

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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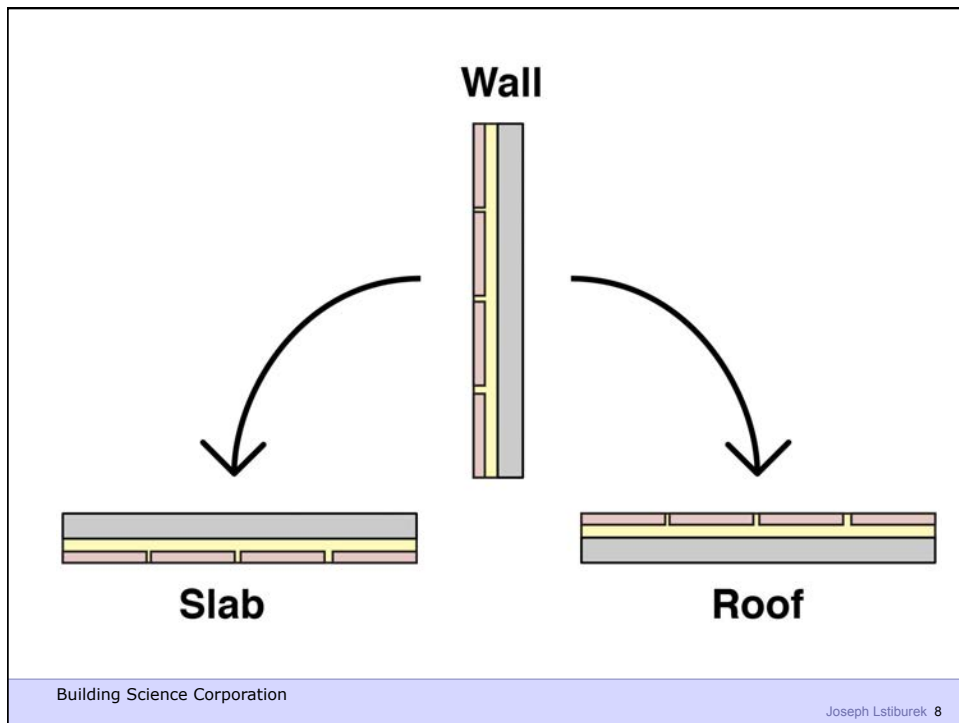
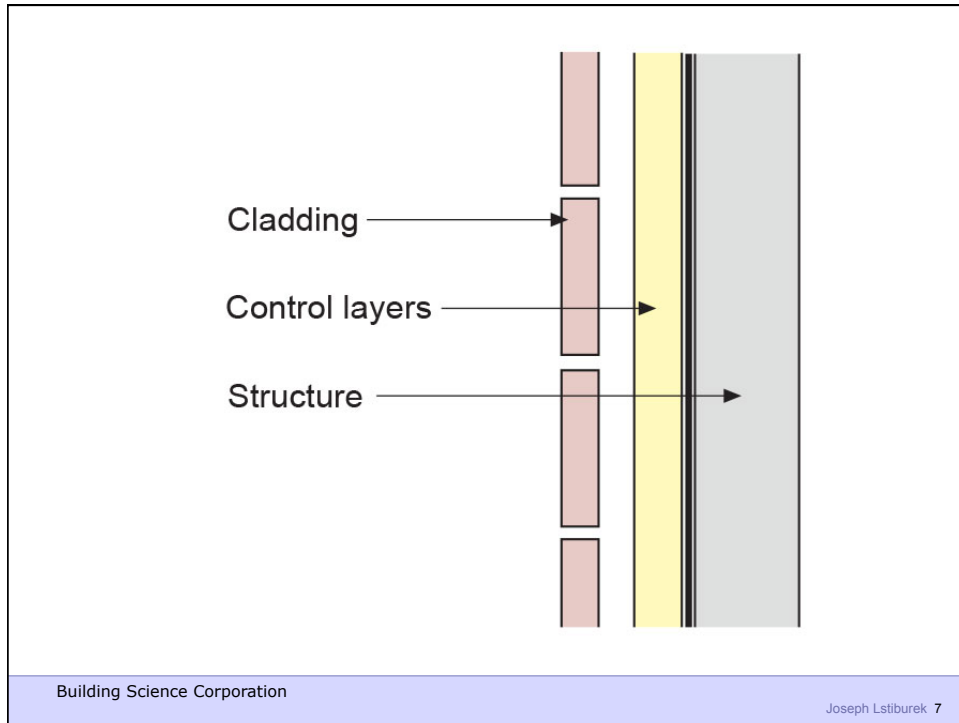
2nd Law of Thermodynamics

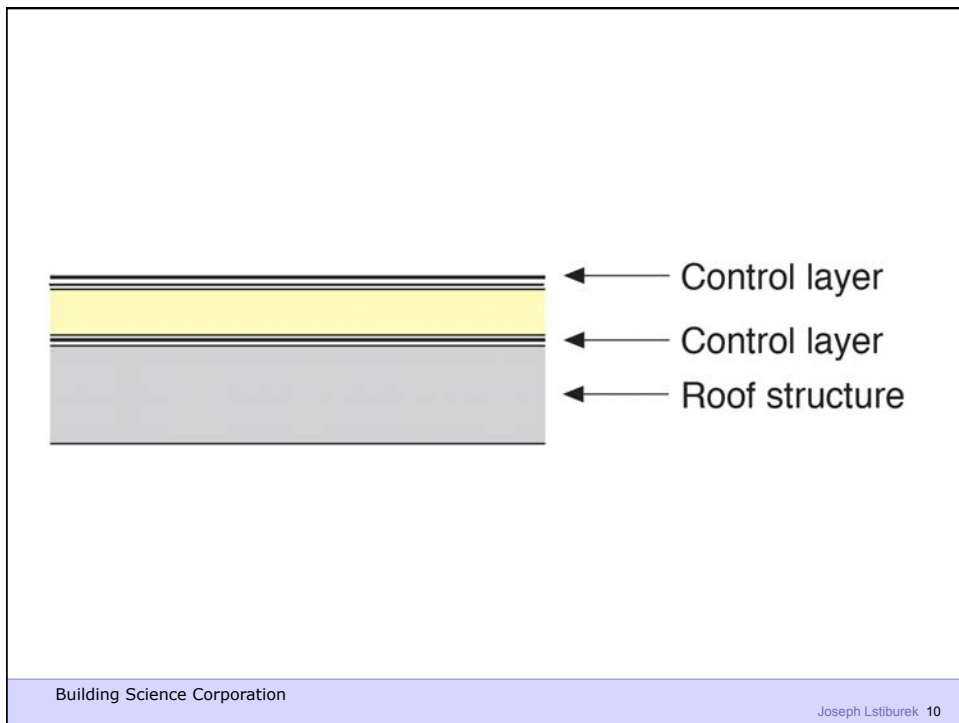
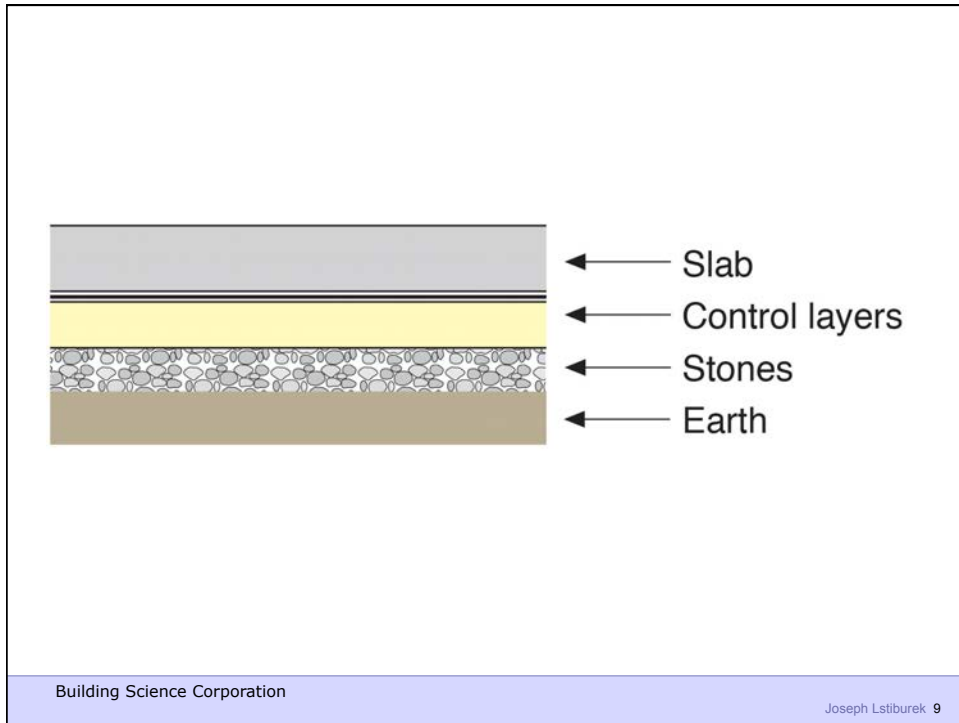
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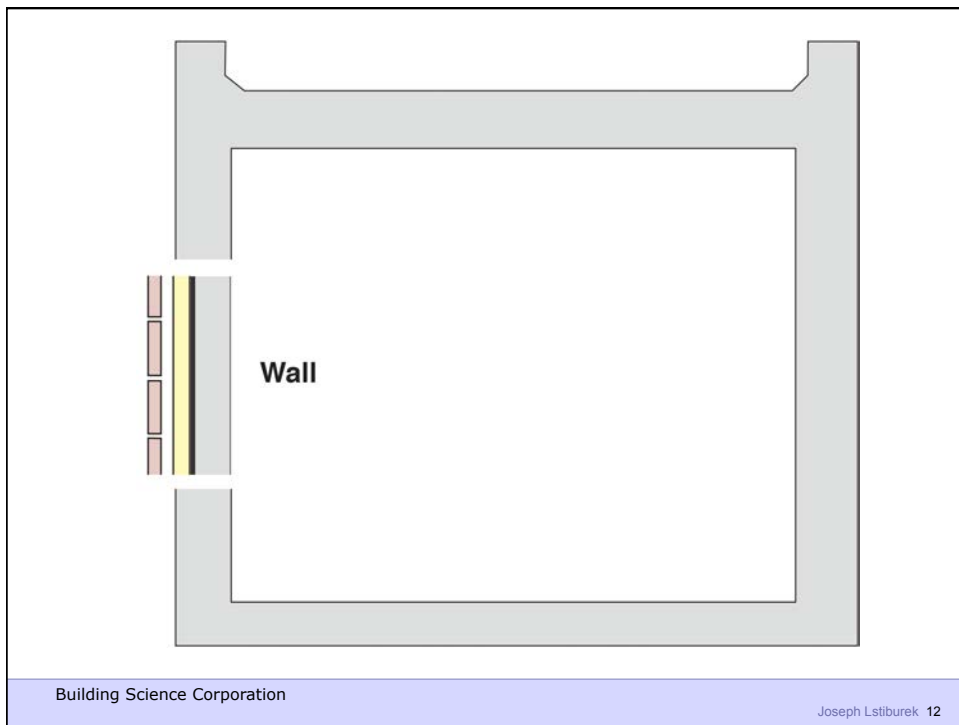
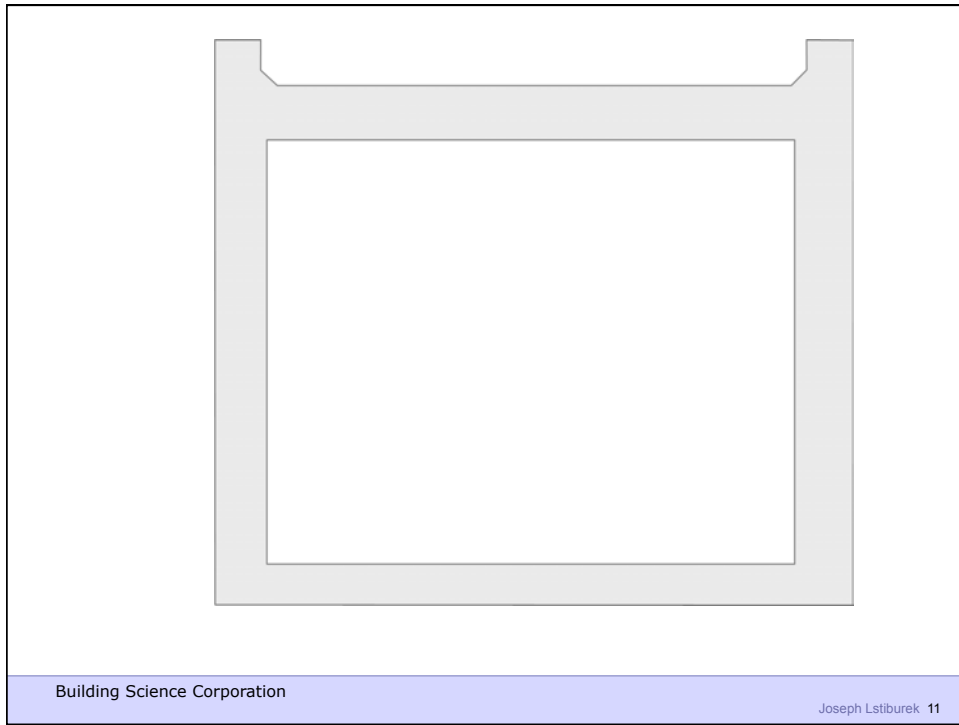
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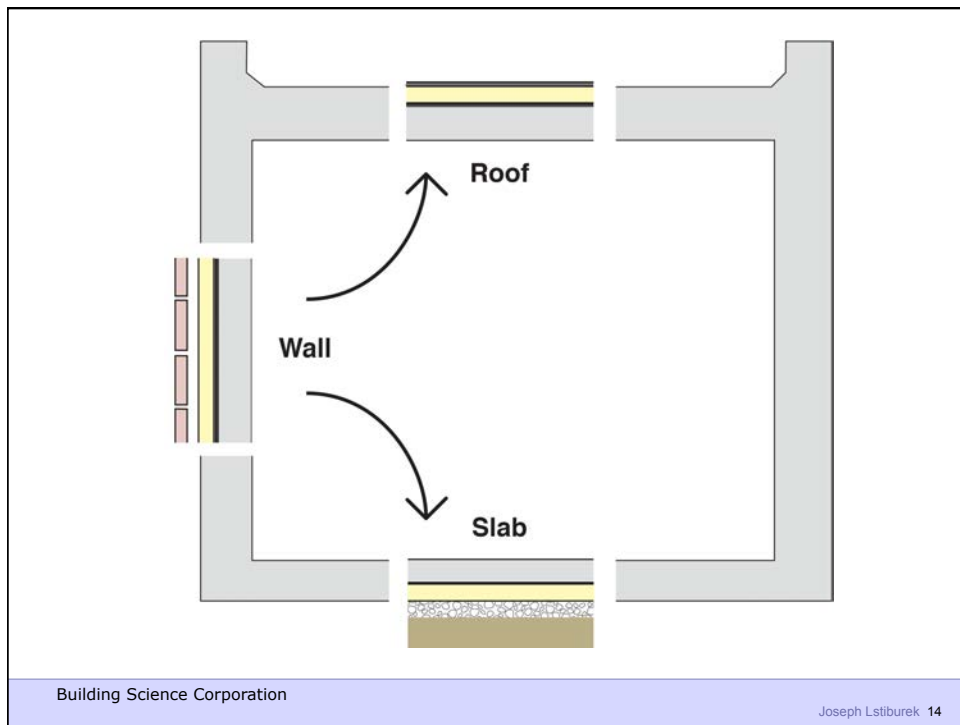
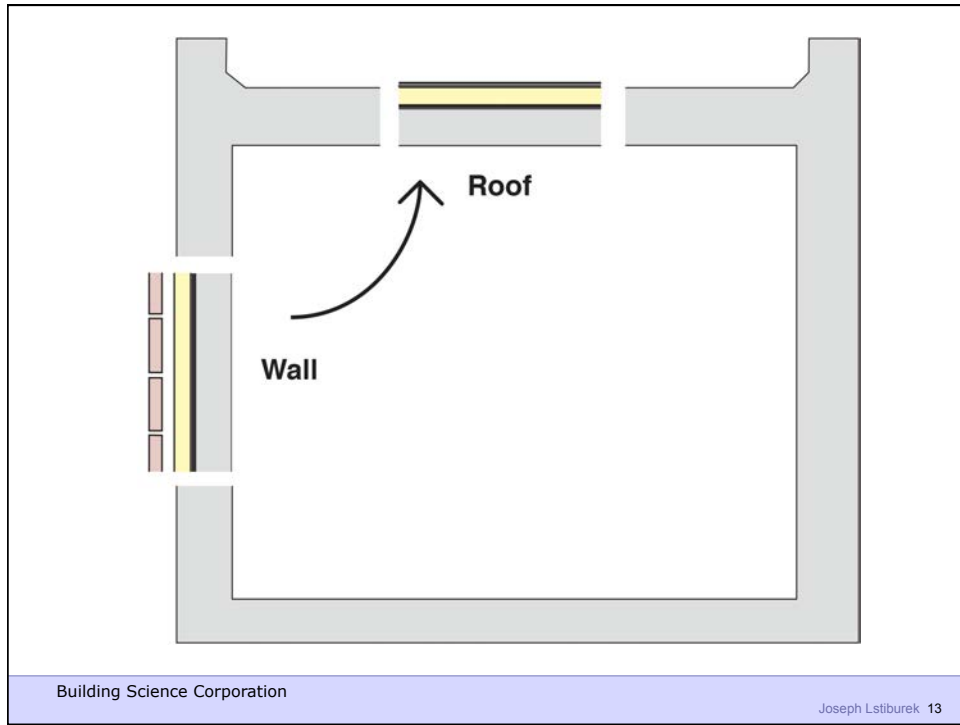
Heat Flow Is From Warm To Cold
Moisture Flow Is From Warm To Cold
Moisture Flow Is From More To Less
Air Flow Is From A Higher Pressure to a
Lower Pressure
Gravity Acts Down

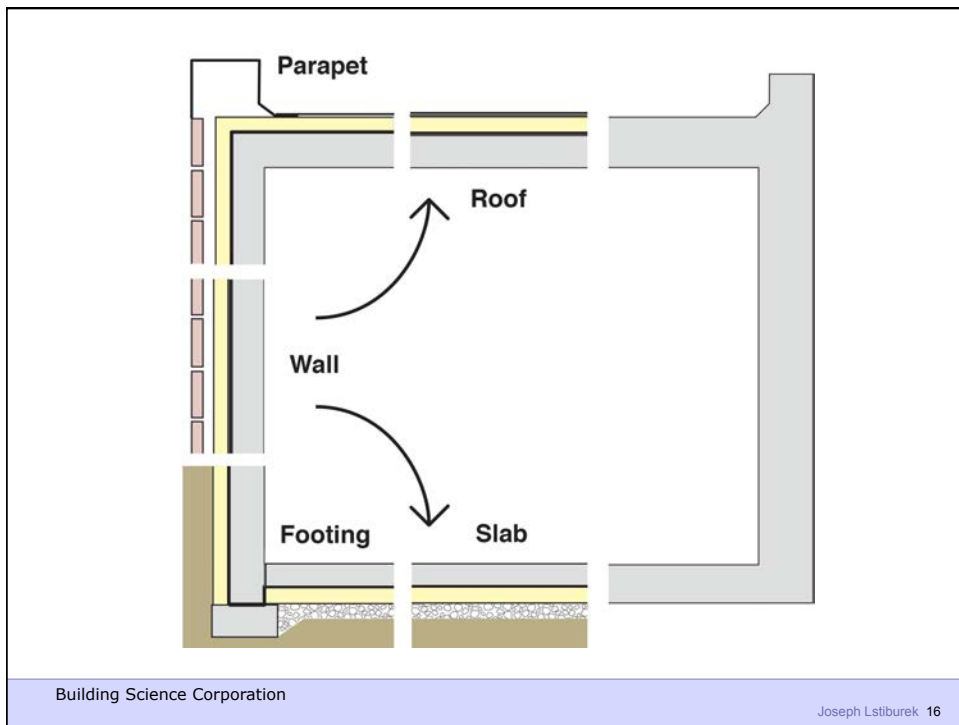
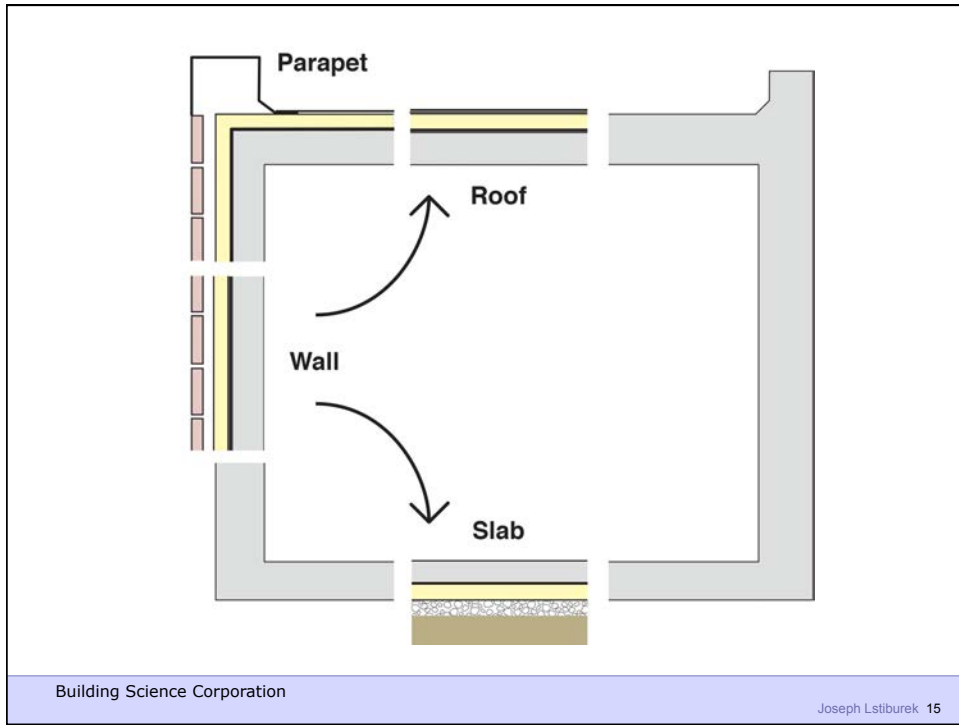
Water Control Layer
Air Control Layer
Vapor Control Layer
Thermal Control Layer

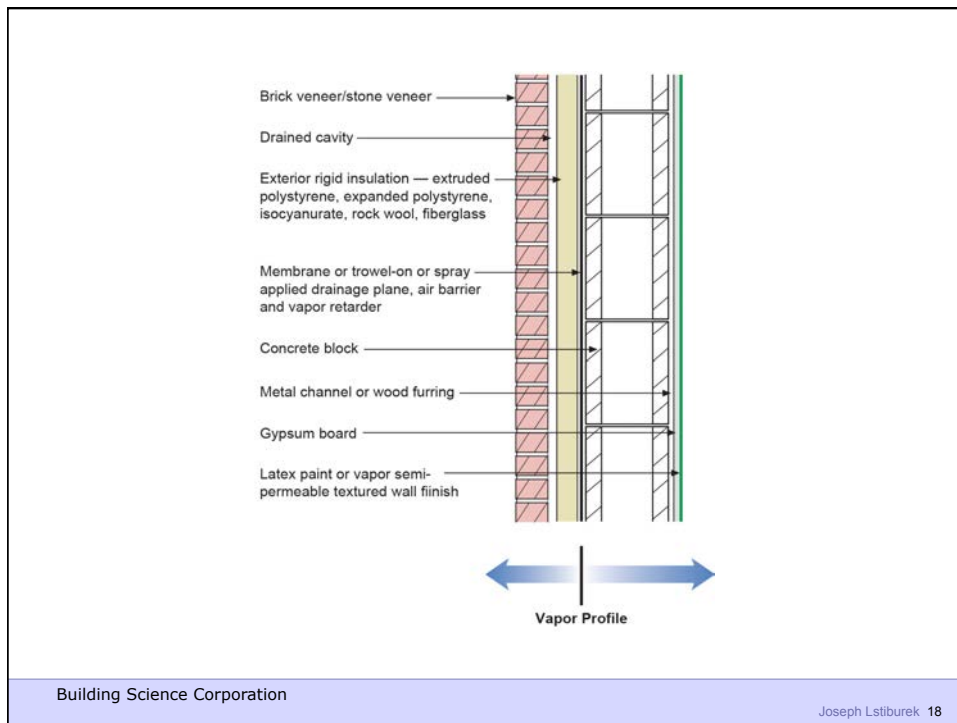
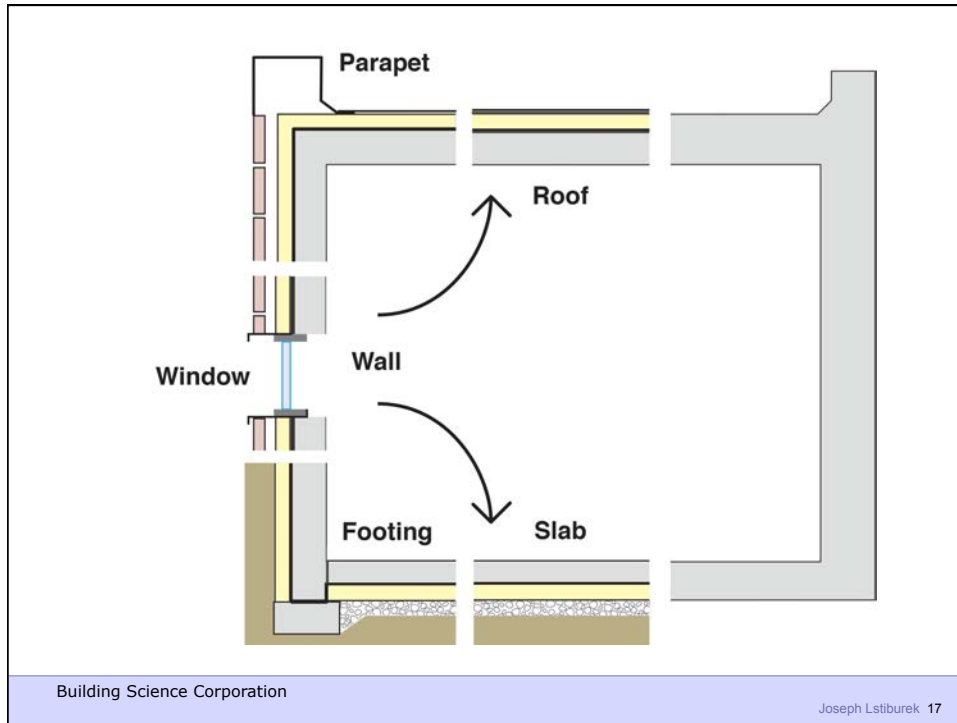


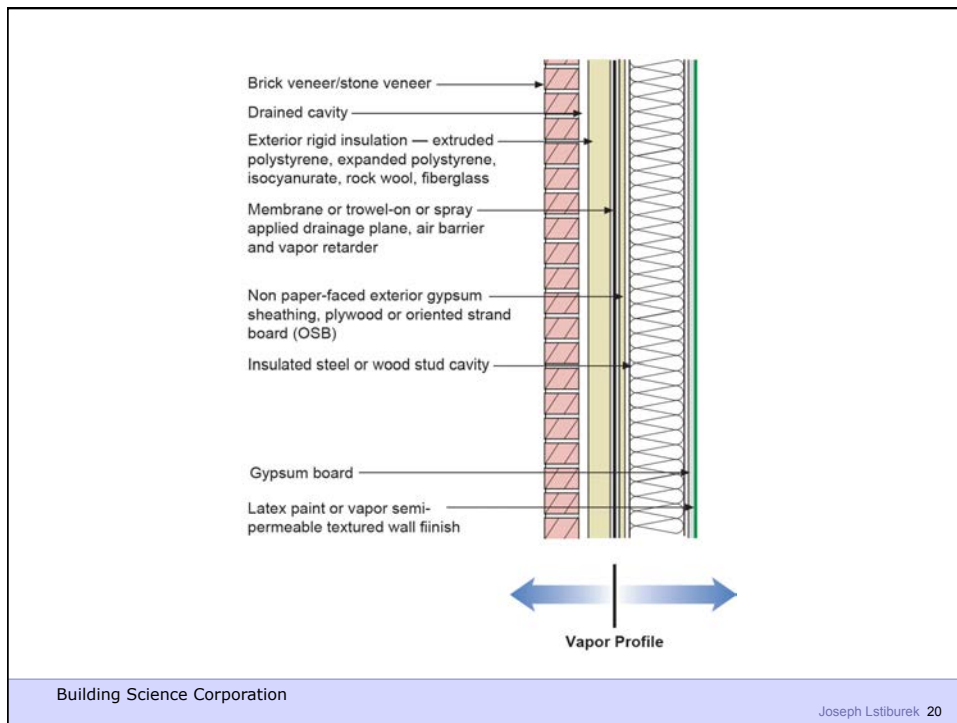
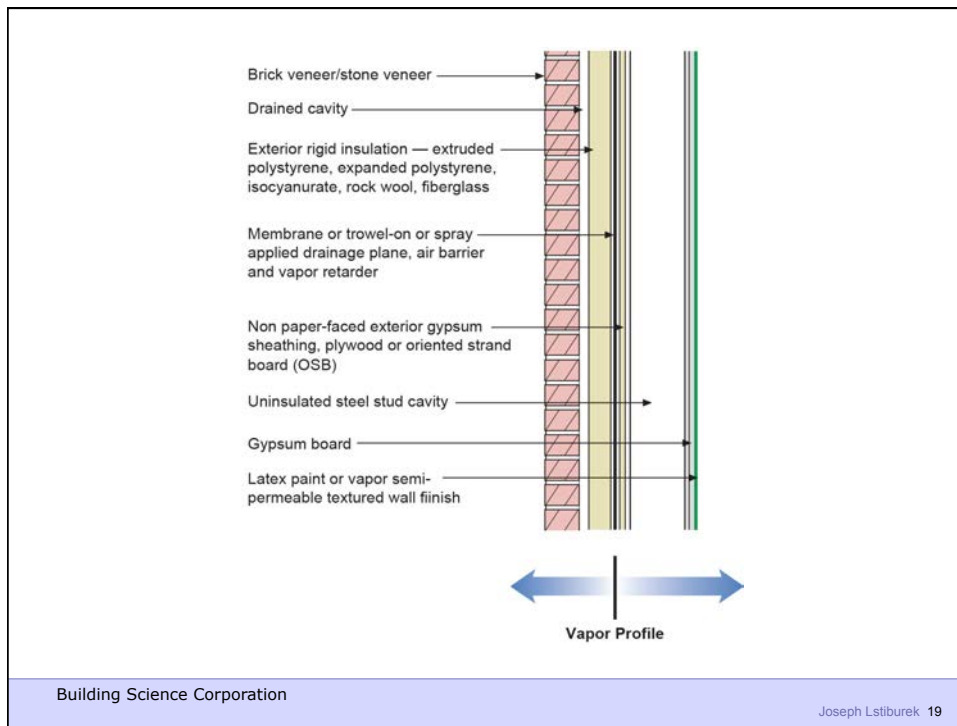


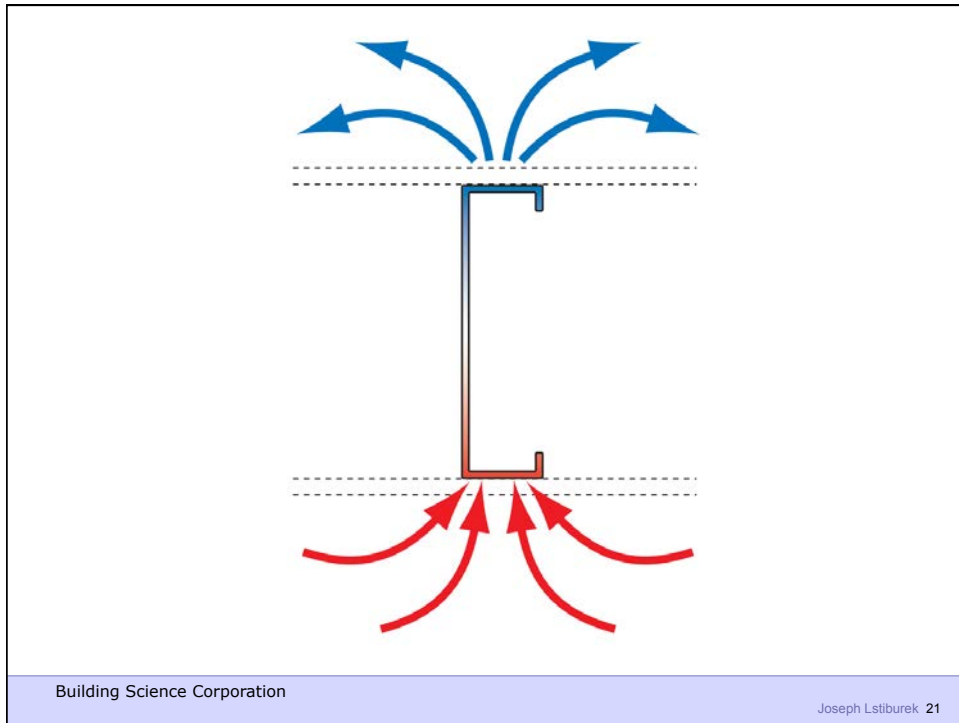




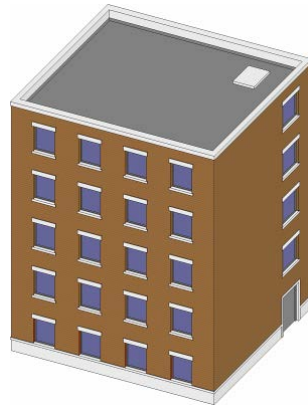








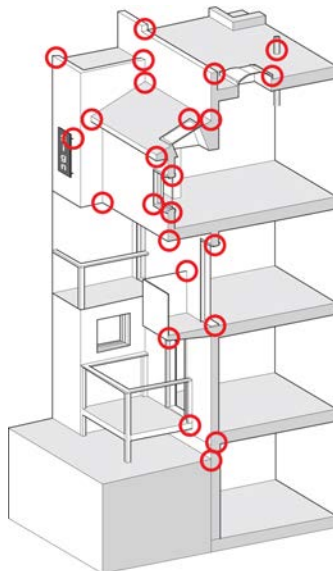
Commercial Enclosure: Simple Layers



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

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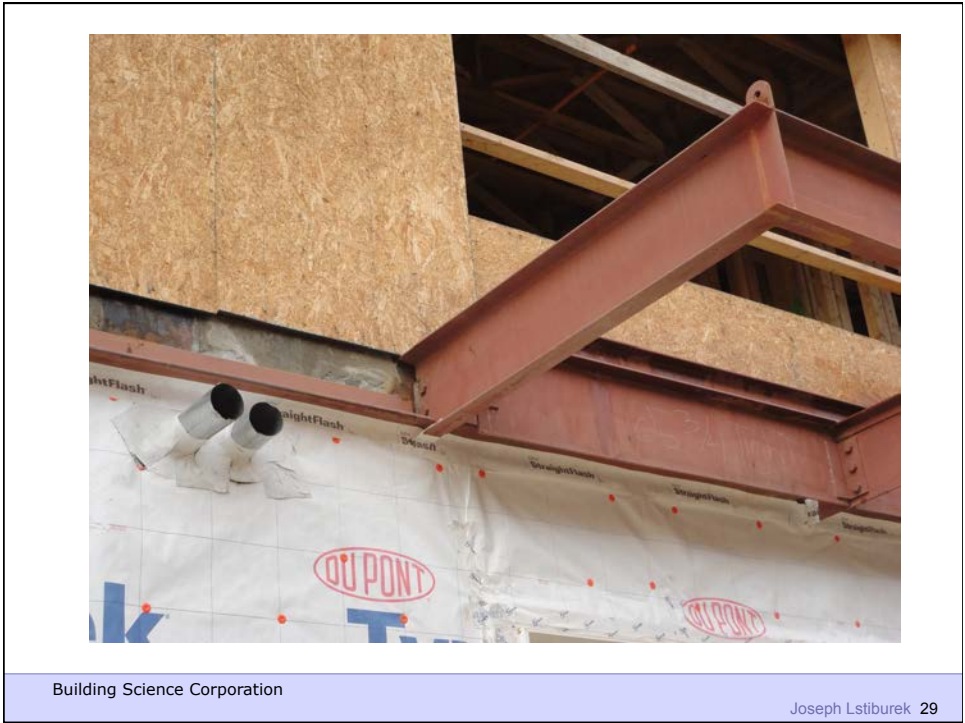
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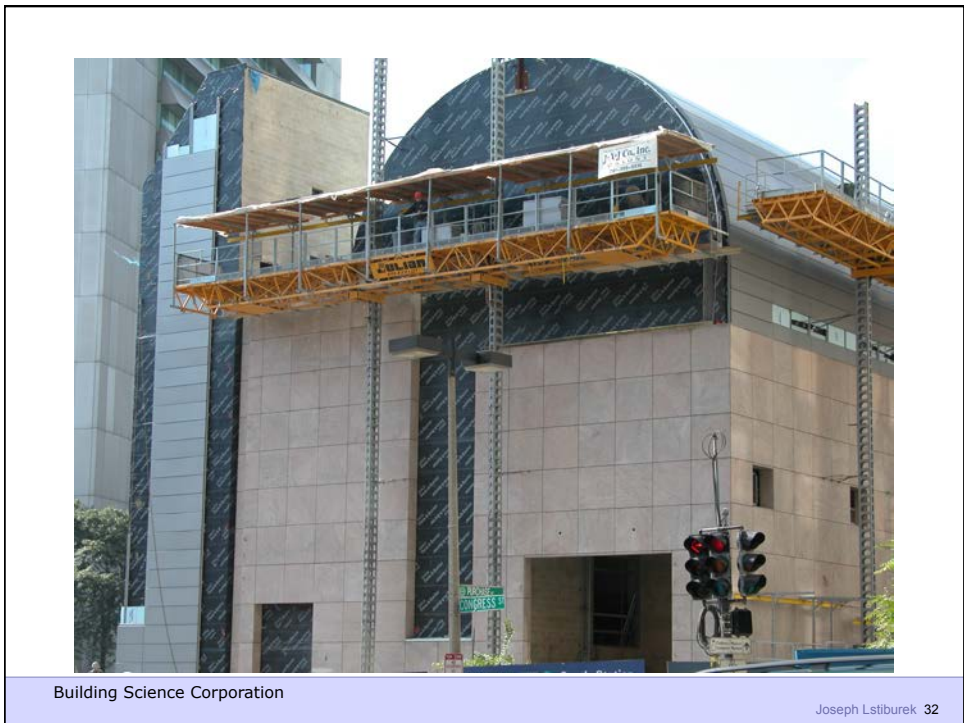
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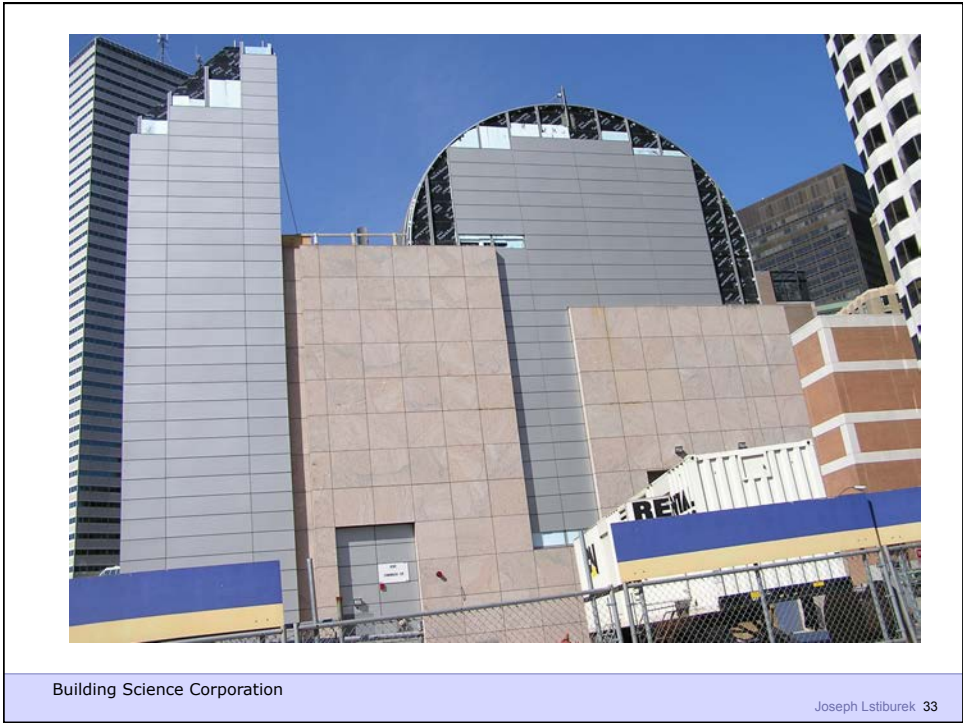


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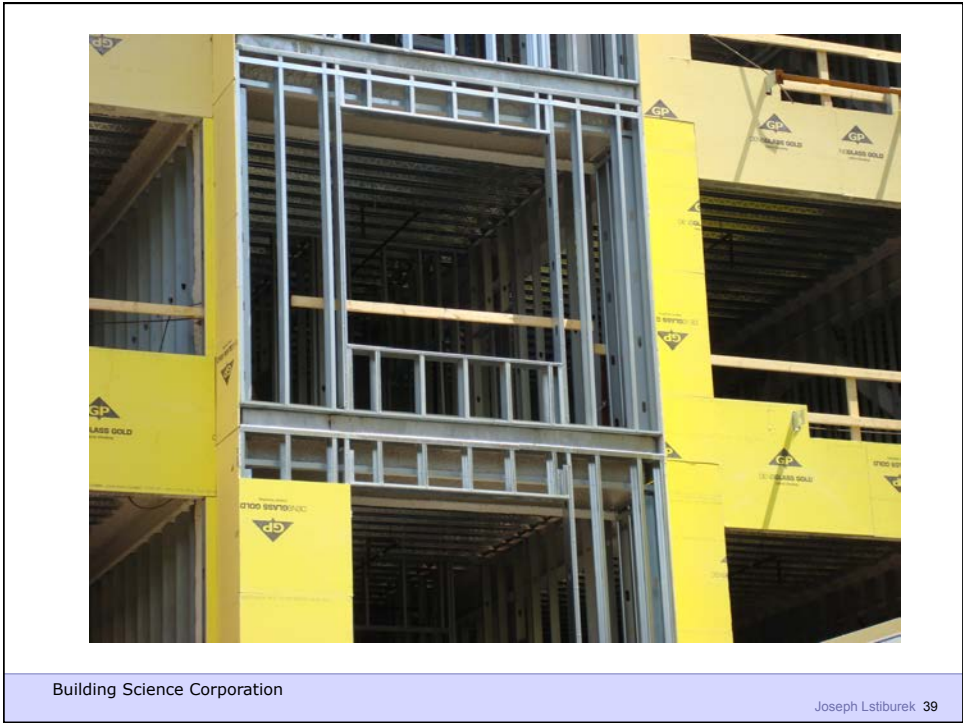
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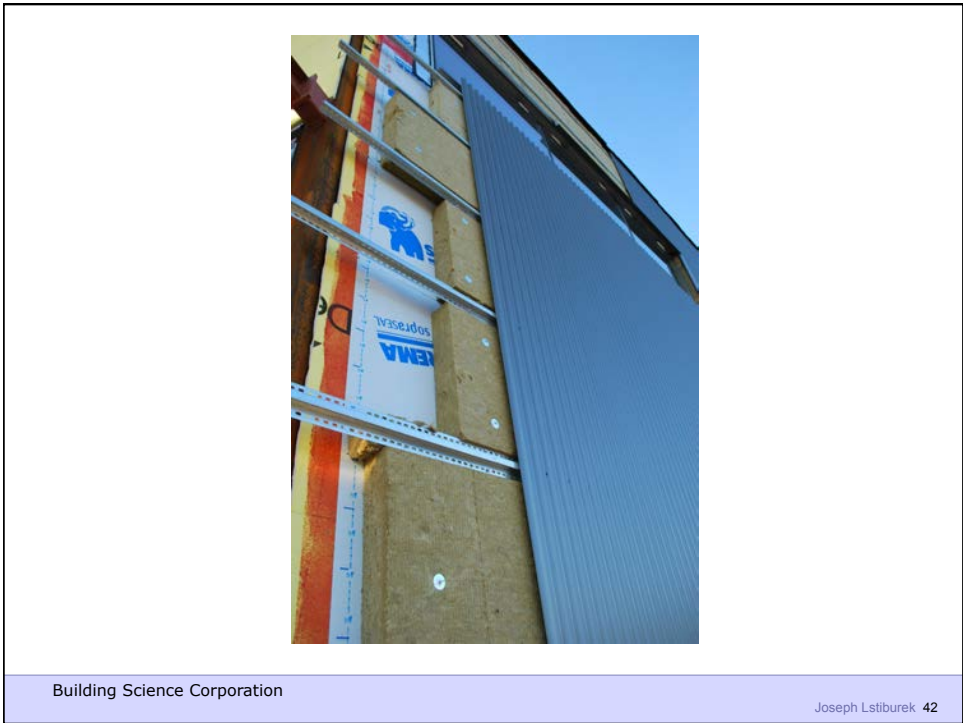


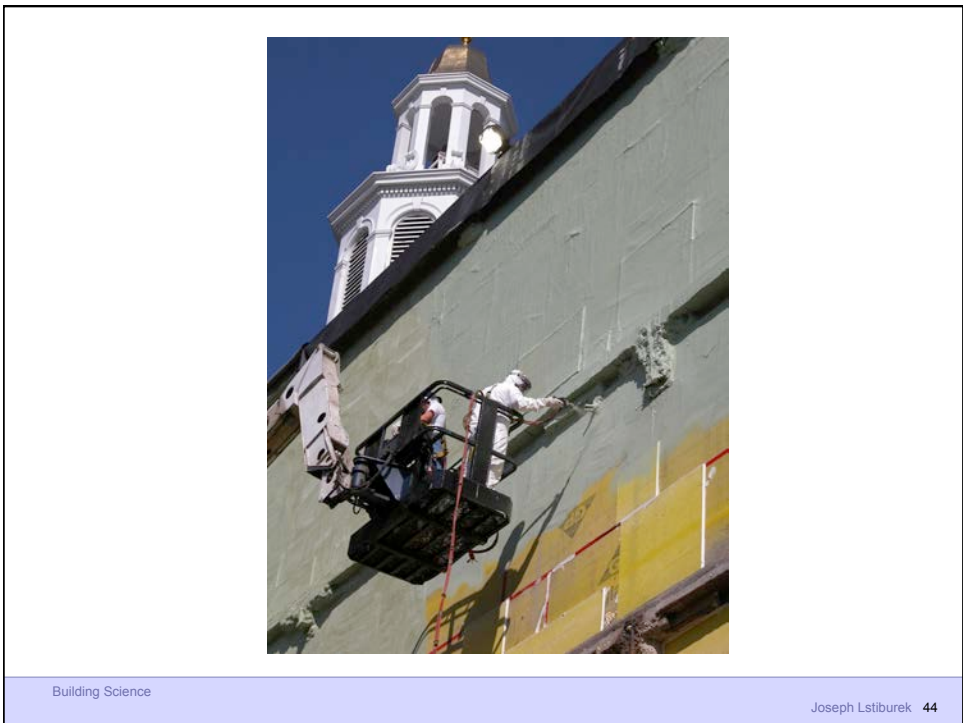
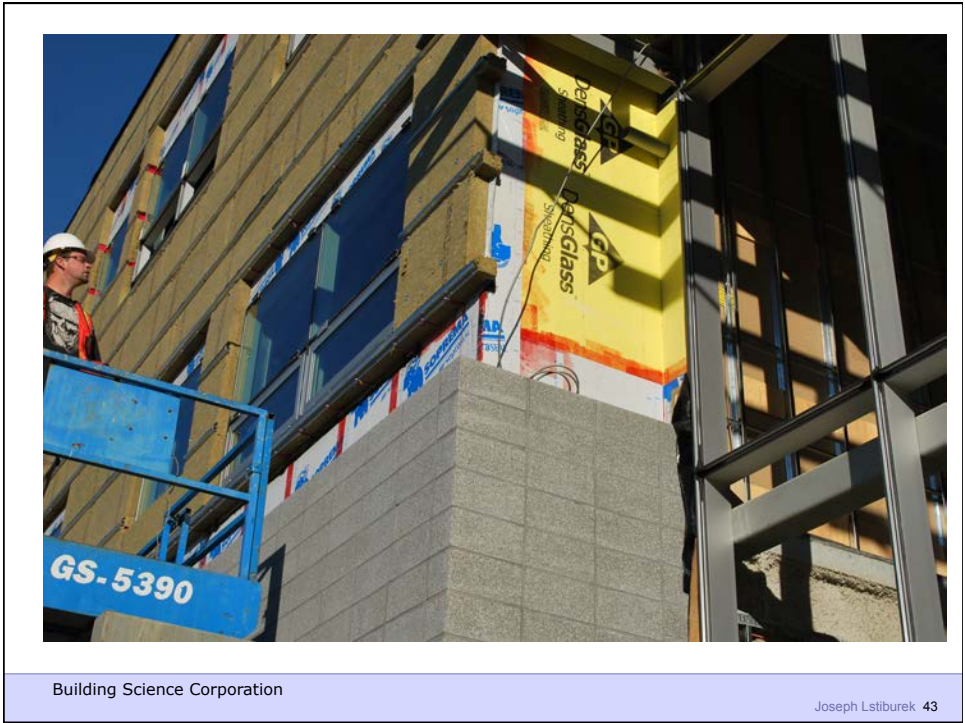
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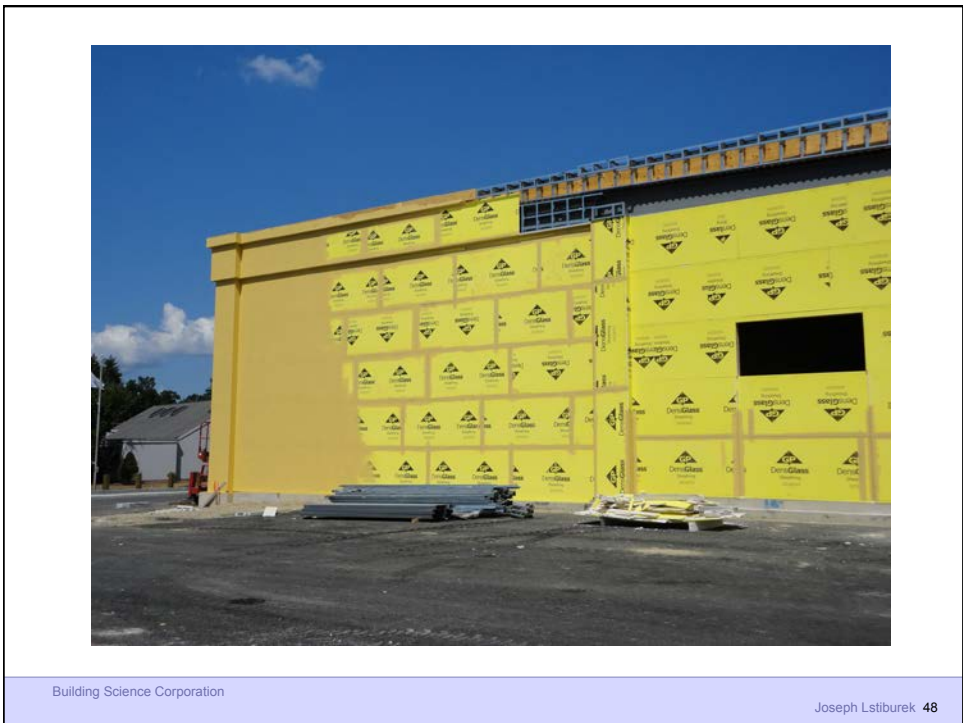


















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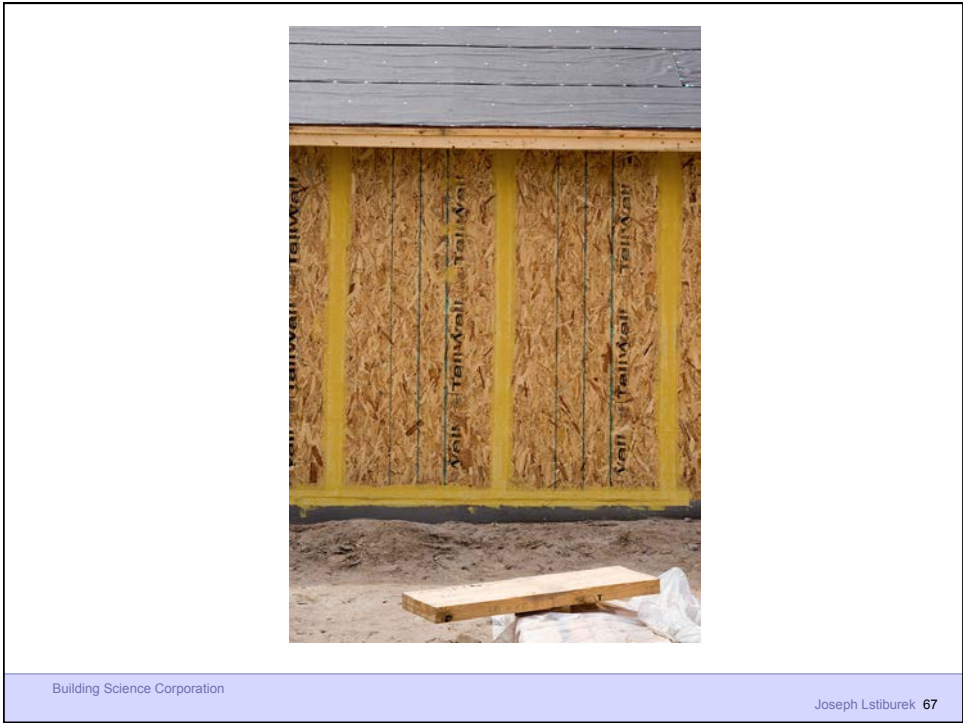
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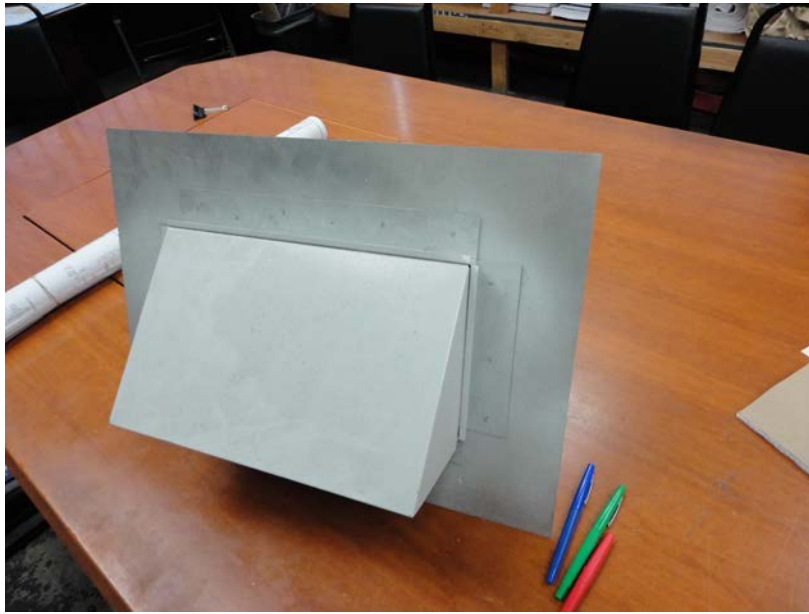
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Joseph Lstiburek – Rain Control 70



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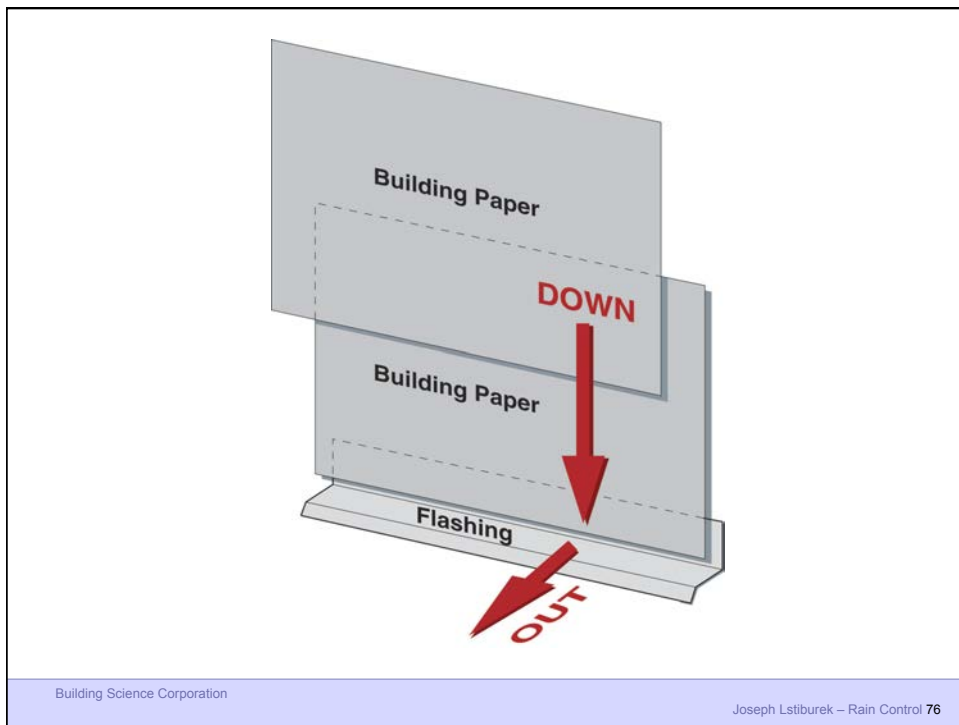
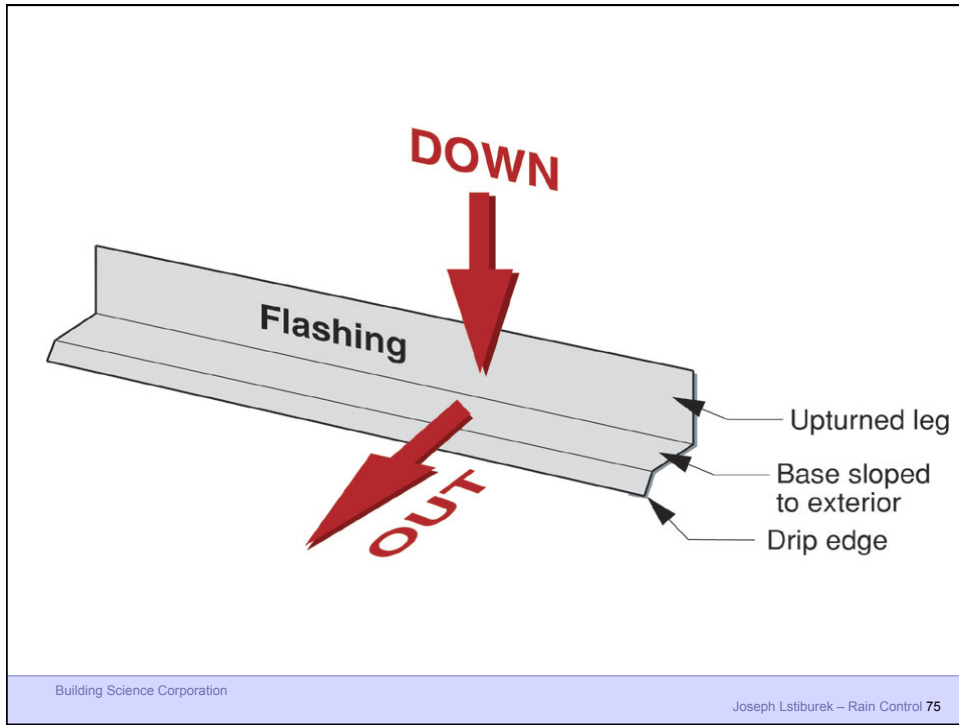
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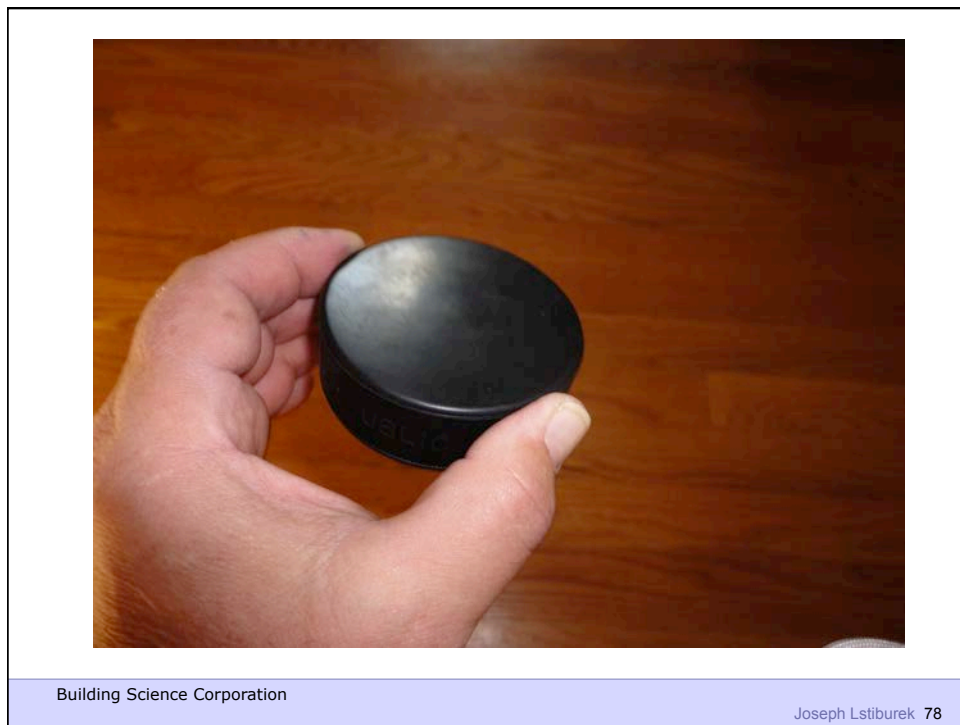
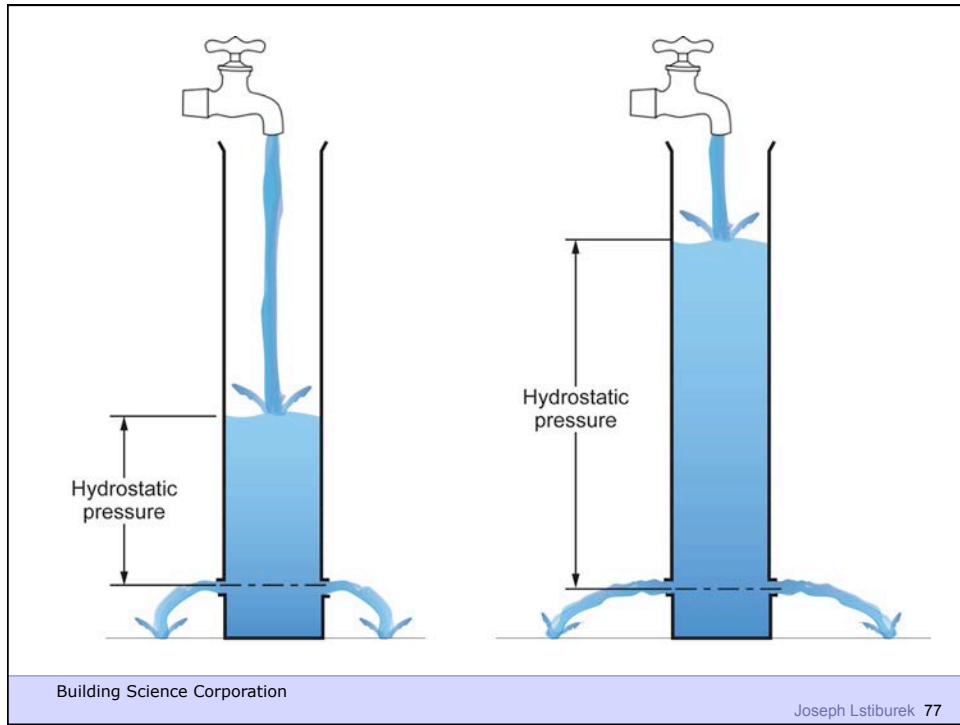


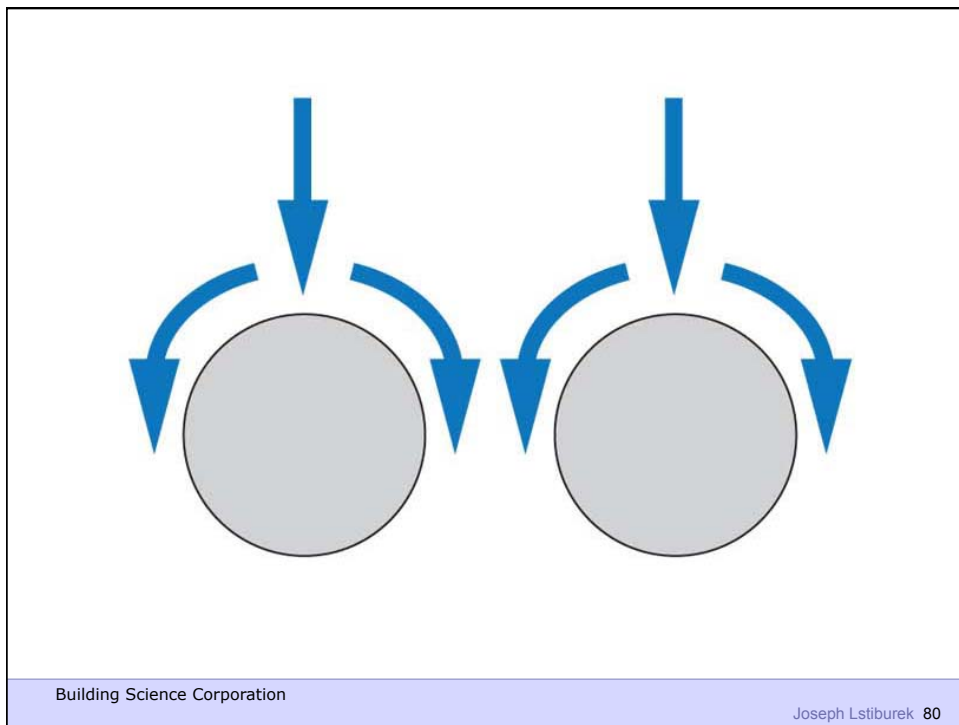
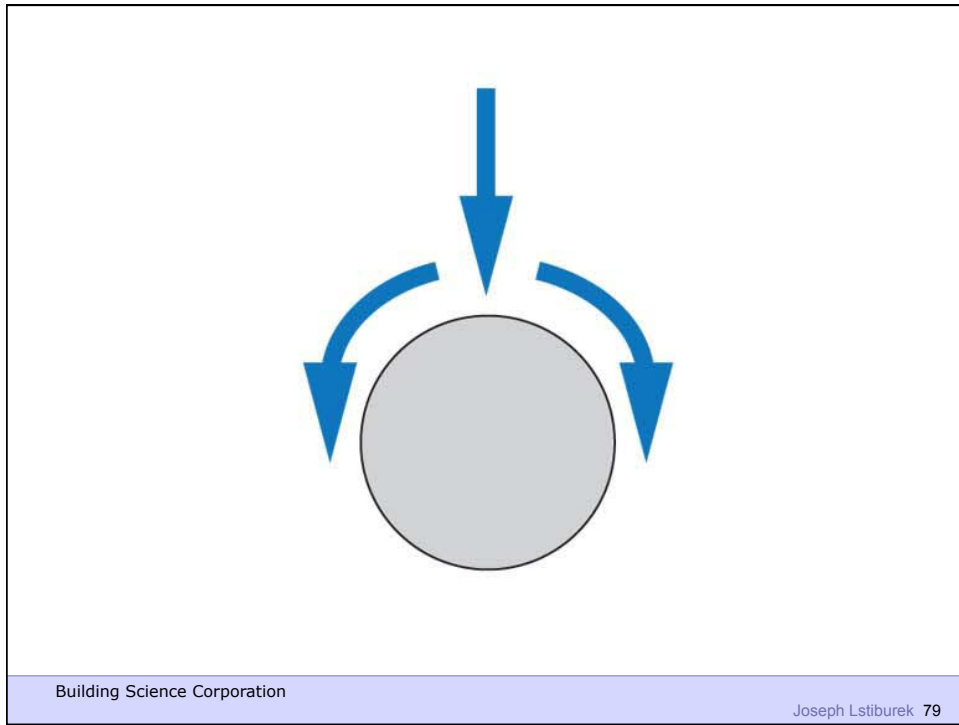
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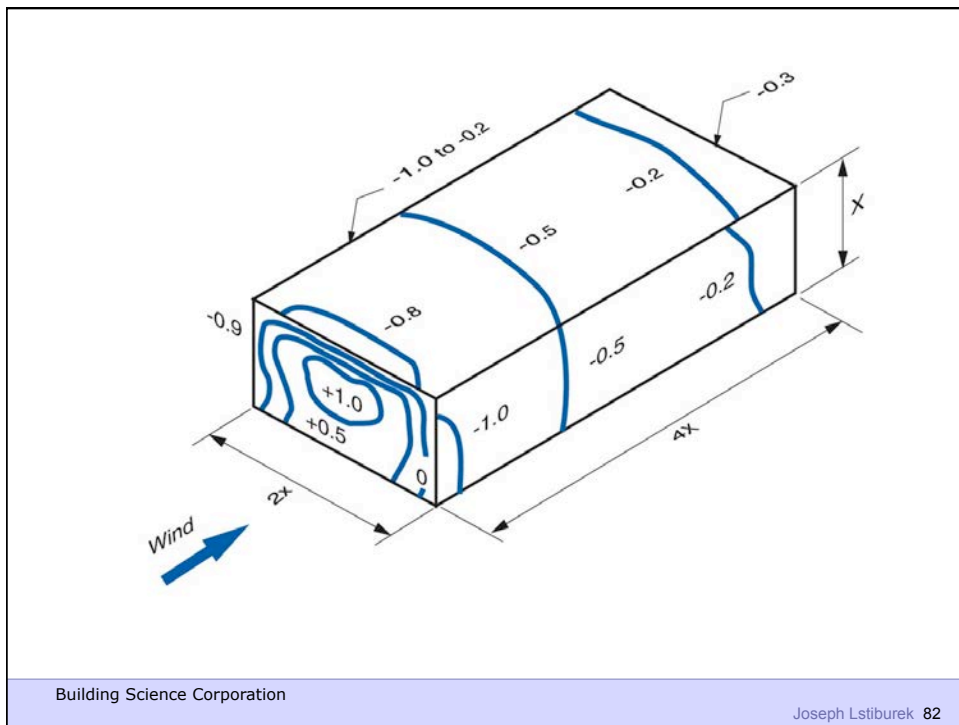
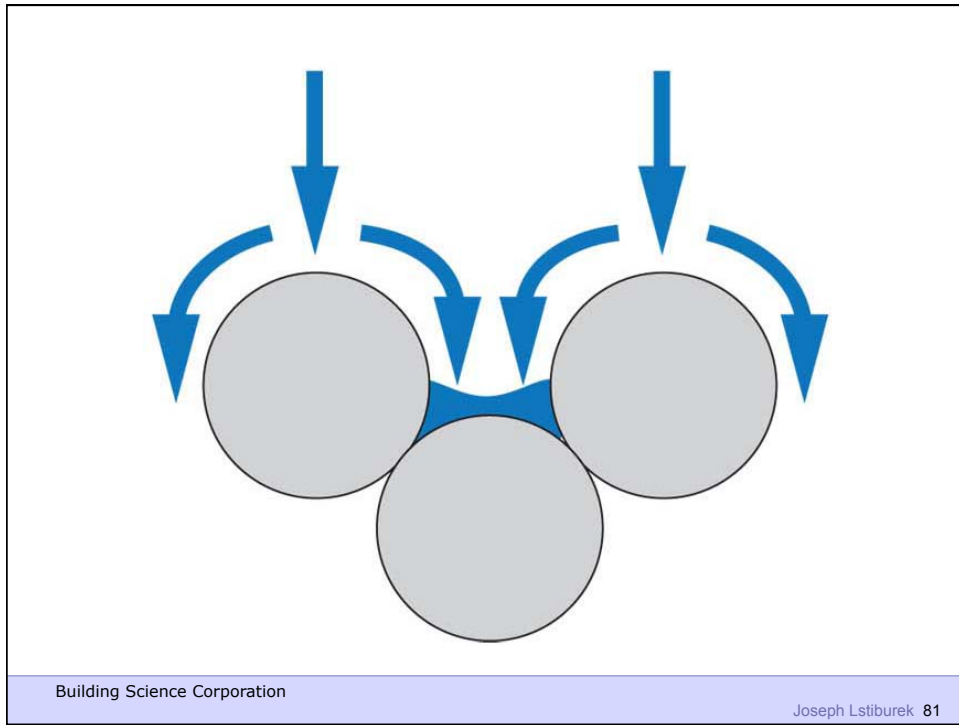
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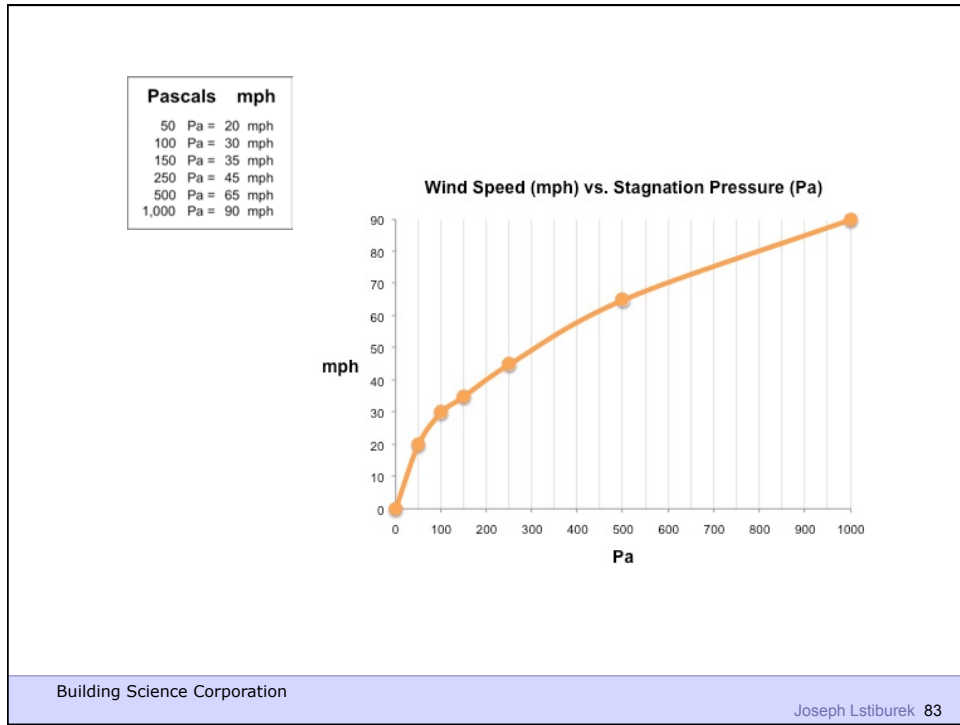








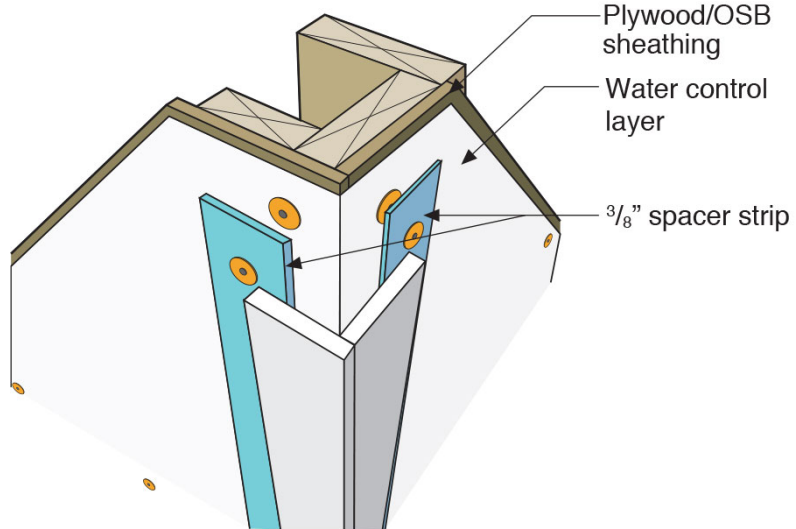






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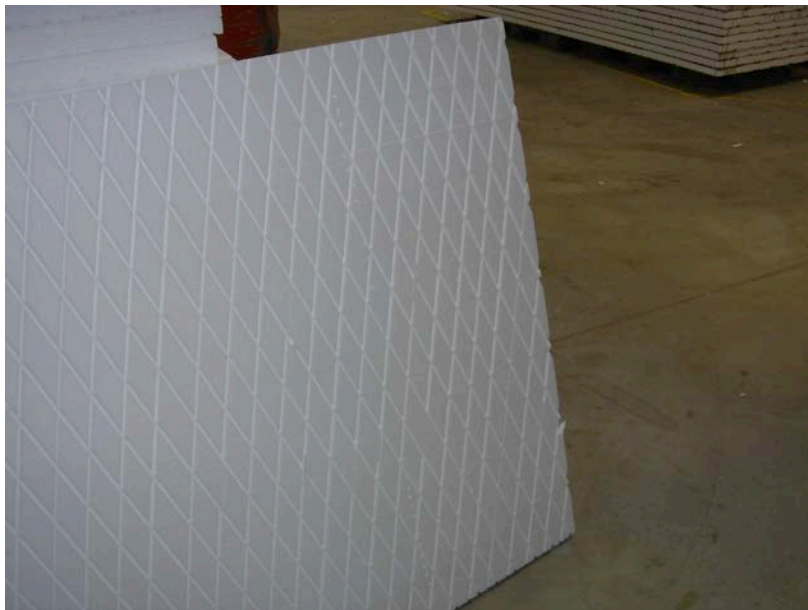
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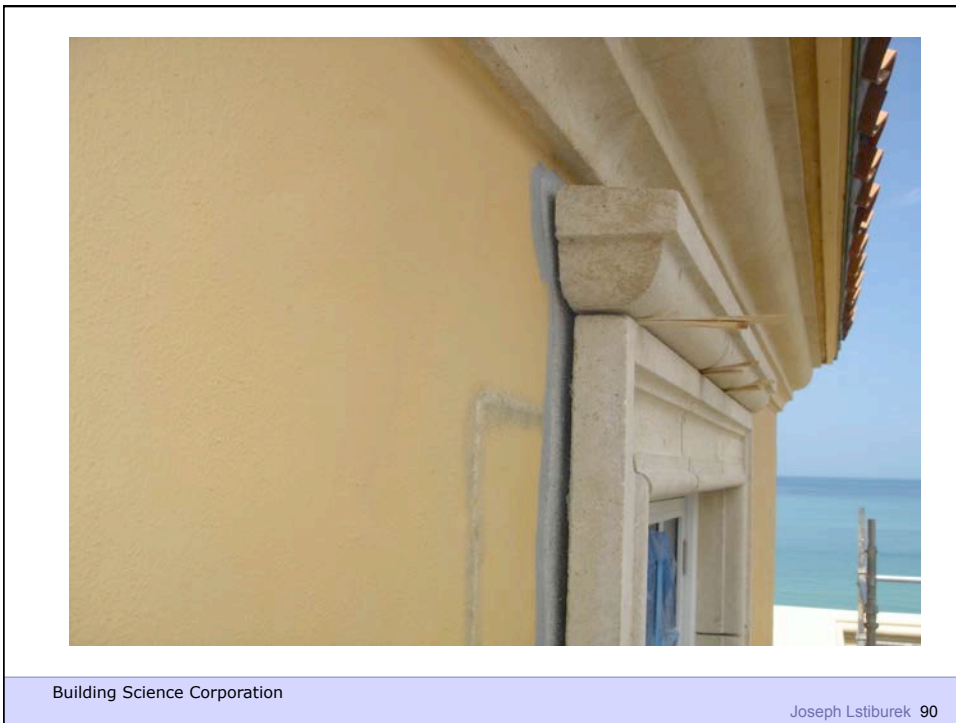
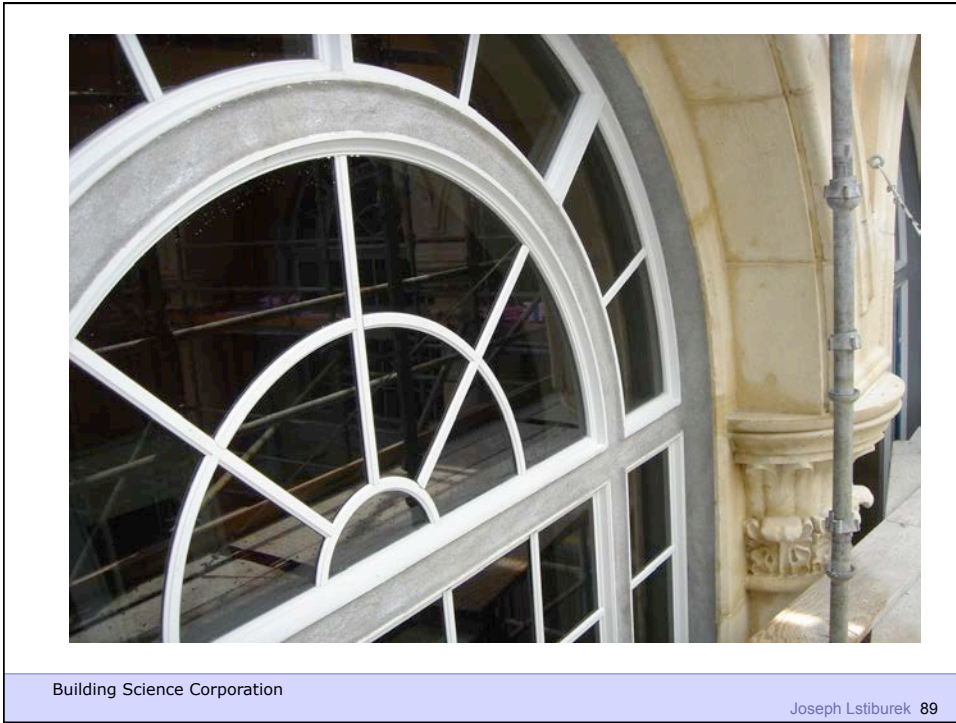
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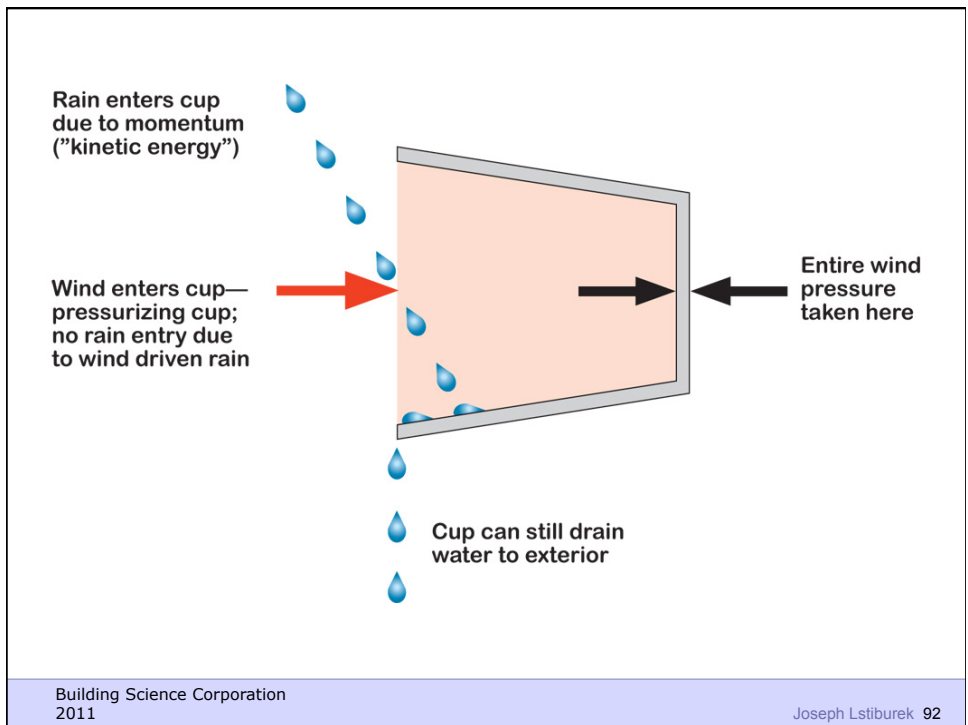
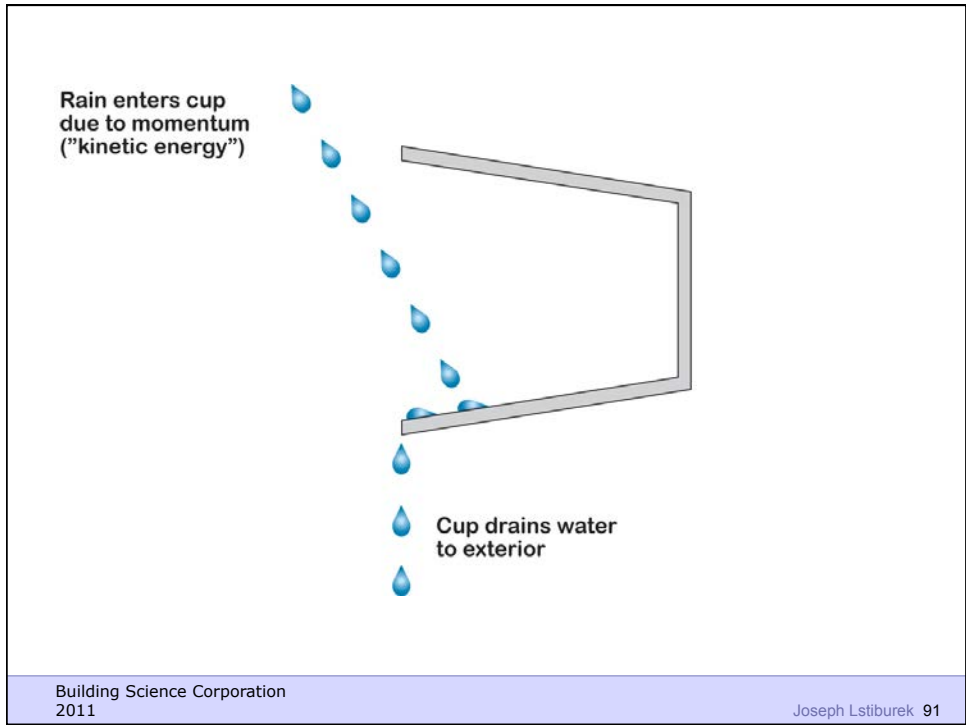
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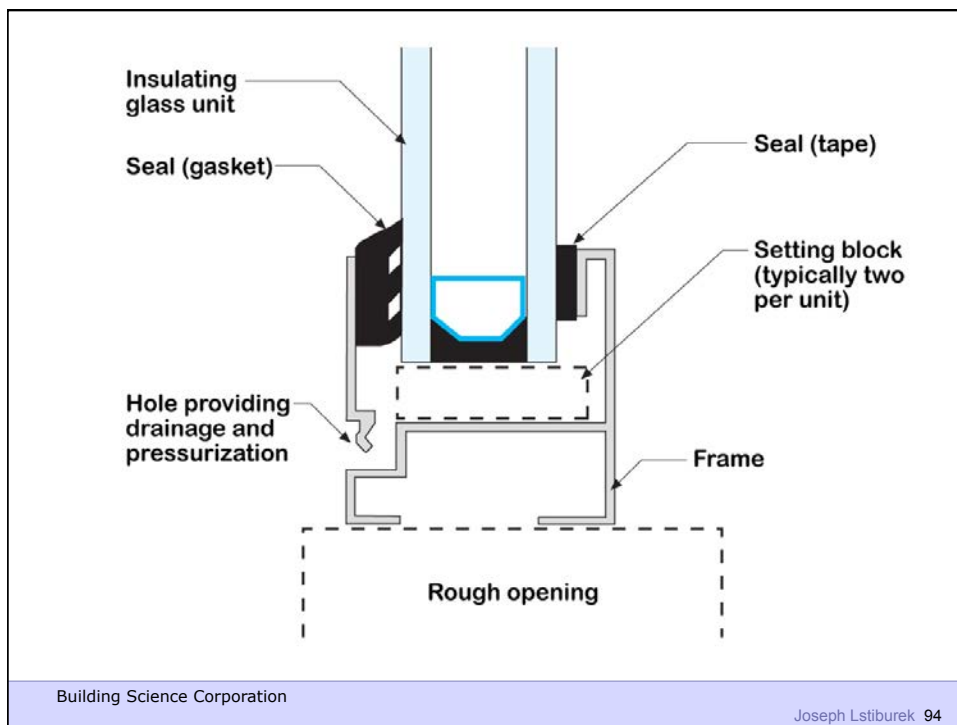
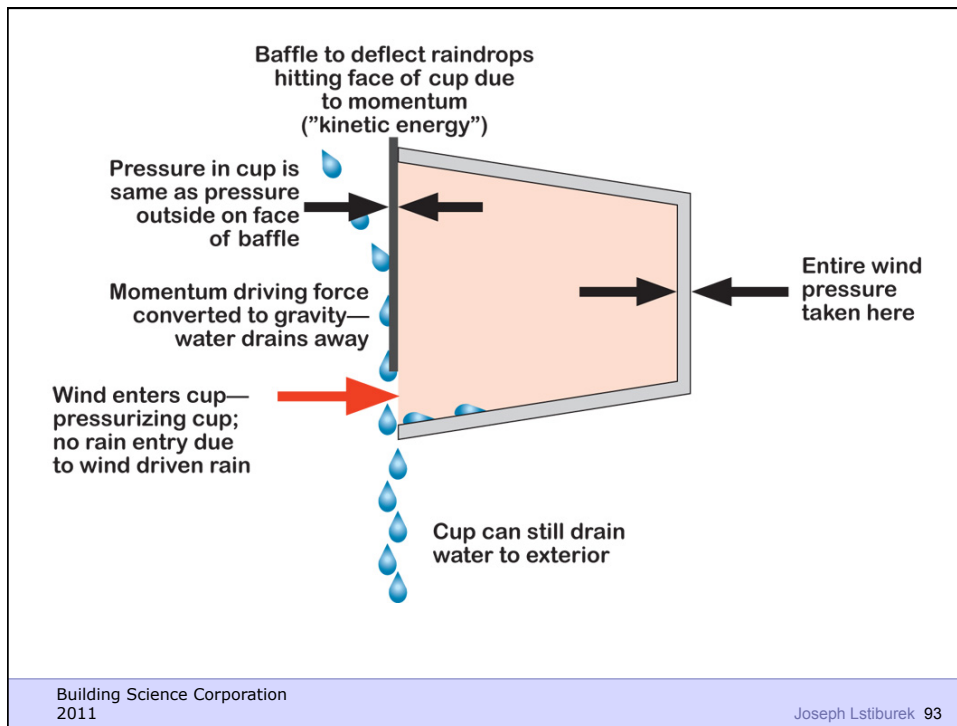


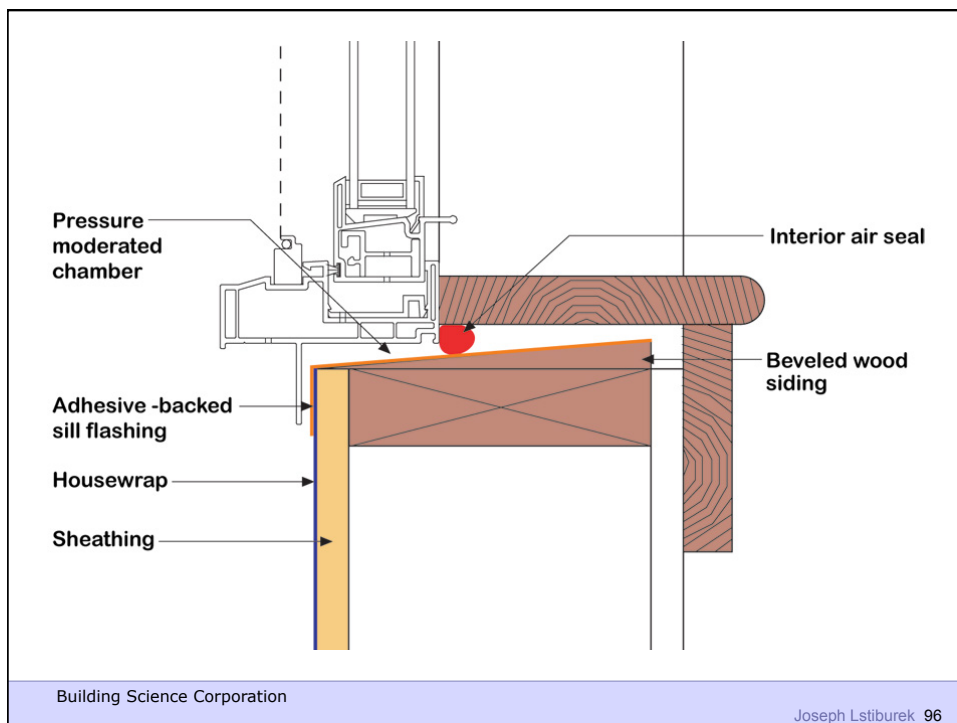
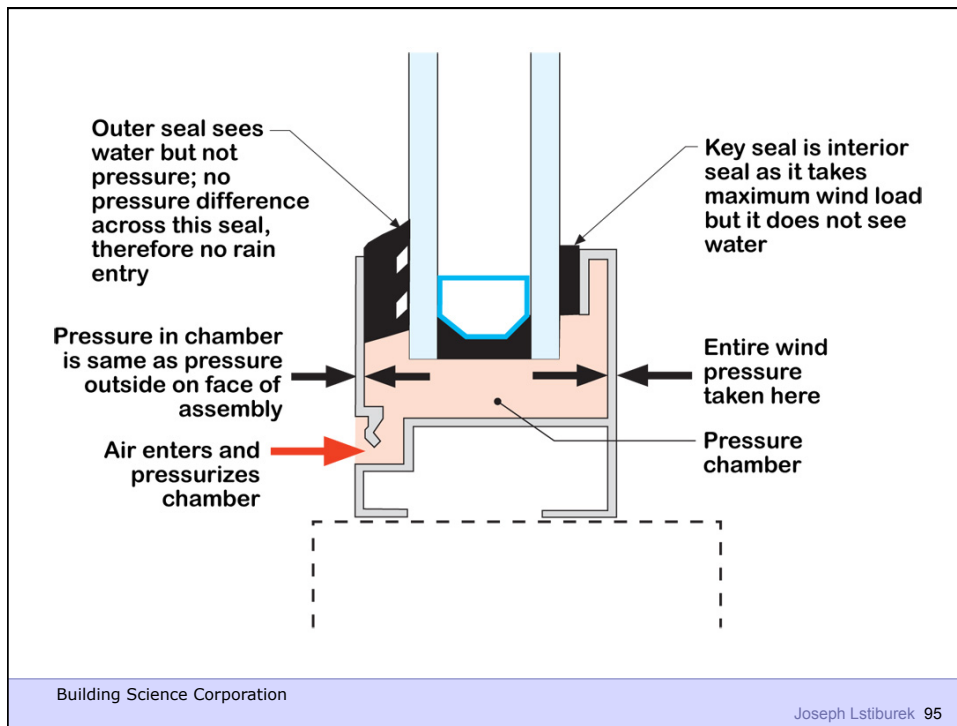
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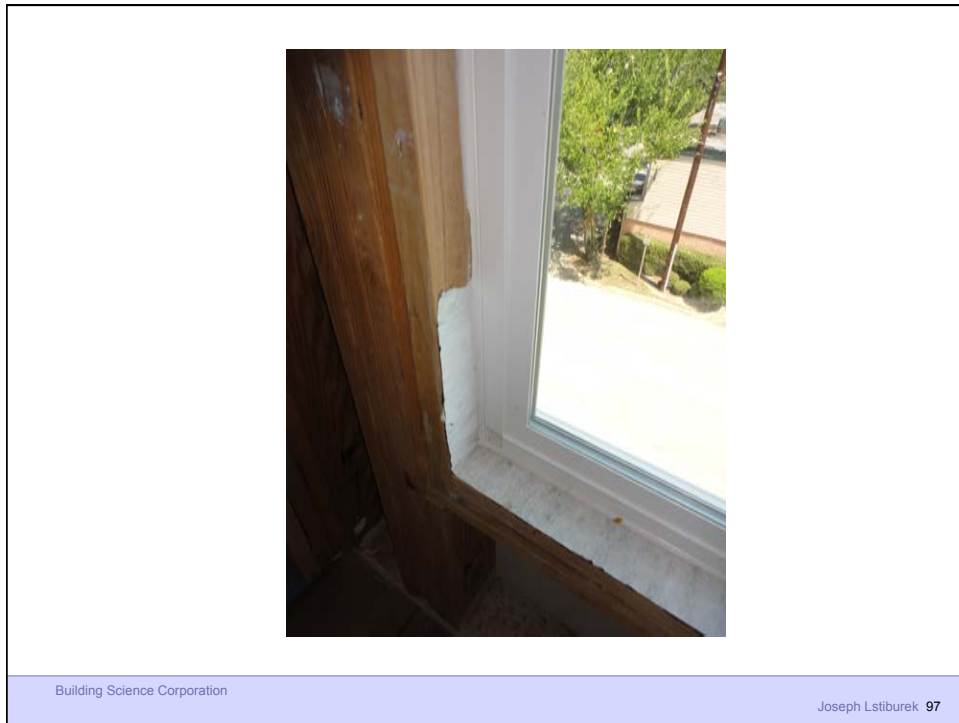
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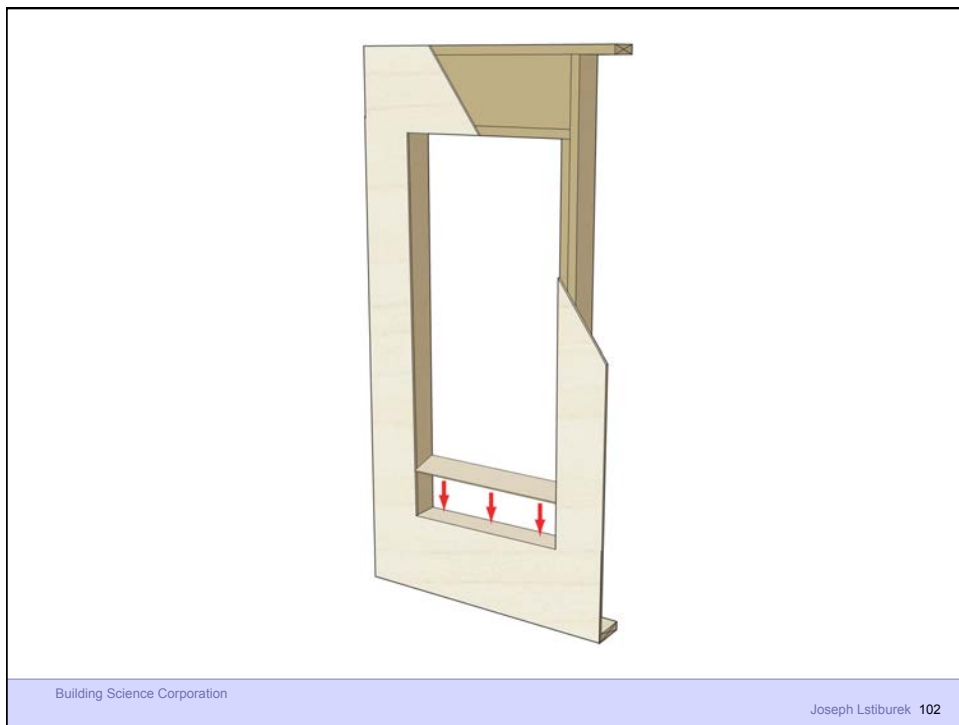
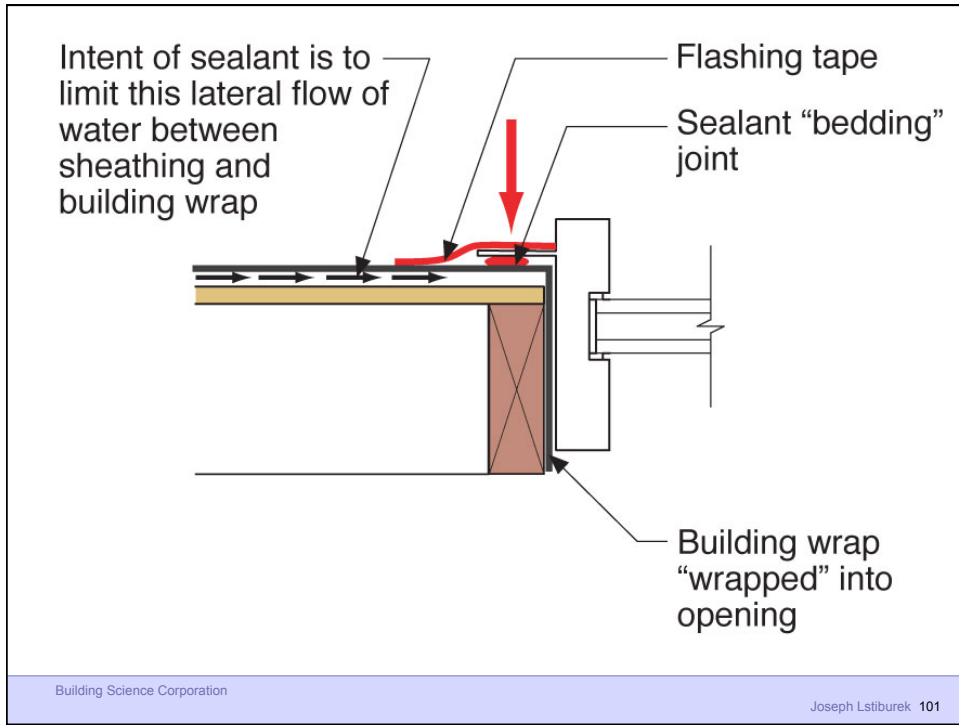


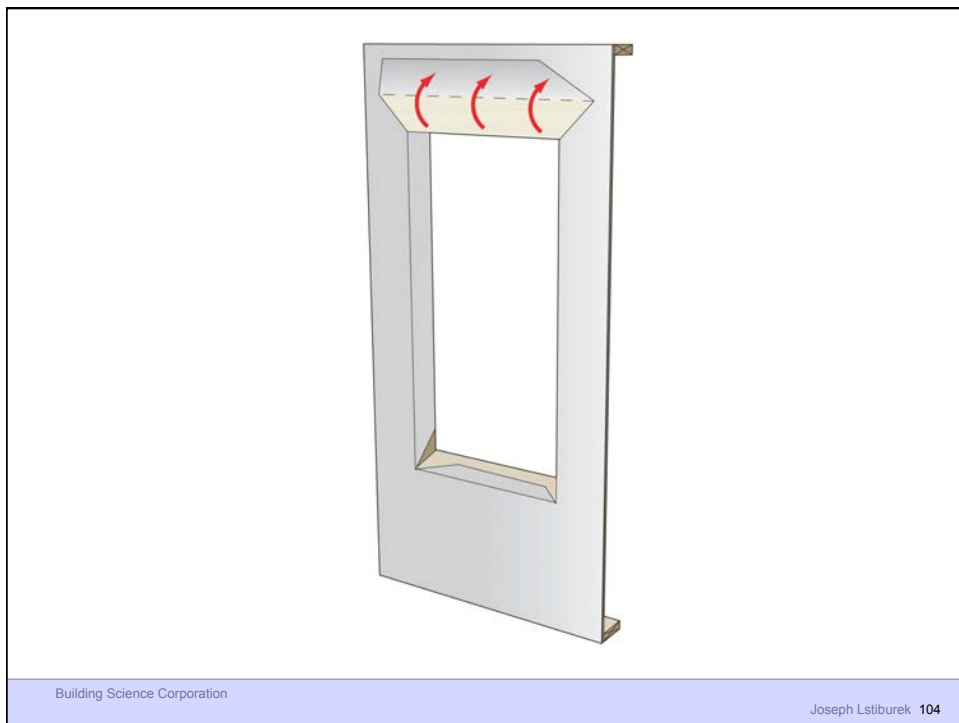
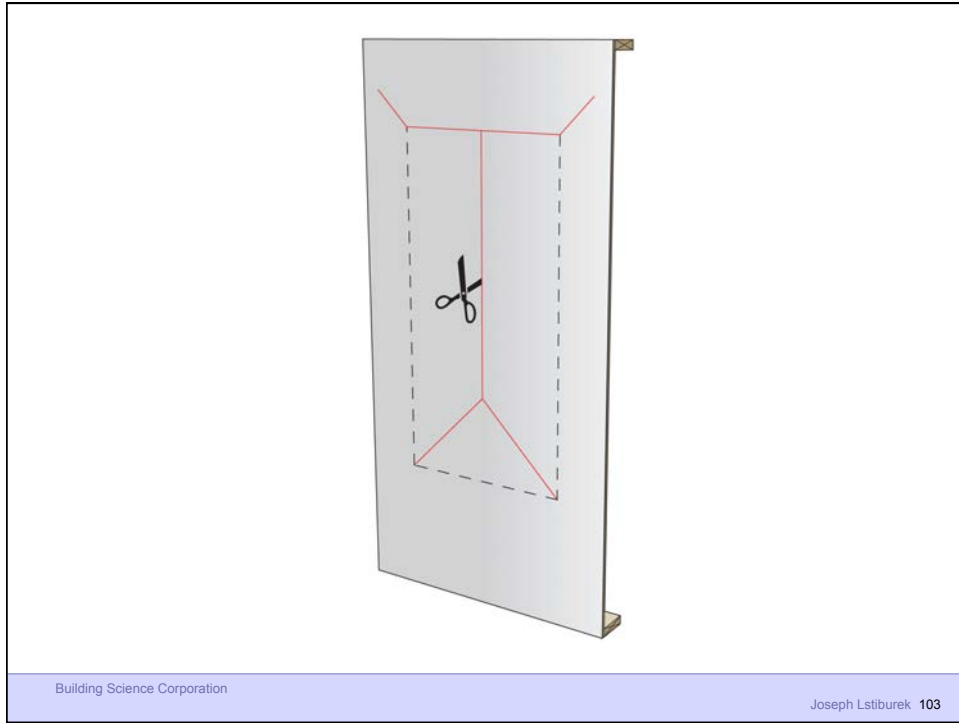


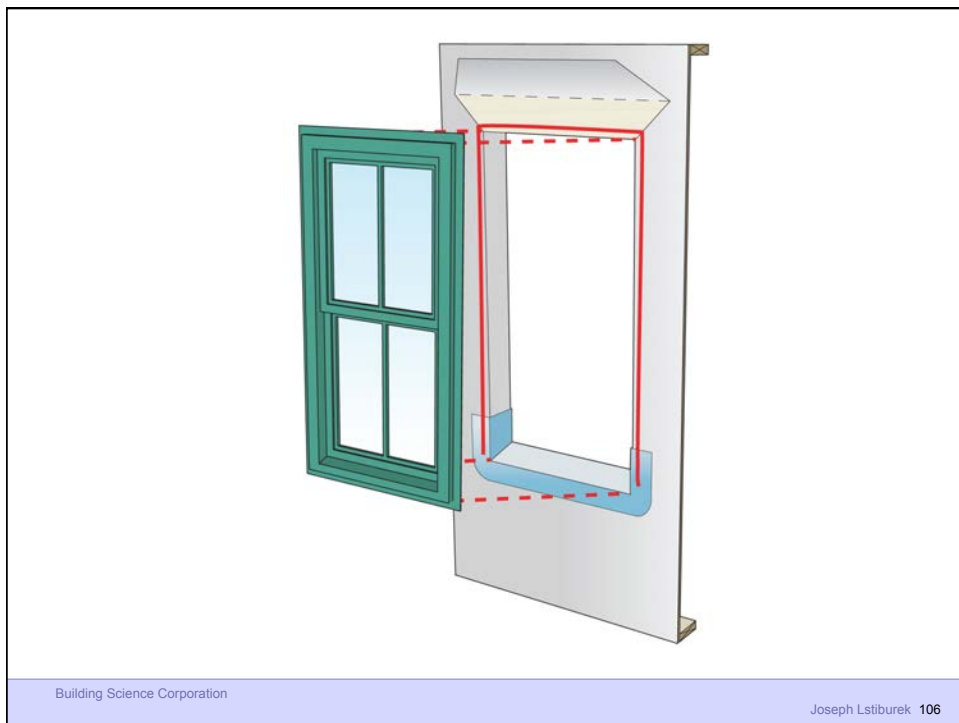
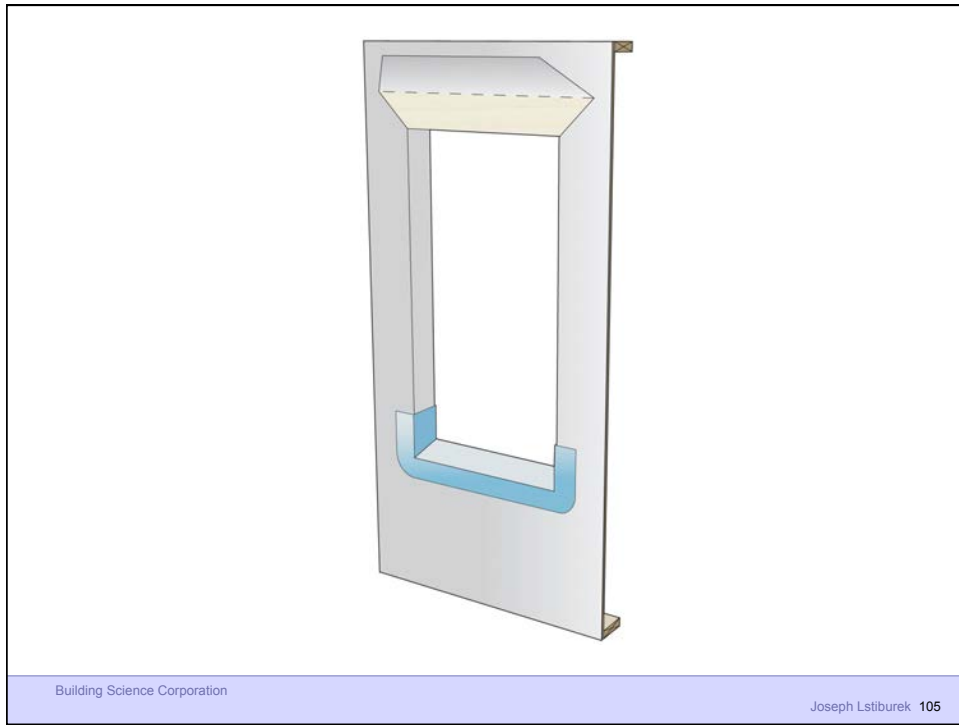


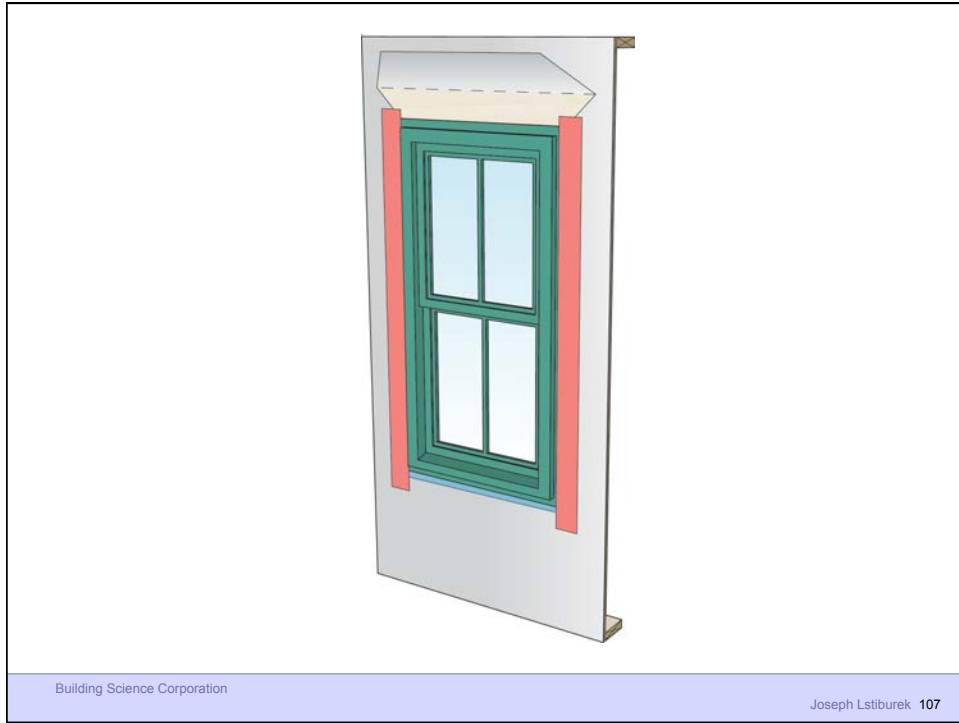


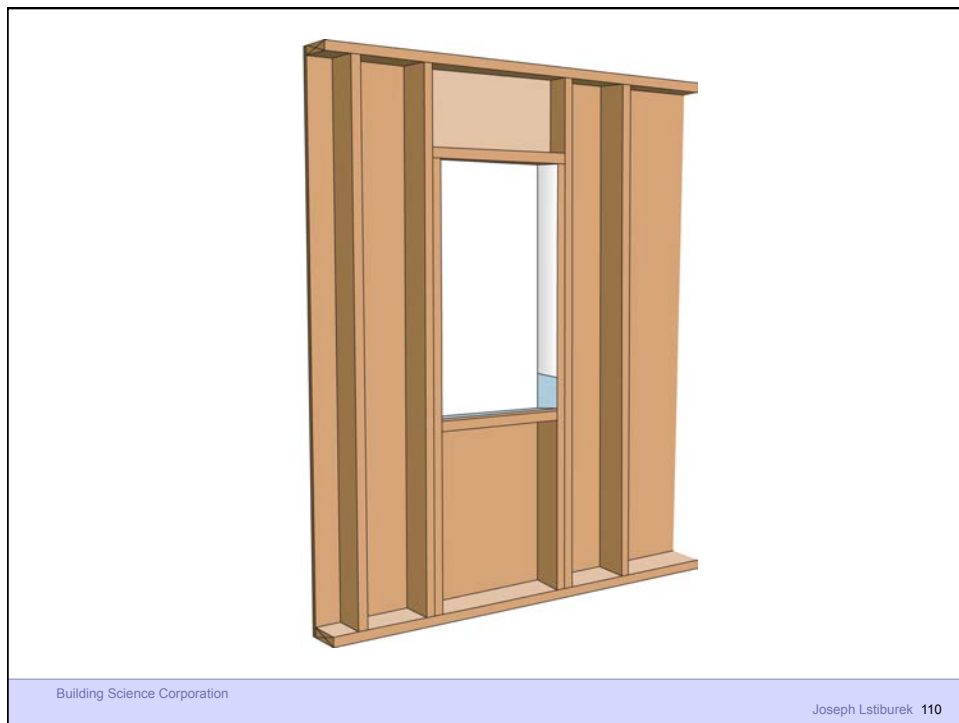


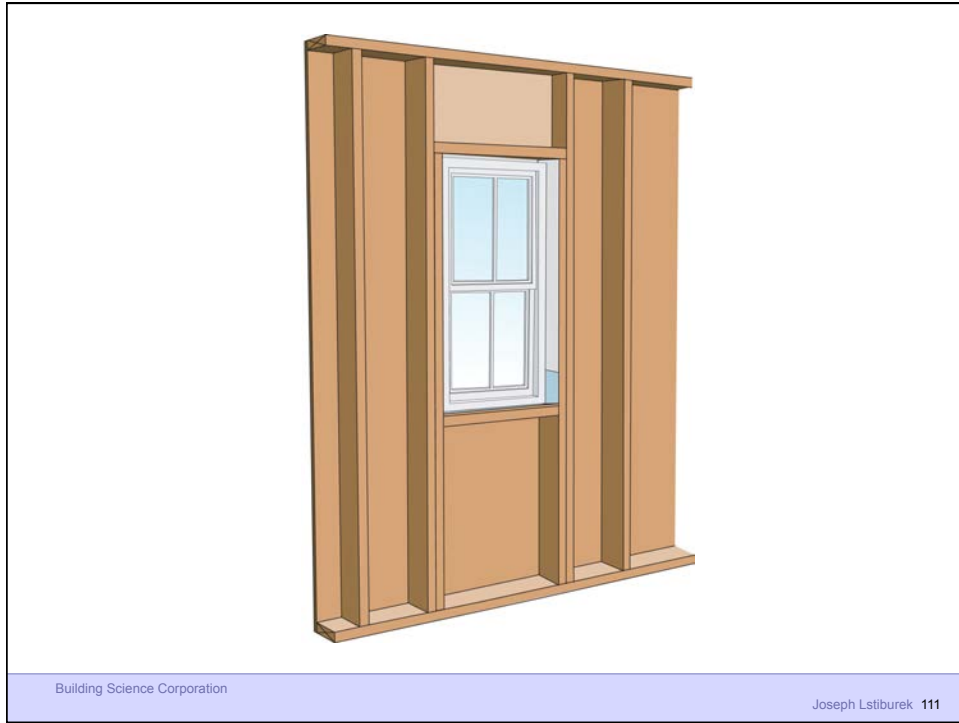


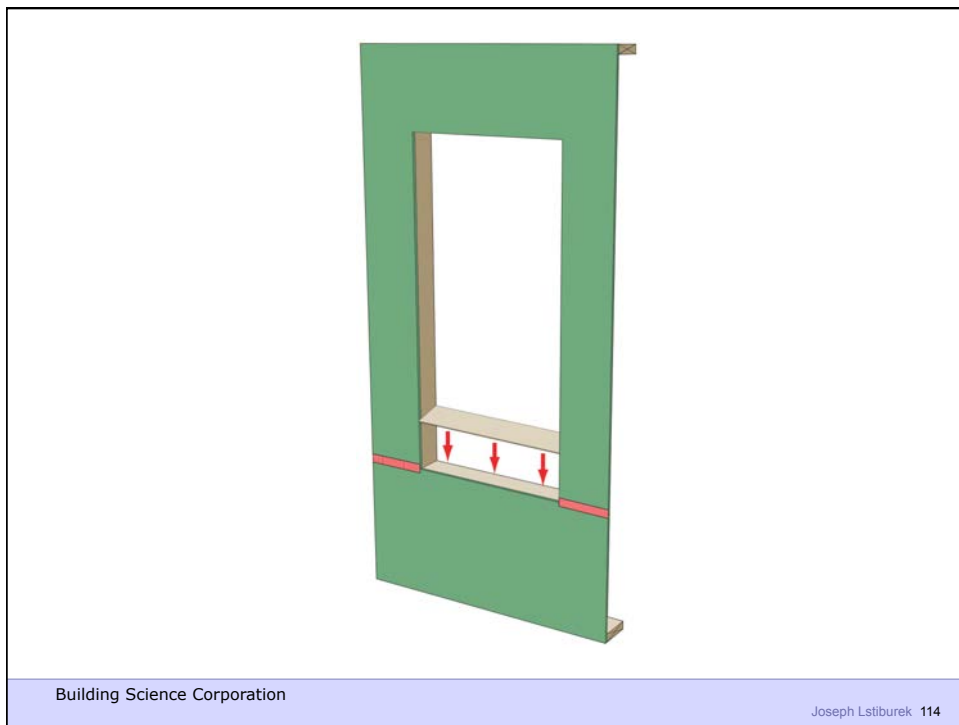
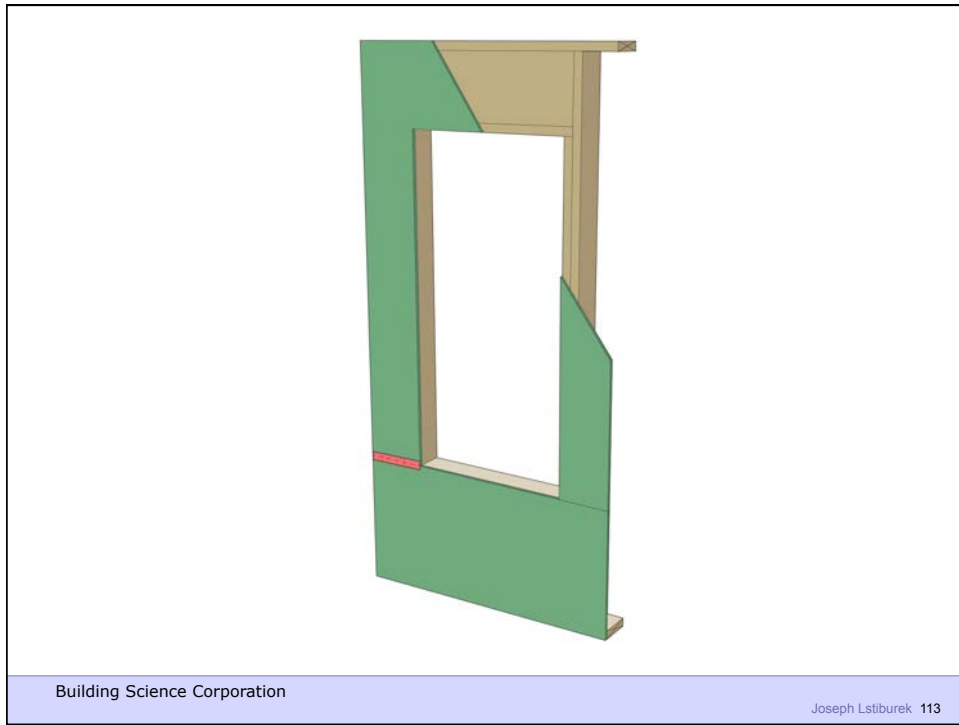


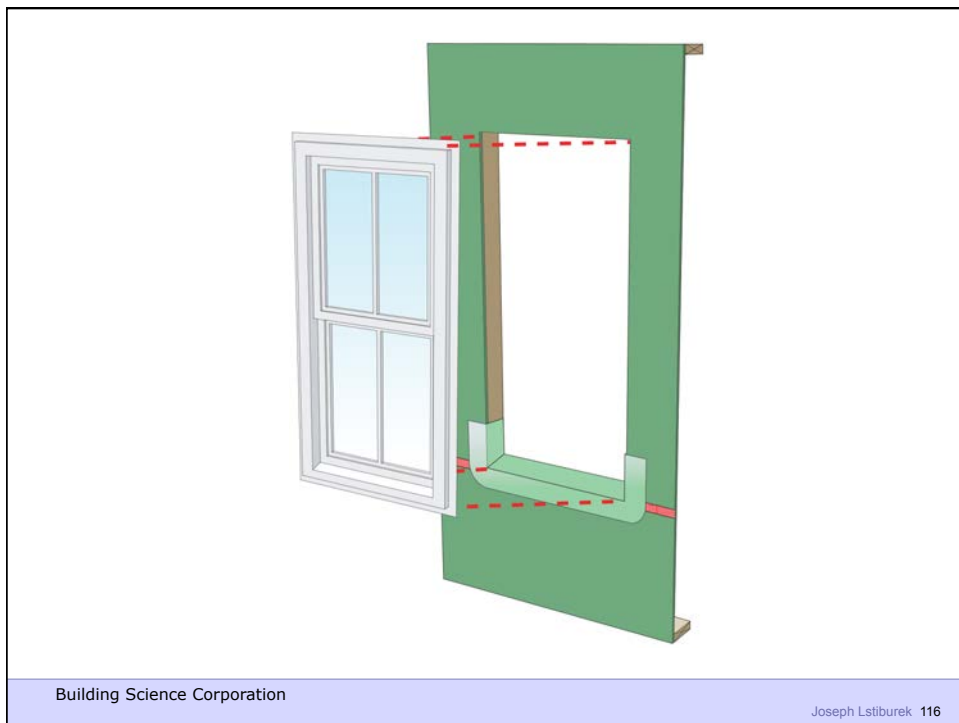
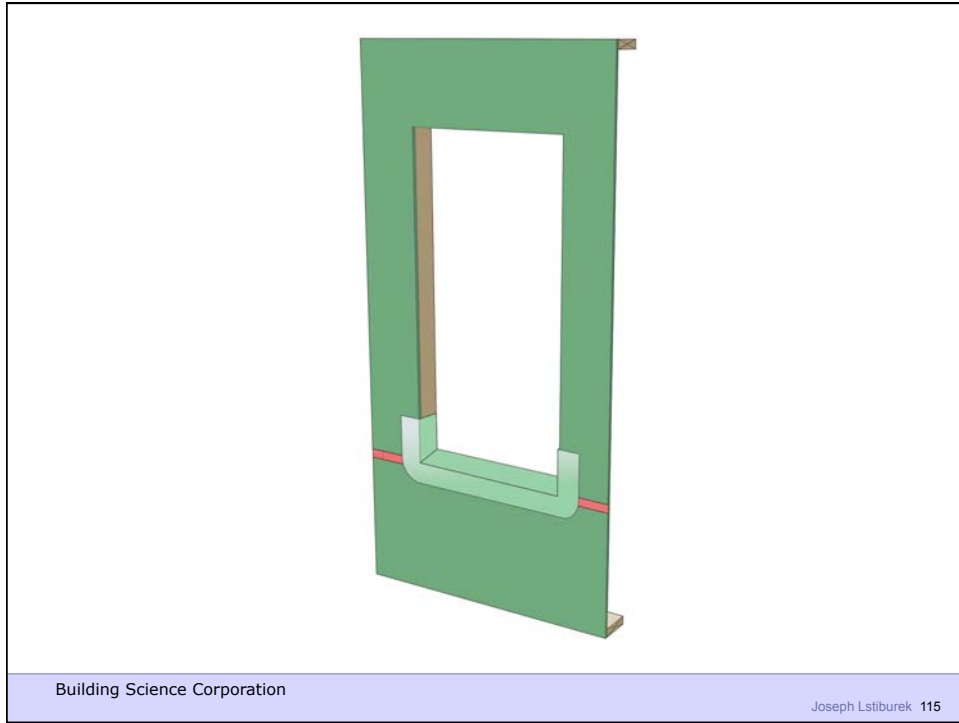




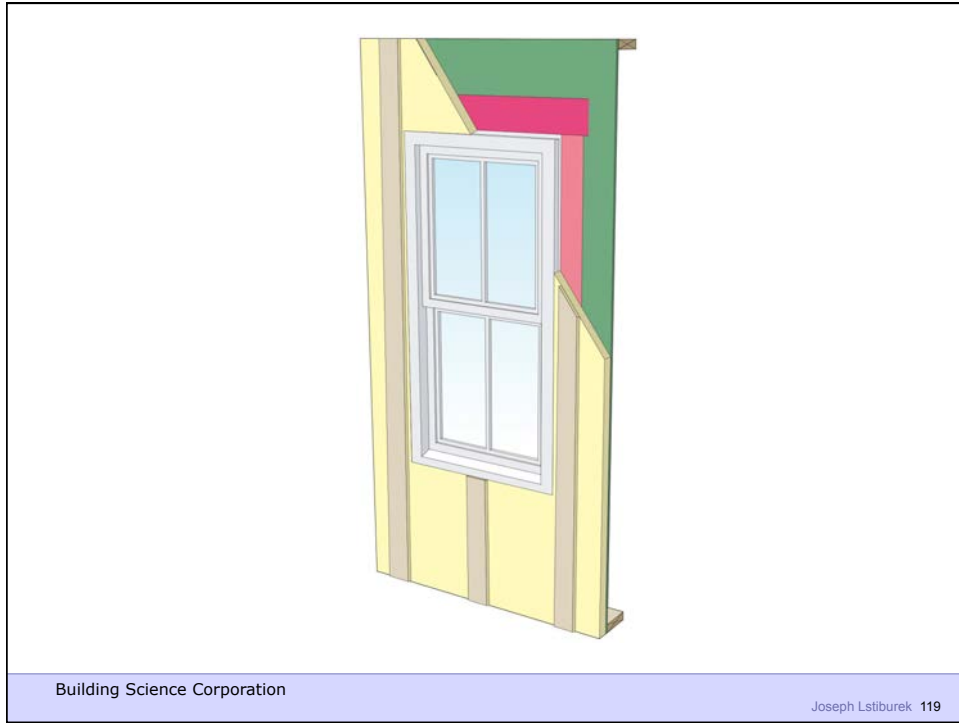


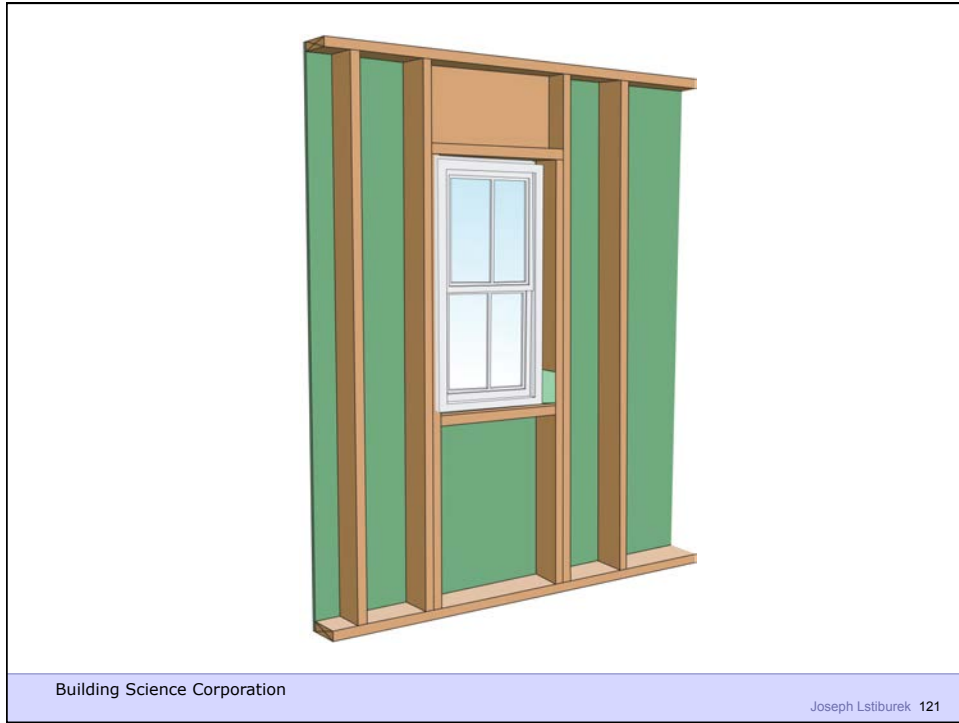


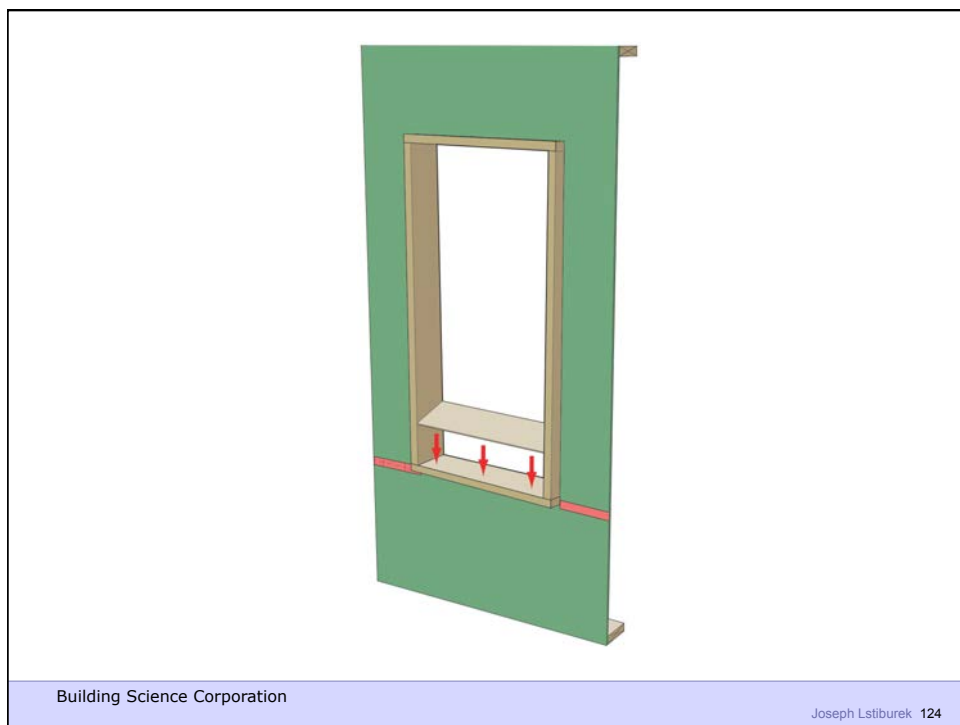
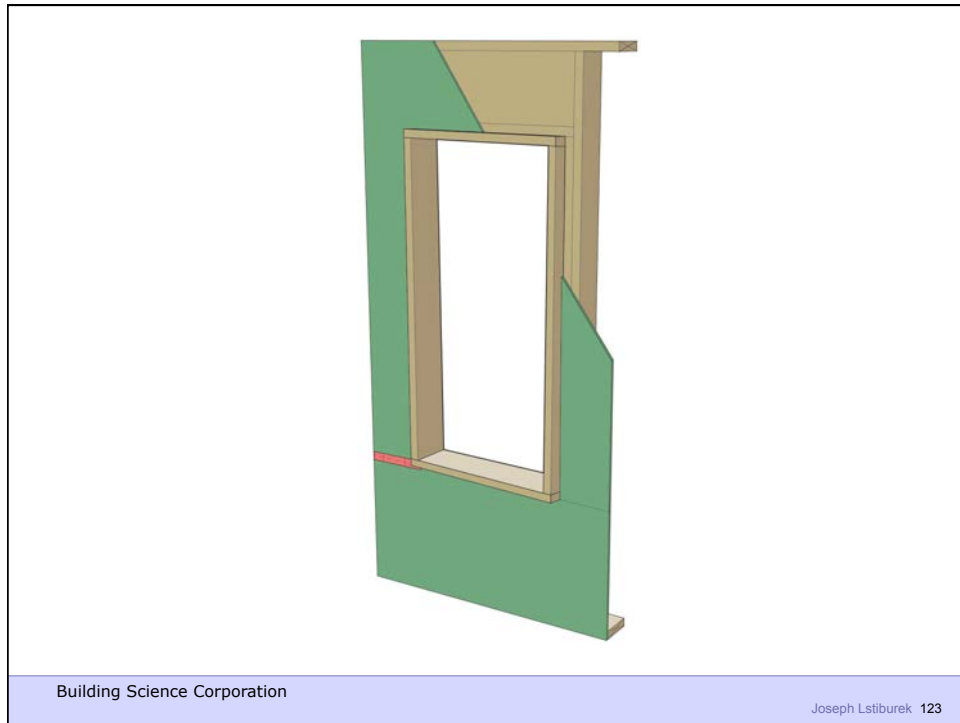


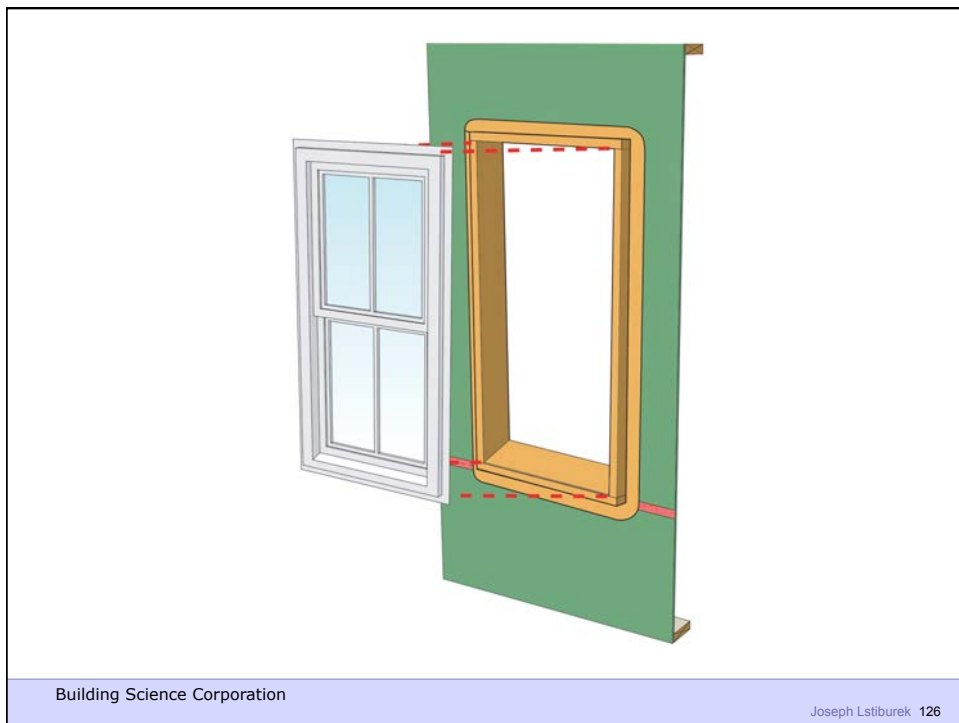
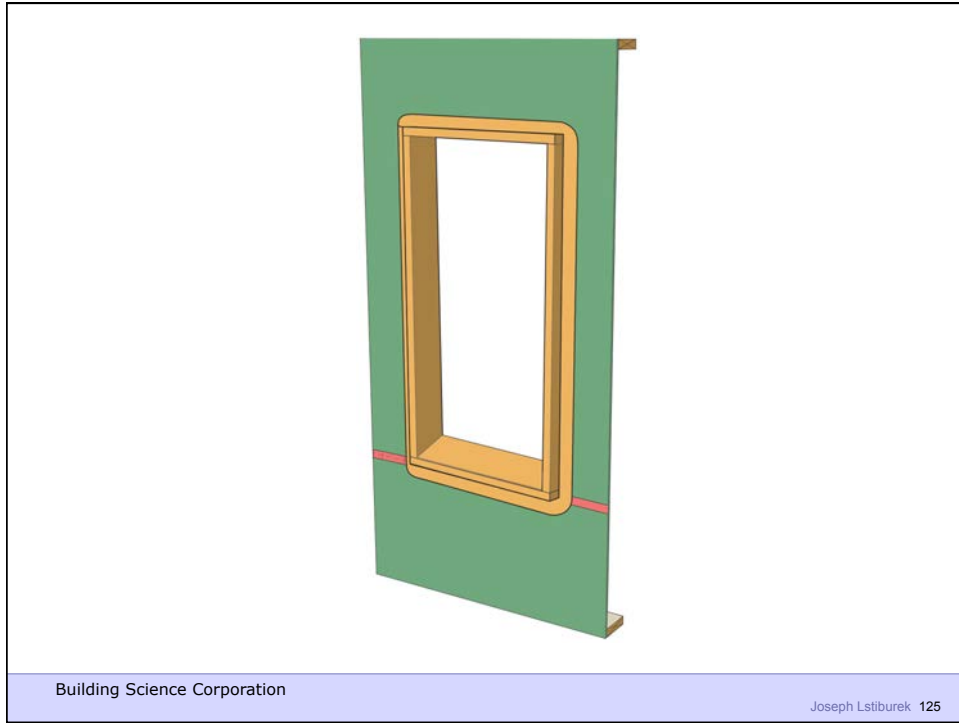


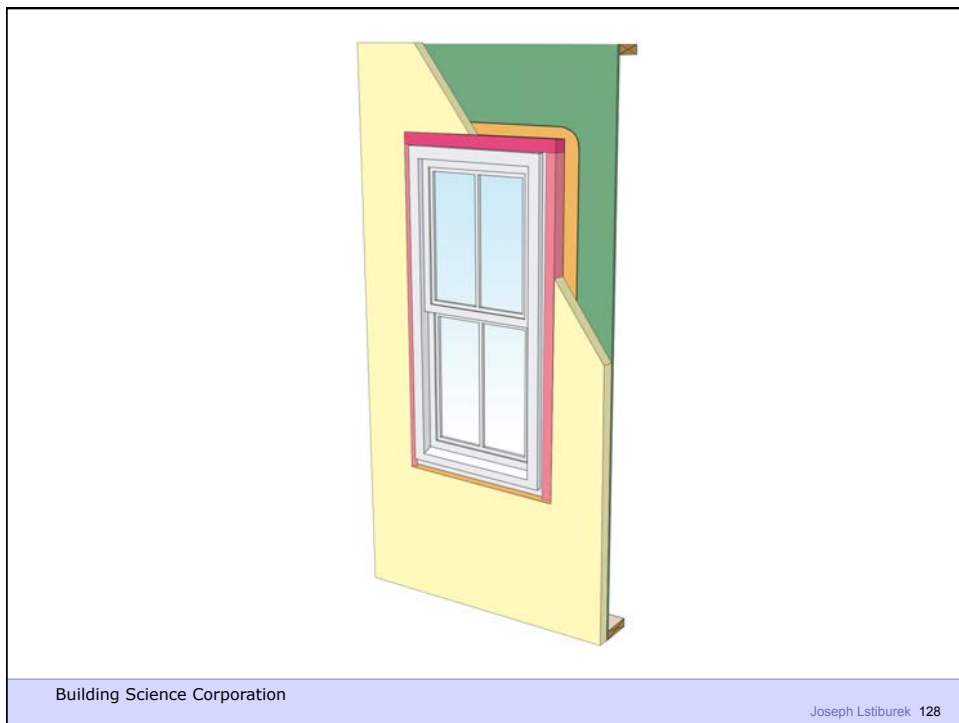


















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