

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

# Building Science

---

## Towering Inferno

# Setting The Stage

Grenfell Tower

North Kensington, United Kingdom

June, 2017







# Focus is on Cladding

Focus is on Cladding  
Effective Compartmentalization  
Detection and Alarm Systems  
Sprinkler Systems  
Egress





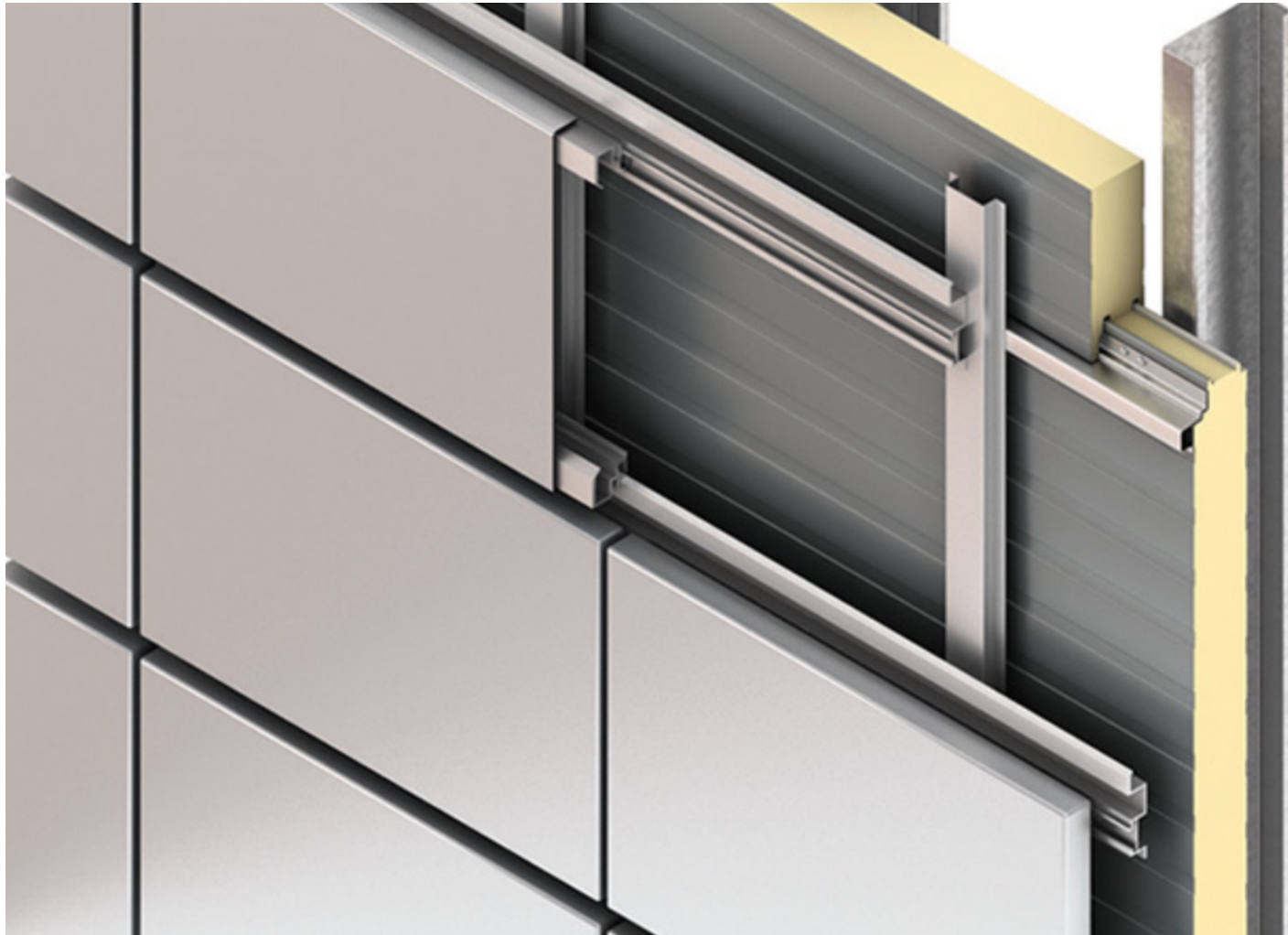


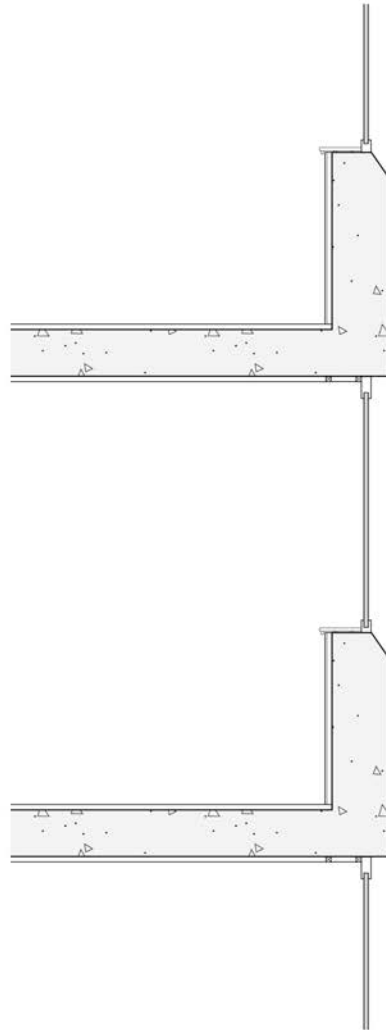




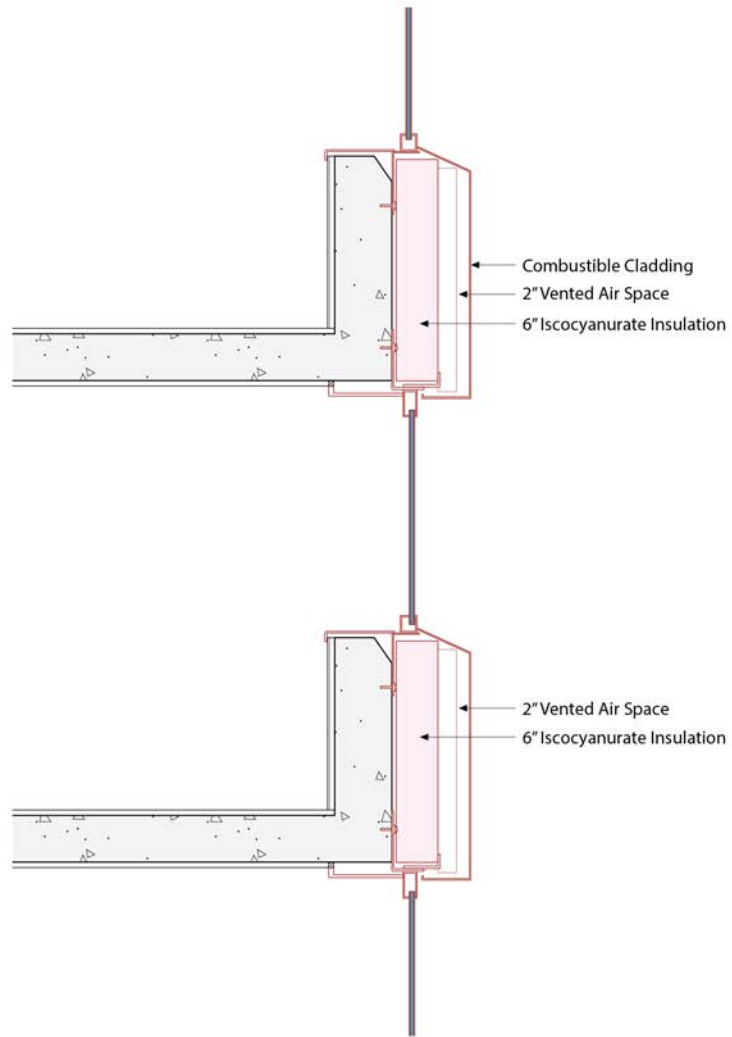


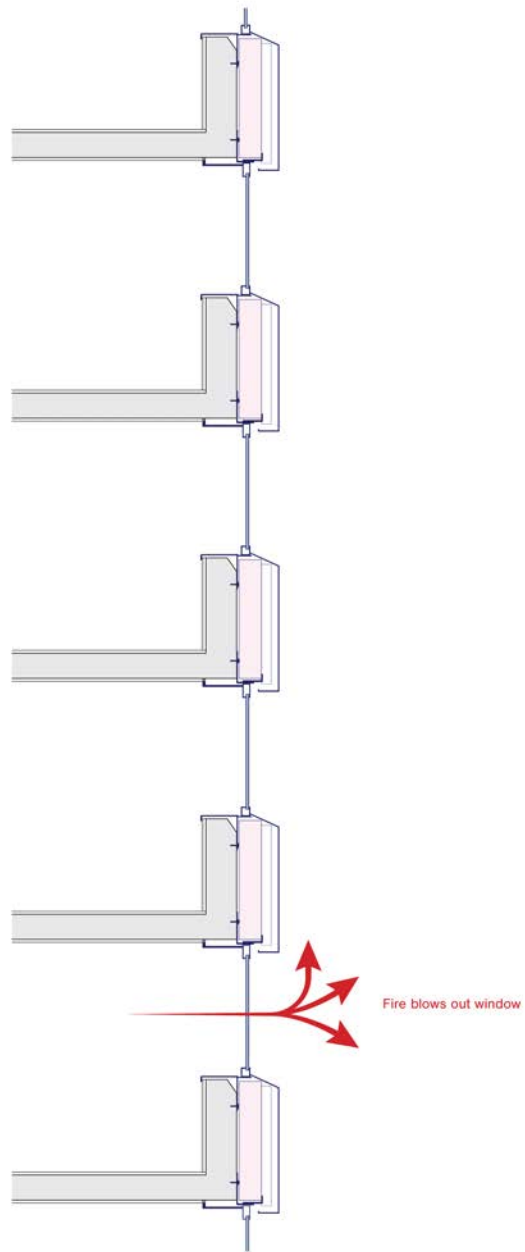


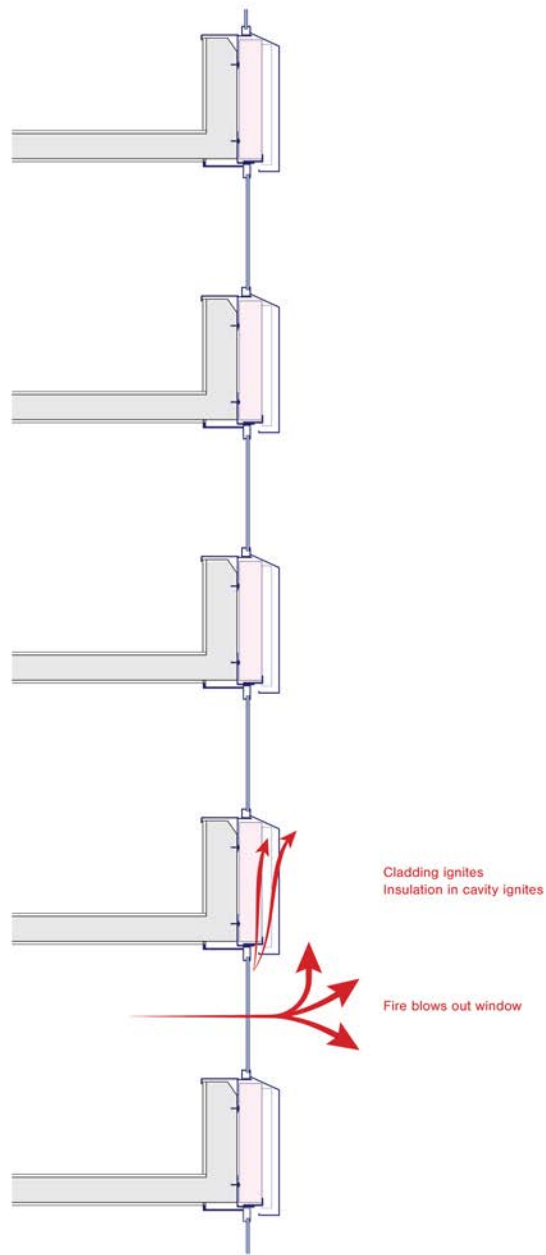


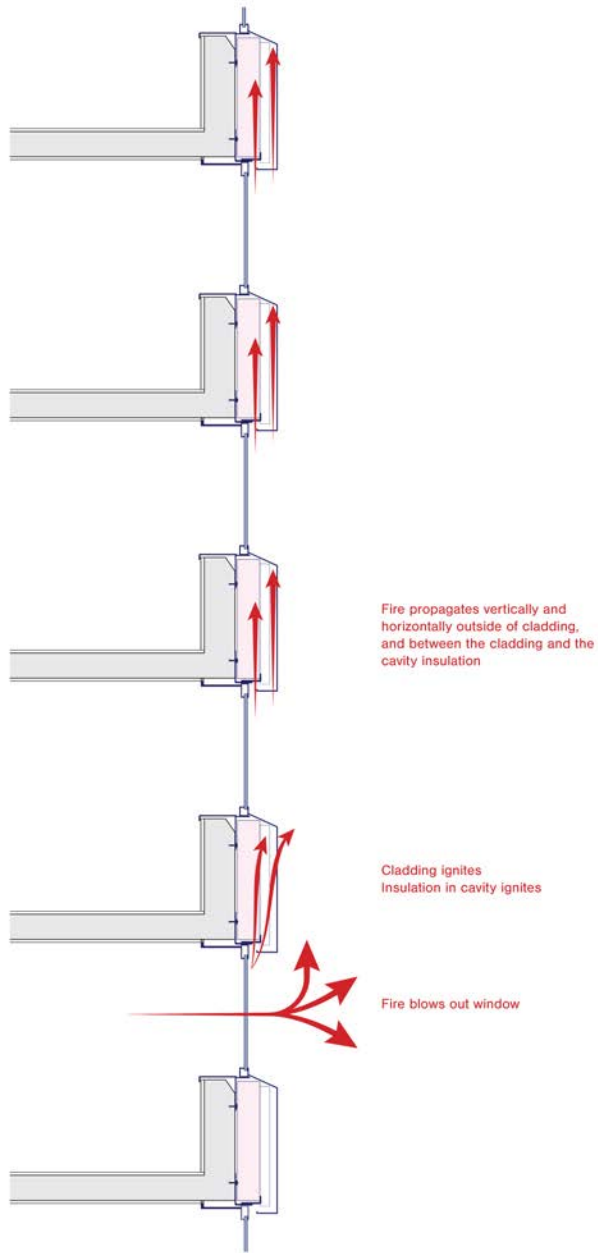


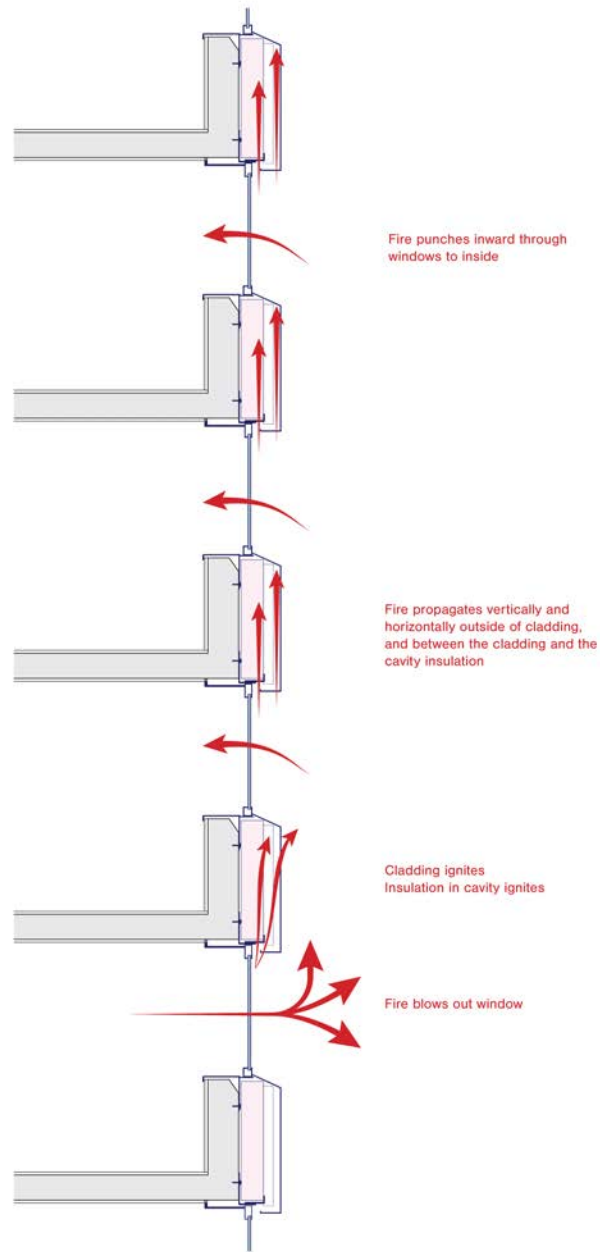












Dubai Address Hotel

Dubai, United Arab Emirates

January, 2015







# Mermoz Roubaix, France

## May 2012



- <https://www.youtube.com/watch?v=KHZfLDxYBuU>

Tamweel Tower

Dubai, United Arab Emirates

November, 2012





Al Nahda Tower

Sharjah, United Arab Emirates

April, 2012





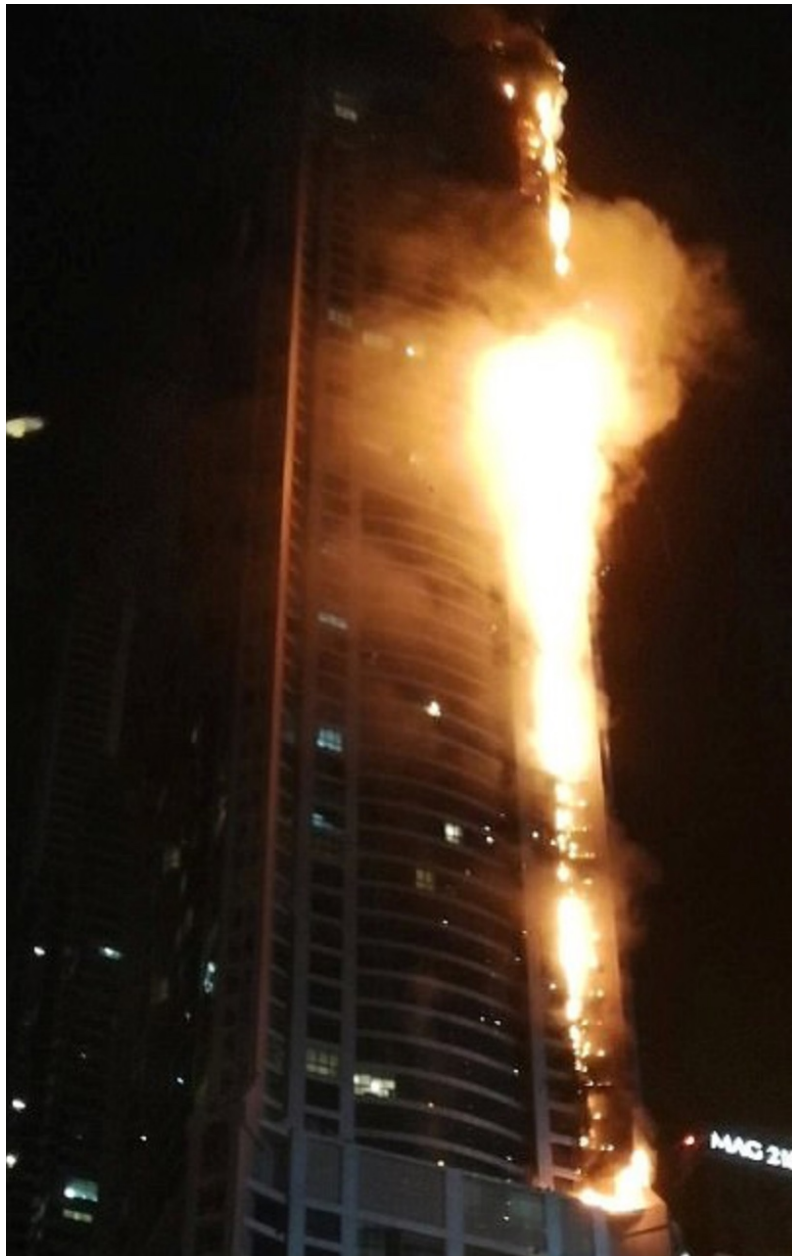


Polat Tower  
Istanbul, Turkey  
July, 2012





Dubai Torch Tower  
Dubai, United Arab Emirates  
August, 2017





Thorn House Hotel

Rostov-on-Don, Grozny, Chechnya

September, 2017







Marco Polo Apartments  
Honolulu, Hawaii  
July, 2017





Trump Tower  
New York, New York  
April, 2018









Monte Carlo Casino  
Las Vegas, NV  
January, 2008







# The English Fix



# Cladding Attachment





# Hooker Chemical Building Niagara Falls, New York





John E. Jaqua Academic Center  
University of Oregon,  
Eugene, Oregon



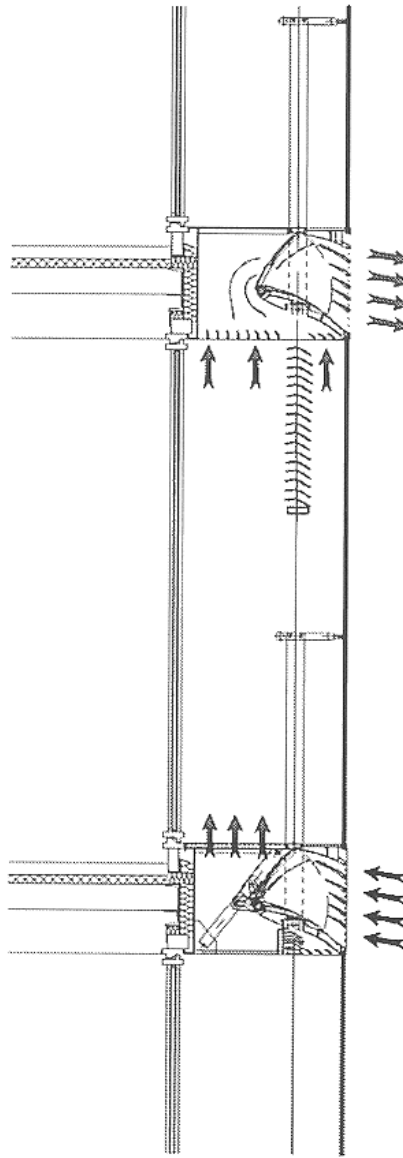


# Stattdor Building Dusseldorf, Germany









# Where I Grew Up









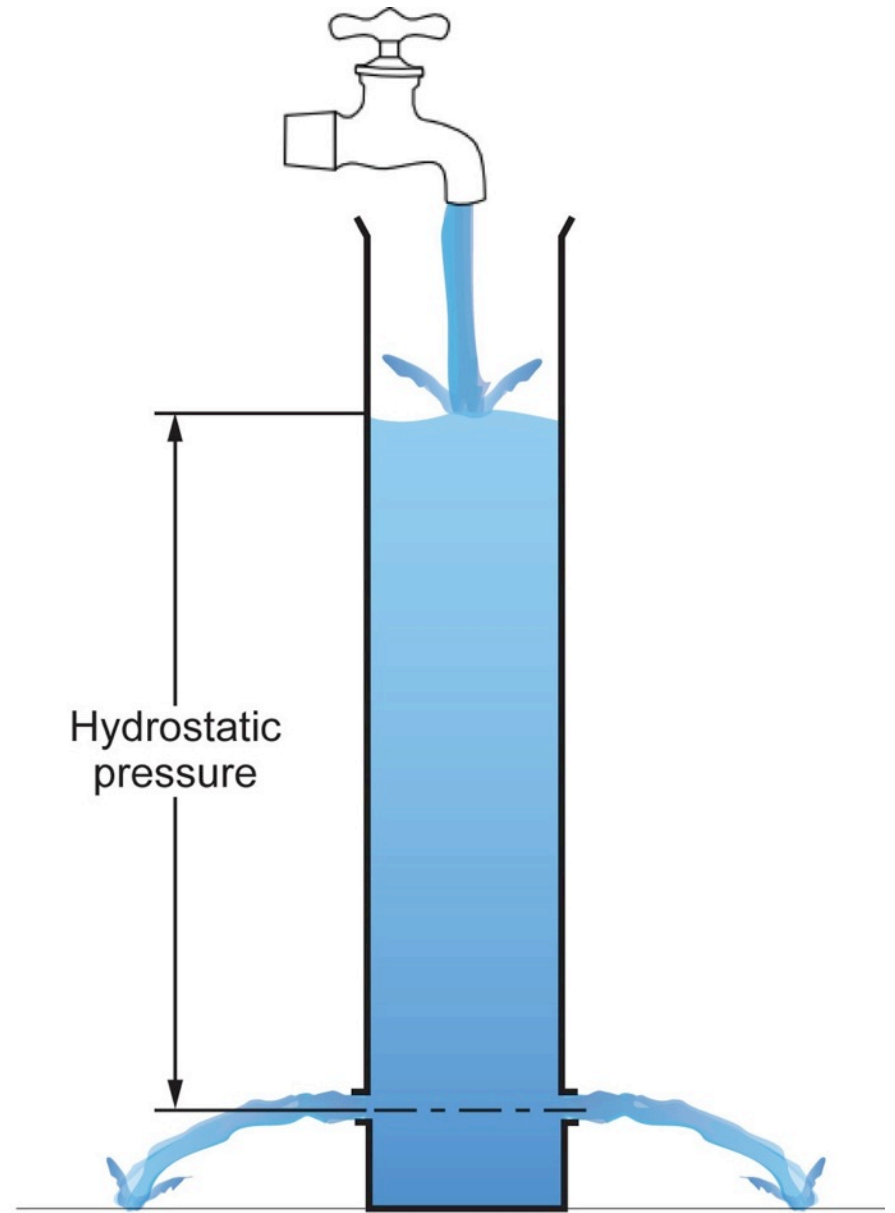
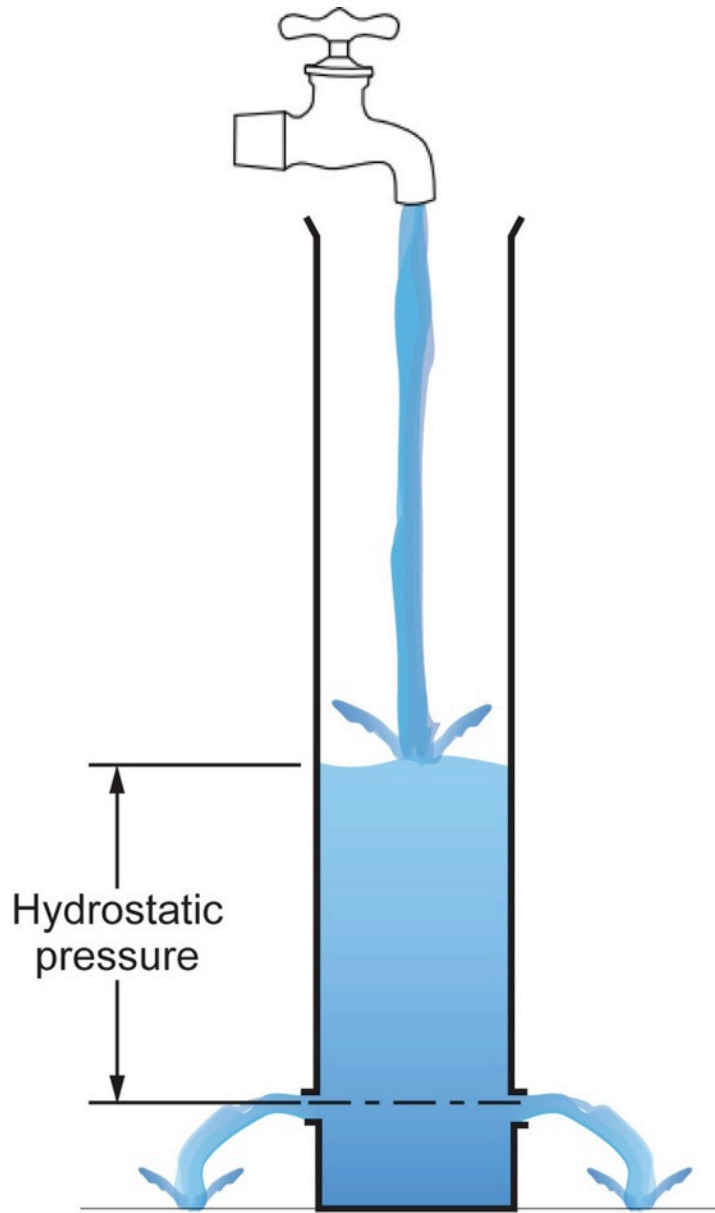




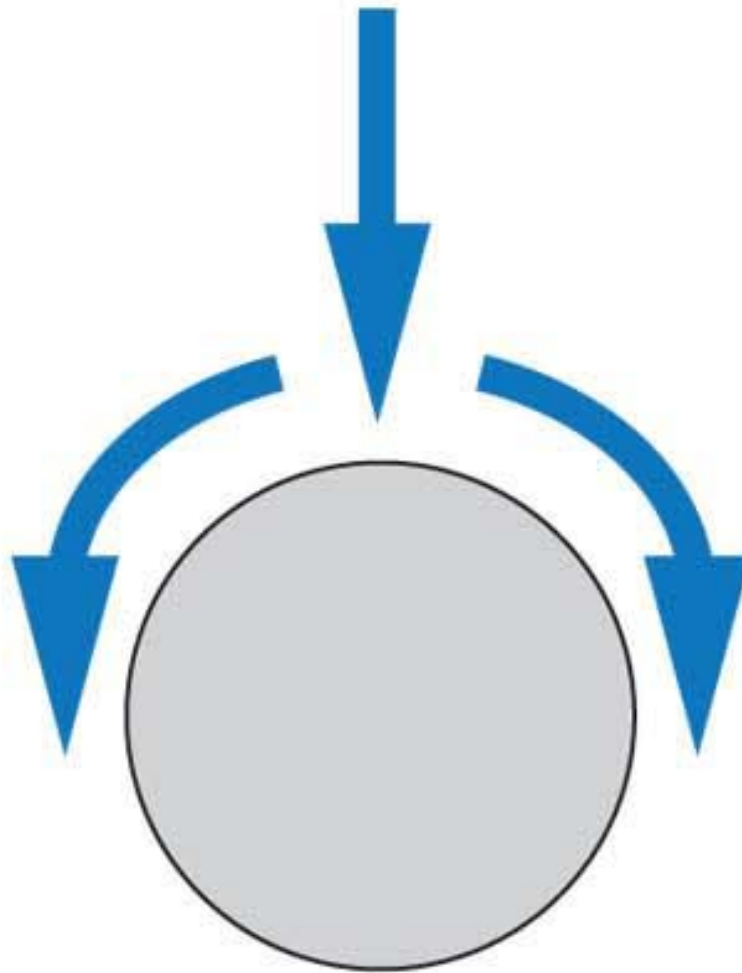


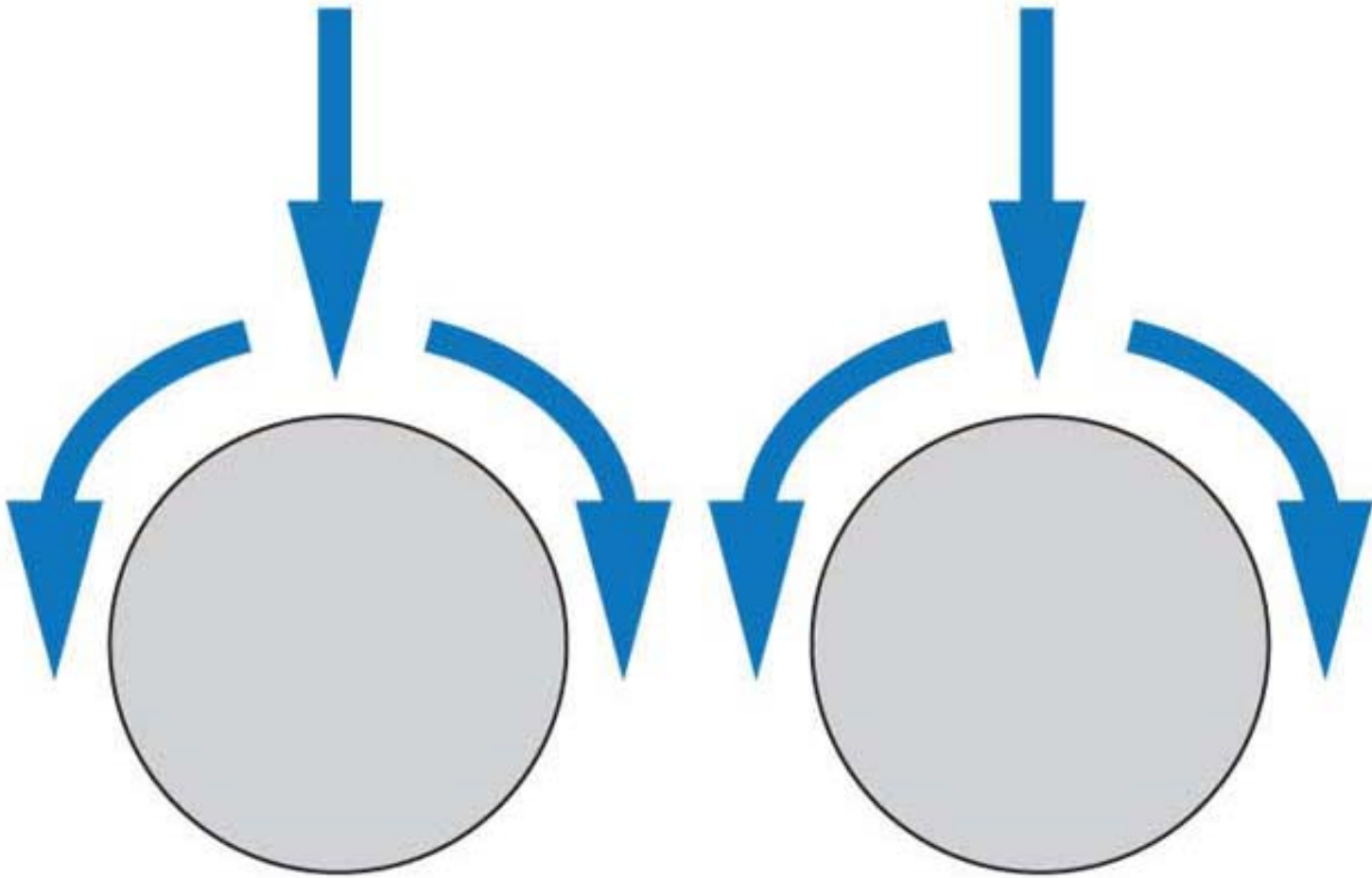
# Rain



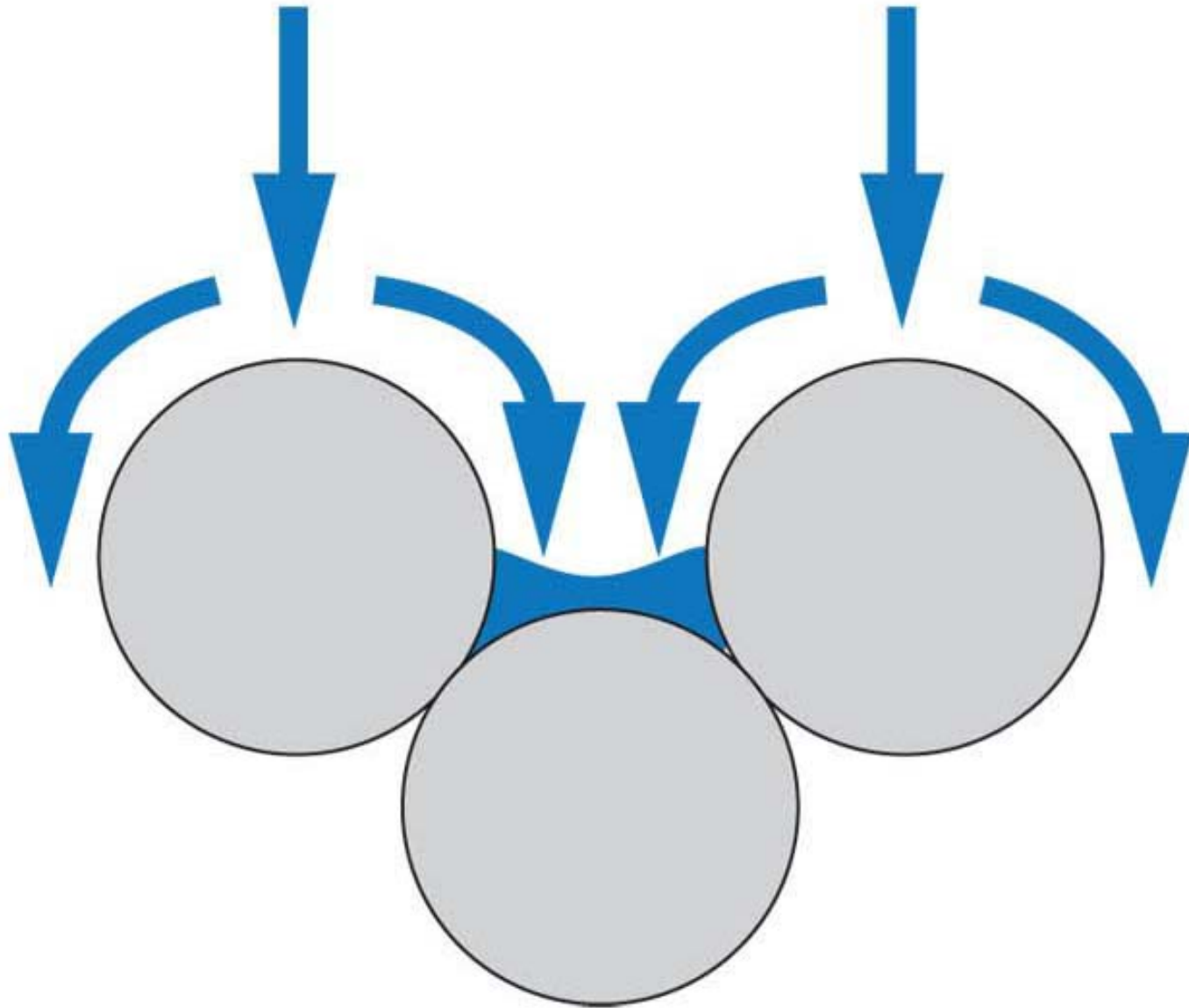


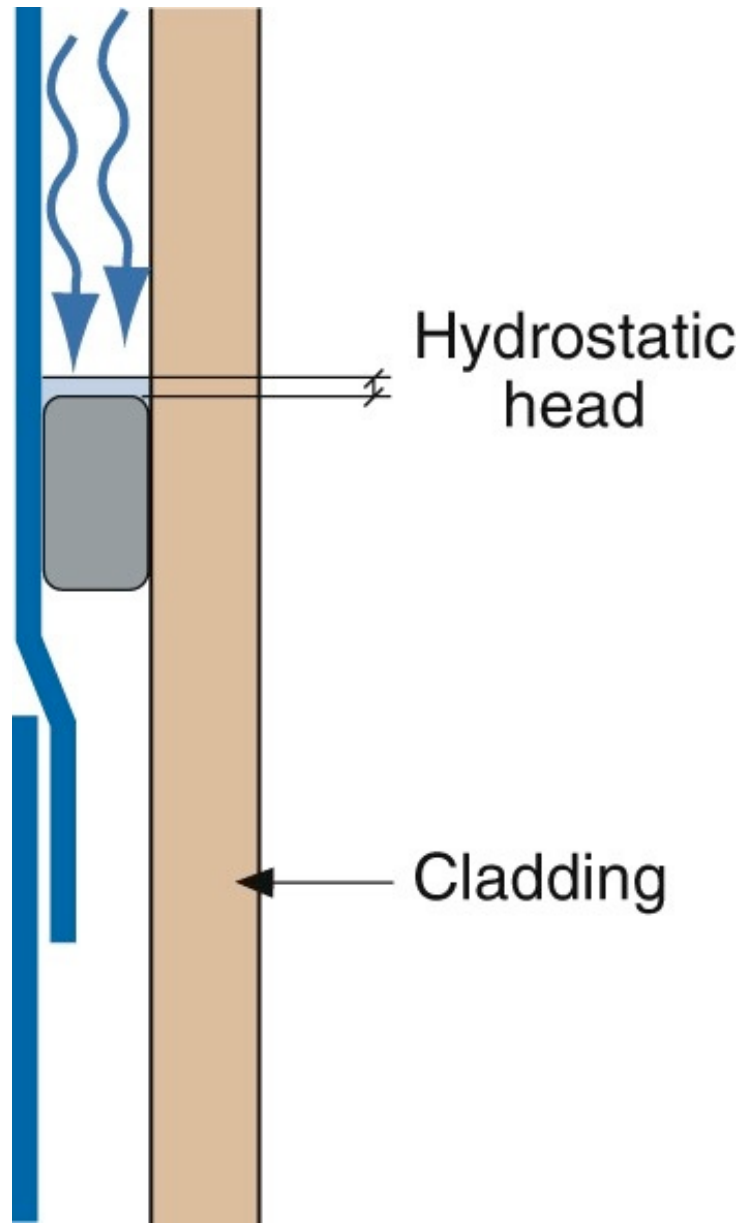


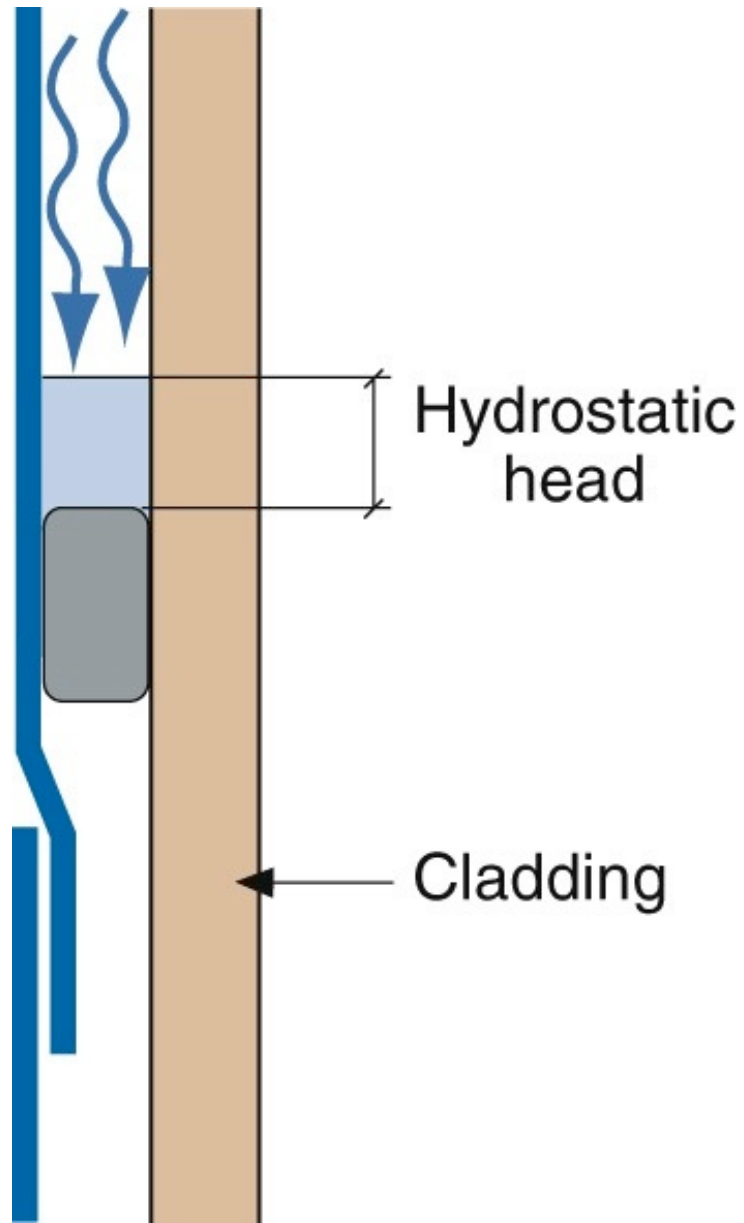


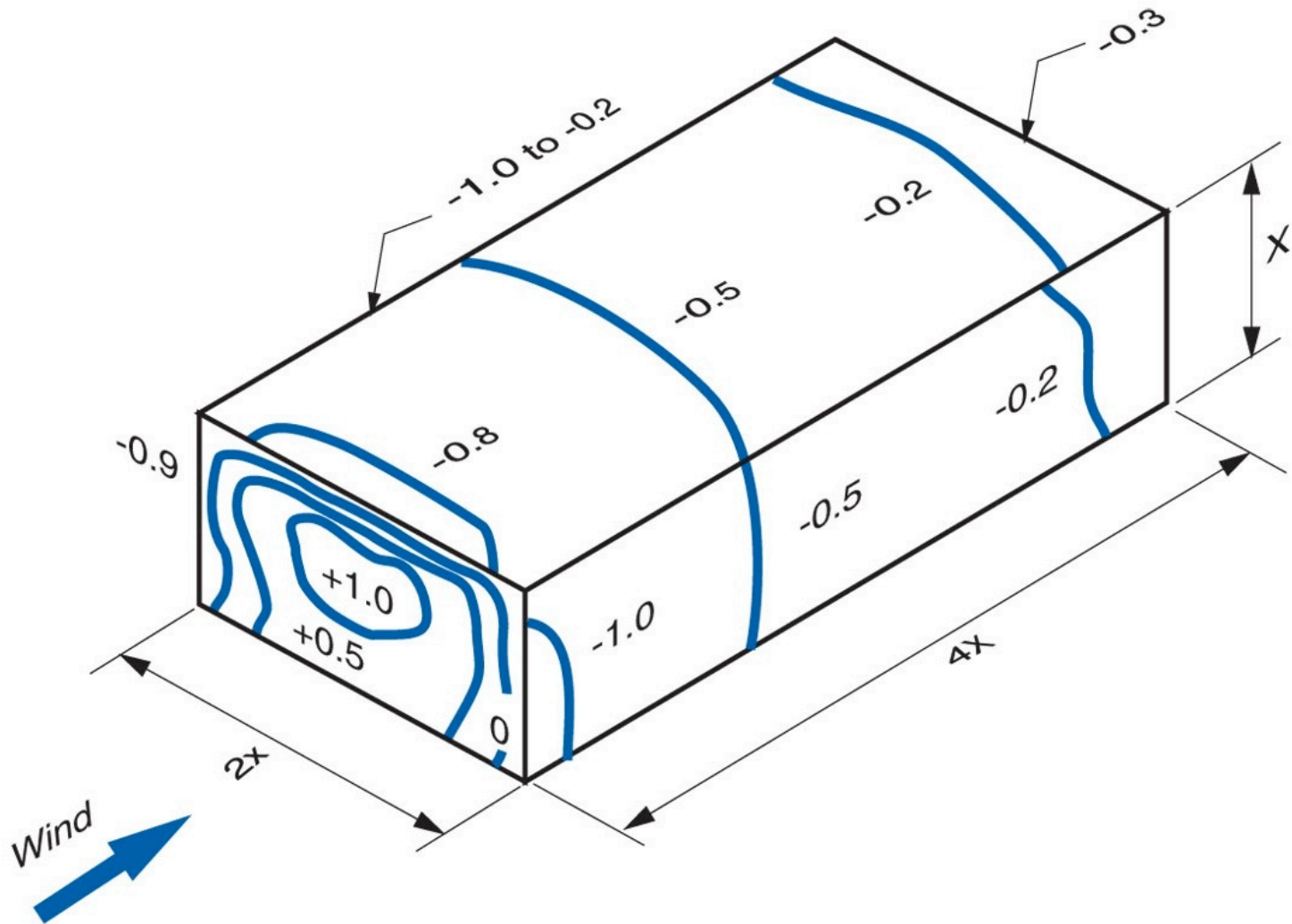




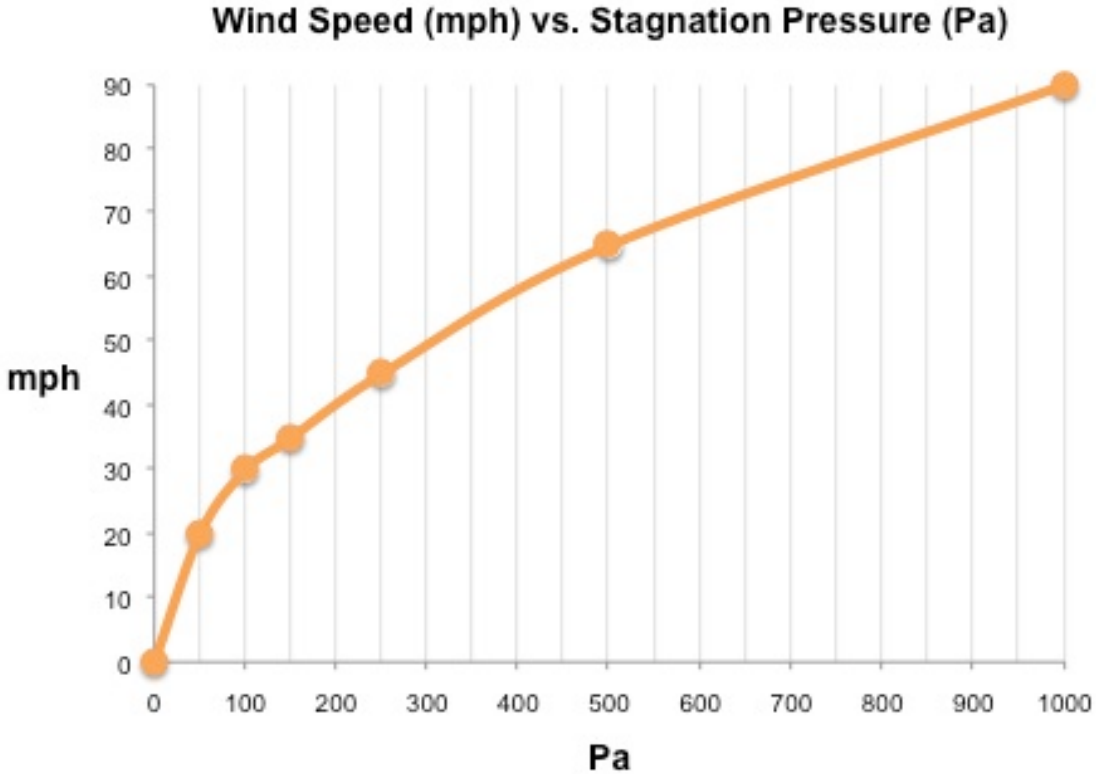




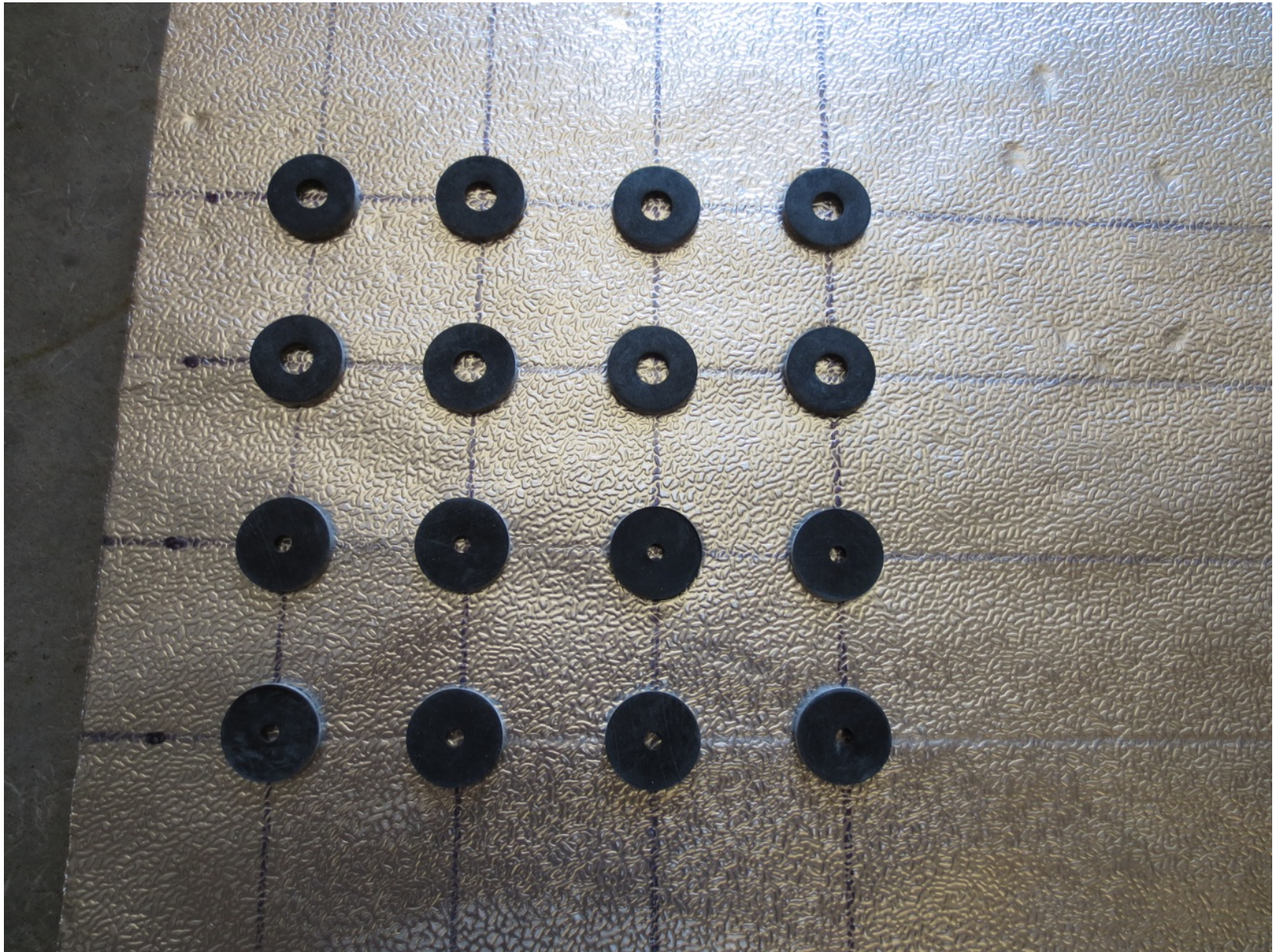




Pascals	mph
50	Pa = 20 mph
100	Pa = 30 mph
150	Pa = 35 mph
250	Pa = 45 mph
500	Pa = 65 mph
1,000	Pa = 90 mph



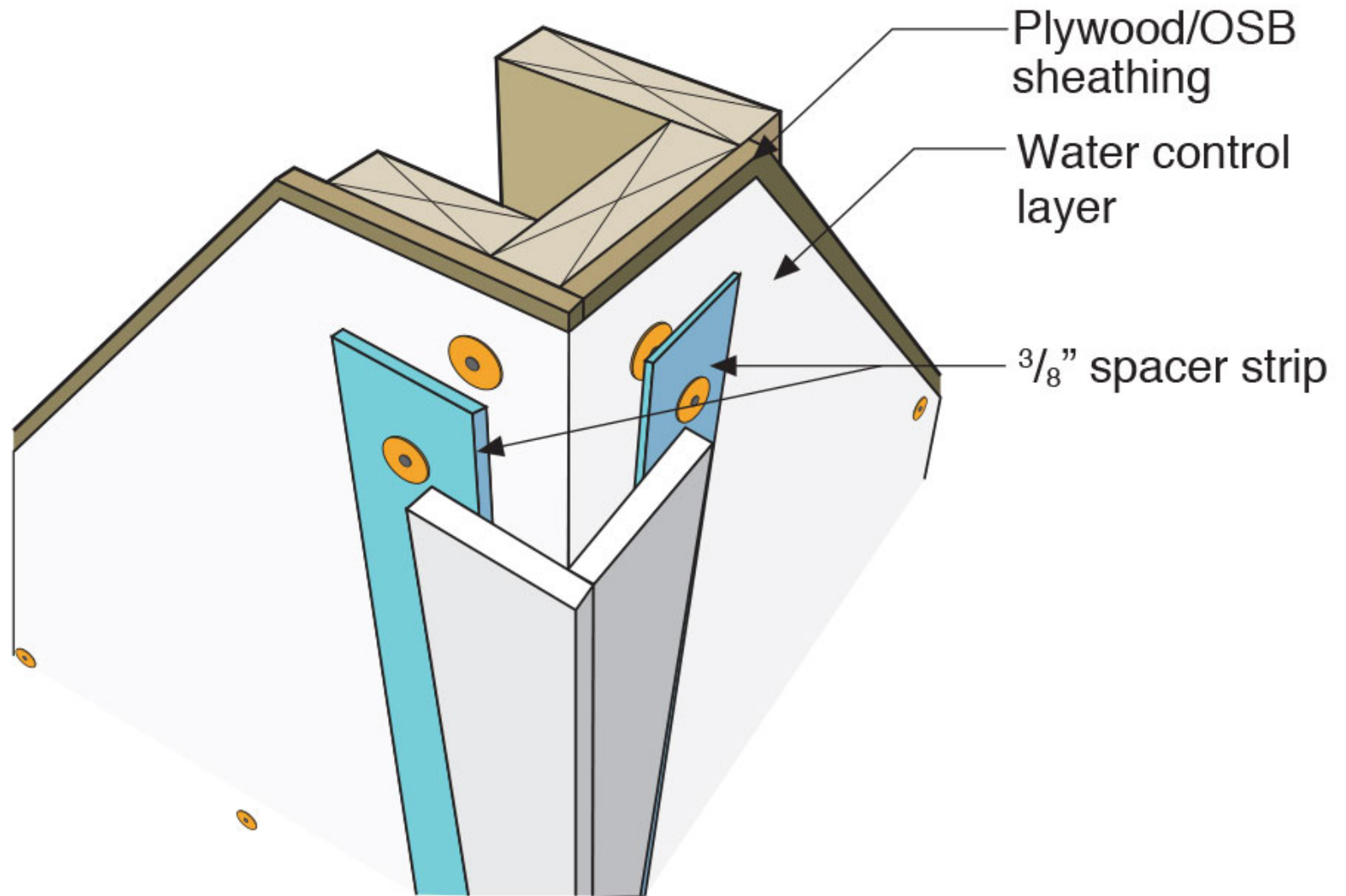
# Rain Screen





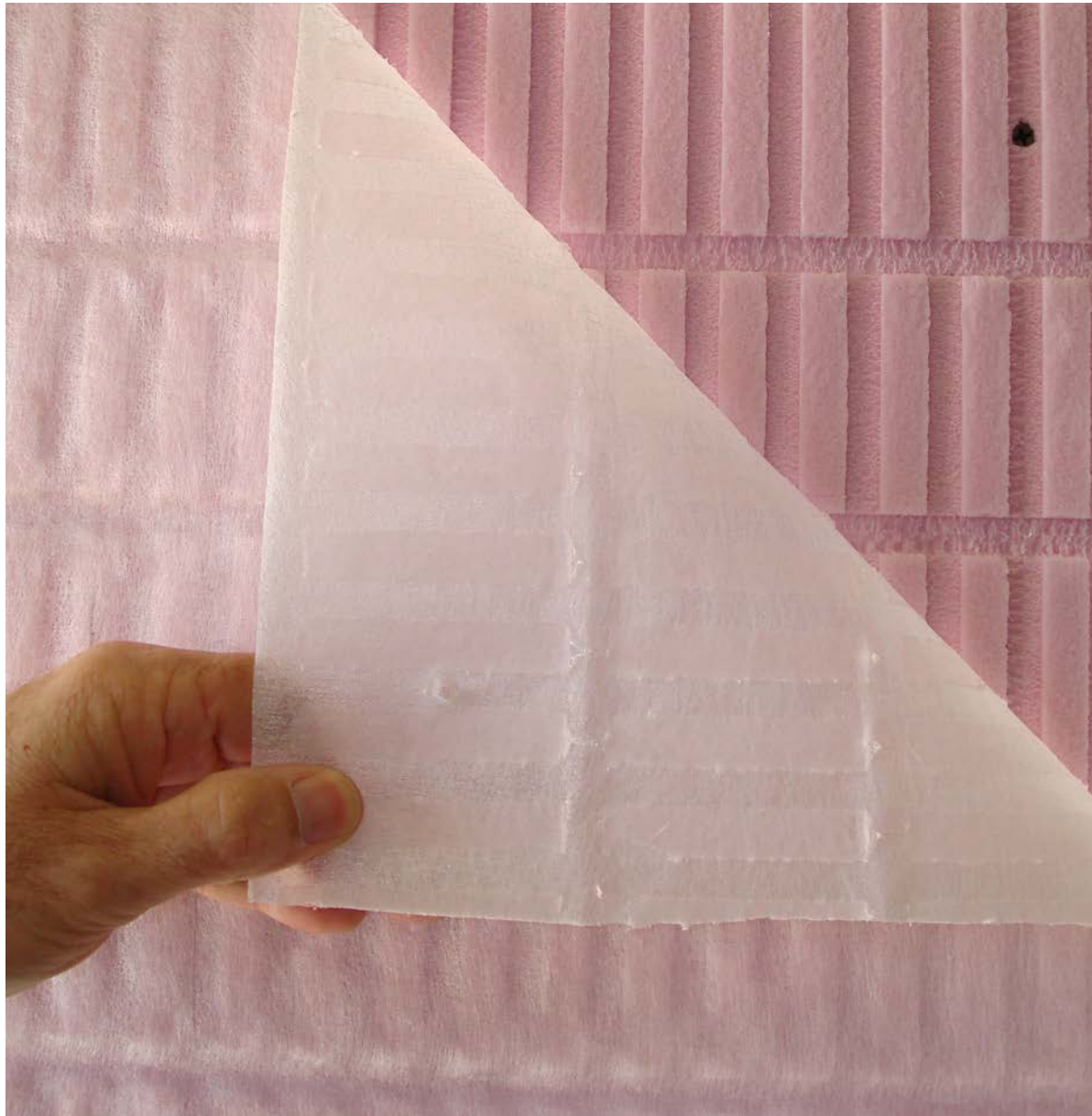


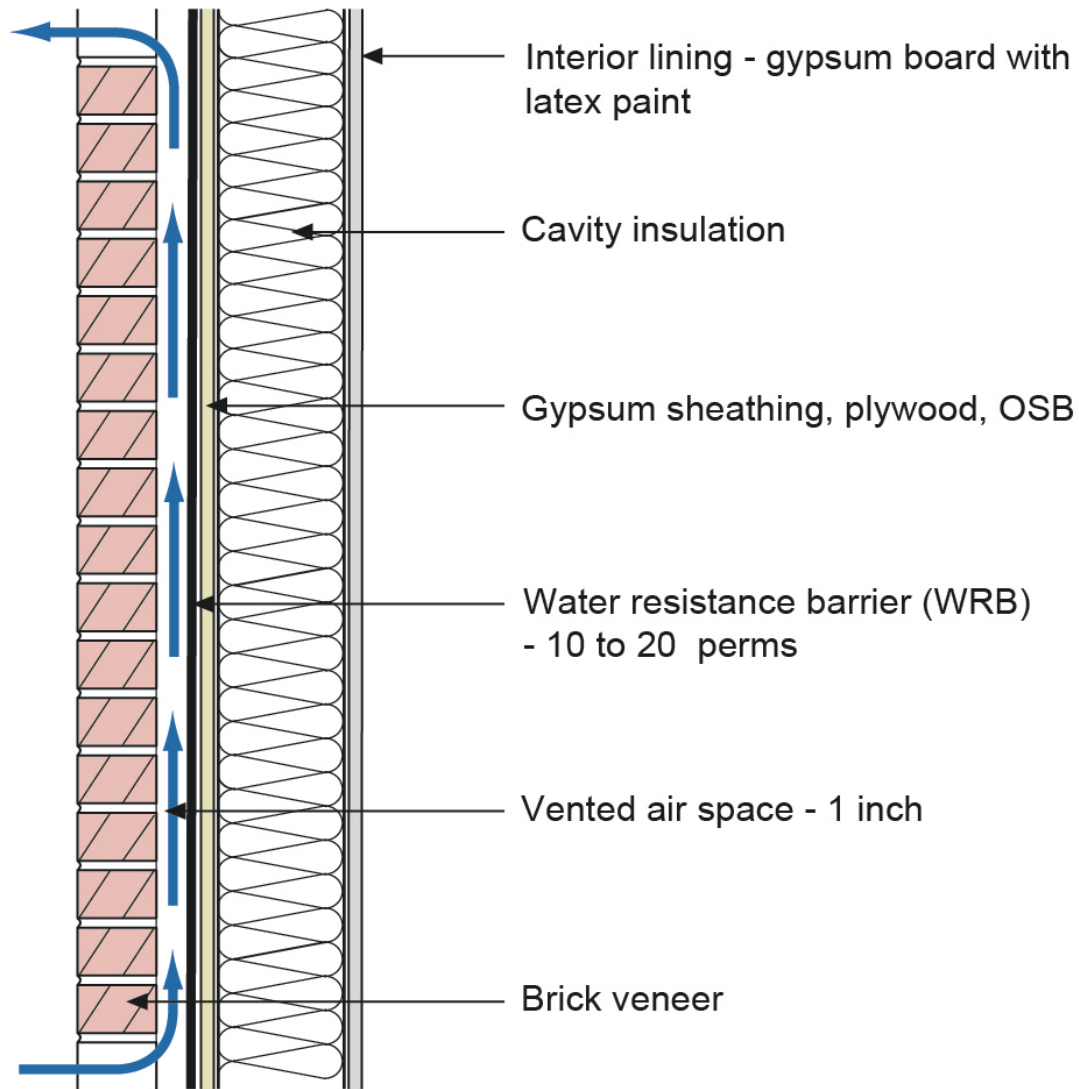


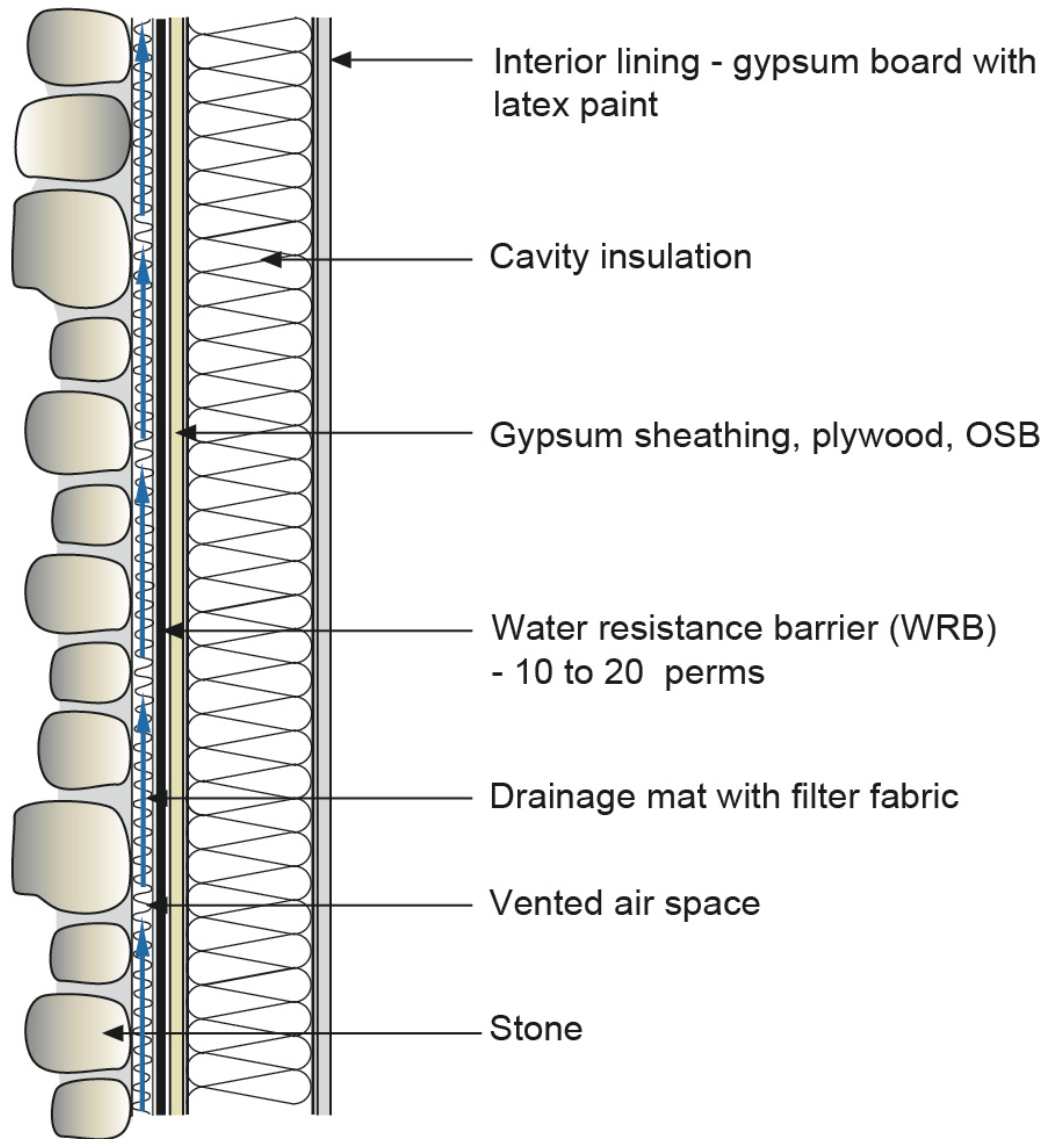


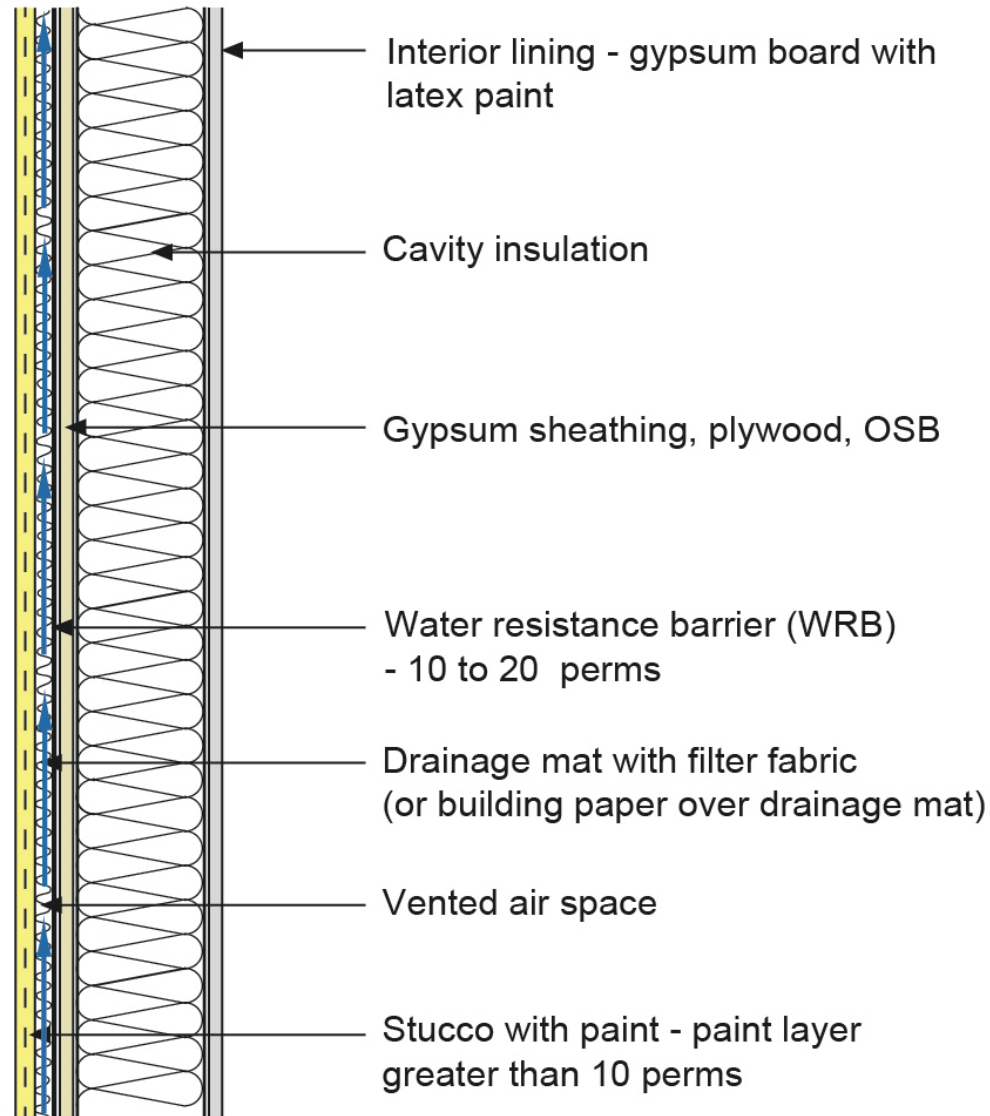




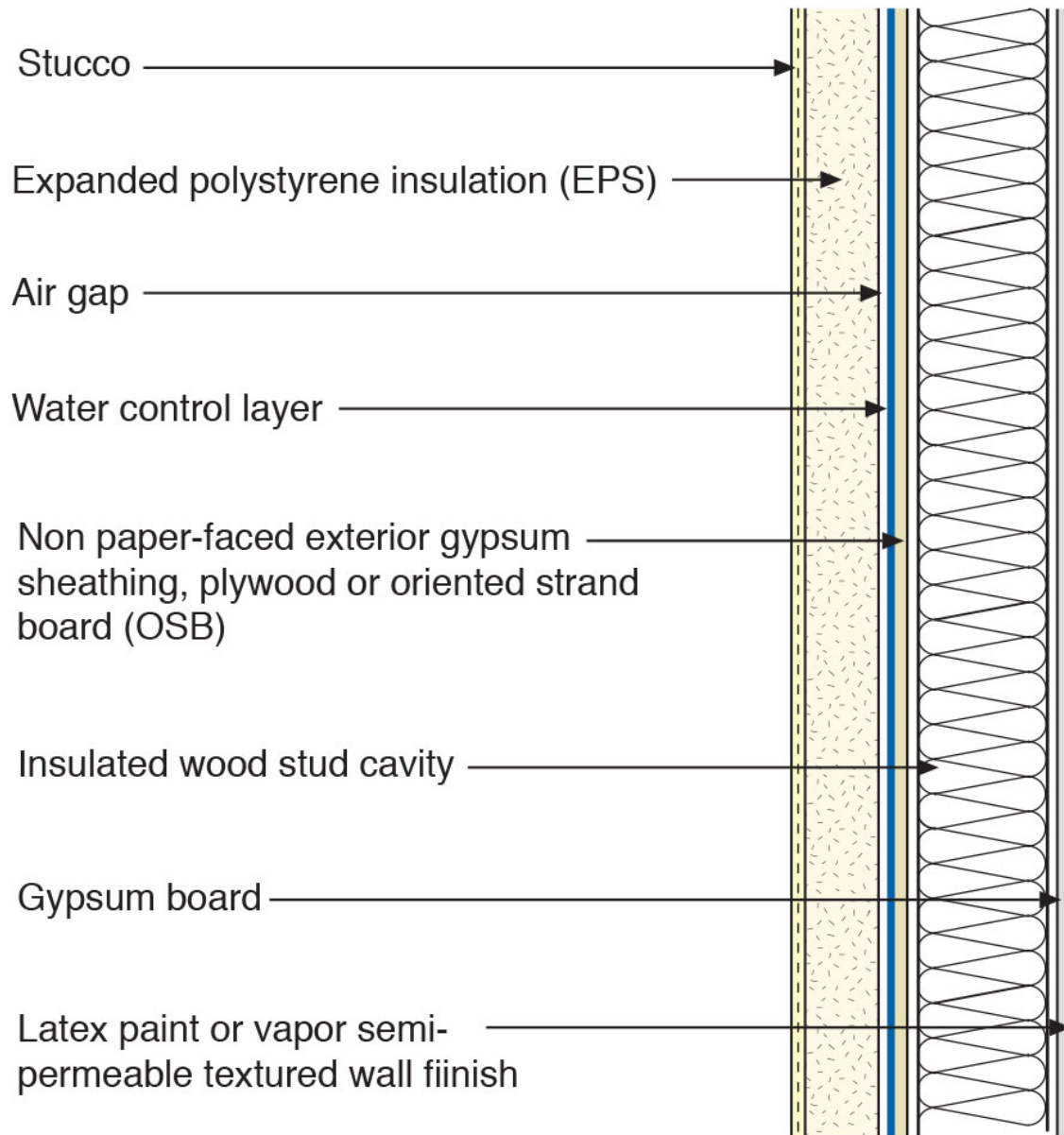




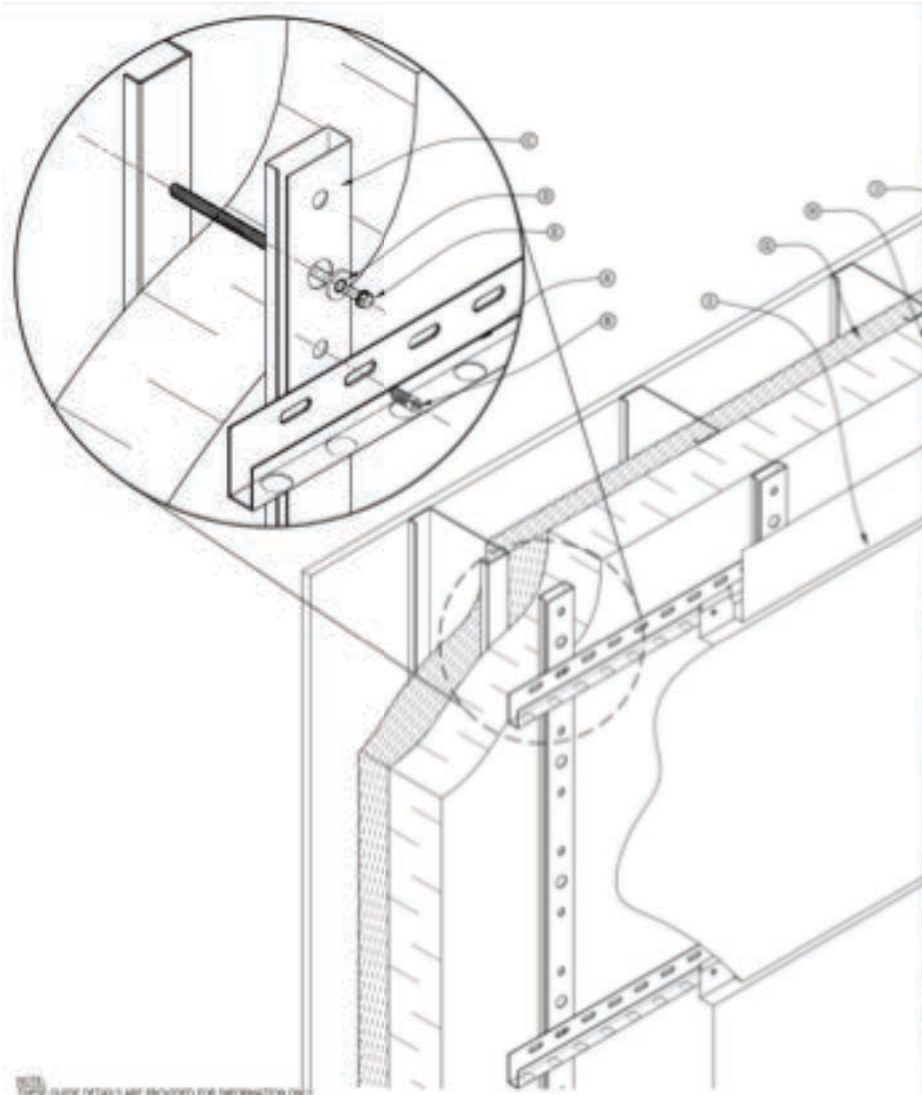


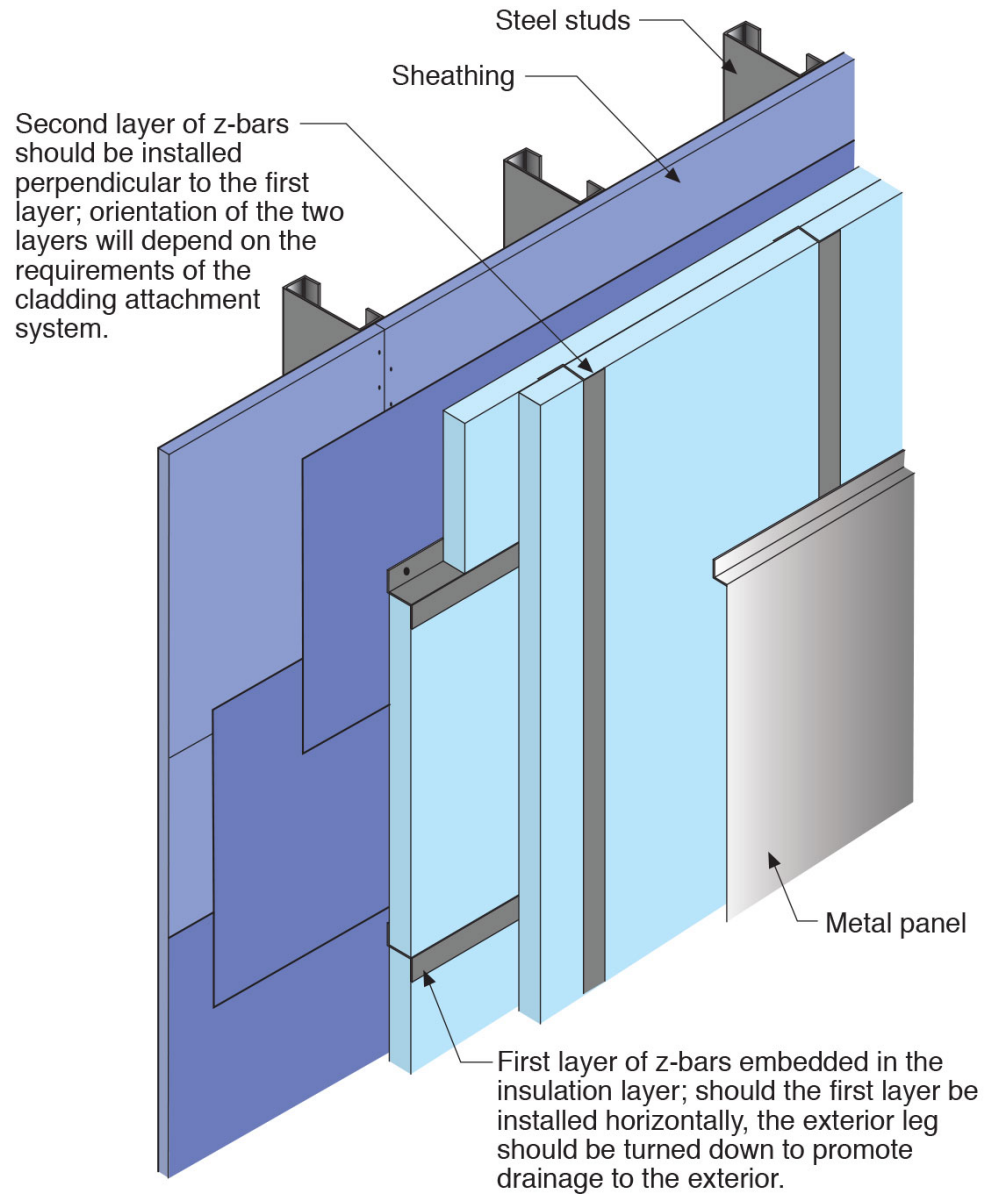


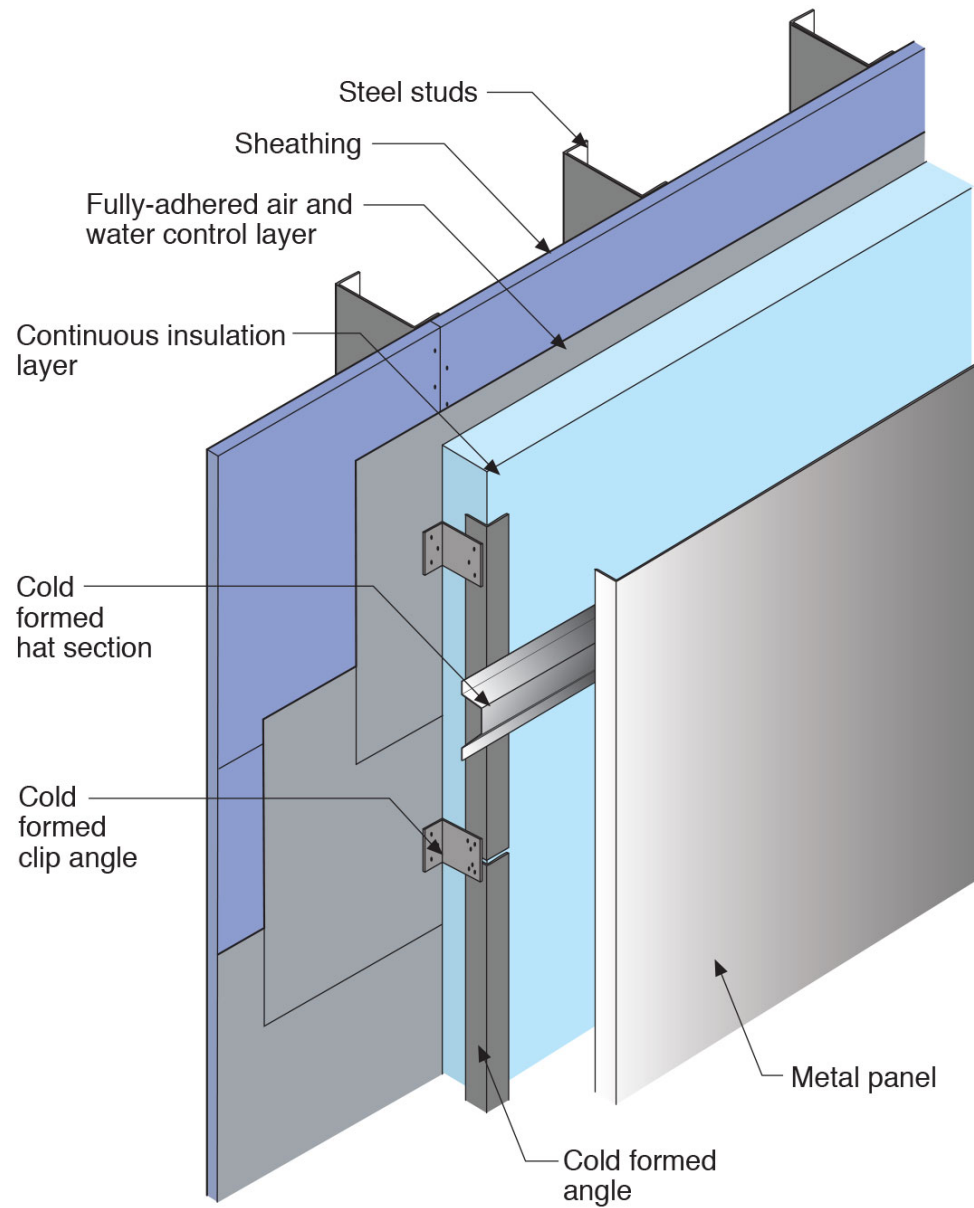




# Cladding Attachment

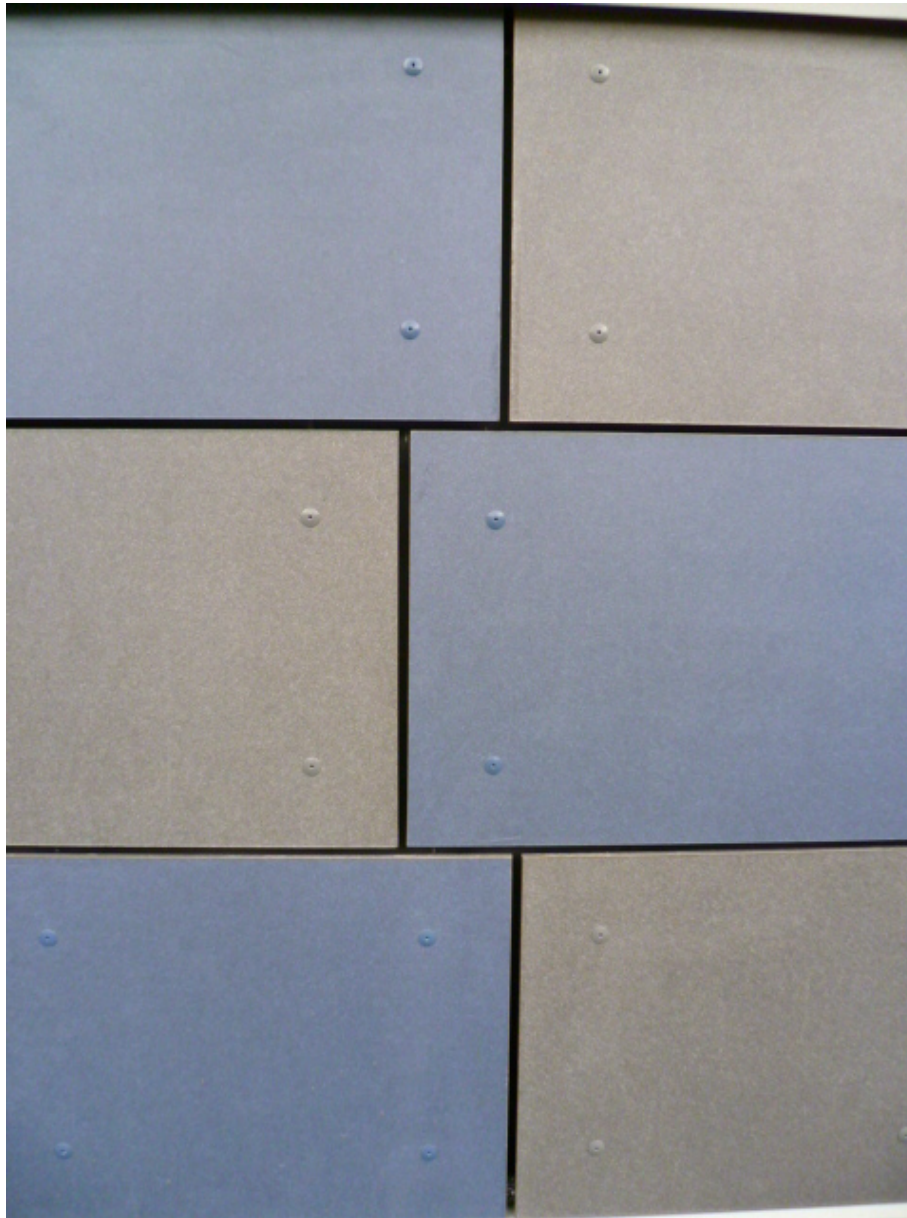








# Open Rain Screen







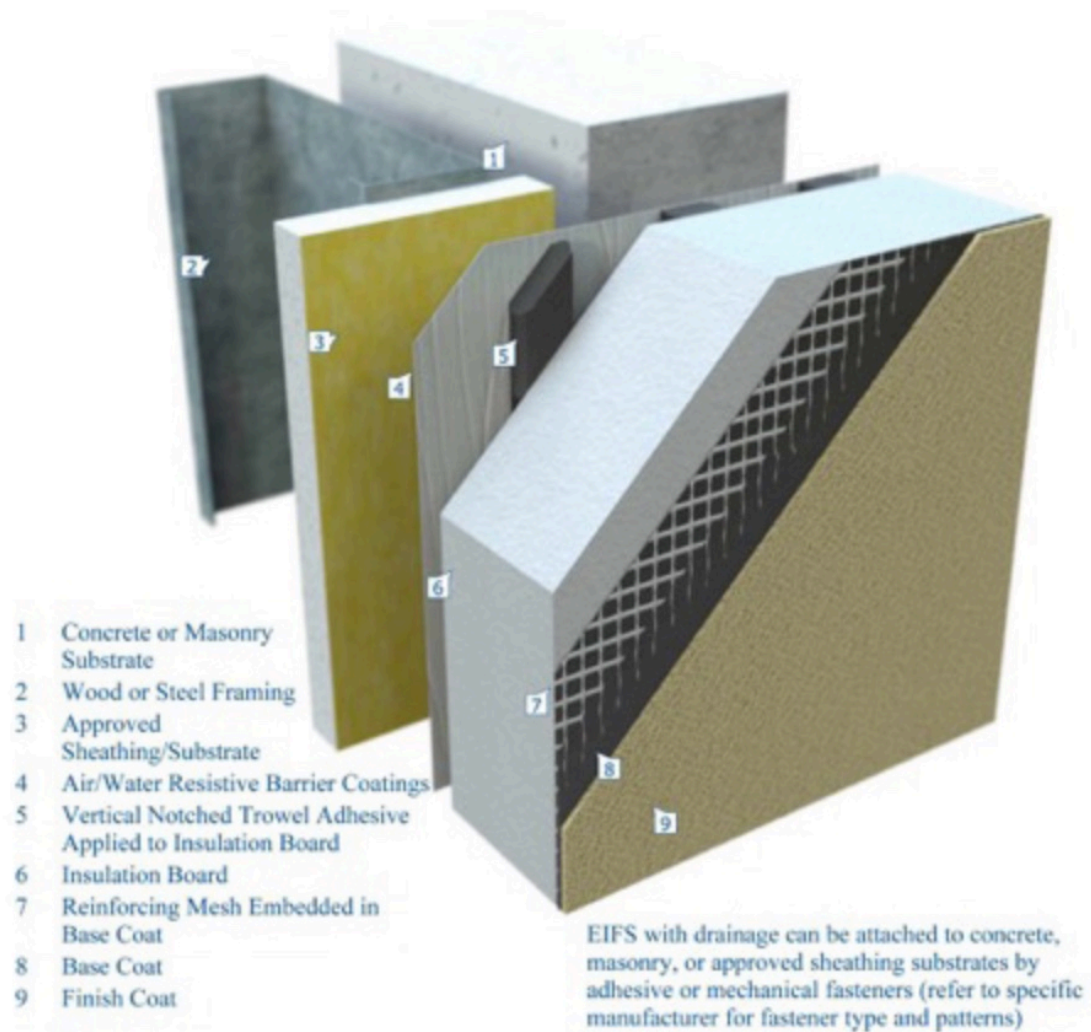




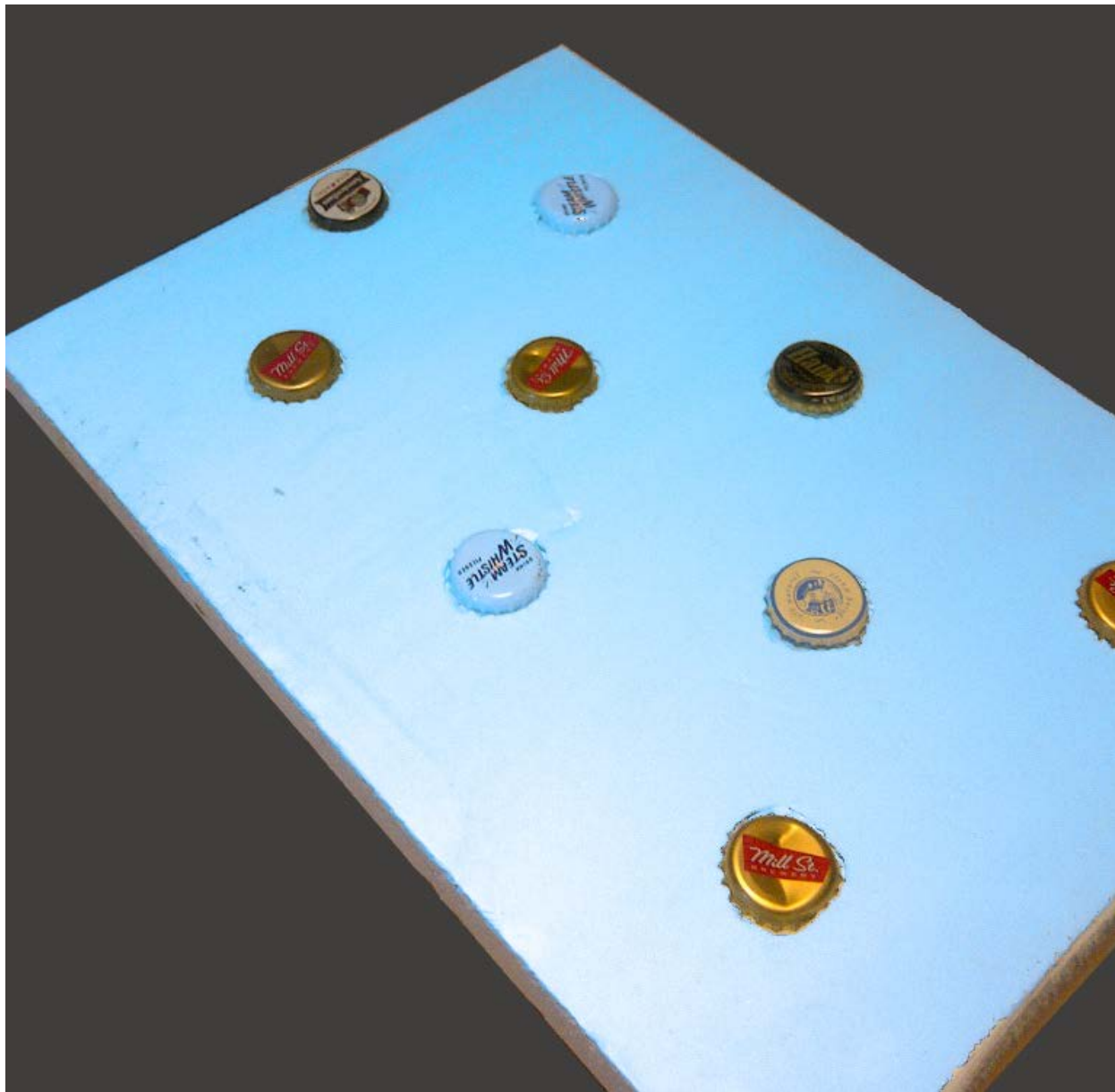
# EIFS....”Drain Screen”

# Beer Screen?

## TYPICAL EIFS CONFIGURATION



# Beer Screen?





# NFPA 285



Image Courtesy Payette



Image Courtesy Payette

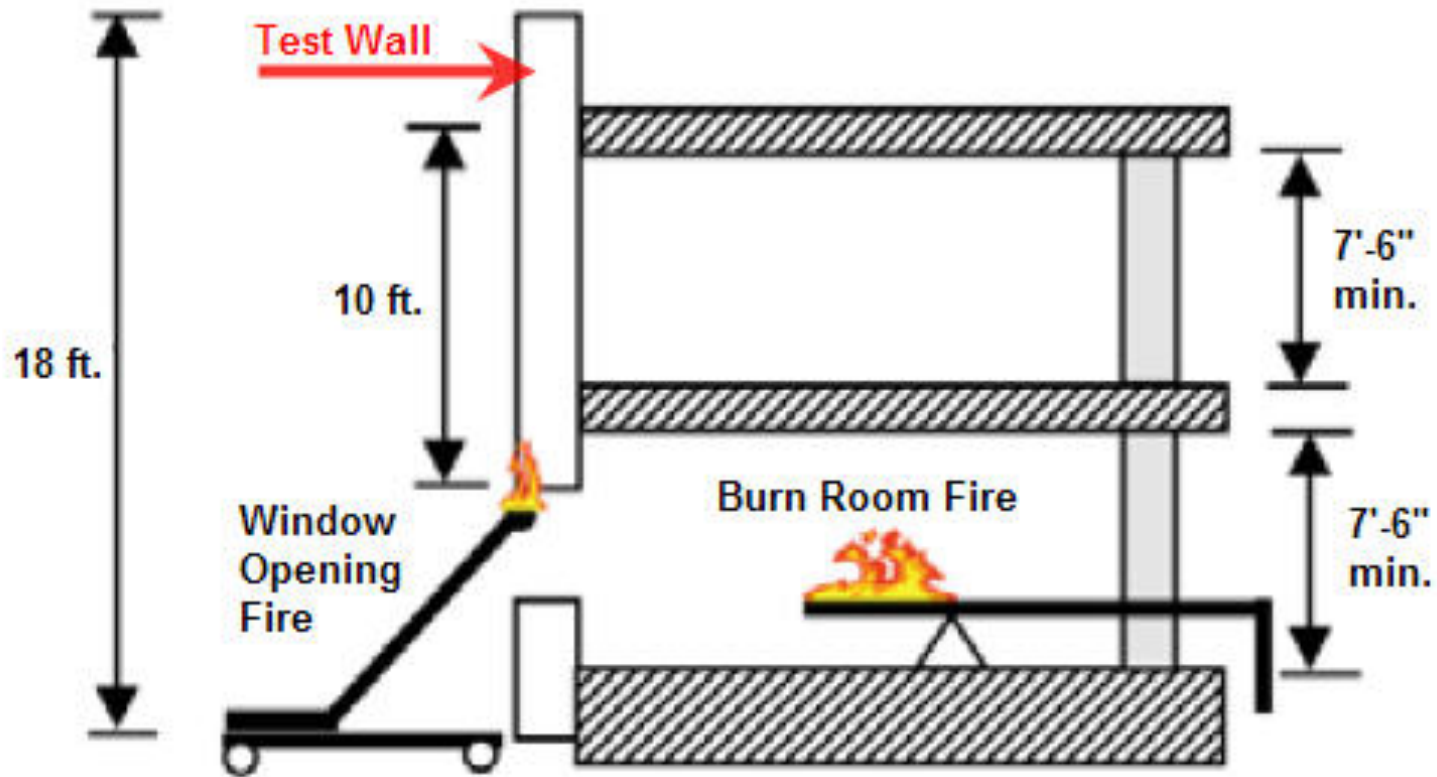


Image Courtesy Carlisle

Thank Jesse Beitel....

# Wild Fires

# Wild Fires

Biggest Problem is Due to Embers Drawn  
into Vented Attics

Wild Fires

Biggest Problem is Due to Embers Drawn  
into Vented Attics

Easy Solution...Unvented Attics



# Need To Understand Vented And Unvented Attics....