

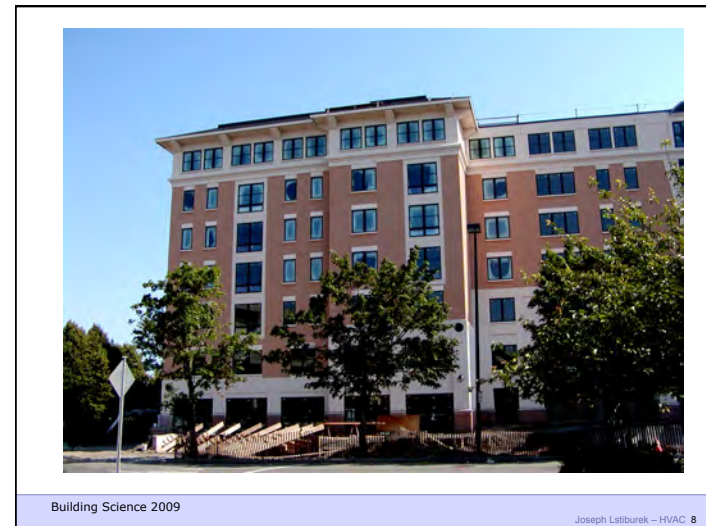
Joseph Lstiburek, Ph.D., P.Eng, ASHRAE Fellow

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Multifamily Podium Construction

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Heat 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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A Building is an Environmental Separator

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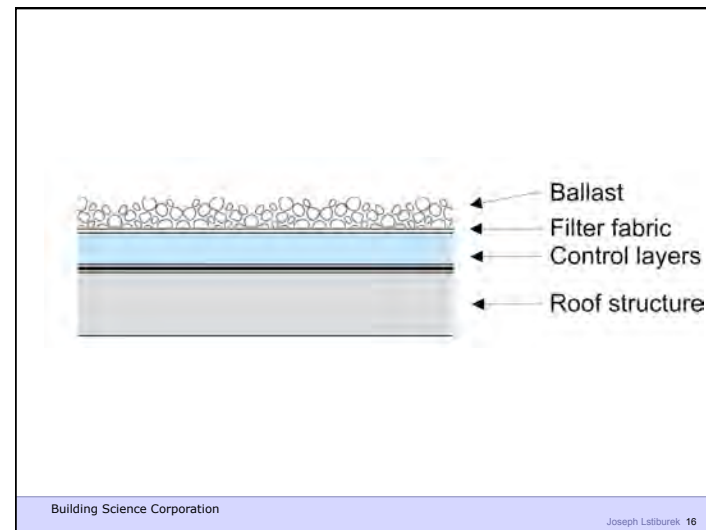
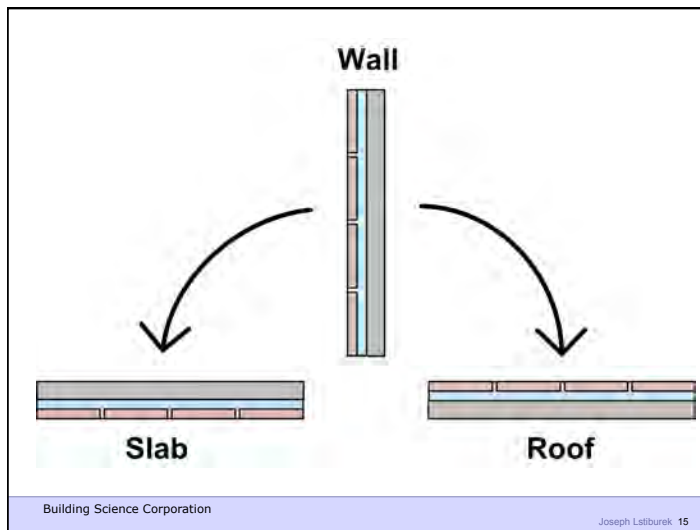
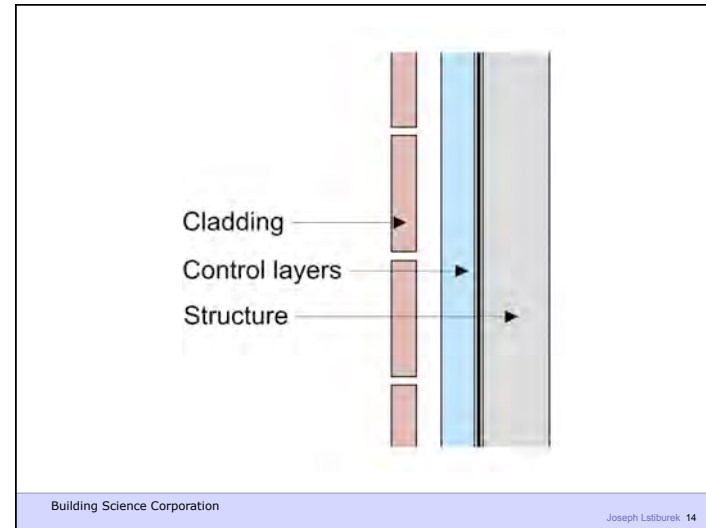
- Control heat flow
- Control airflow
- Control water vapor flow
- Control rain
- Control ground water
- Control light and solar radiation
- Control noise and vibrations
- Control contaminants, environmental hazards and odors
- Control insects, rodents and vermin
- Control fire
- Provide strength and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

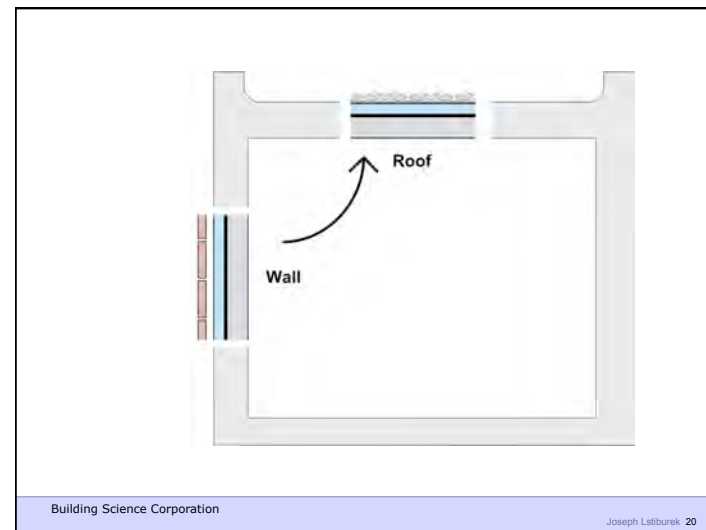
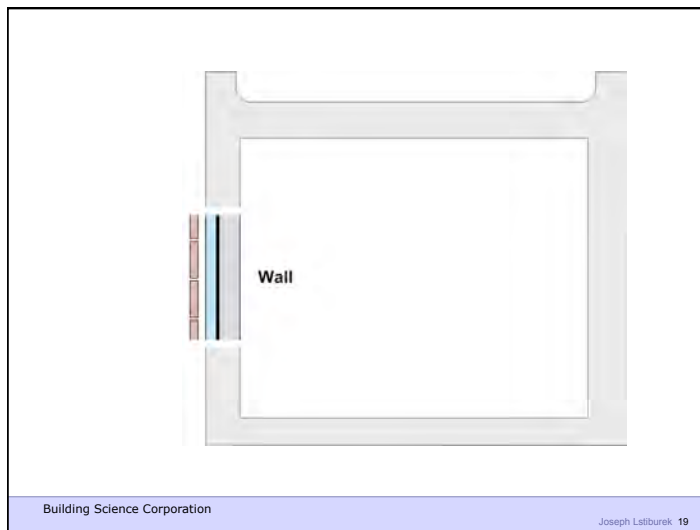
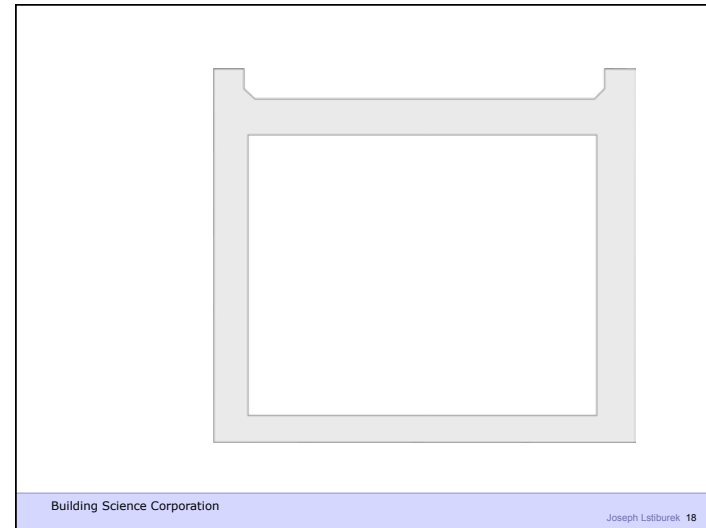
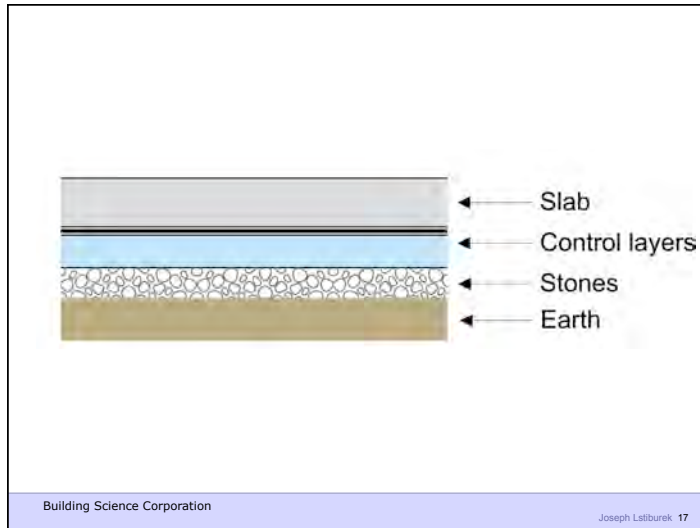
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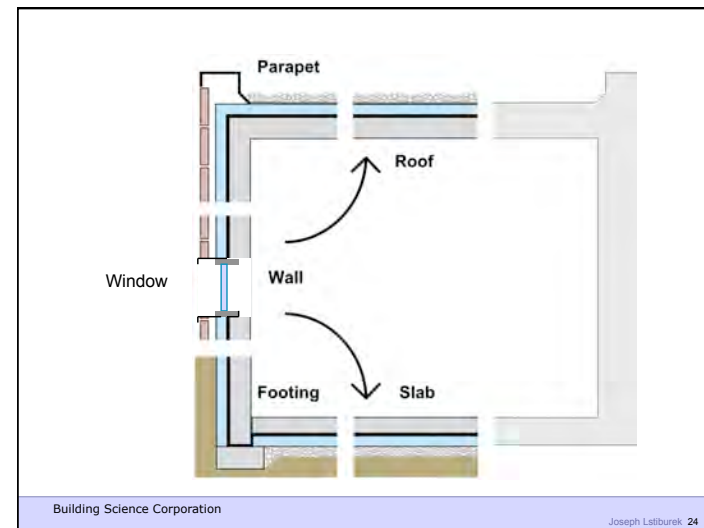
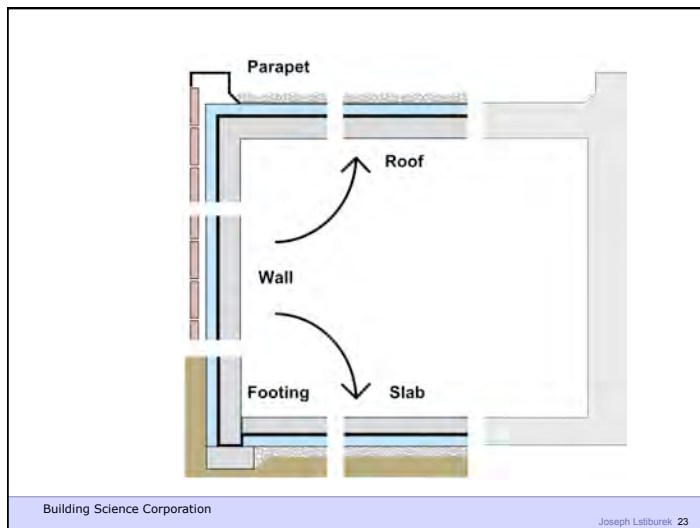
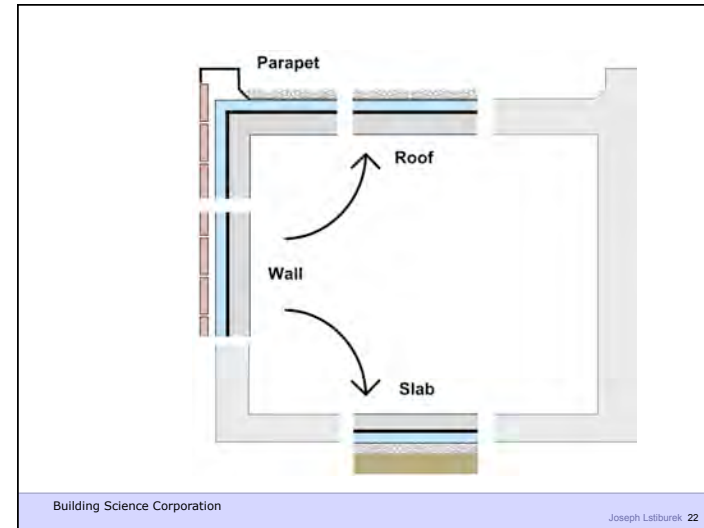
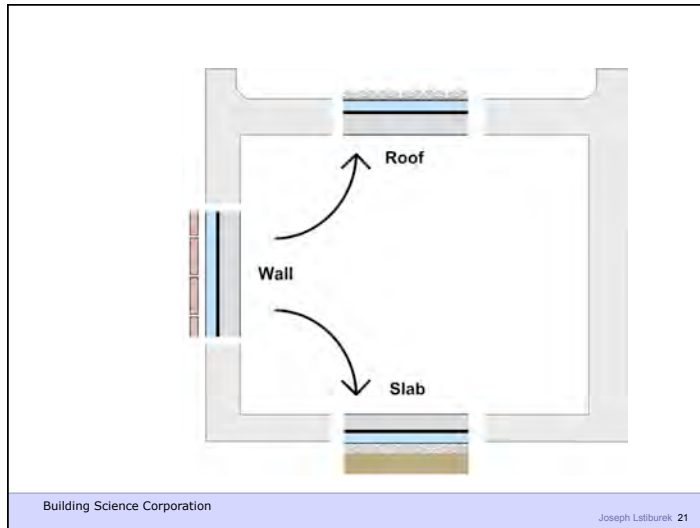
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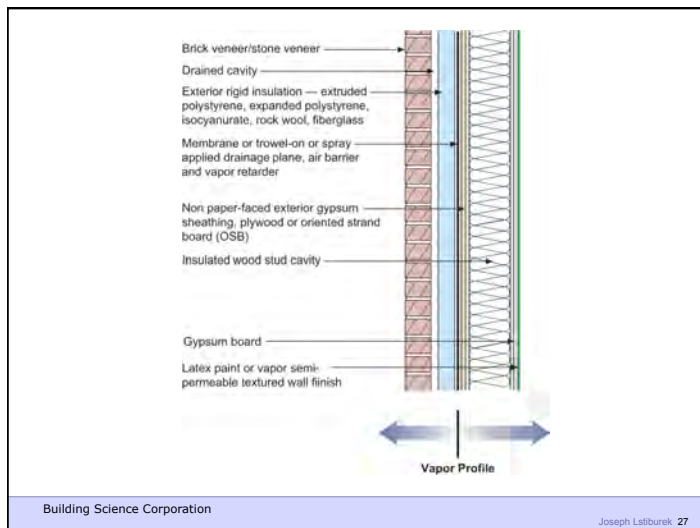
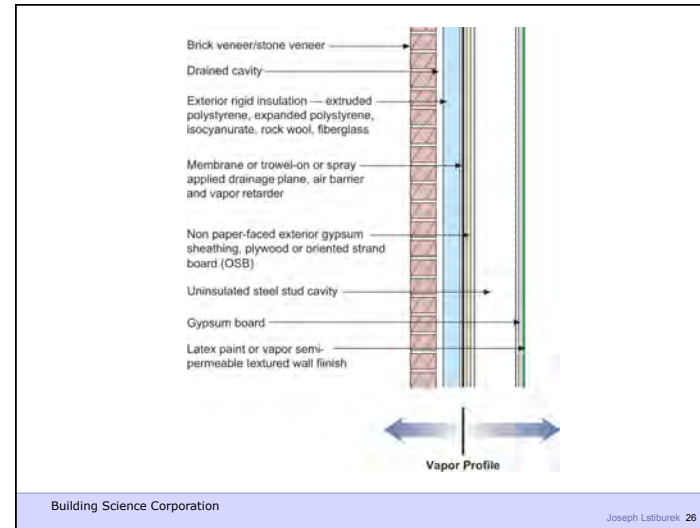
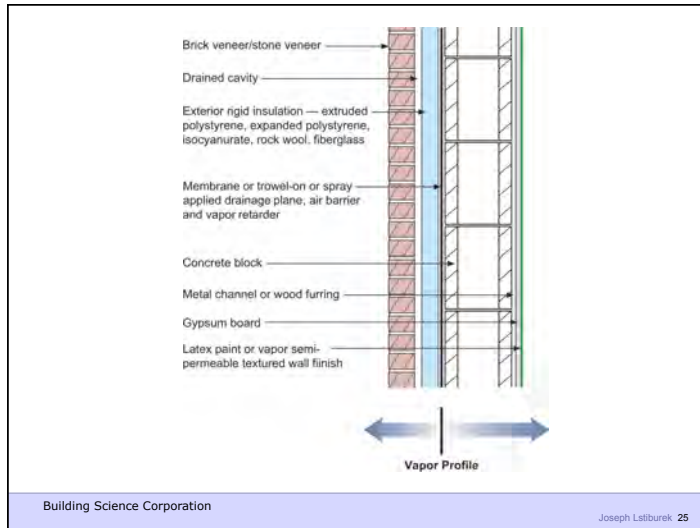
Water Control Layer
Air Control Layer
Vapor Control Layer
Thermal Control Layer

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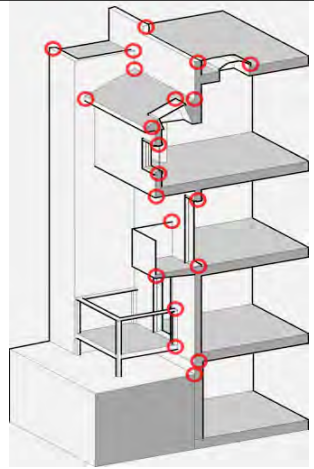
Commercial Enclosure: Simple Layers

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

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Enclosure Design: Details

- Details demand the same approach as the enclosure.
- Scaled drawings required at 



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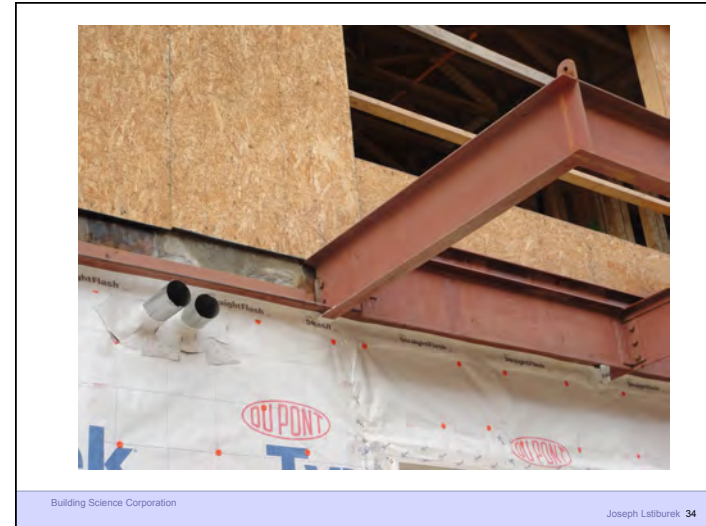
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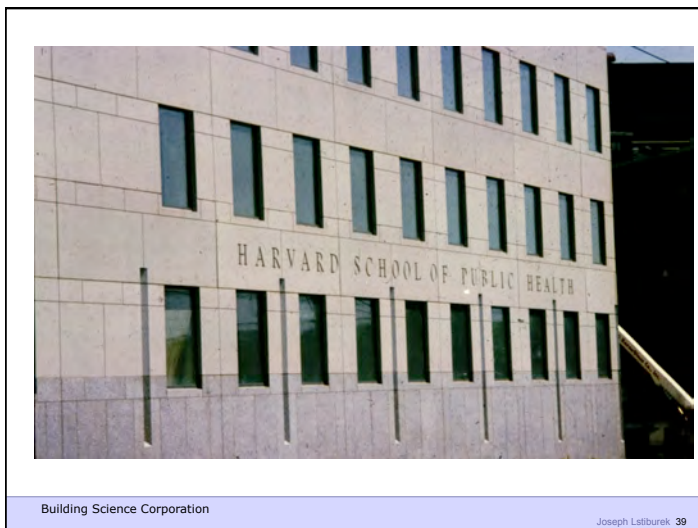
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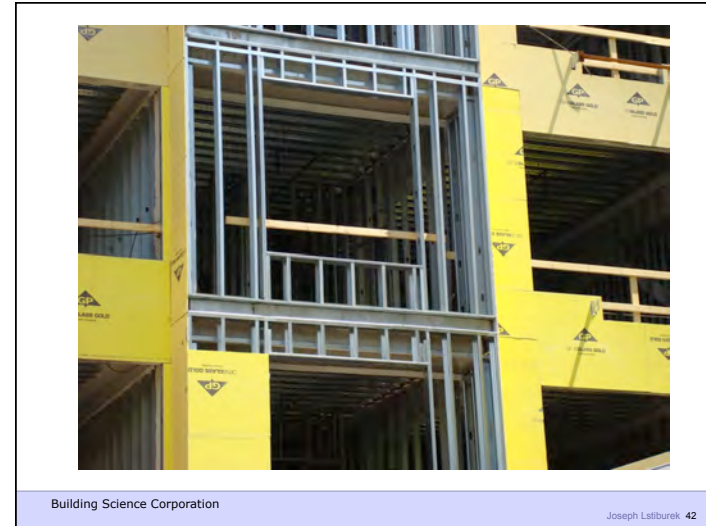


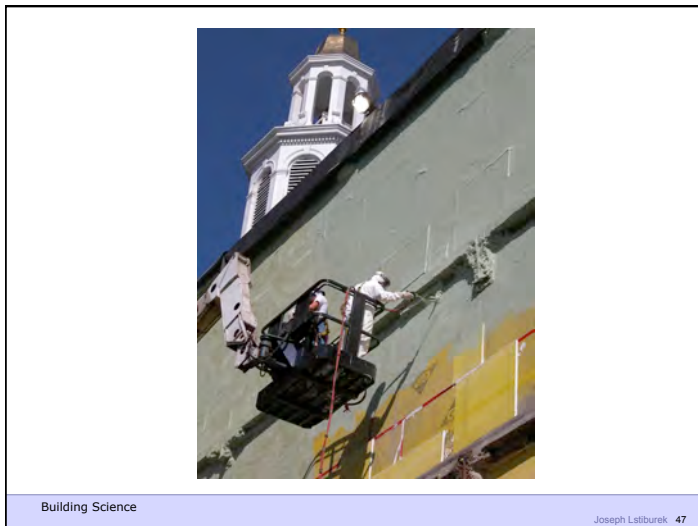
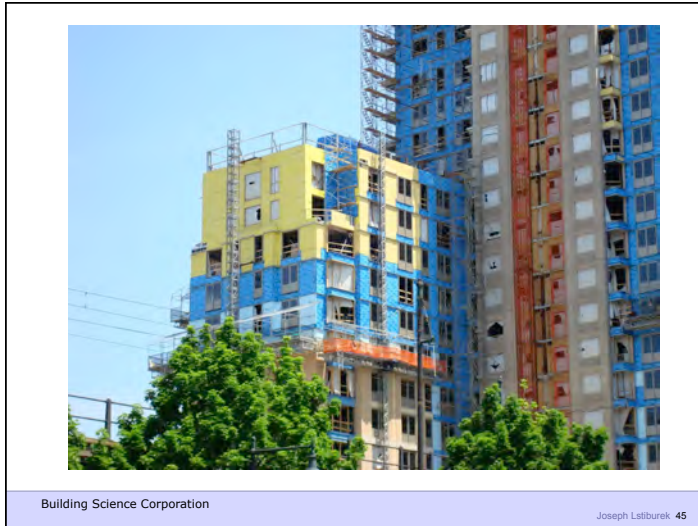
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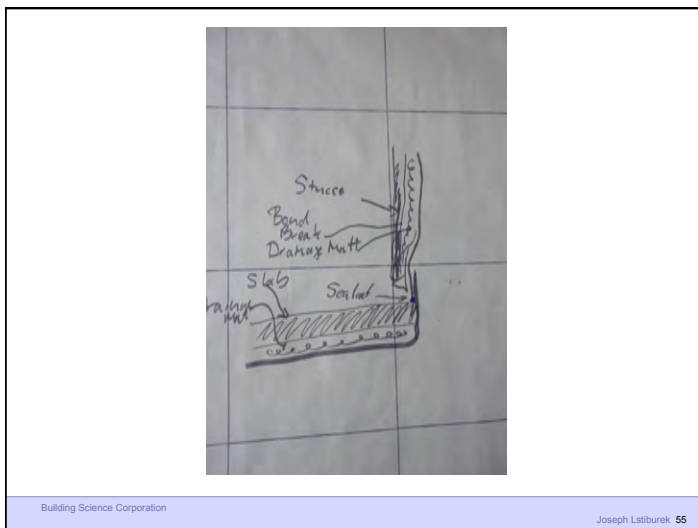
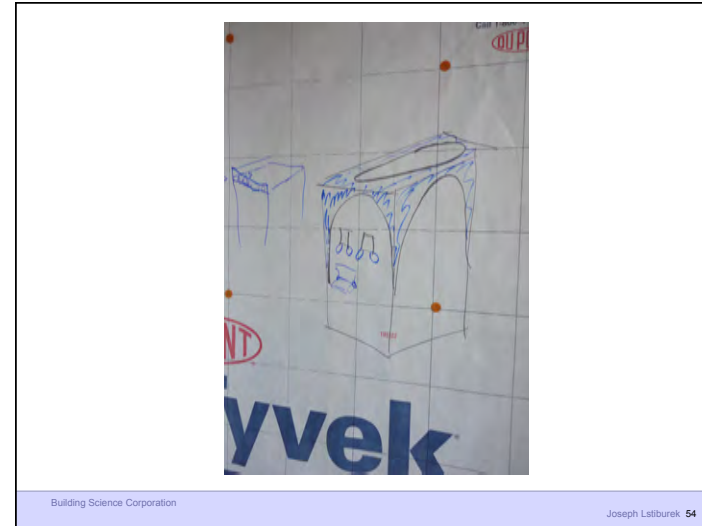


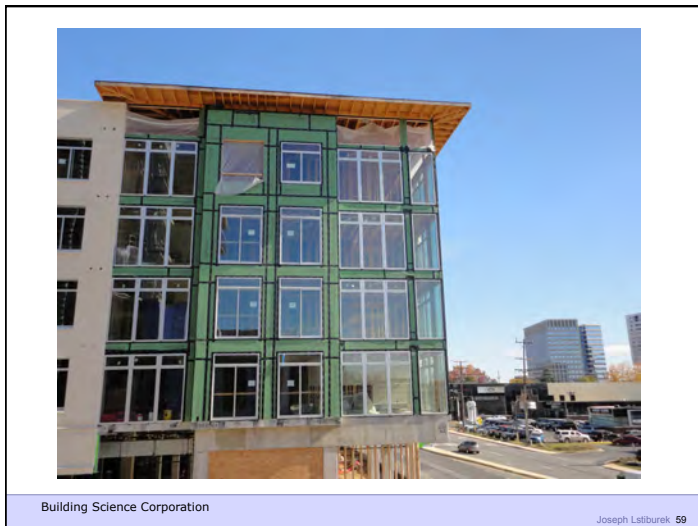


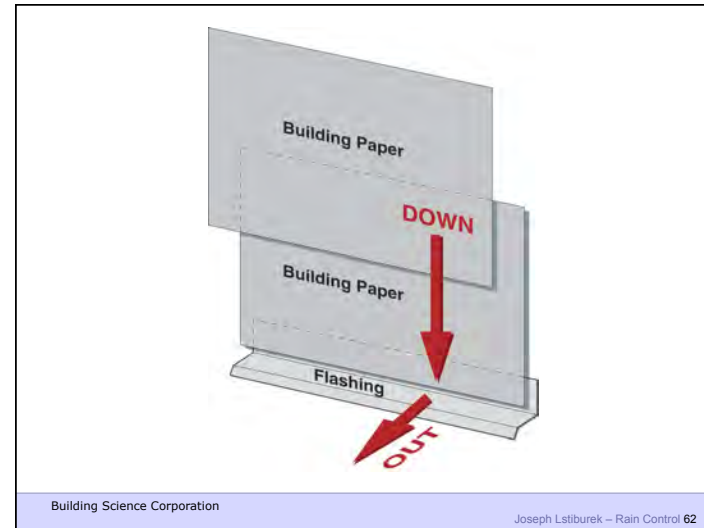
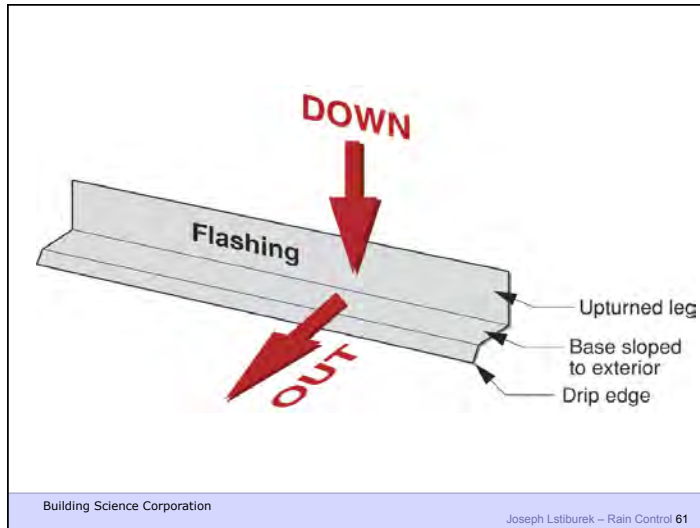


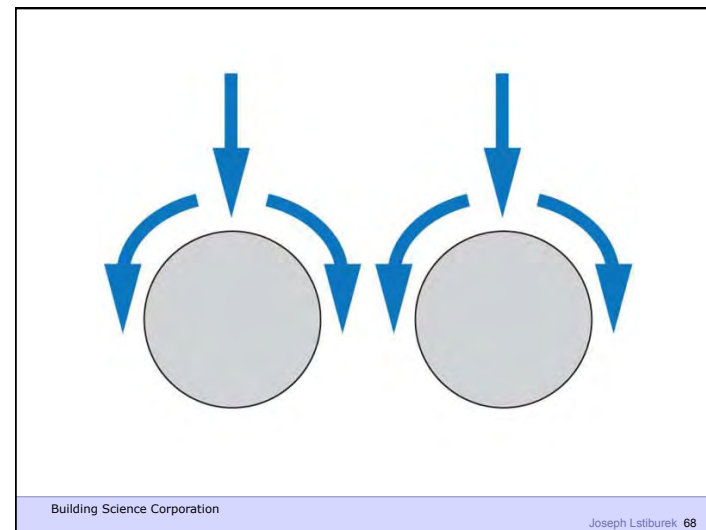
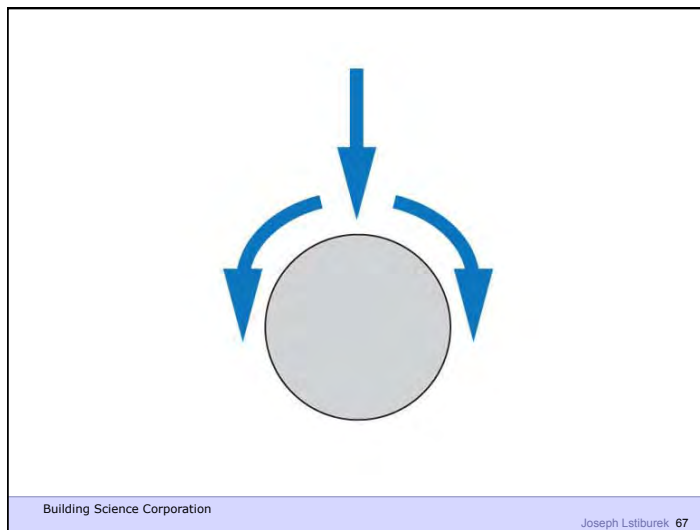
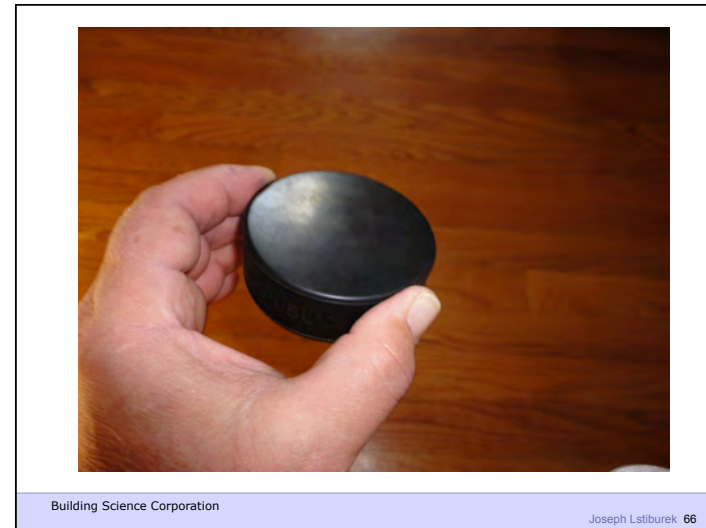
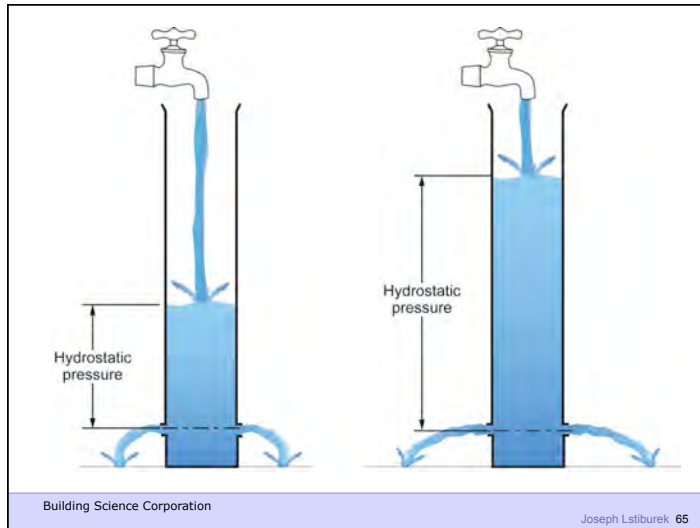


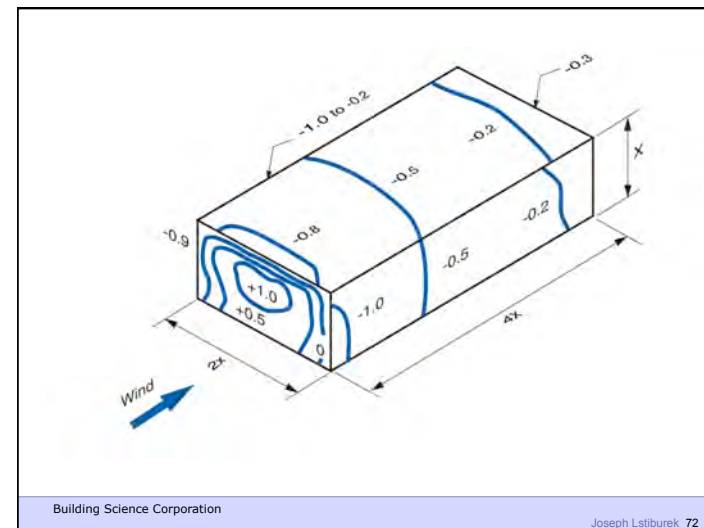
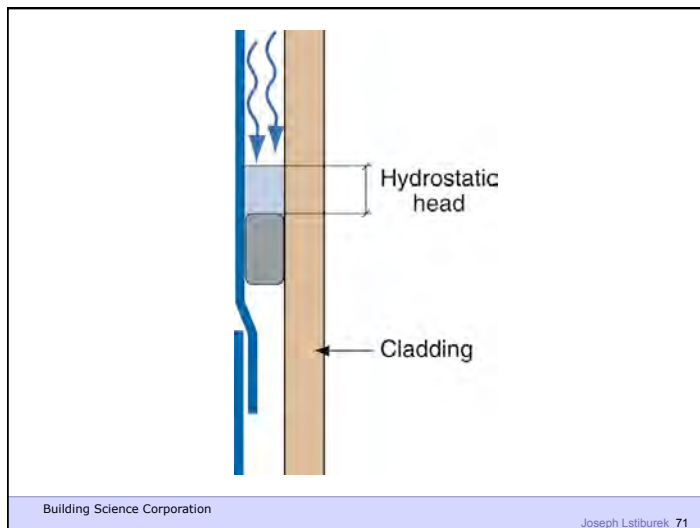
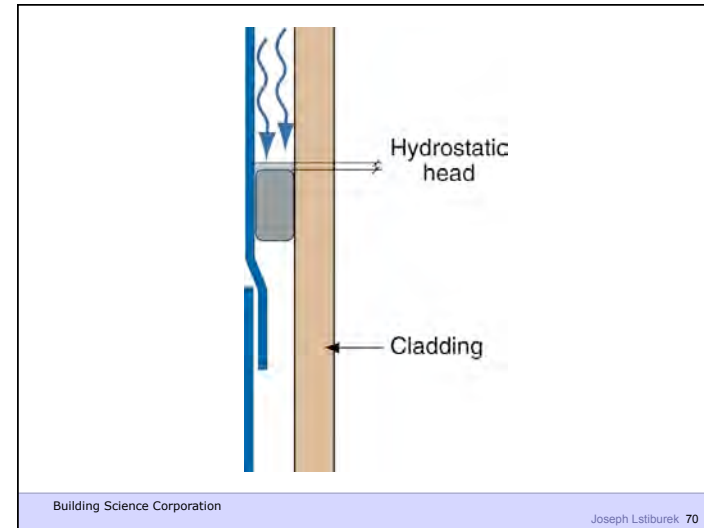
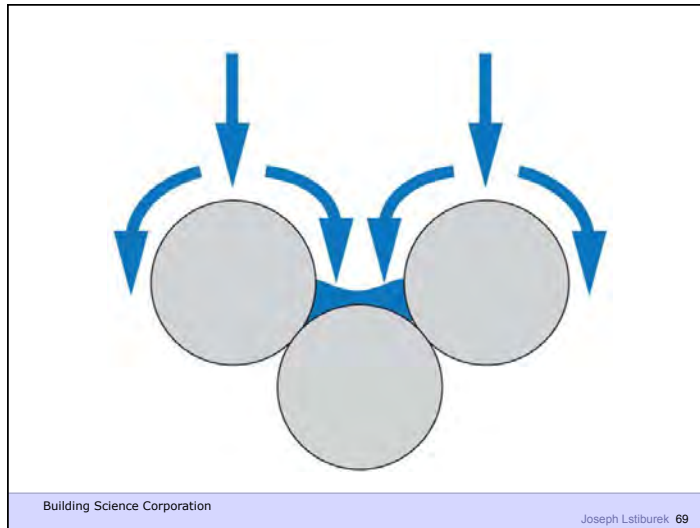


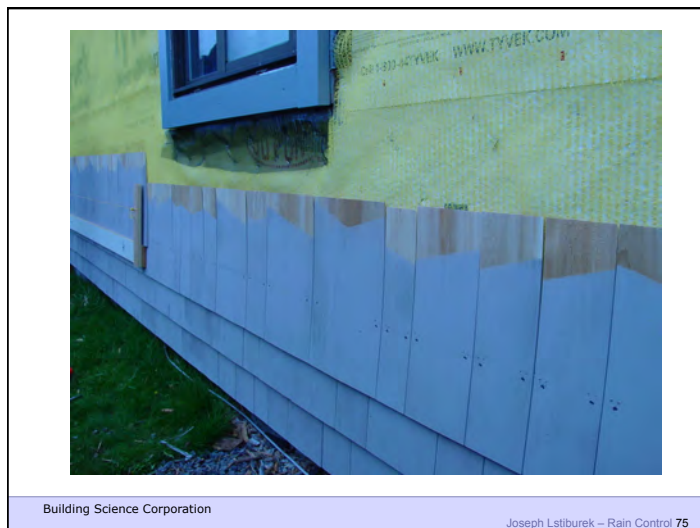
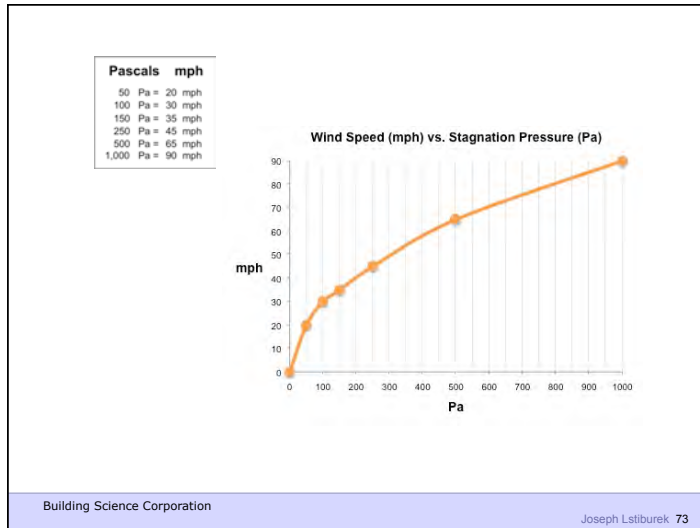


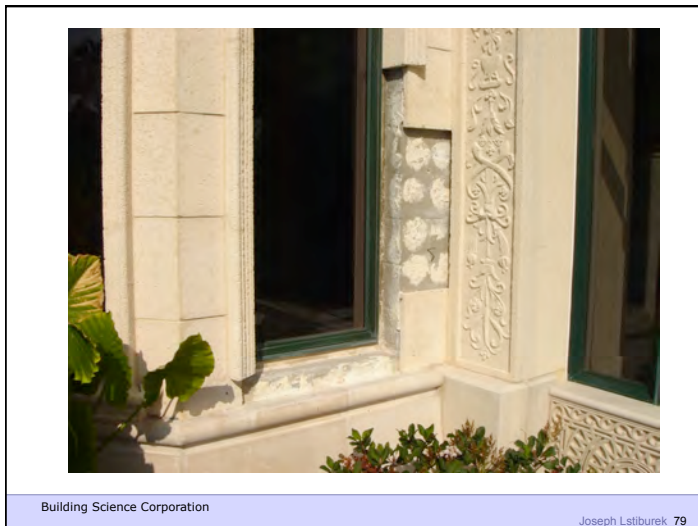
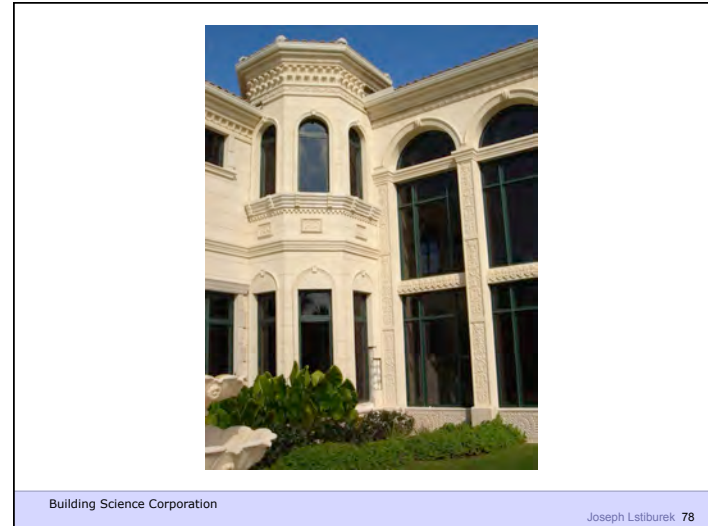


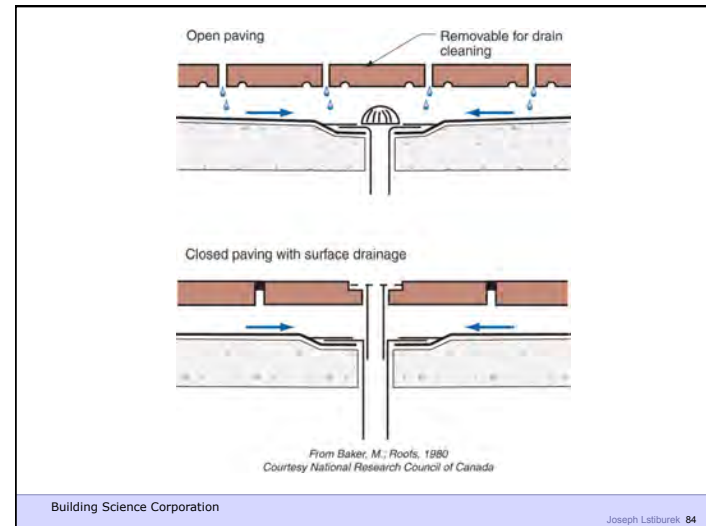
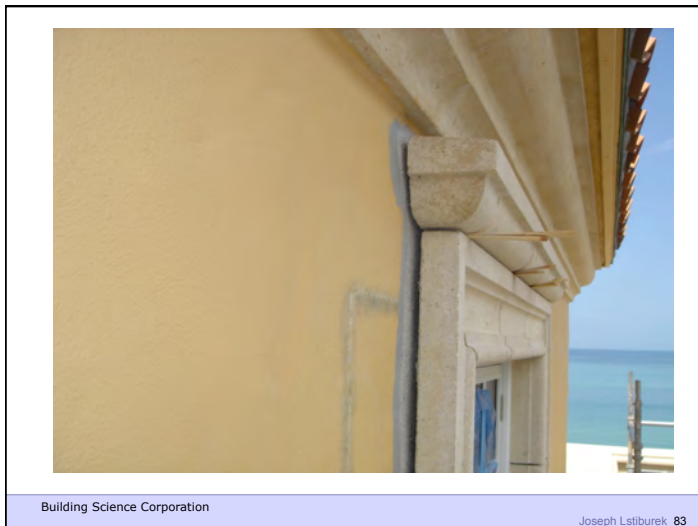
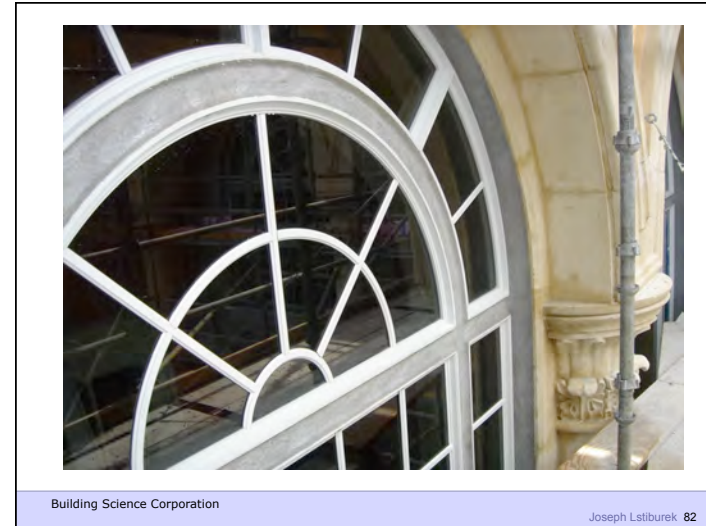
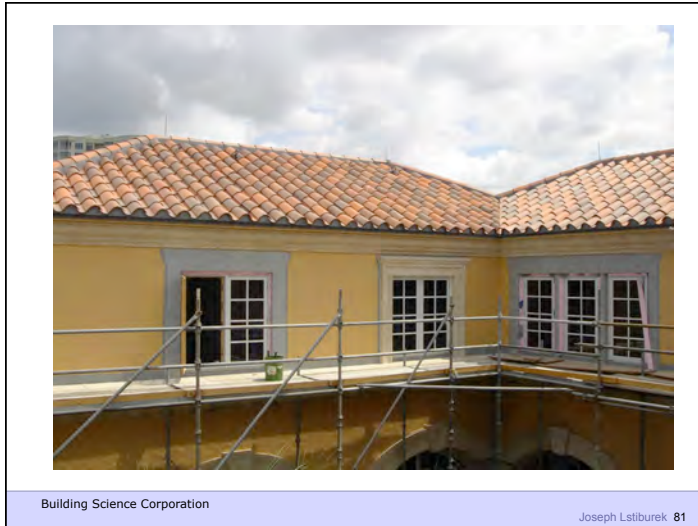


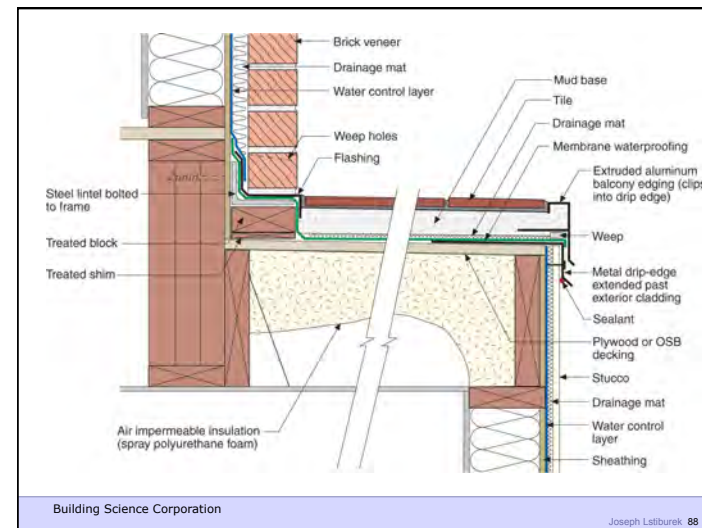
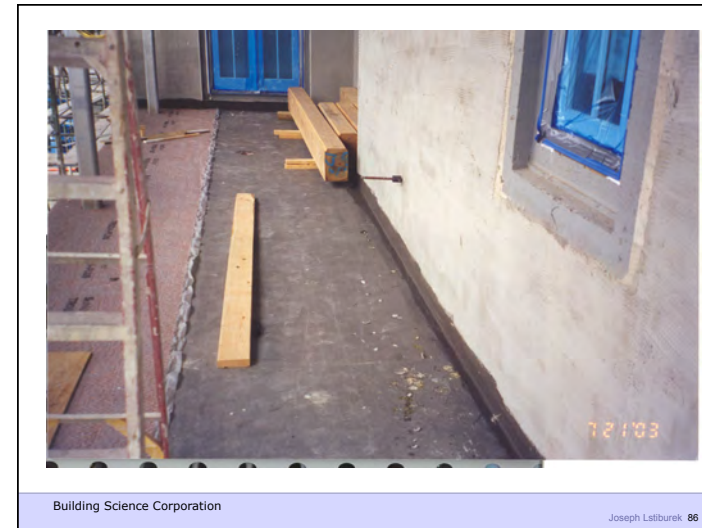
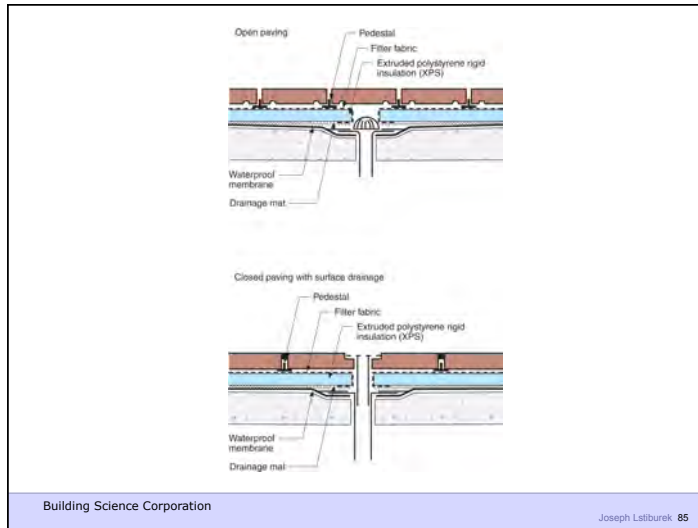


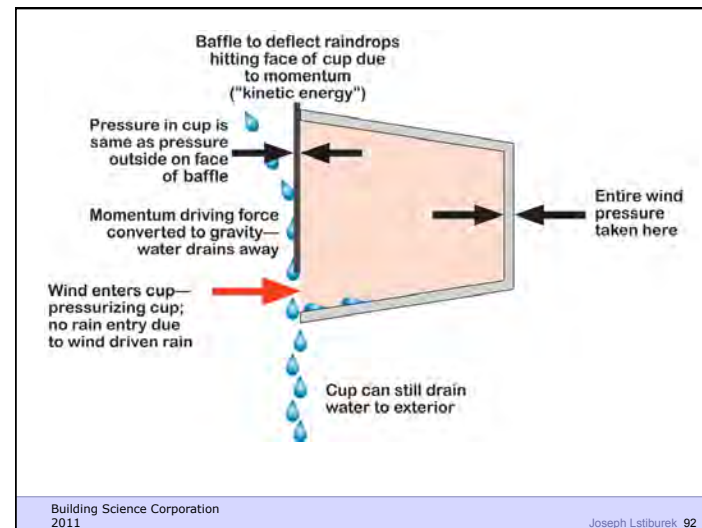
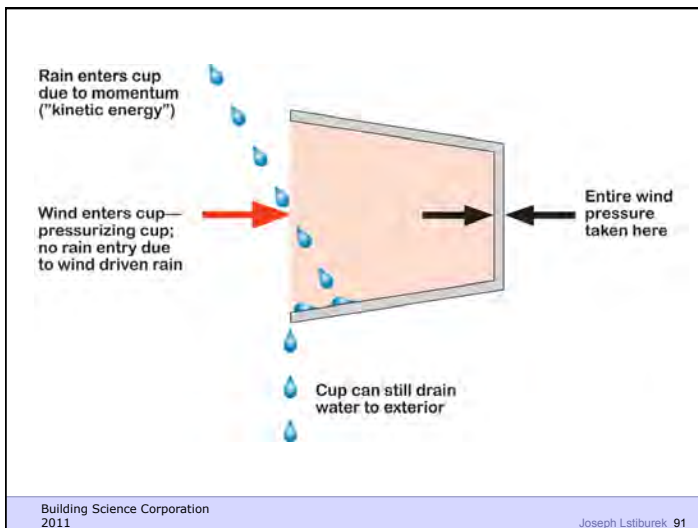
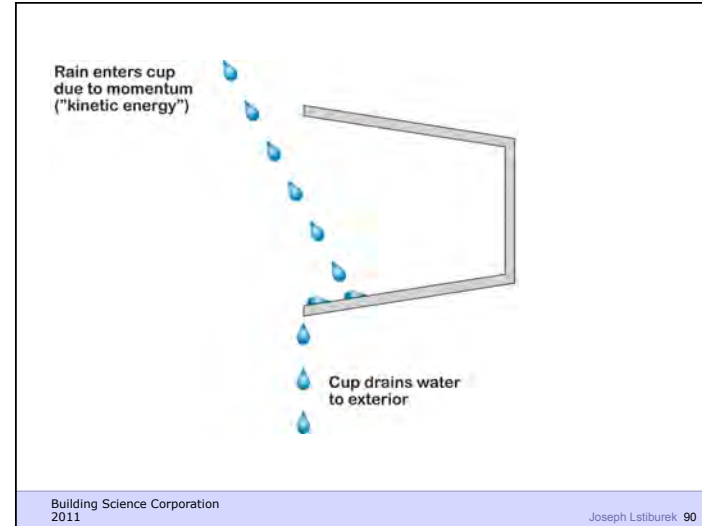


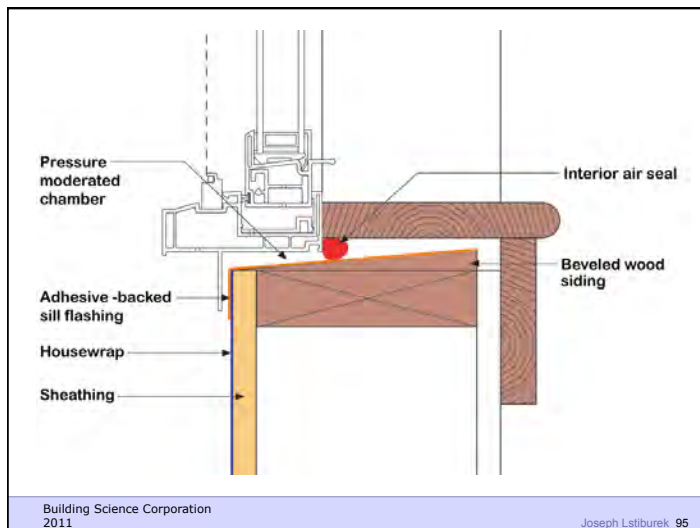
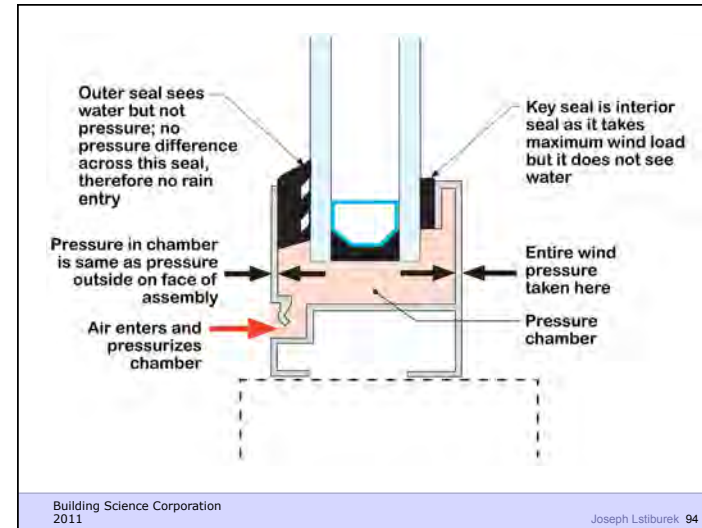
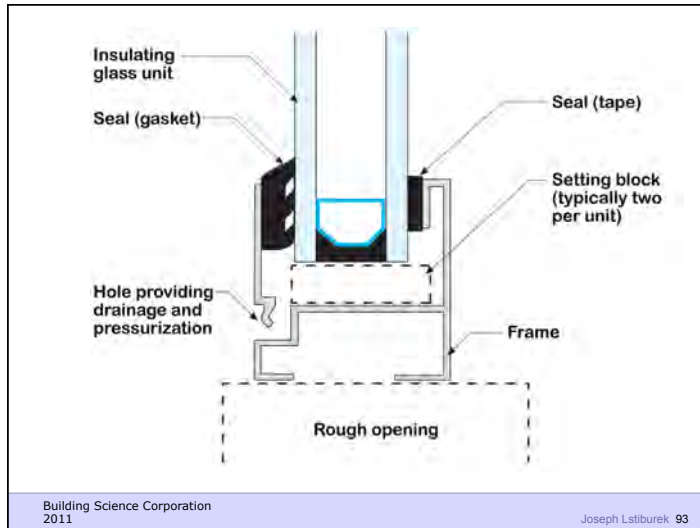


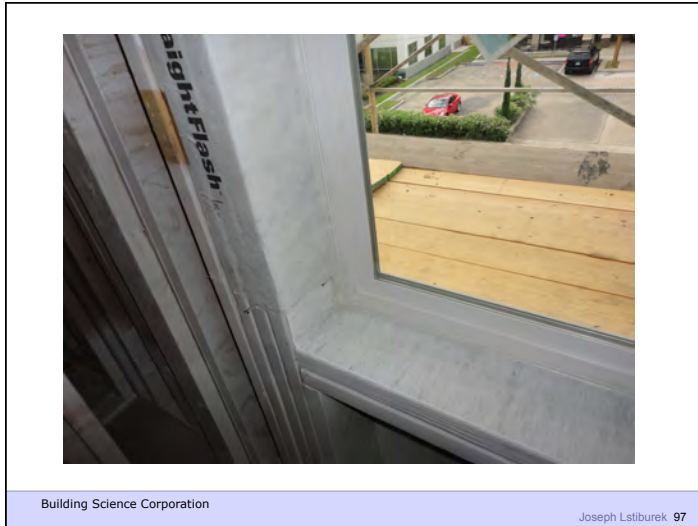


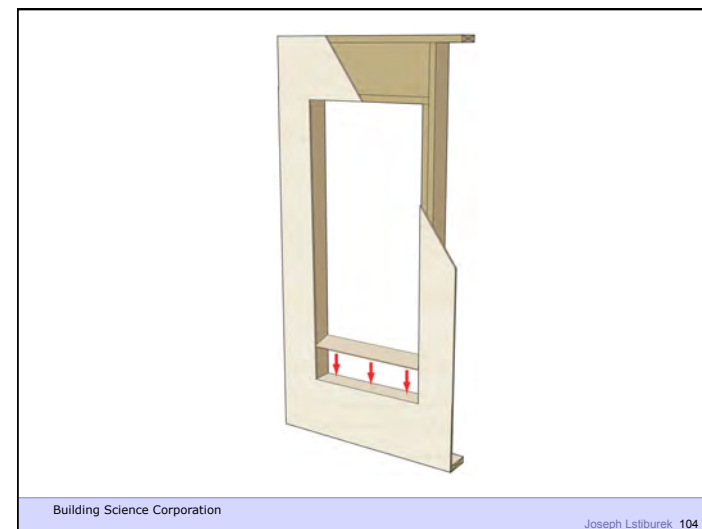
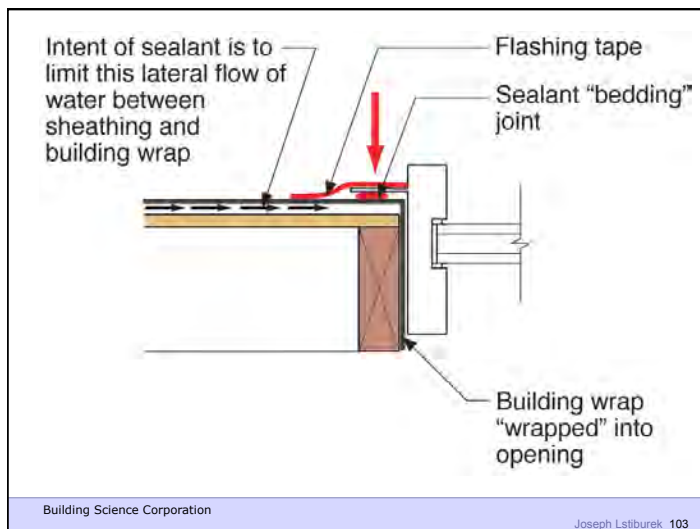
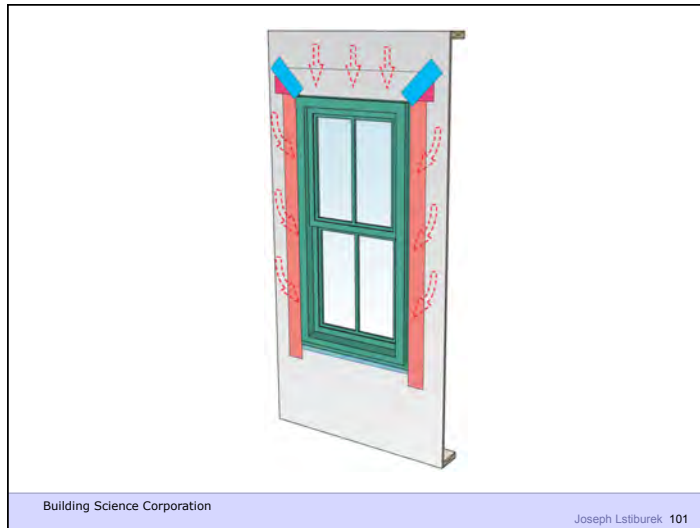


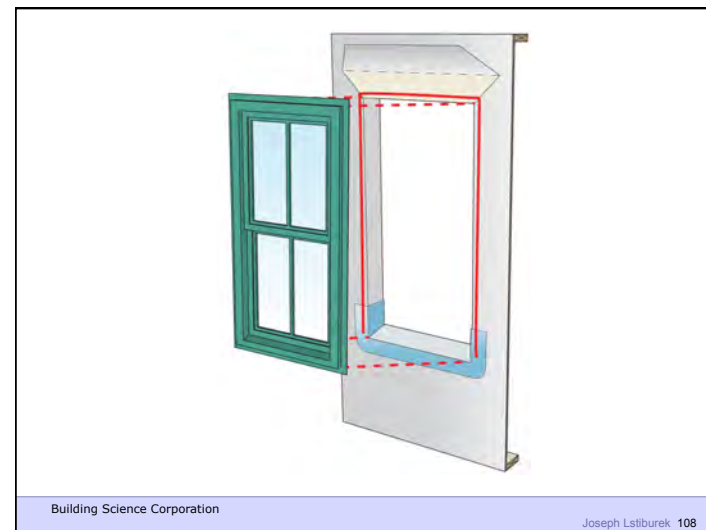
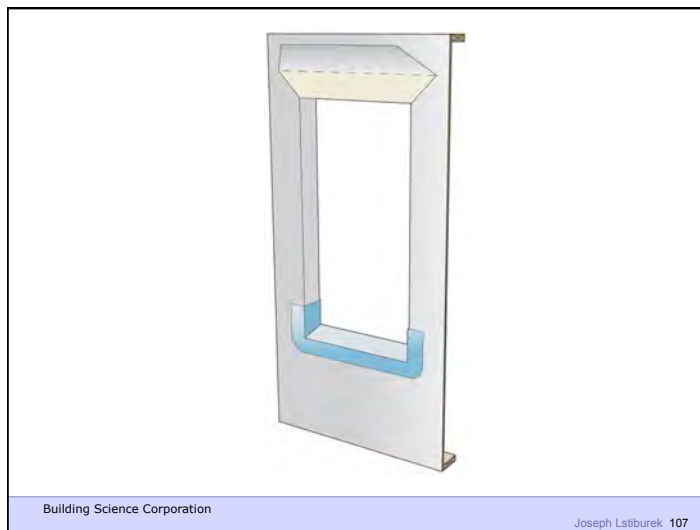
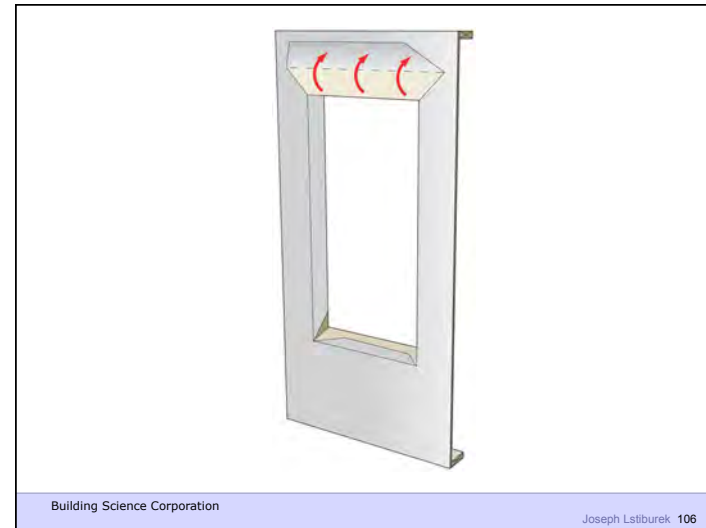
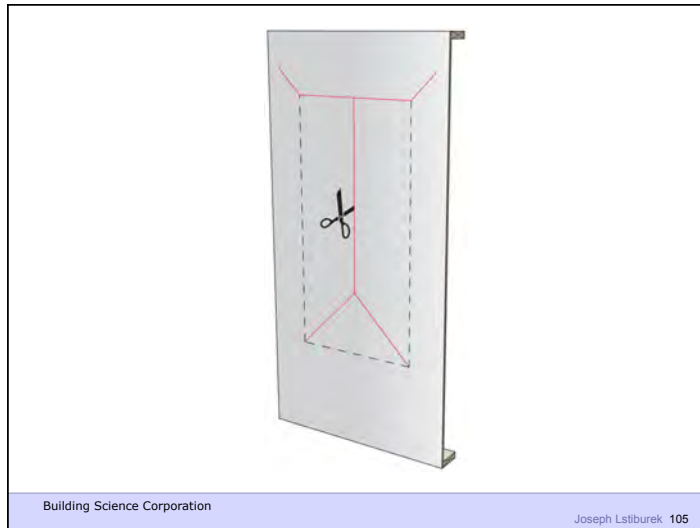




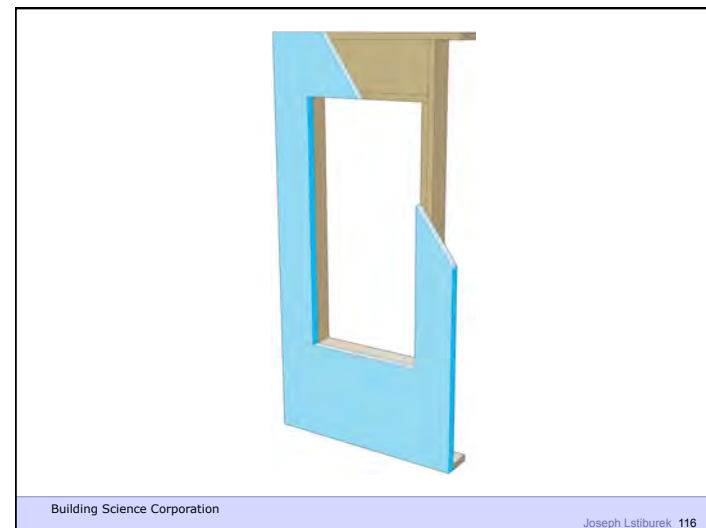


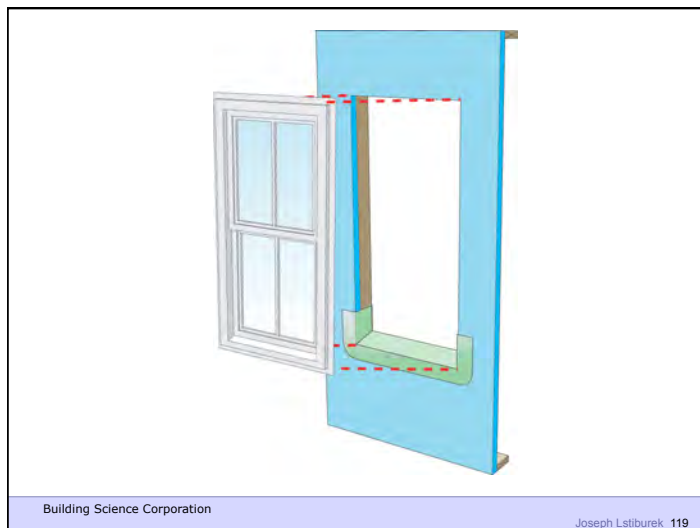
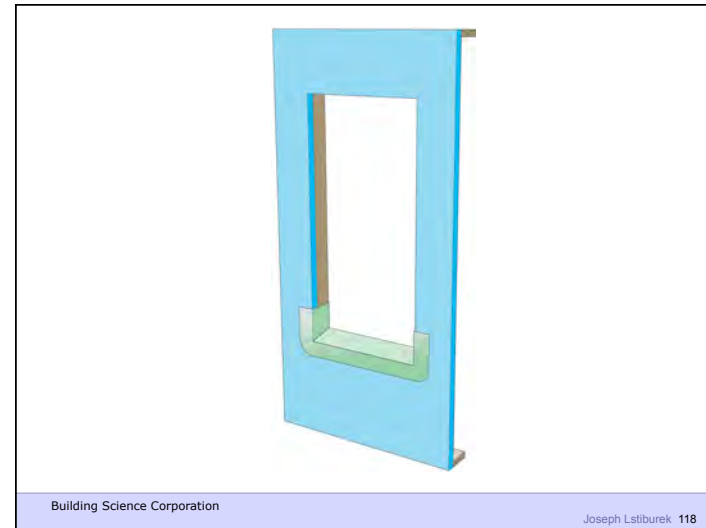
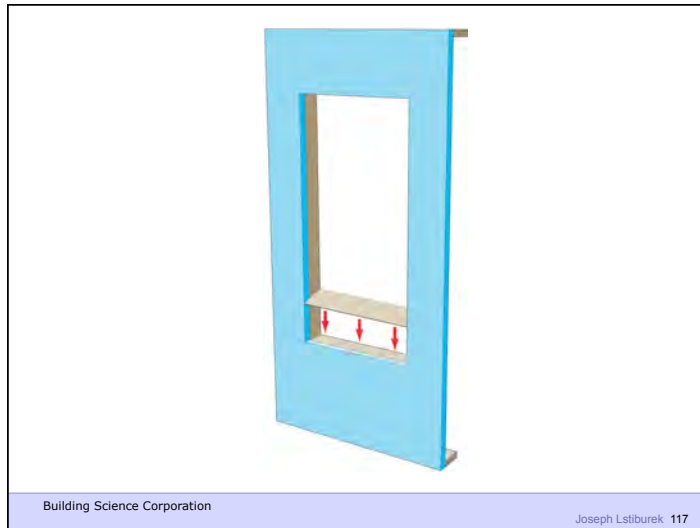


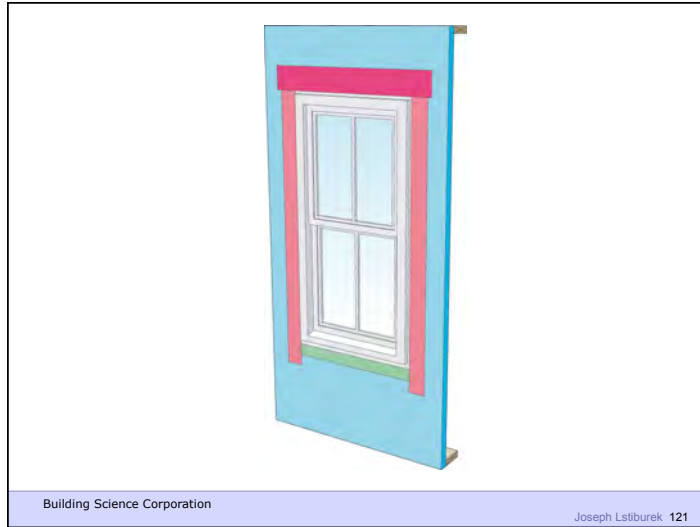


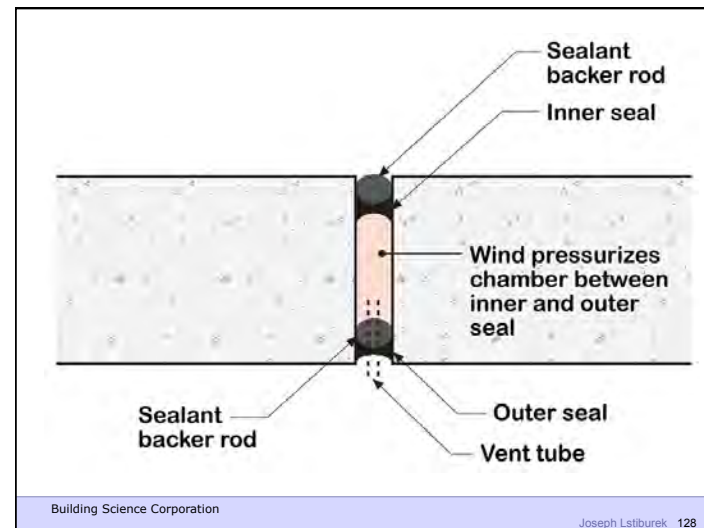


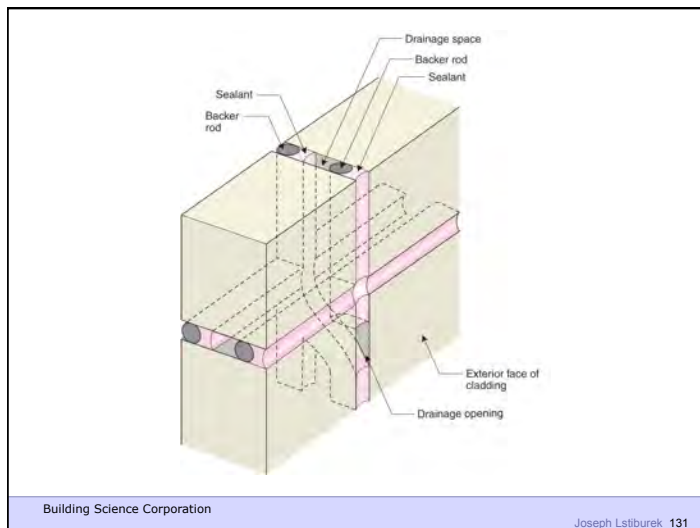
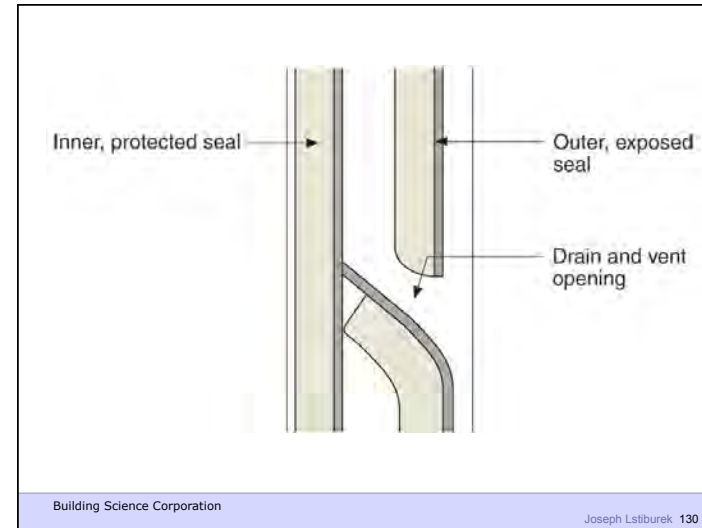
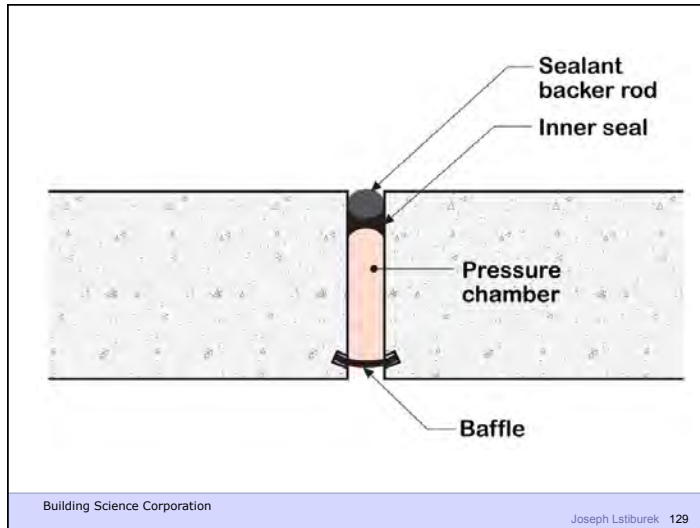


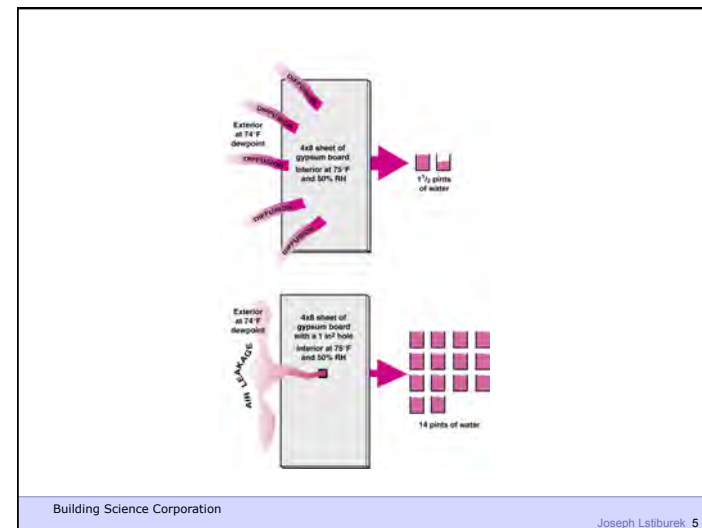
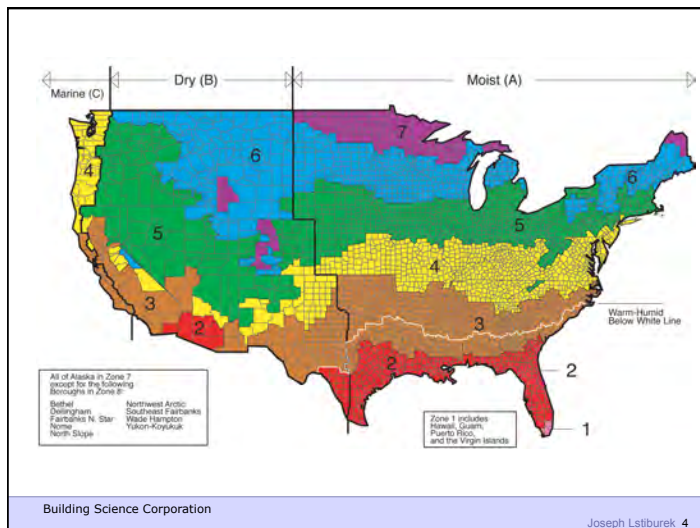
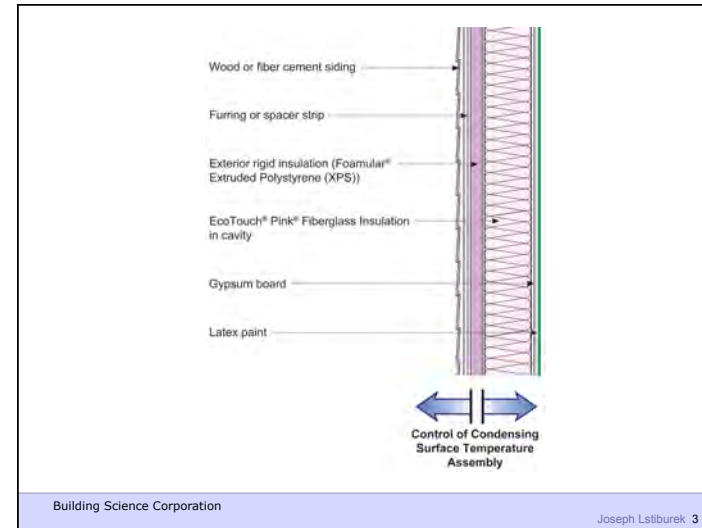
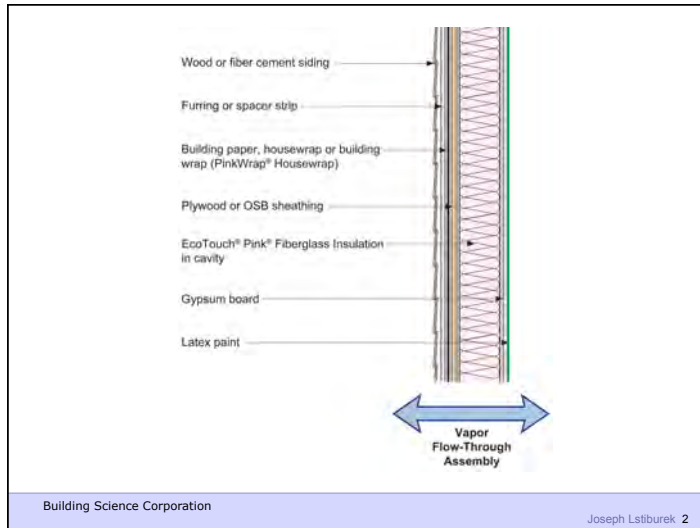


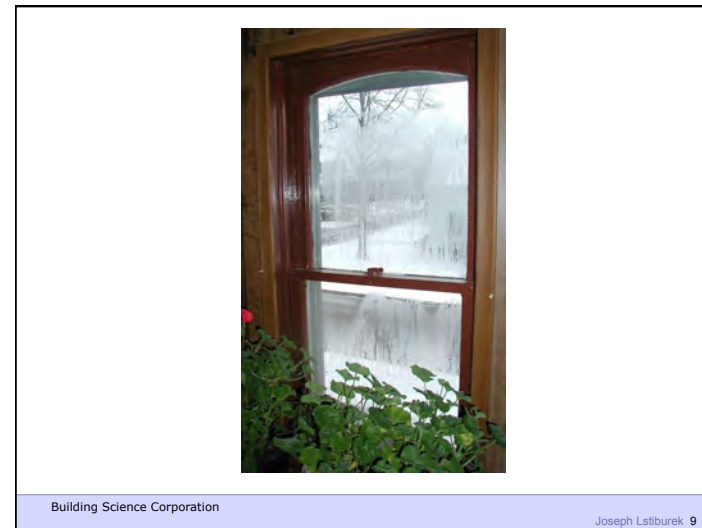
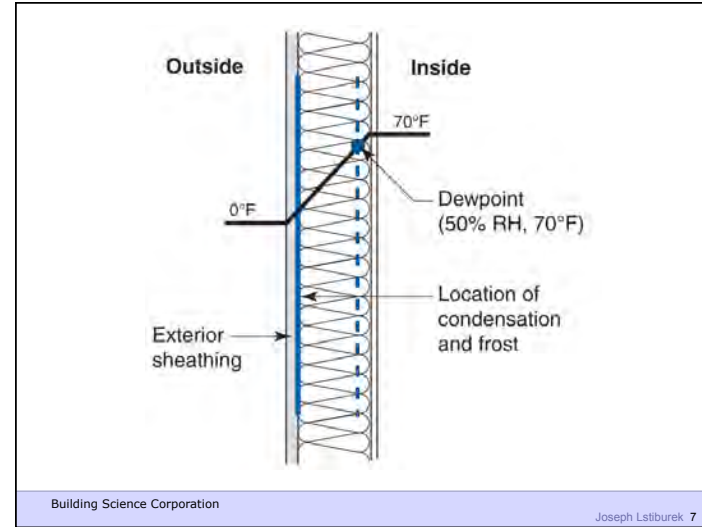
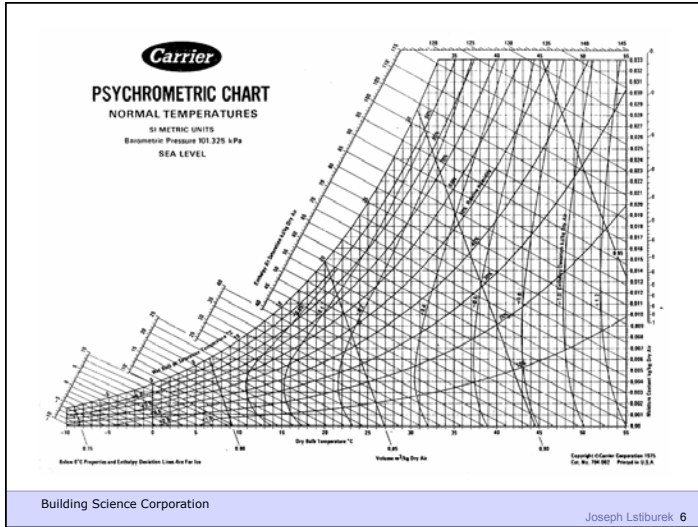


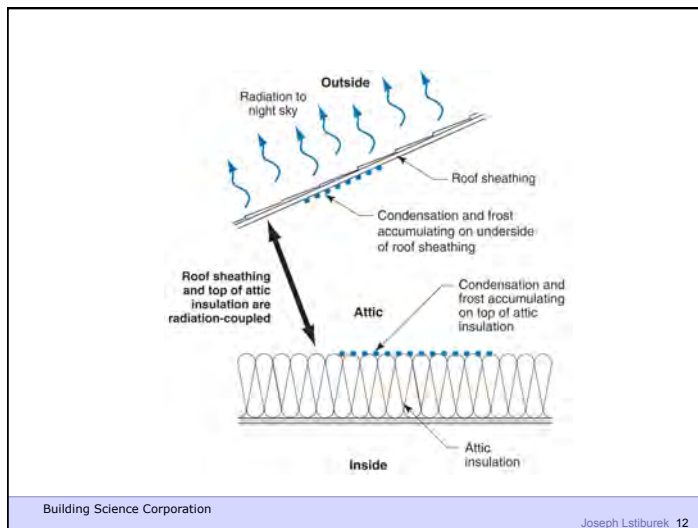
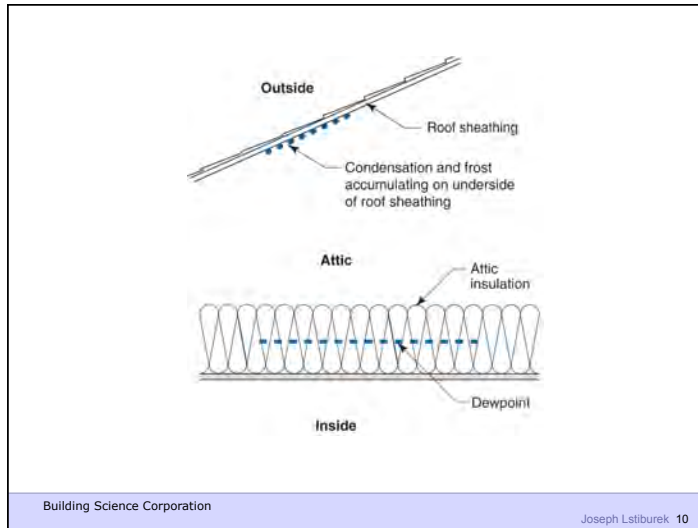








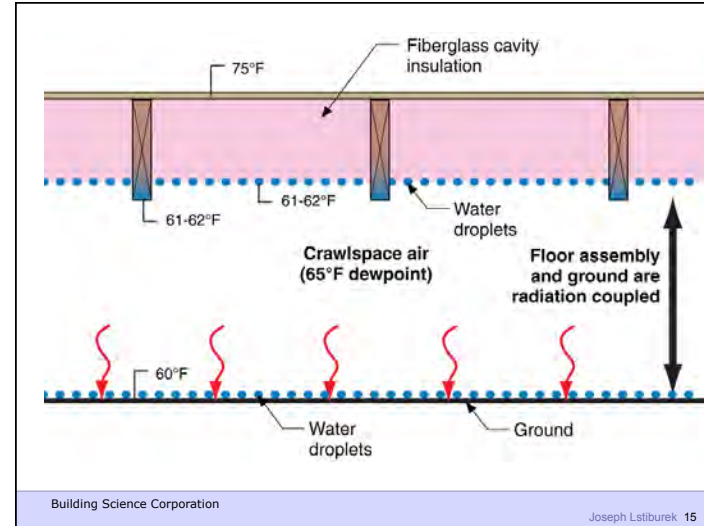






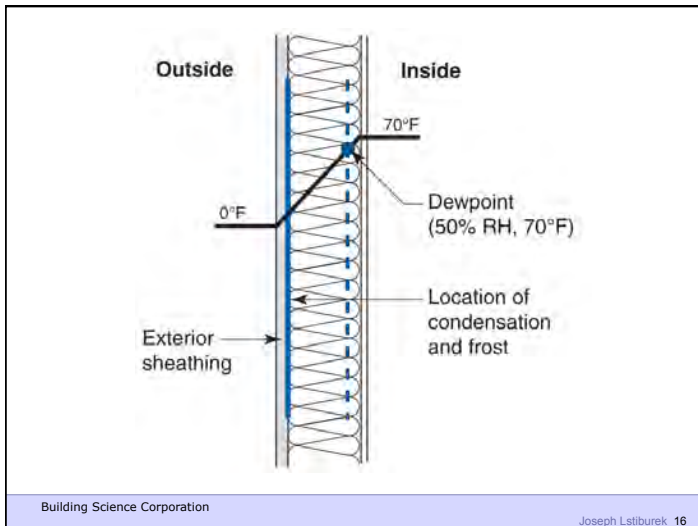
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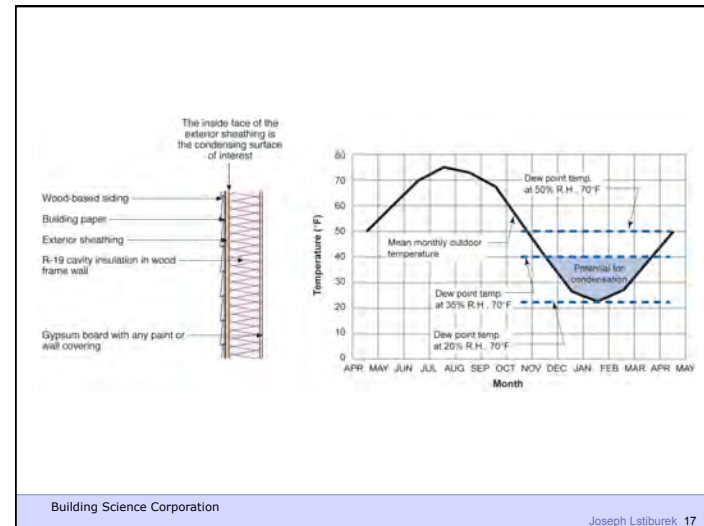
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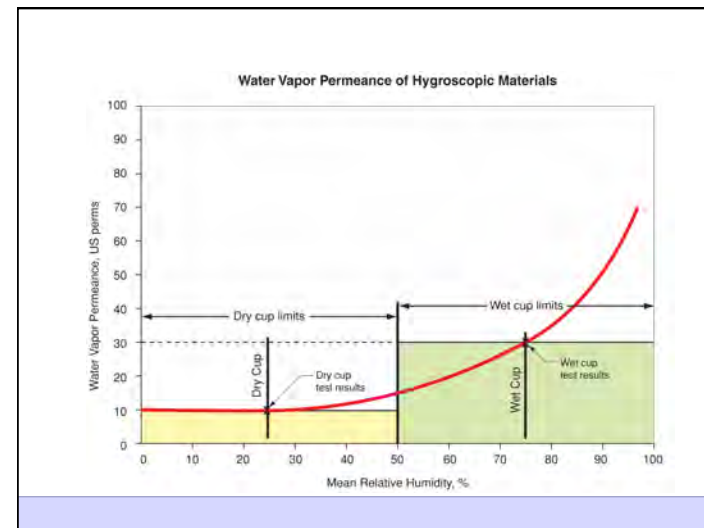
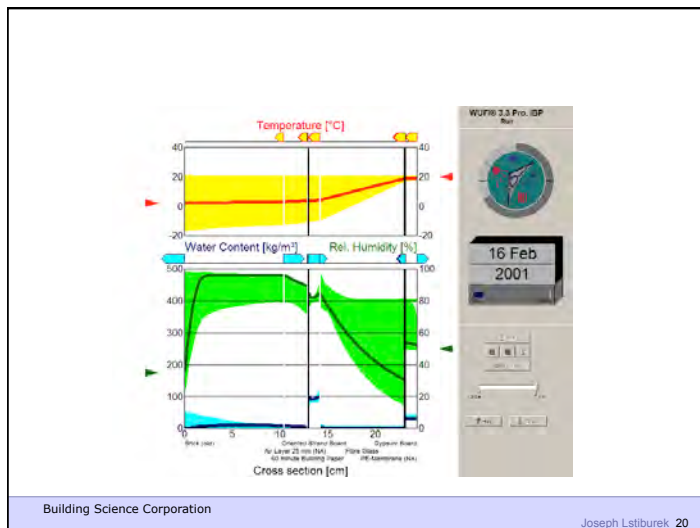
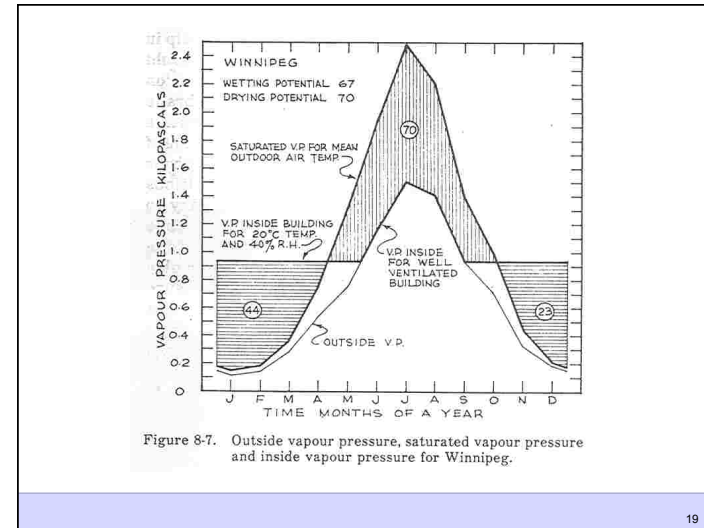
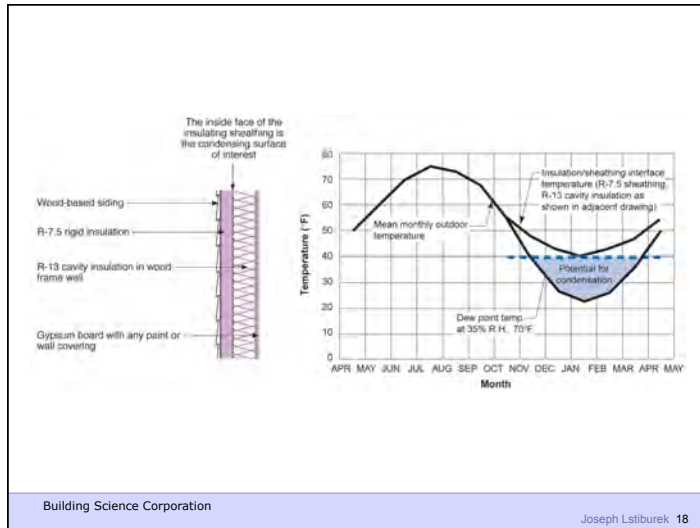
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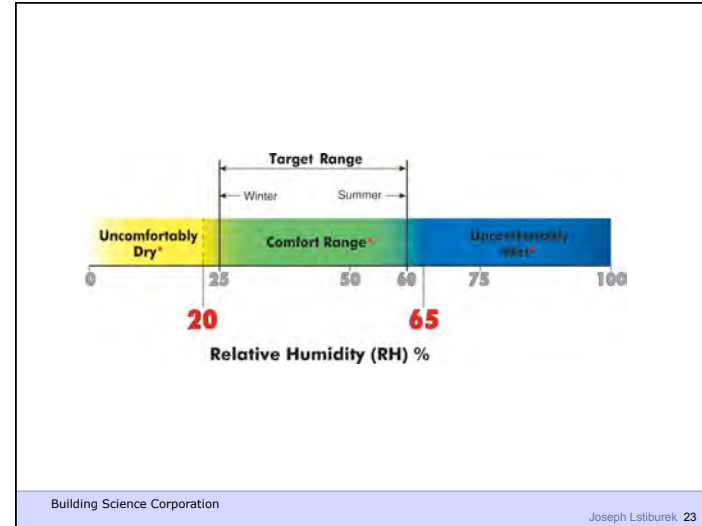
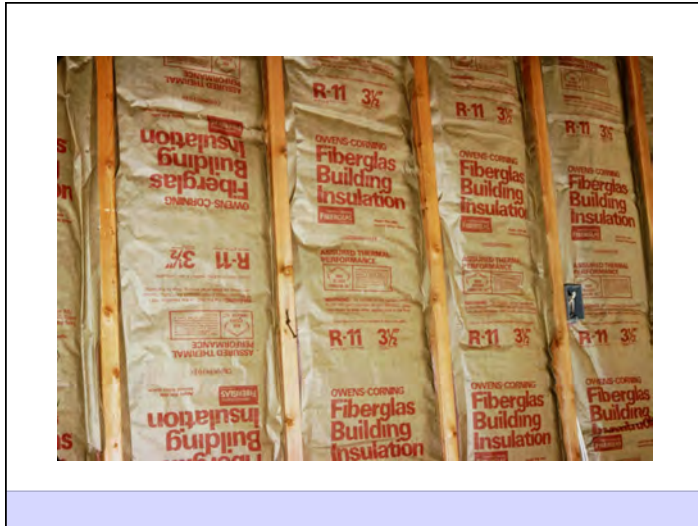
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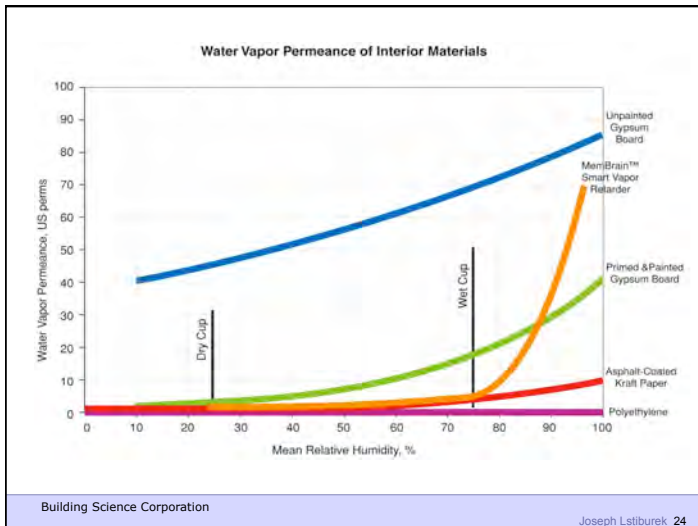
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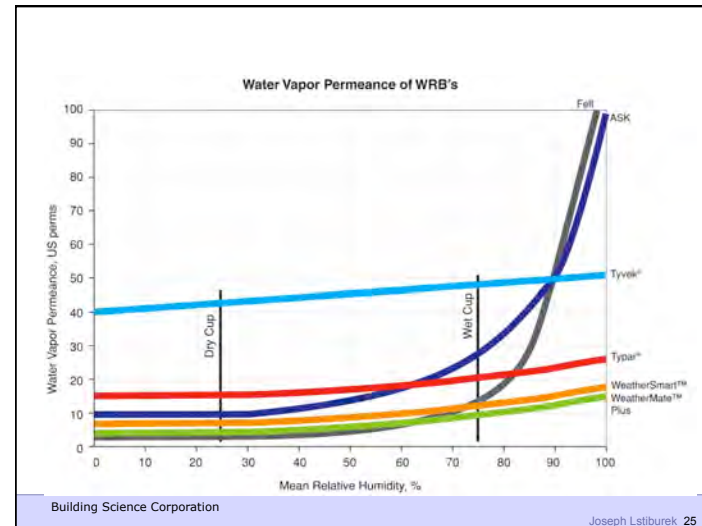
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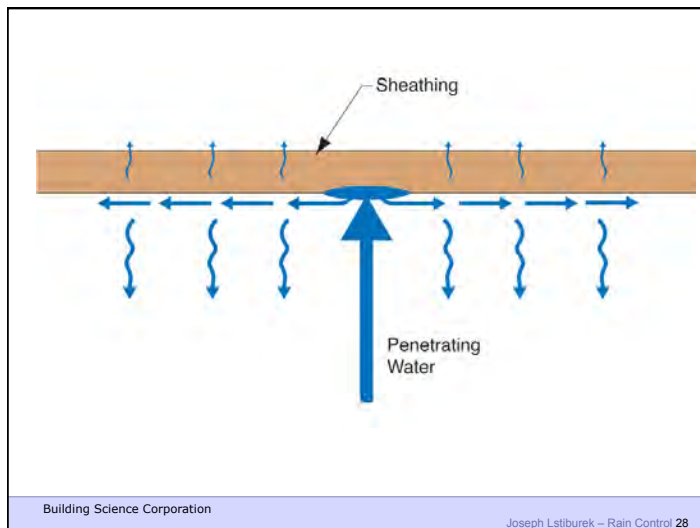
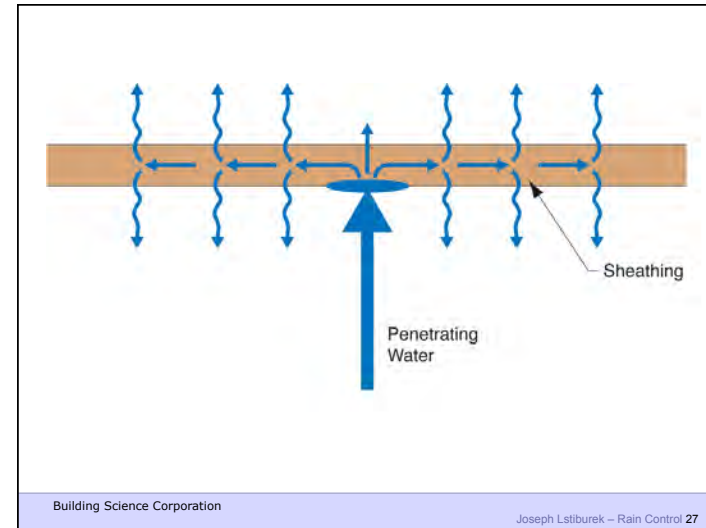
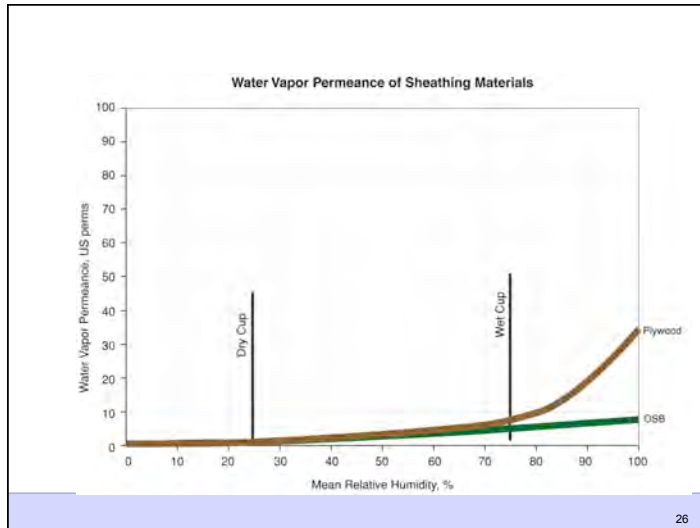
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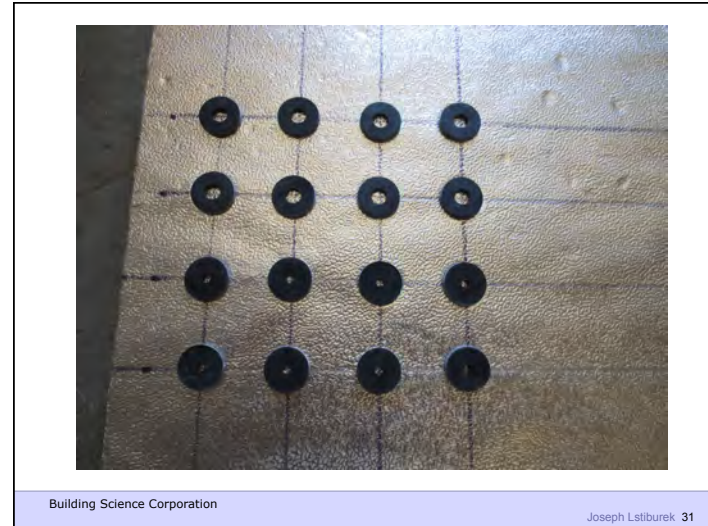
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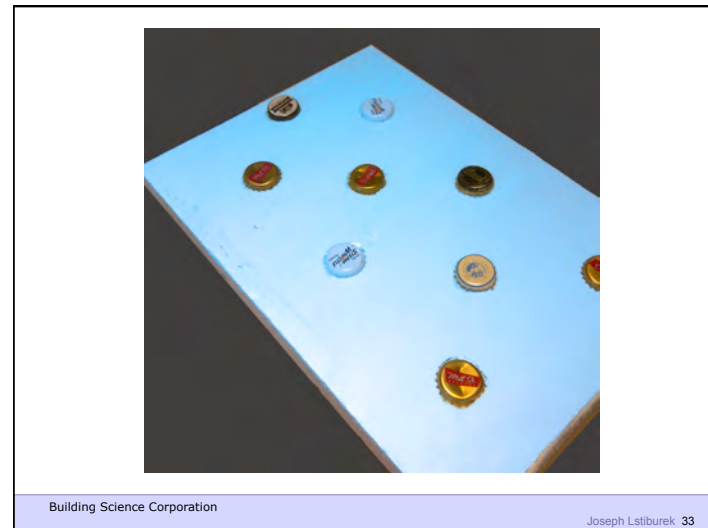
Rain Screen

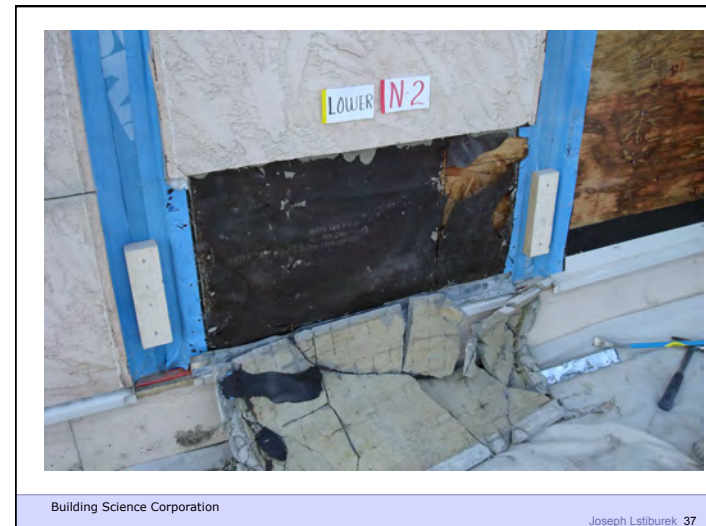
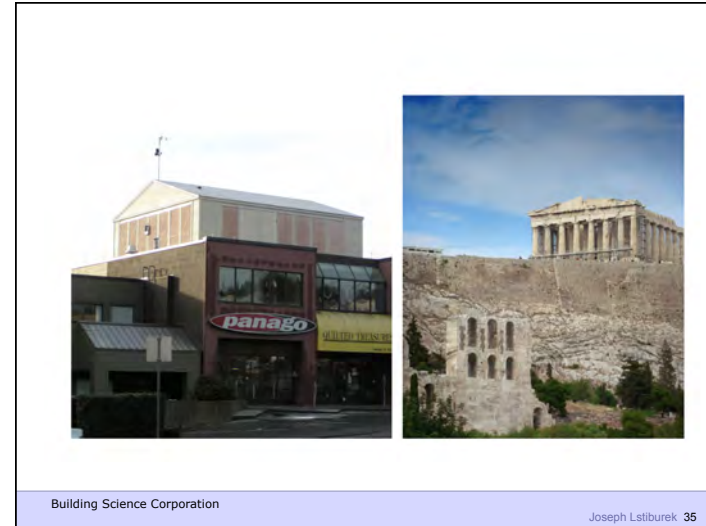
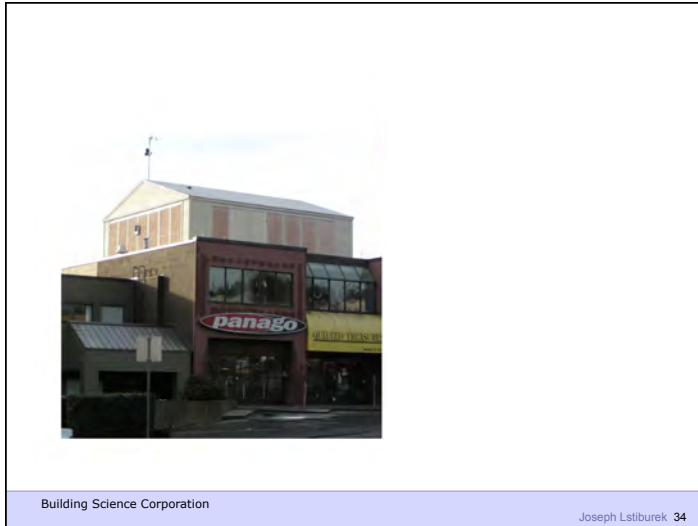
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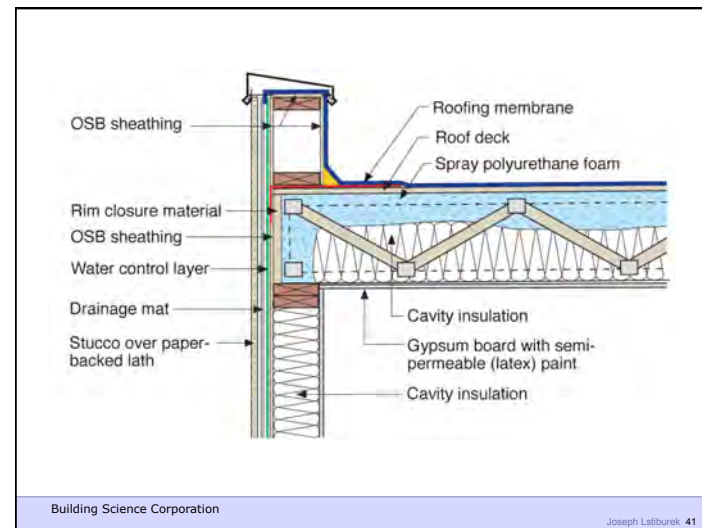
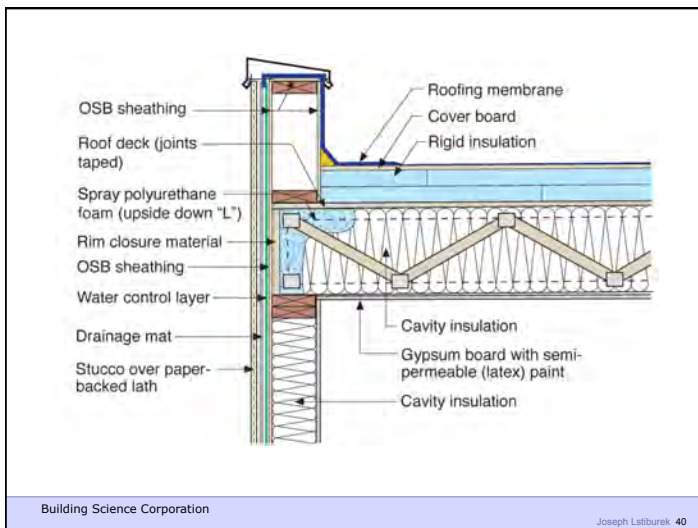
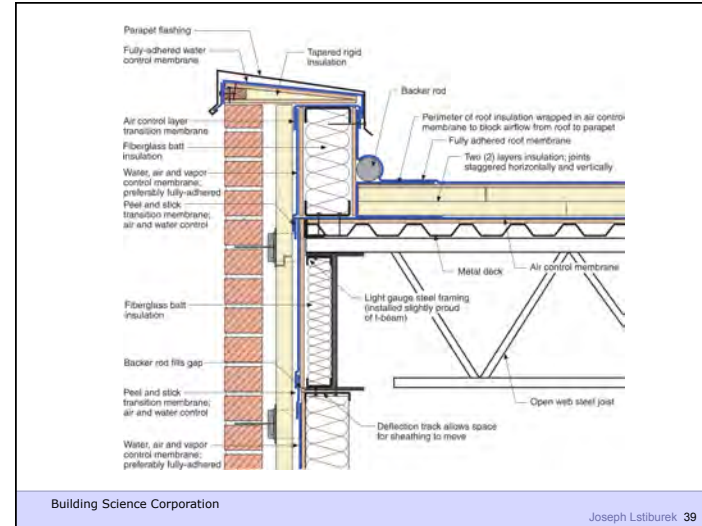


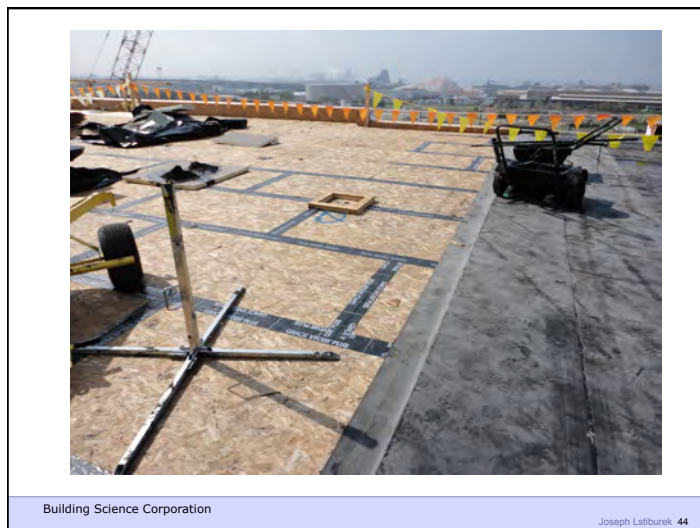
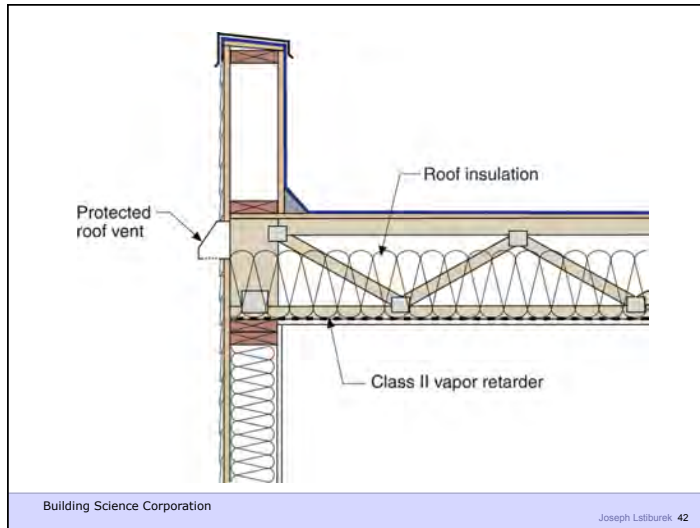
Beer Screen?

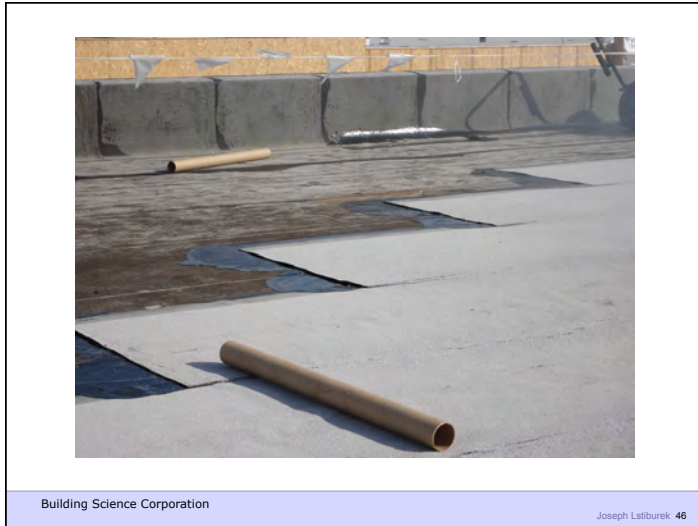
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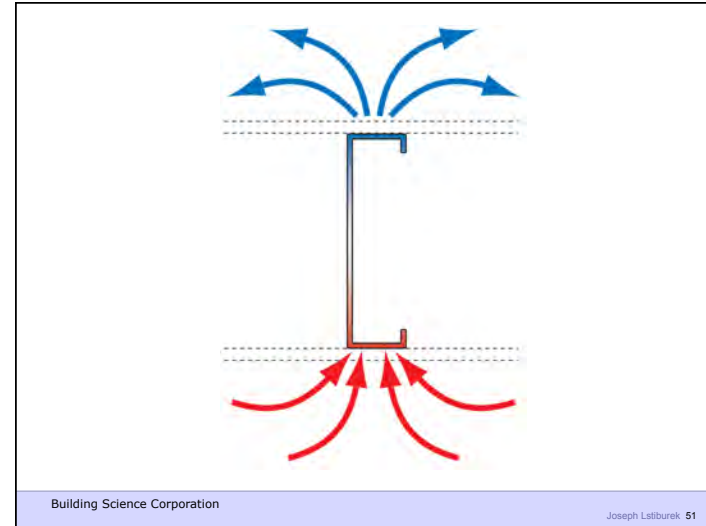


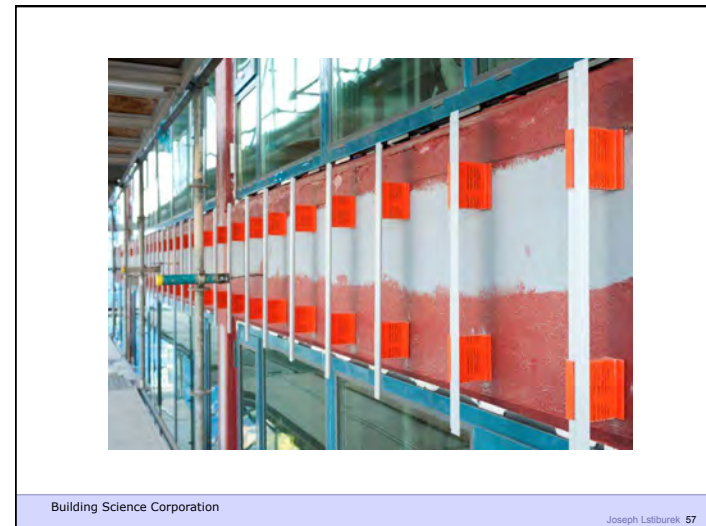
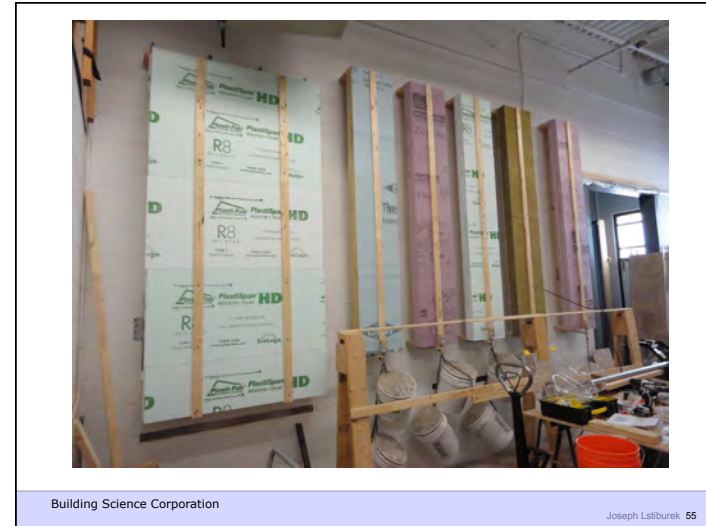


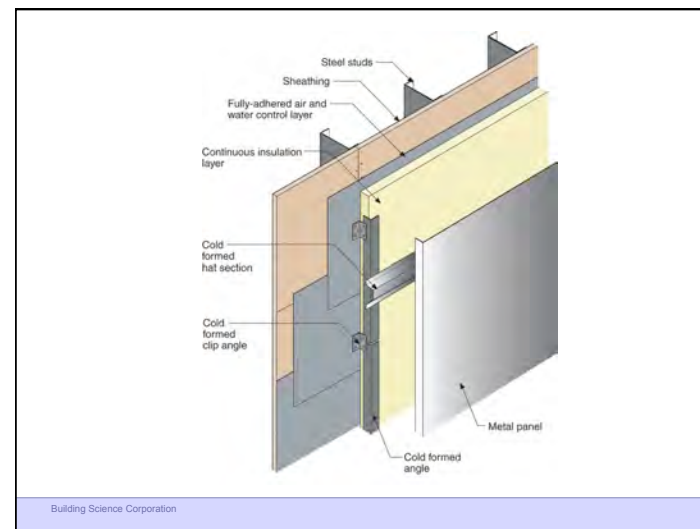
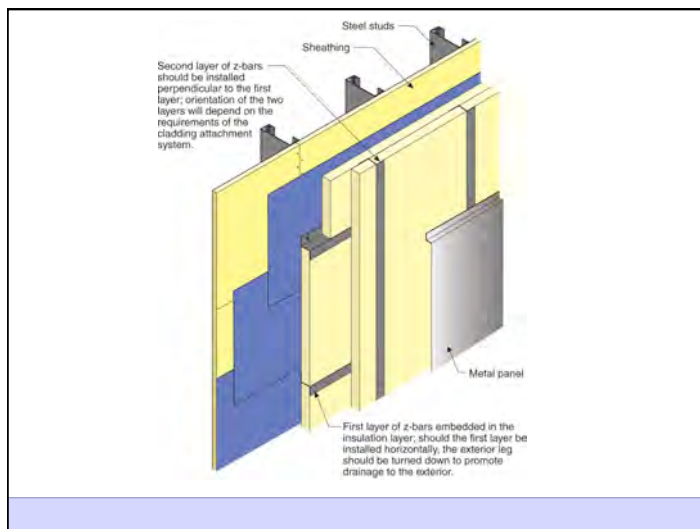
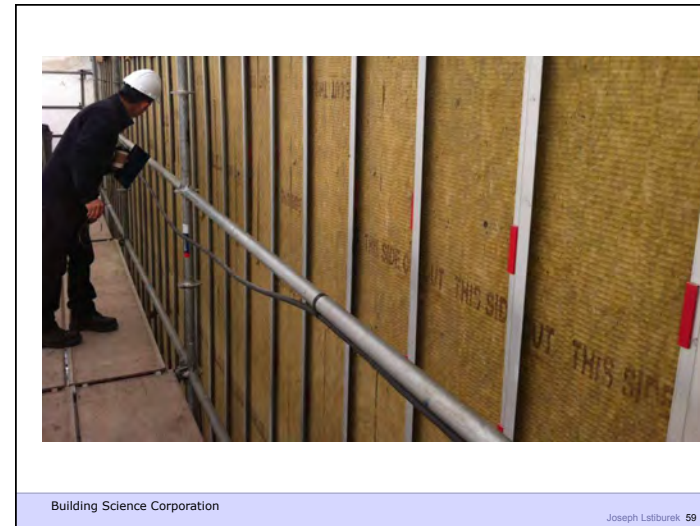
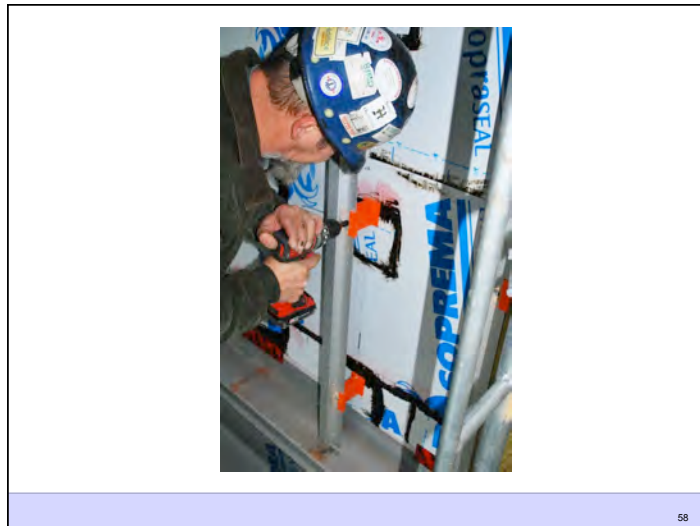


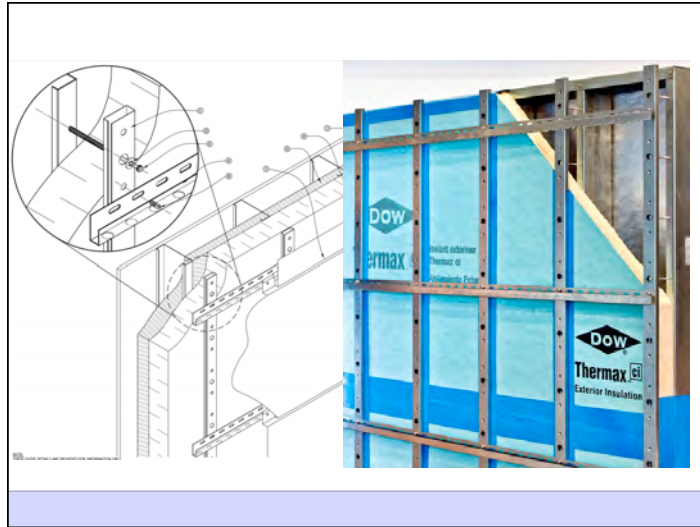










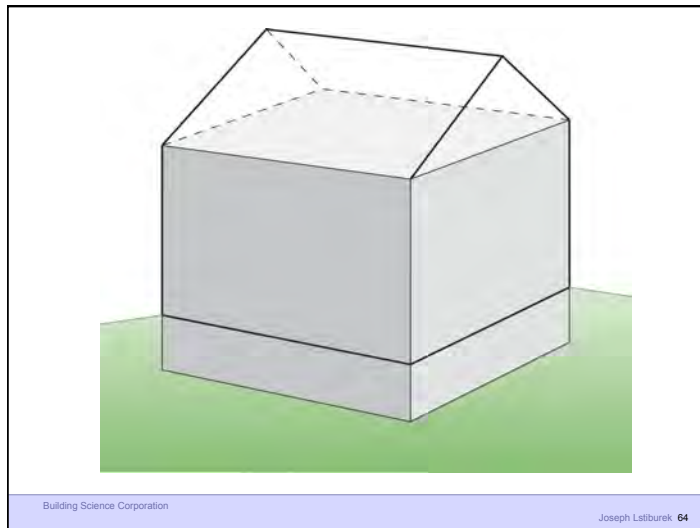


Air Barrier Metrics

Material	0.02 I/(s-m2)@75 Pa
Assembly	0.20 I/(s-m2)@75 Pa
Enclosure	2.00 I/(s-m2)@75 Pa

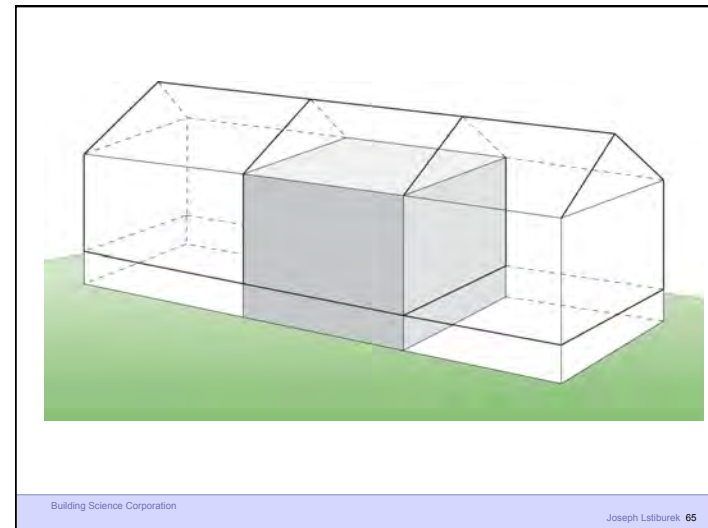
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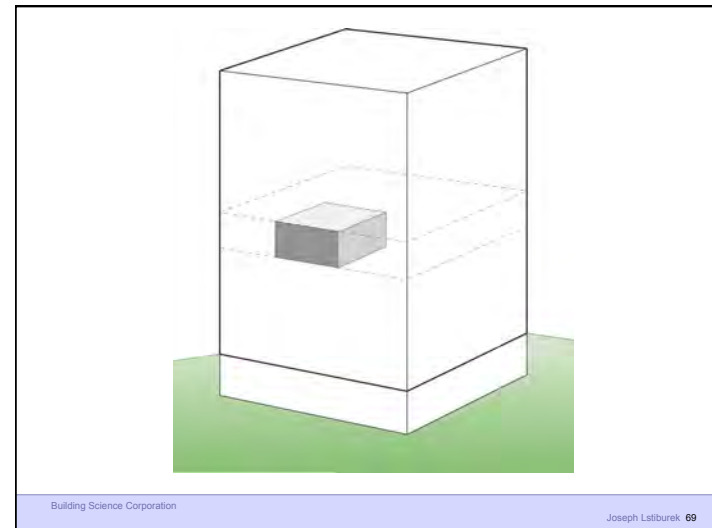
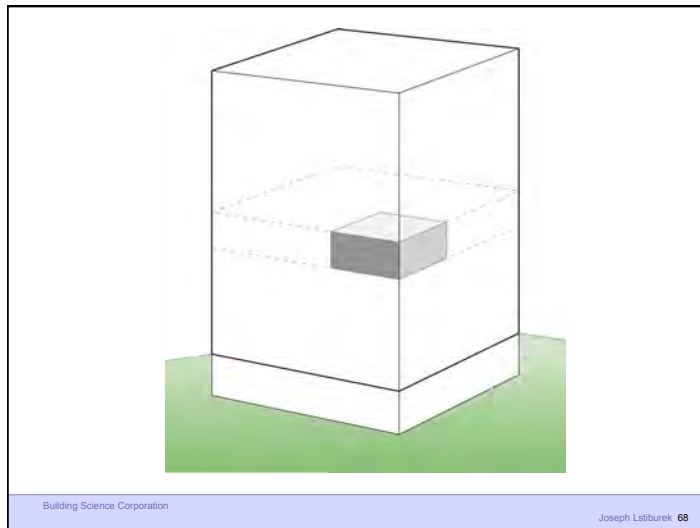
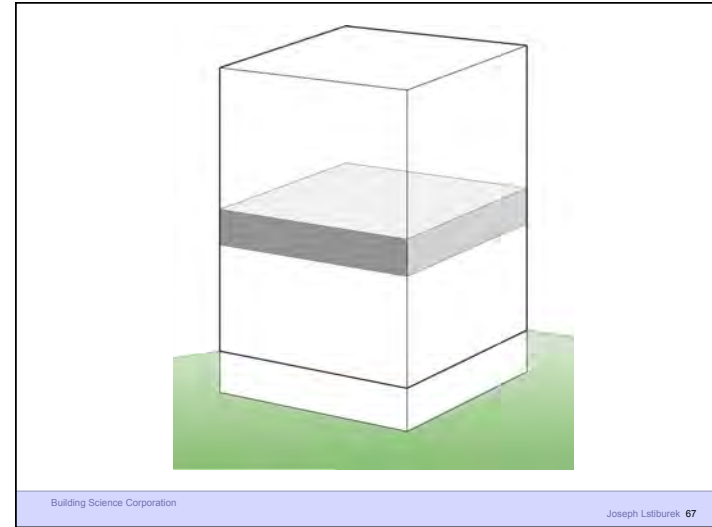
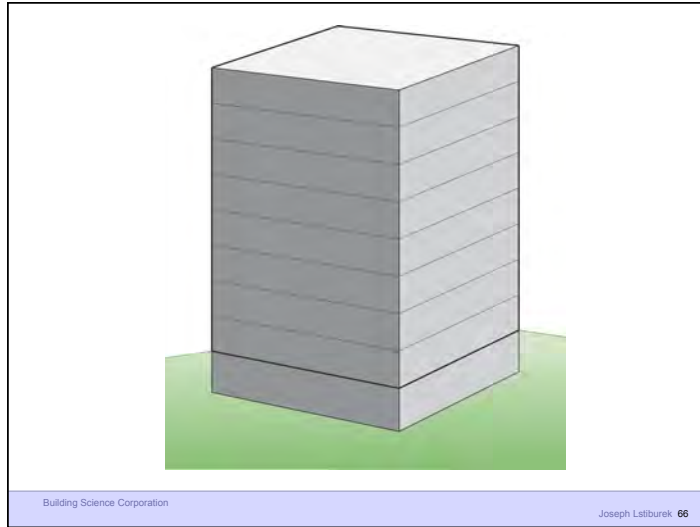
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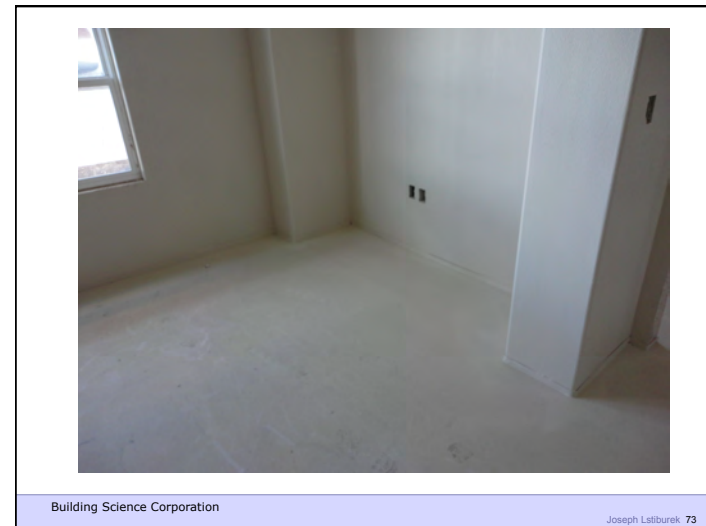
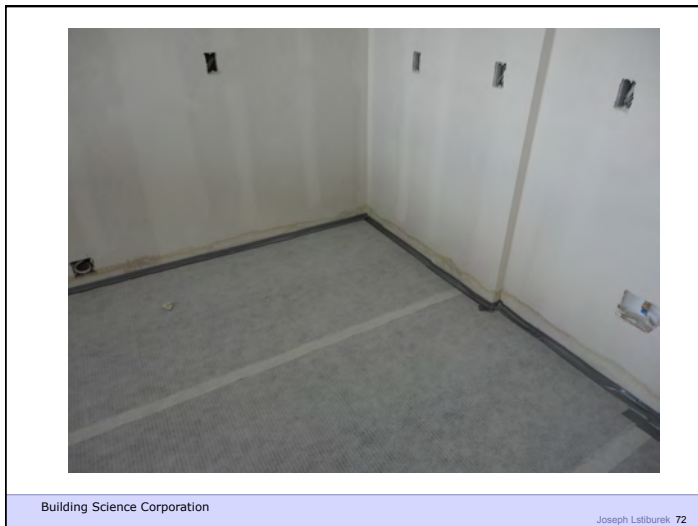
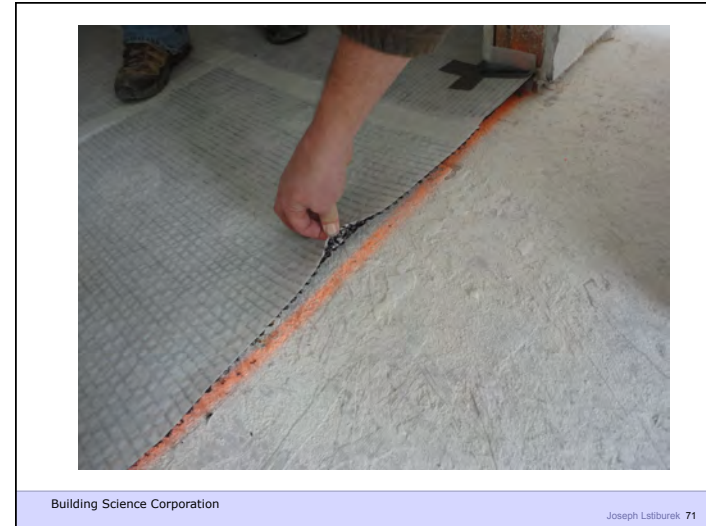
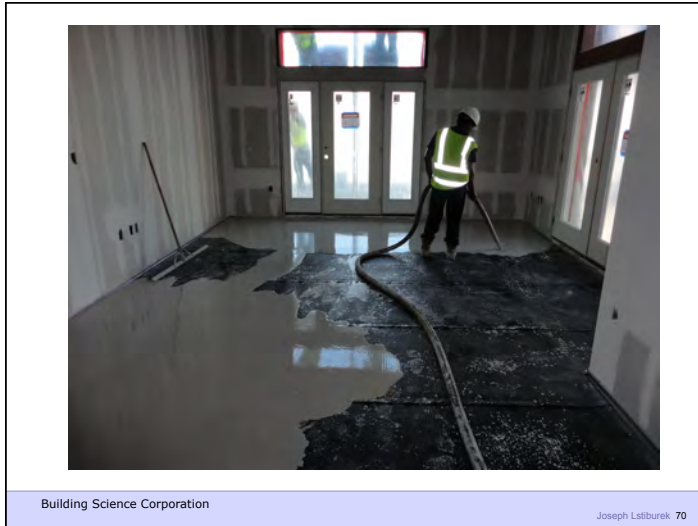
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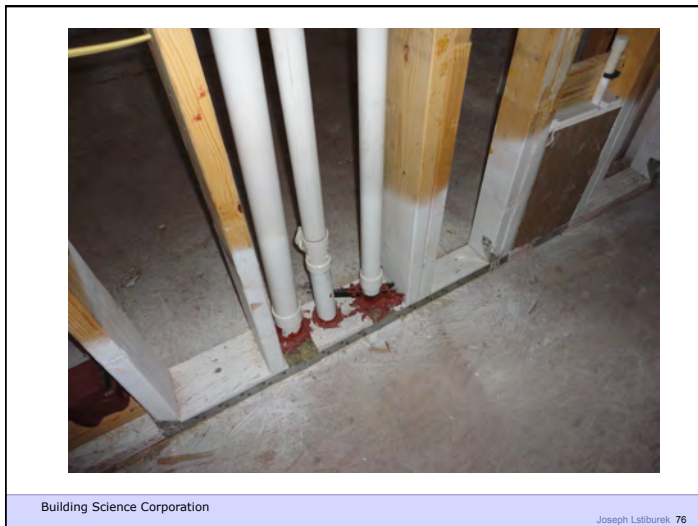


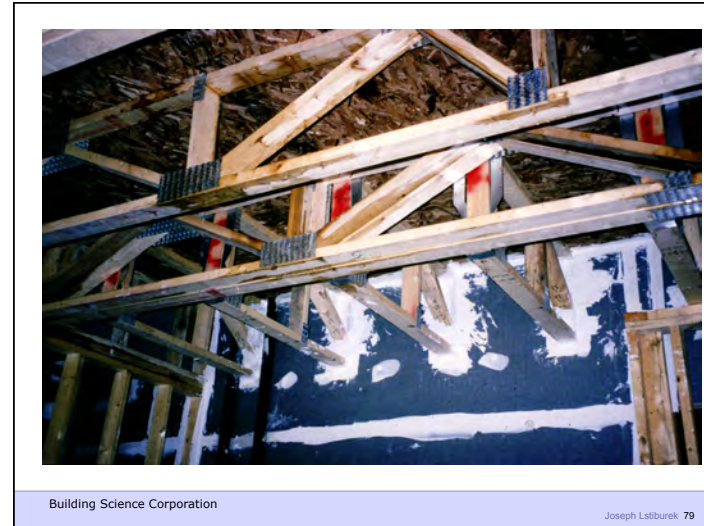
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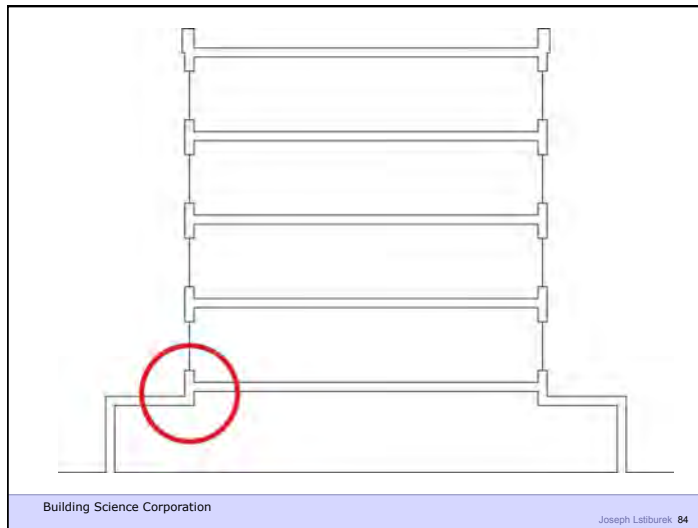
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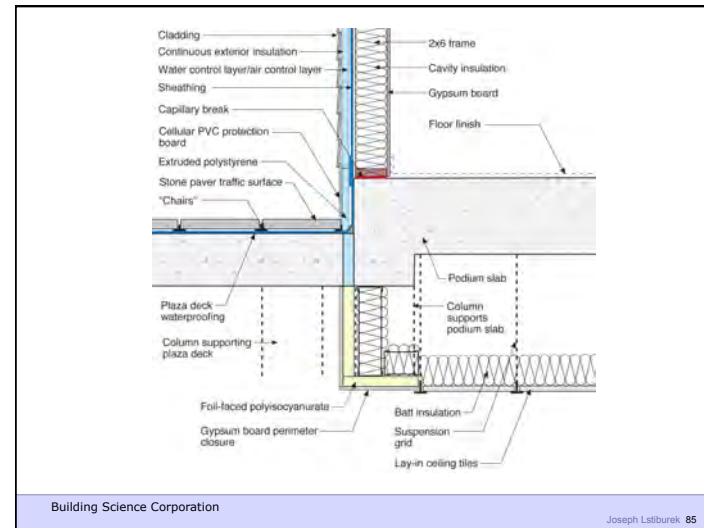
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