

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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A Building is an Environmental Separator

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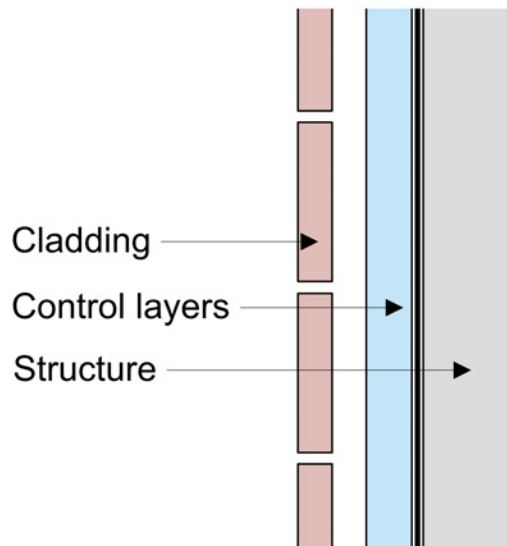
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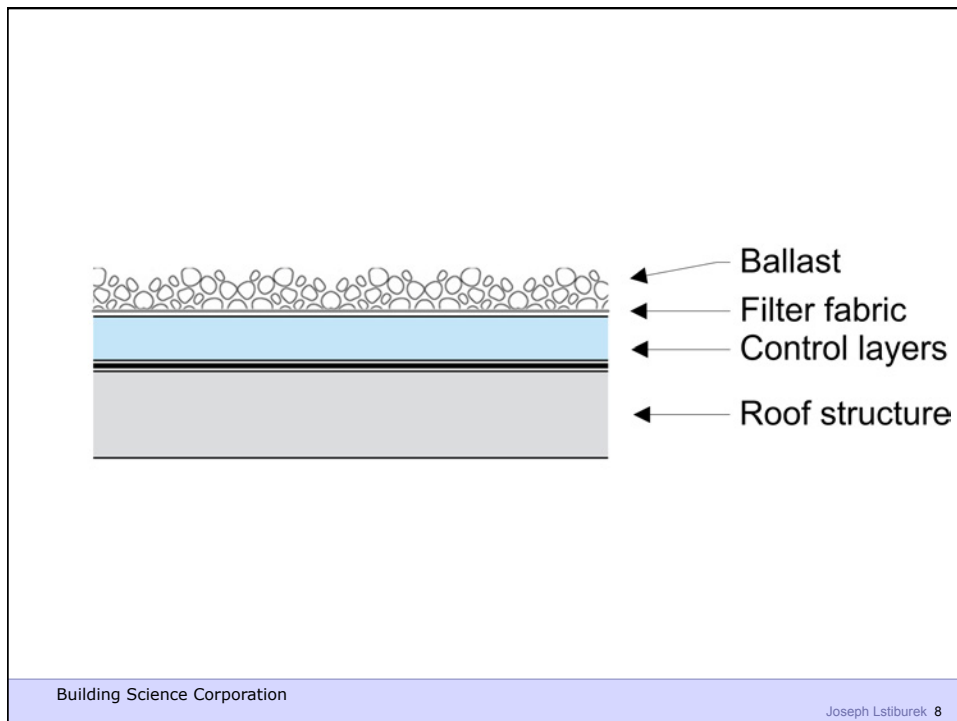
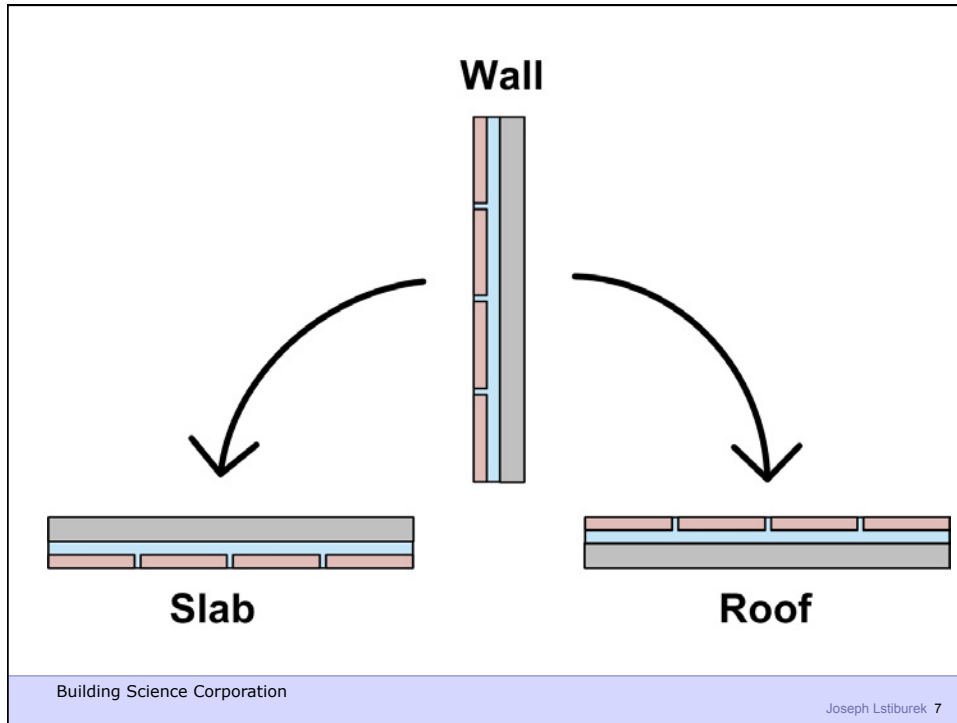
- Control heat flow
- Control airflow
- Control water vapor flow
- Control rain
- Control ground water
- Control light and solar radiation
- Control noise and vibrations
- Control contaminants, environmental hazards and odors
- Control insects, rodents and vermin
- Control fire
- Provide strength and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

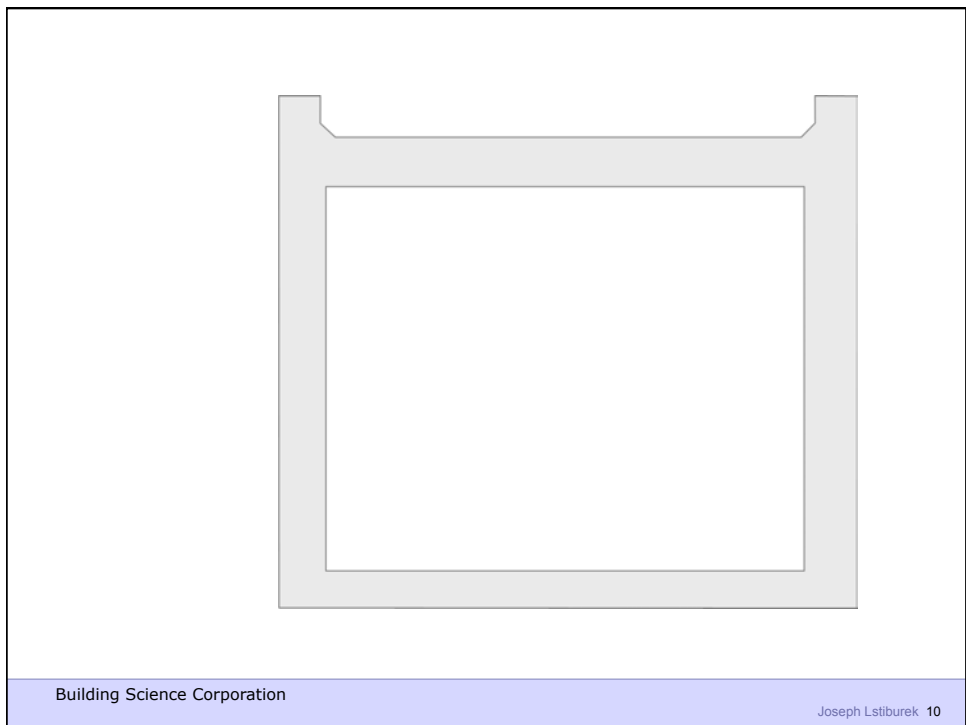
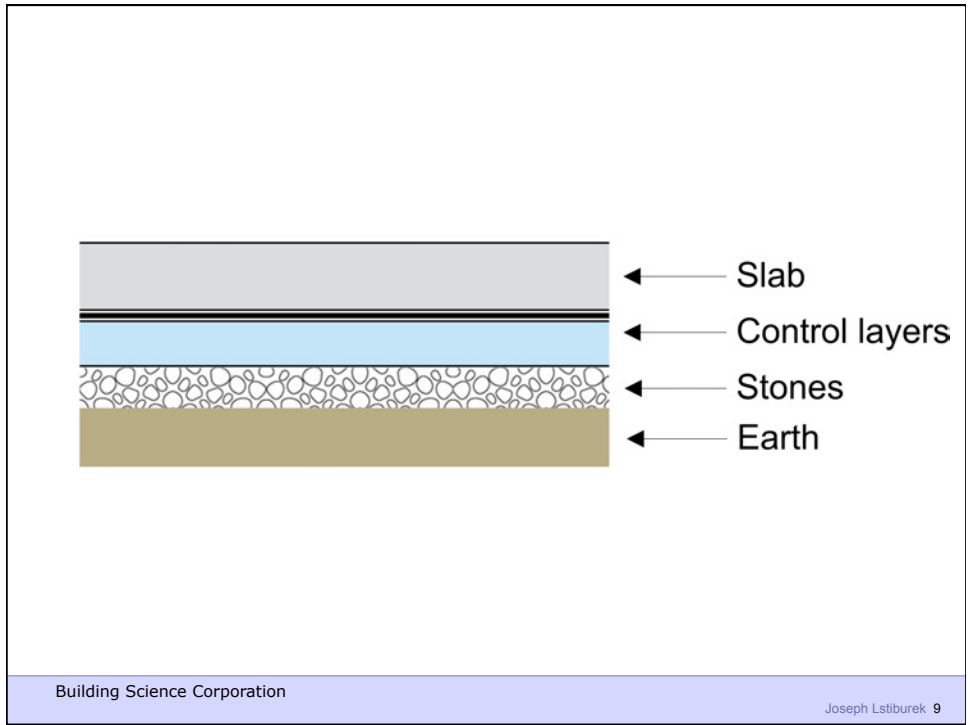
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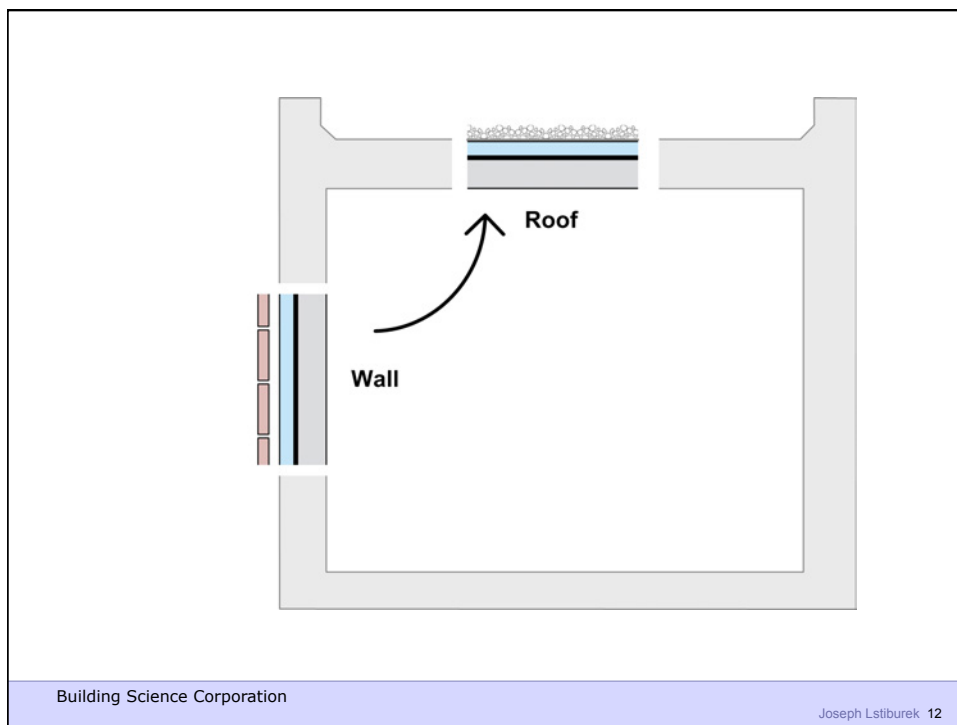
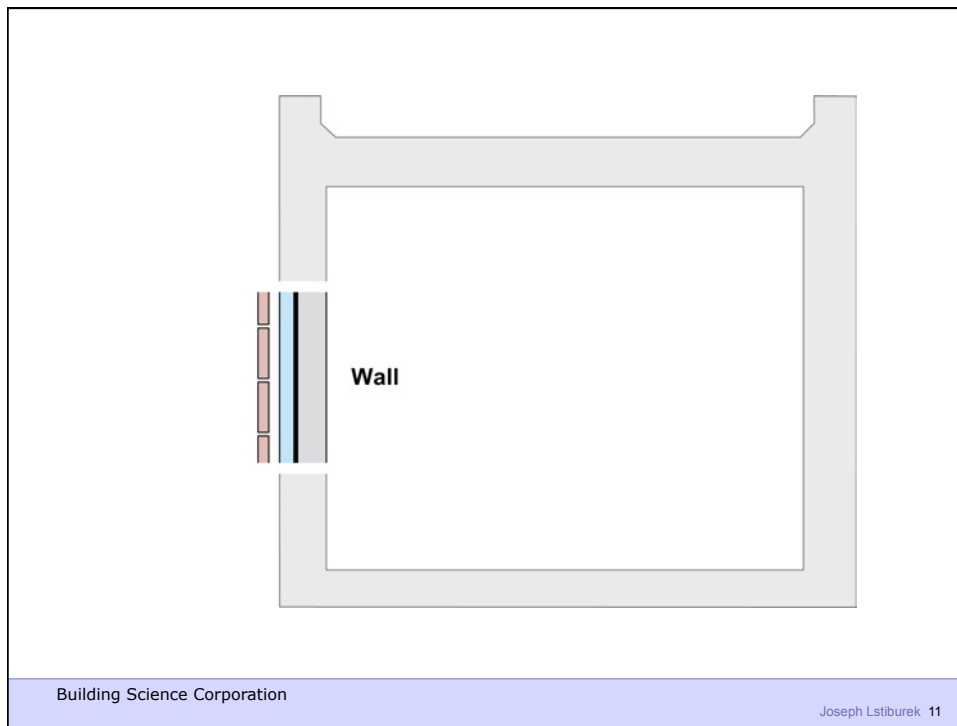
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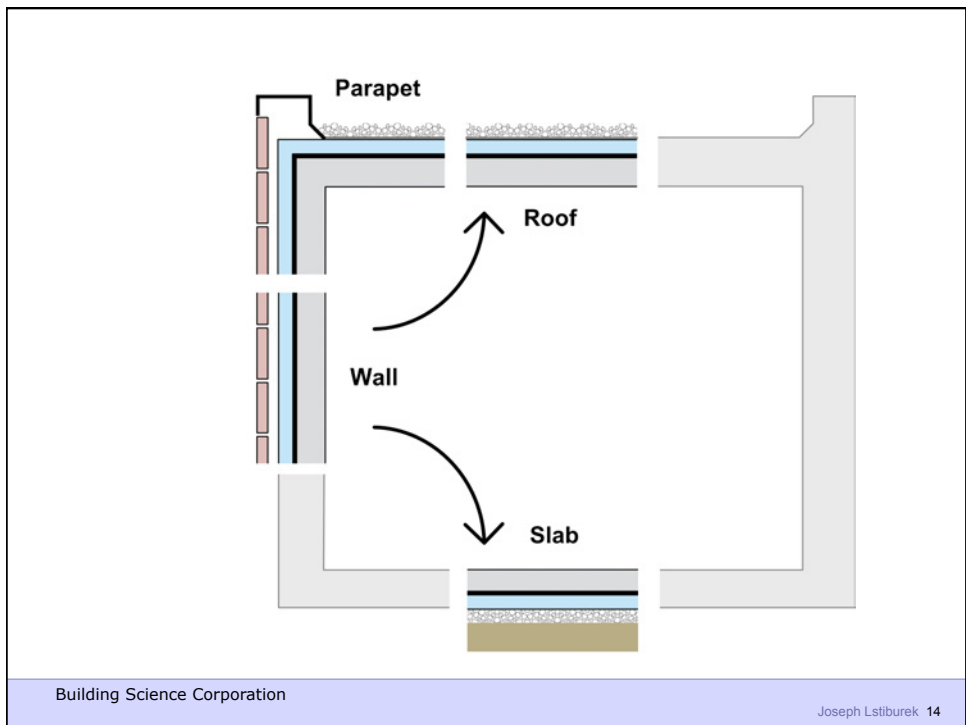
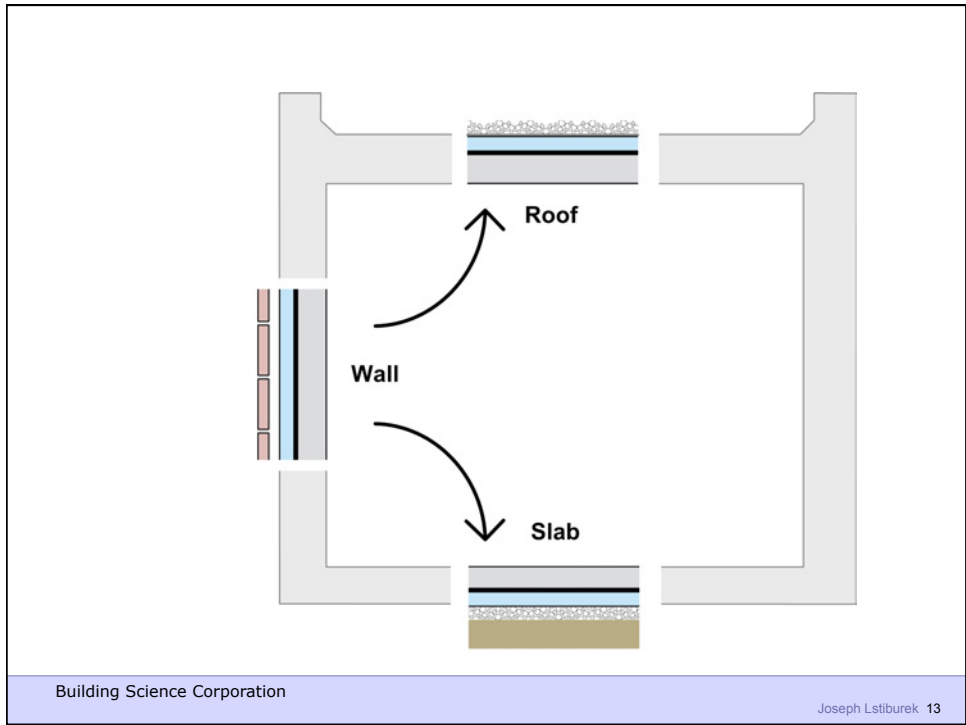
Water Control Layer
Air Control Layer
Vapor Control Layer
Thermal Control Layer

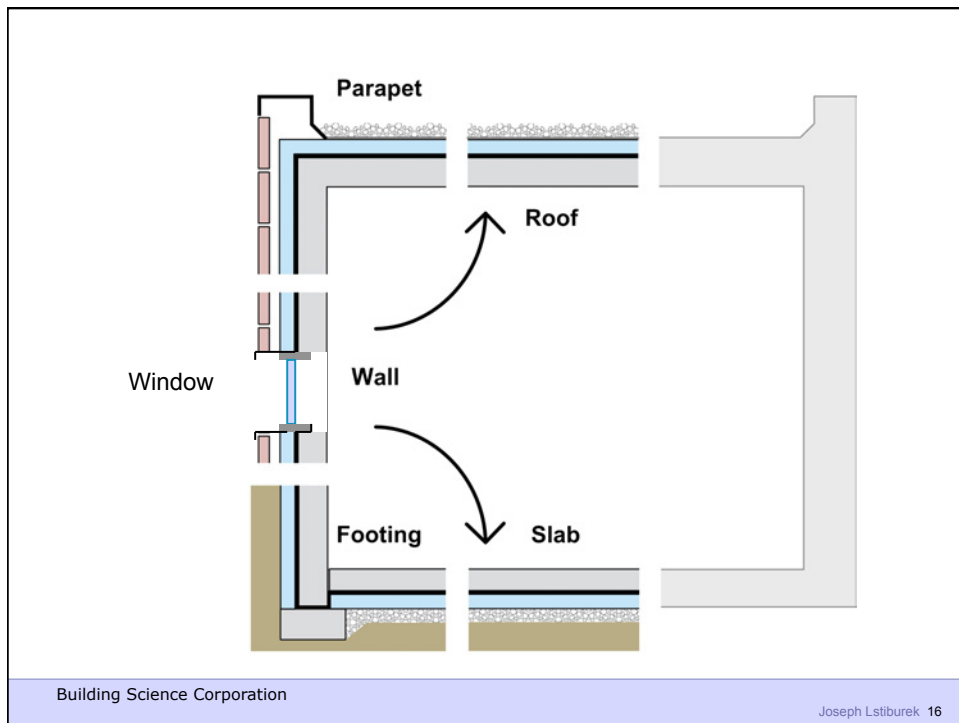
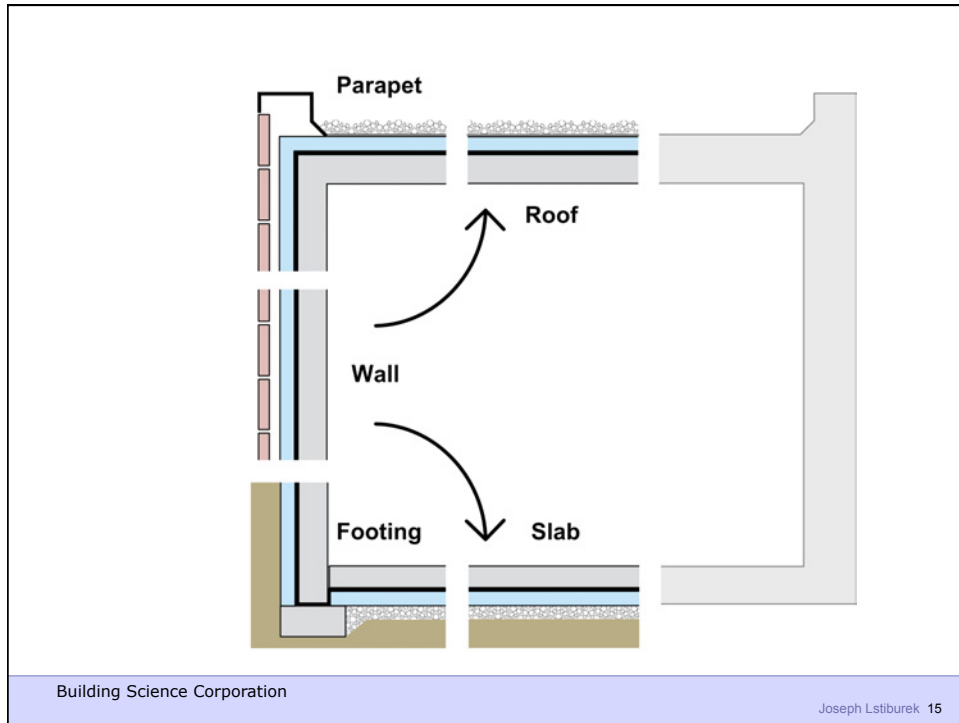


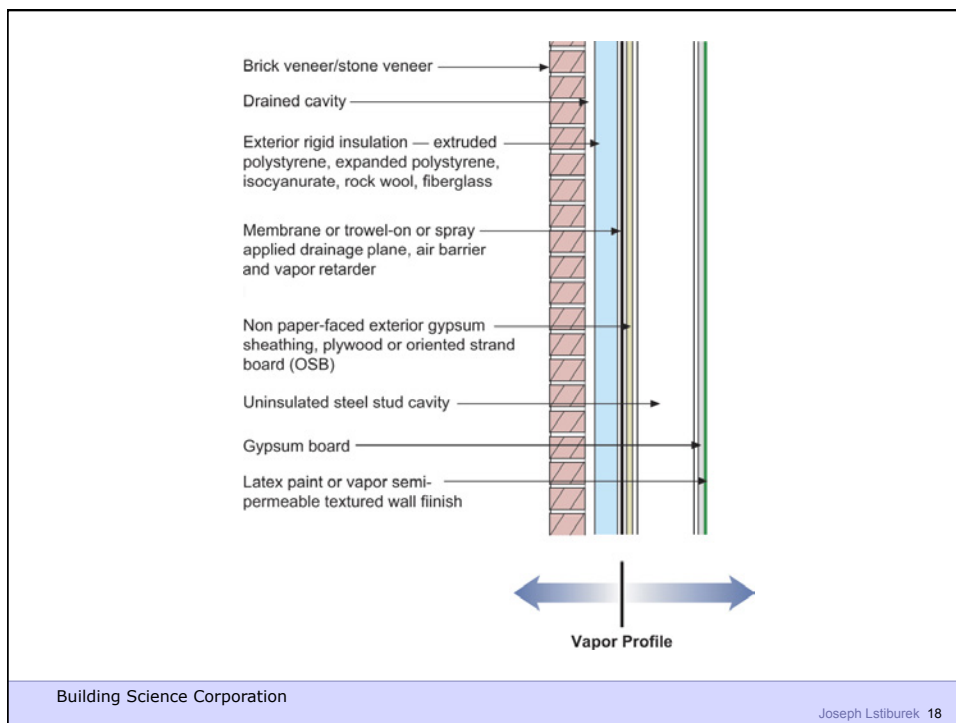
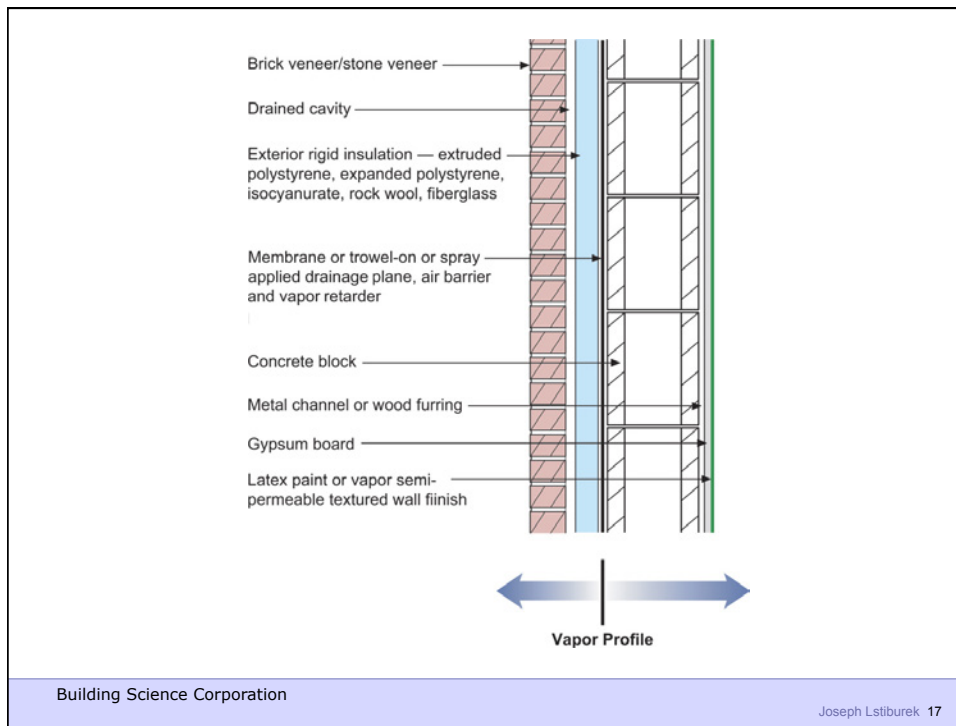


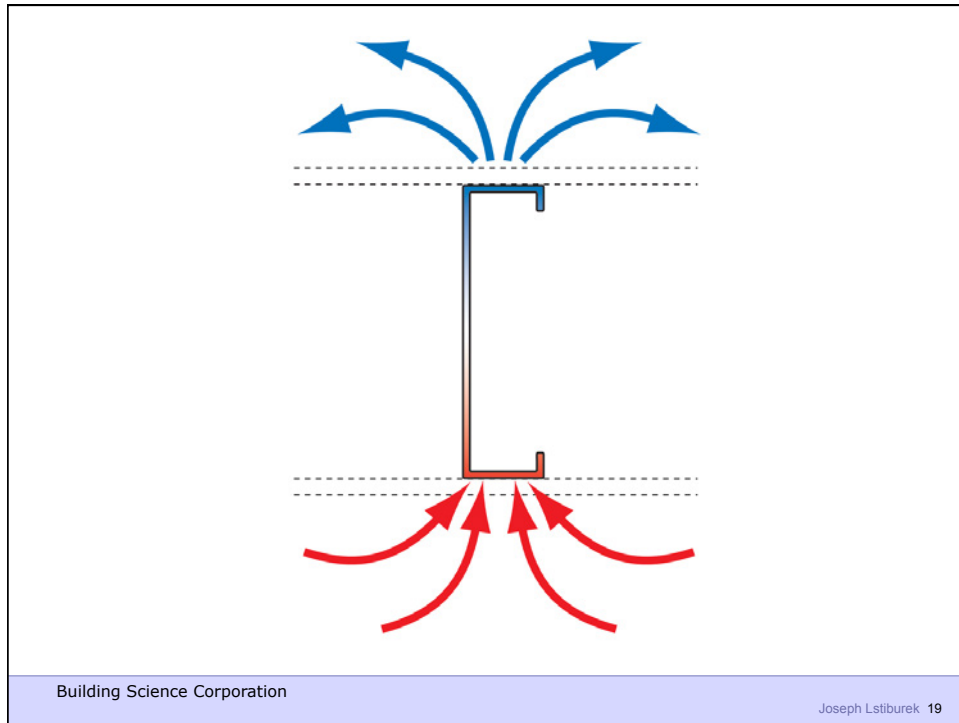


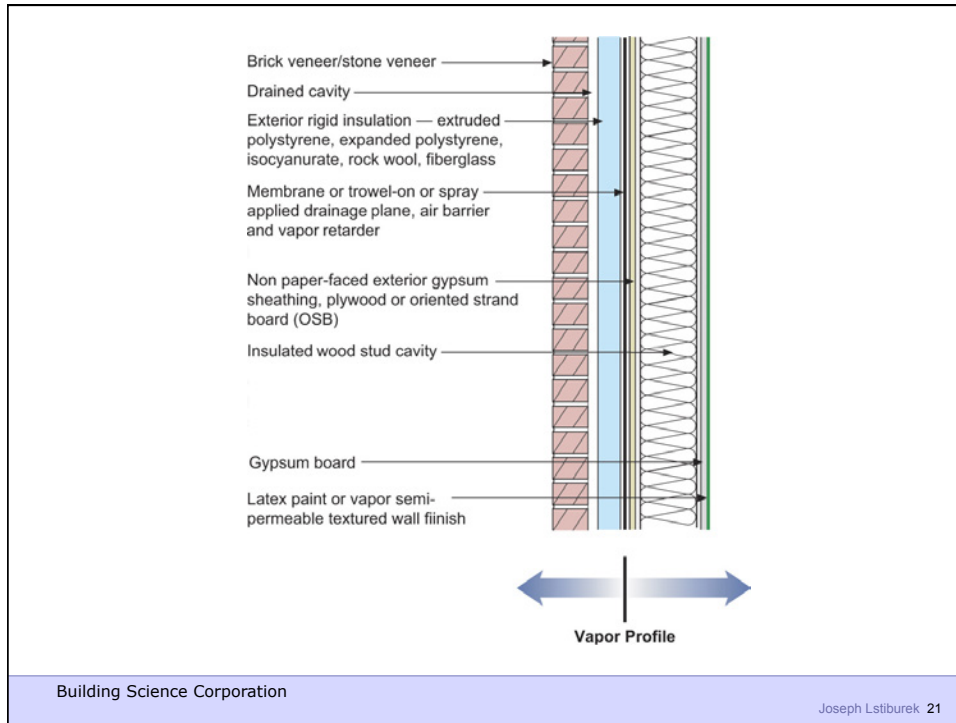




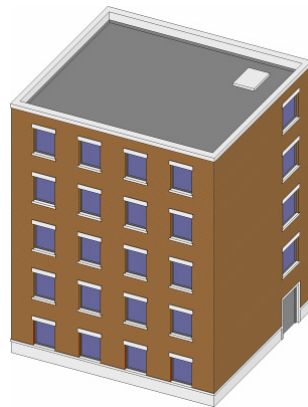




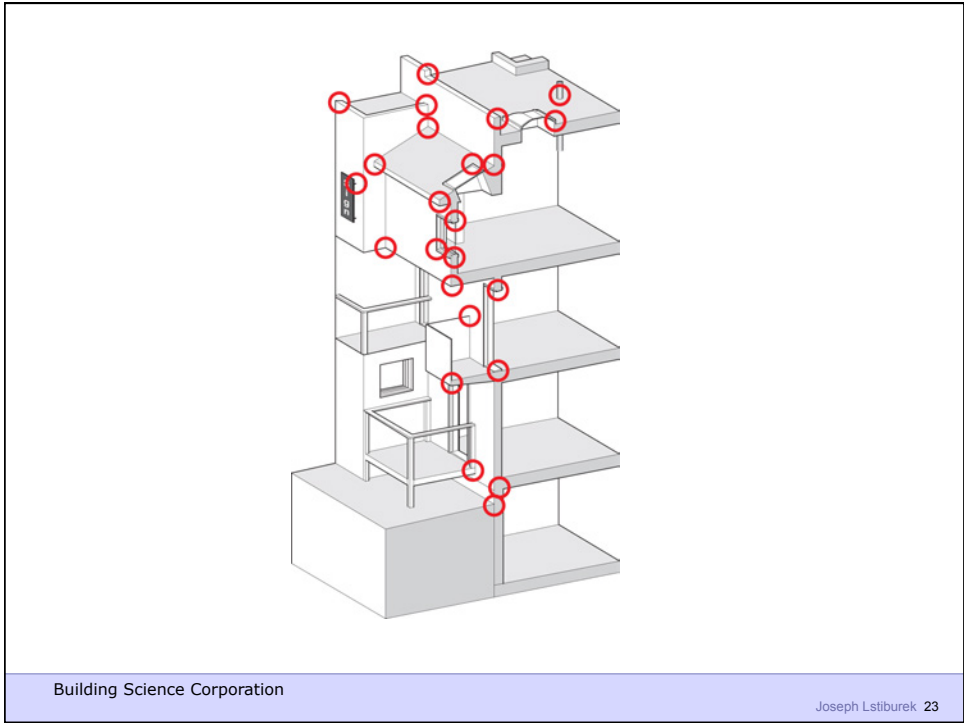




Commercial Enclosure: Simple Layers



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





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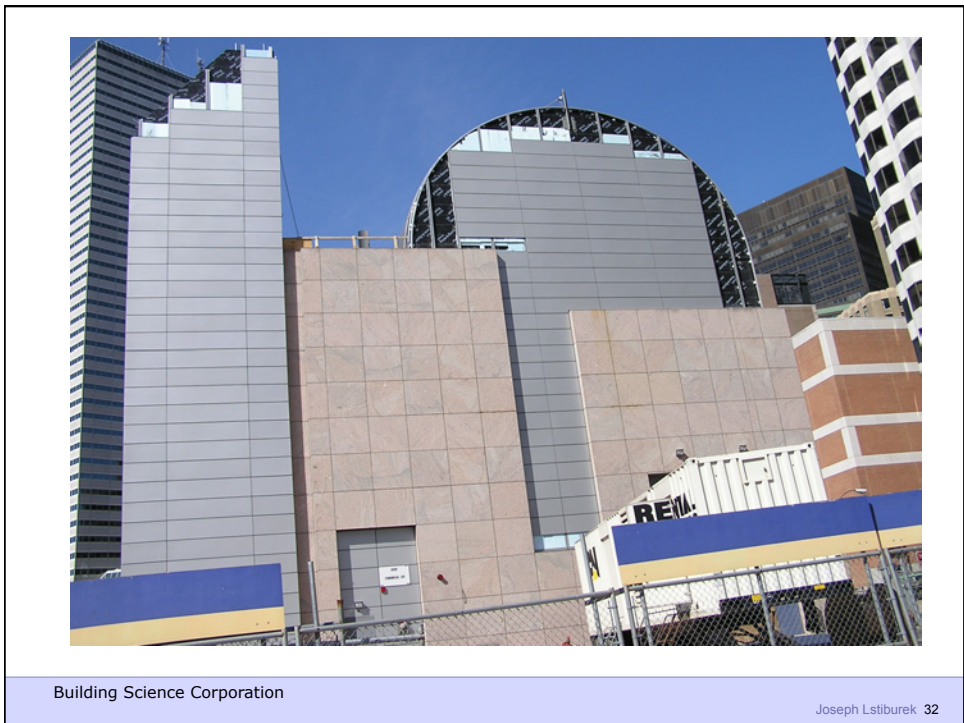


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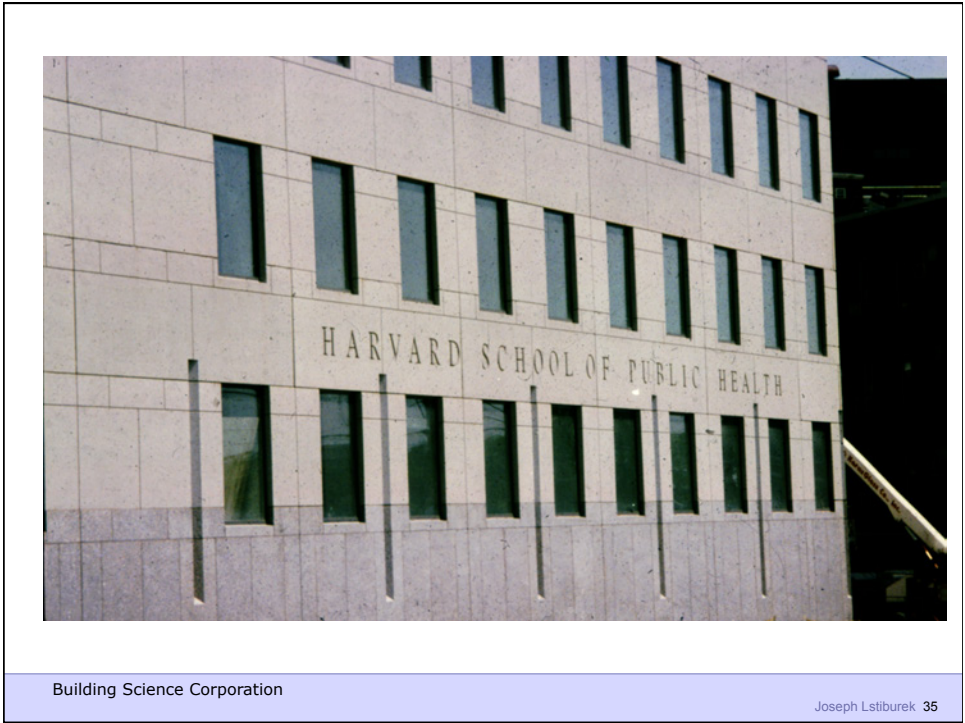
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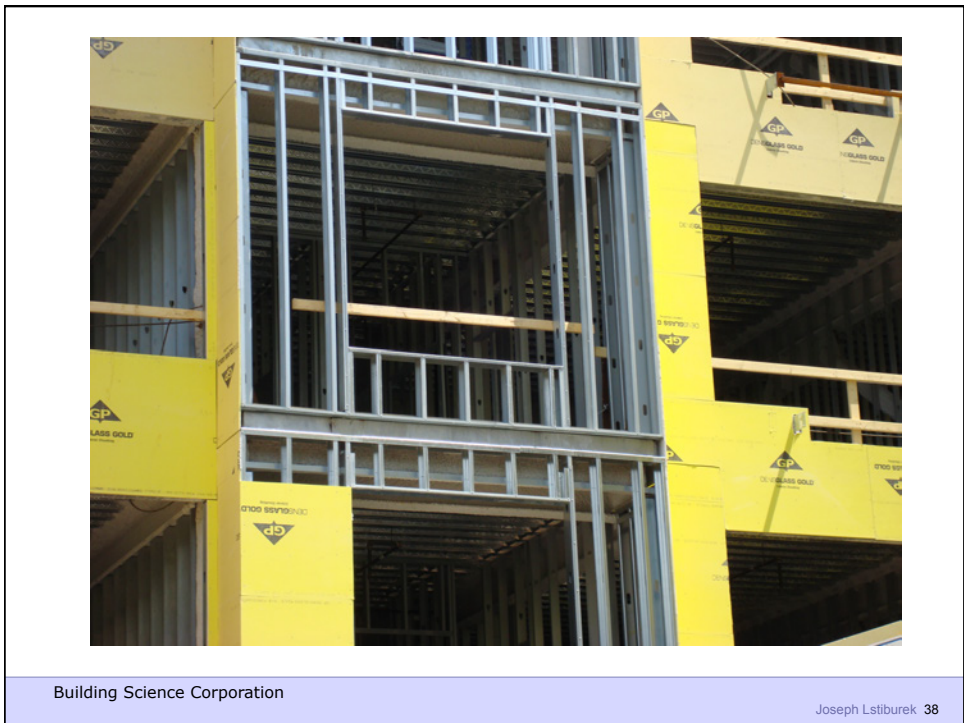
















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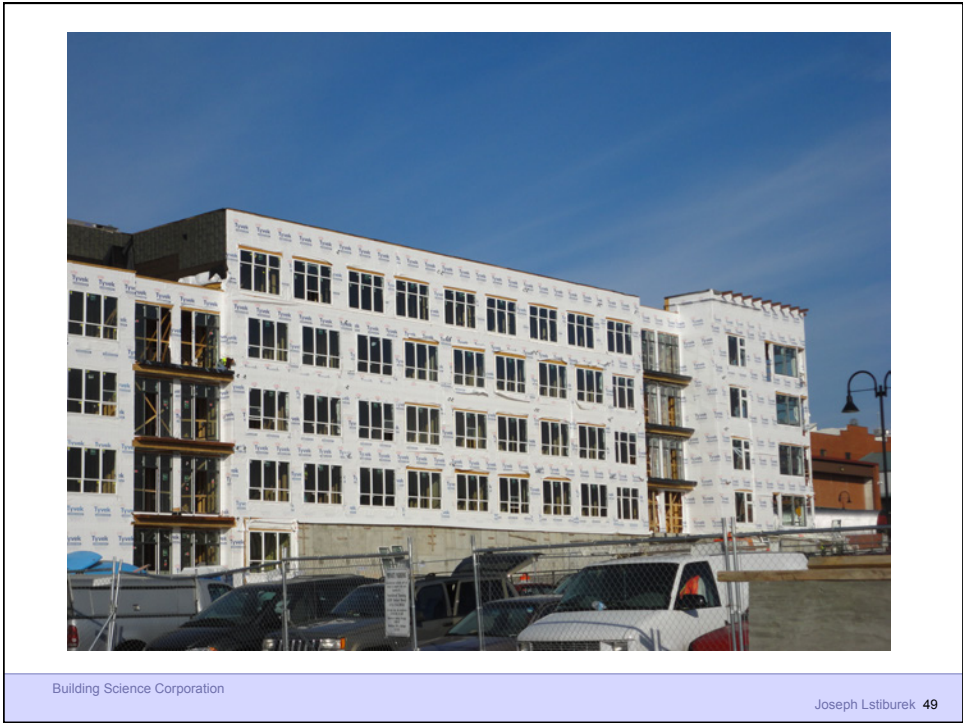
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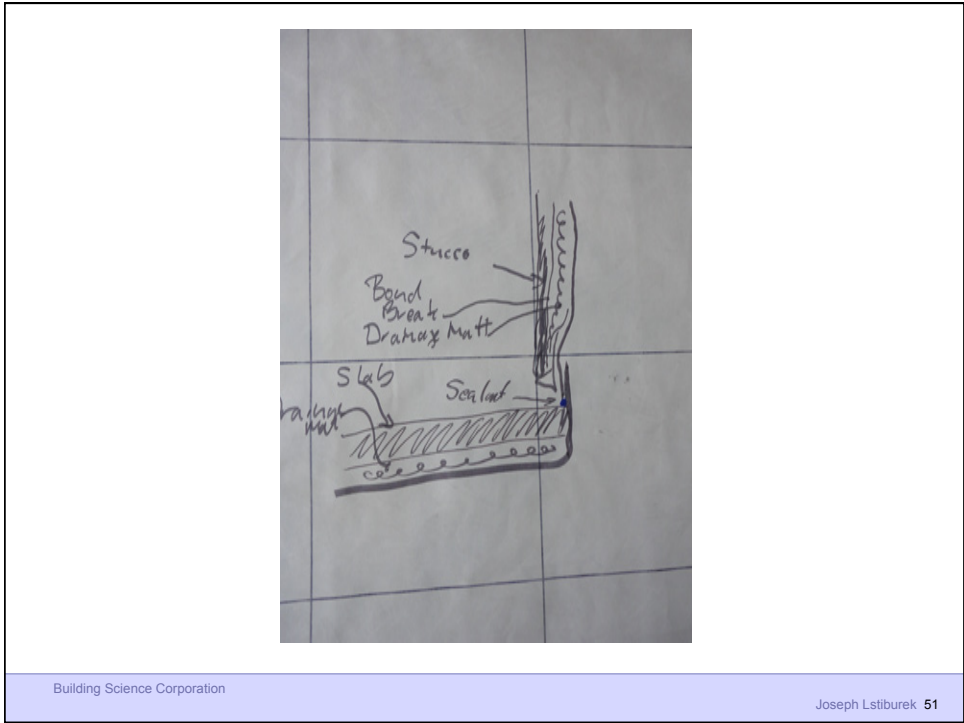
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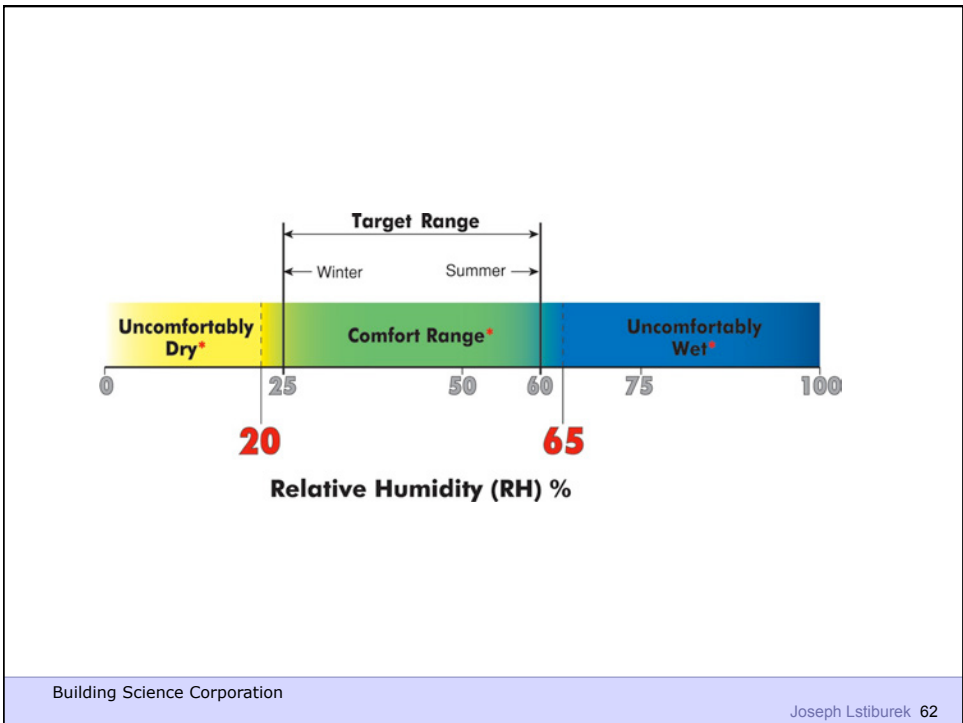
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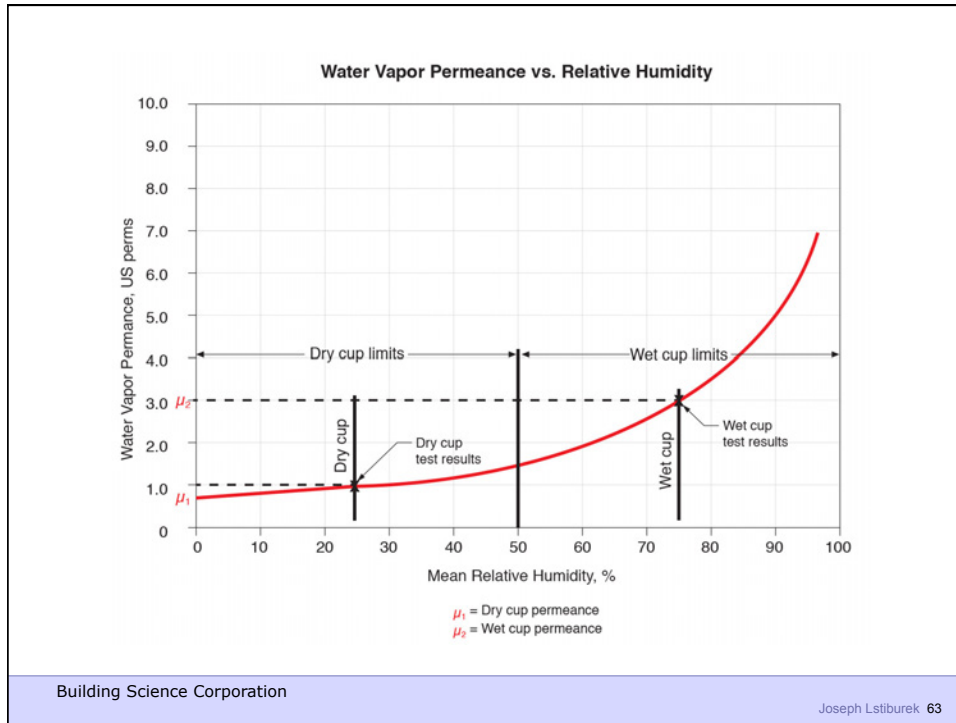
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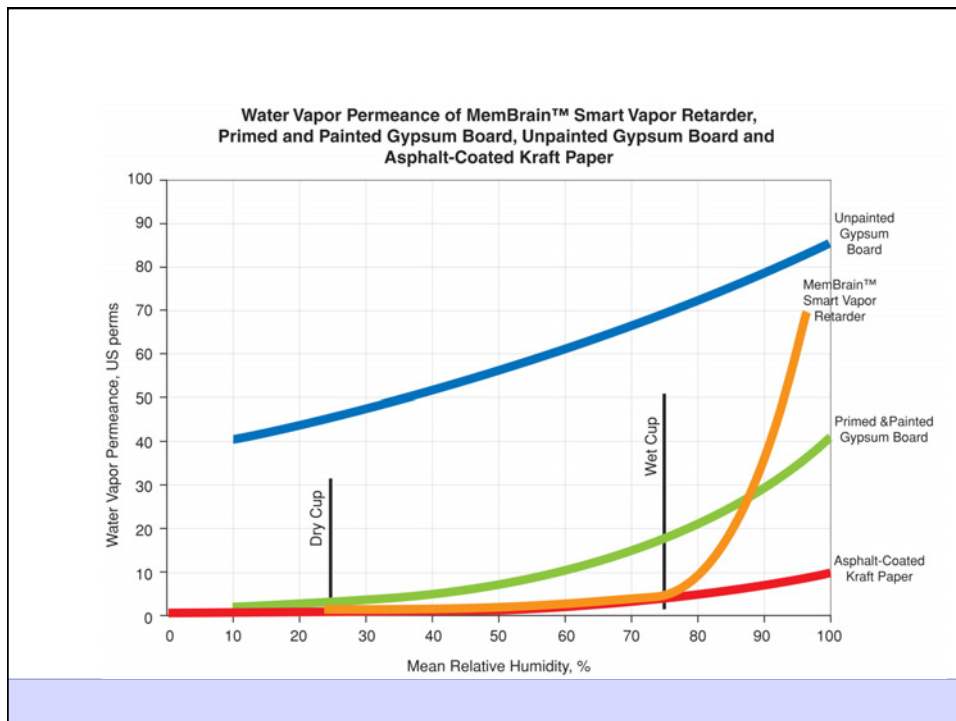
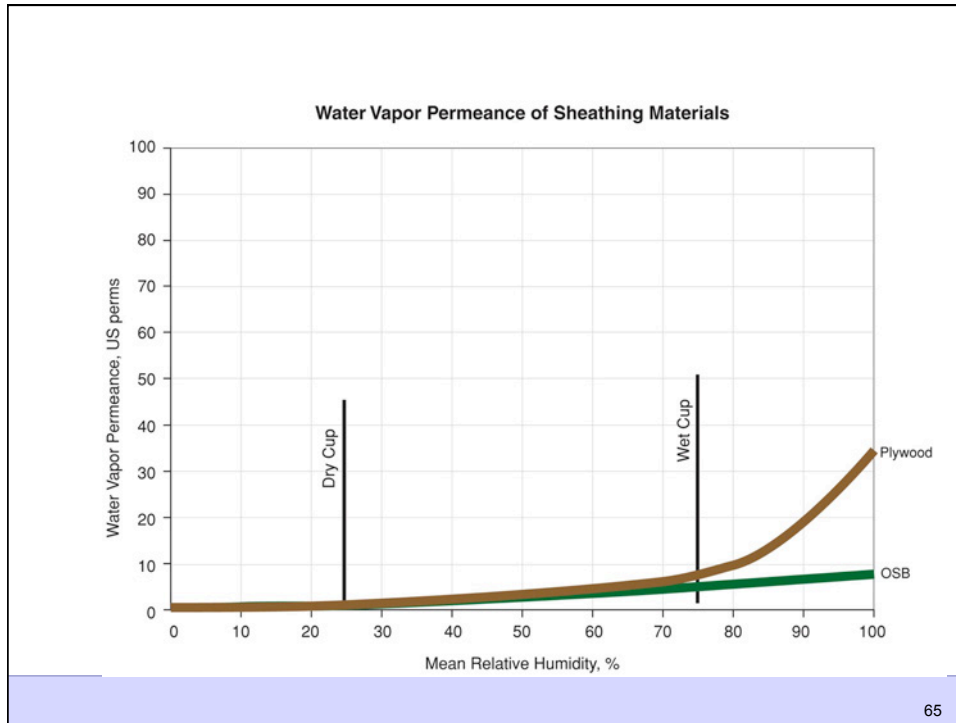


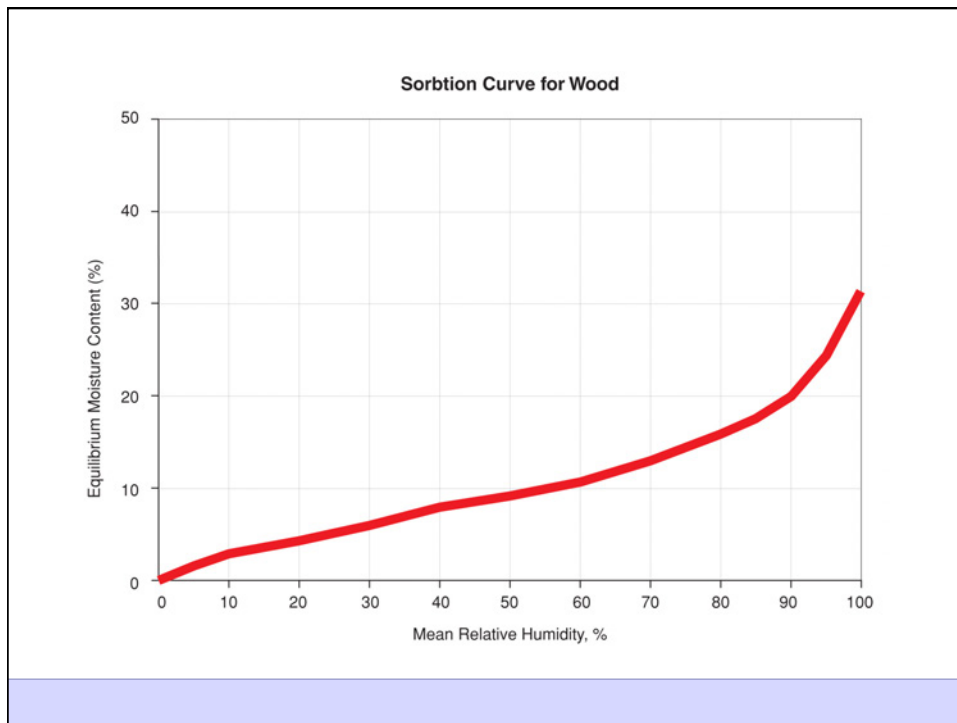
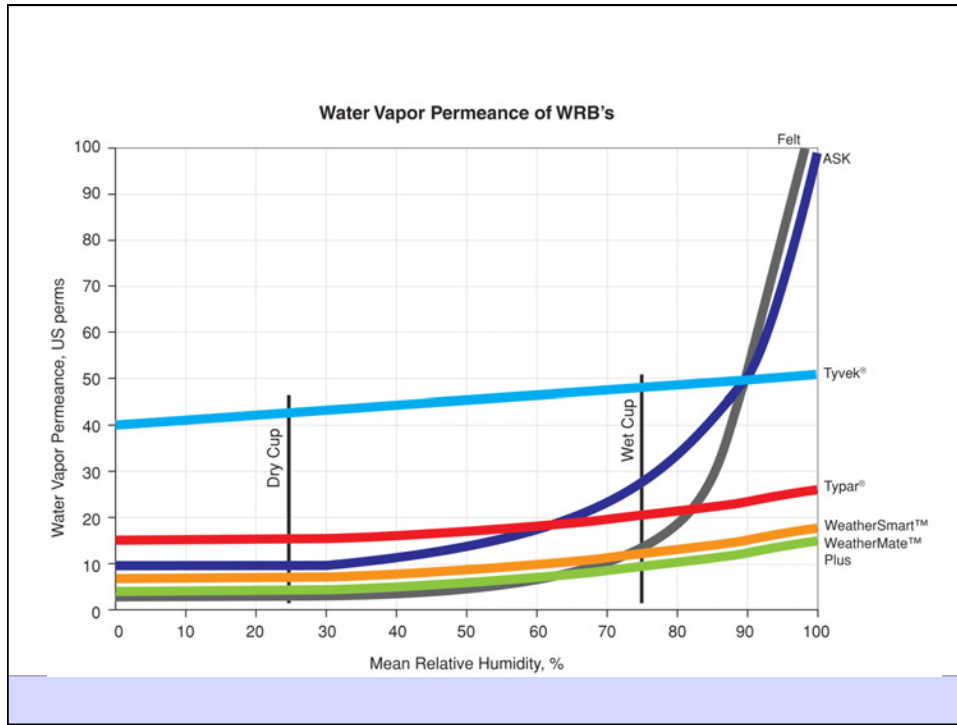
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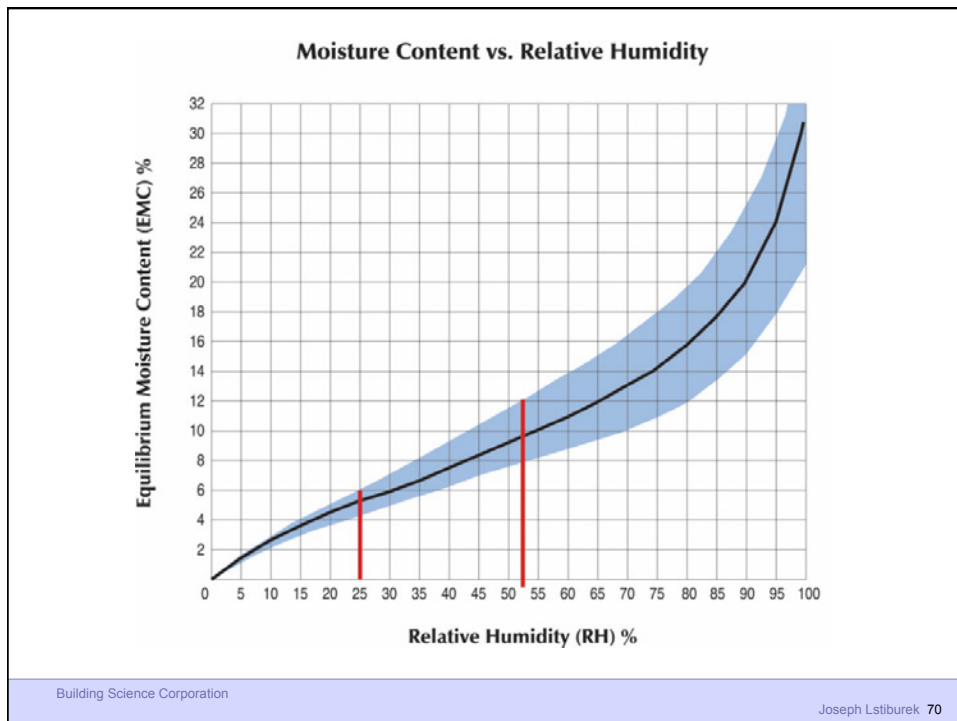
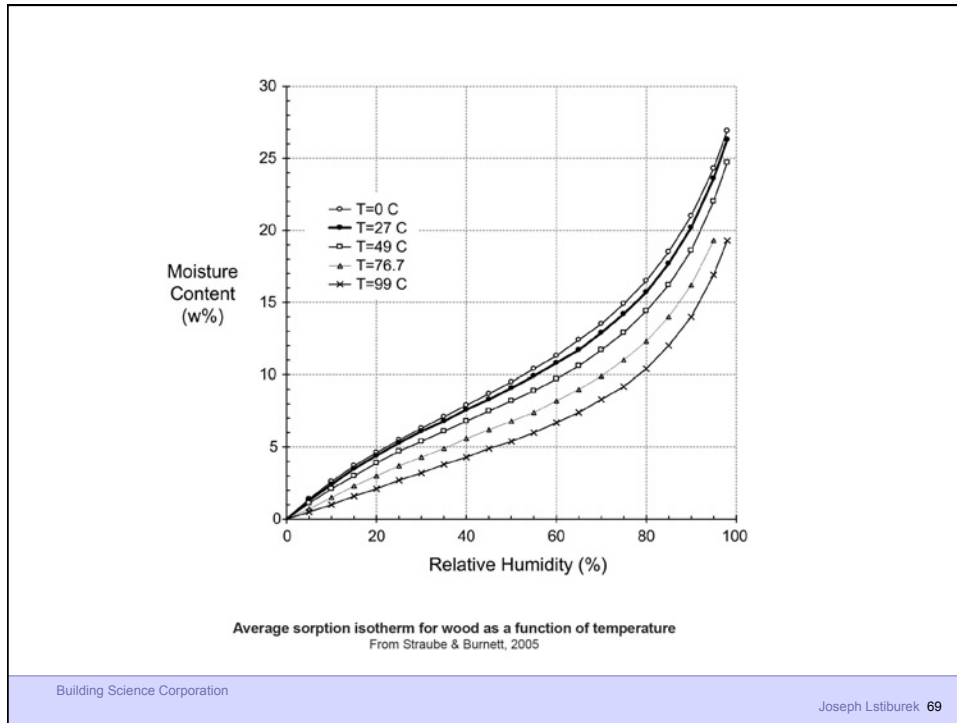
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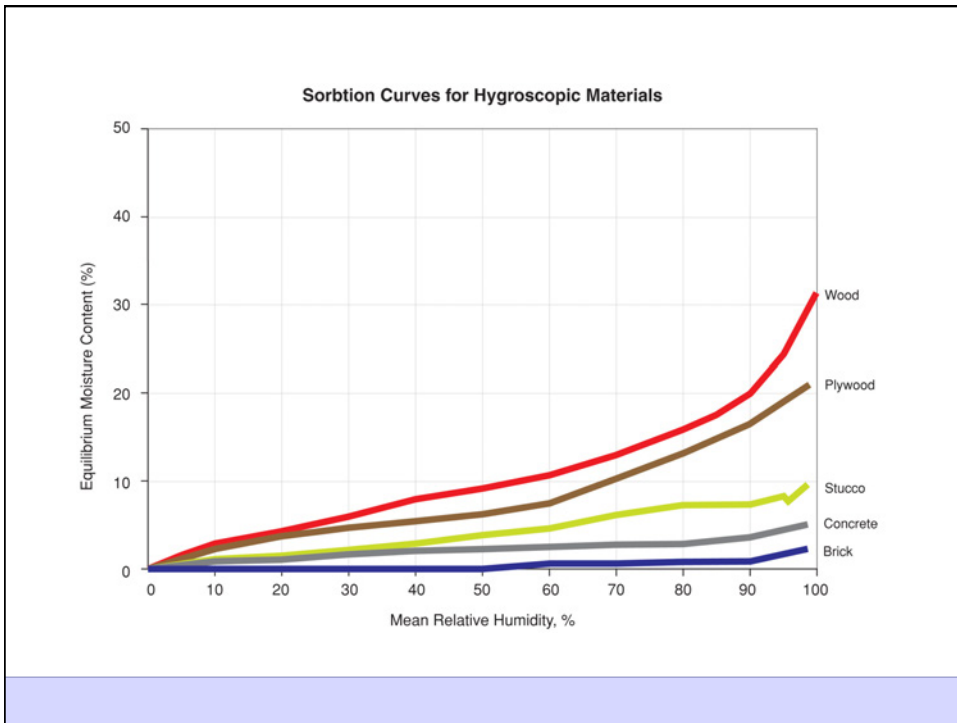














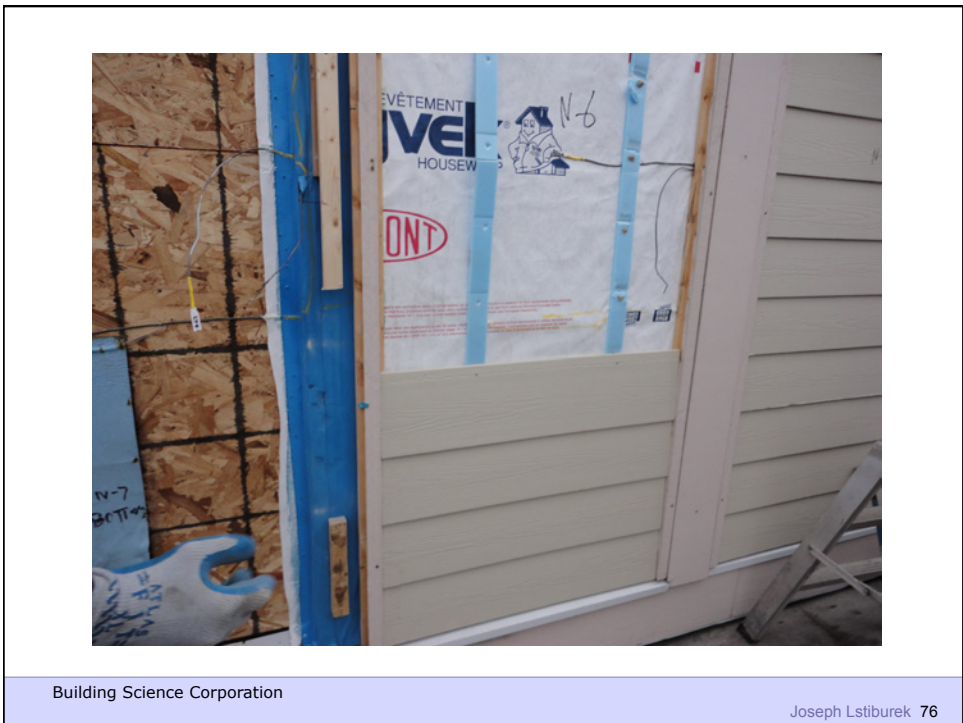
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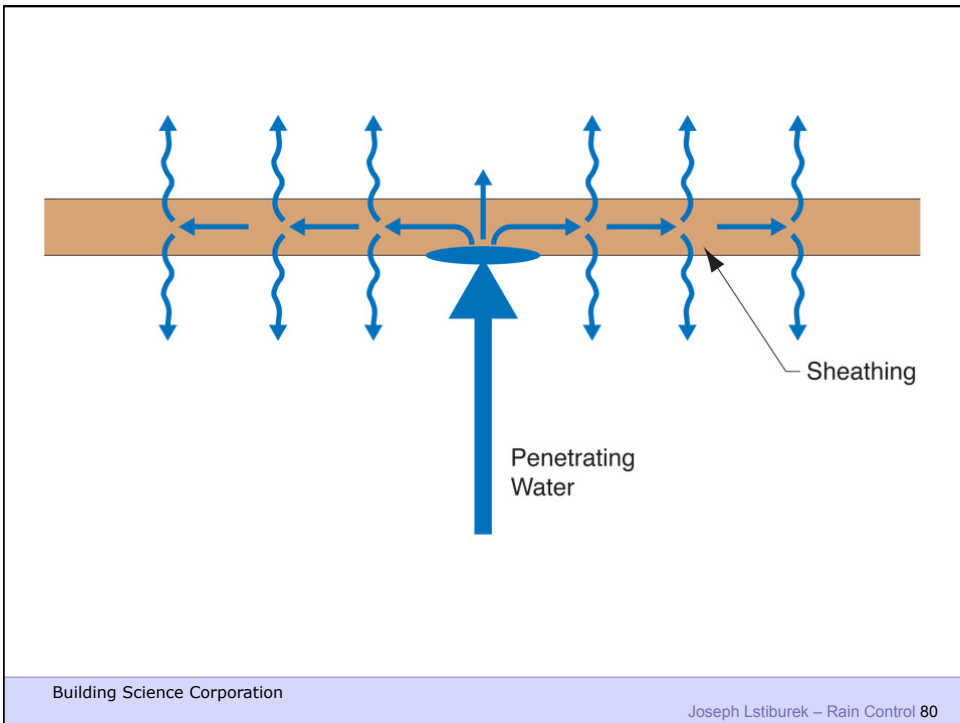


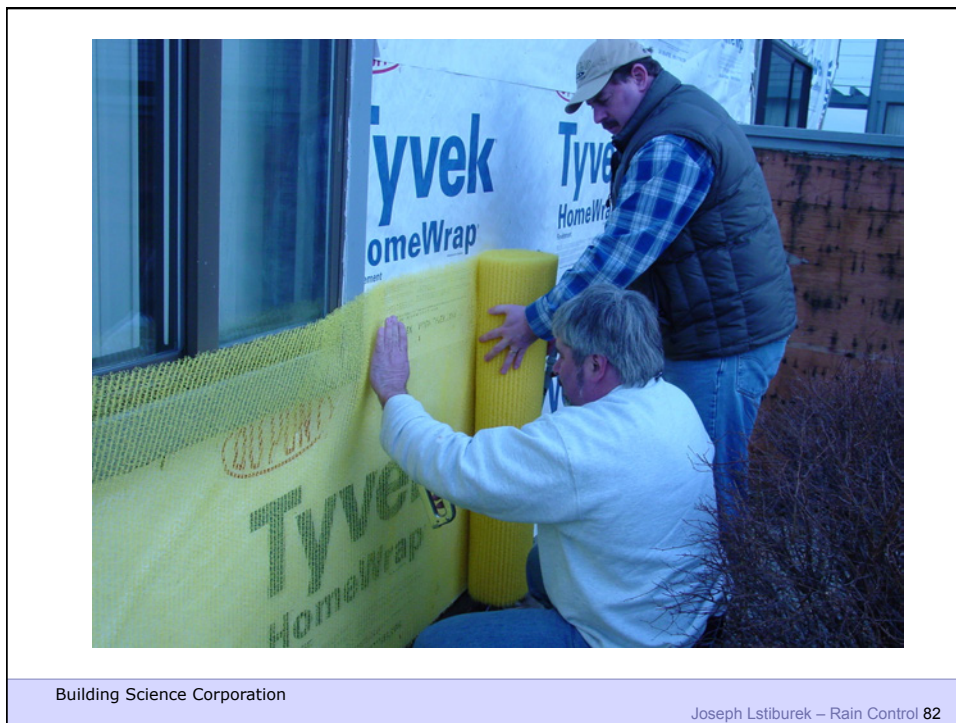
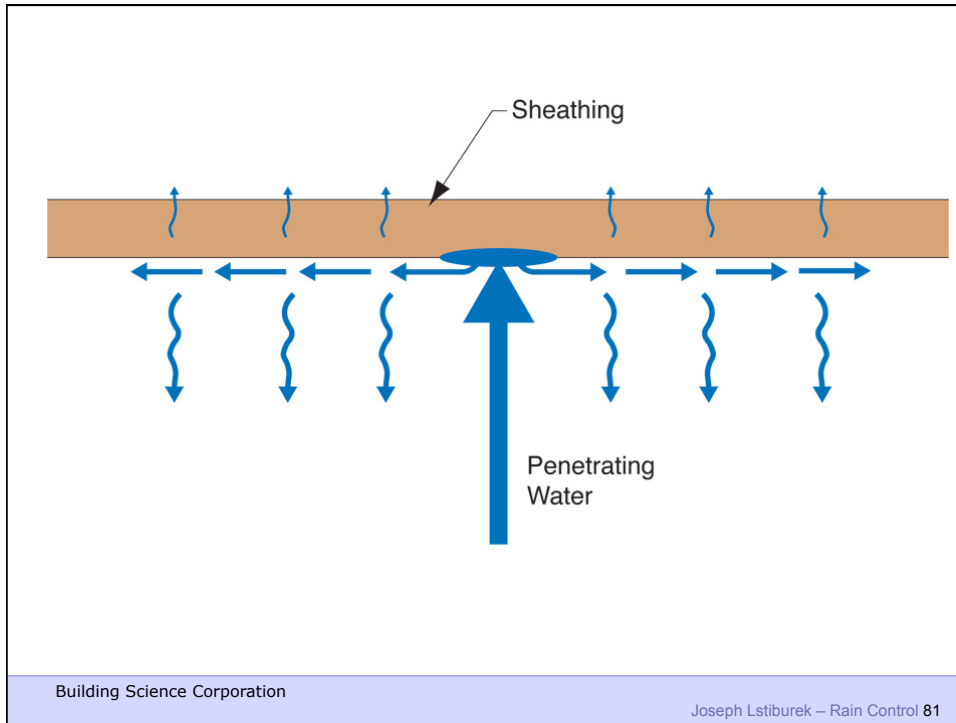
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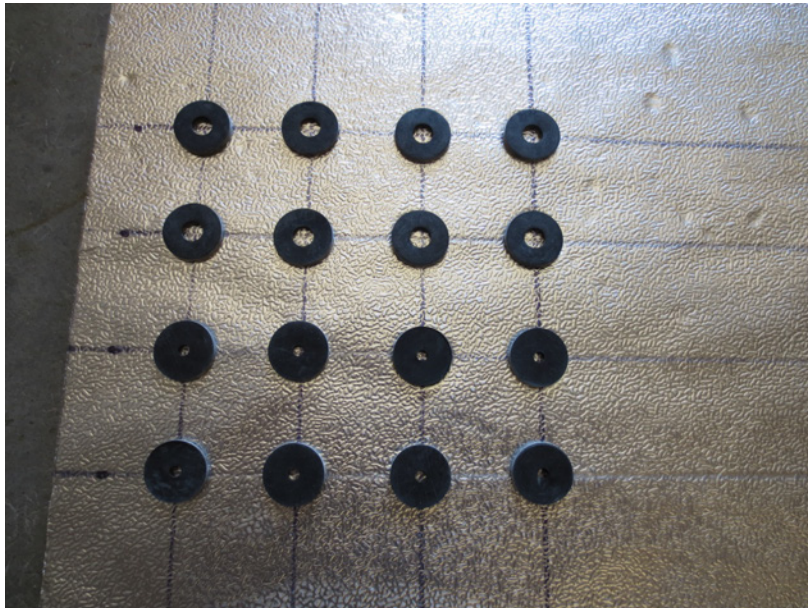




Rain Screen

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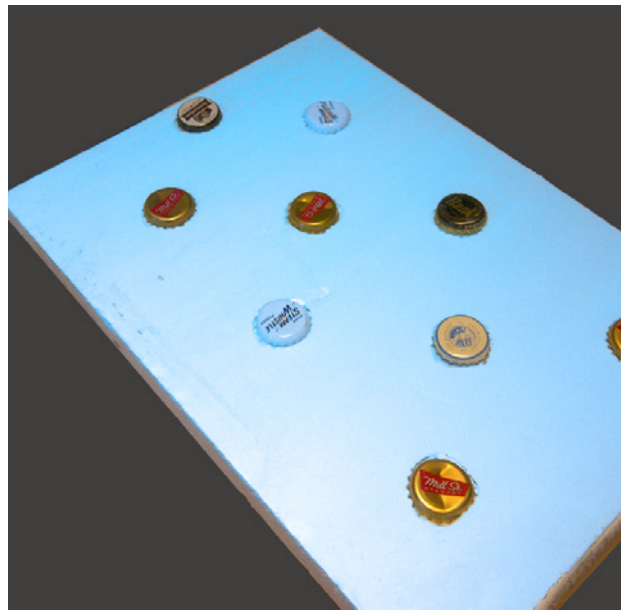
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Beer Screen?

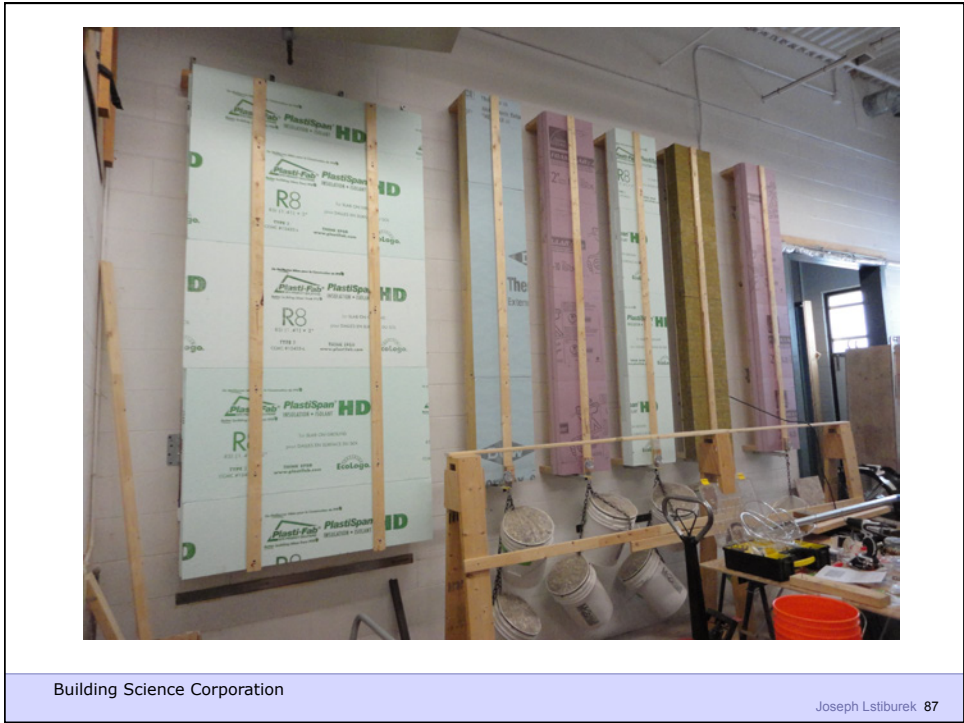
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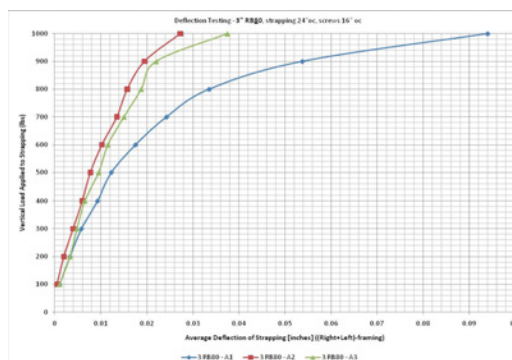
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Rockwool

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





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