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You've Identified Stucco! What Else Should you Know?

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You've Identified Stucco! What Else Should You Know?

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&

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Topics we will Cover

- What does ASHI require?
 - How to Identify Stucco Type.
 - Primary Concerns of Stucco.
 - How to Inspect.
 - What to Report.
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ASHI: Inspector shall Observe & Inspect:

- Readily accessible installed systems & components, as observed at the time of the Home Inspection.
 - “The exterior wall covering, flashing and trim.”
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ASHI: Written Report shall:

- “Describe the exterior wall covering.”
 - Report which components, in the professional opinion of the inspector, are *significantly deficient* or are near the end of their service life. Report the reason why if it is not self-evident.
 - Report “the inspector’s recommendations to correct or monitor the reported deficiency.”
-

Exterior Components to be Inspected include but are not limited to:

- Wall cladding materials or systems
 - Roof Flashings
 - Wall Flashings
 - Trim
 - Doors and Windows
 - Deck and Balcony Attachments & Flashings
 - Eaves, Soffits and Fascias
 - Interfaces with grade.
-

Our Three Primary Objectives this Morning Are:

- To help you to be able to identify typical stucco systems.
 - To help you recognize problems and potential problems in the stucco system at locations that a Home Inspector is expected to observe.
 - To provide you some suggestions on reporting techniques.
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Identification is Key to Inspecting Stucco Clad Homes

- To be able to identify the Stucco System you must understand system components.
 - You will learn the basic components of the most common stucco systems.
 - Some homes have multiple systems on them.
 - At times it will not be possible to say this is a _____ System.
 - Sometimes it is not a system but rather a combination of components or systems.
-

Some of the Typical Stucco Types Found Include:

- Traditional Stucco
 - Barrier PB **EIFS**
 - “One-Coat-Stucco”
 - Moisture Drainage **EIFS**
 - DEFS
 - PM **EIFS**
 - ICF
 - Hybrids or Applicator’s Short Cut
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Traditional or Three Coat Stucco:

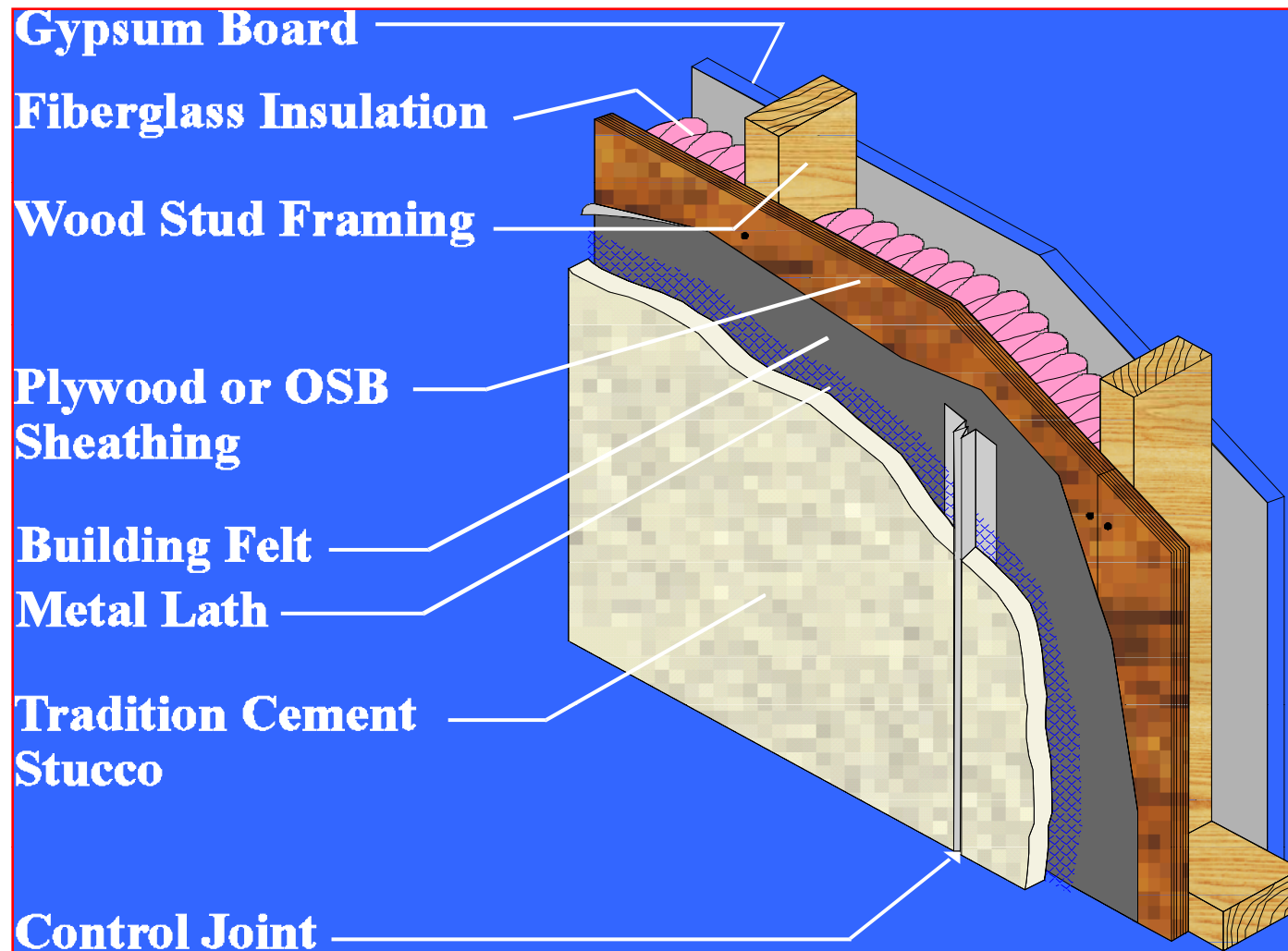
Basic components include.

- Portland Cement Stucco.
 - Requires a Moisture Barrier on water sensitive substrate but not on concrete or masonry substrates.
 - Hard & may be subject to extensive cracking.
 - Requires control or expansion joints every 144 square feet.
 - Metal lath.
 - Metal casing bead or J-bead.
 - Scratch, brown and finish coats.
-

Traditional or Three Coat Stucco.

- All older installations are traditional stucco.
 - A common problem includes extensive surface cracking.
 - Should have metal lath.
 - Should have metal accessories.
 - Problem: Designers and Owners did not like the appearance of cracks or control joints so use of this product declined.
 - Some areas of the country have continued to use traditional stucco; other areas of the country are starting to use traditional stucco again.
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Traditional Stucco Building Section



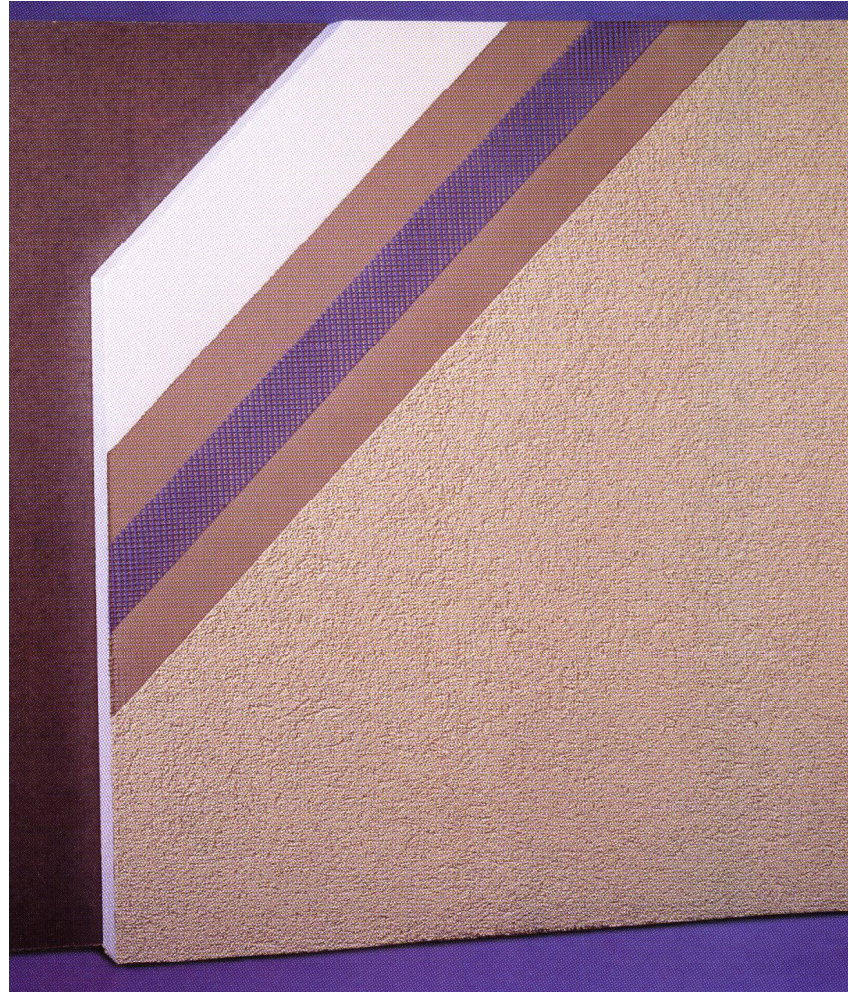
Traditional Stucco Building Section



Then along came **Barrier PB EIFS**

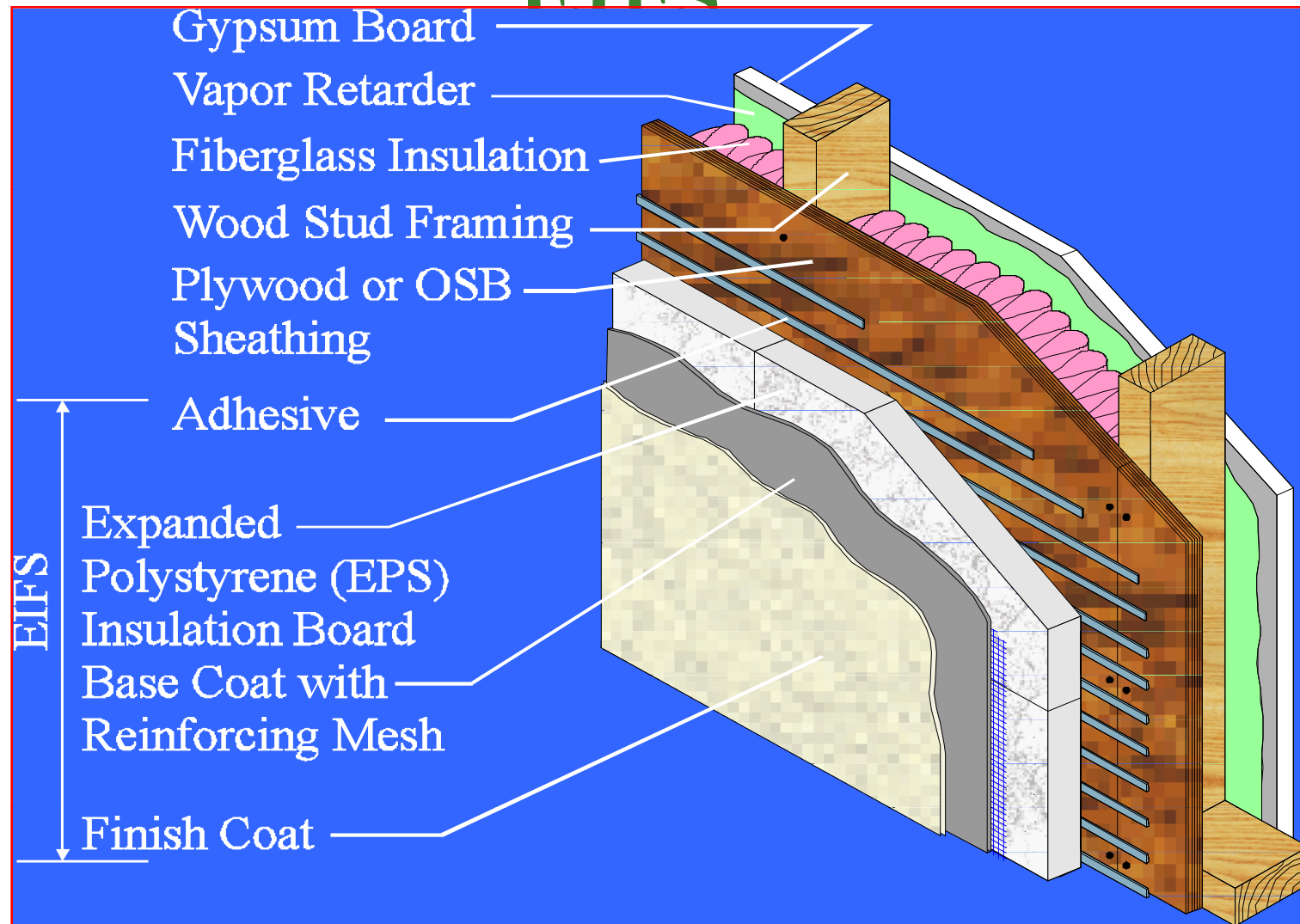
- This is what is generally referred to as EIFS.
 - PB = Polymer Based.
 - Barrier means that the system is designed such that water should not get behind the exterior surface.
 - It consists of EPS insulation and a lamina adhesively attached to a substrate.
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Insulation and Lamina of PB EIFS



Typical Section of Barrier PB

EIFS



Base Coat for PB EIFS



- Trowel applied
- Weather resistant layer
- The fiberglass mesh provides the impact and crack resistance
- Encapsulate the mesh
- Applied in minimum thicknesses
- The basecoat can be both cementitious and non-cementitious

Things to look for to Identify a Barrier PB EIFS Clad Home:

- EPS foam insulation (by itself EPS does not mean the cladding is EIFS).
 - Exposed fiberglass mesh.
 - Thin lamina; about 1/16 inch.
 - The wall surface gives to the touch.
 - Typically no accessories although pvc starter tracks or casing beads are allowed.
 - Sounds hollow when tapped.
 - Typically adhesively attached to substrate (OSB, plywood, etc.)
-

EIFS made the Stucco Appearance on Homes very popular!

To provide the stucco appearance without the Barrier PB EIFS problems the Stucco manufacturer's developed alternative systems, including:

- Moisture Drainage EIFS
 - Proprietary One-Coat-Stucco Systems
 - Direct Applied Finish Systems
 - ICF
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One-Coat-Stucco System:

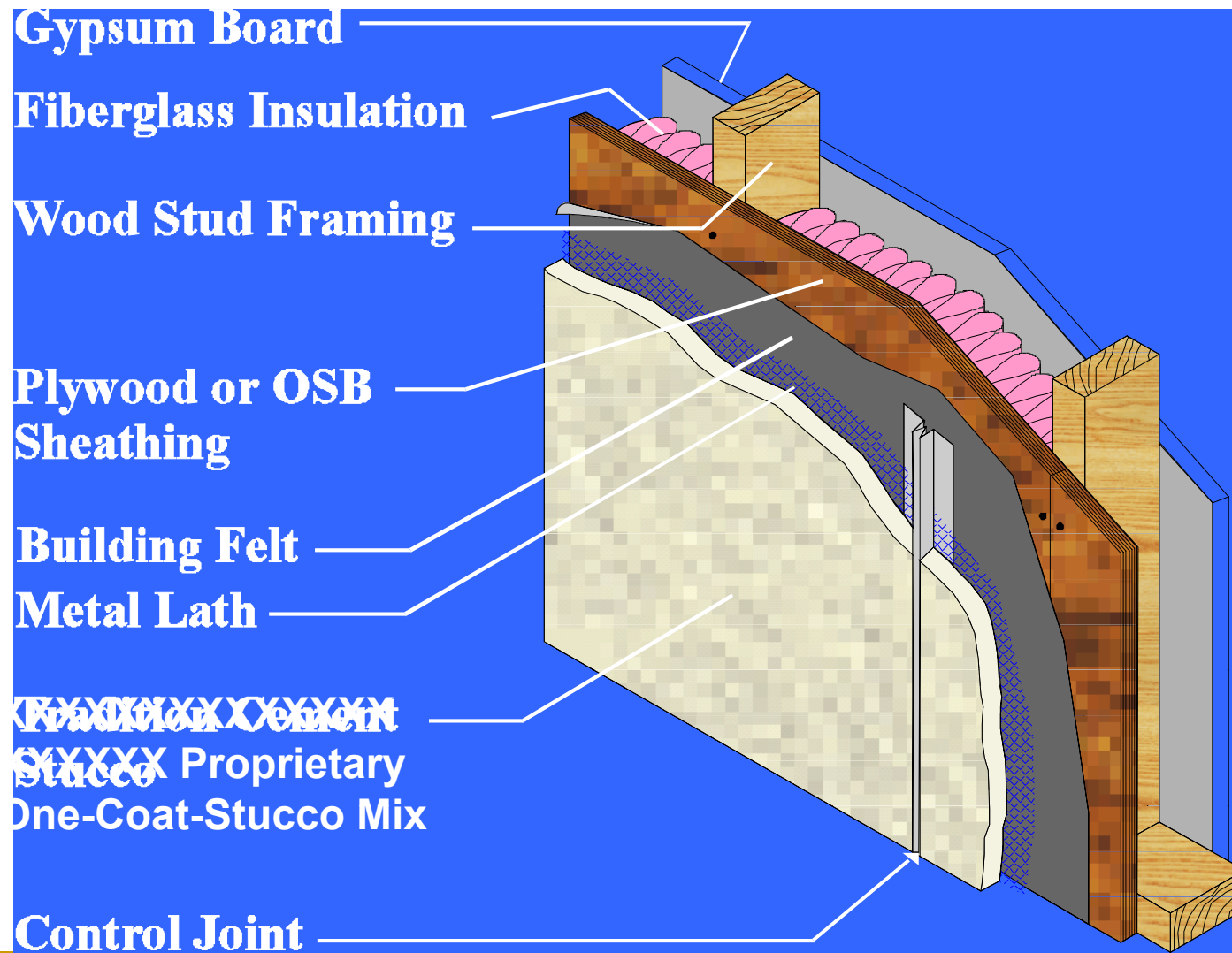
Basic Components include:

- Portland Cement Stucco with polymers and fiberglass reinforcing.
 - Requires a Moisture Barrier on moisture sensitive substrates.
 - Hard surface which helps resist impact damage.
 - Control joint requirements are required but spacing is to be specified by the design professional (typically to limit panels to 150 square feet).
 - Metal lath (stucco netting or diamond lath)
 - Metal casing bead or J-bead.
 - Minimum 3/8" basecoat plus finish coat.
-

One-Coat-Stucco

- May or may not crack depending on material used and installation techniques.
 - May or may not have foam insulation behind stucco; it can have EPS or XPS insulation behind the system.
 - This does not make this an EIFS system!
 - Very popular since problems with EIFS have surfaced
-

One-Coat-Stucco: Building Section



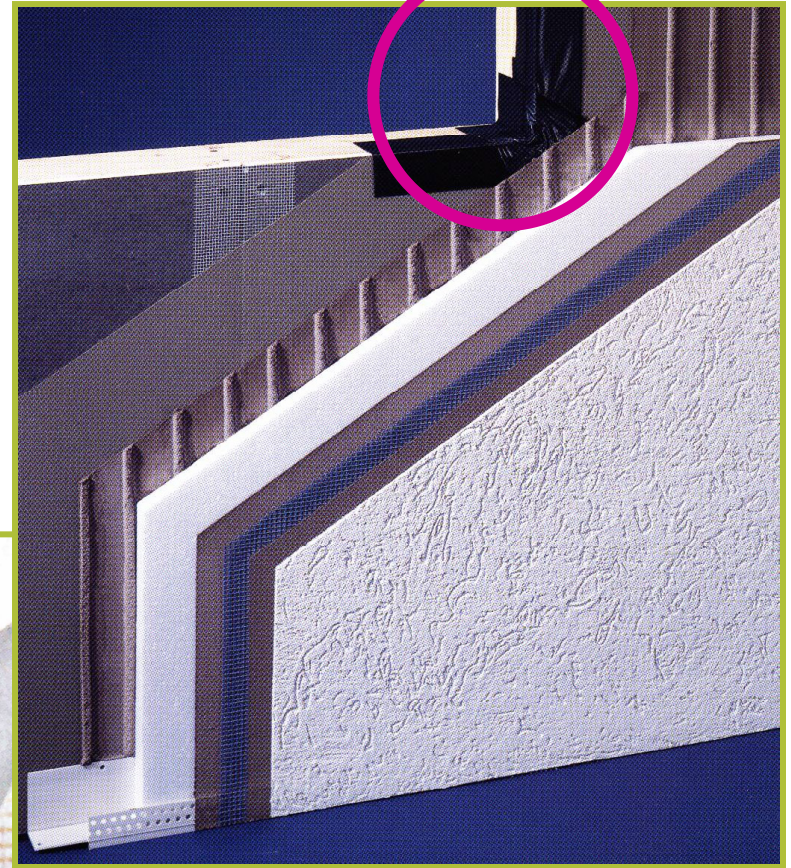
Moisture Drainage EIFS

- The basic installation appears very similar to Barrier PB EIFS; it uses PB EIFS components.
 - A Moisture Barrier is required against moisture sensitive substrates.
 - PVC accessories are permitted but not required.
 - Most systems have a weep screed (PVC starter track with weep holes) but not all.
 - Most are mechanically fastened thus will give more than PB EIFS; however, the most advanced systems are adhesively attached.
 - Each system is proprietary thus there are many variations.
-

Moisture Drainage EIFS Offers Similar Performance Advantages to Barrier PB EIFS.

- Insulation on the outside of the building
 - Energy Conservation
 - Helps control thermal movement of structure.
 - Aesthetic Flexibility.
 - Economical Construction
 - Soft
 - Buffered from Substrate
 - Crack Control
-

Moisture Drainage EIFS



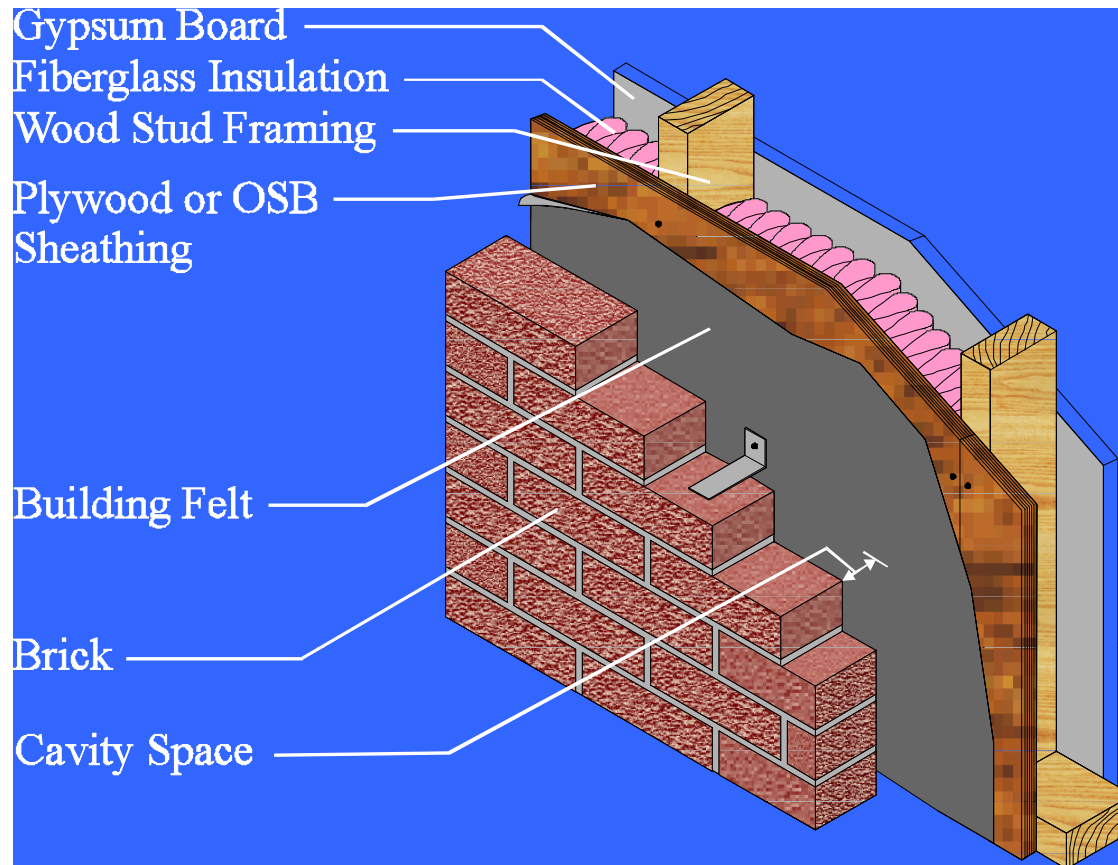
Direct Applied Exterior Finish System (DA or DEFS)

- DEFS has base coat directly applied to an approved substrate such as Dens-Glass Gold or Cement Board.
 - Originally mesh may be over full surface or just at joints in substrate. Now all manufacturers require that the mesh cover entire wall surface.
 - DEFS uses system accessories.
 - Each system is proprietary thus there are a number of variations.
-

Combined Systems

- There are many homes with full Real Stucco systems with “EIFS” bands; these bands are EPS Plant-On bands. These are proper installations; *Please do not call these systems EIFS!*
 - EPS bands with no basecoat or fiberglass reinforcing of lamina are improper.
 - We have inspected homes with Real Stucco on the wall surface but Barrier EIFS attached around windows; these are typically improper.
 - Some sections of a home may be EIFS and other sections may be real stucco.
-

Brick Veneer Cross Section (similar to Real Stucco or MD-EIFS)



Questions on Stucco Identification?

The next sections will address:

- Home Inspector Observations:
 - Where to Look
 - What to Look For
 - What Observed concern may mean.
 - Suggested Home Inspector Report Comments
 - Typical Observations
-

Primary Concerns

- The points to be inspected per the ASHI standards are the locations where indications of concerns can be found.
 - These points of Primary Concern are the same for all of the types of stucco that we have discussed as well as other sidings.
-

Observations: Primary Concerns

- Interfaces
 - Roof (kick-outs)
 - Balcony, porch
 - Dormers
 - Chimney enclosures
 - Windows, doors
 - Features
 - Quoins
 - Water tables, cornice
 - Eyebrows and trim
 - Penetrations
 - Electrical
 - Cable, telephone
 - AC
 - Water
 - Attachments
 - Handrails
 - Signs
 - Lighting
-

Observations: Weather Tightness

- Joints where needed
 - Floor line
 - Change of substrate
 - Joints in substrate
 - Sealants location
 - Windows and doors
 - Expansion joints
 - Sealant application
 - Type
 - Shape
 - Backer rod
 - Bonding surface
 - Flashing
 - Step
 - Kick-out
 - Balcony, decks
 - Chimney
 - Windows, doors
 - Real Stucco or EIFS
 - Terminations or Back wrapping
 - Lath or Mesh coverage
 - Thickness
 - Adhesion, attachment
-

Kick-out Flashings

1. Kick-out or diverter flashings. These are at the bottom of the step flashings. They divert the water out of the wall and into the gutter.
 2. They must be visible and daylight to deliver on them out of walls.
 3. Watch for staining on the walls below where gutter ends meet walls.
-

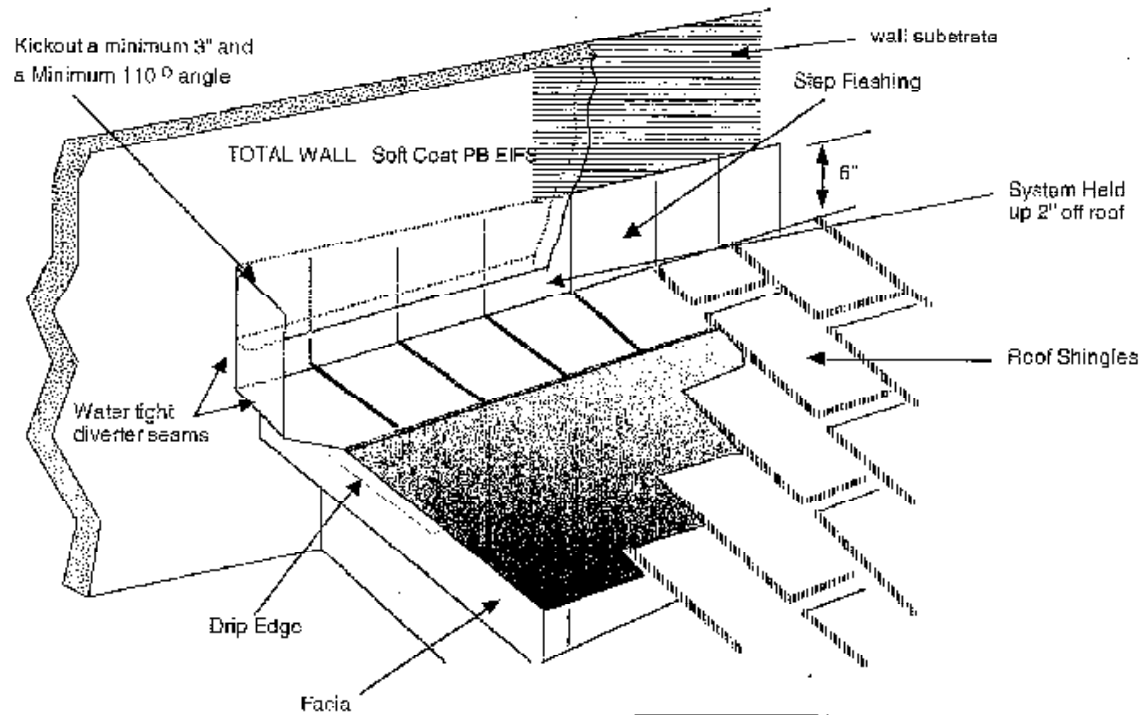
Improper (missing) kick-out flashing



Substrate below missing kick-out.



Typical Kickout Flashing Detail



TOTAL WALL		Typical Roof Flashing with kickout diverter
Revision Date	Original	Code No.
	10/10/01	PB 3.00

Improper or Missing Deck Flashing

- Deck flashings are often incomplete and unsealed.
 - Even when present deck flashings often are missing end dams.
 - All joists and beams must be flashed and sealed where they penetrate Real Stucco or EIFS.
 - Watch for bulges in EIFS near corners.
-

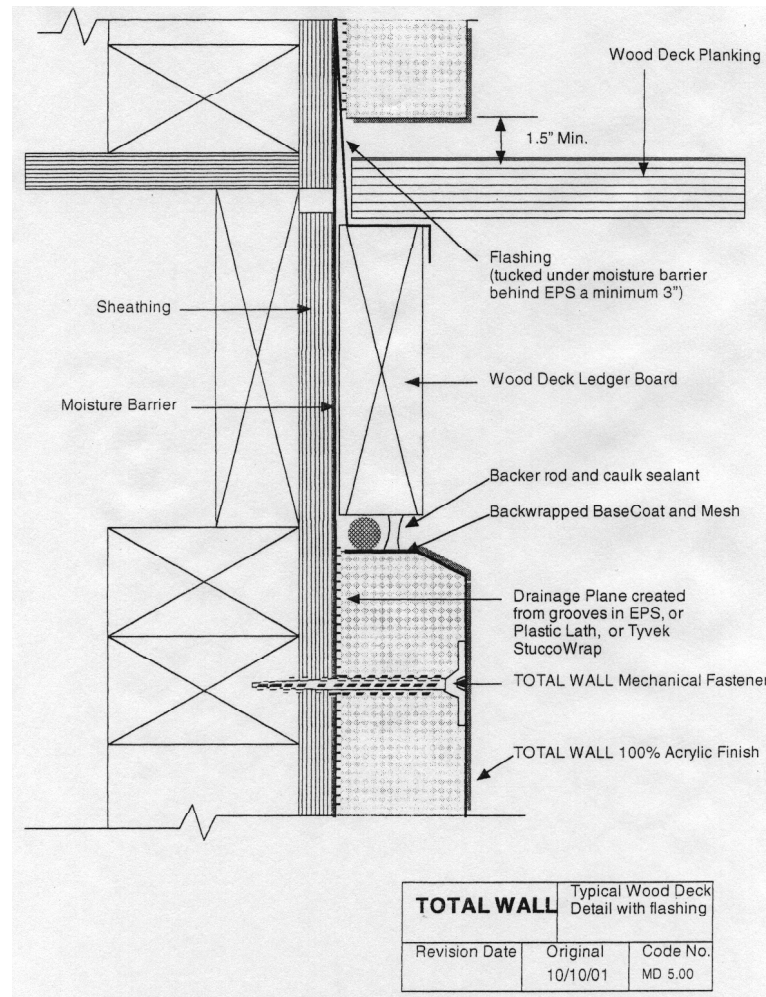
Missing deck flashing at beam.



Missing flashing at deck column.



Typical Deck Flashing Detail



Windows and Doors not sealed to Real Stucco or EIFS.

- All EIFS manufacturers and EIMA details call for EIFS to be sealed to window and door frames.
 - Almost all One-Coat-Stucco manufacturers and the Northwest Walls and Ceiling Bureau's Stucco Resource Guide call for Real Stucco to be sealed to window and door frames.
 - Most call for drainage provisions at window and door heads.
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Damage below unsealed joint at window



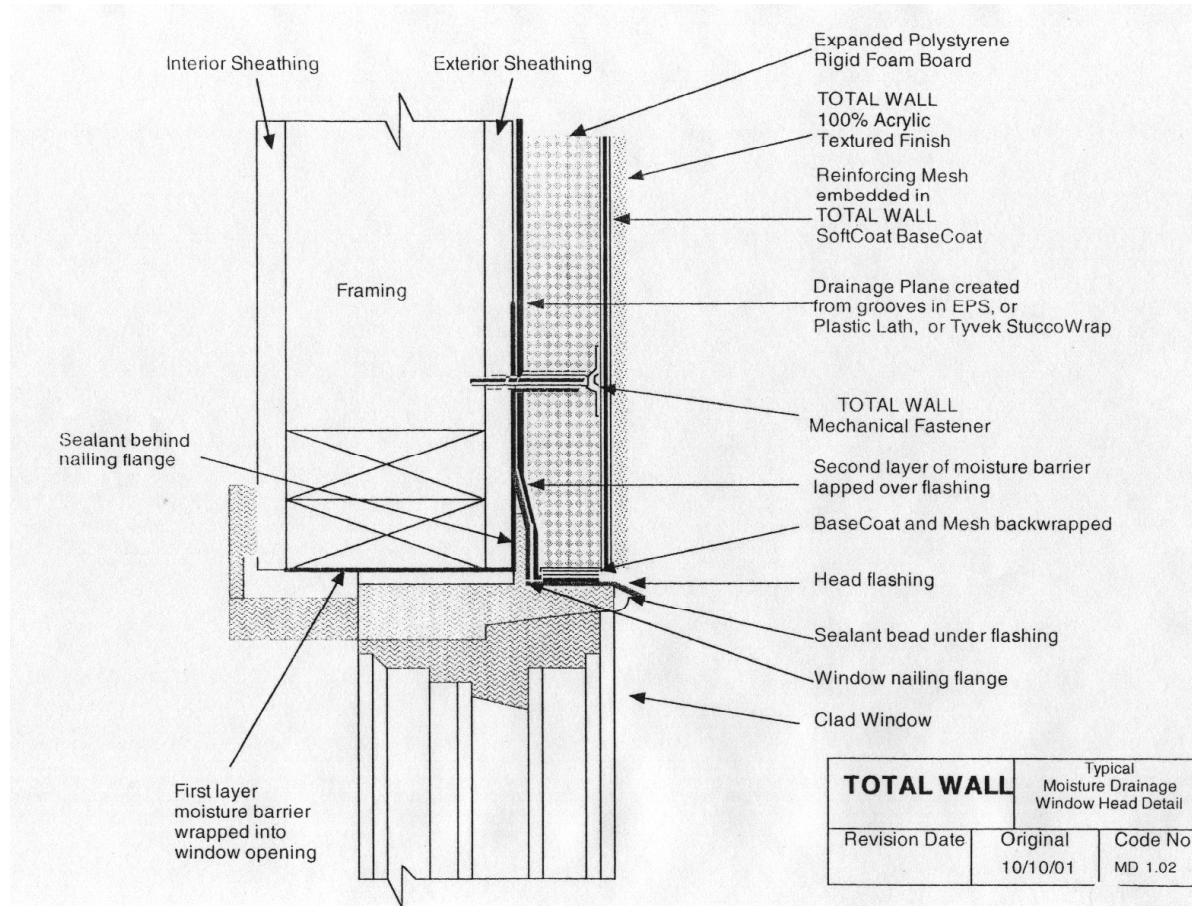
Improper weatherproofing of window in Real Stucco.



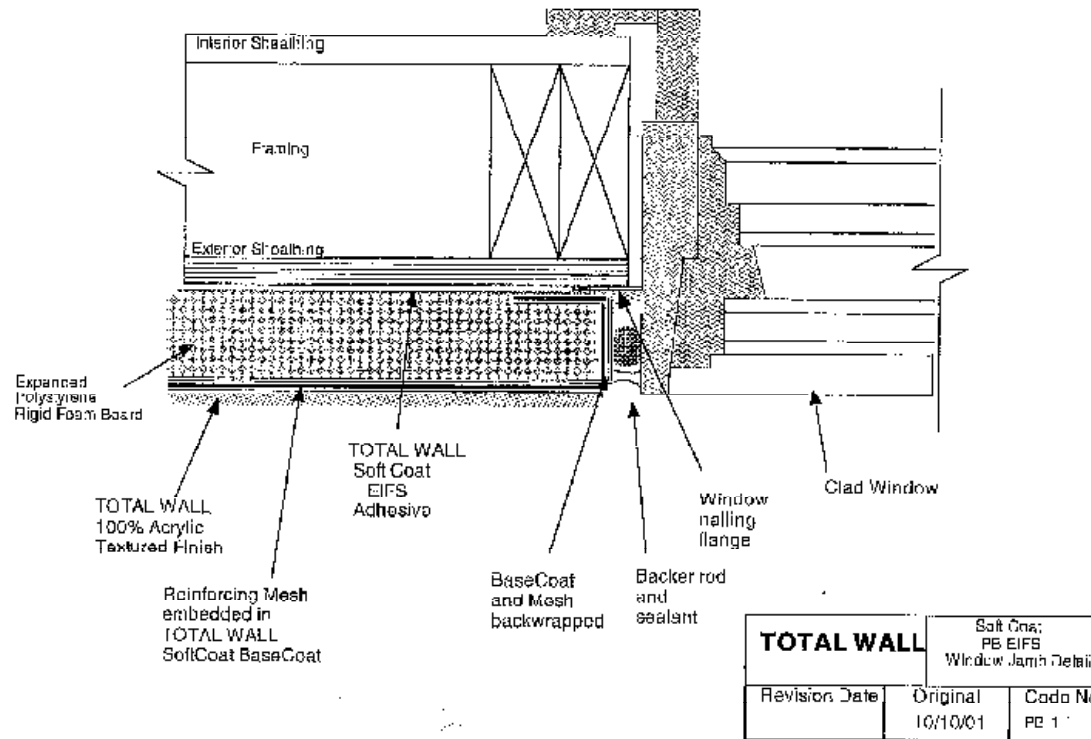
Typical gaps around glass blocks.



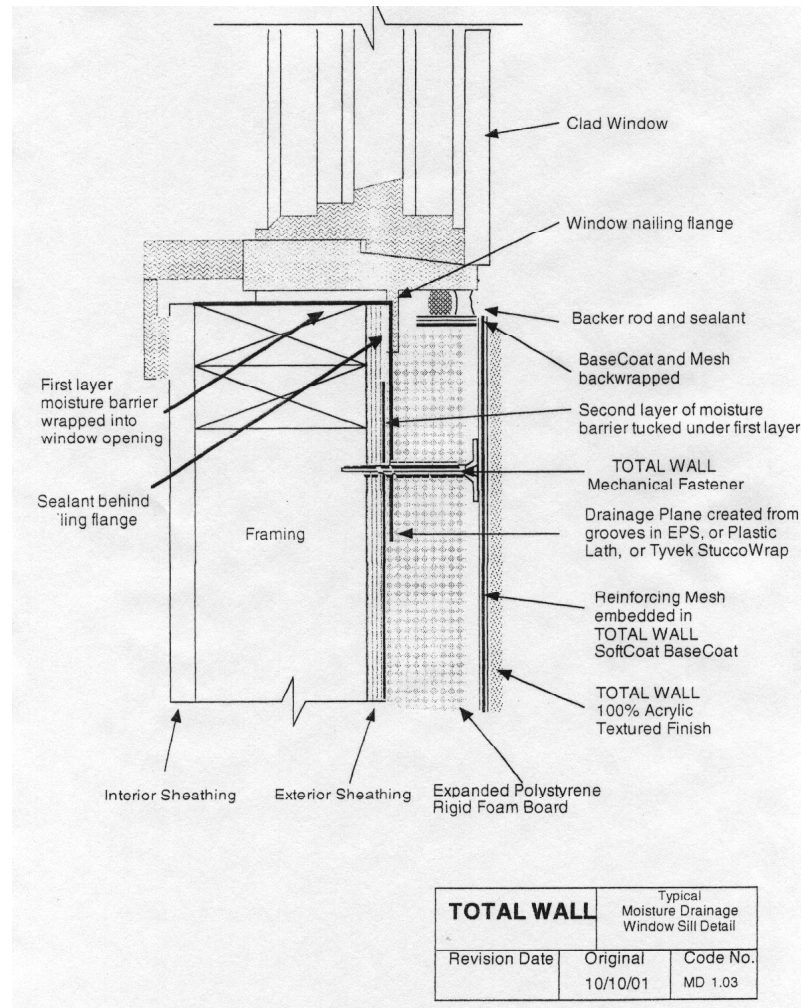
Typical Moisture Drainage EIFS at Window Head



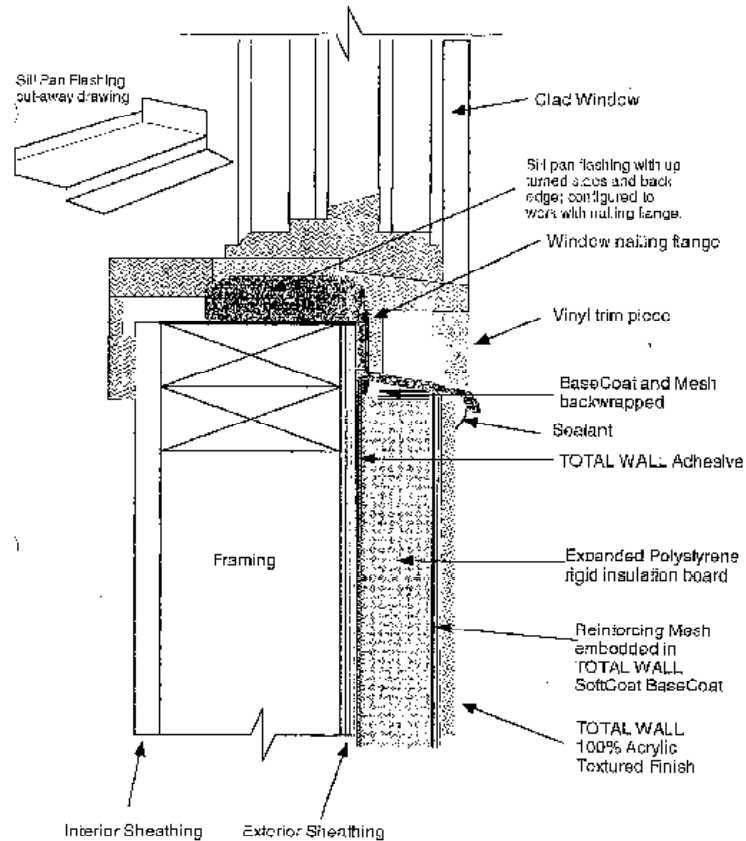
Typical EIFS to Window Jamb Details



Typical MD-EIFS Window Sill Detail



MD-EIFS Window Sill Detail with Pan



TOTAL WALL		Typical Soft Coat PS System Window Sill with pan flashing
Revision Date	Original 5/5/00	Code No. PB 1.03A

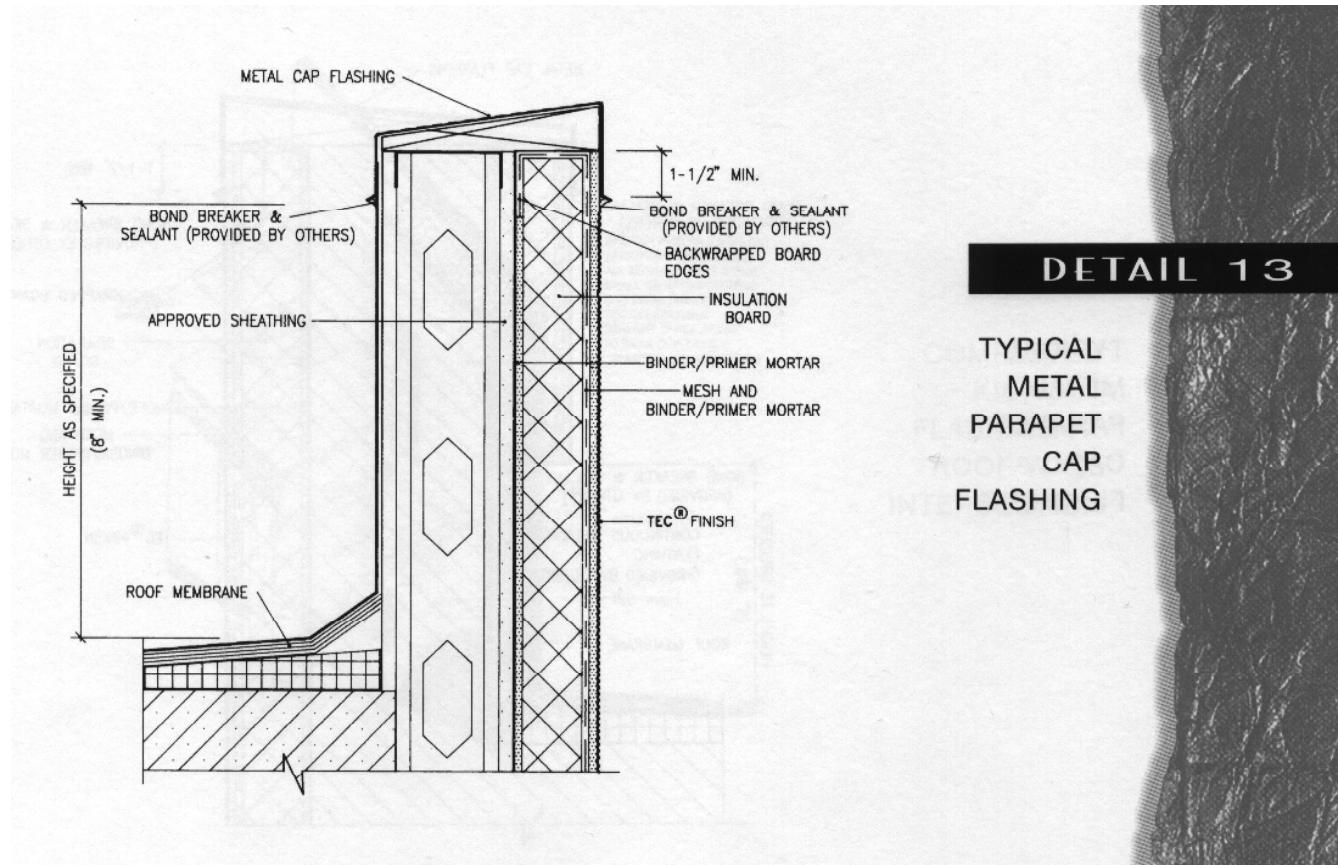
Parapet walls with no cap flashing.

- Typically, EIFS & HCS are not to be on flat surfaces.
 - Water can seep through the flat surface of the stucco.
 - The flat surface is more subject to impact damage.
-

Flaking finish coat on HCS below parapet.



Typical Parapet Cap Flashing PB Barrier



Delamination of EIFS

- EPS can delaminate from substrate.
 - EIFS lamina can delaminate from EPS board.
 - Delamination will typically show as a bulge in the wall.
 - The EIFS is loose and springy; it will usually ripple when tapped.
 - Can indicate deteriorated substrate or failed adhesive; further destructive investigation is indicated.
-

Bulges in delaminated EIFS can show edges of EPS boards.



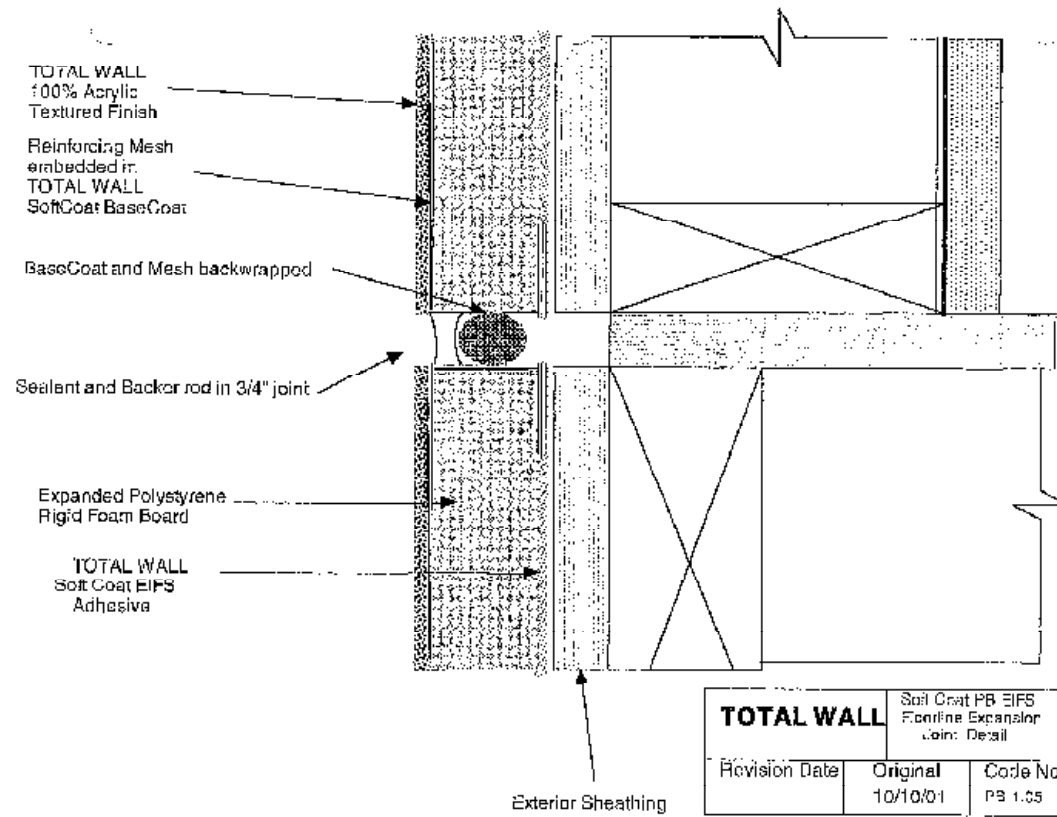
Floor-line buckling

- Floor line buckling occurs because the floor-line expansion joint was omitted.
 - Caused by cross grain shrinkage of dimensional wood framing members.
 - Typically occurs one time in a house in the first year or two of the house's life.
-

Floor-line buckle in EIFS.



Floor Line Expansion Joint in Wood Framing



Incomplete backwrapping of EIFS.

- There should be no exposed EPS board or mesh on an EIFS installation.
 - At grade this helps prevent wicking and termite infestation; EIFS must be kept above grade 6 to 8 inches.
 - At higher locations on a home it helps prevent water intrusion.
-

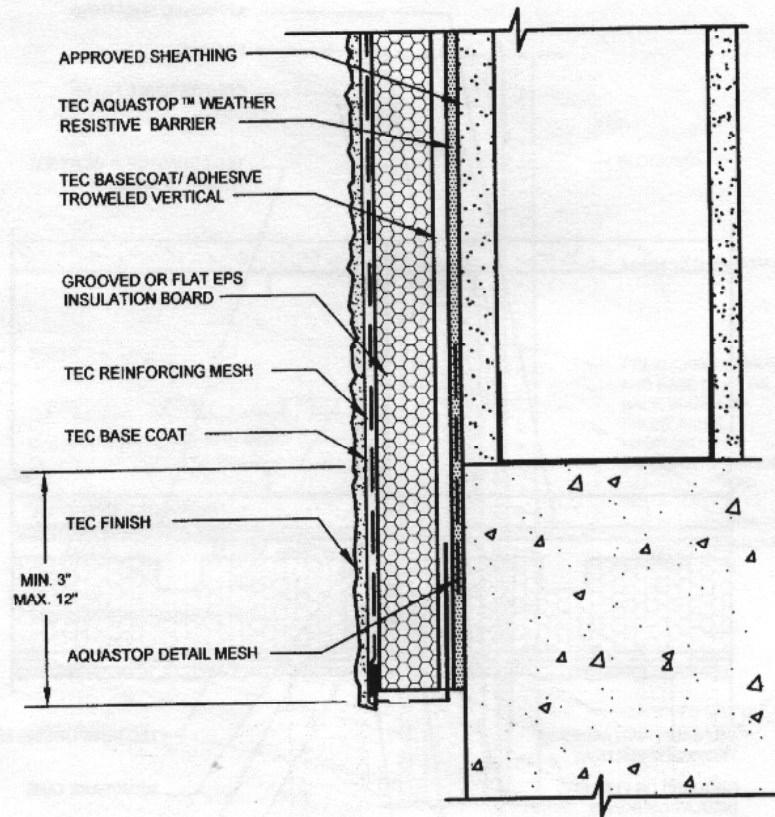
Incomplete Backwrapping



EIFS Laps Top of Foundation Wall

DETAIL 13

TYPICAL
TERMINATION
AT FOUNDATION



NOTES: MUST TERMINATE MINIMUM 8" ABOVE GRADE.

Horizontal surfaces on bands.

- Horizontal surfaces on EIFS and Real Stucco bands are subject to impact damage and finish delamination.



Flaking of finish on EIFS bands.



Incomplete stucco or damaged stucco.

- Often EIFS or Real Stucco is not properly completed in hard to get at areas.
 - Both EIFS and Real Stucco can be impact damaged; although it is harder to damage Real Stucco.
 - Bird prefer EIFS but I have seen bird damage to Real Stucco.
-

Damage to EIFS where it was touching patio slab.



Fungi

- If you see fungi or mushrooms growing out of a crack further investigation is needed.
 - Mildew can grow on the surface and may not be a significant problem other than ongoing maintenance of periodically cleaning the surface.
-

Fungi growing out of stucco window joint



Suggestion on how to report your stucco observations, Stucco Identification.

- If you are absolutely certain, then report what you have identified the stucco system to be, i.e. EIFS Barrier, Moisture Drainage-EIFS OCS, OCS with EPS Plant-On bands, etc.
 - If you have **any** doubts I would suggest stating it “Appears to be....”
-

Suggestion on how to report your stucco observations, Stucco Identification.

- If it is an atypical system that is unfamiliar to you, then report the components observed and state it appears to be an atypical system.
 - To avoid arguments, I suggest you call OCS or traditional stucco as Hard-Coat-Stucco (HCS) that appears to be $\frac{1}{2}$ " or $\frac{3}{4}$ " or xx" thick.
-

Suggestions on how to report stucco observations, Items of Concern.

- List **all** of the concerns that you observed.
 - We often get sellers wanting a follow up inspection of a single item; we will not do this!
 - Number the items, it makes it easier to talk about concerns in the future.
 - Include a note that a stucco inspection may identify additional concerns not found during this visual home inspection.
-

Suggestions on how to report stucco observations, Give them Guidance on Their Next Step.

- You have observed areas of concern that have the potential for problems that are not visible.
 - A home inspection typically can not provide enough information to draw conclusions.
 - Take care that you are not an alarmist.
-

Do Not Be an Alarmist!!!



The EIFS on this wall was performing! Inspector said “this is EIFS so it must be removed!”

Suggestions on how to report stucco observations, Give them Guidance on Their Next Step.

- They need more information to make an educated decision:
 - Assuming everything is ok could cause them to buy a problem house.
 - Assuming major problems could cause them to walk away from their Dream Home that only needed minor repairs.
-

Suggestion on how to report your stucco observations, Suggestions to Client.

- Suggest that they need further evaluation to determine the scope of the repairs required.
 - Suggest they use an EDI Certified Independent Third Party Stucco Inspector.
 - Stucco contractors can have a conflict of interest.
 - Stucco distributors can have a conflict of interest.
-

Any Questions?

Questions:

- On Points of Concern or Details?
- On Reporting Suggestions?

The Last Sections, time permitting, are Photos of typical Field Observations

What is wrong with this picture?



What is wrong with this picture?



Any Ideas why this is cracking?



What kind of stucco am I?



What kind of Stucco am I?



What kind of Stucco am I?



Close-ups



What Kind of Stucco am I?



Close ups



Conclusion

Keep In Mind That:

- This presentation gives you information on how to address homes with stucco during a home inspection. It does not make you a stucco inspector.
 - Refer issues to Stucco Inspector
-

Any Questions?

We will be around afterwards if anyone thinks of another question.

Thank you!
