

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

Innovation Summit 2014

Improved Claims
Building Science and Underwriting

www.buildingscience.com

Life is Tough Enough As it Is...

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Life is Tough Enough As it Is...
It's Harder When You Are Stupid

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Don't Do Stupid Things

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80 percent of construction defects involve water

98 percent of basements will experience water damage during their useful service life

40 percent of homeowners claim to have suffered from water damage

Water damage is the second most frequently filed claim

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Buildings Get Wet From The Outside

Buildings Get Wet From The Inside

Buildings Start Out Wet

Wet Happens

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Point Number 1

Buildings Must Be Designed To Dry

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Buildings Can Dry To The Outside

Buildings Can Dry To The Inside

Buildings Can Dry To Both Sides

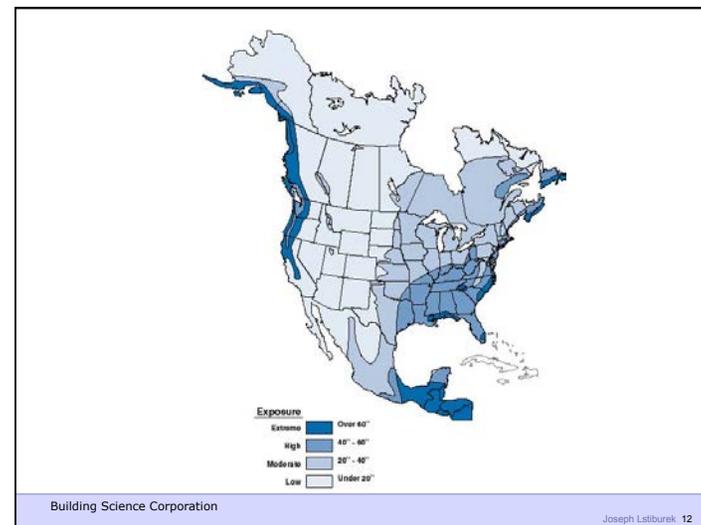
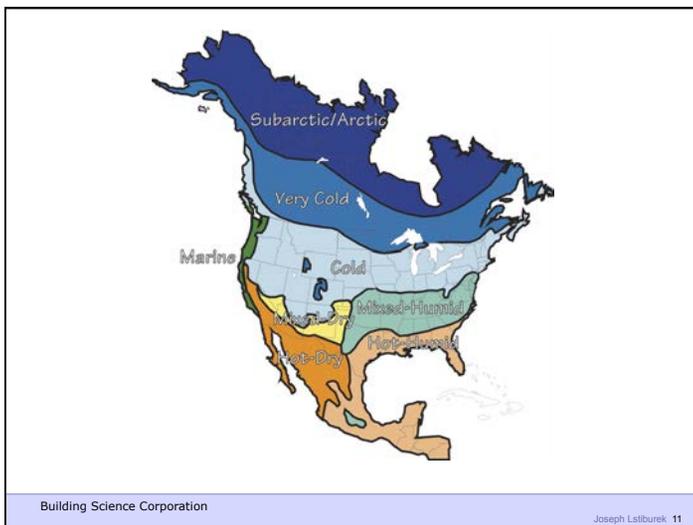
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2nd Law of Thermodynamics

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Heat Flow Is From Warm To Cold
 Moisture Flow Is From Warm To Cold
 Moisture Flow Is From More To Less
 Air Flow Is From A Higher Pressure to a Lower Pressure
 Gravity Acts Down

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Don't Do Stupid Things Vapor Barriers

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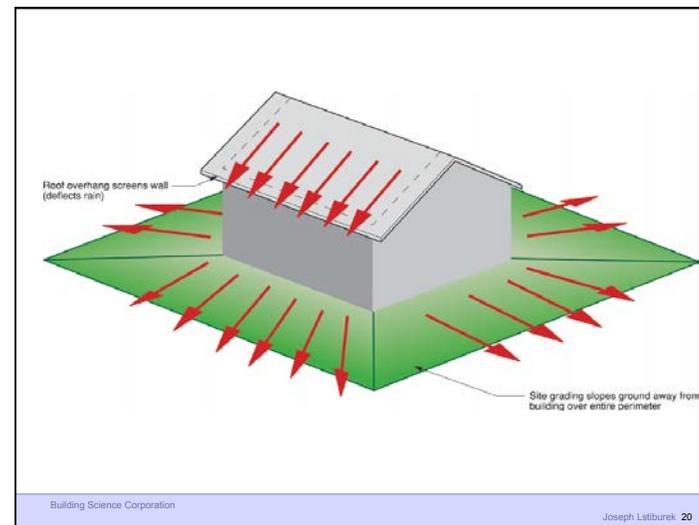
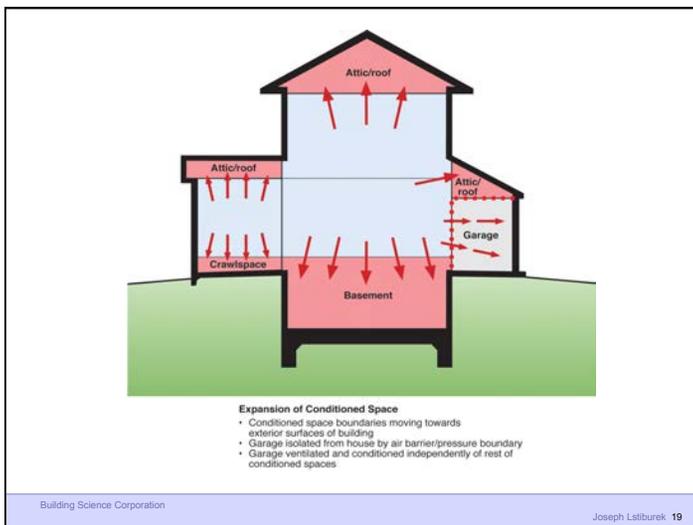
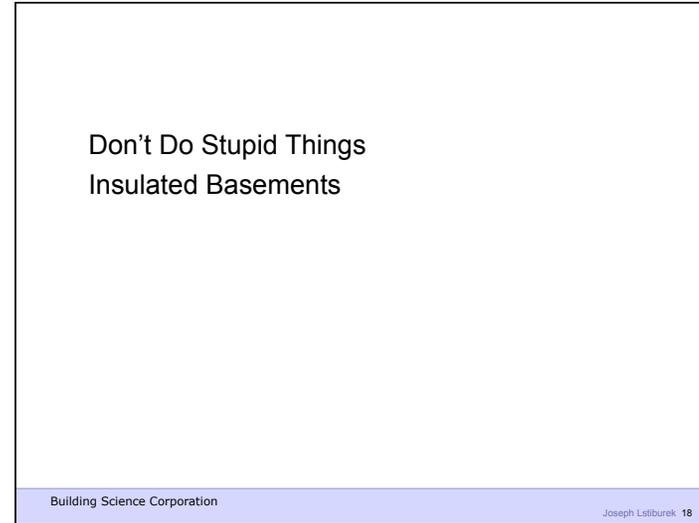
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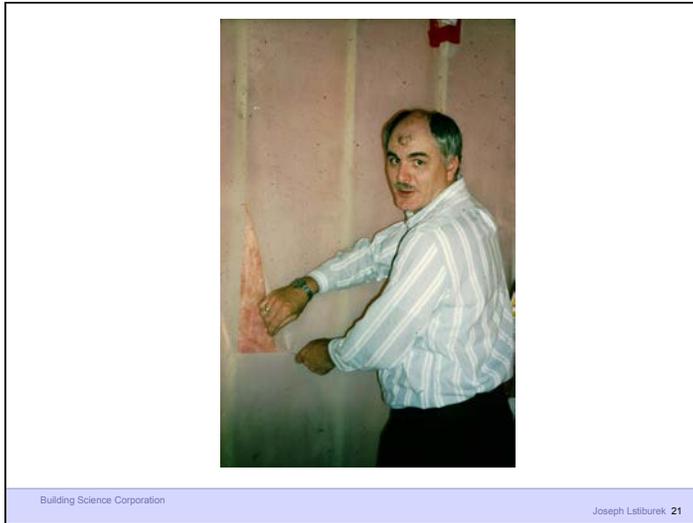
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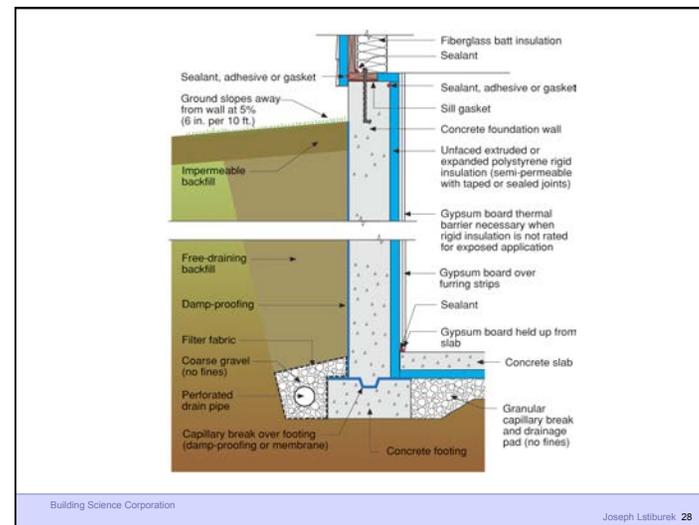
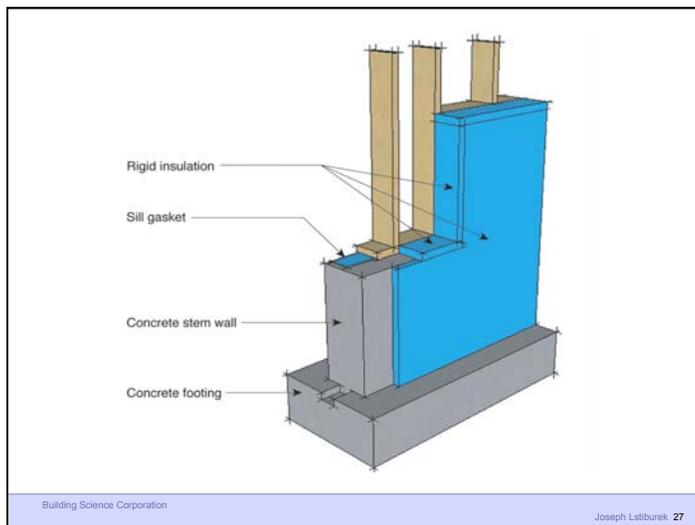


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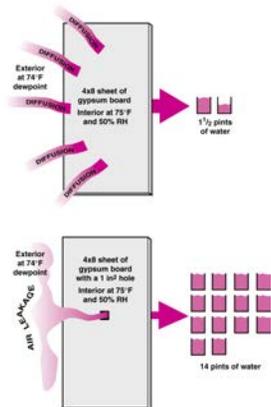
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Don't Do Stupid Things Humidifiers

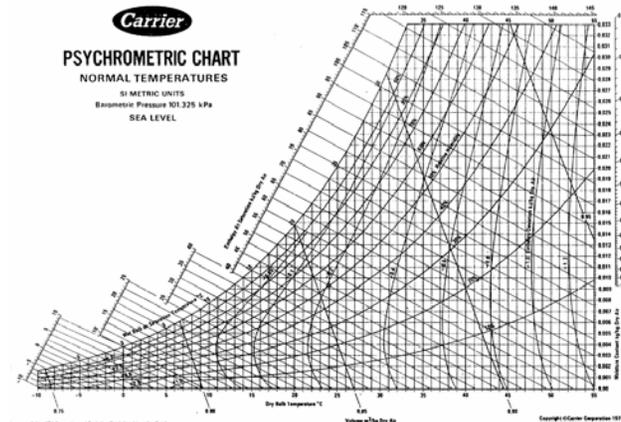
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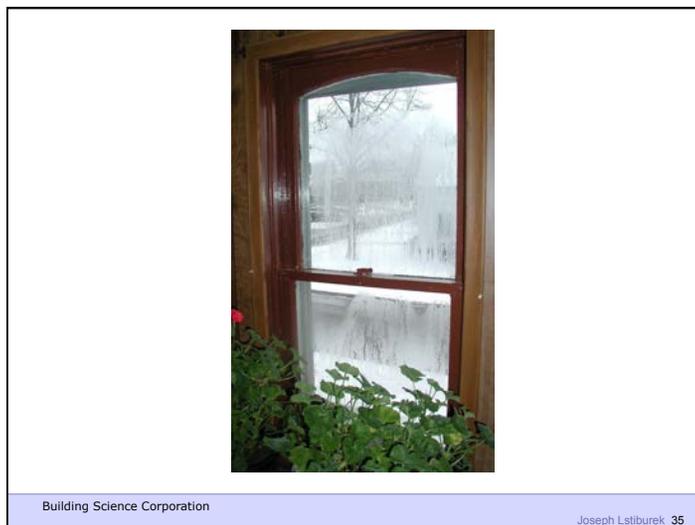
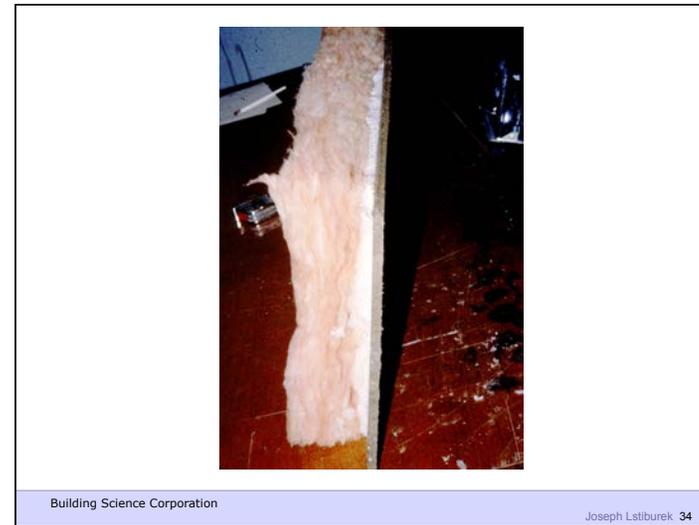
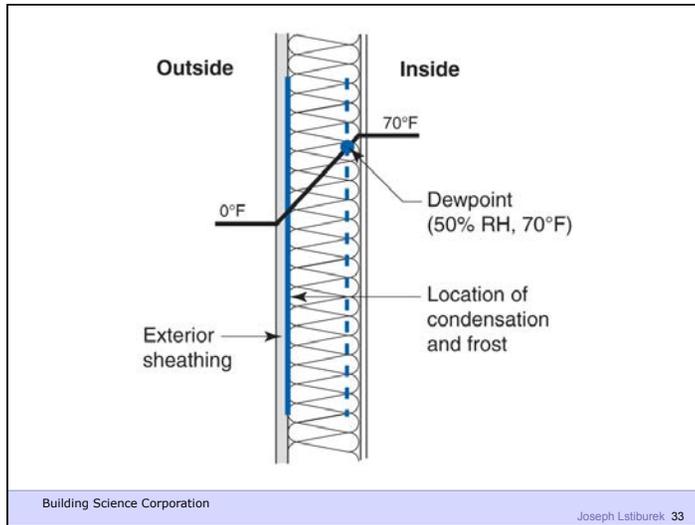
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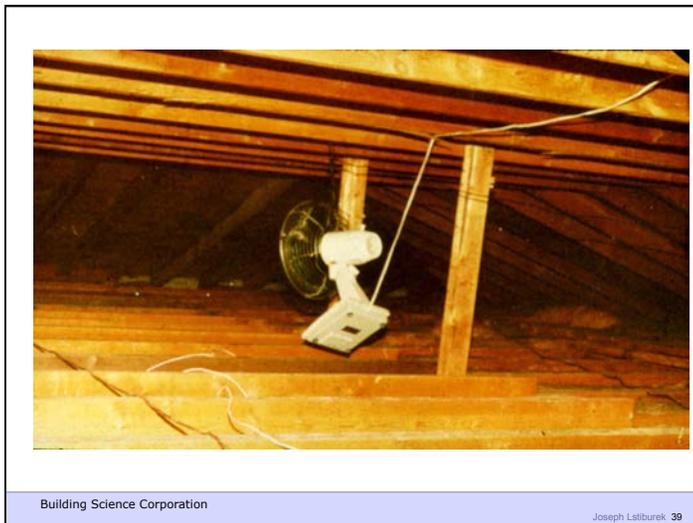
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Vented Attics

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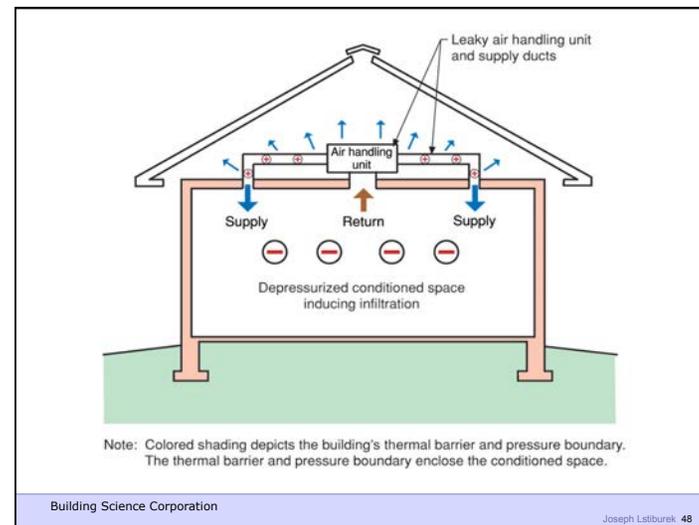
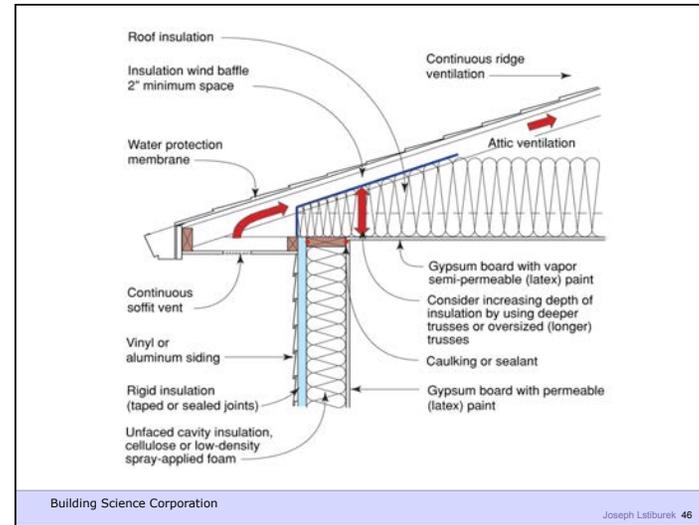


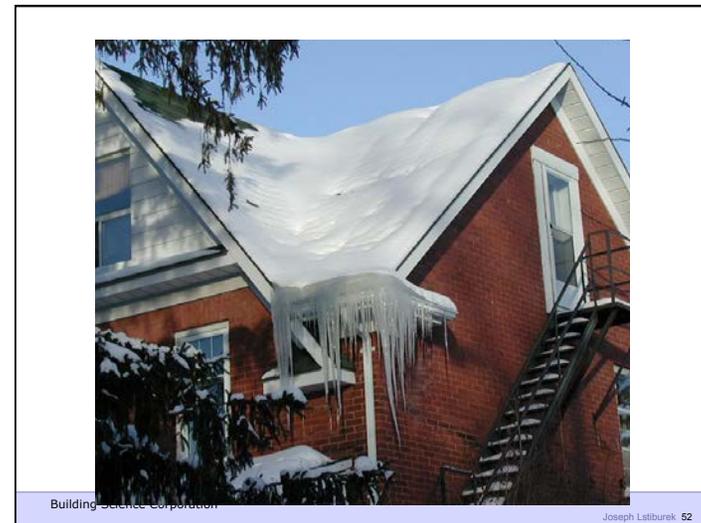


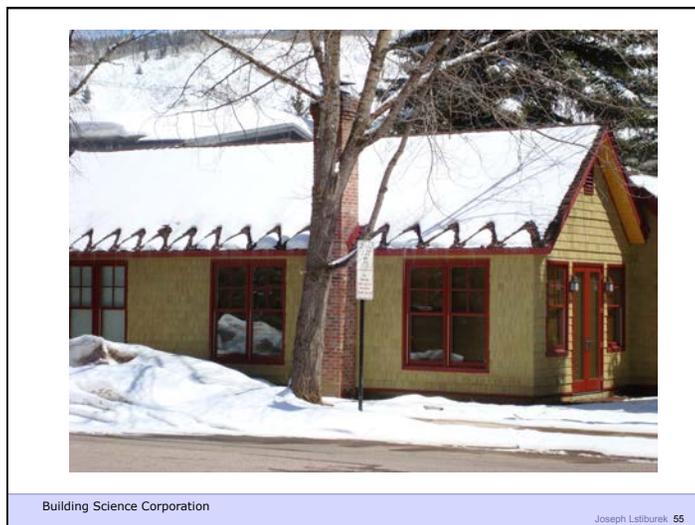
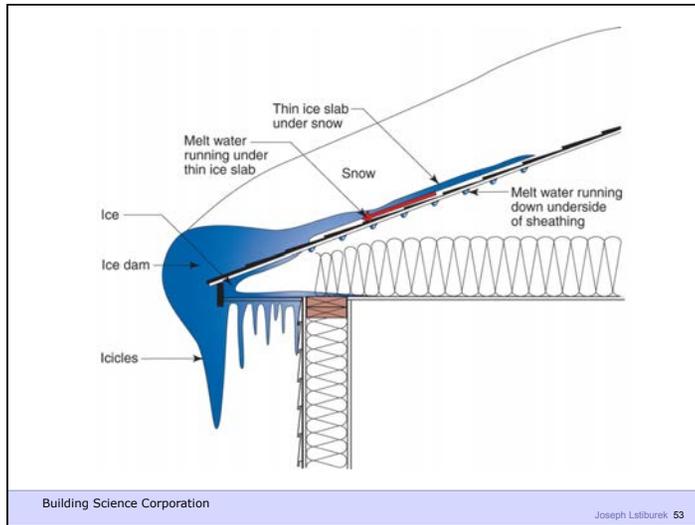
Ice Dams

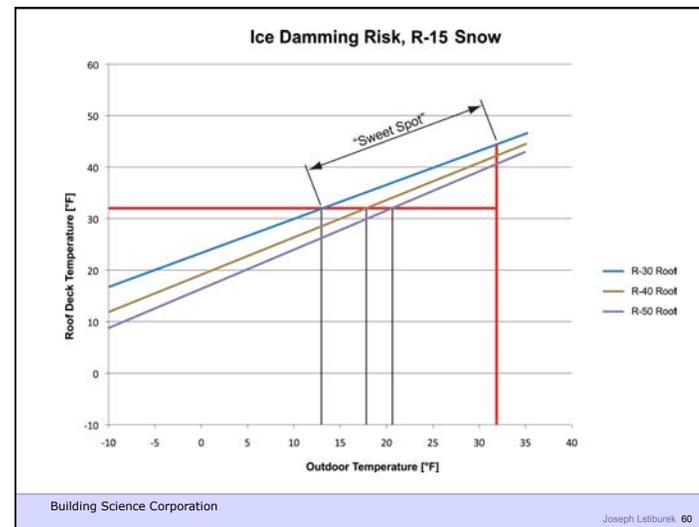
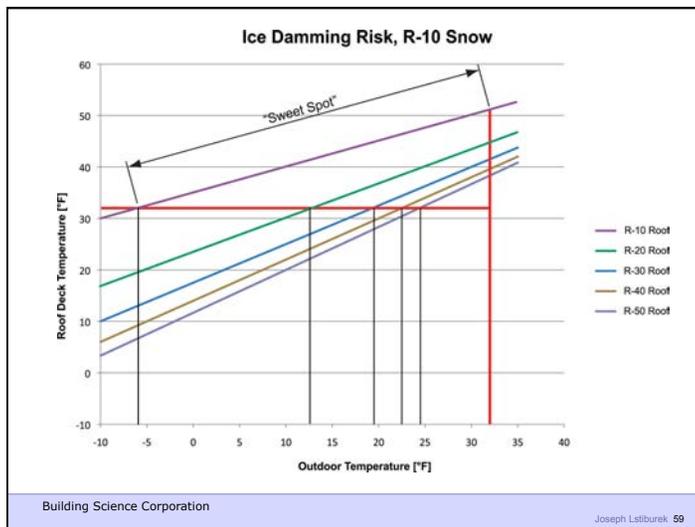
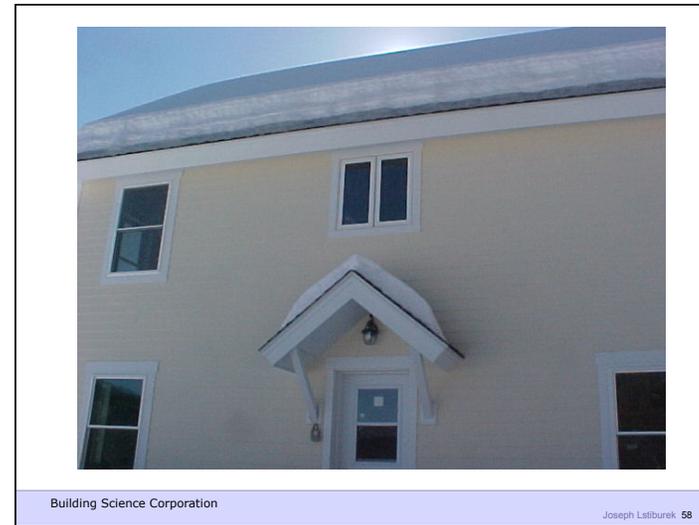
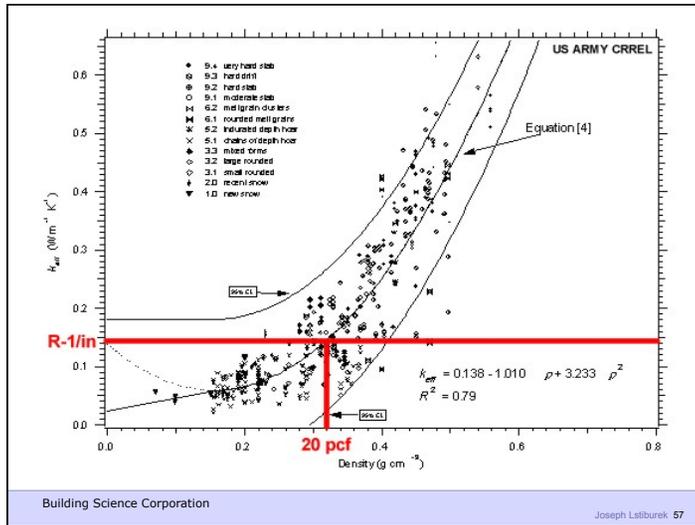
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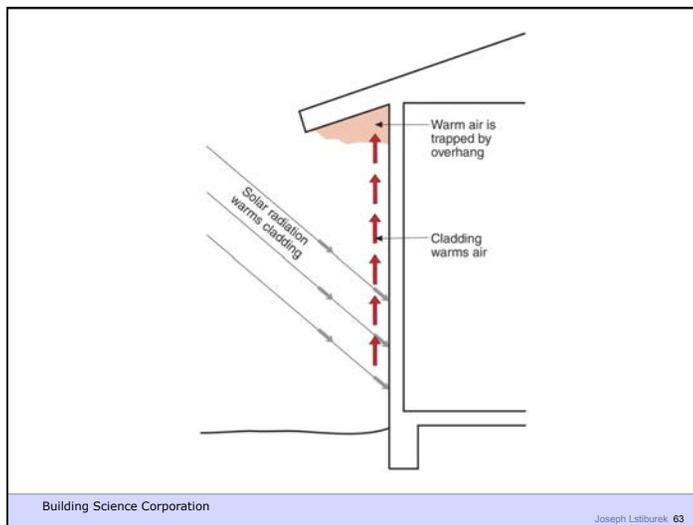
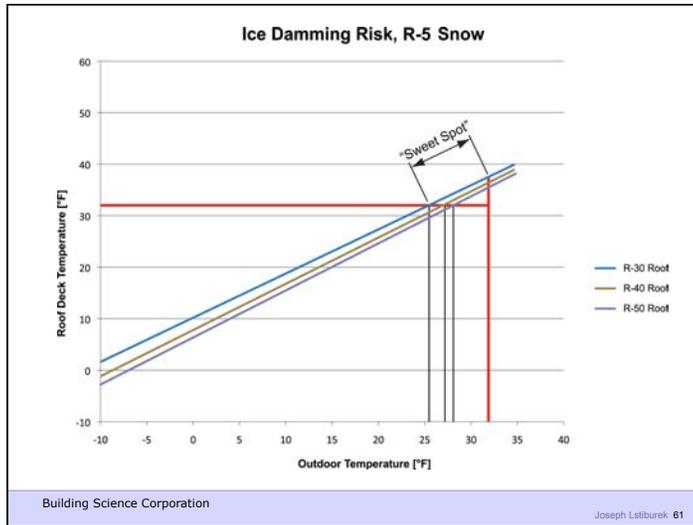
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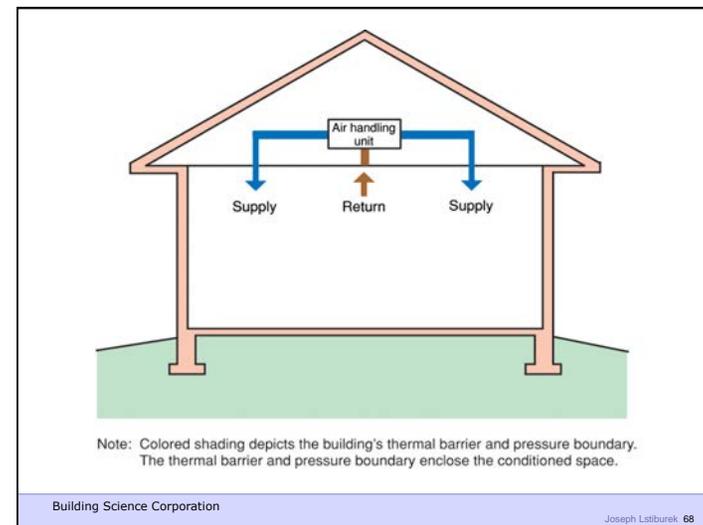
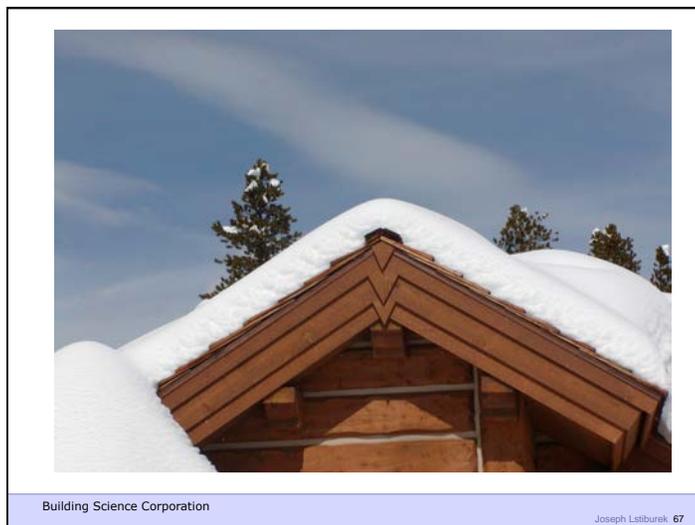


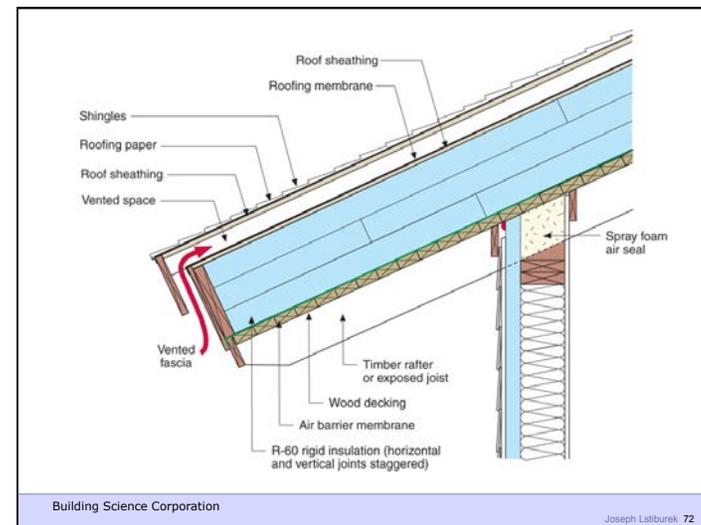
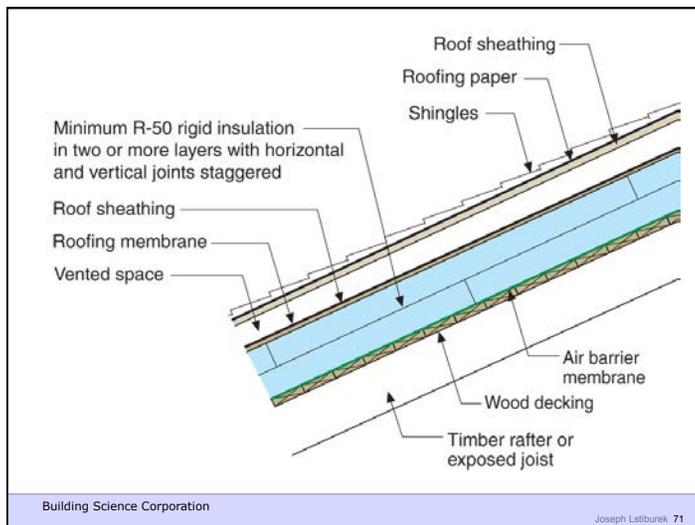
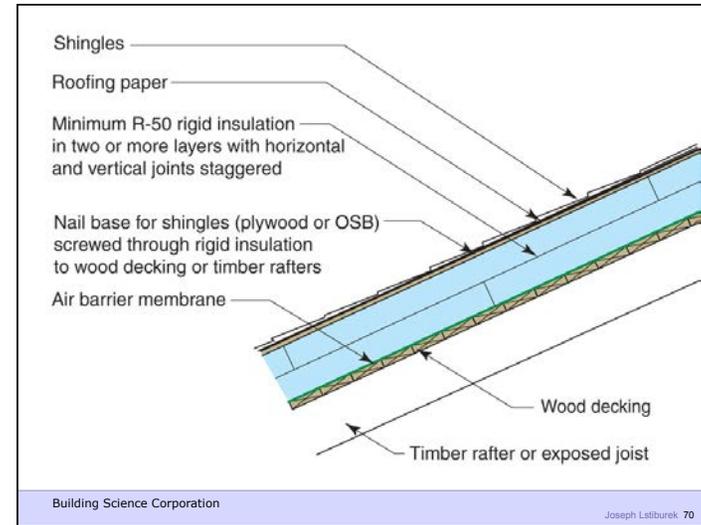
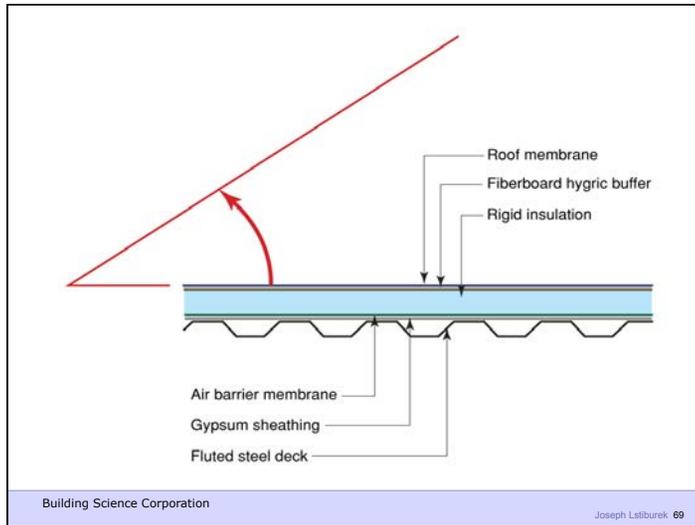


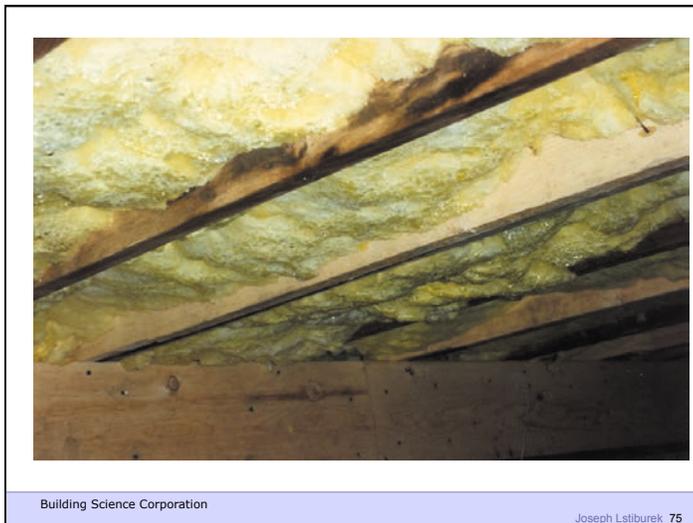
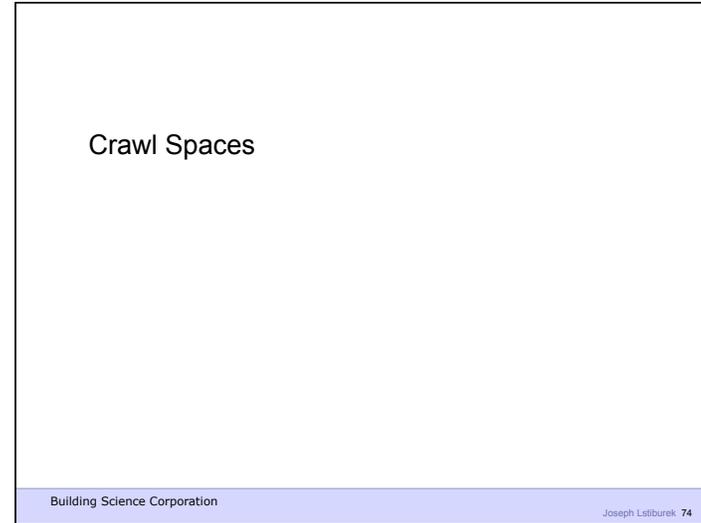
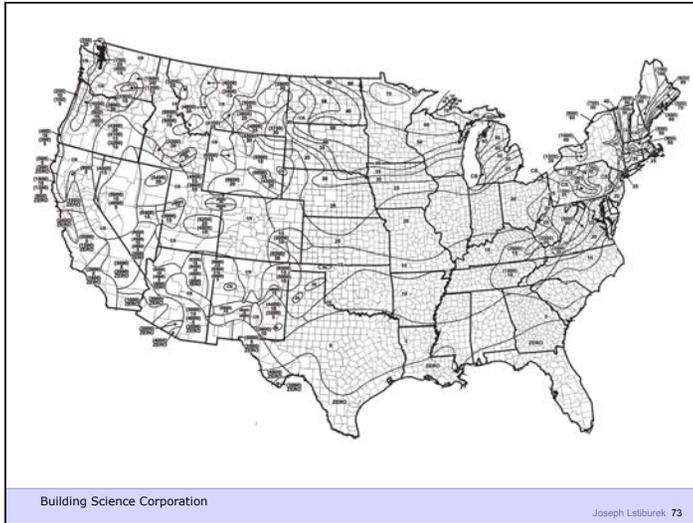


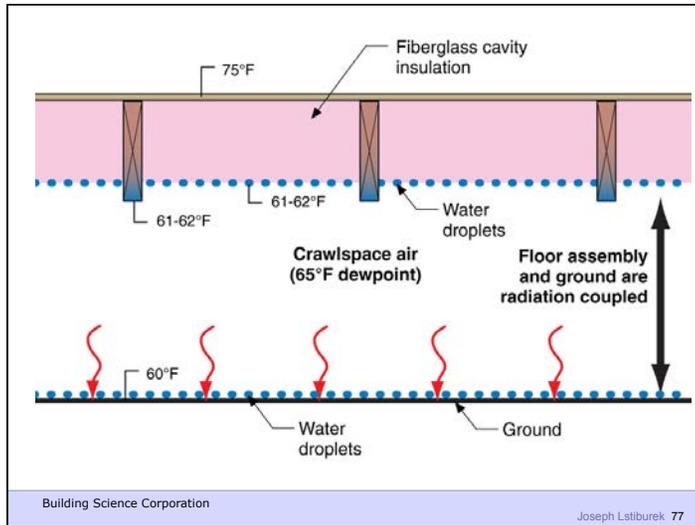






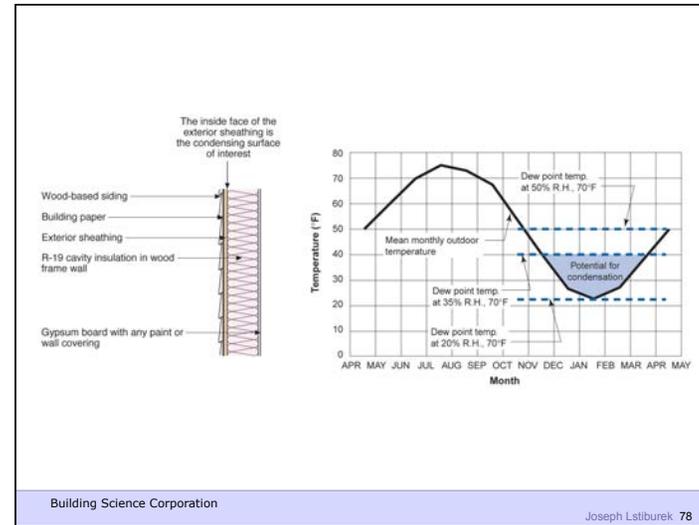






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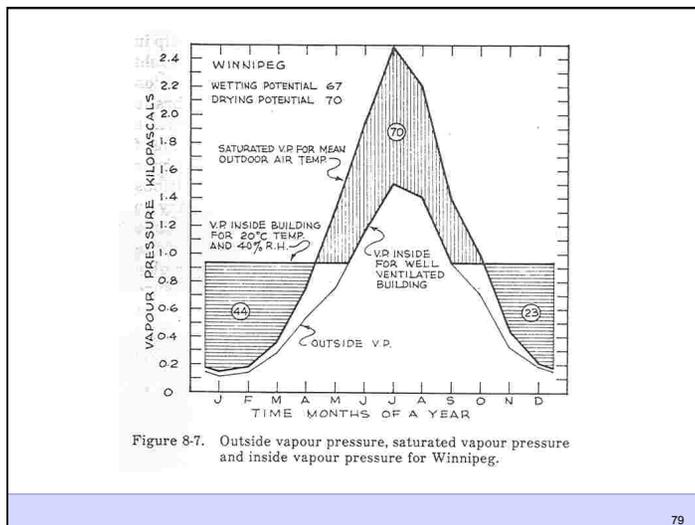
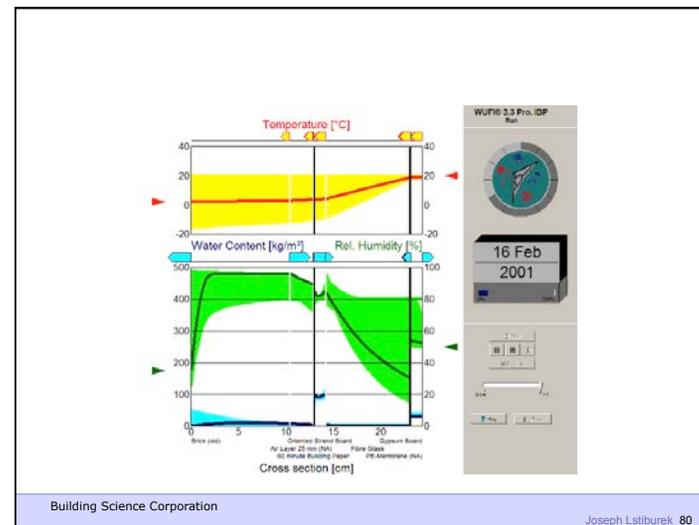


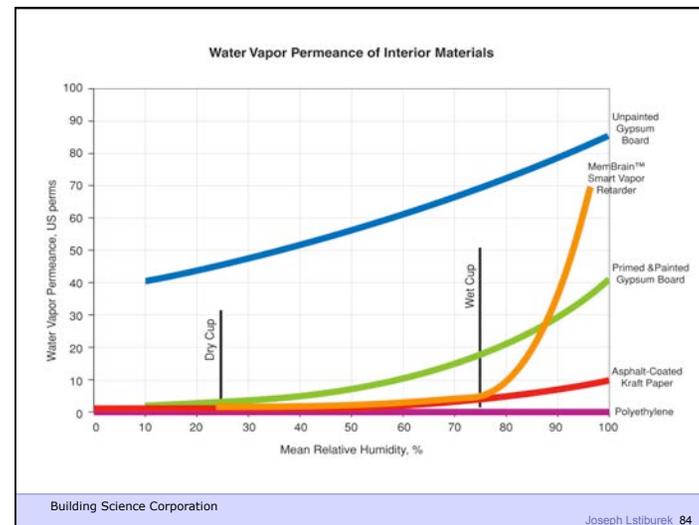
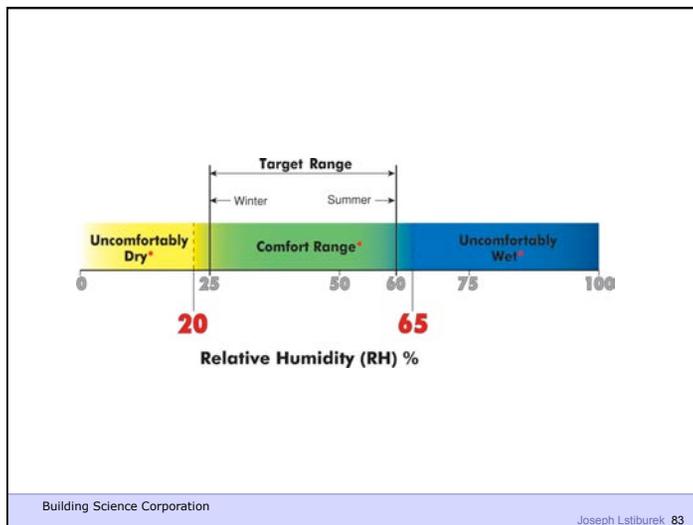
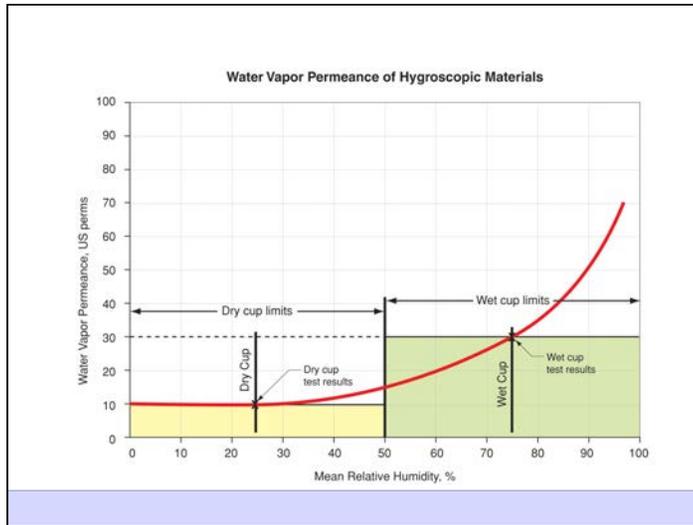
Figure 8-7. Outside vapour pressure, saturated vapour pressure and inside vapour pressure for Winnipeg.

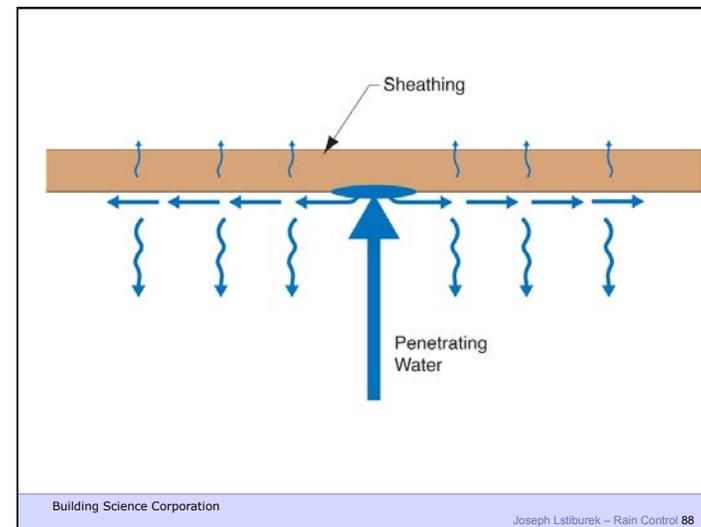
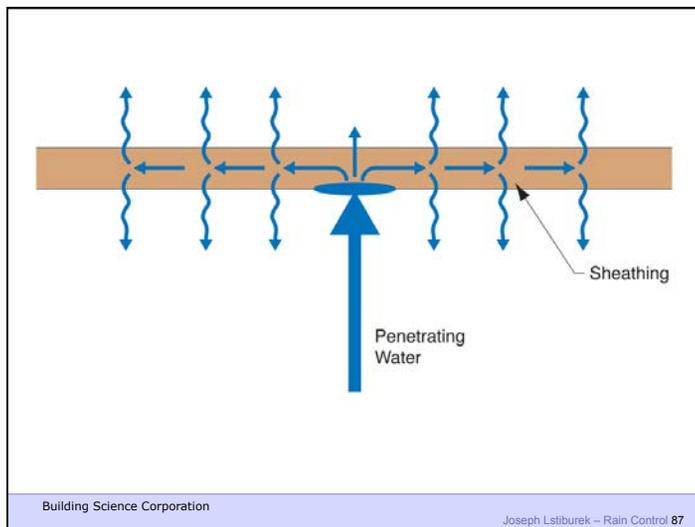
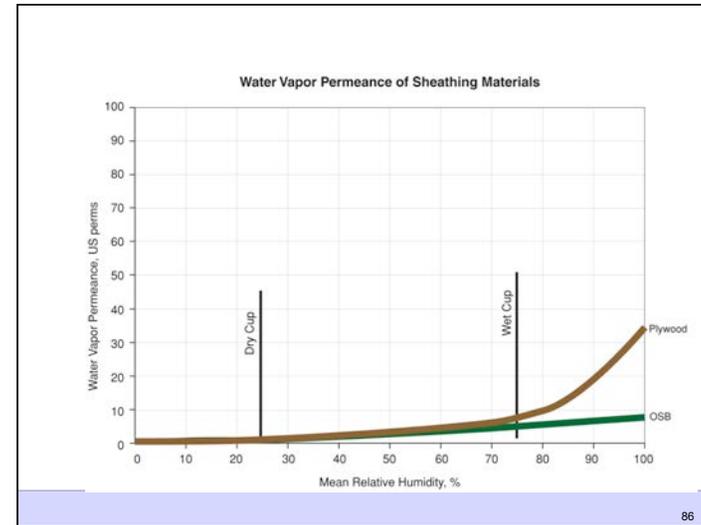
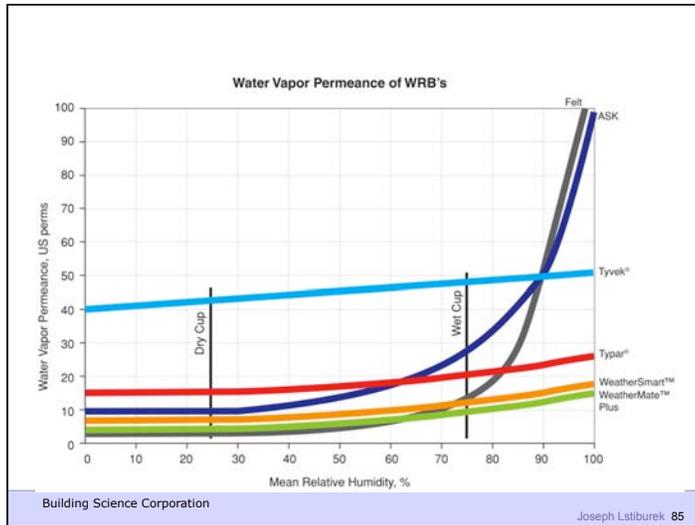
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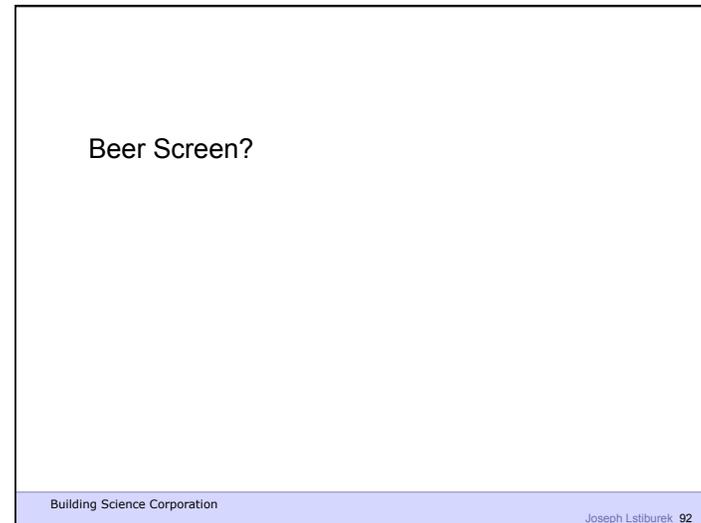
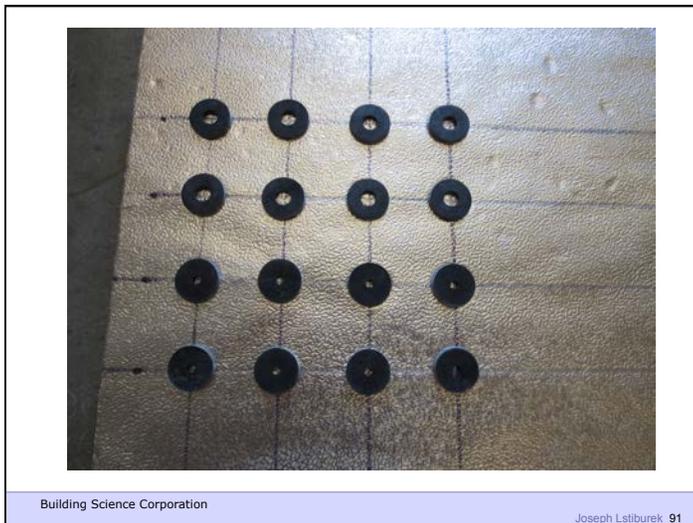
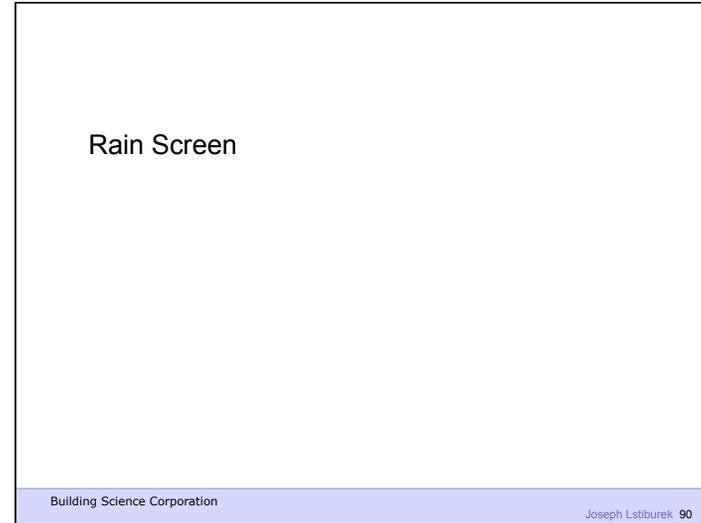


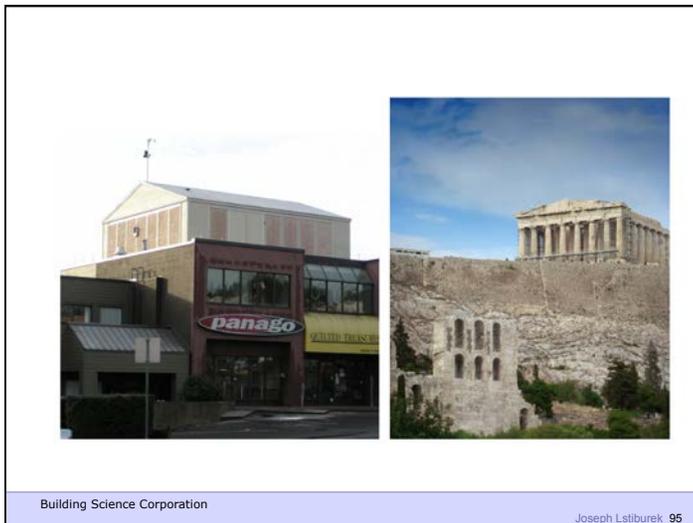
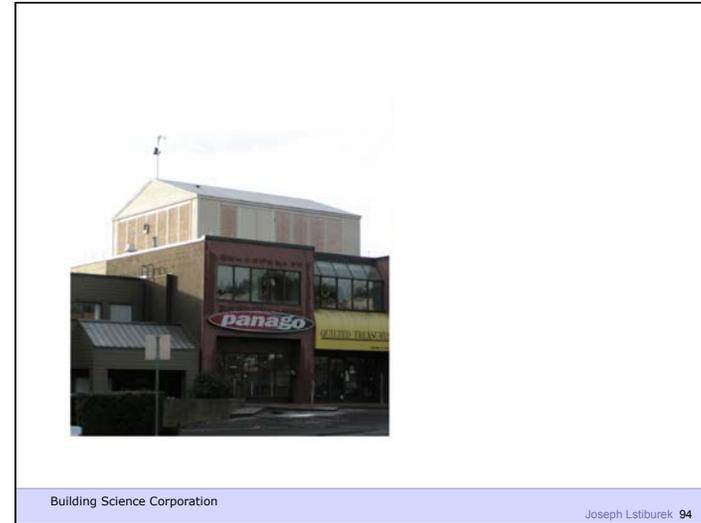
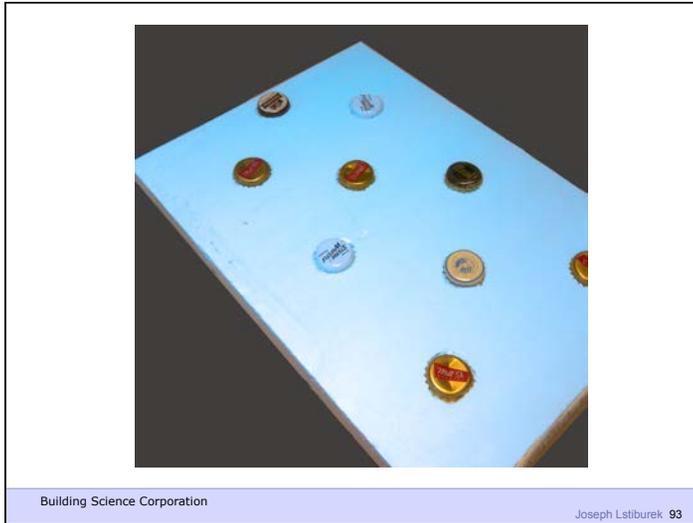
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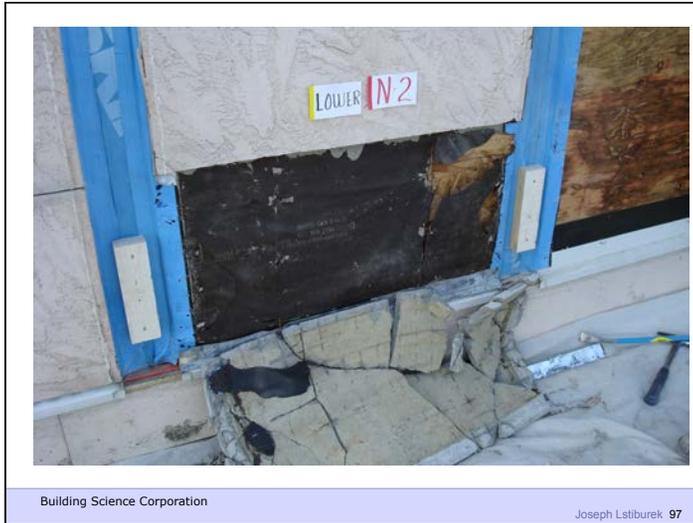
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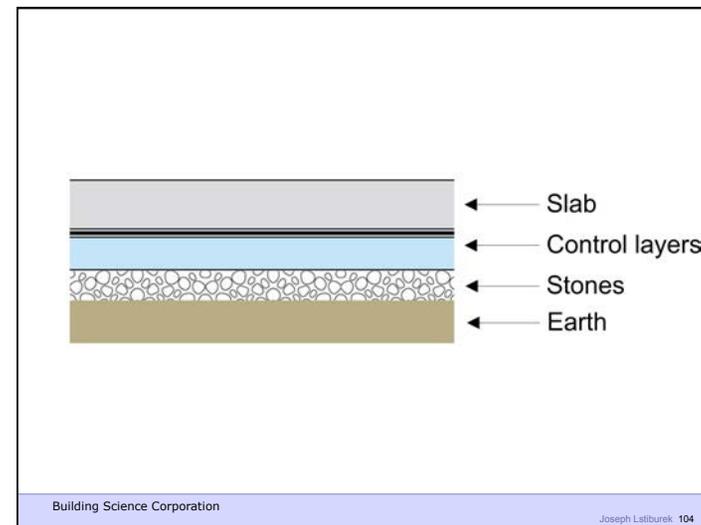
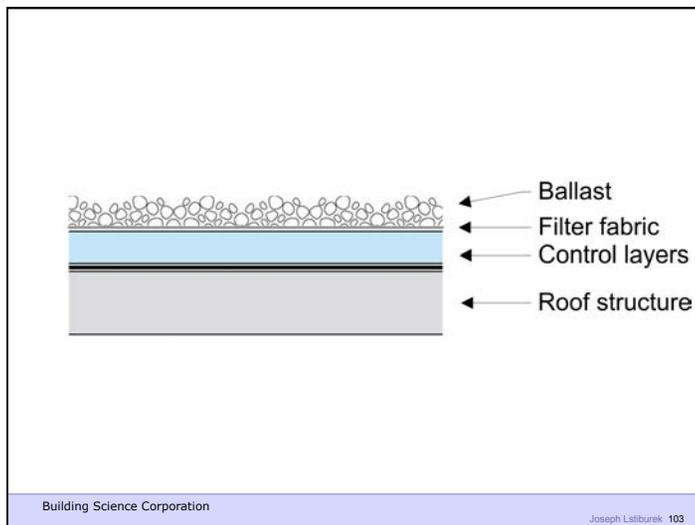
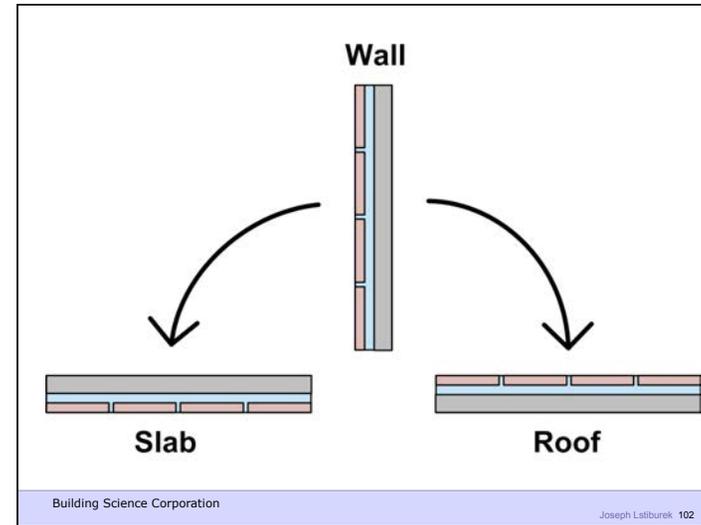
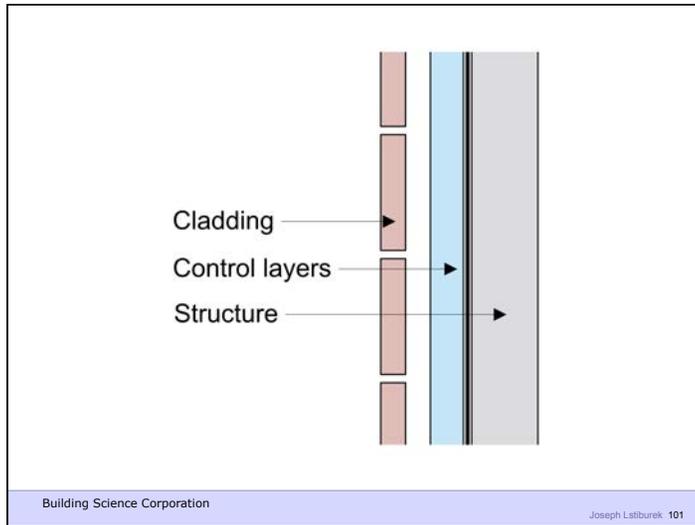


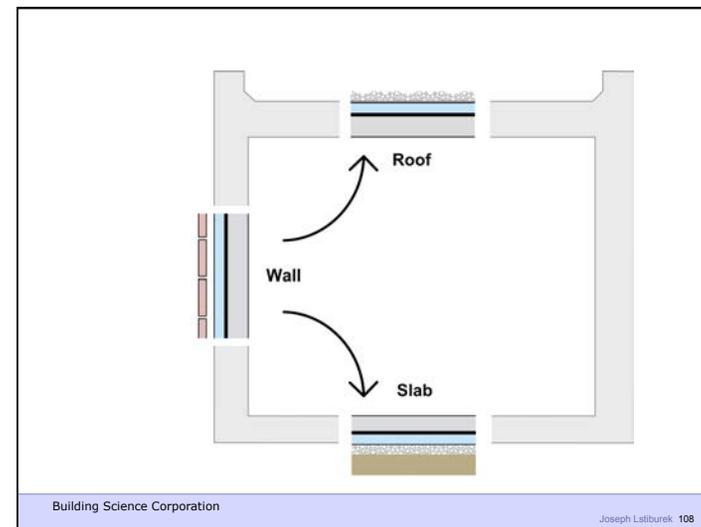
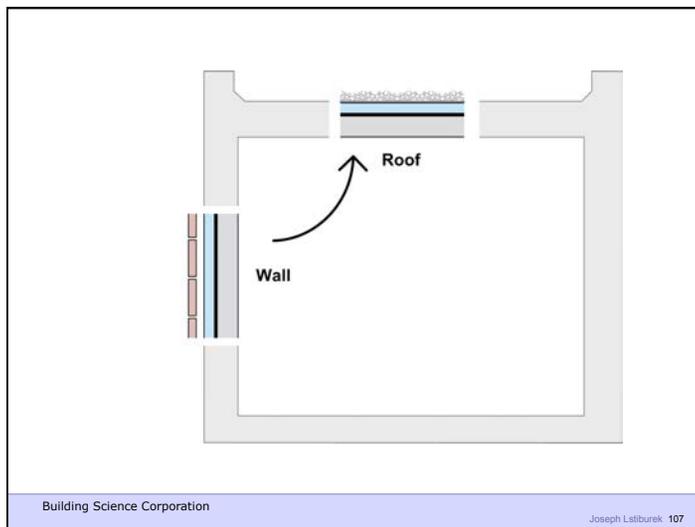
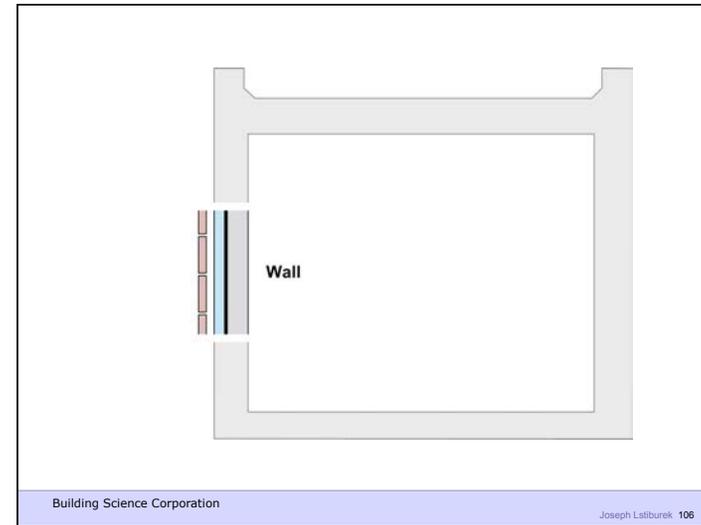
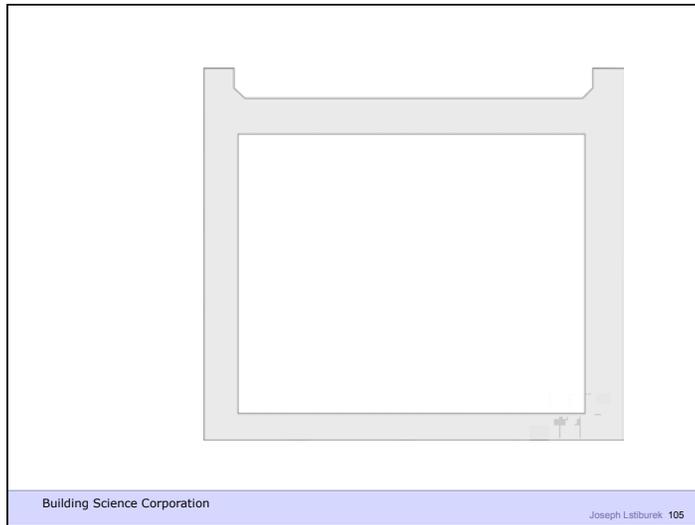
If You Need To Run A Hygrothermal Model
To Figure Out If Your Wall Works You
Have The Wrong Design

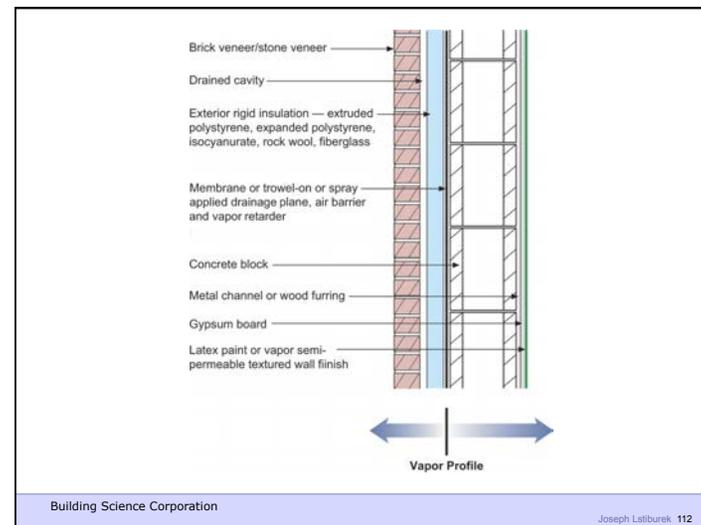
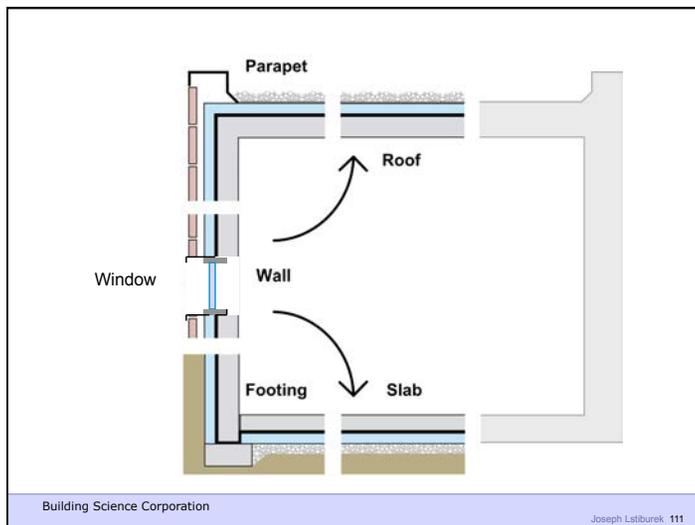
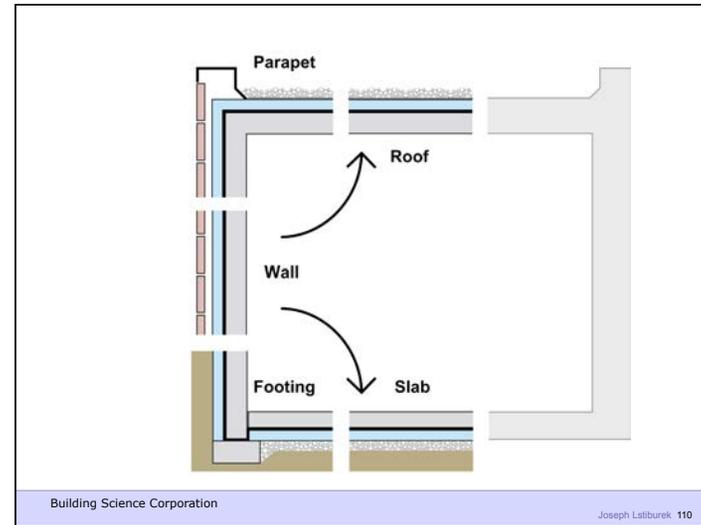
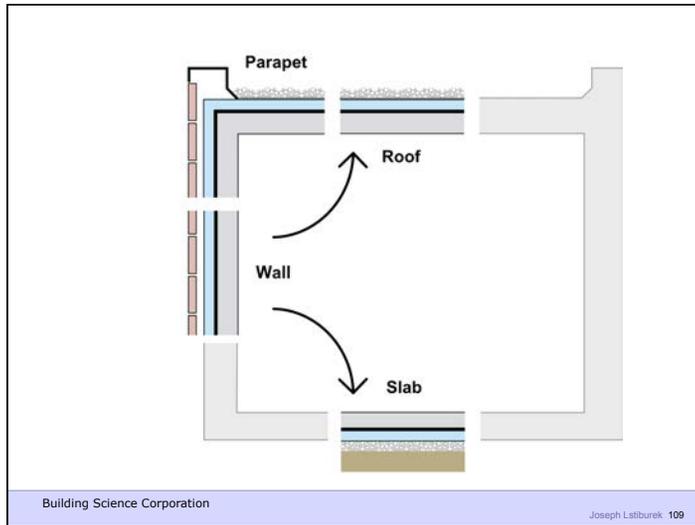
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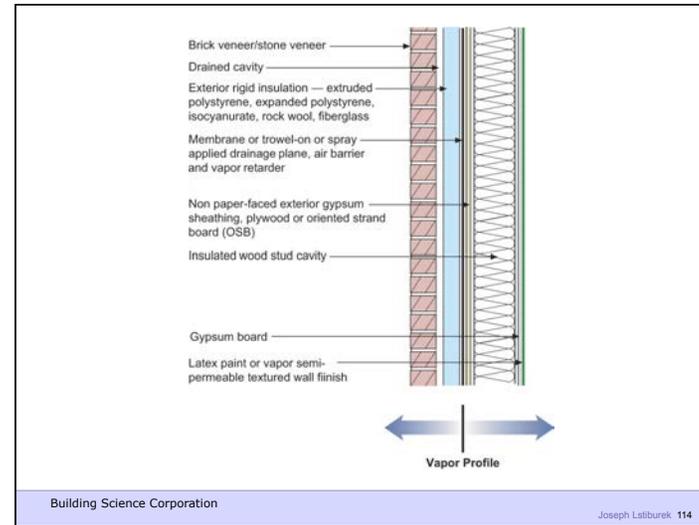
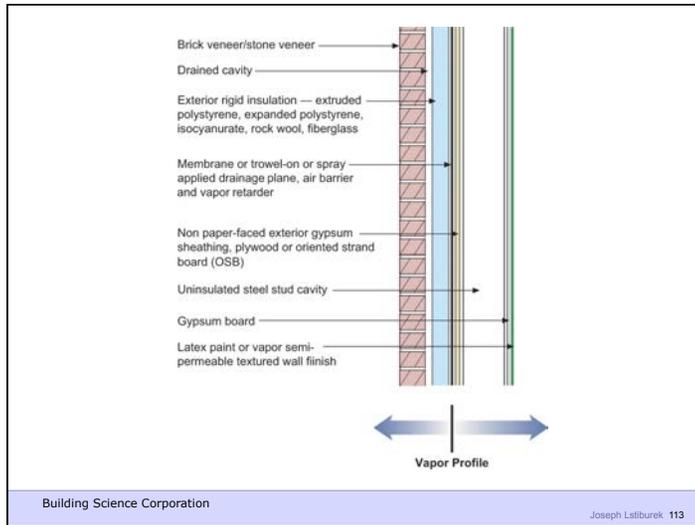
Water Control Layer
Air Control Layer
Vapor Control Layer
Thermal Control Layer

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Commercial Enclosure: Simple Layers



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

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