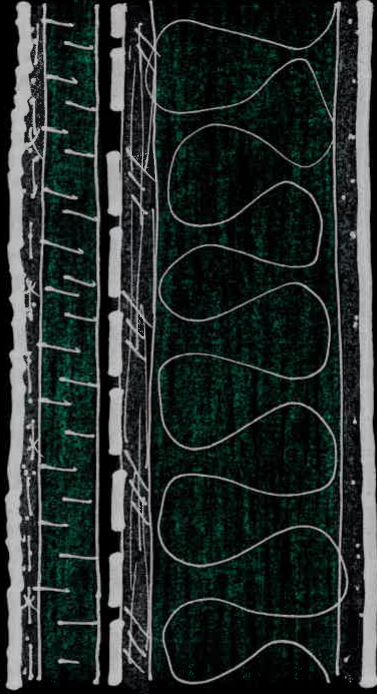


Stucco over ci



versus

EIFS



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- *Questions*

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- *Questions*

Part III

- *EIFS Myths*
- *Questions*

Stucco ASTM Standards

ASTM C1063 *Standard Specification for **Installation of Lathing** and Furring to Receive Interior and Exterior Portland Cement-Based Plaster*

ASTM C926 *Standard Specification for **Application of** Portland Cement-Based Plaster*

ASTM C1861 *Standard Specification for Lathing and Furring **Accessories, and Fasteners**, for Interior and Exterior Portland Cement-Based Plaster*

ASTM WK56766

*Standard Guide for **Crack Reduction Methods** for
New Applications of Portland Cement-Based
Plaster over Lathing and Furring*

ASTM WK56766

Top 10 List of Crack Prevention Strategies!

ASTM WK56766

#1 Adequate Moist Curing



Moist Curing		
Coat	Minimum Period Moist Curing	Minimum Interval Between Coats
Scratch	48 hours	48 hours before applying brown
Brown (including double back alternate method of plaster application)	48 hours	7 days before applying finish
Finish	Per manufacturer requirements	

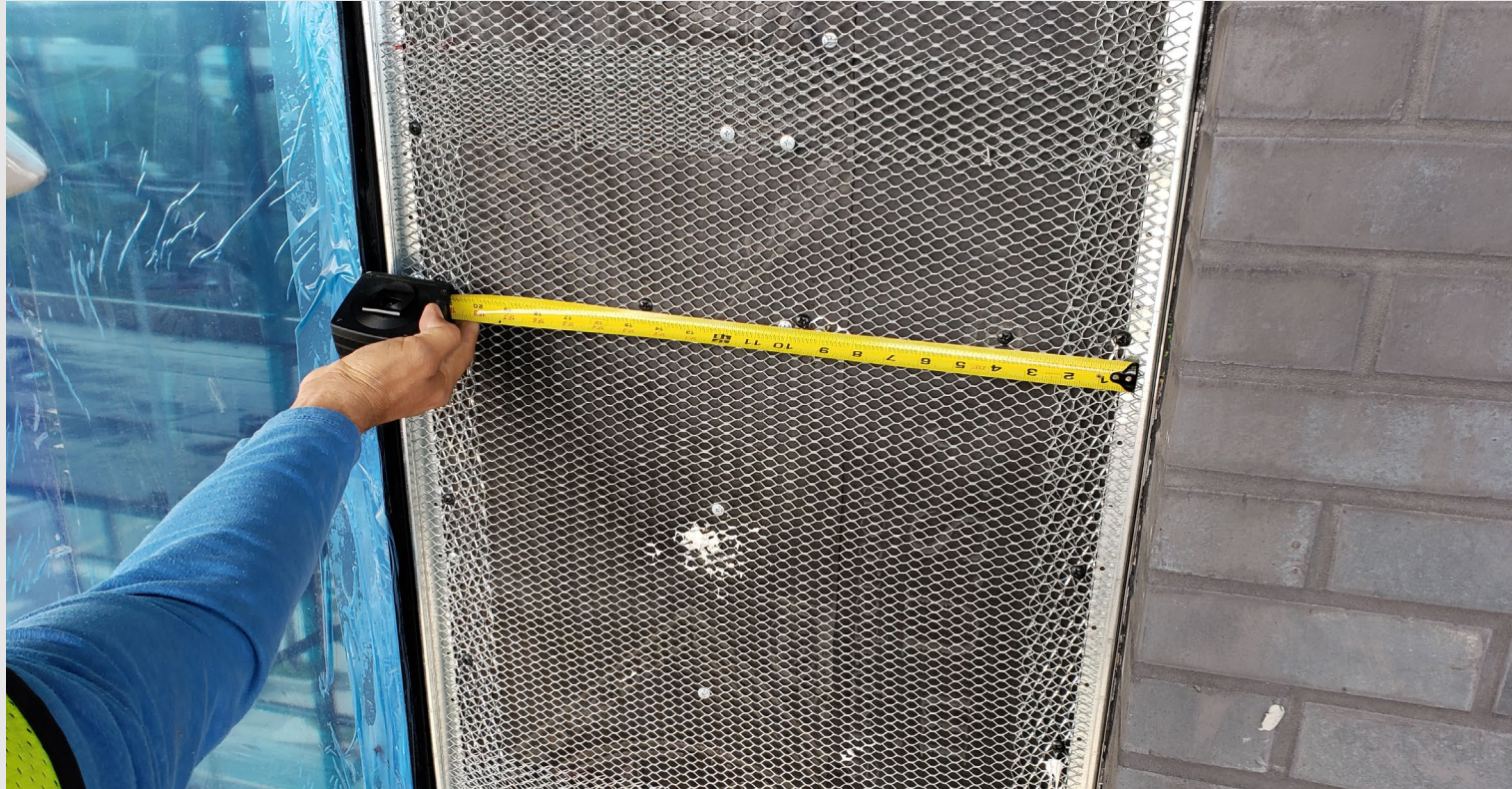
ASTM WK56766

#2 Mockups



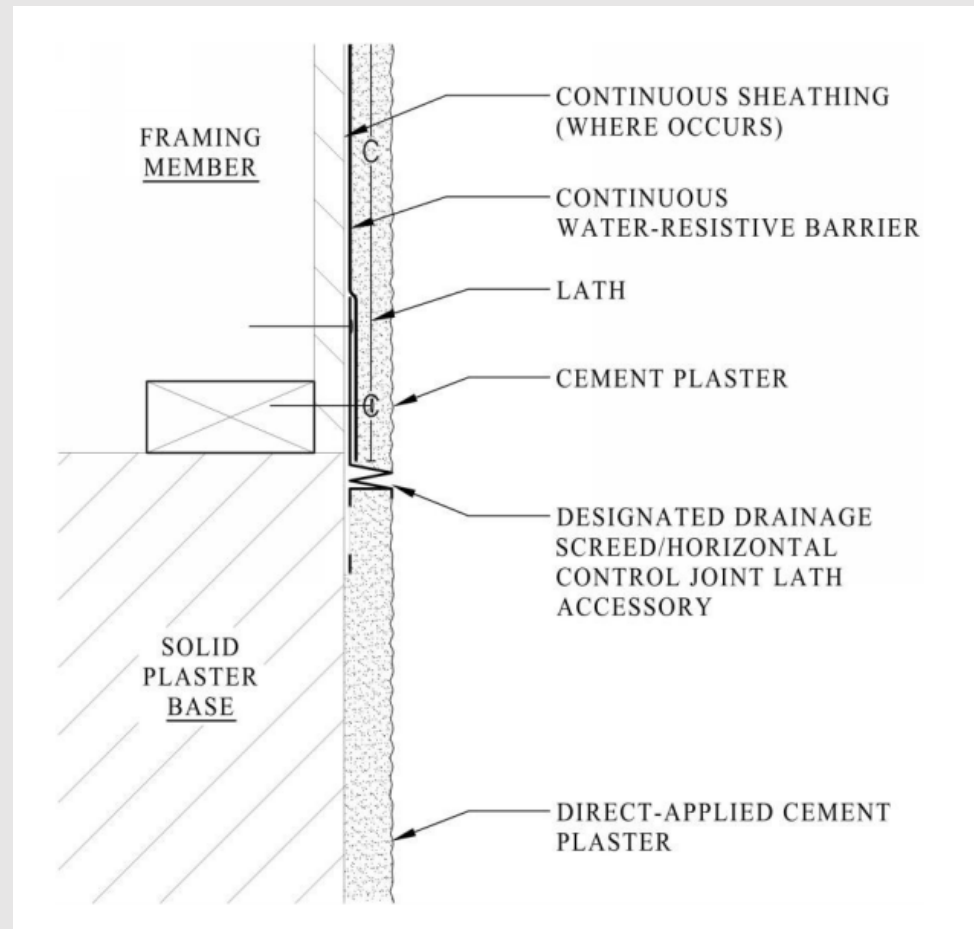
ASTM WK56766

#3 Lath Fastening per ASTM C1063
More isn't better!



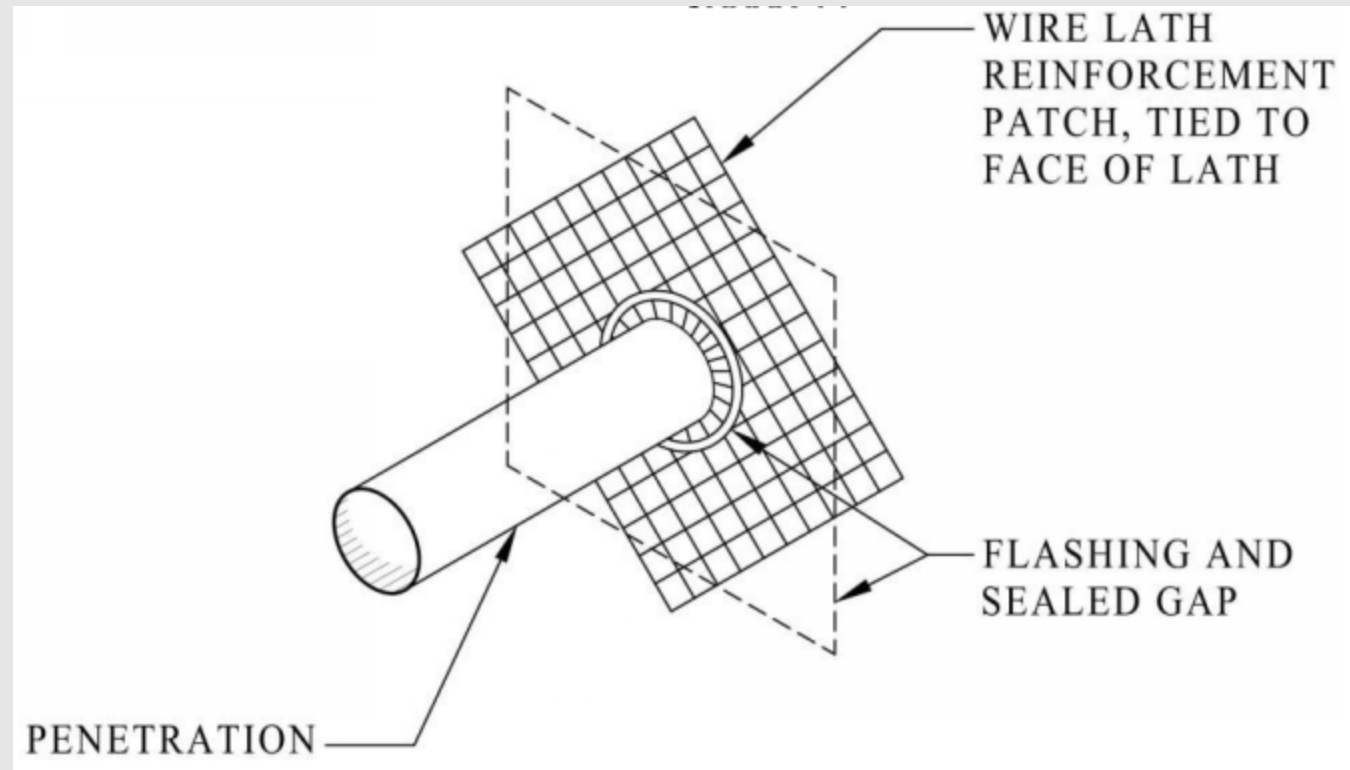
ASTM WK56766

#4 CJ at Dissimilar Bases



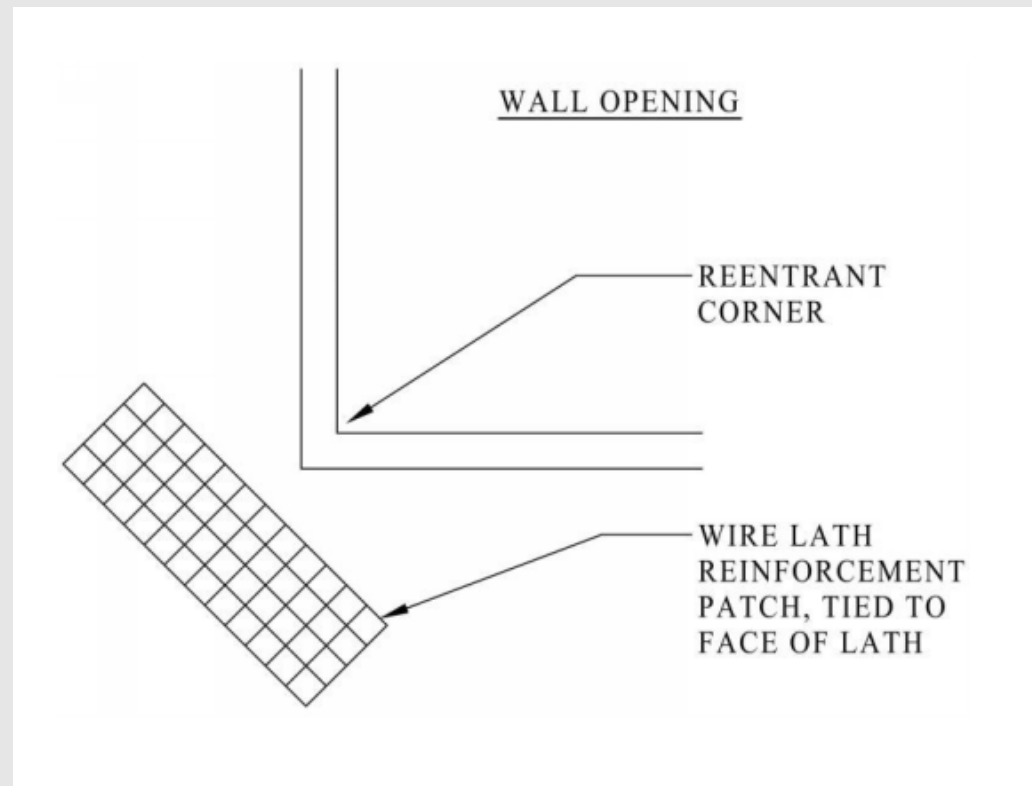
ASTM WK56766

#5 Lath Reinforcement Patch at Penetrations



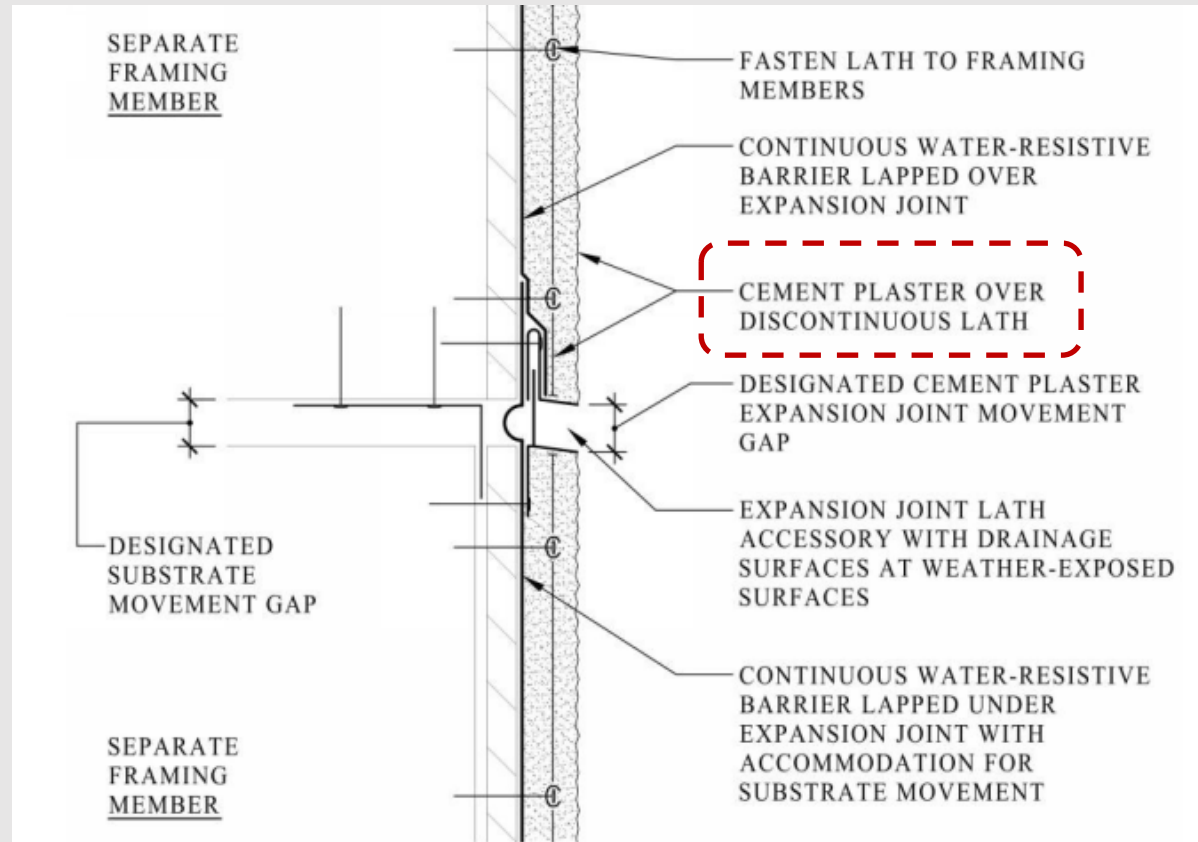
ASTM WK56766

#6 Lath Reinforcement Patch at Reentrant Corners Where CJs are not used



ASTM WK56766

#7 EJ (Expansion Joint – **not** CJ) used to accommodate building movement



ASTM WK56766

#8 CJ (Control Joints) *used to prevent cracking due to plaster shrinkage and thermal movements*

- At reentrant corners
- Direction changes for framing/furring
- Prevent panels exceeding 1:1.5 geometry ratio
 - Unless 10 SF or less
- Avoid panels in L-shapes, C-shapes, doughnut-shapes, sponge-bob shaped, etc.
- Limit panels to 100 SF (144 SF is typical recommendation)
- Purely aesthetic joints should be CJs or EJs
- Cut the lath...don't cut the lath...cut the lath...don't cut the lath...aaaaaaaah!!!











ASTM WK56766

#9 Special Sauce Recipe:

- *Fiber Additives*
- *Polymer admixture*
- *Continuous fabric mesh*
- *Fabric mesh reinforcement patches at reentrant corners, penetrations, etc.*

ASTM WK56766

#10 Finish Coat – texture, >10-mil coating



What's wrong with a little cracking?



Consult the Manufacturer

Excerpt from Sto stucco Repair and Maintenance Document:

Hairline Cracks (up to approximately 1/32" wide)

1. Apply two coats of color-matched smooth elastomeric coating by brush or roller and allow to dry. General application guide is 12-14 wet mil thickness per coat. Refer to Sto product bulletin 212 (Stolastic) or 222 (StoSilco Lastic) for specific information. Apply the coating up to an architectural break or to the full elevation as necessary to obtain a satisfactory aesthetic appearance.

Moderate Cracks (up to approximately 1/8" wide)

1. Embed glass fiber reinforcing mesh (920E Sto Mesh) in acrylic base coat (225 Sto RFP). Treat the cracks individually with a 4-6 inch wide strip of mesh centered over the crack. If cracks are spread throughout an area, treat the whole area with mesh. Overlap all mesh seams minimum 2-1/2". Resurface up to an architectural break or resurface the full elevation as necessary to obtain a satisfactory aesthetic appearance.
2. After the base coat is dry, usually within 24 hours, re-apply Sto acrylic elastomeric finish to match the color/texture of adjacent areas.



We create chemistry

RES 300S

SM_aRT™ Stucco Procedure

Procedure for Patching Cracked Stucco

Introduction

Prior to repairing cracks, a root cause analysis is needed to determine the cause of cracking, otherwise repairs may not be effective. In some cases, stucco installation deficiencies can be corrected. Where underlying

Procedure

1. Identify areas that will be resurfaced. For aesthetic reasons, resurfacing should be terminated at an architectural break in the wall such as a reveal, change in plane or change in elevation. Doing



We create chemistry

RES 301S

SM_aRT™ Stucco Procedure

Procedure for Repairing Stucco Cracks

Introduction

Prior to repairing cracks, a root cause analysis is needed to determine the cause of cracking, otherwise repairs may not be effective. In some cases, stucco installation deficiencies can be corrected. Where underlying

Procedure

1. Thoroughly clean all surfaces that will be coated, and allow to dry.
2. Inspect sealant joints and repair as needed.
3. Determine whether to use BASF MASTERPROTECT FL 746 (smooth)



We create chemistry

RES 500S

SM_aRT™ Stucco Procedure

Procedure for Resurfacing Stucco

Introduction

There are many reasons to consider resurfacing damaged stucco.

Procedure

1. Identify areas that will be resurfaced. For aesthetic reasons, resurfacing

And remember...
Don't forget about...
Drainage!!!

Use a Drainage Mat!



Drainage Mat DF

Drainage Mat DF is a composite, dual function product. It consists of a nylon entangled filament core that is thermally bonded to spun bonded continuous bi-component fiber non-woven fabric.

USES

For use with cement plaster stucco wall systems and other wall cladding applications to provide a defined drainage plane with an avenue for flow and drainage of incidental moisture penetration from the wall assembly.

COVERAGE

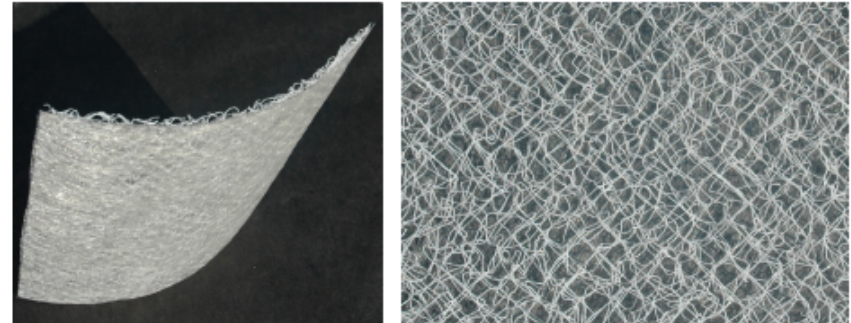
Approximate coverage rates are as follows: 45.3m² (487.5 ft²) per roll.

PACKAGING

99cm x 45.7m (39" x 150') rolls, 6 rolls per pallet. Gross roll weight 11.3 kg (25 lbs).

TECHNICAL SUPPORT

Consult our Technical Services Department for specific recommendations concerning all other applications. Consult the BASF Wall Systems website, www.wallsystems.basf.com, or 800-221-9255 for additional information about products and systems and for updated literature.



Advantages

150 foot roll minimizes number of seams to speed application

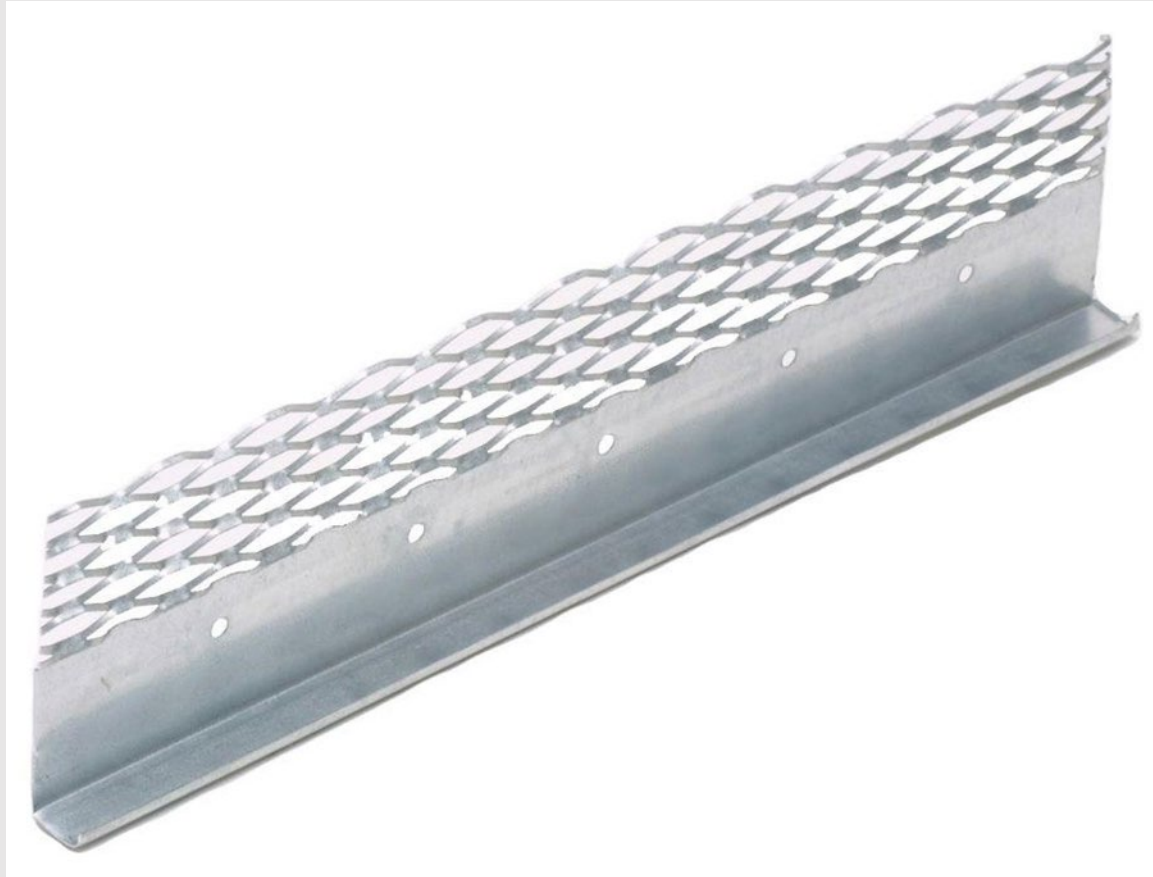
Entangled filament construction creates optimal drainage plane while retaining flexibility

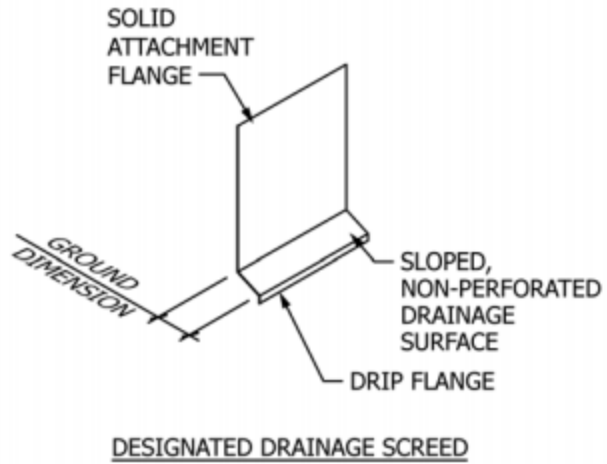
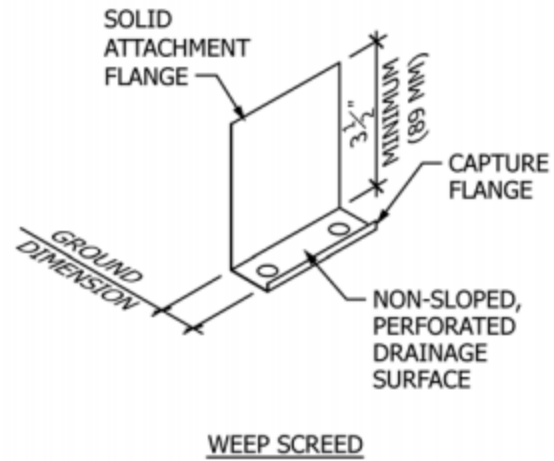
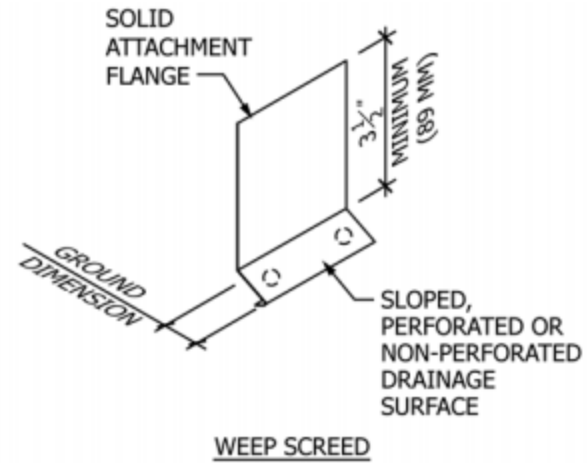
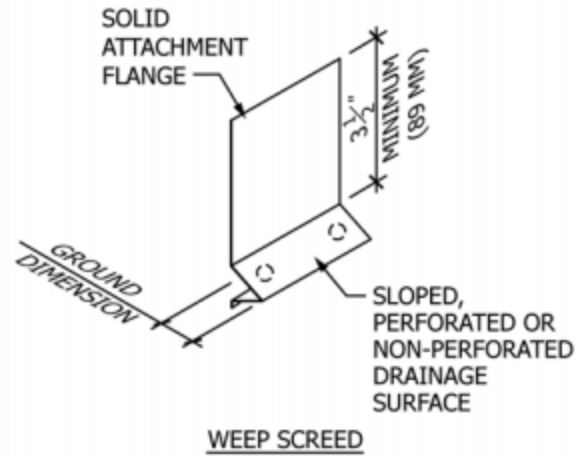
Lightweight; easy to handle

Non-scratch nylon construction provides flexibility, enhances easy application

Drainage Mat DF prevents the cement plaster from blocking the drainage plane; enables rain screen design for maximum drainage and ventilation efficiency

Use Solid Zinc Accessories





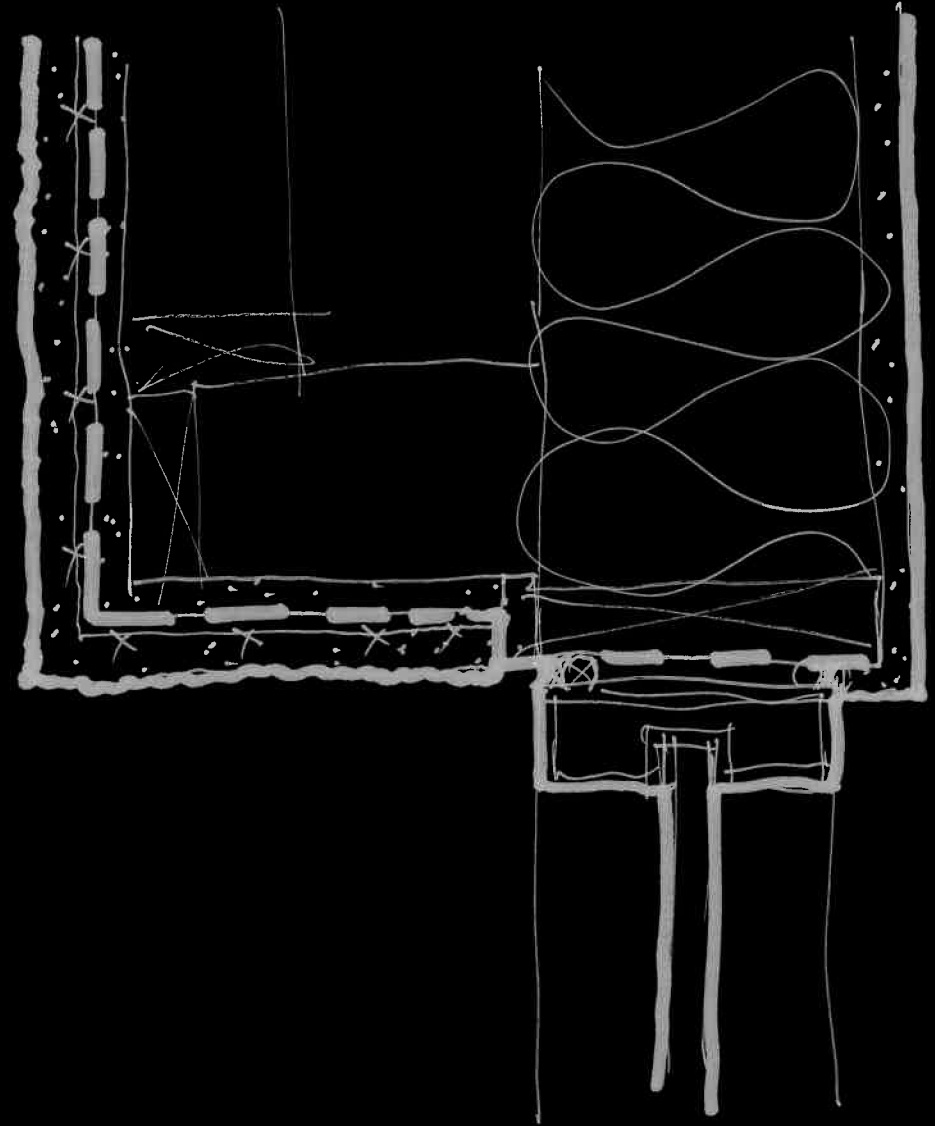






Don't do this at
the **head**:

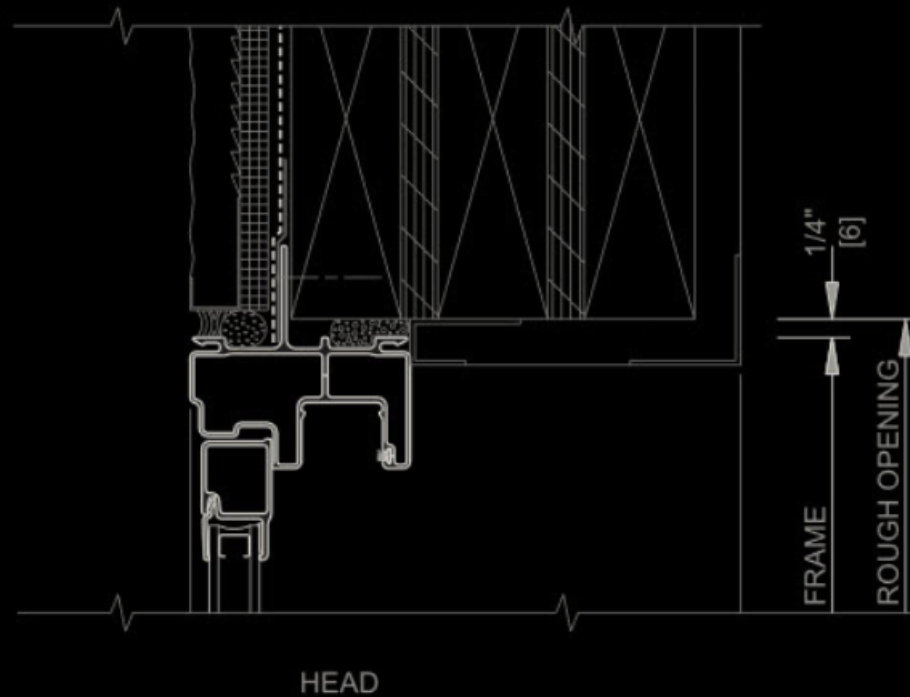
Stucco vertical to horizontal
needs to drain (weep,
flashing, etc.)



Design Vignette (10 points):

The window head section detail shown below is taken directly from the Pella (window manufacturer) installation instructions. It is entitled “FIN INSTALLATION DETAILS Integral Nailing Fin With Southwest-Style Hardcoat Stucco On Insulation Board.”

Critique the section detail below.

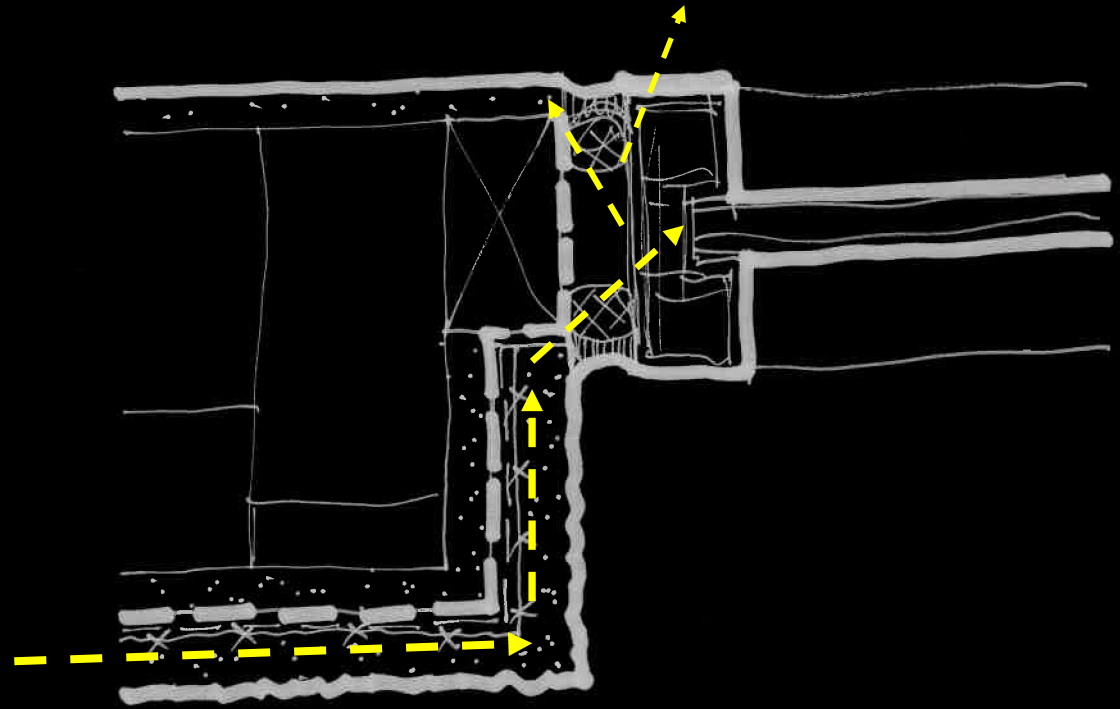




Don't do this at
the **jamb**:

Solutions:

1. Two sealant joints
2. Add metal piece
3. Shift location of window



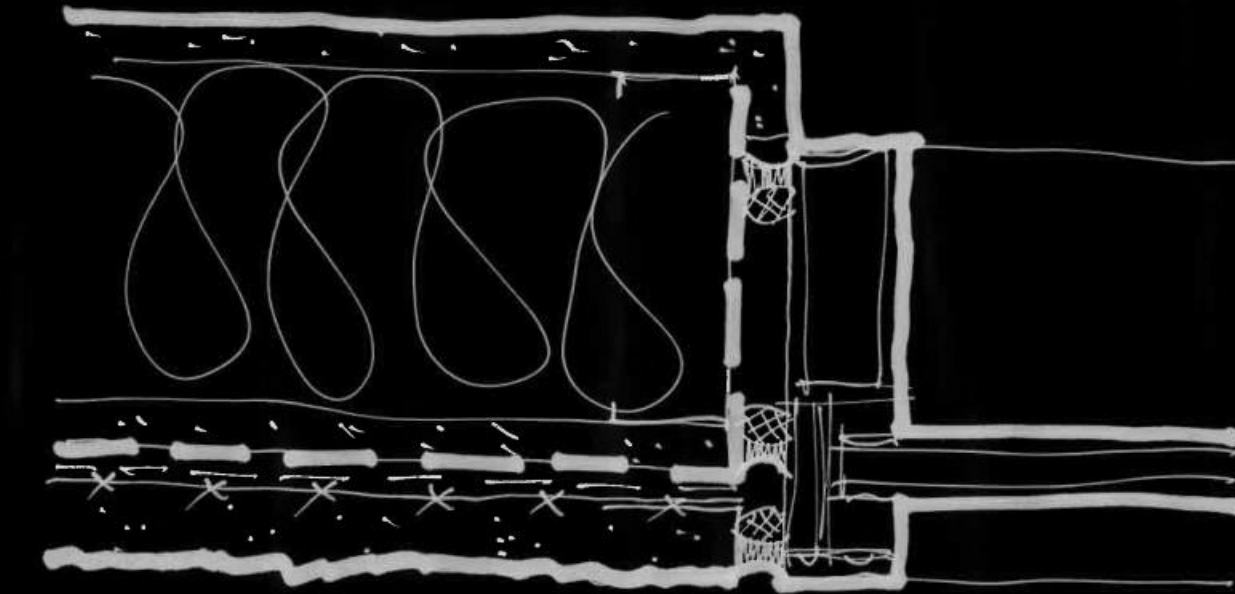
Solution #1

Shift location of window



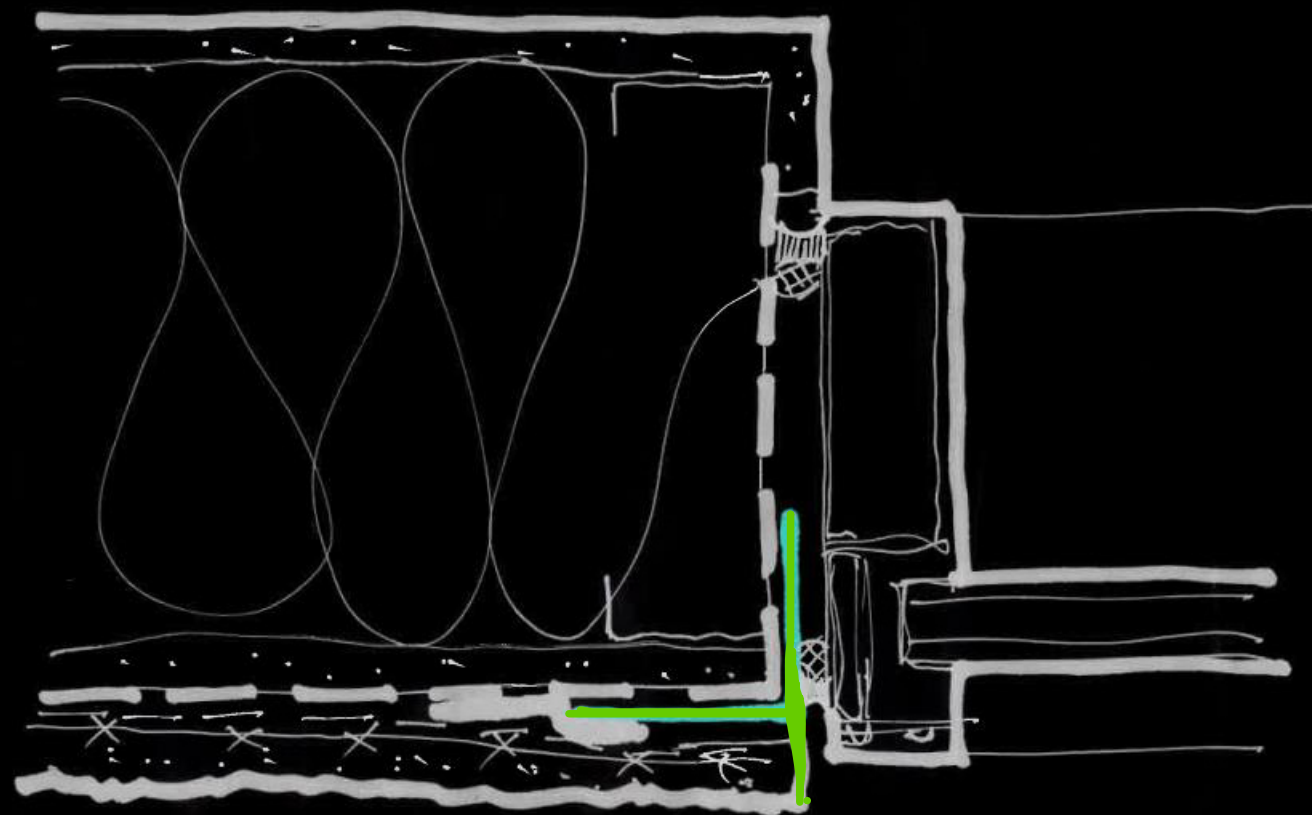
Solution #2

Dual Lines of Sealant



Solution #3

Add Metal



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- **EIFS Myths**
- **Questions**

EIFS Trope #1:

A synonym for “litigation”

ONLINE DEGREE MA IN NGO MANAGEMENT Be your own leader and make a difference



PRODUCTS

Home > Technology > Products > Revisiting EIFS, the Once-Maligned Cladding System that May Help Architects Meet New Energy Codes

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TECHNOLOGY

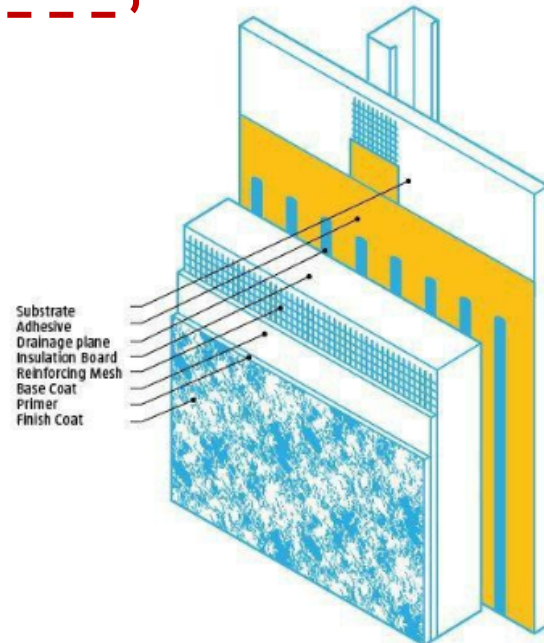
Revisiting EIFS, the Once-Maligned Cladding System that May Help Architects Meet New Energy Codes

EIFS became known as a lawsuit magnet in the 1990s. But with new energy codes for commercial buildings imminent, is the cladding system poised for a comeback?

By [ELIZABETH EVITTS DICKINSON](#)



Drainable EIFS

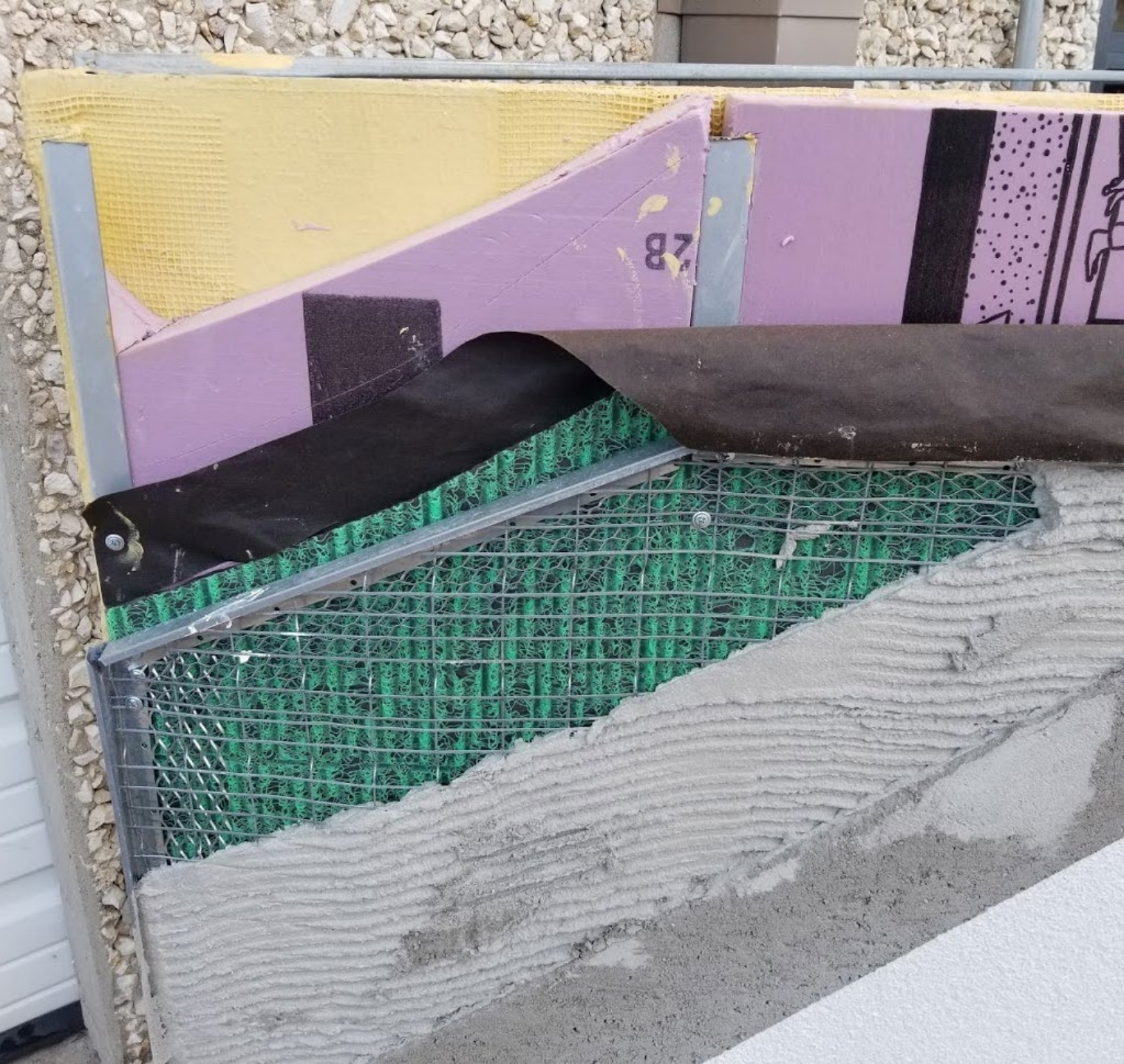


EIFS Trope #2:

“It looks cheap, tacky”







*Liv.Able Furniture Showroon, Nashville, TN, Freeman Kennett Architects
EIFS System: BASF Senergy*



Liv.Able Furniture Showroon, Nashville, TN, Freeman Kennett Architects



Liv.Able Furniture Showroon, Nashville, TN, Freeman Kennett Architects



Chris Benedict, RA



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*The Emperor
Has No
Clothes...*





EIFS Trope #3

Part I:

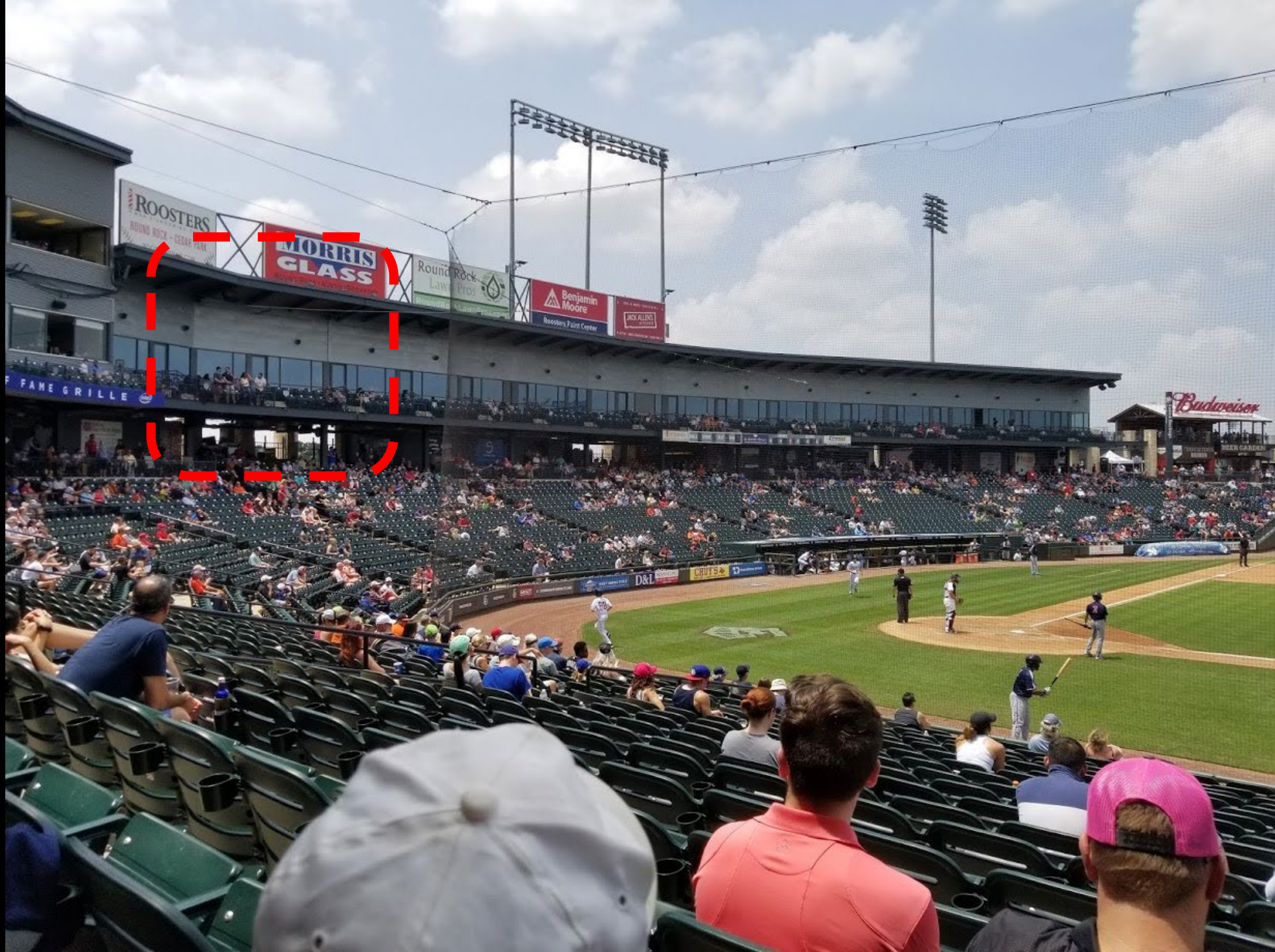
It's too breakable...











ROOSTERS
ROUND ROCK - CEDAR PARK

**MORRIS
GLASS**

Round Rock
Live Pro's

Benjamin
Moore
Roosters Field Center

JACK ALLINS

FAME GRILLE

Budweiser

D&L

CHUBB



EIFS Trope #3, Part II:

*It's too breakable...and not a
durable system because
warranty is for only 10-years...*

Warranty = Durability?

Warranty for Drainable EIFS by Dryvit/CPG:

- 10-20 year system warranty covers all four control layers (air, heat, water, vapor)
- Covers material defects including labor
- 10-year UV fade for color
- Protection for underlying framing and sheathing
- No depreciation

DRYVITCARE
PLATINUM
WARRANTY



Dryvit Systems, Inc. ("Dryvit") warrants in the limited manner specified herein that the materials manufactured by Dryvit shall be free from defect in the manufacture of the materials.

THE SOLE RESPONSIBILITY AND LIABILITY OF DRYVIT UNDER THIS WARRANTY SHALL BE TO PROVIDE LABOR AND MATERIALS NECESSARY TO REPAIR OR REPLACE THE DRYVIT MATERIALS DESCRIBED HEREIN SHOWN TO BE DEFECTIVE DURING THE WARRANTY PERIOD, AND ONLY FOR THE MATERIALS WARRANTED HEREUNDER. ANY OTHER LABOR OR OTHER COSTS ASSOCIATED WITH THE REPAIRS OR REPLACEMENT SHALL BE THE SOLE RESPONSIBILITY OF THE OWNER. NO OTHER CHARGES OR EXPENSES WILL BE ALLOWED BY DRYVIT. DRYVIT WILL DETERMINE IN ITS SOLE DISCRETION THE APPROPRIATE SCOPE AND METHOD OF REPAIR OR REPLACEMENT TO REMEDY ANY CONDITION COVERED BY THIS WARRANTY.

No warranty whatsoever is made with respect to (i) materials produced by other manufacturers not bearing Dryvit's name or logo which are used in the installation of the Dryvit materials covered hereunder, (ii) materials produced by other manufacturers for Dryvit but not sold by Dryvit or its authorized distributor, even if such materials bear Dryvit's name or logo, nor (iii) cracking.

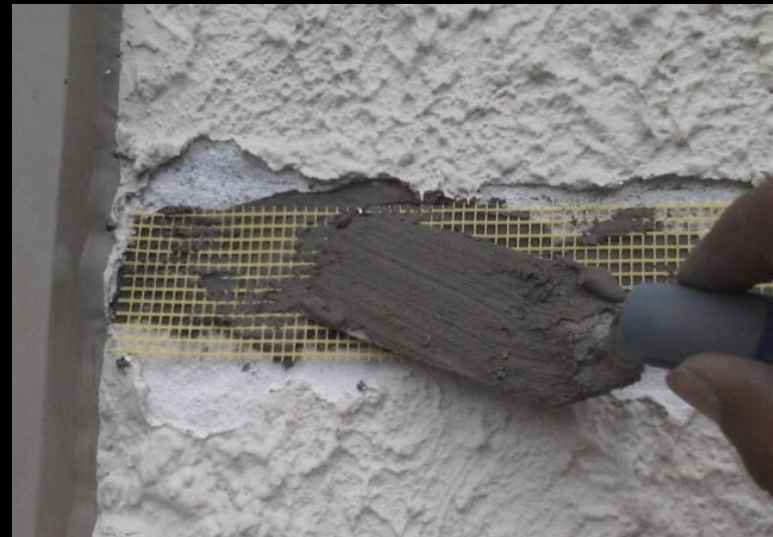
This warranty is void if Dryvit materials are intermixed with other chemicals or materials not specifically required by Dryvit's current published literature.

No warranty whatsoever is made for damage caused in whole or in part by acts of God or natural

Warranty = Durability?

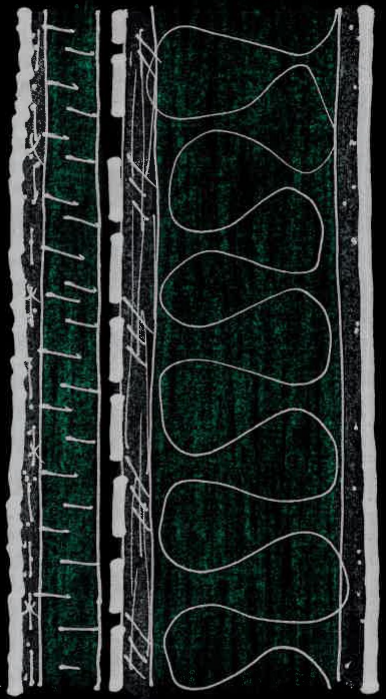
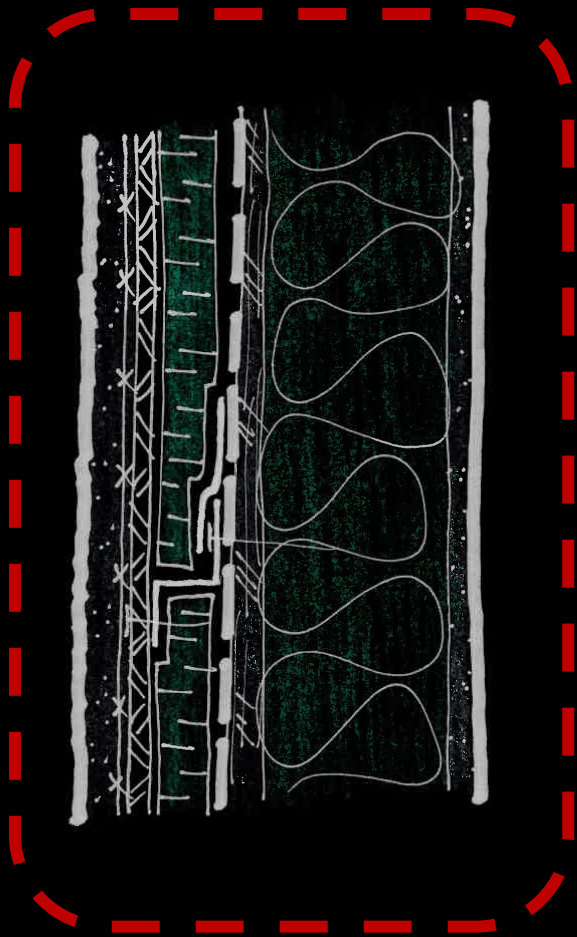
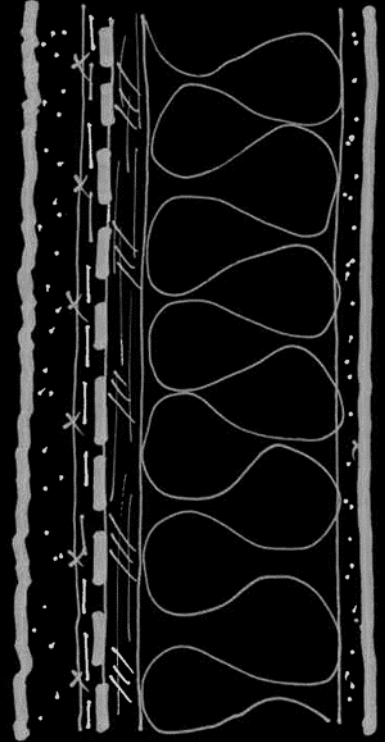
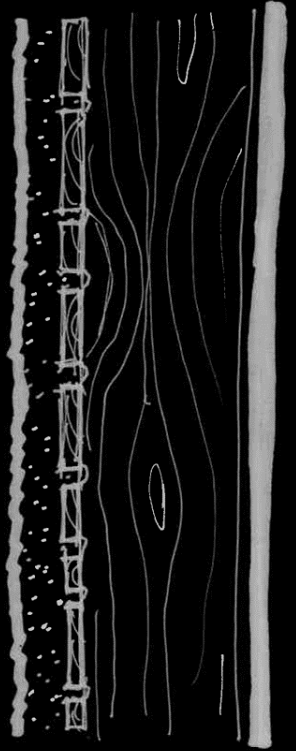
How long will it last?

- Anecdotally *can* last life of the building
- Some maintenance *will* be required
- Typical consideration for resealing and/or recoating about every 10 years – probably every 5 years in coastal areas



EIFS Trope #4:

It's "dishonest"



That old world look...



But now you need control joints...



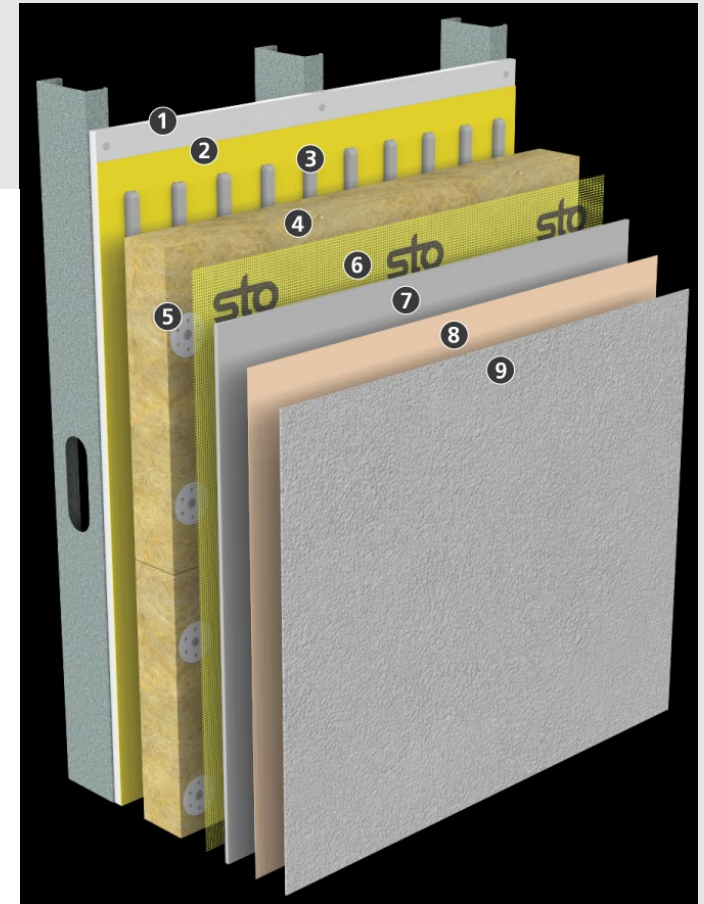
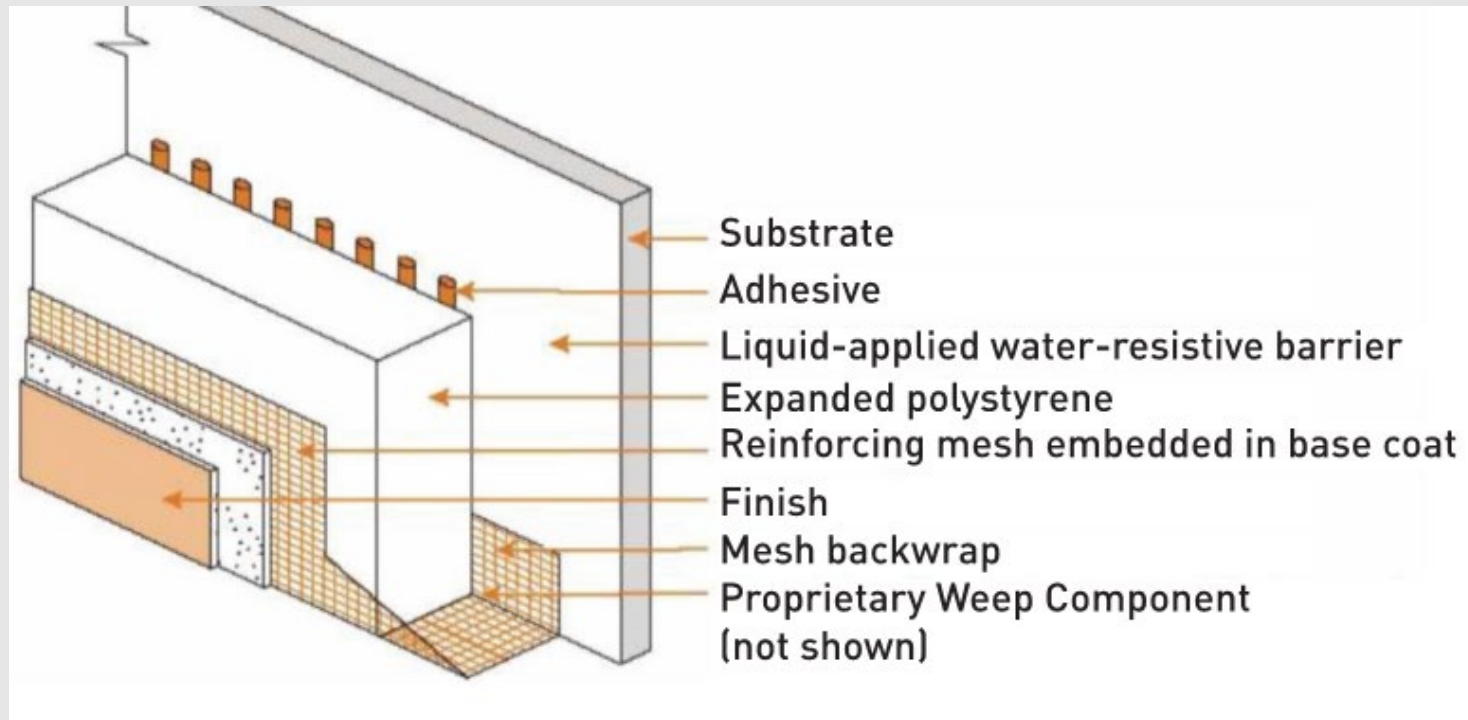
Or...you could just use...





Fire Protection...

NFPA 285 Concerns with EIFS



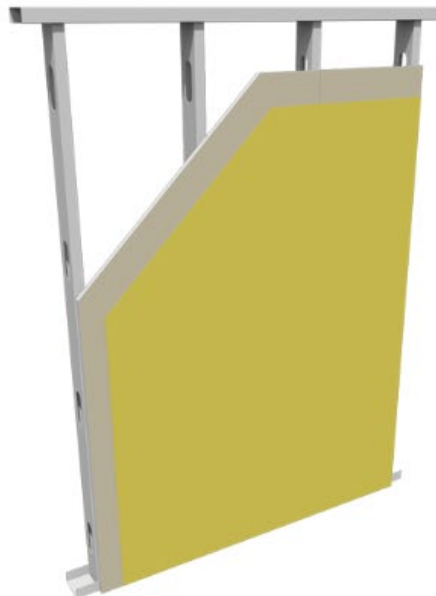
EIFS System WRB

EIFS is a System *Stucco is a Collection of Parts*

[Sto Gold Coat](#)[Sto Gold Coat - TA](#)[Sto EmeraldCoat](#)[Sto ExtraSeal](#)[Sto AirSeal](#)[Sto VaporSeal](#)

Sto Gold Coat®

Sto Gold Coat® is a ready-mixed flexible waterproof air barrier membrane for use in StoTherm® ci Systems. It is applied directly to vertical above grade wall sheathing and concrete masonry, and functions as a waterproof air barrier when combined with StoGuard® joint and rough opening treatment.



PERMEABILITY: Vapor Permeable

SUBSTRATE TYPE: Glass-Mat Gypsum Sheathing, Exterior Plywood, OSB, Concrete Masonry Units.


TYPE OF APPLICATION: Roller-applied / Spray-applied

LEARN MORE ABOUT STO GOLD COAT® IN THESE OTHER SYSTEMS

[StoTherm® ci XPS >](#)[StoTherm® ci >](#)

INFO & DOWNLOADS

[PRODUCT BULLETIN](#)[SDS](#)[LEED](#)[BROCHURE](#)[STO GOLD COAT® A1000G - DOC](#)[STO GOLD COAT® A1000G - PDF](#)



*Drainable EIFS...
you are my
hero!!!*



Recommended EIFS Training from AWCI:

<https://www.awci.org/education/doing-it-right/eifs>

AWCI JOIN MEMBERS MEDIA BUYERS' GUIDE QUICK LINKS Search Advanced Search f in t y

AWCI ASSOCIATION OF THE WALL AND CEILING INDUSTRY "Tell me and I forget, teach me and I may remember, involve me and I learn." – Benjamin Franklin

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Doing It Right Project Manager Webinars Convention Industry Leaders Conference Calendar

Home > Learning Programs > Doing It Right Programs > EIFS—Doing It Right® > Online Course

EIFS—Doing It Right® Online Course

AWCI EIFS—DOING IT RIGHT

This online course consists of 15 modules covering a range of topics related to the correct installation and inspection of EIFS. Participants can study and review the course information at their own pace. At the completion of a module, participants will be required to pass an online assessment before moving on to the next module. The online course is available in English and

More Details

- [Program Overview](#)
- [Certification Categories](#)
- [Recertification](#)

CALENDAR HIGHLIGHTS

CONVENTION + INTEX AWCI's
Convention
& INTEX Expo

October 17 - 20
New Orleans, LA
[more info →](#)

***Stucco: Past, Present and Future
or Drainable EIFS: You are my Hero***

phius con new york
October 14, 2021

Keith A. Simon, AIA, CPHC, BECxP,
CxA+BE, LEED AP, CEI

Terracon

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