

Joseph Lstiburek, Ph.D., P.Eng, ASHRAE Fellow

# Building Science

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## Adventures In Building Science

[www.buildingscience.com](http://www.buildingscience.com)







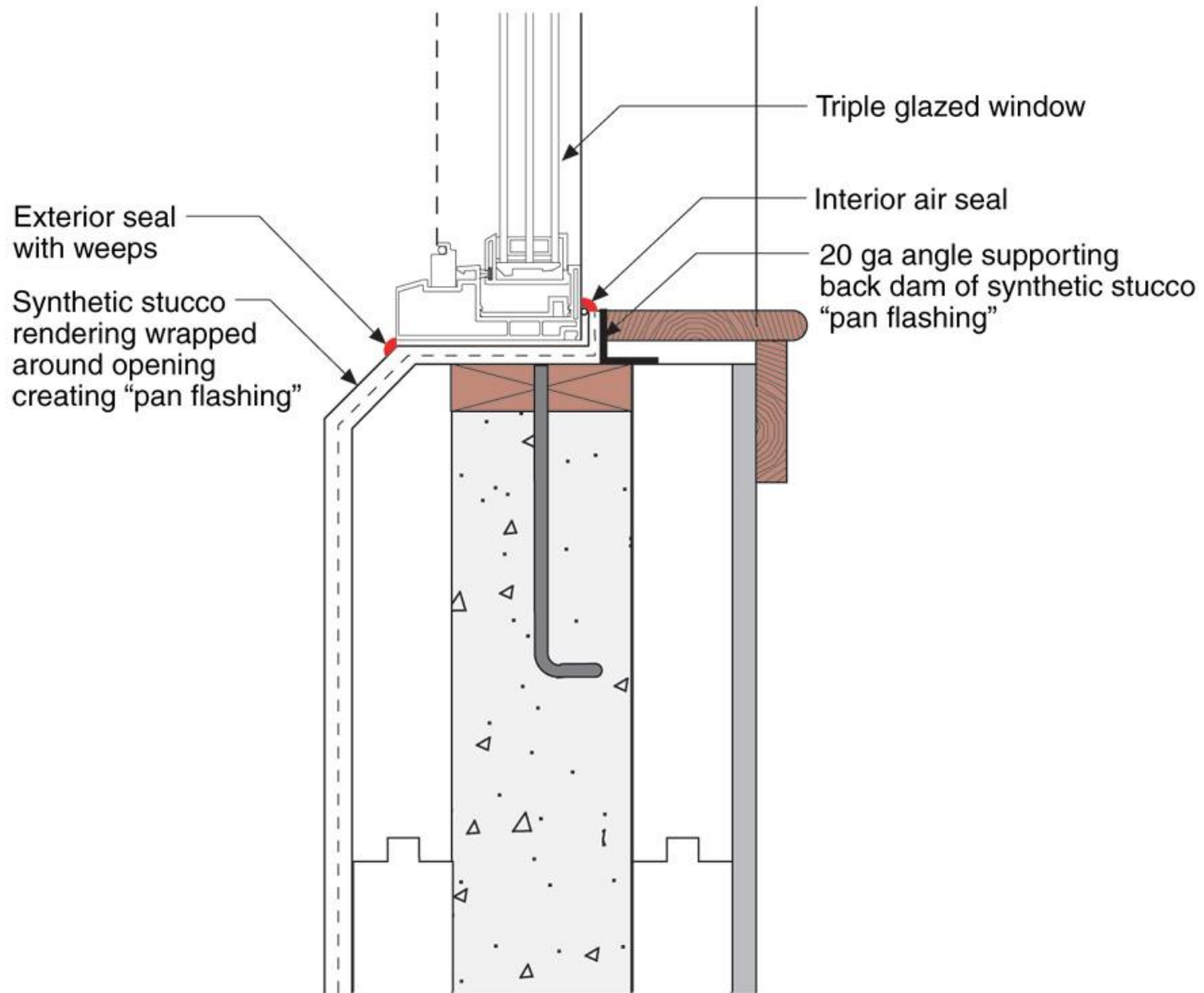


# Back to Barrier and Face Seal....

# Can Barrier or Face Seal Work?













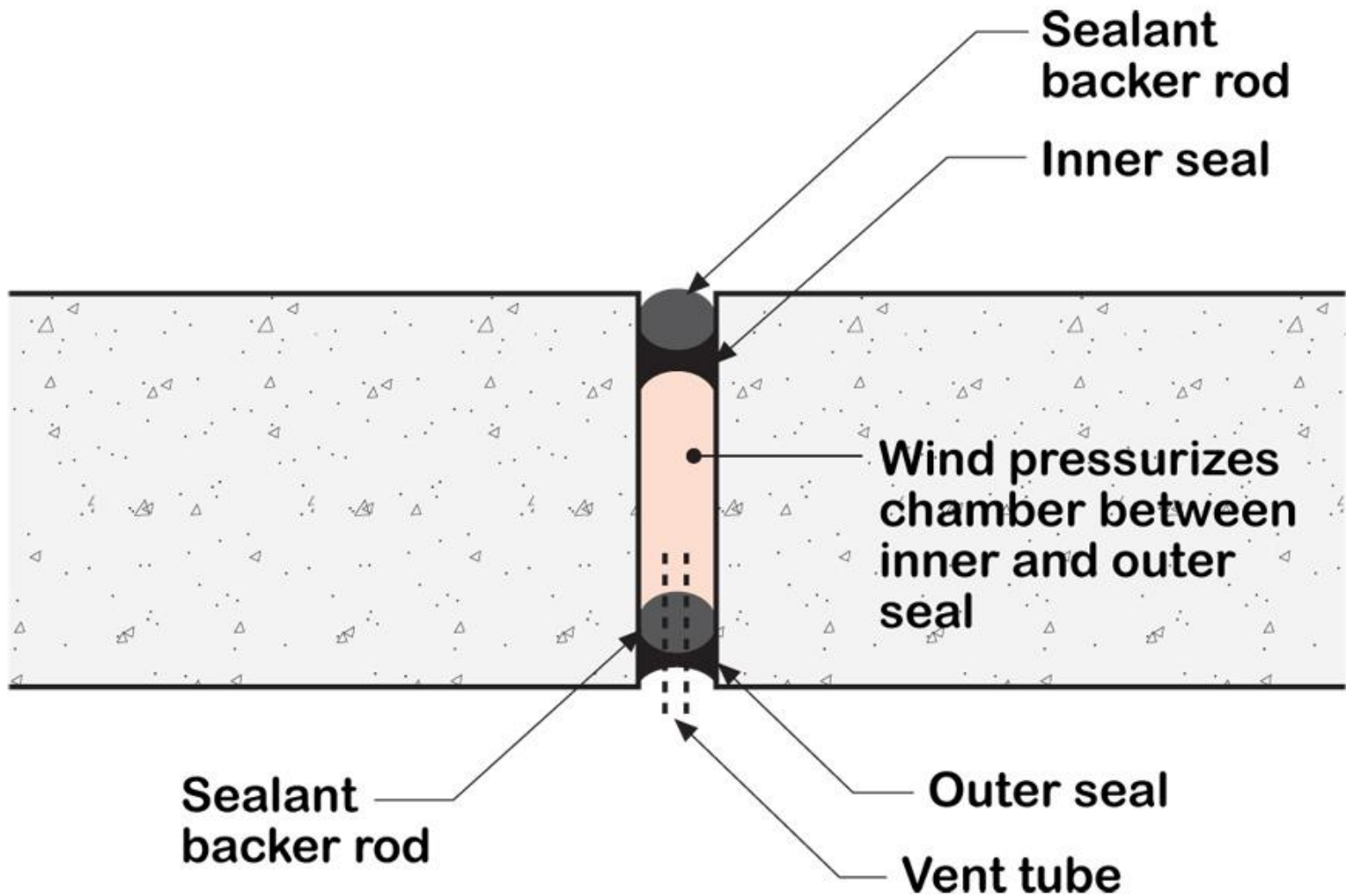


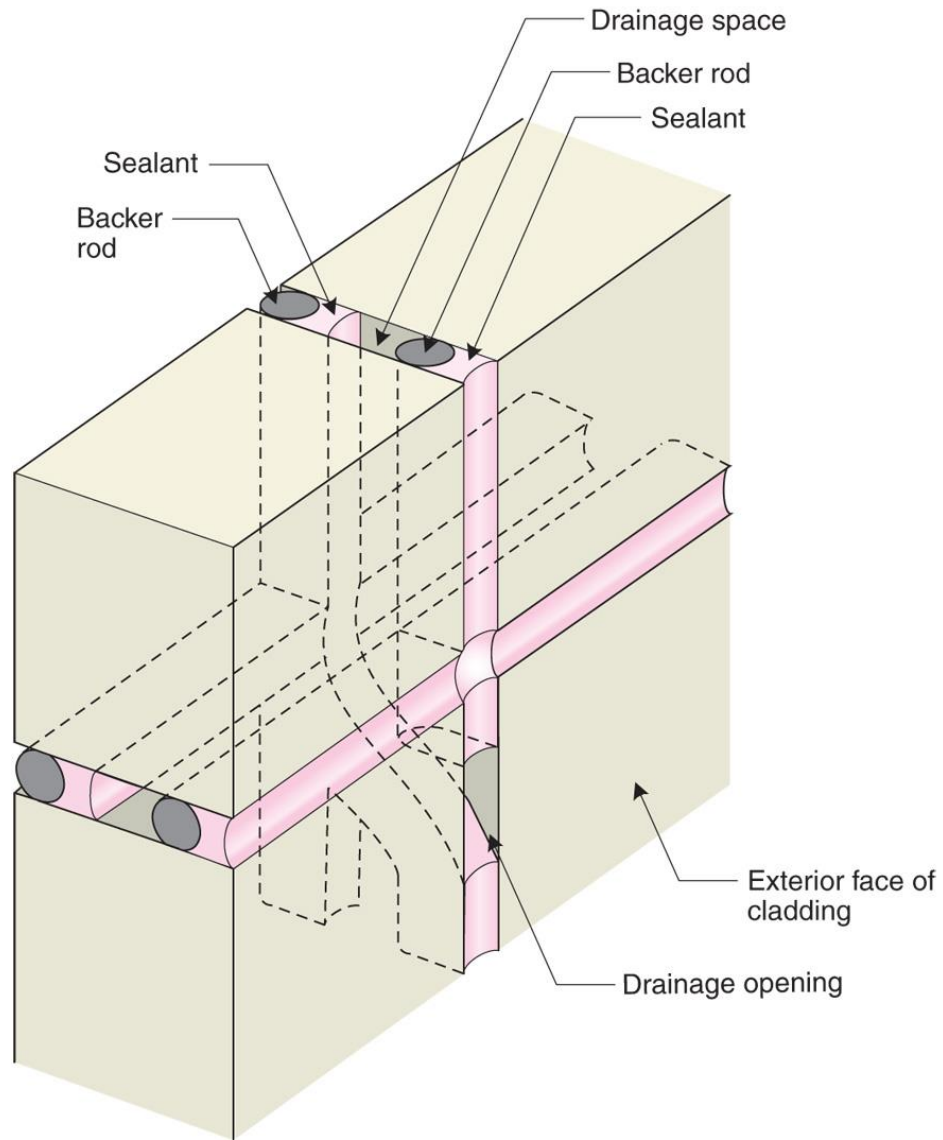










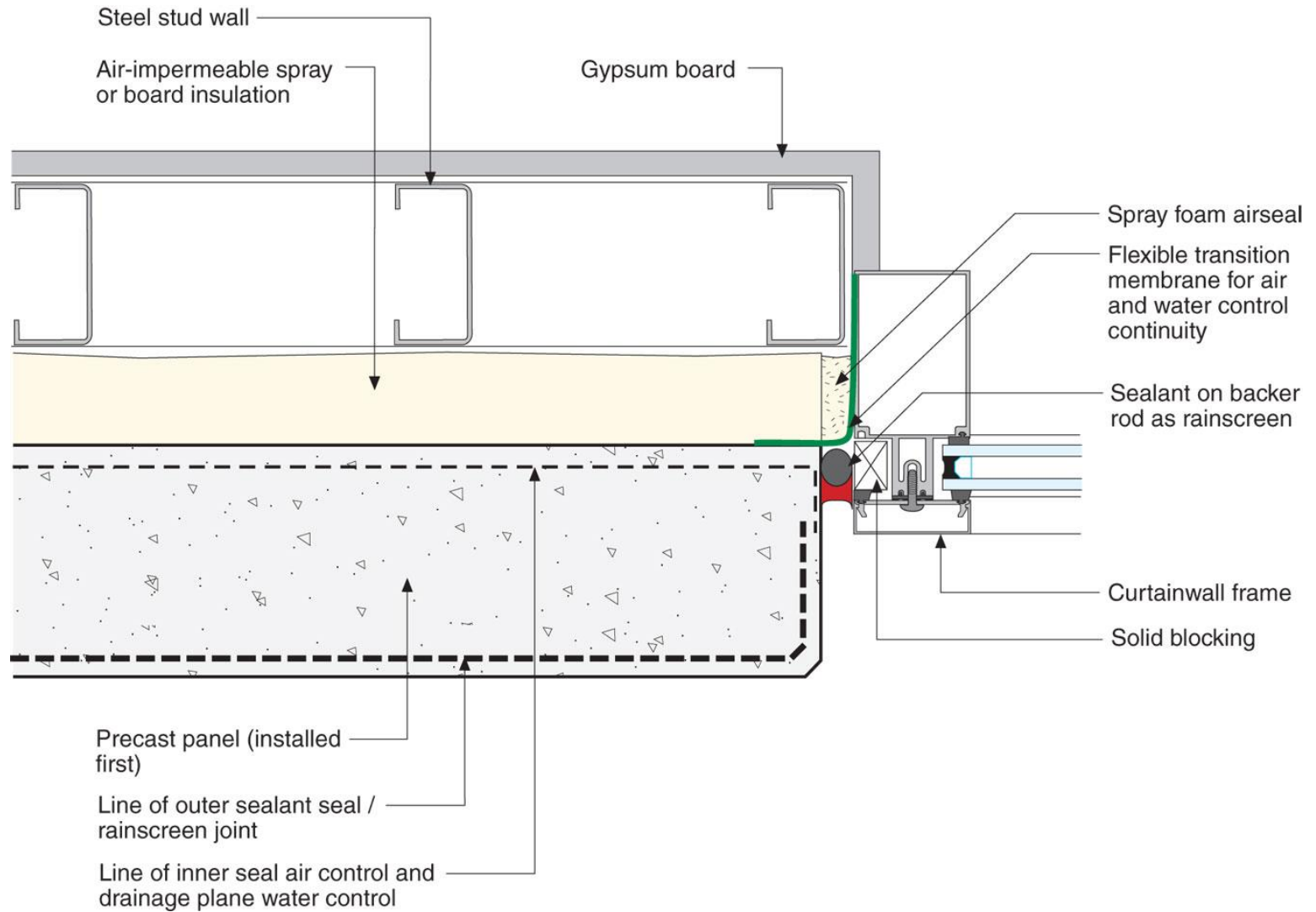


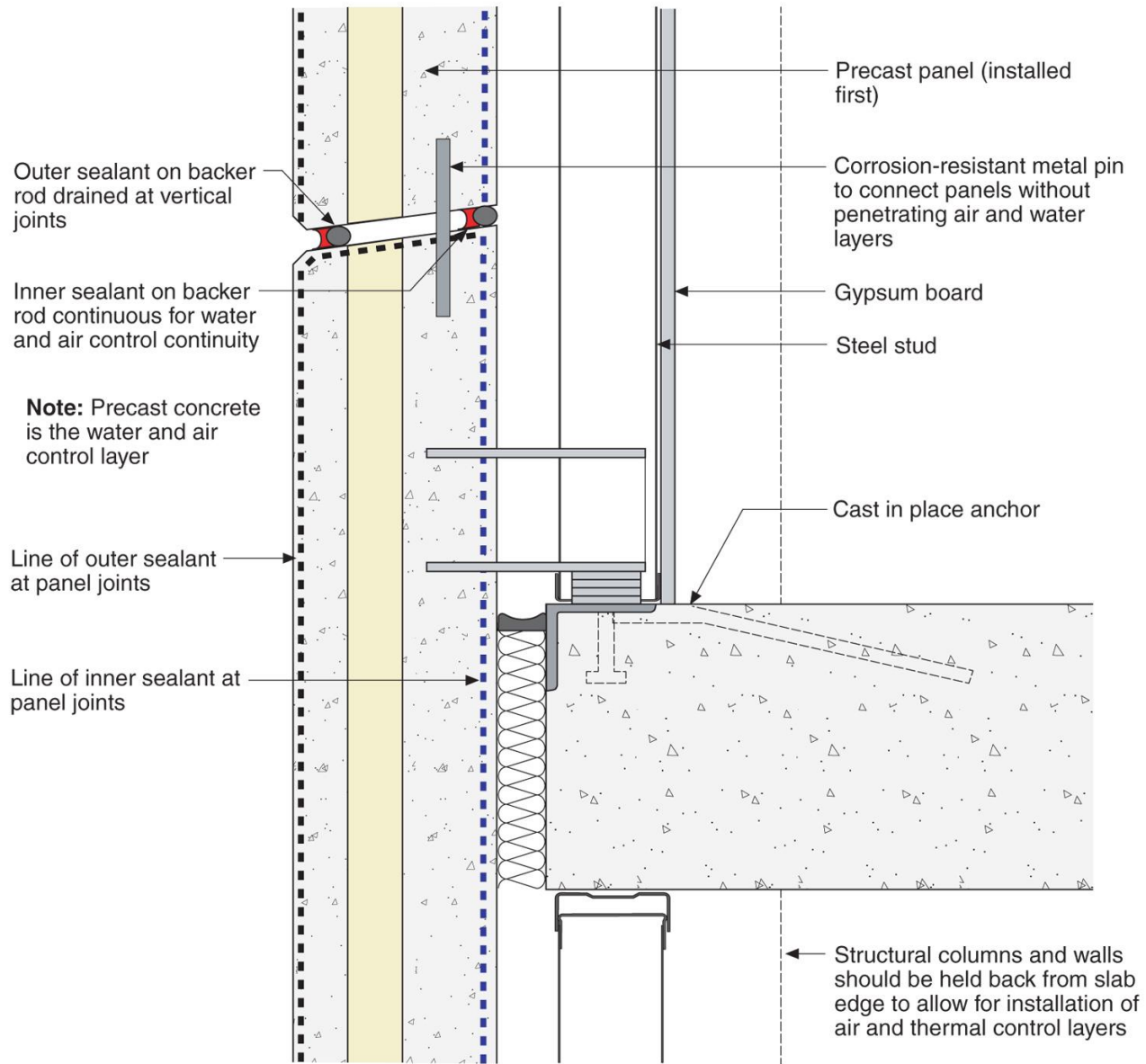






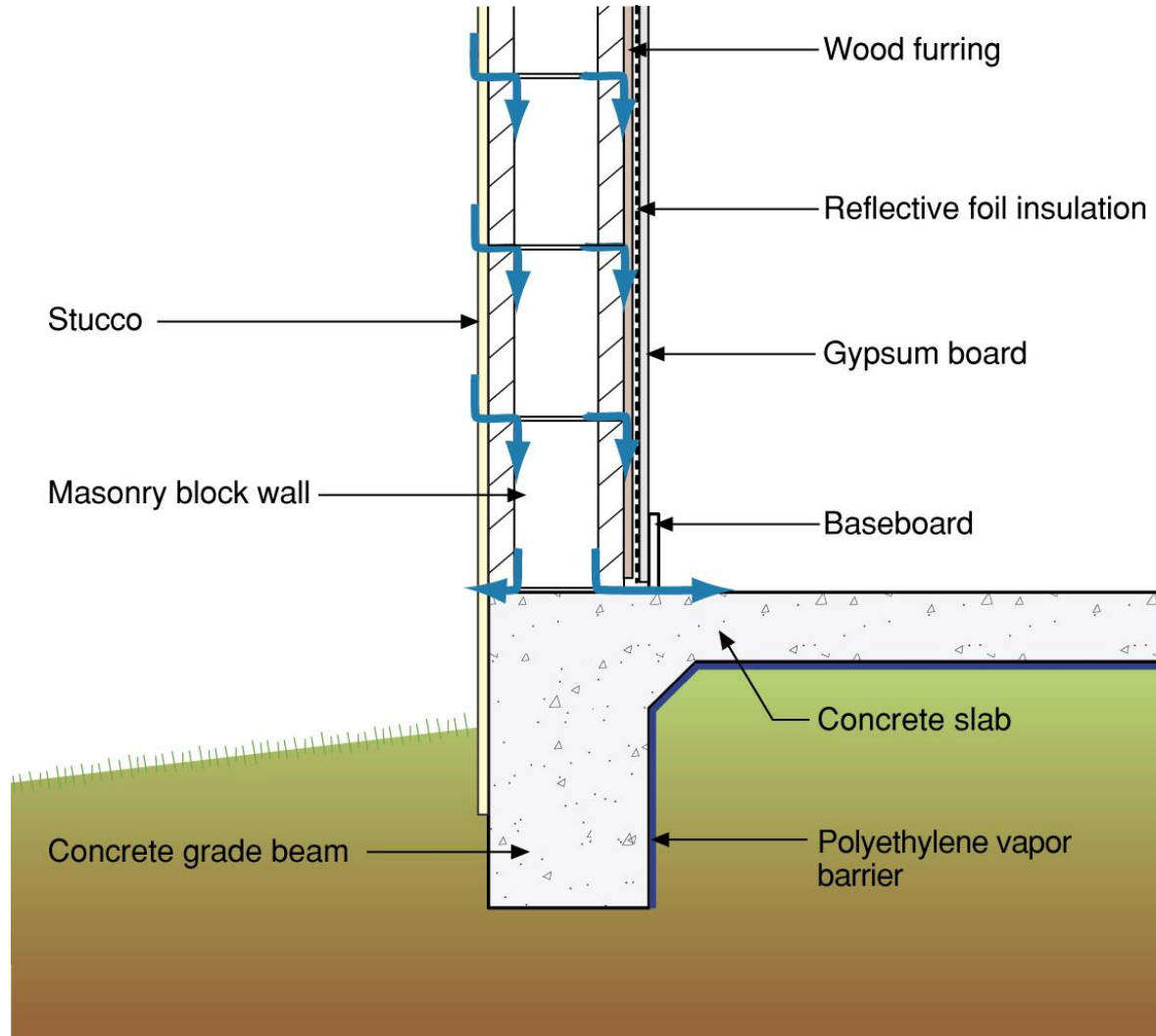


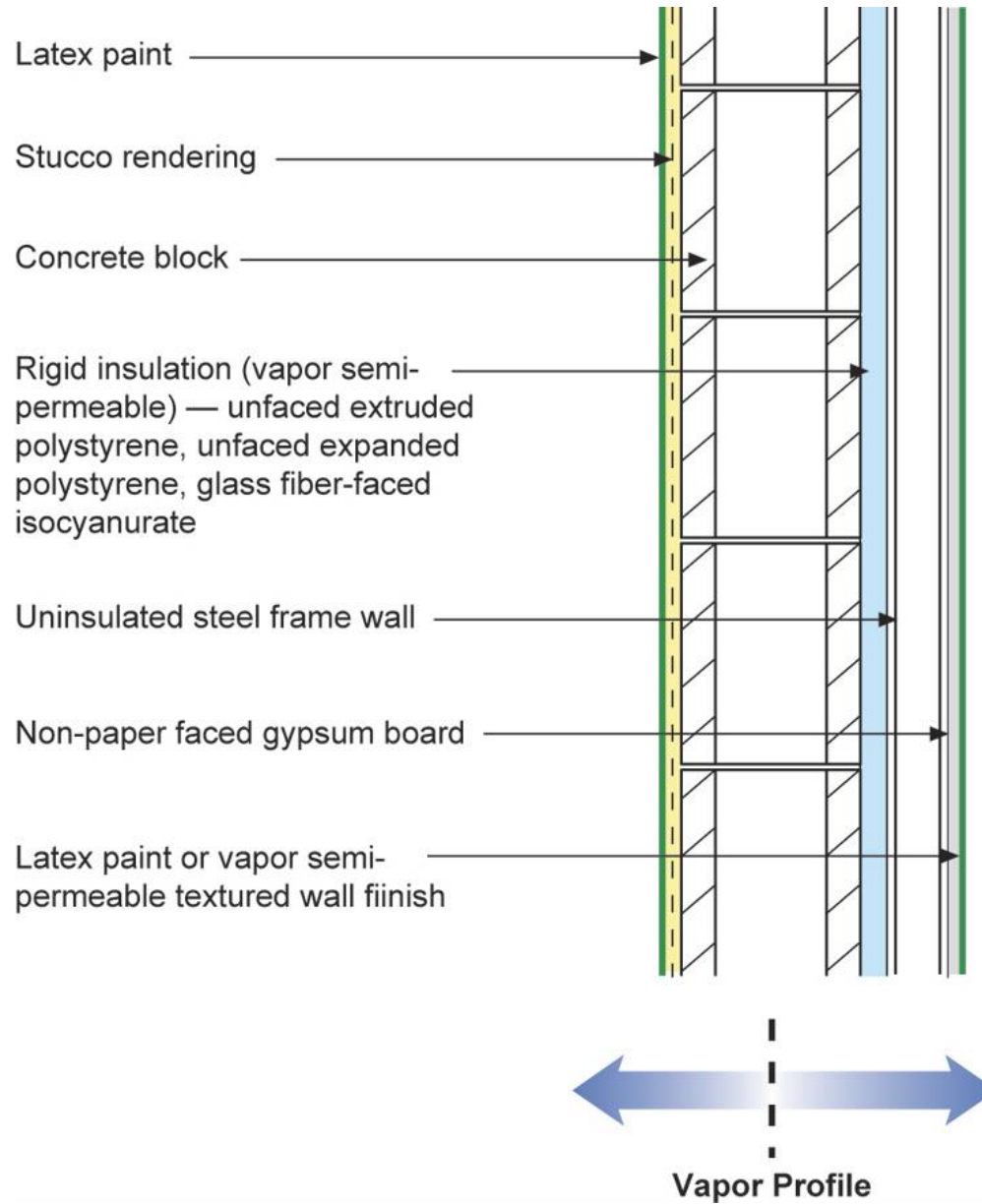


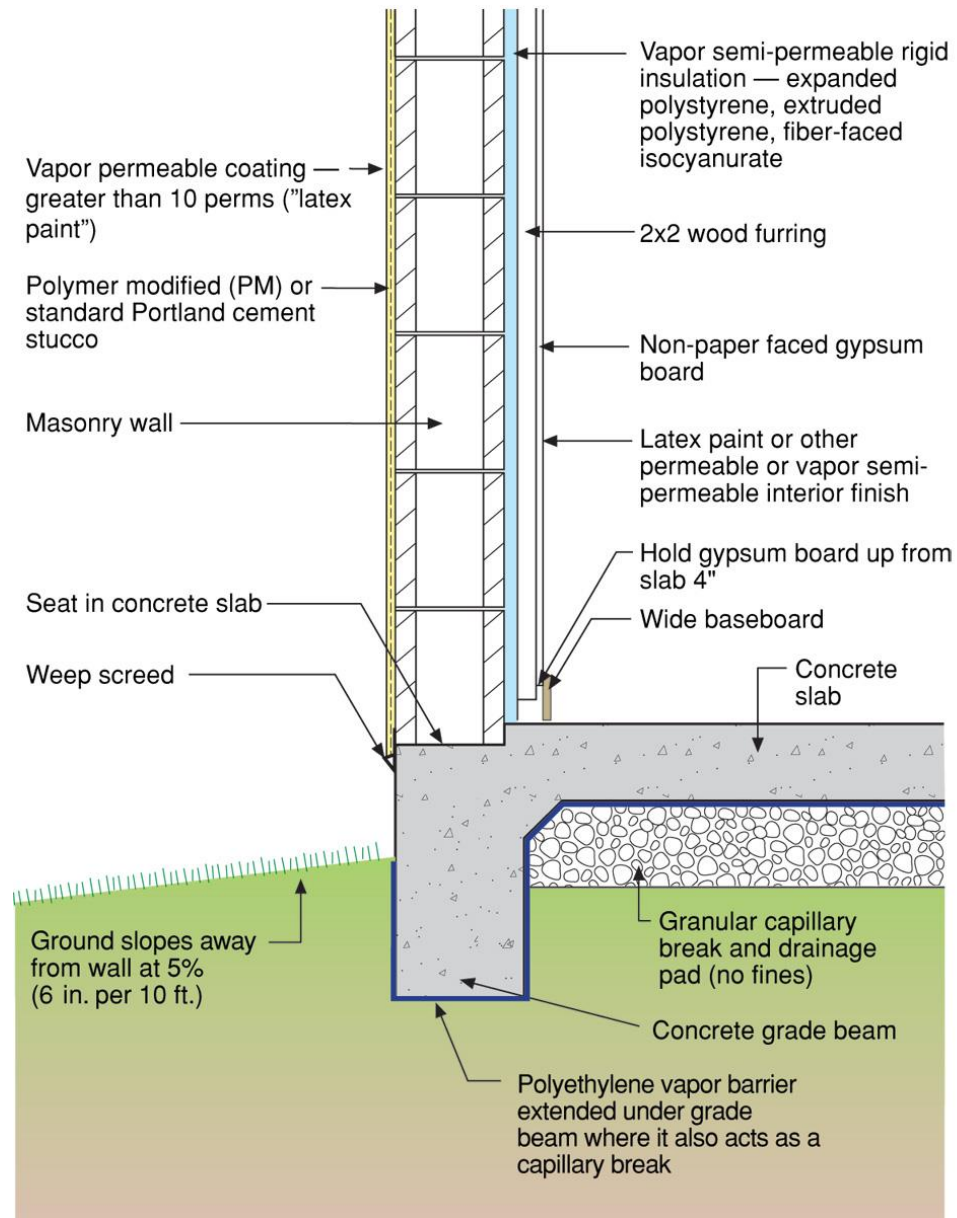


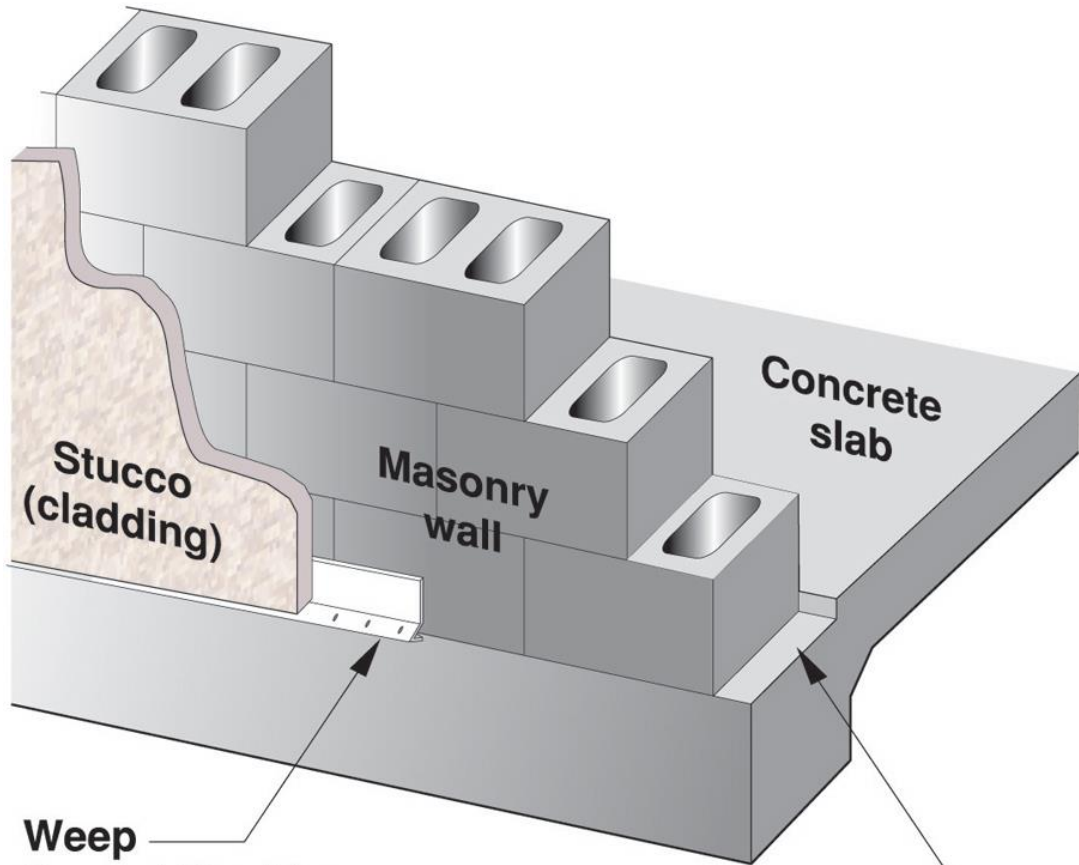


# Rainwater Entry Mass Assembly









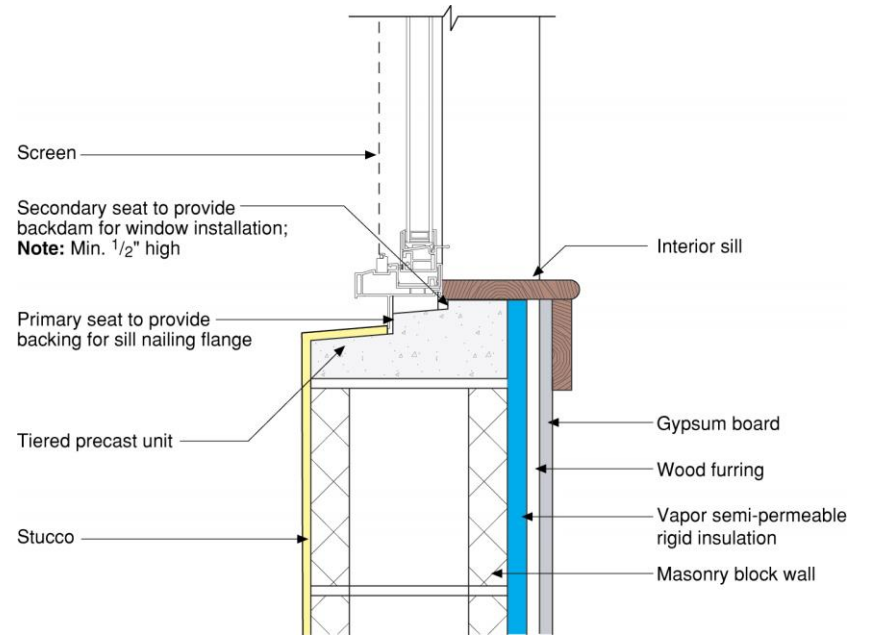
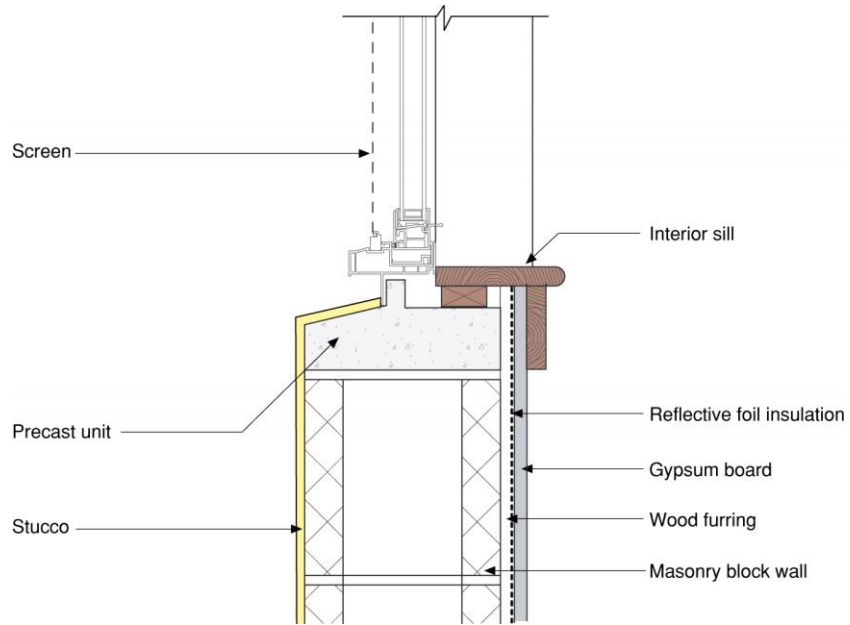
**Weep  
Screed Flashing**  
(provides drainage at  
stucco - masonry connection)

"Seat" in slab acting  
as a flashing for masonry -  
slab connection











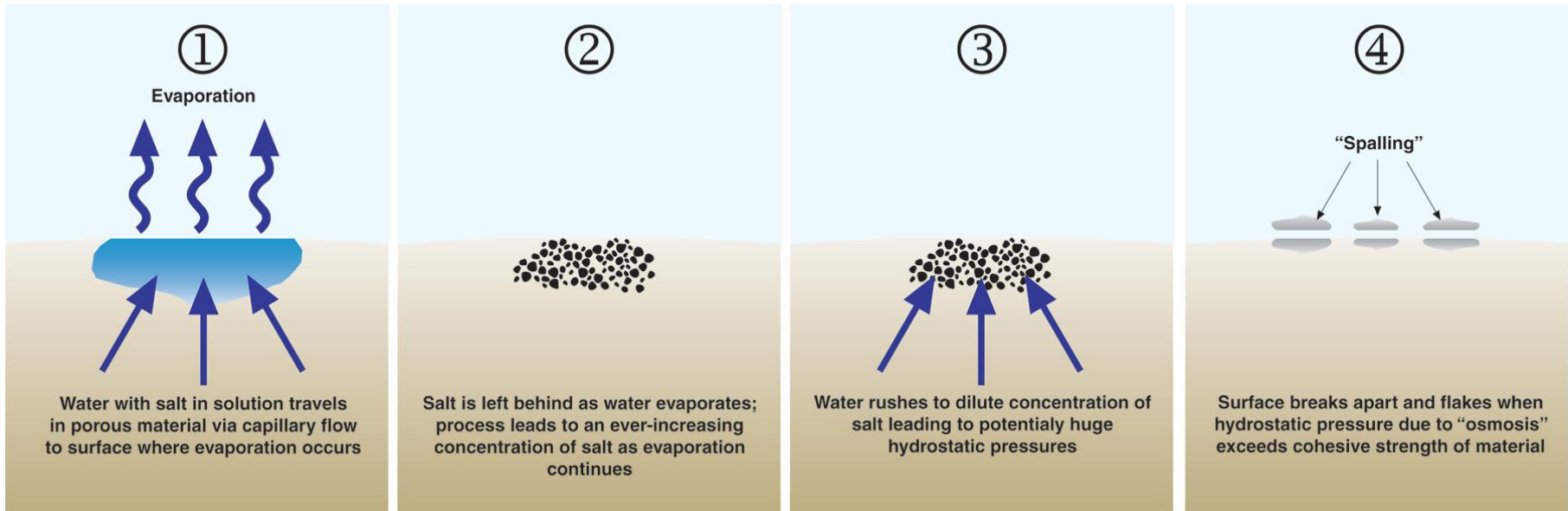
Reminder...  
Don't Do Stupid Things











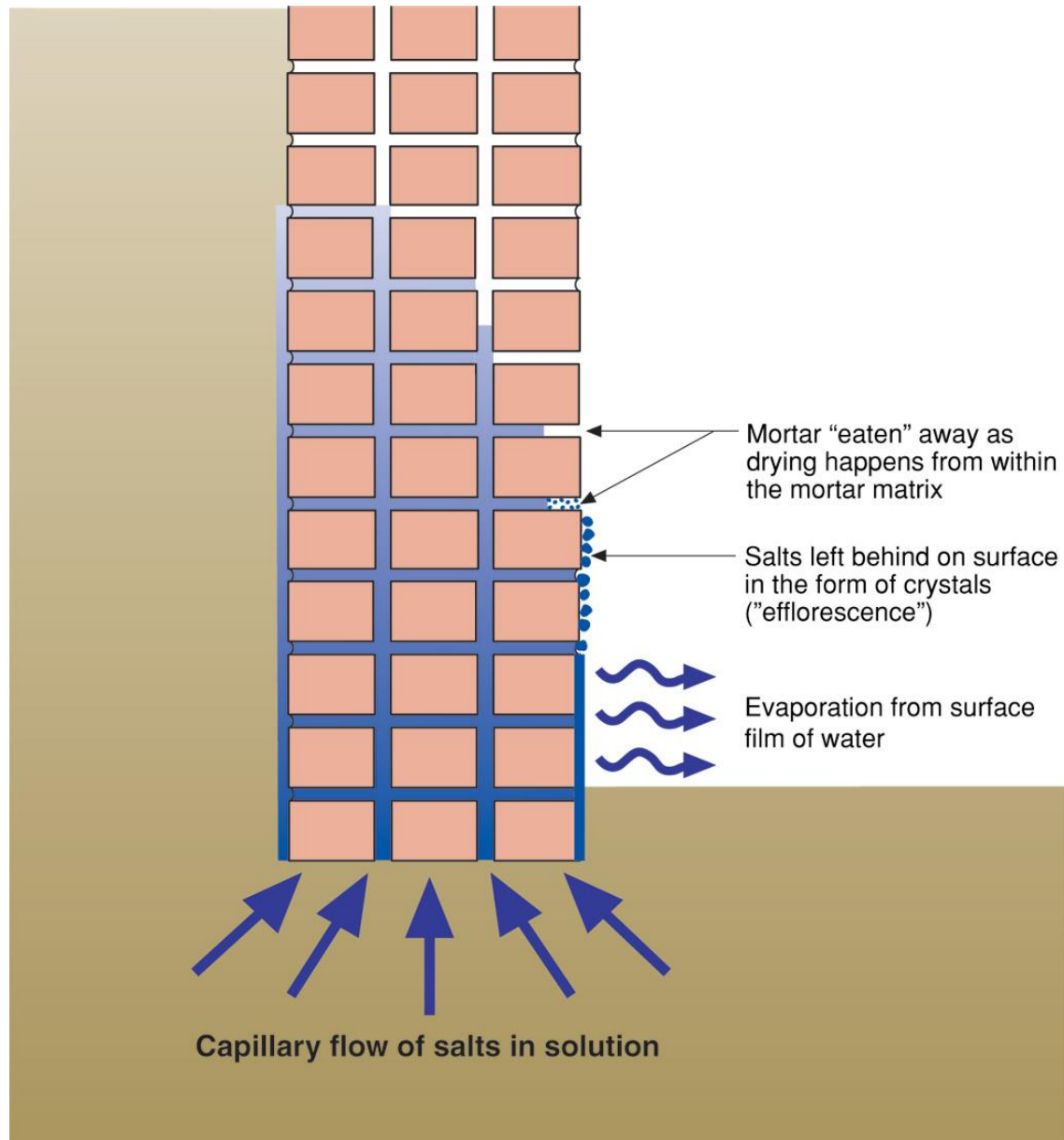
# Diffusion + Capillarity + Osmosis = Problem

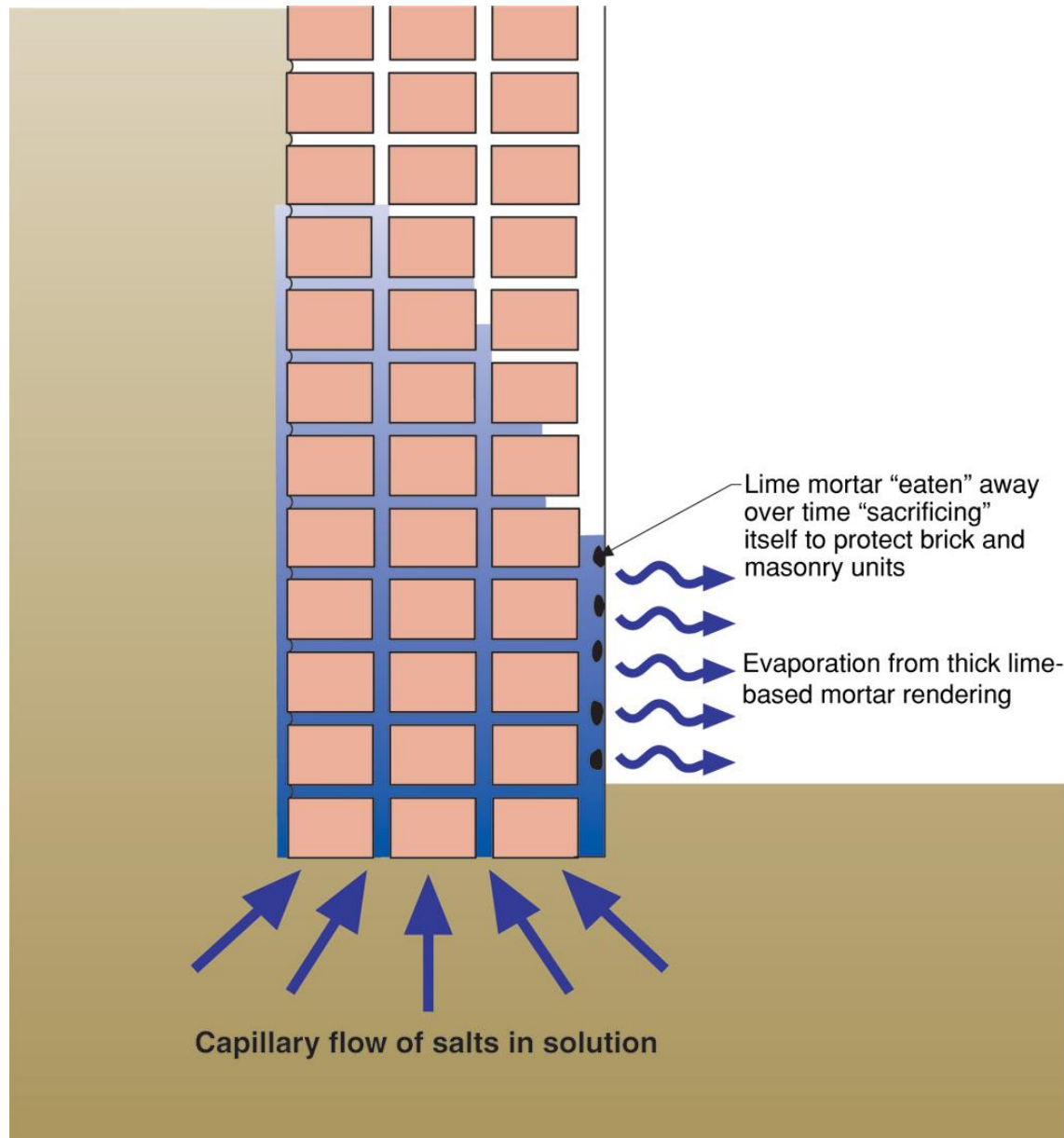
- Diffusion Vapor Pressure                      3 to 5 psi
- Capillary Pressure                                300 to 500 psi
- Osmosis Pressure                                 3,000 to 5,000 psi

















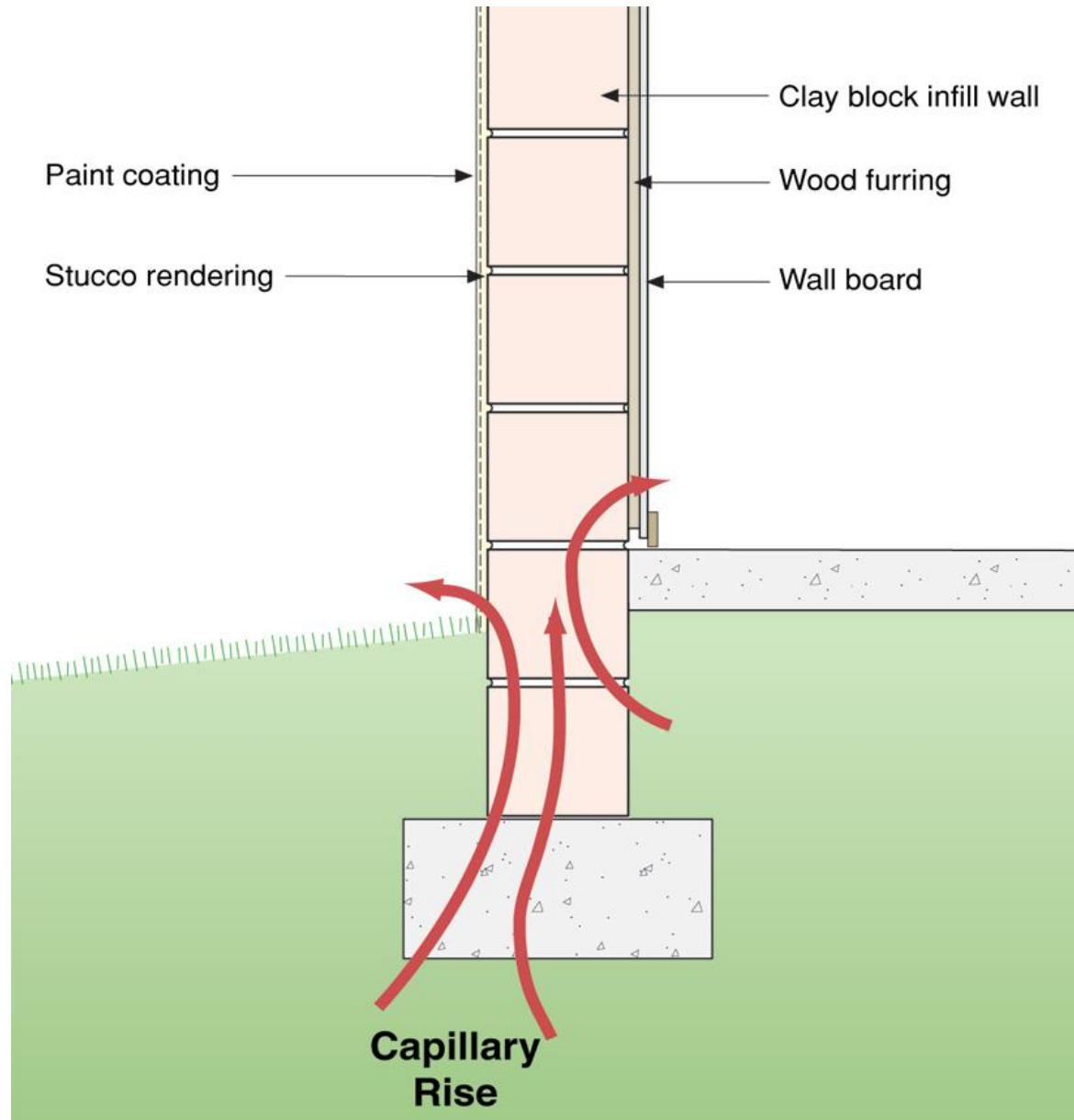








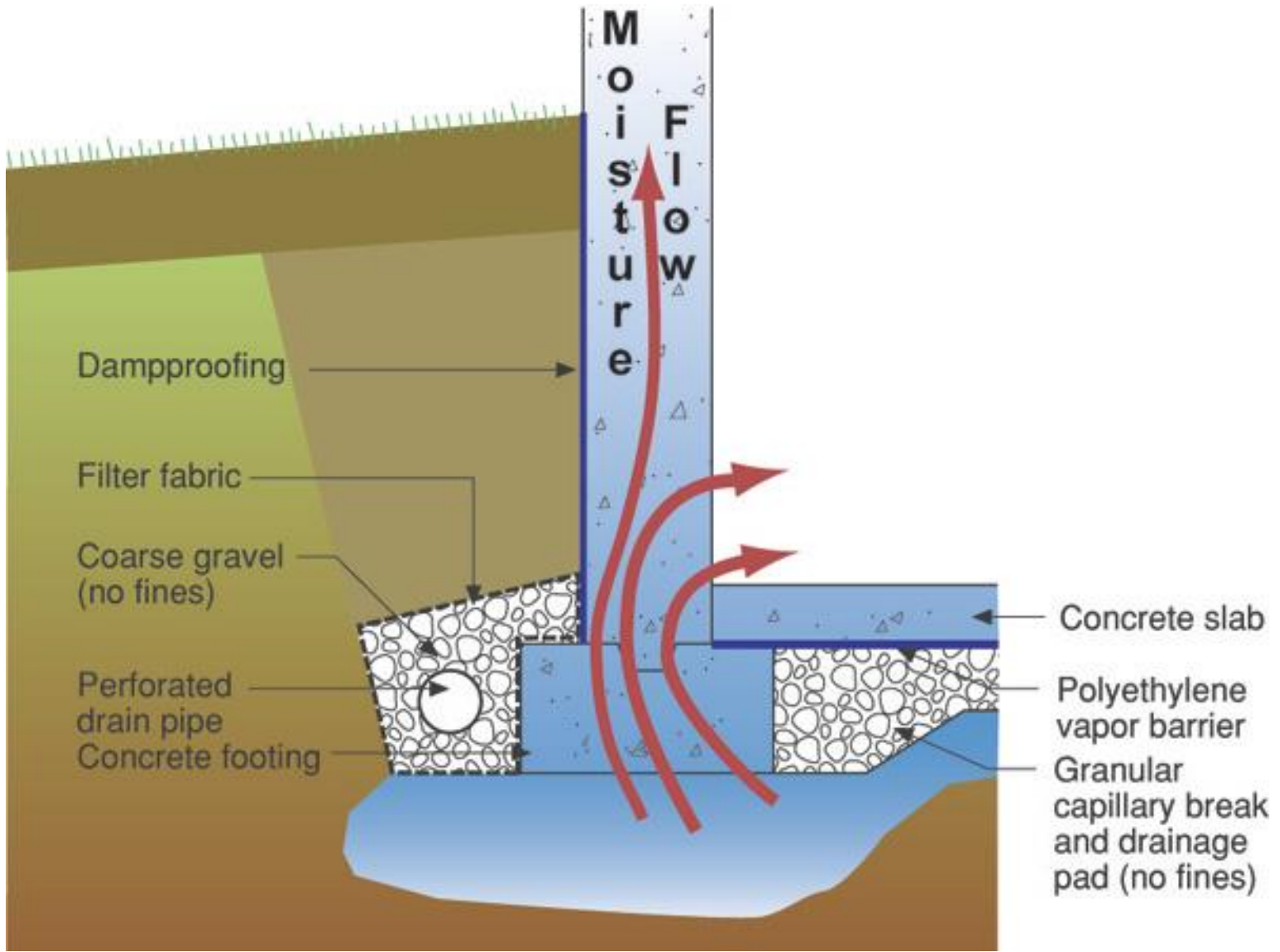


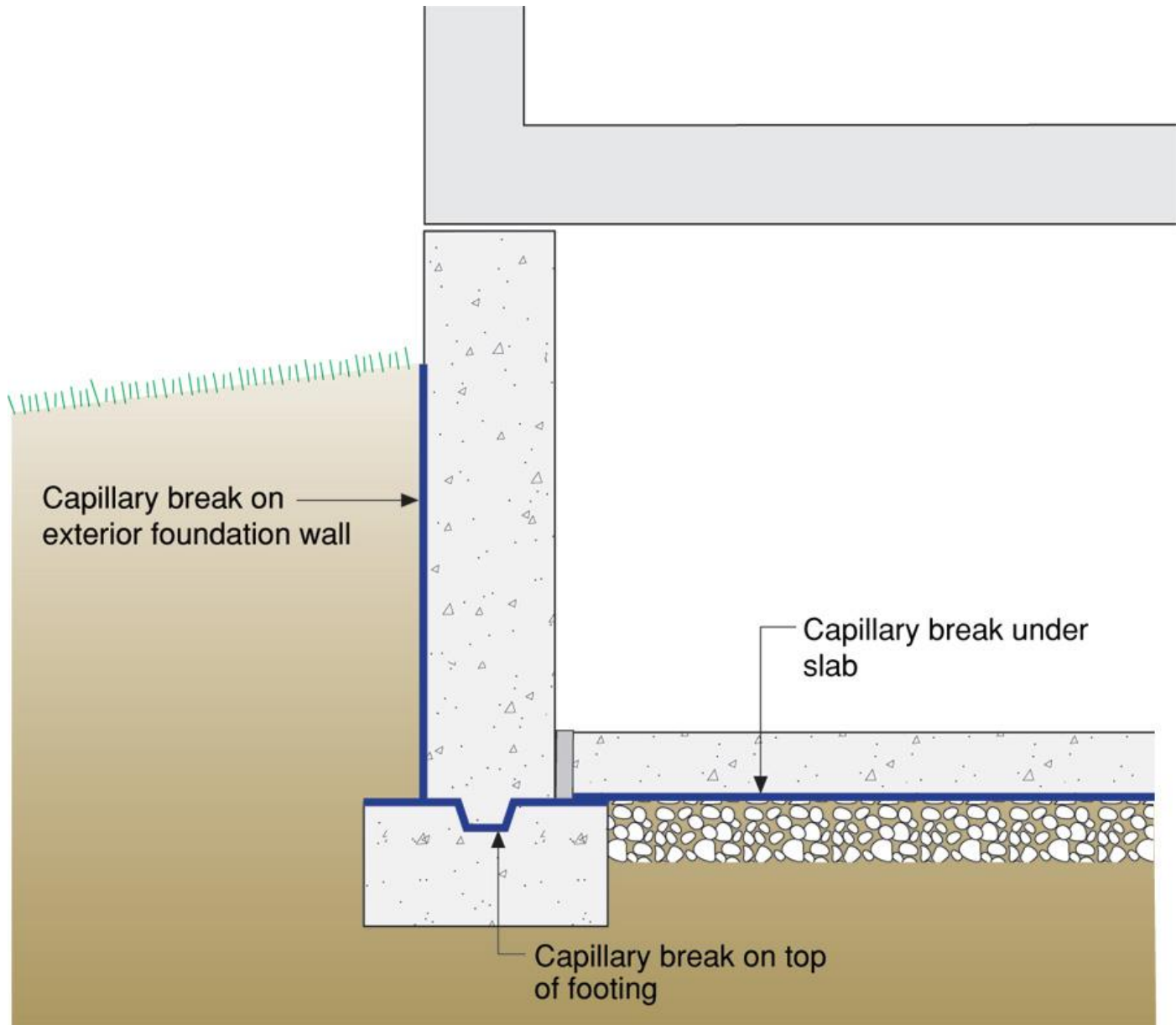




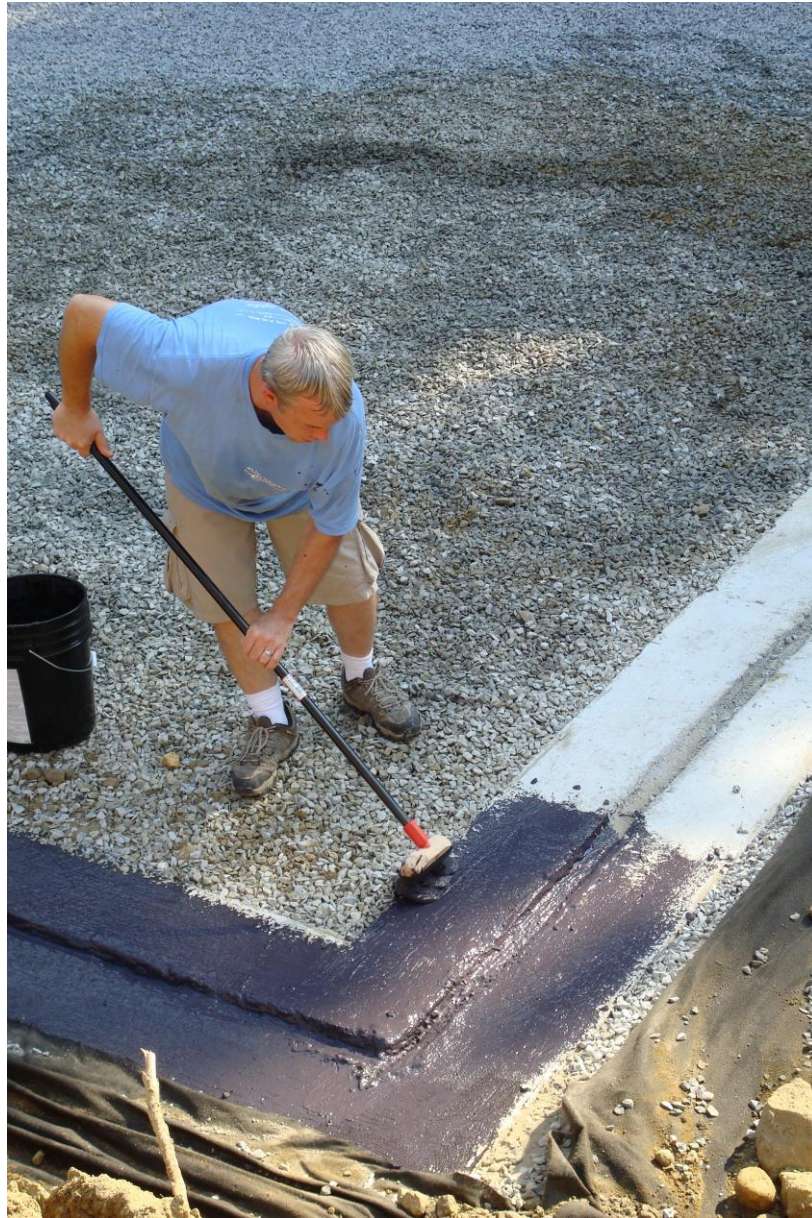
























































































Vapor semi-permeable rigid insulation —  
extruded polystyrene

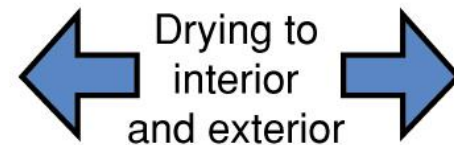
Wood furring

Polymer modified (PM) or standard  
Portland cement stucco

Masonry block wall

Gypsum board

Latex paint or other permeable  
interior finish











15 YEAR WARRANTY

50

**am** SCOREBOARD BRAND  
EXTRUDED FOAM INSULATION

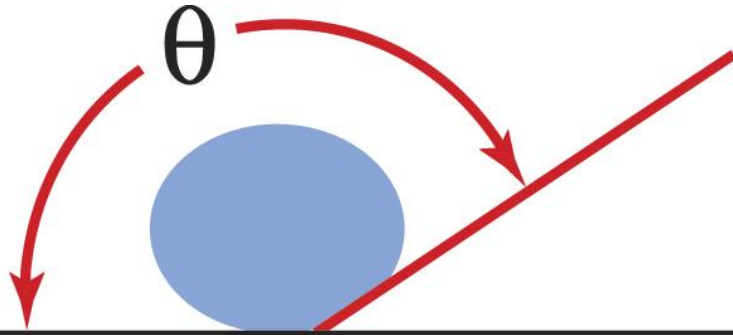
BOARD BRAND  
FOAM INSULATION

DOW

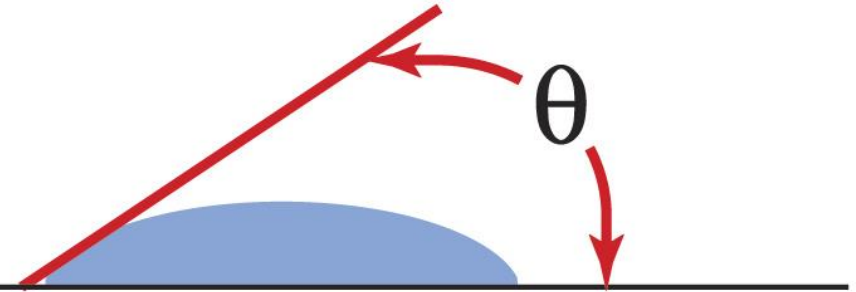
**Styrofoam**



# Surface Tension



- "non-wetable" surface
- water repellent surface
- hydrophobic surface
- water more attracted to itself than to surface
- surface energy of water greater than surface energy of surface
- water "beads up"
- "greasy" surface
- high contact angle " $\theta$ "



- "wetable" surface
- non-water repellent surface
- hygroscopic surface
- water more attracted to surface than itself
- surface energy of surface greater than surface energy of water
- water "spreads out"
- "non-greasy" surface
- low contact angle " $\theta$ "

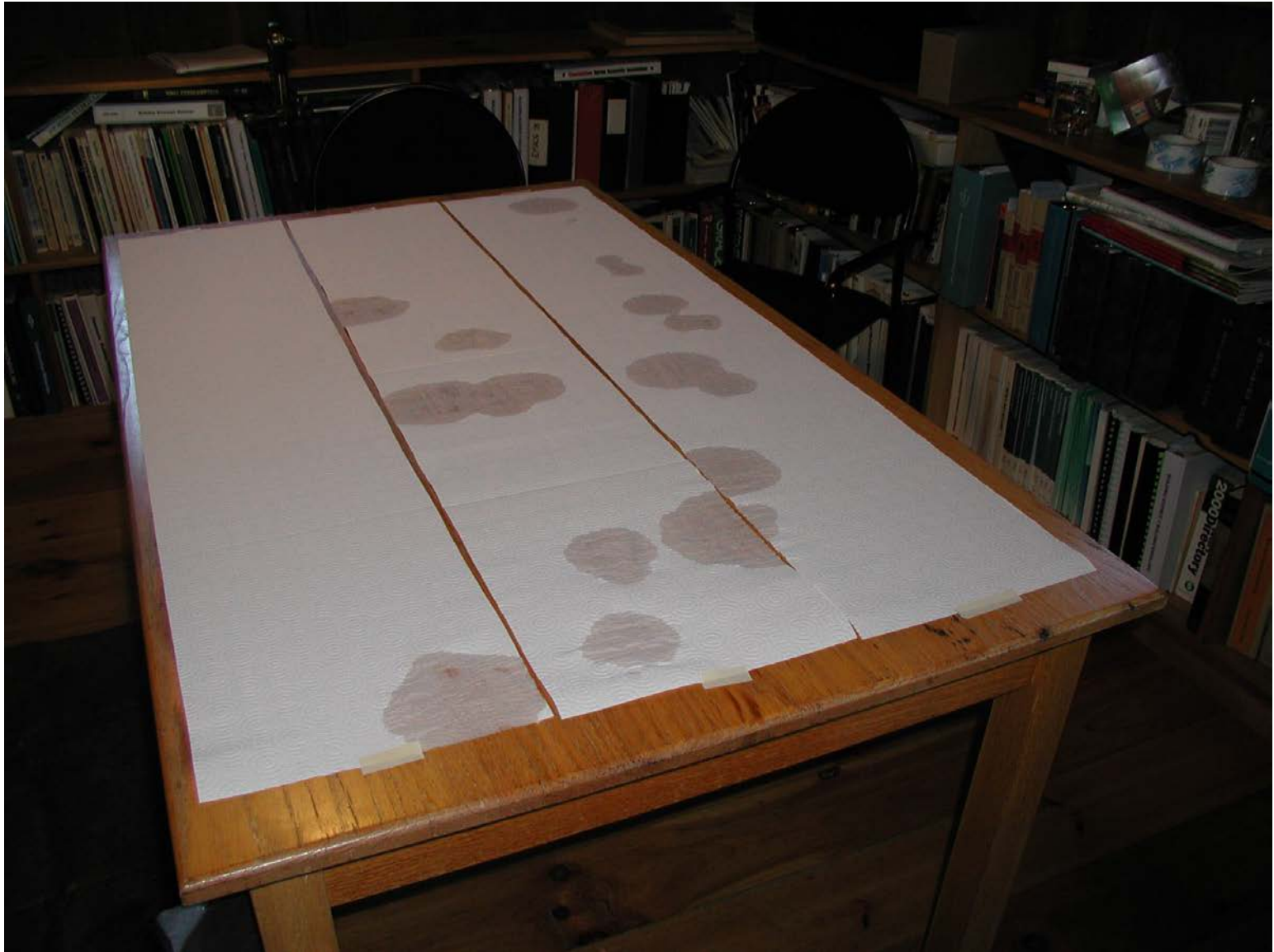


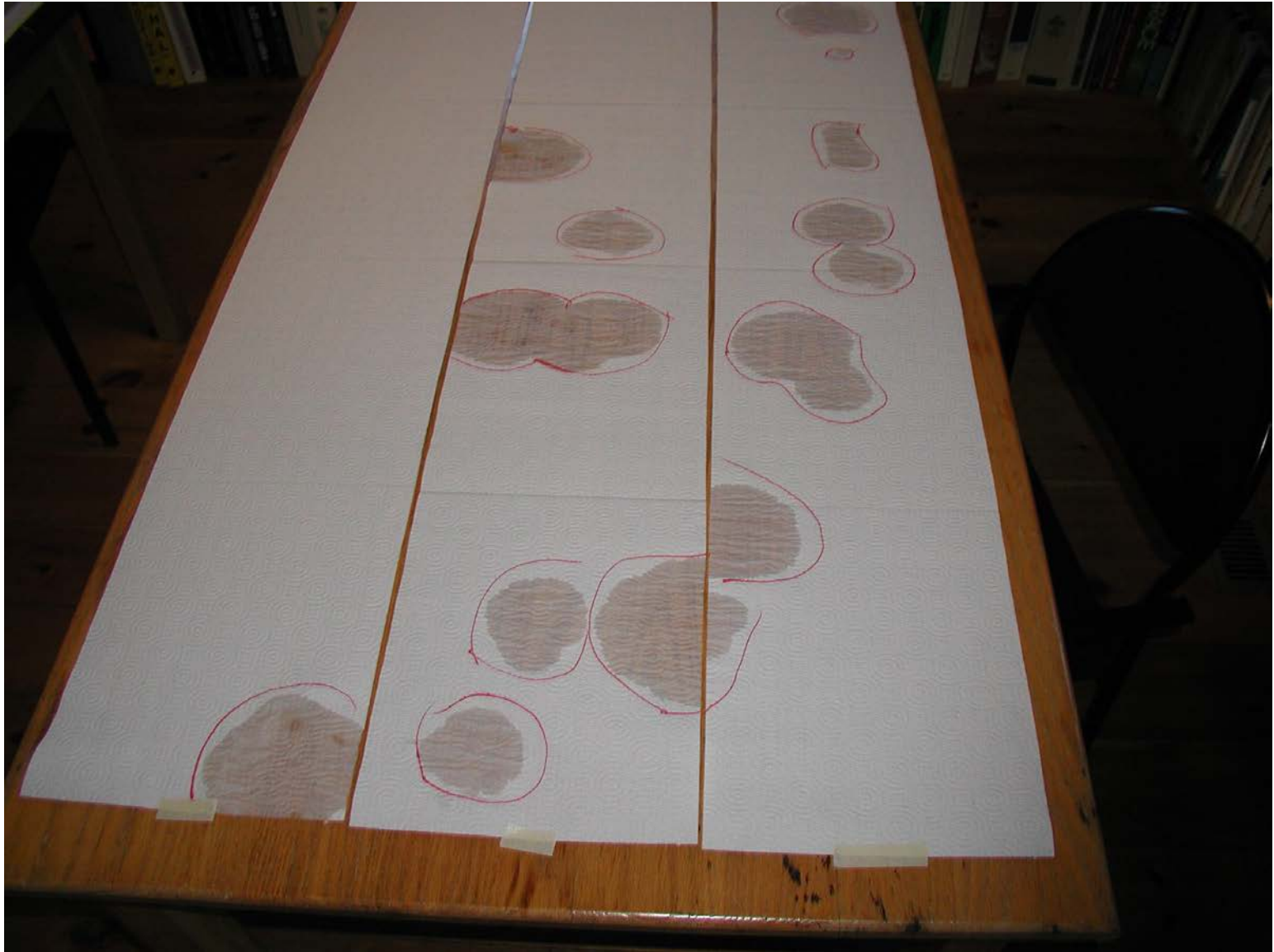








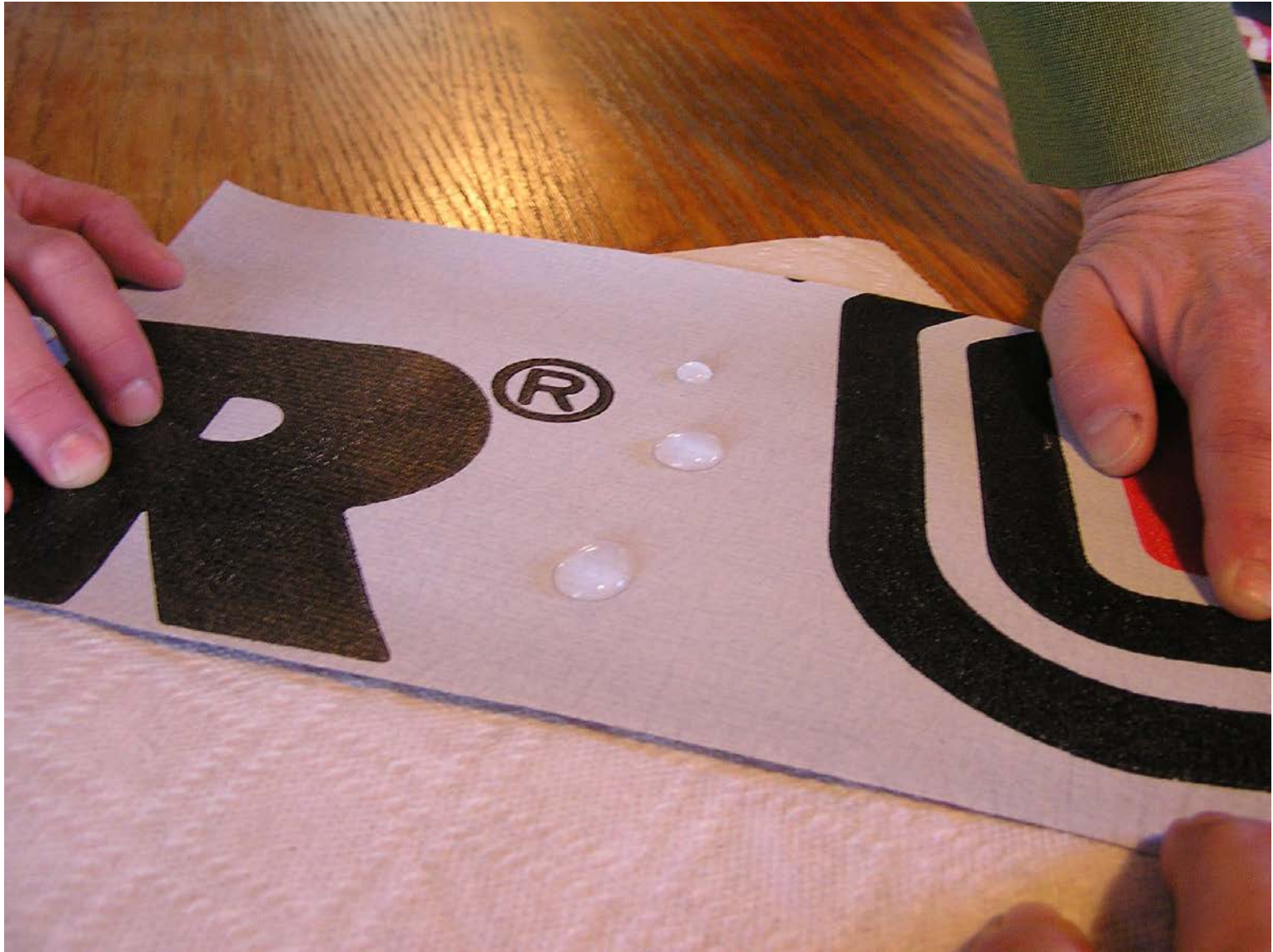




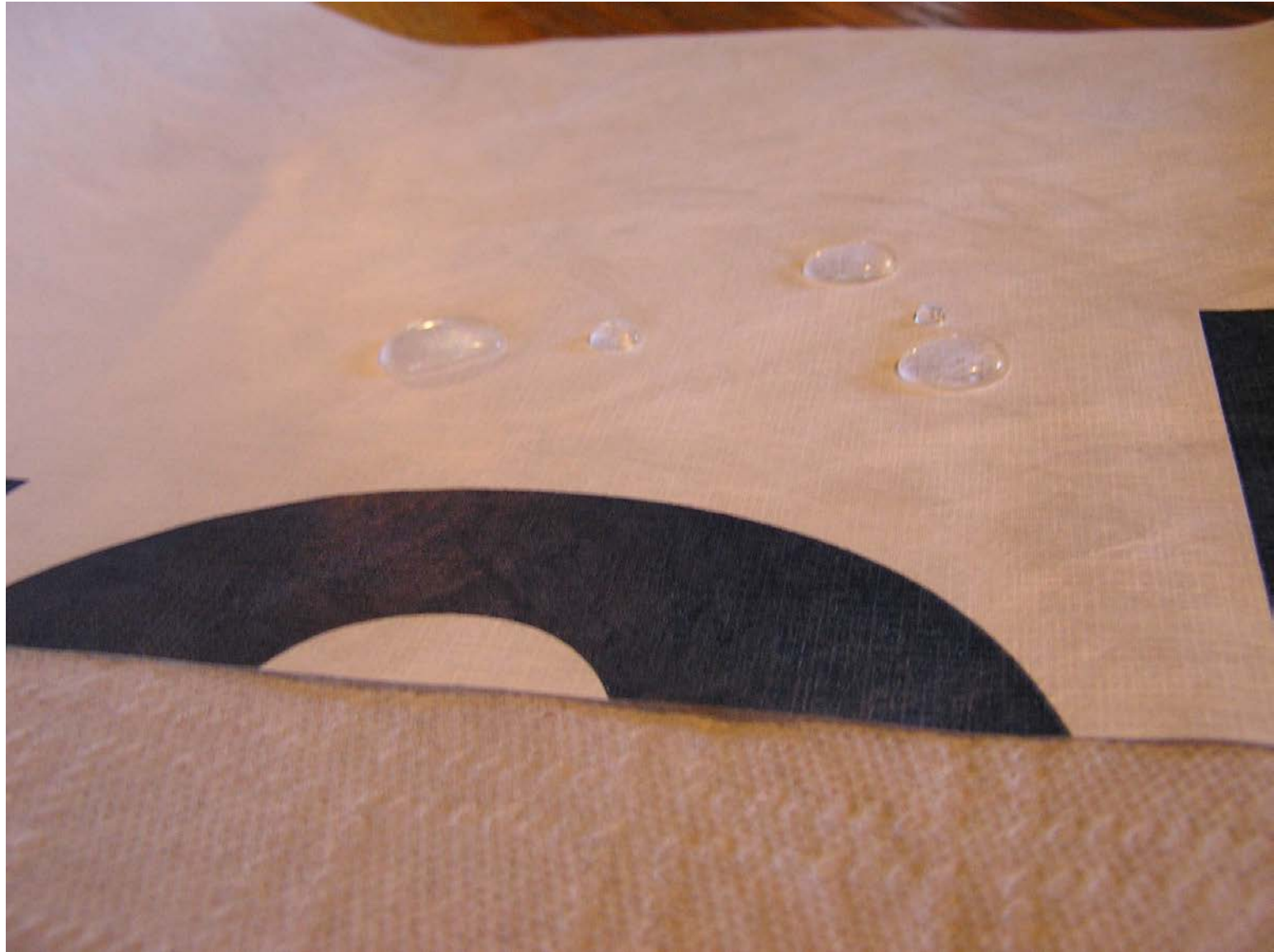


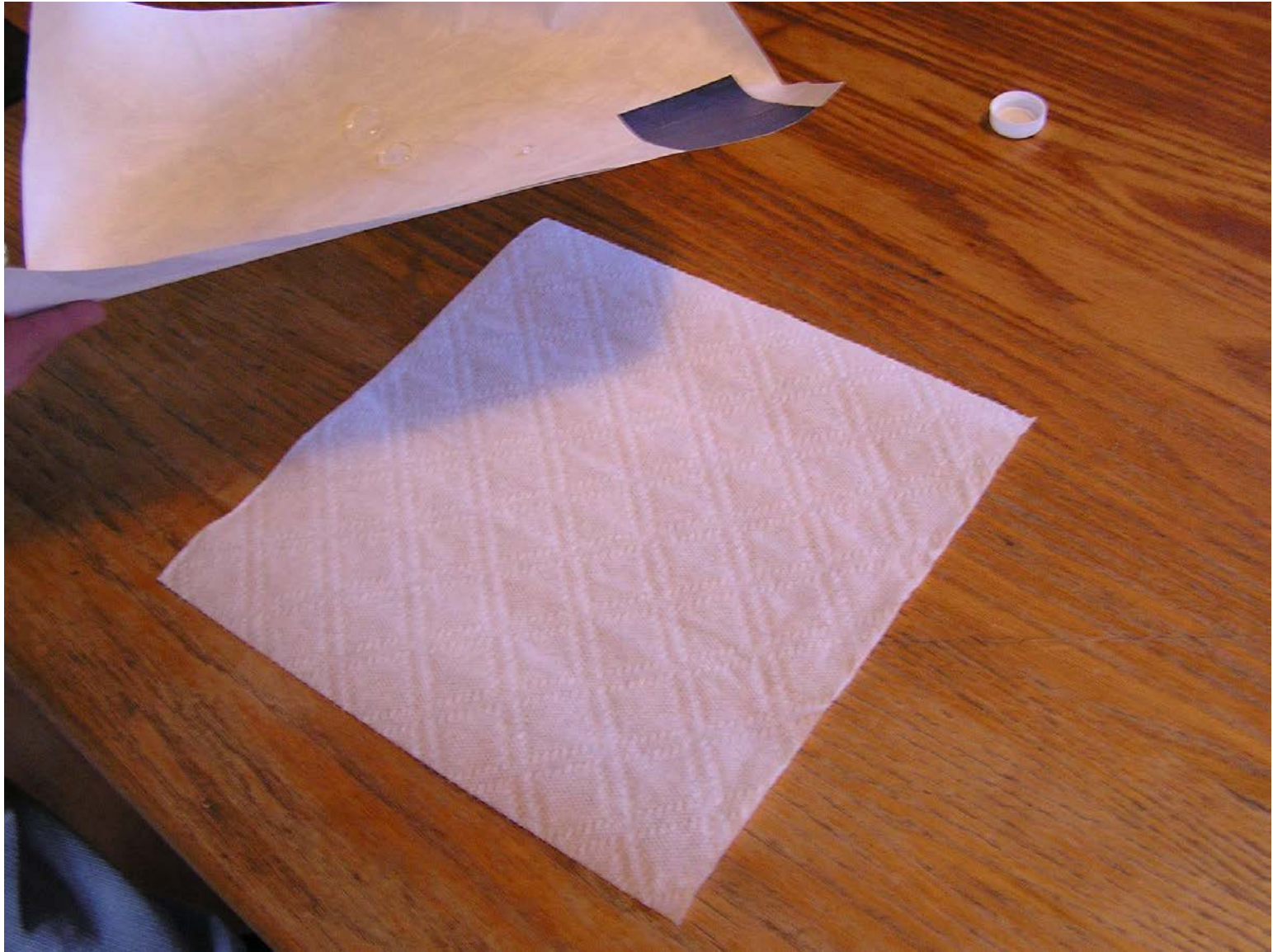








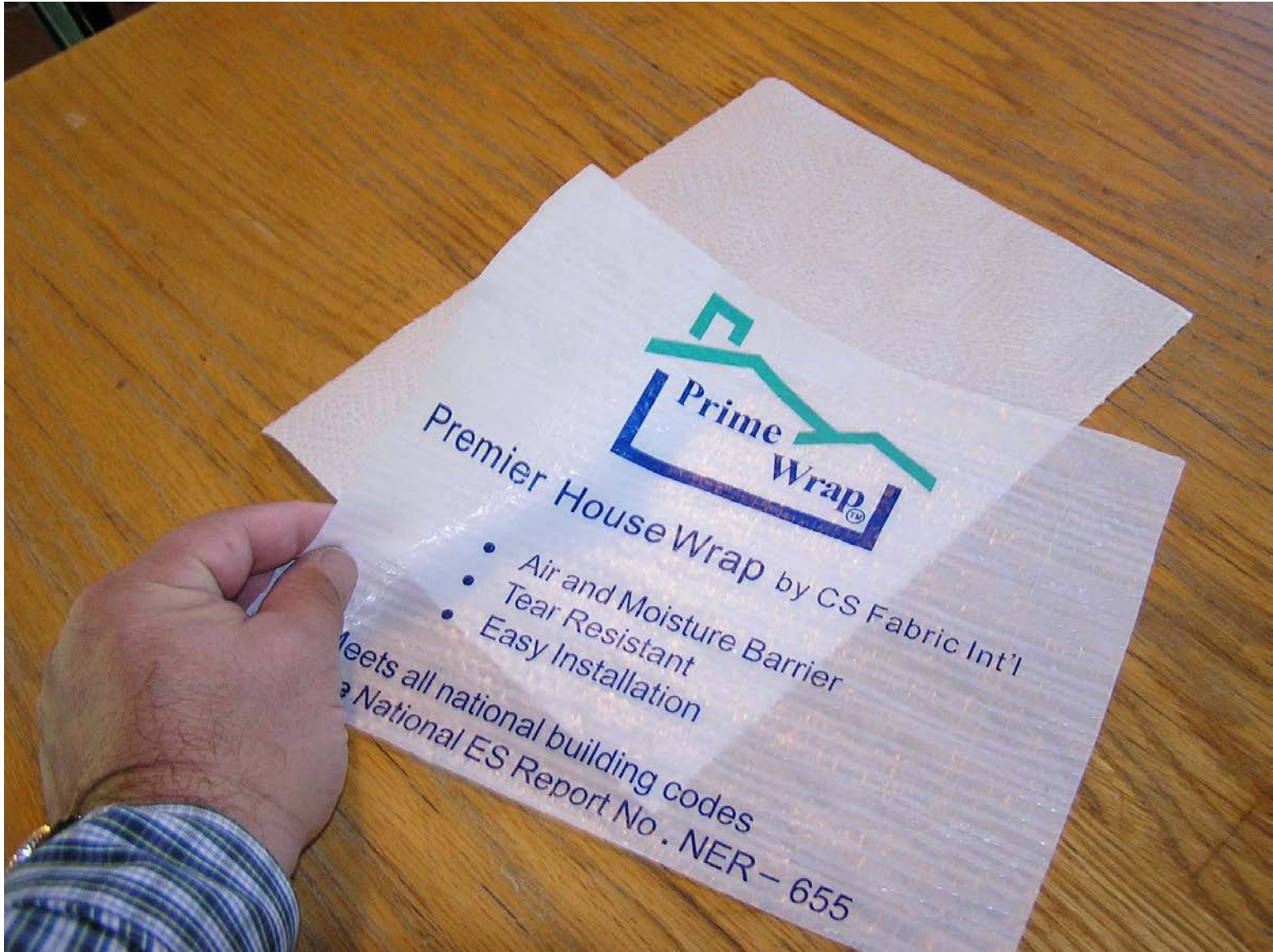












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Premier House Wrap by CS Fabric Int'l

- Air and Moisture Barrier
- Tear Resistant
- Easy Installation

Meets all national building codes  
National ES Report No. NER-655



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*Notice*



Fabric Int'l  
and Moisture Barrier  
Resistant

...ing codes  
Report No. NER - 655

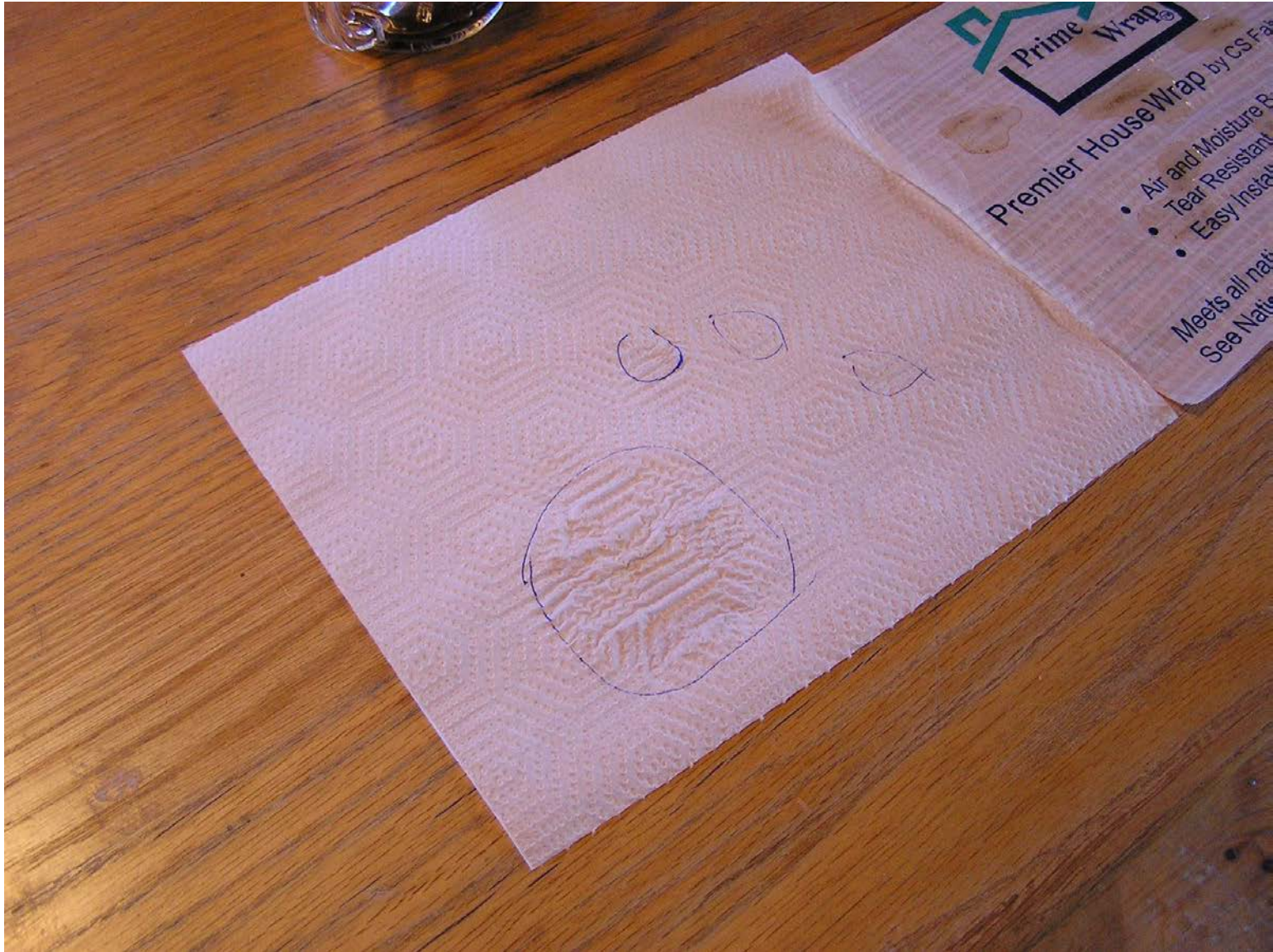




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