

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

# Building Science

Adventures In Building Science

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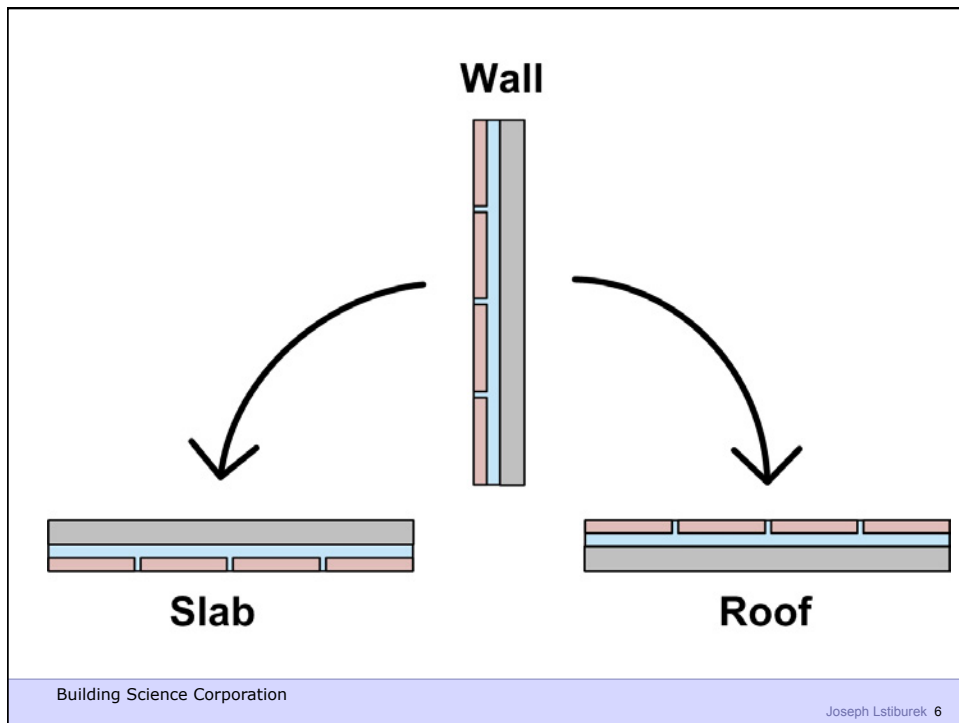
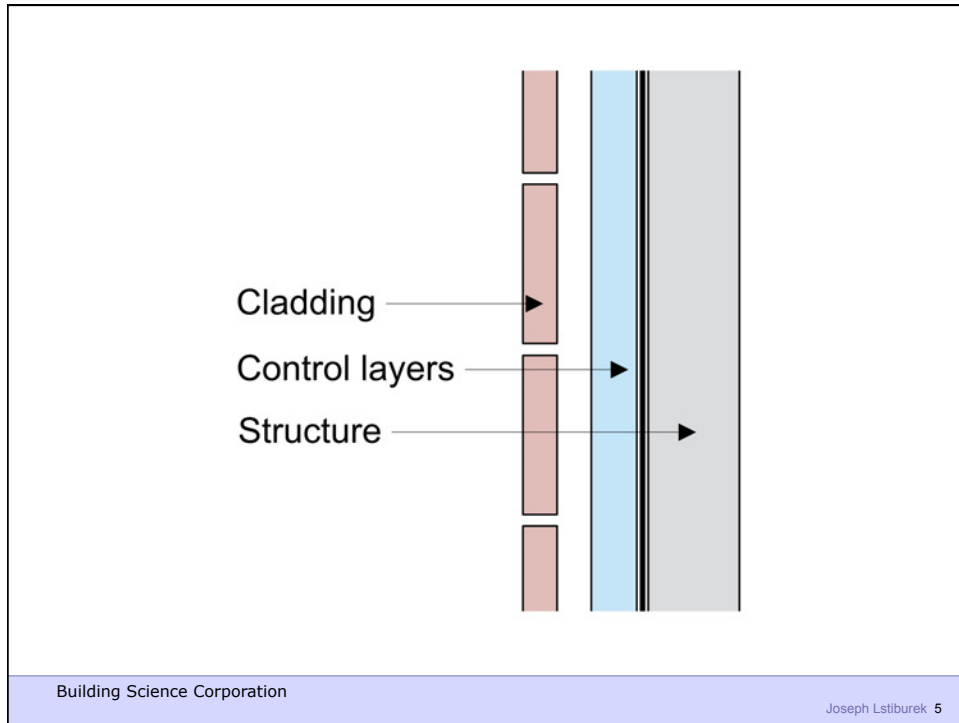
## What is a Building?

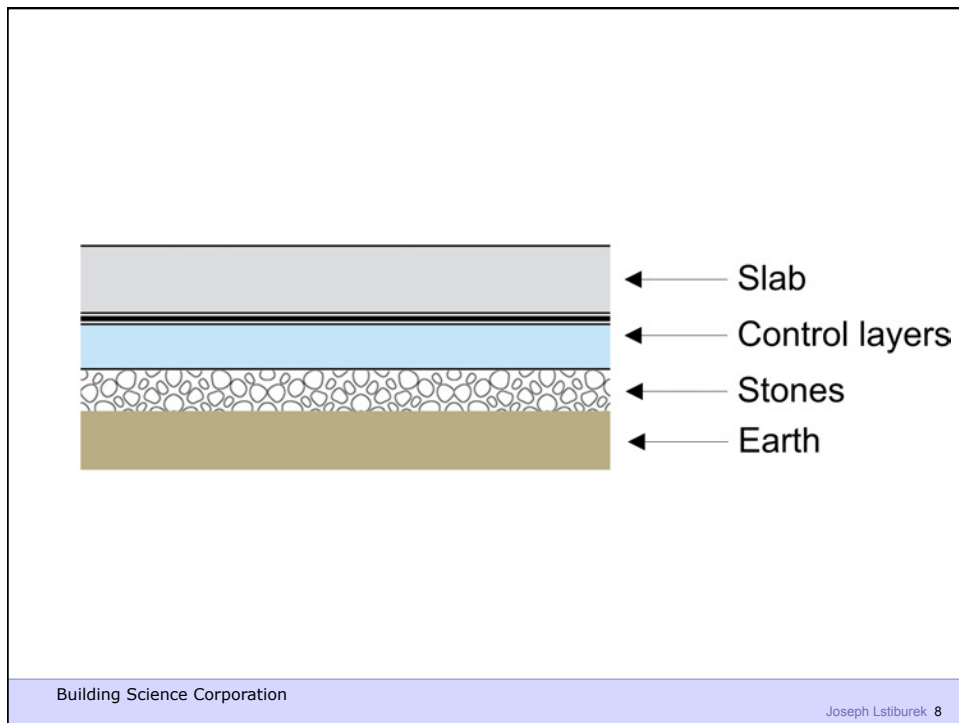
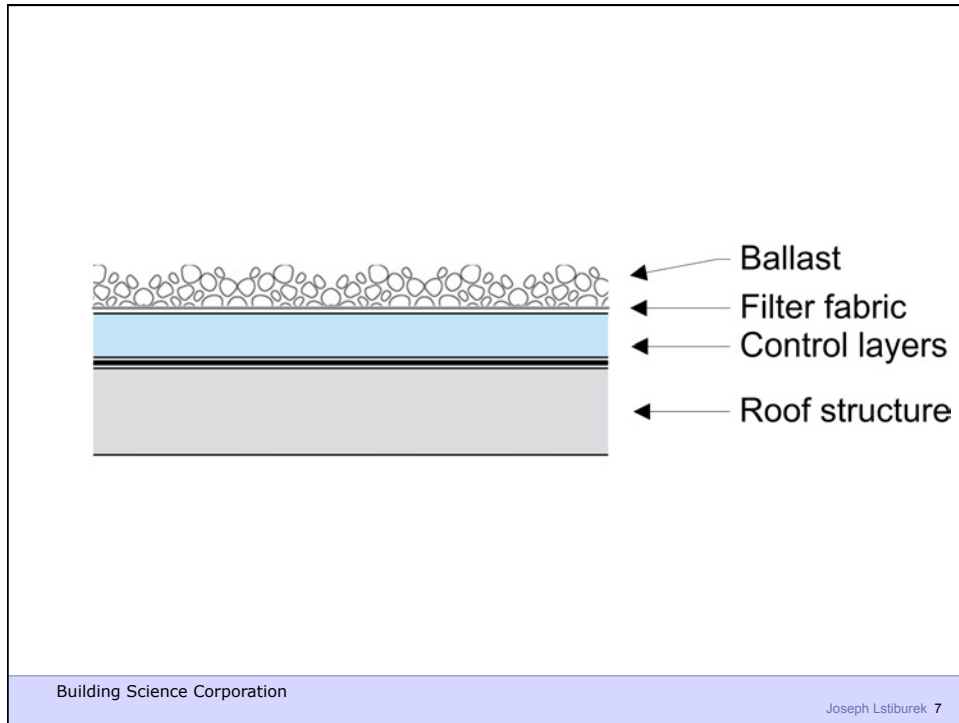
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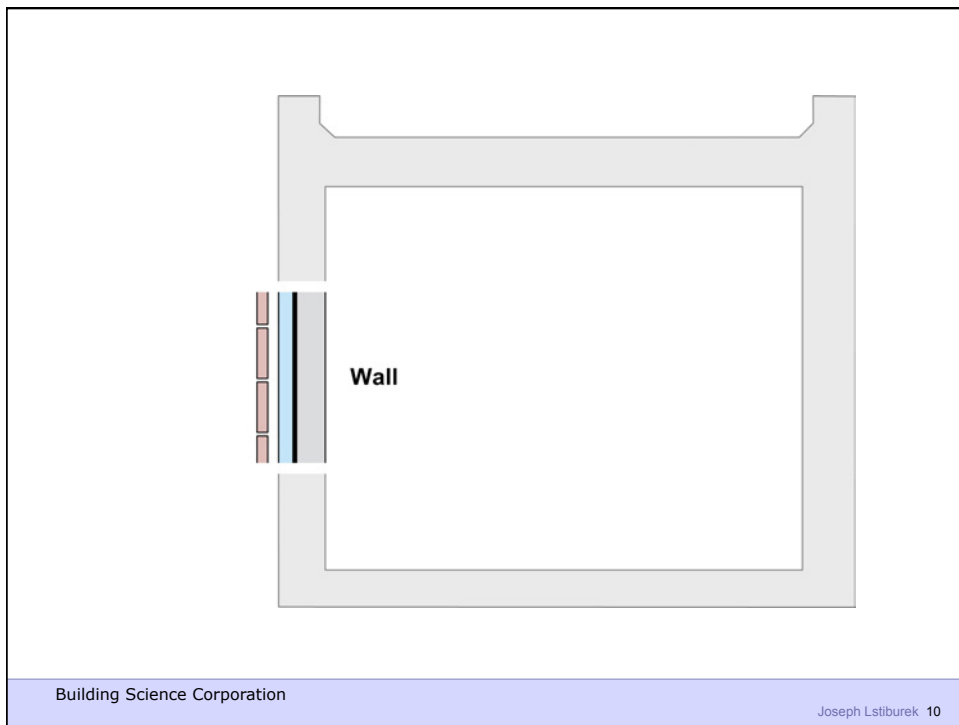
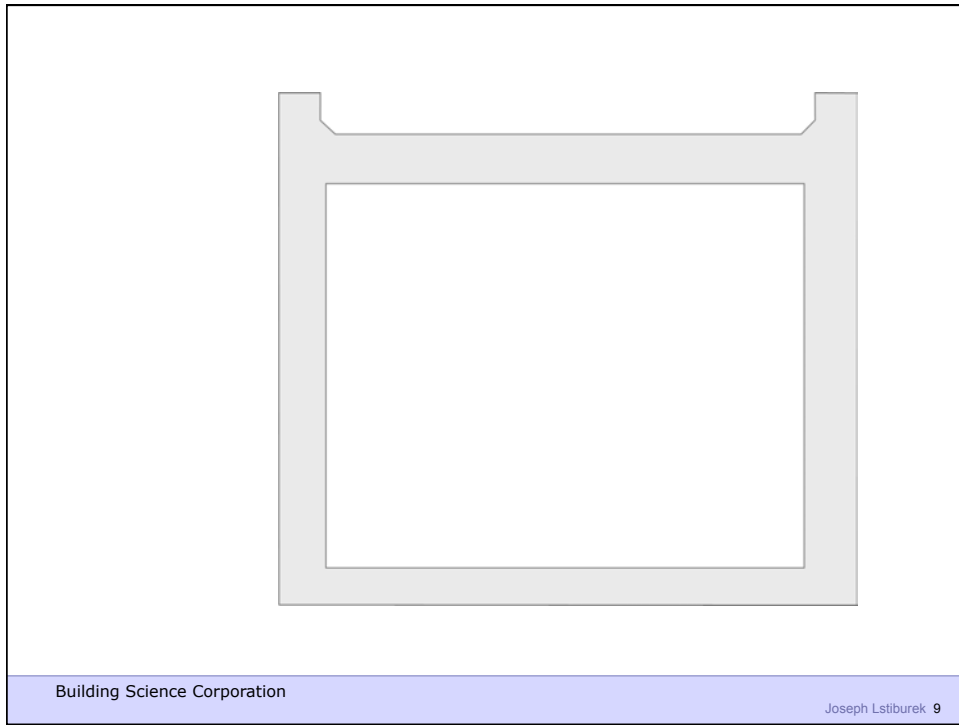
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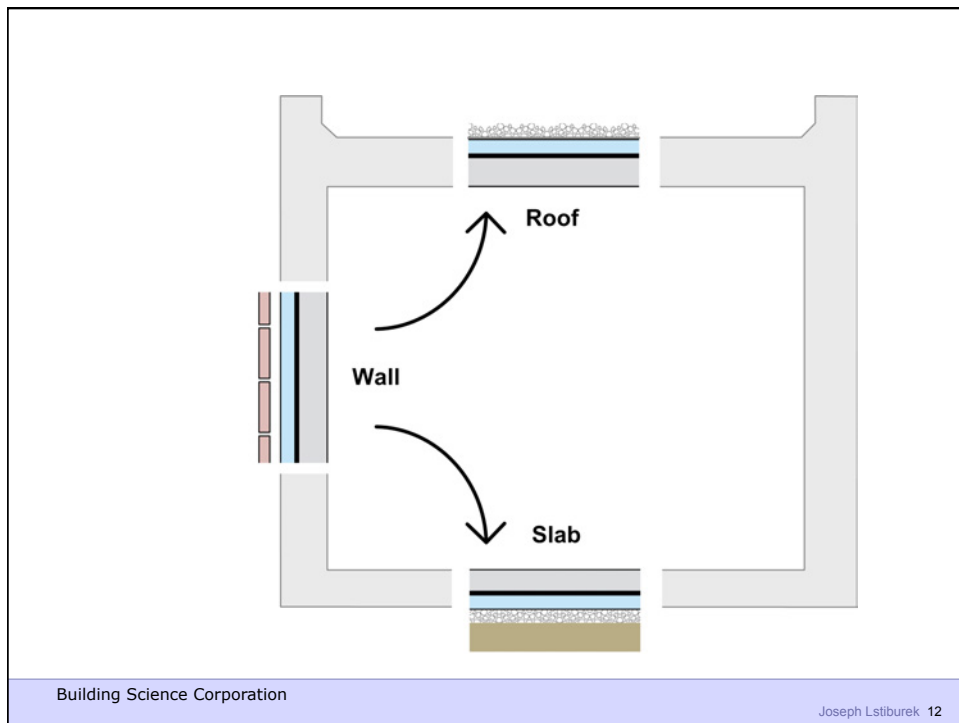
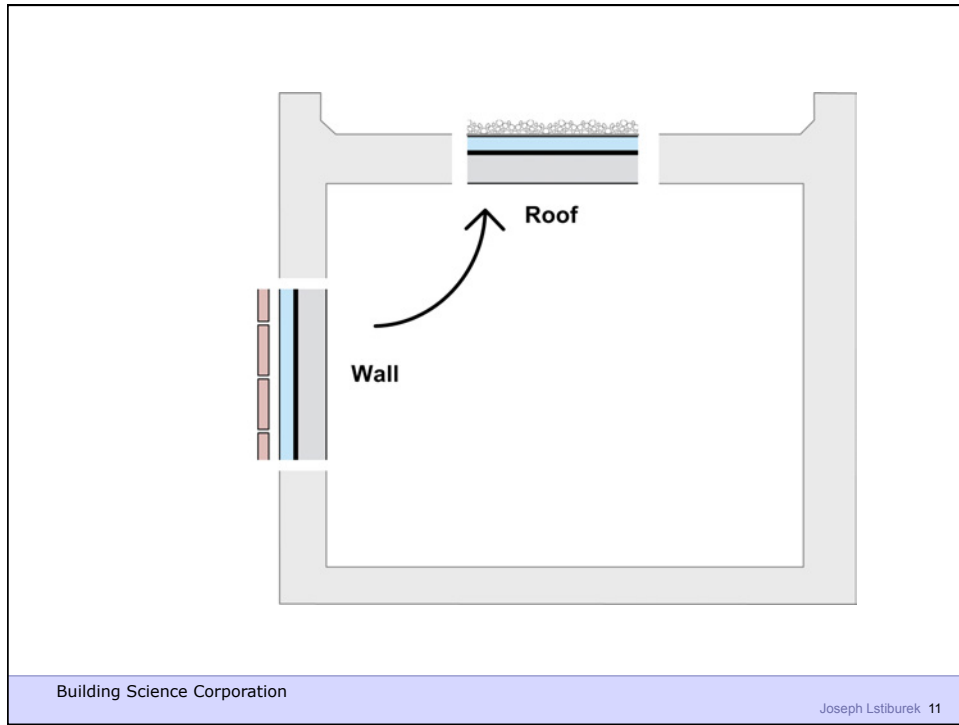
- Control heat flow
- Control airflow
- Control water vapor flow
- Control rain
- Control ground water
- Control light and solar radiation
- Control noise and vibrations
- Control contaminants, environmental hazards and odors
- Control insects, rodents and vermin
- Control fire
- Provide strength and rigidity
- Be durable
- Be aesthetically pleasing
- Be economical

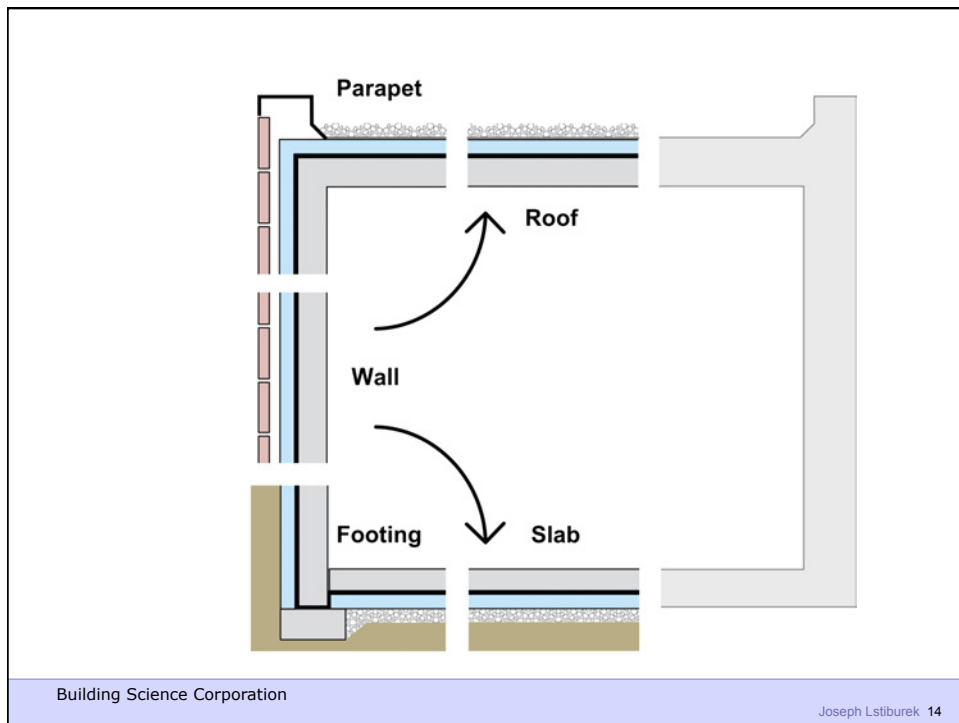
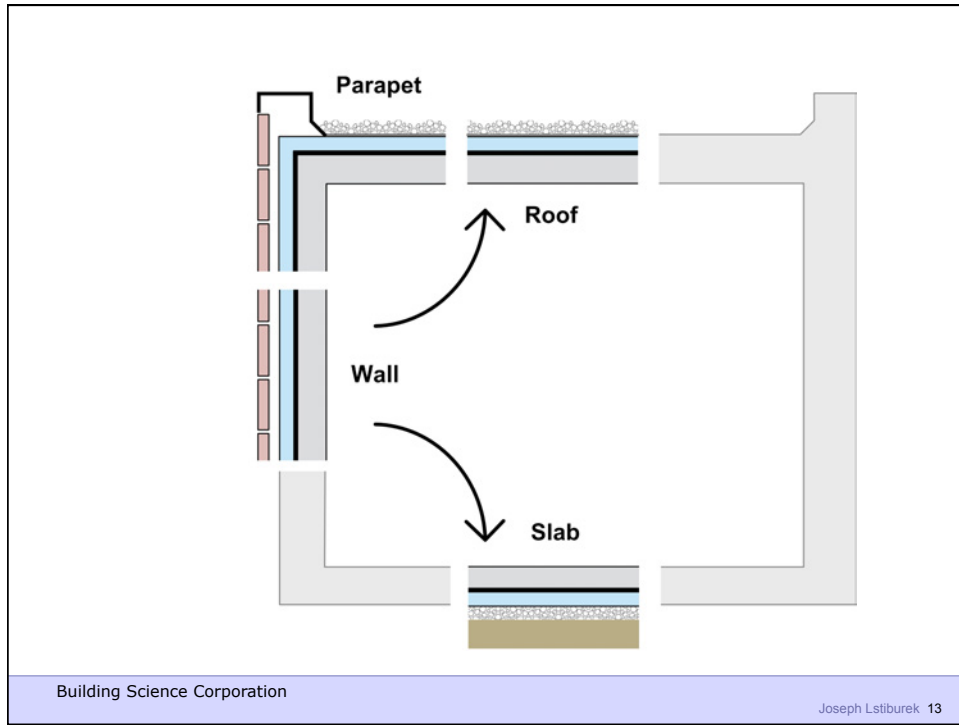
Water Control Layer  
Air Control Layer  
Vapor Control Layer  
Thermal Control Layer

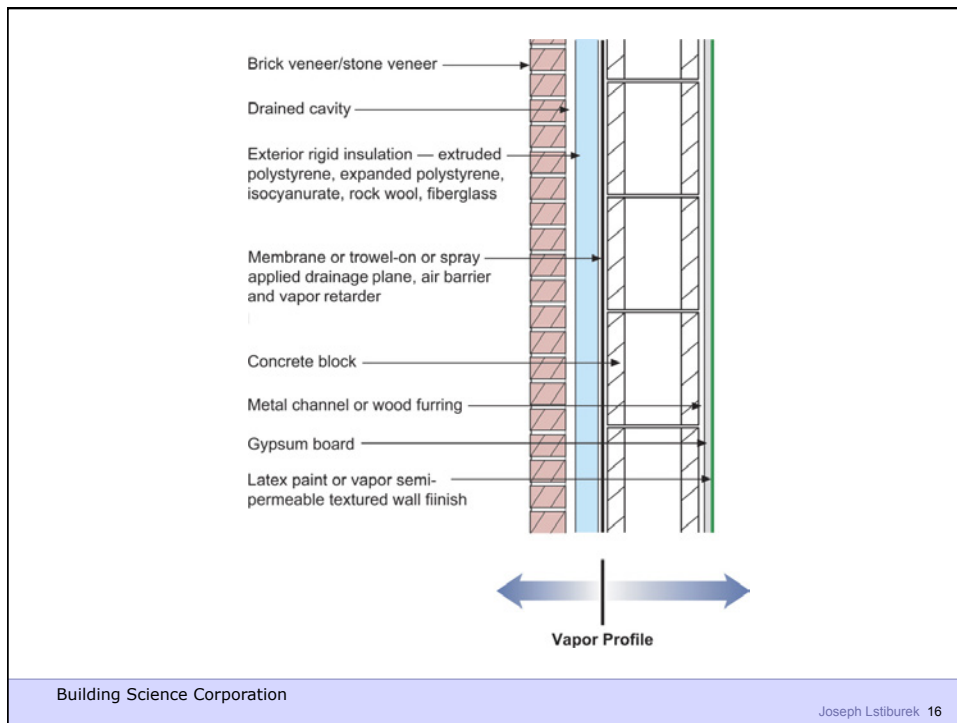
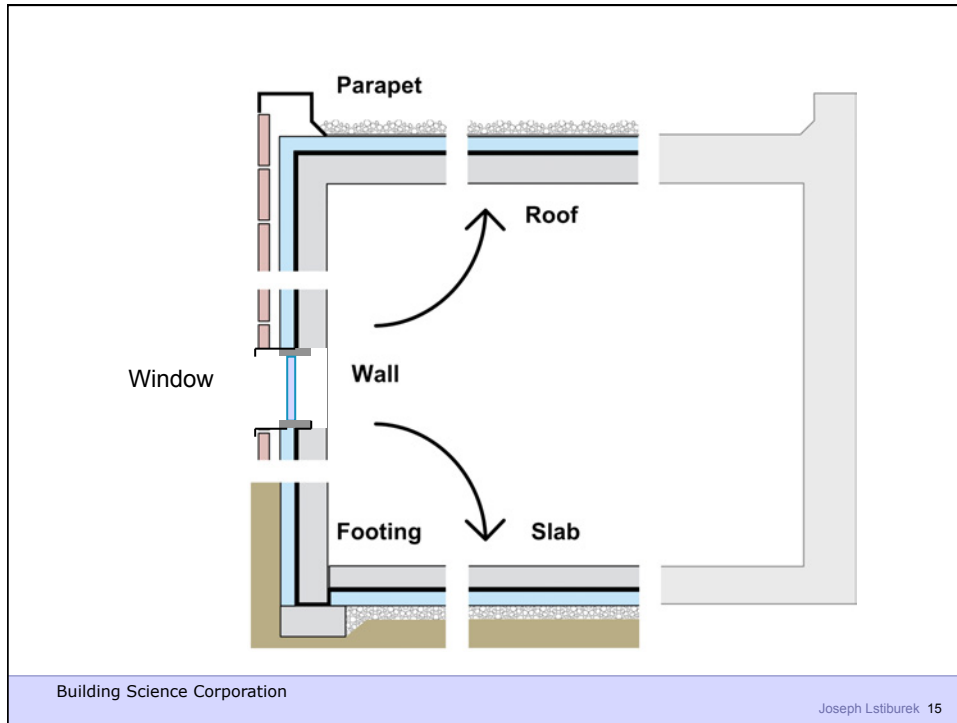




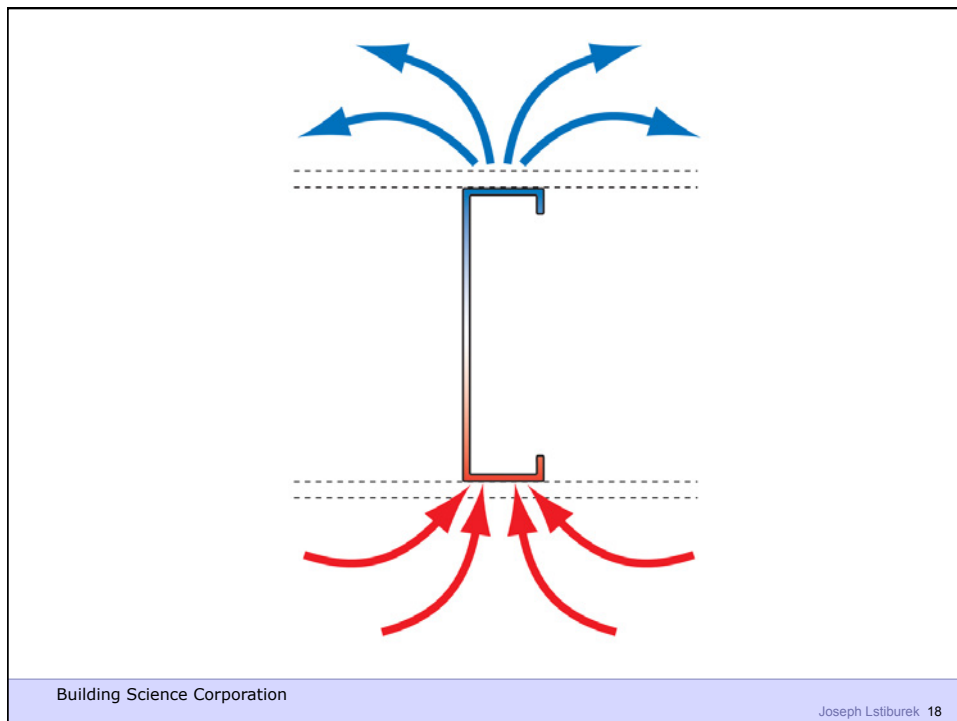
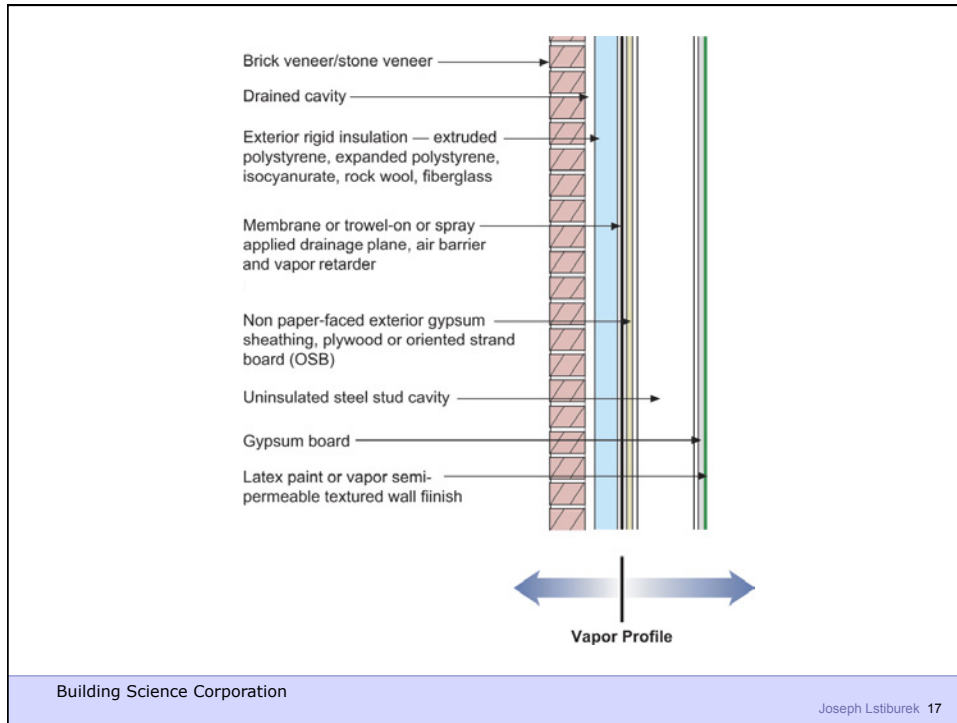


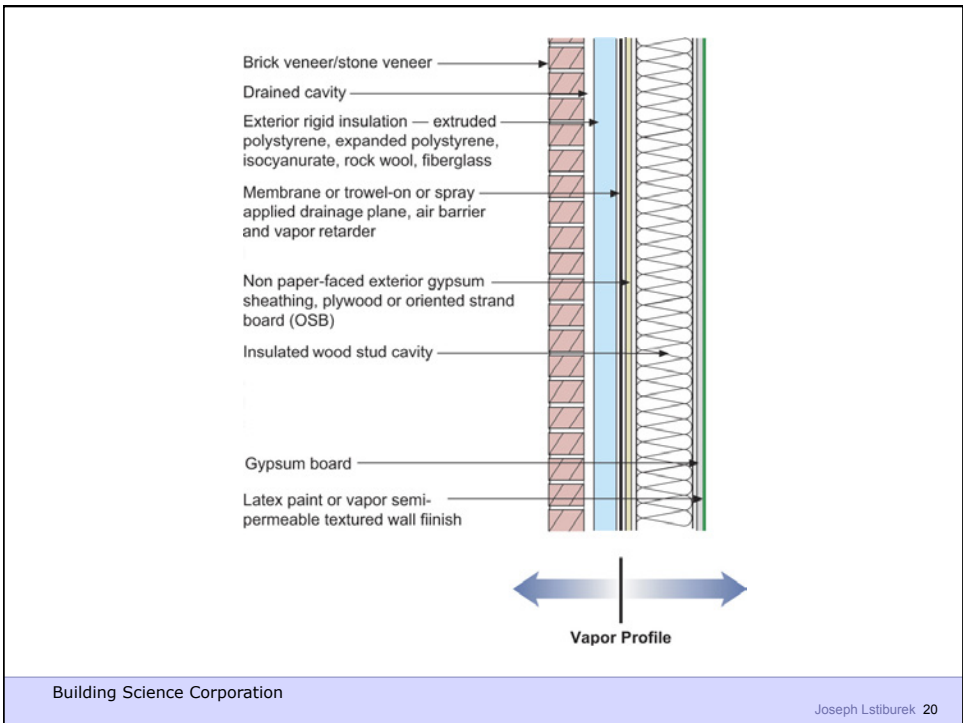




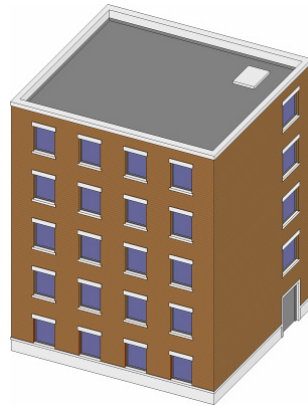








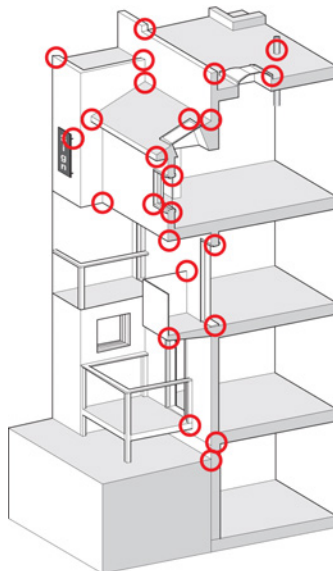
## Commercial Enclosure: Simple Layers



- Structure
- Rain/Air/Vapor
- Insulation
- Finish

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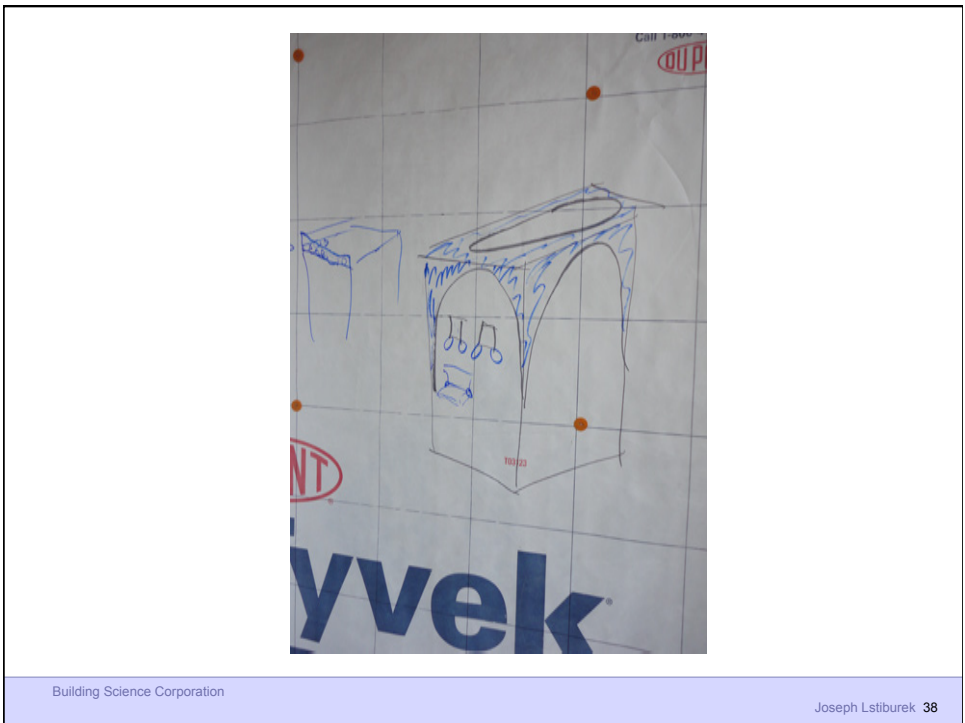
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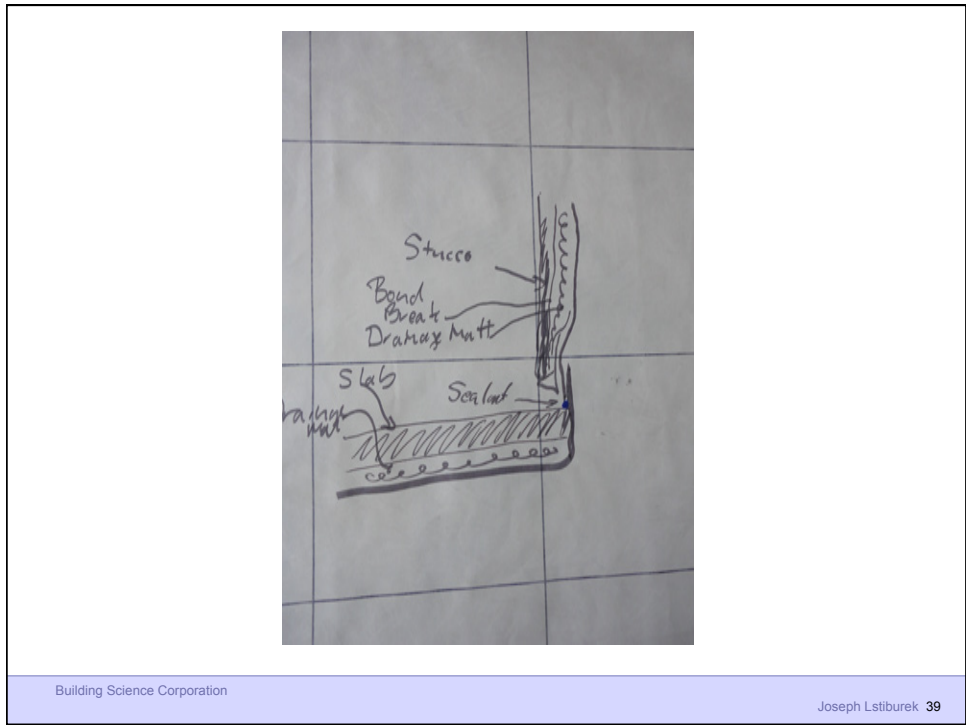
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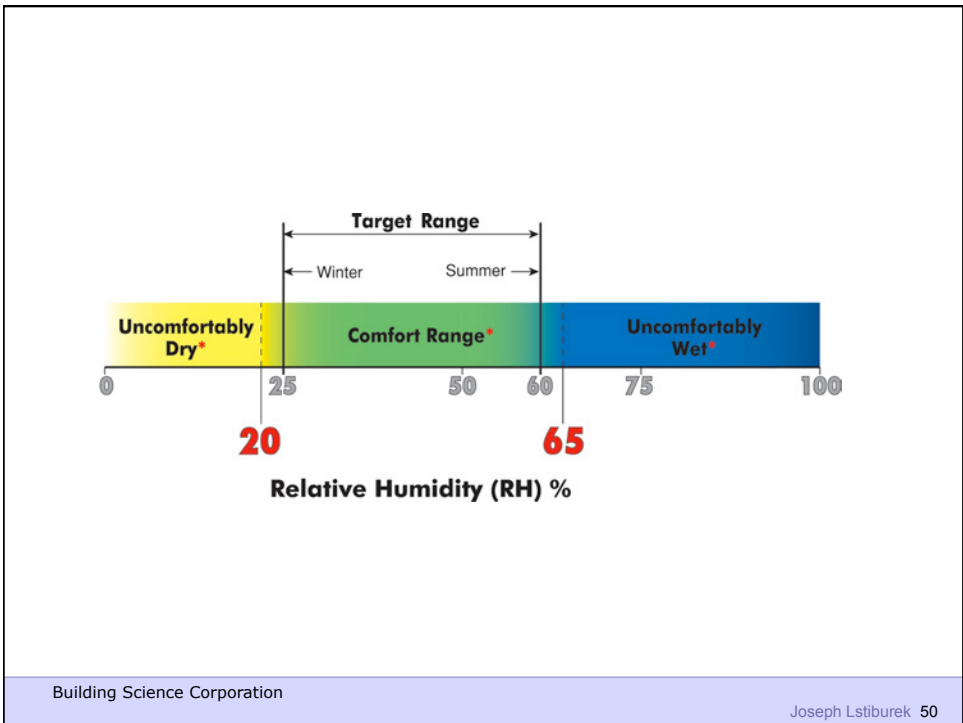
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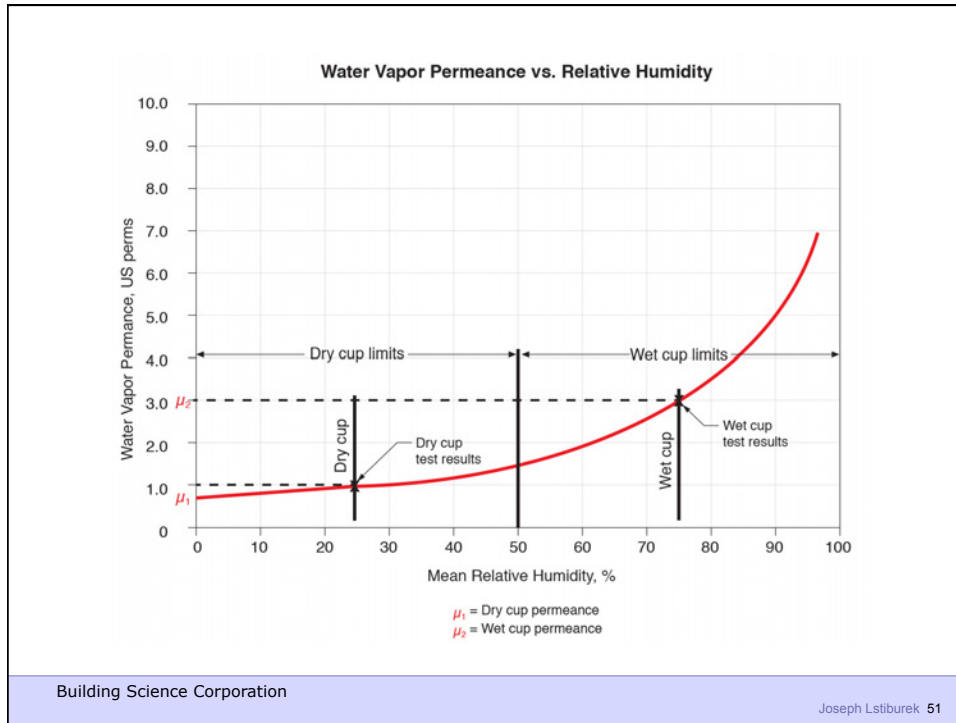


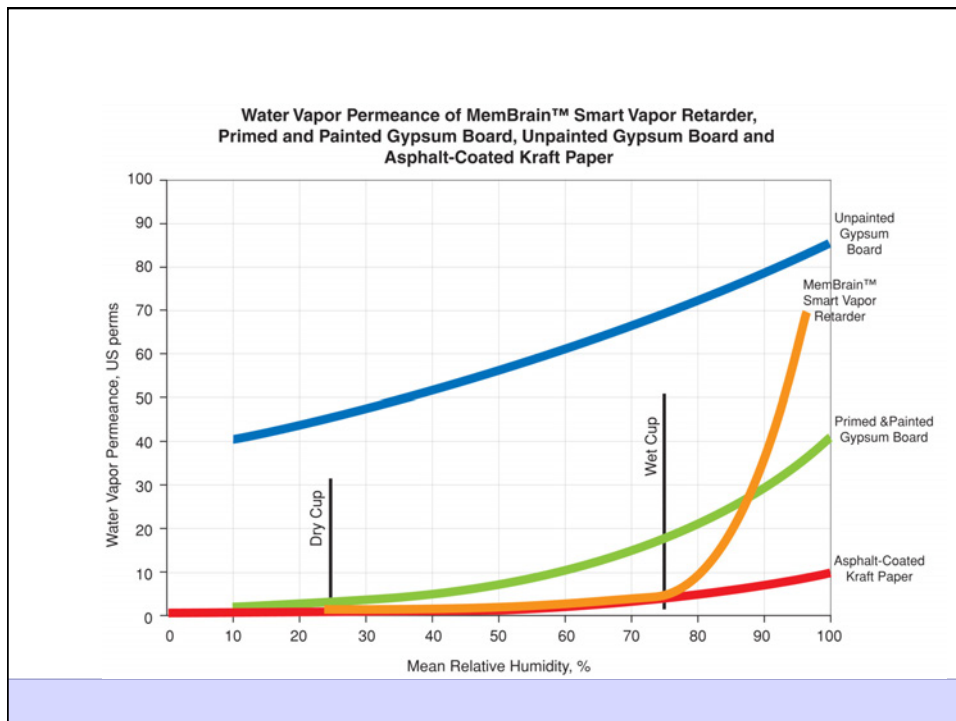
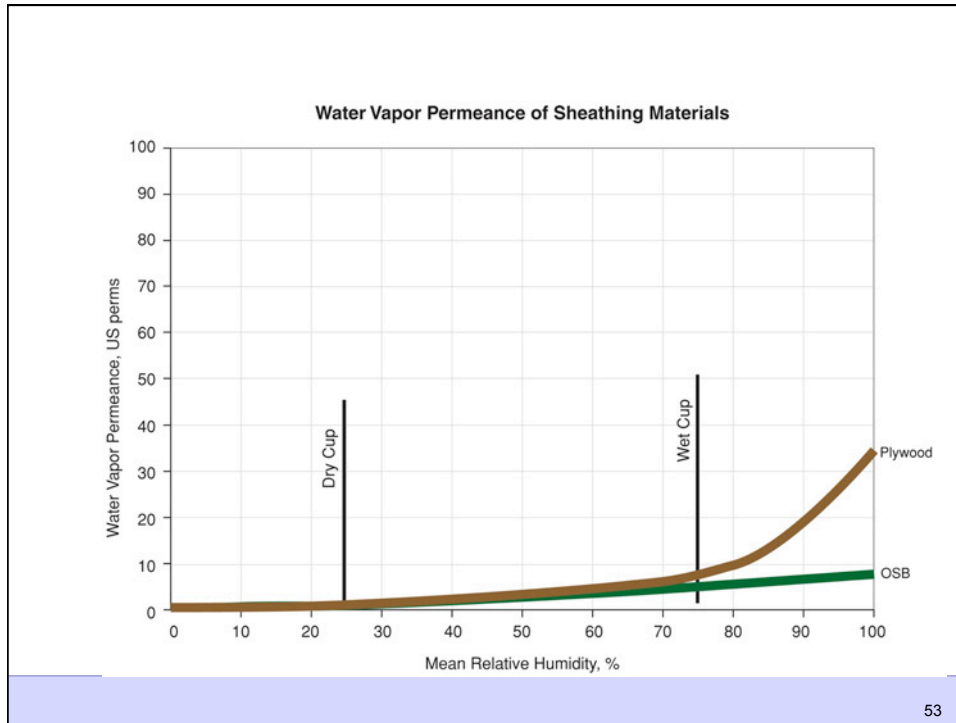
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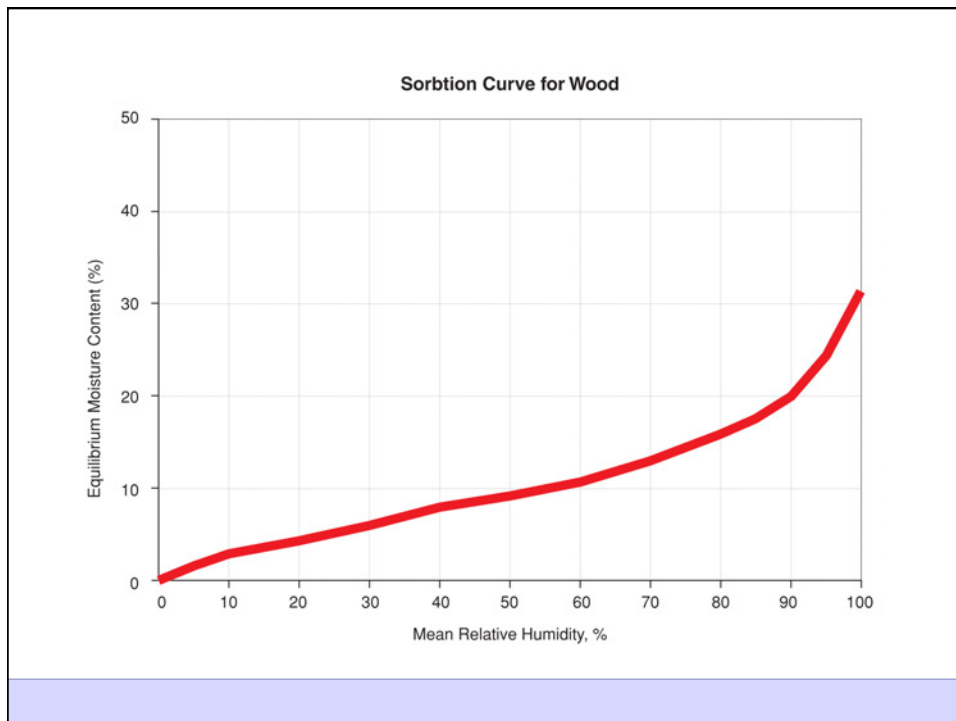
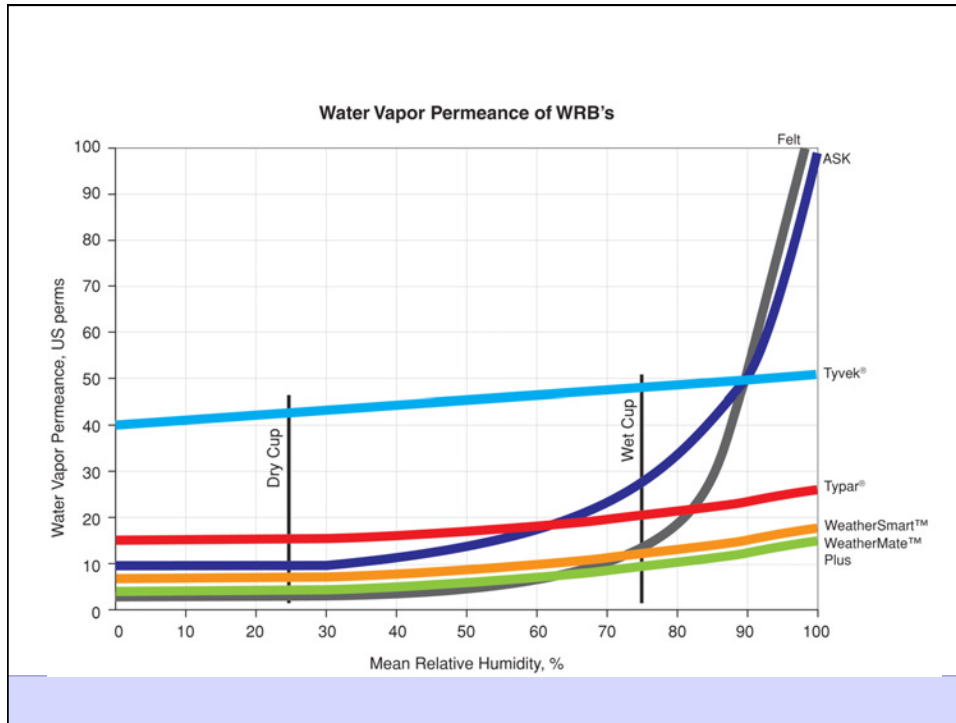
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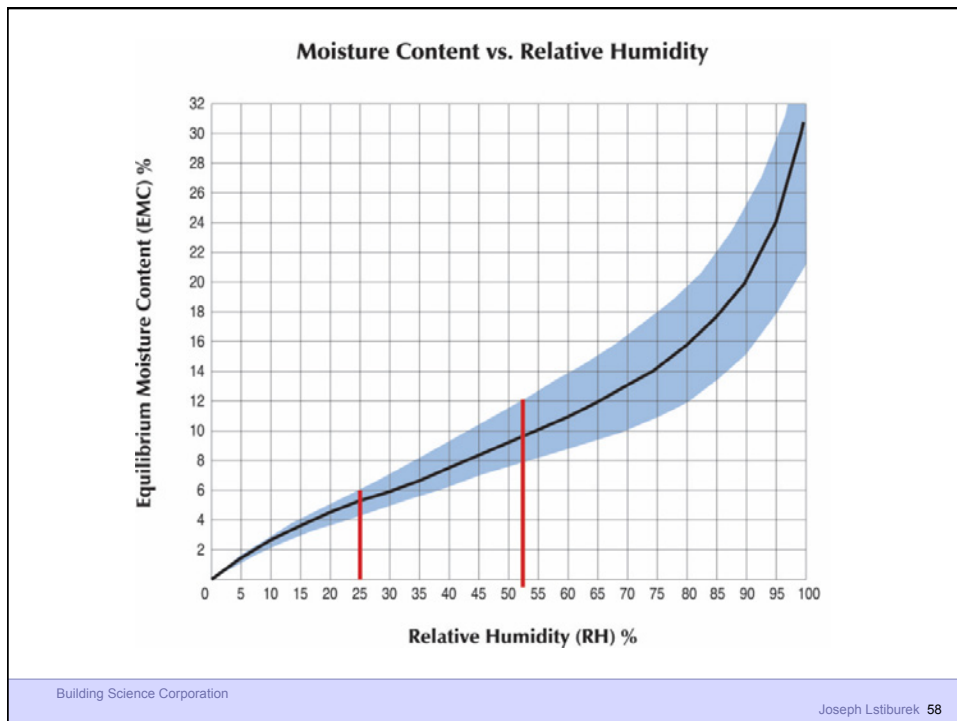
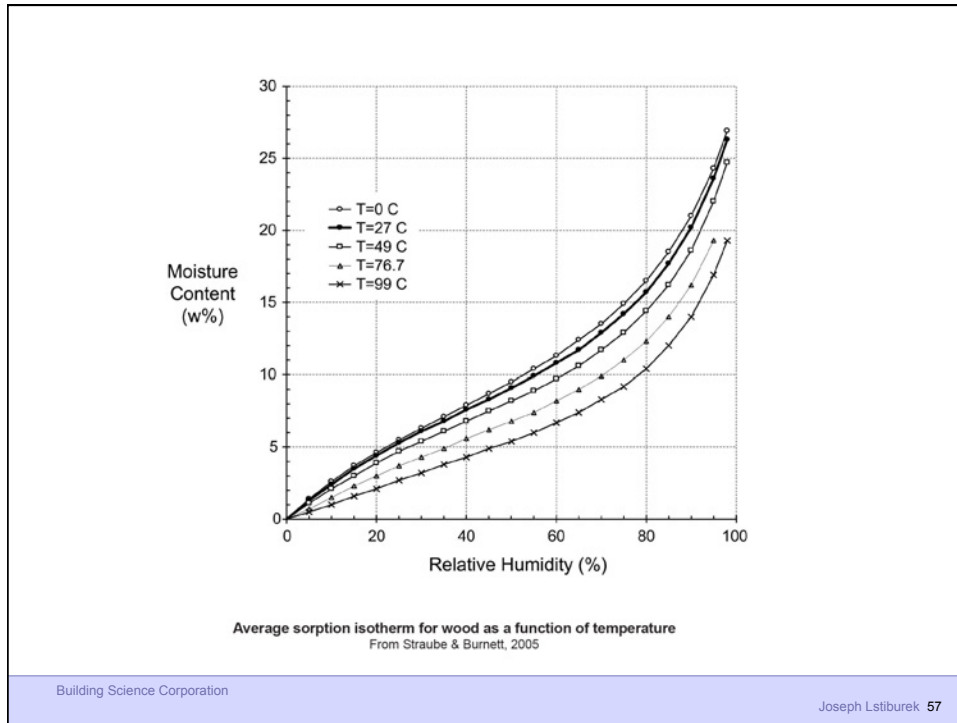


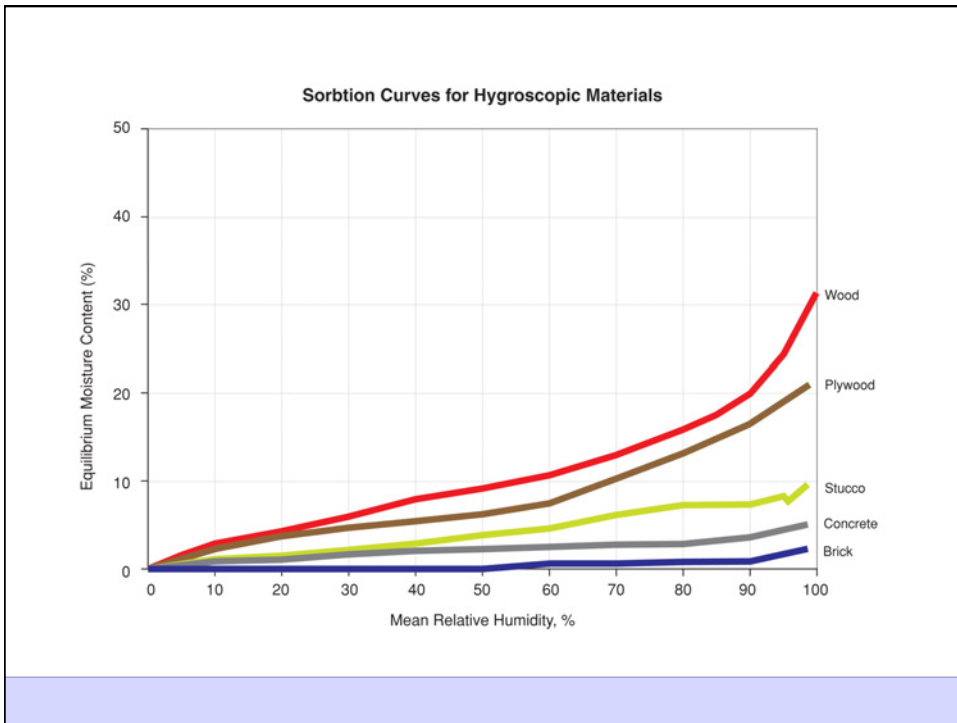














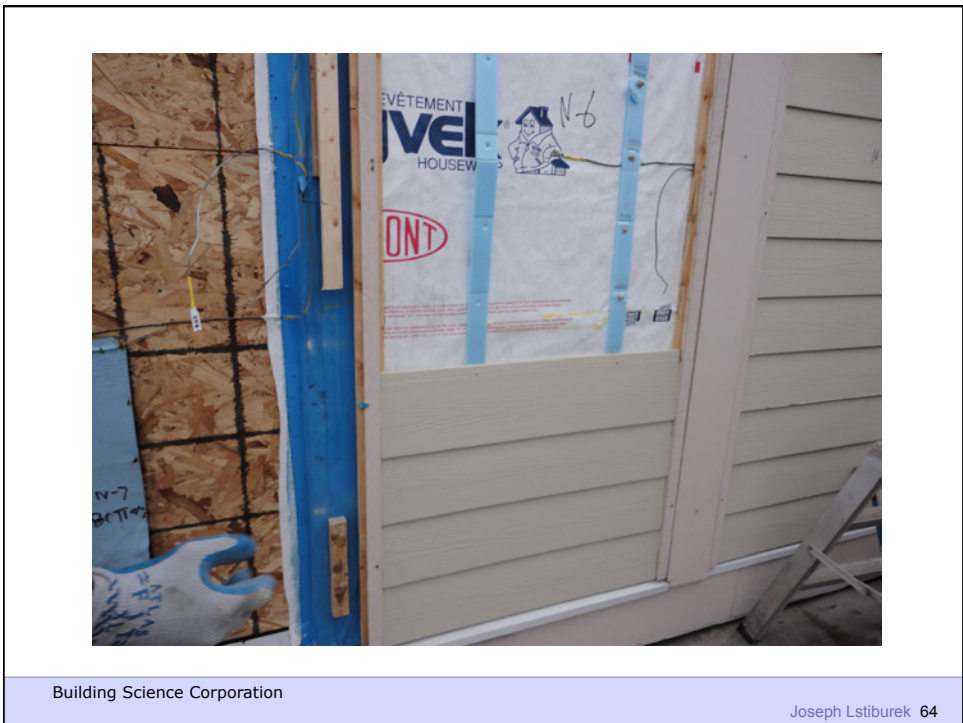
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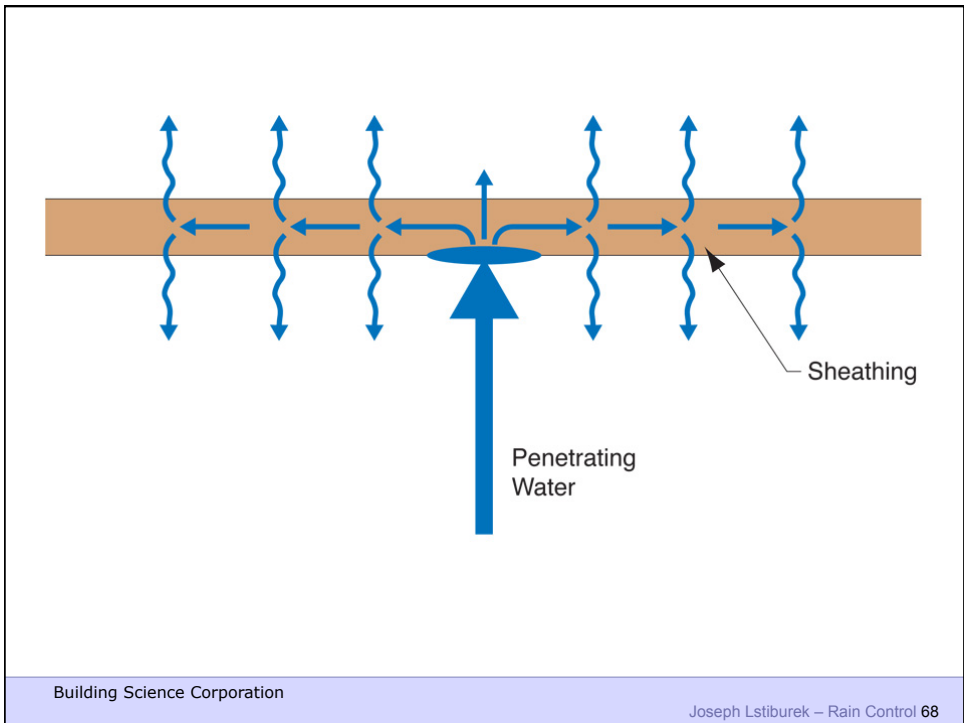
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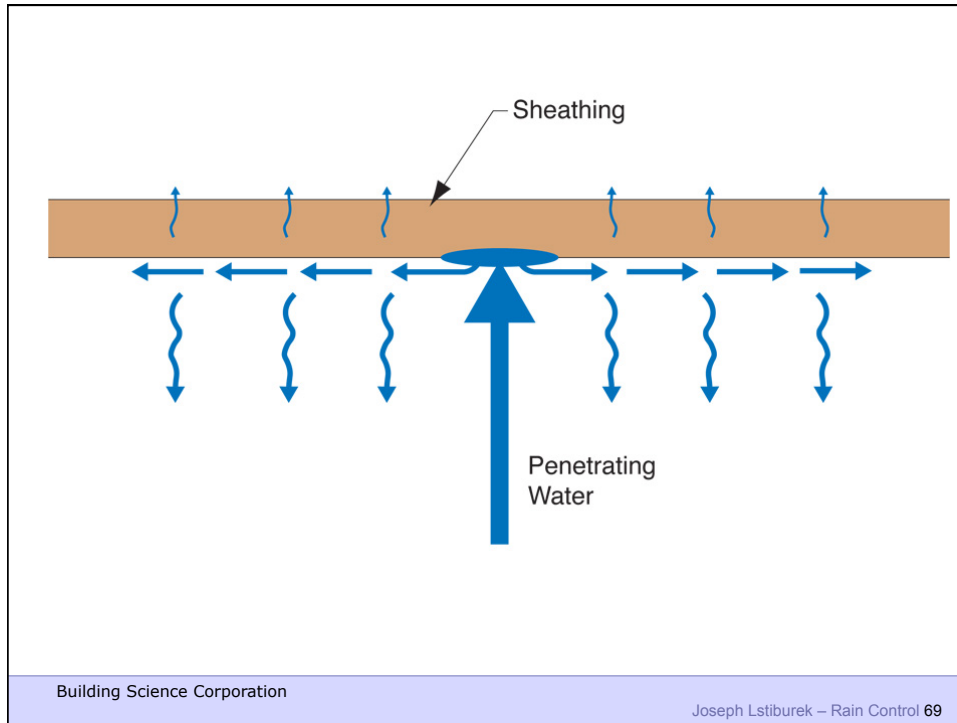
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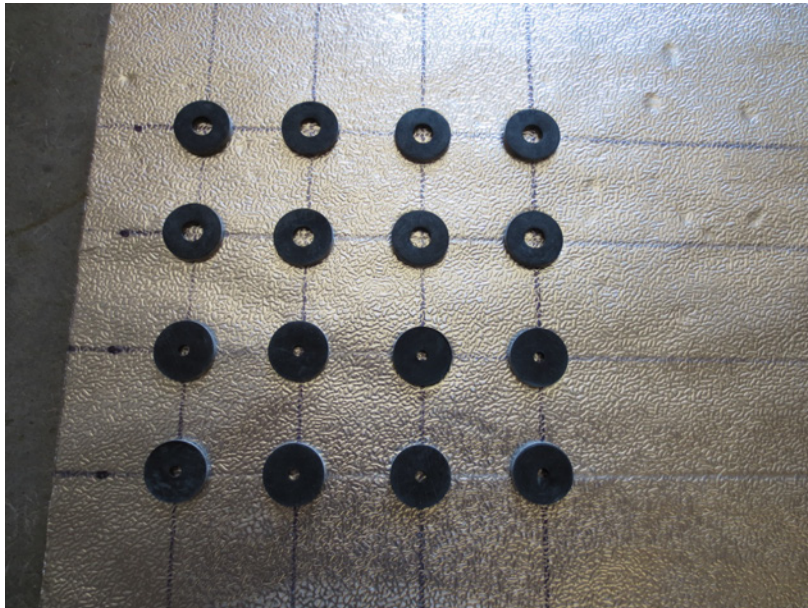




## Rain Screen

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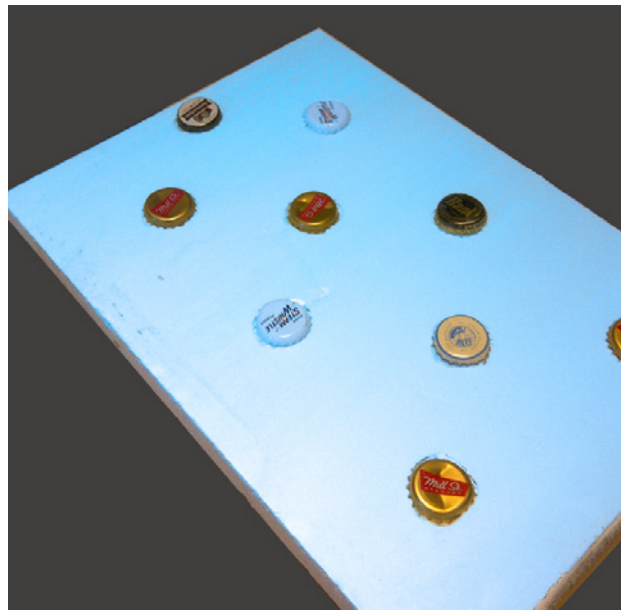
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# Beer Screen?

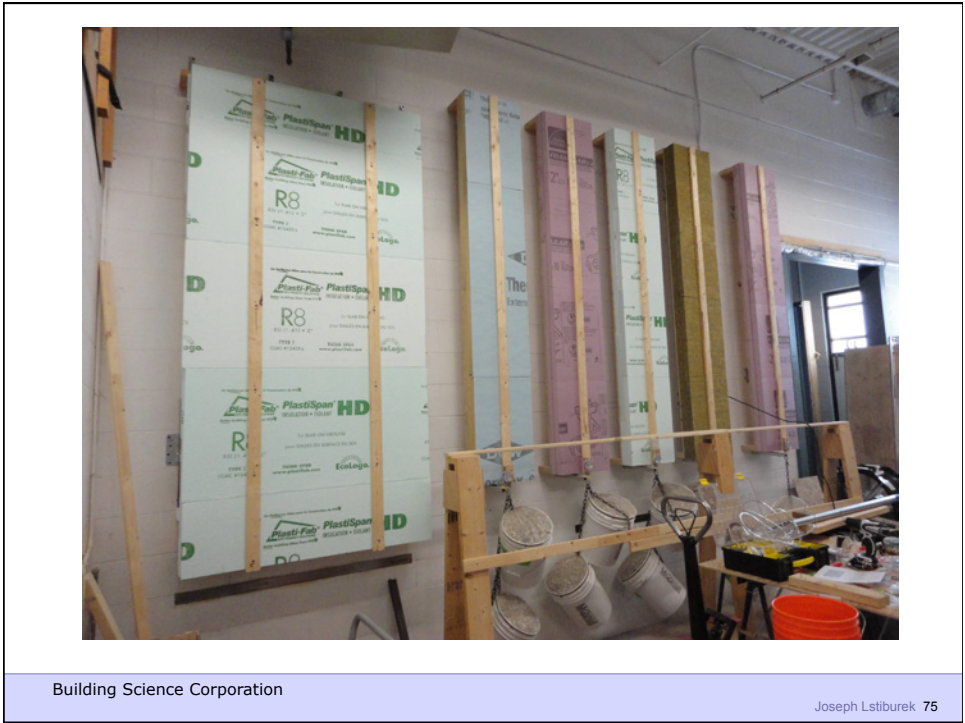
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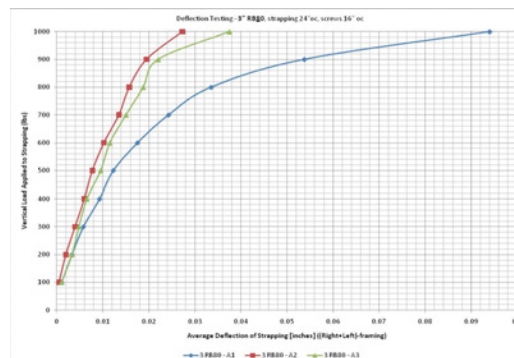
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## Rockwool

1x3 furring @ 24" o.c.  
 #10 screws @ 16" o.c. vertically  
 Result: 20 psf cladding weight  
 with < 2/100" deflection





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