

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

# Building Science

## Walls, Roofs and Foundations

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# Don't Do Stupid Things

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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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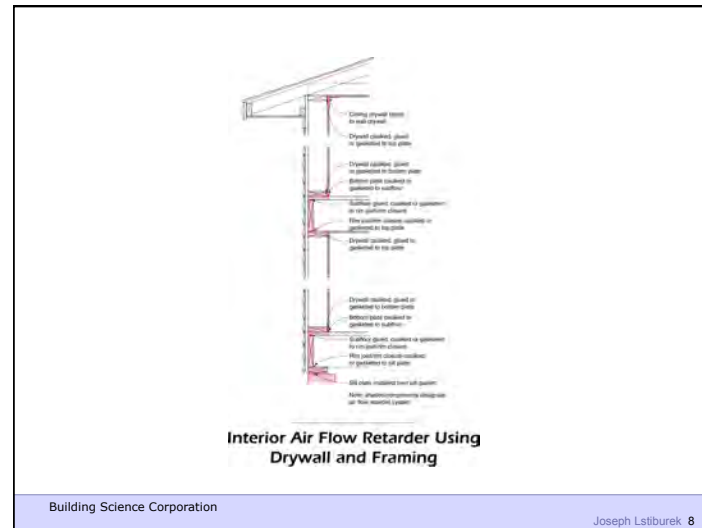
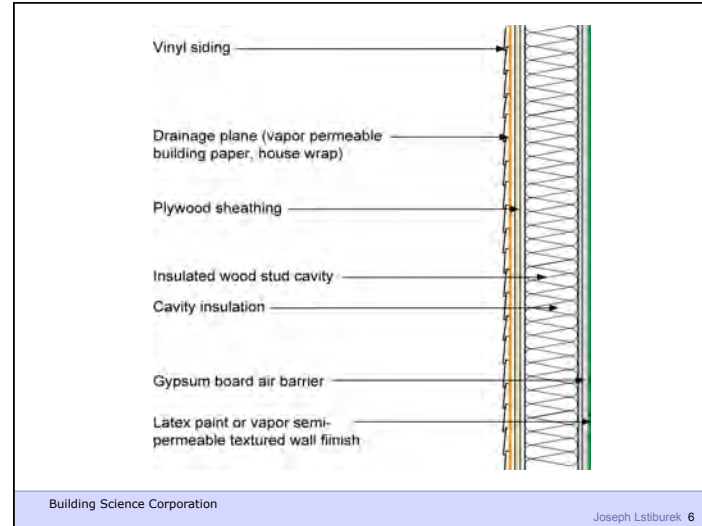
# Walls

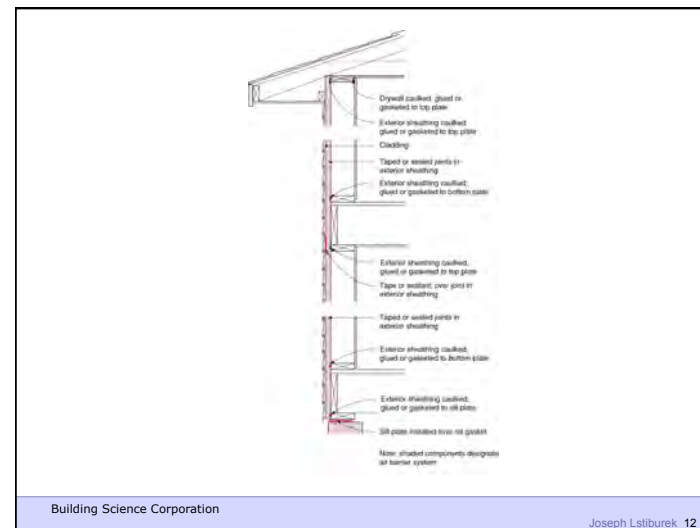
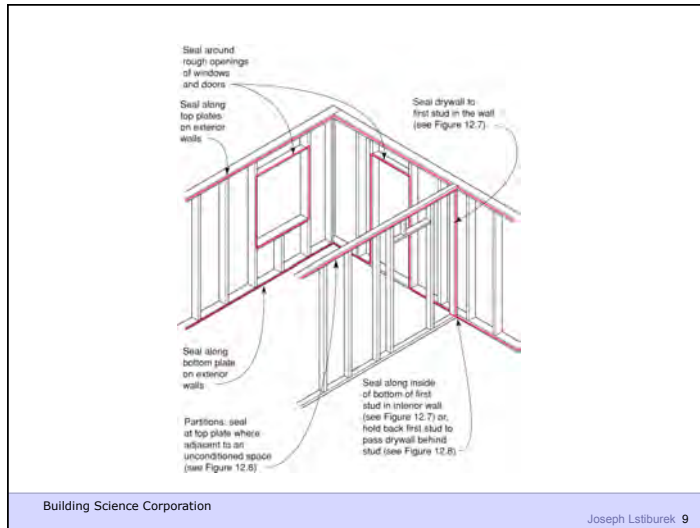
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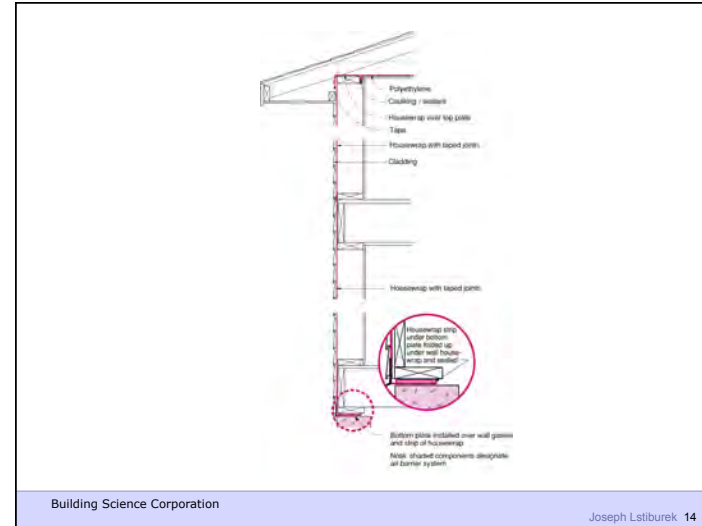
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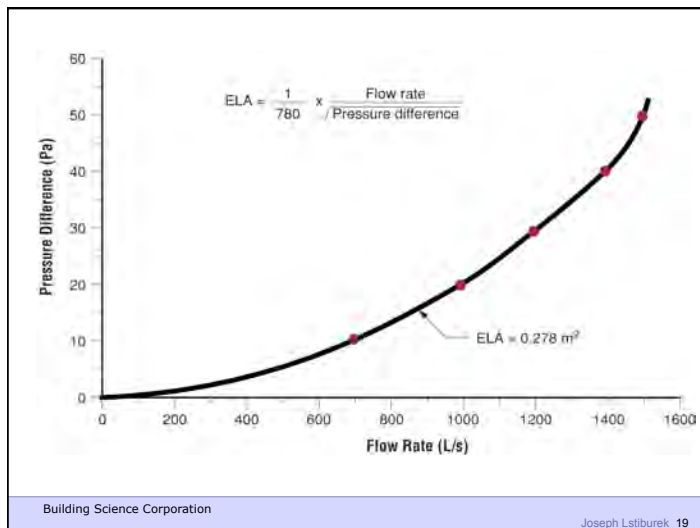
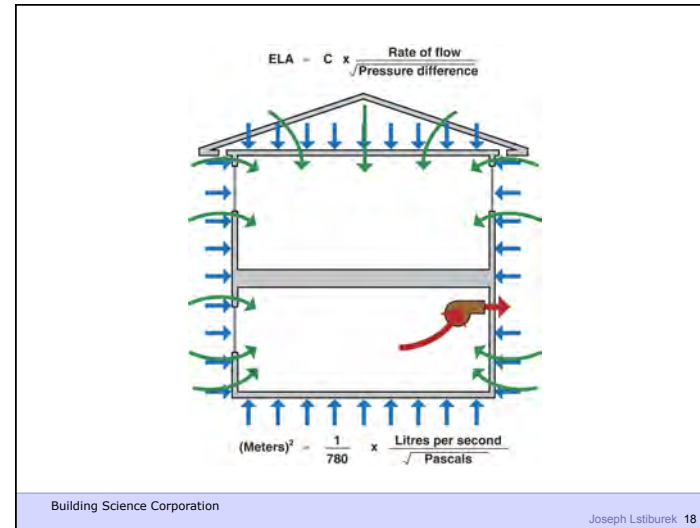
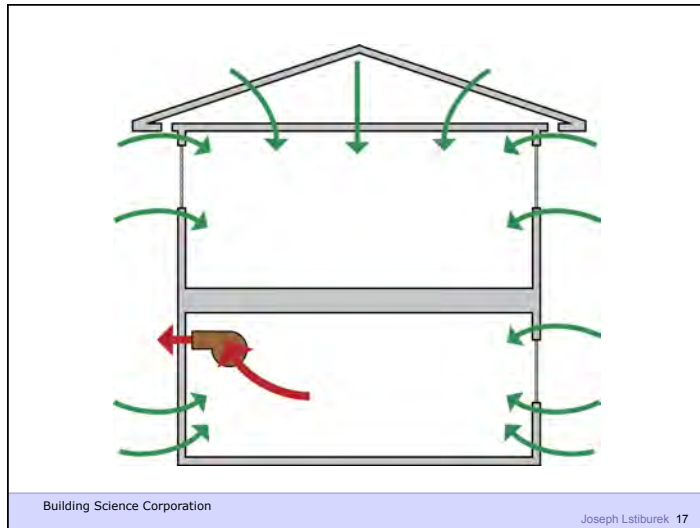
Water Control Layer  
 Air Control Layer  
 Vapor Control Layer  
 Thermal Control Layer

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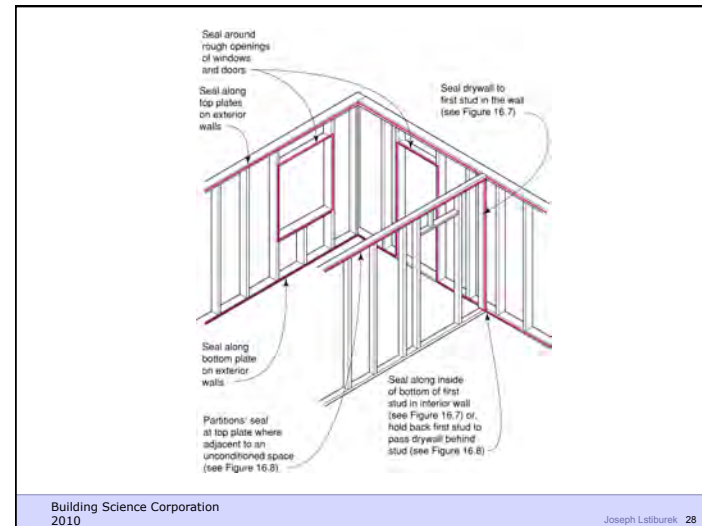
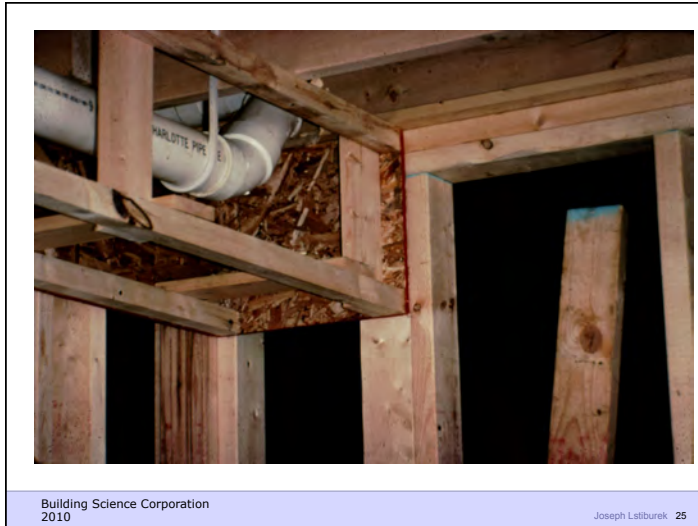


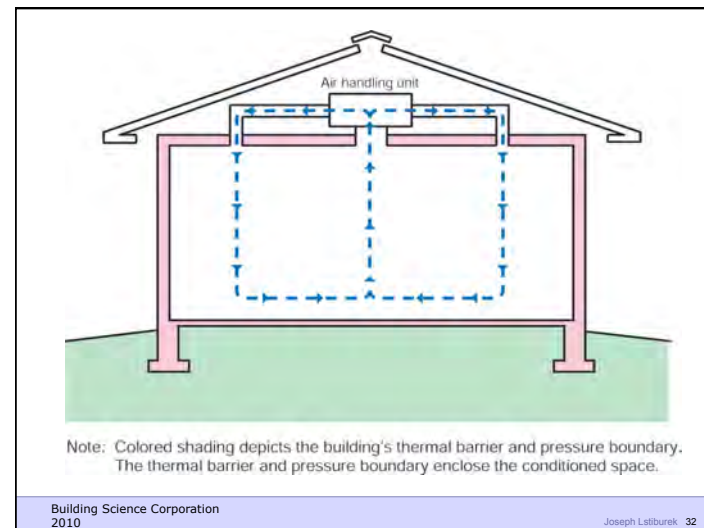
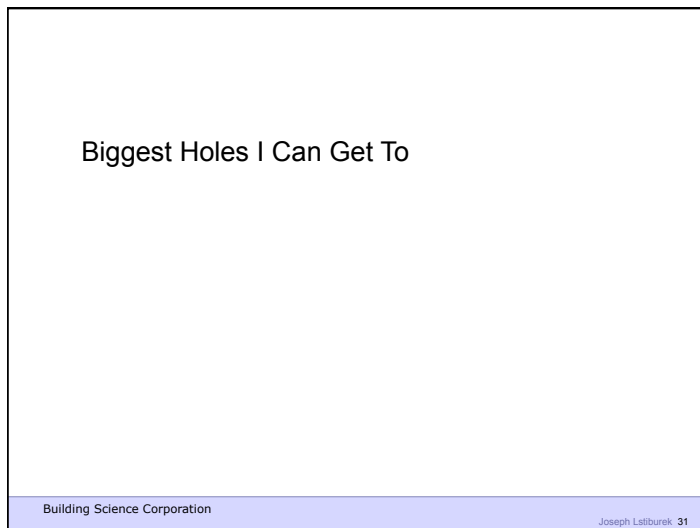
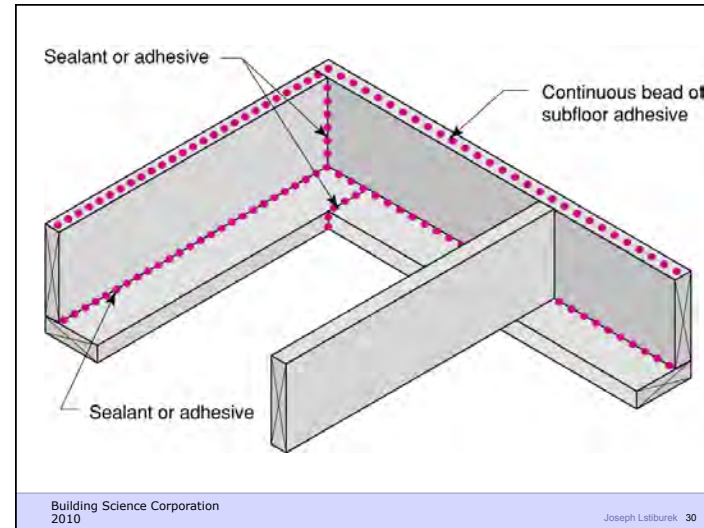
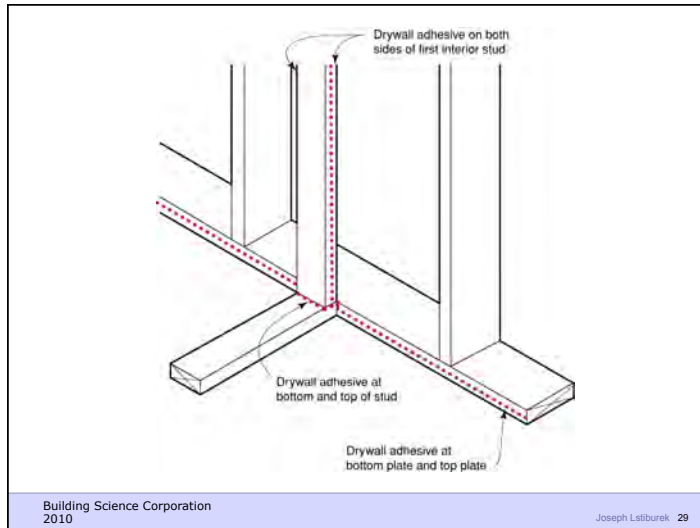














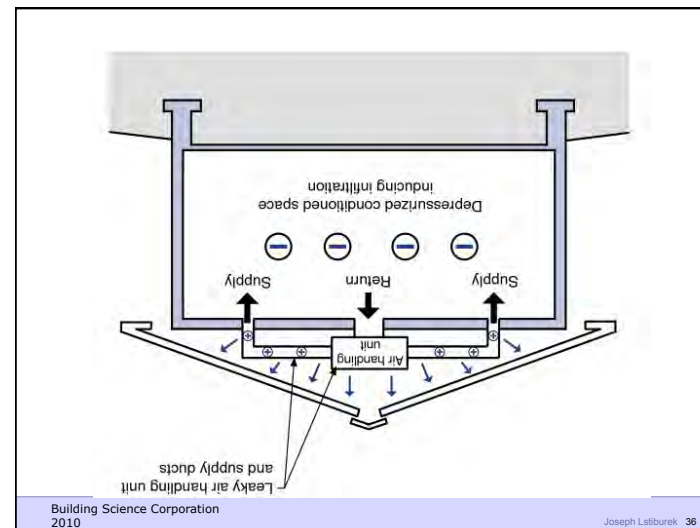
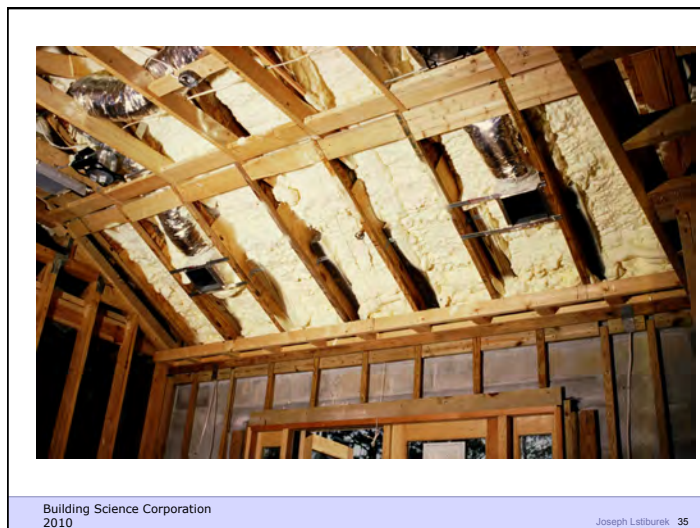
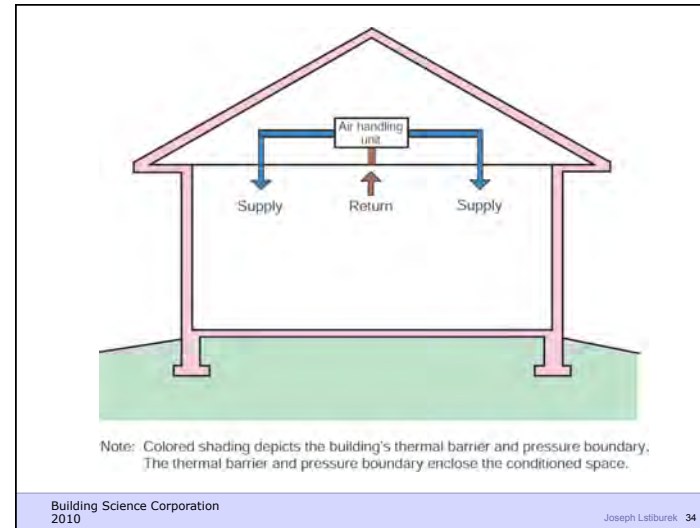
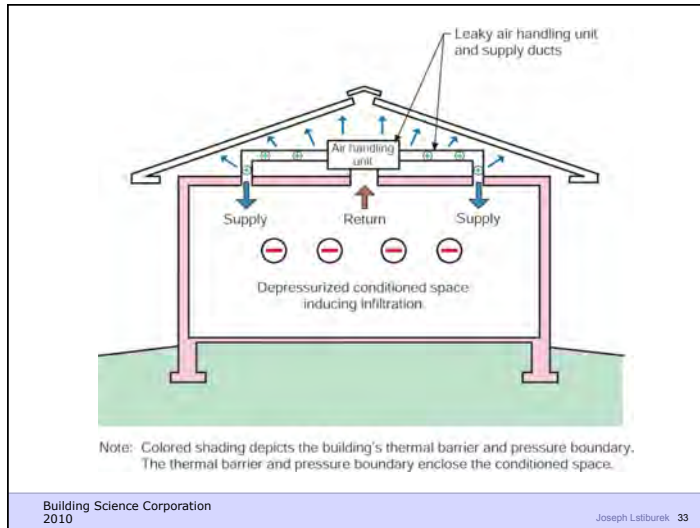


Figure 3.16  
**Leaky Supply Ductwork in Vented Crawl Space**  
 • Air pressurization pattern with mechanical system ducts in the crawl space

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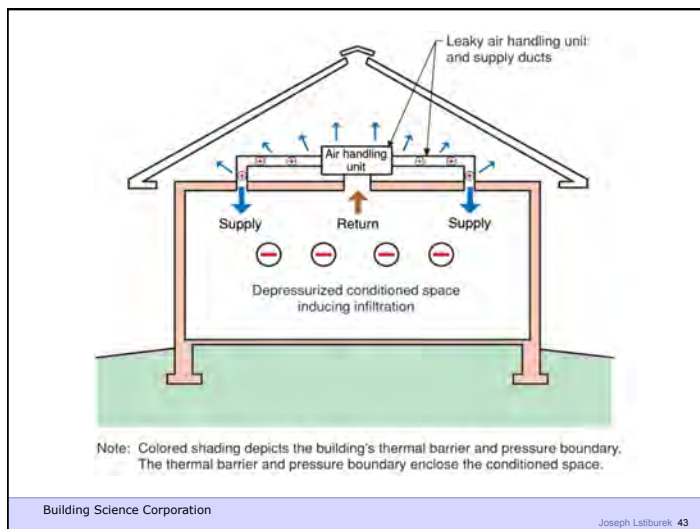
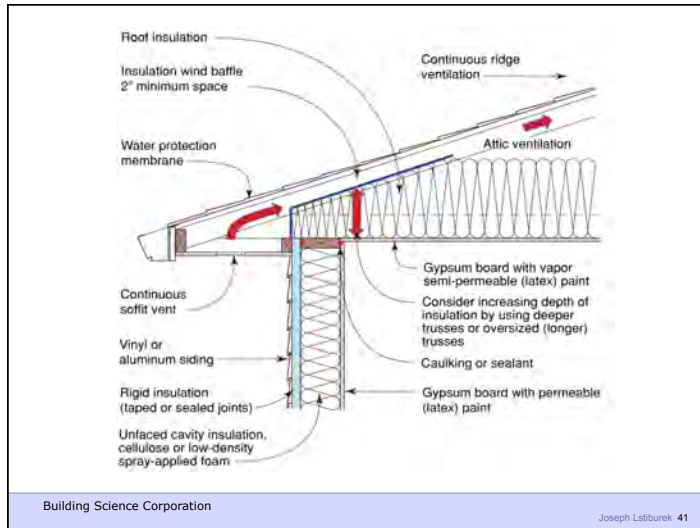
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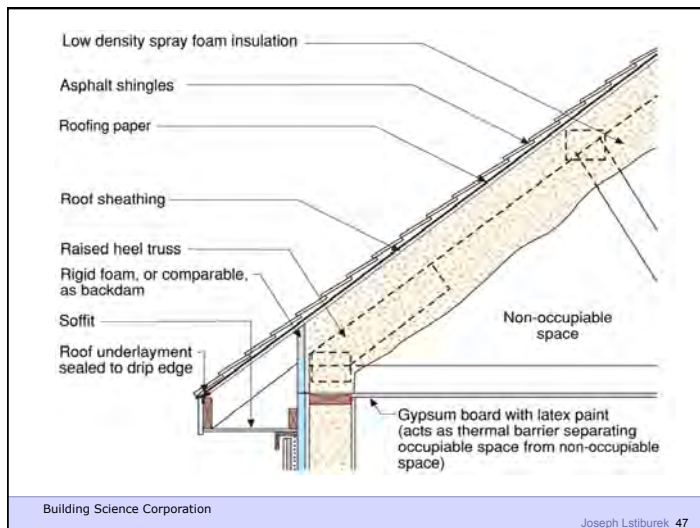
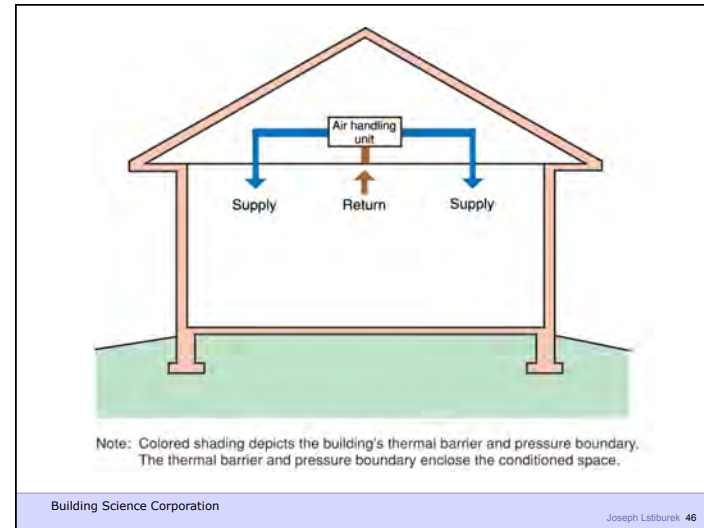
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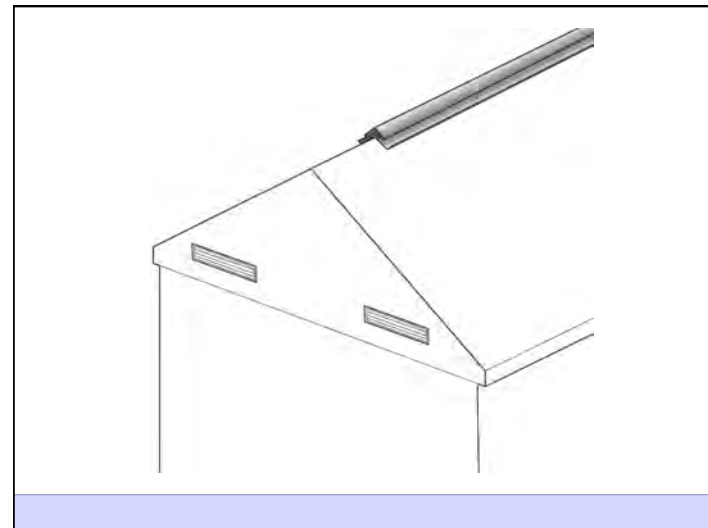
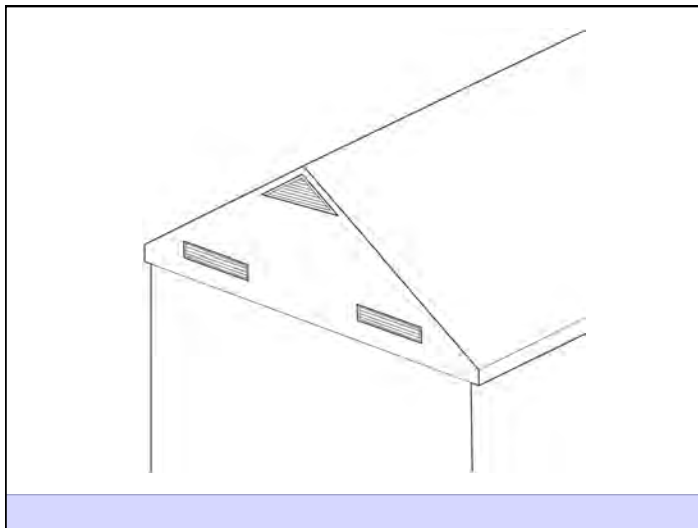
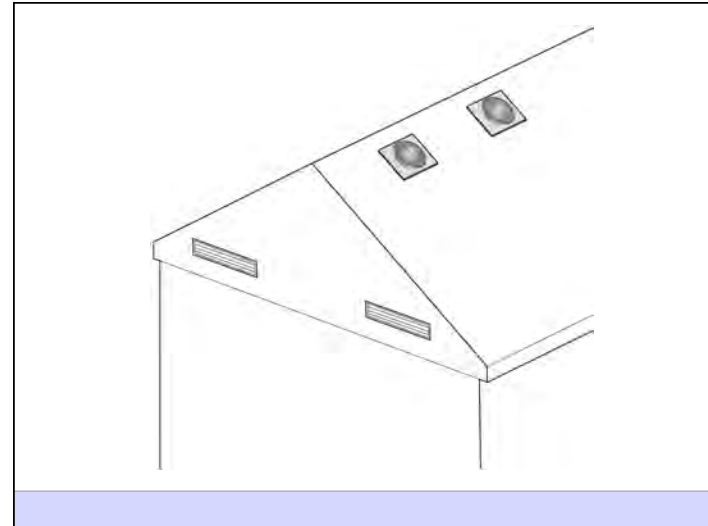
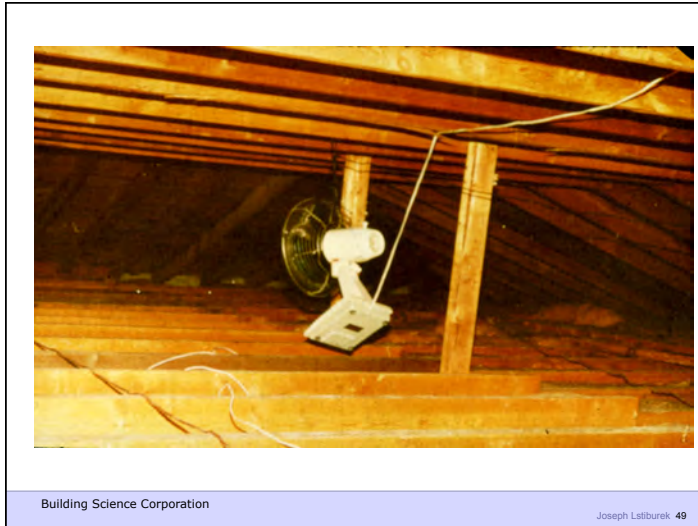
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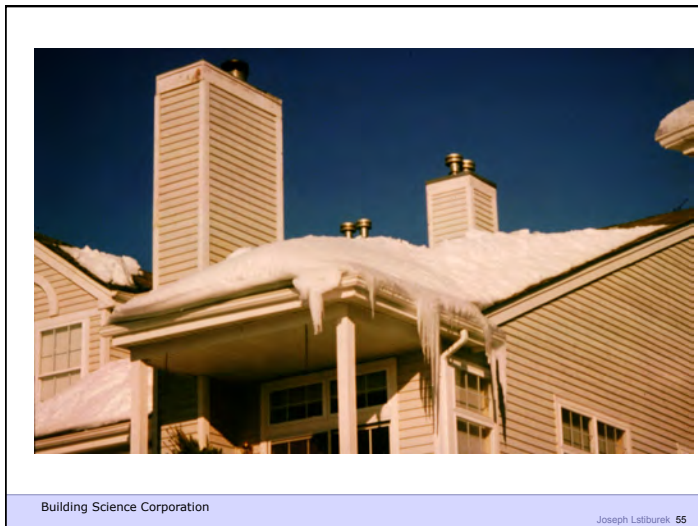
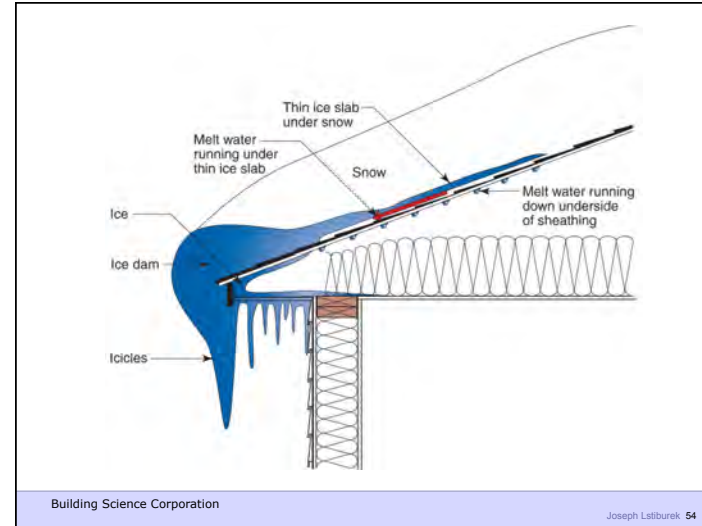


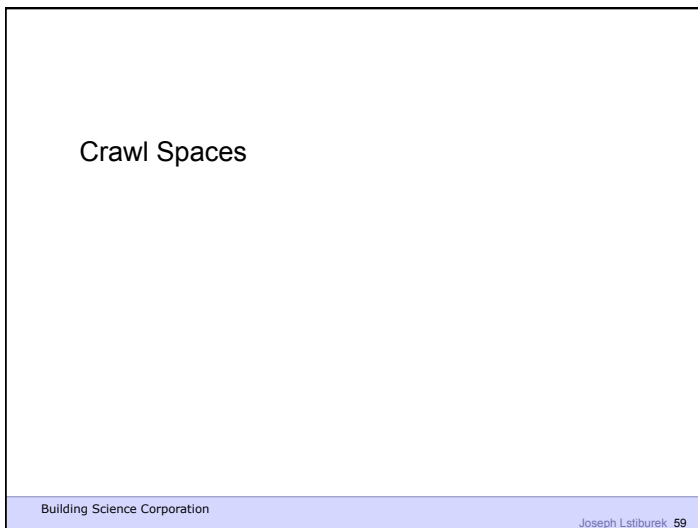
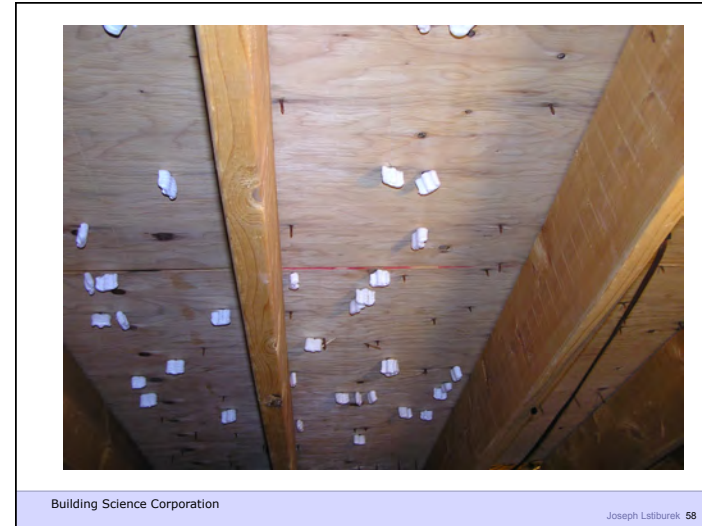


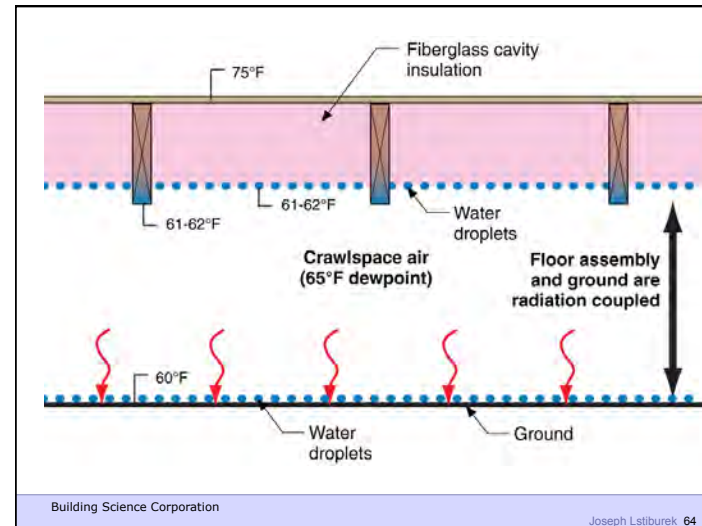
# Ice Dams

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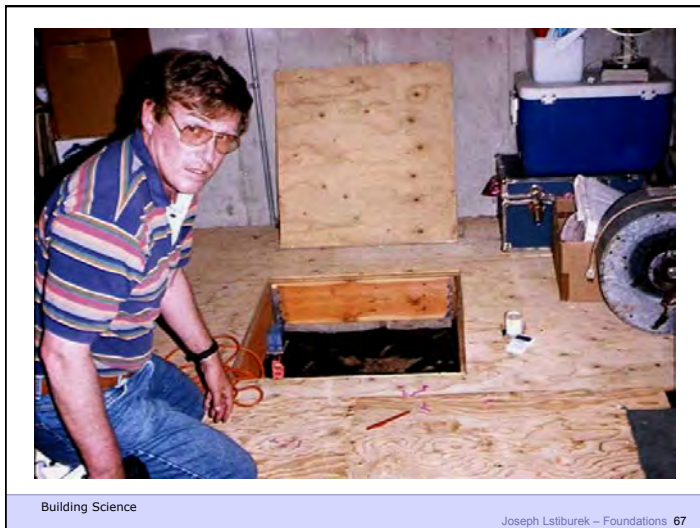
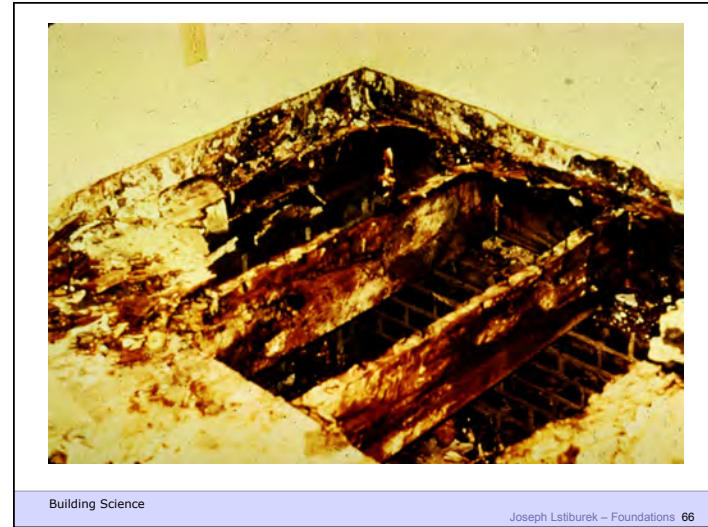
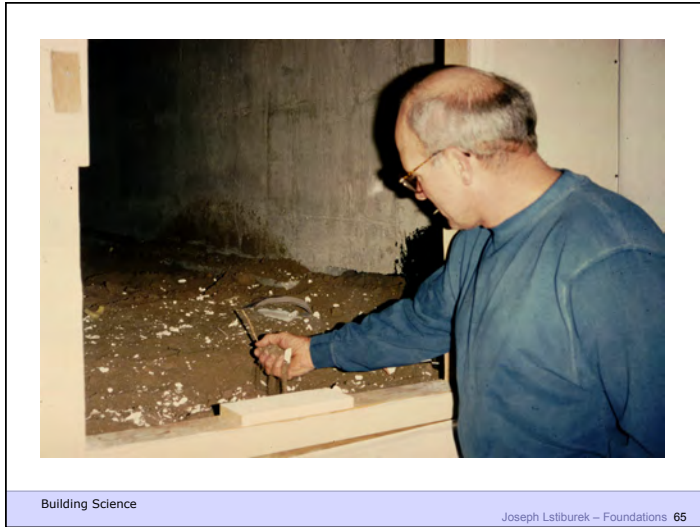
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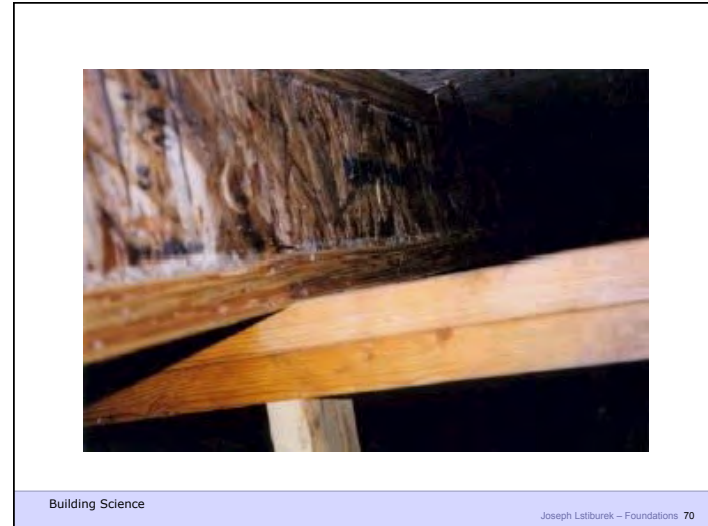




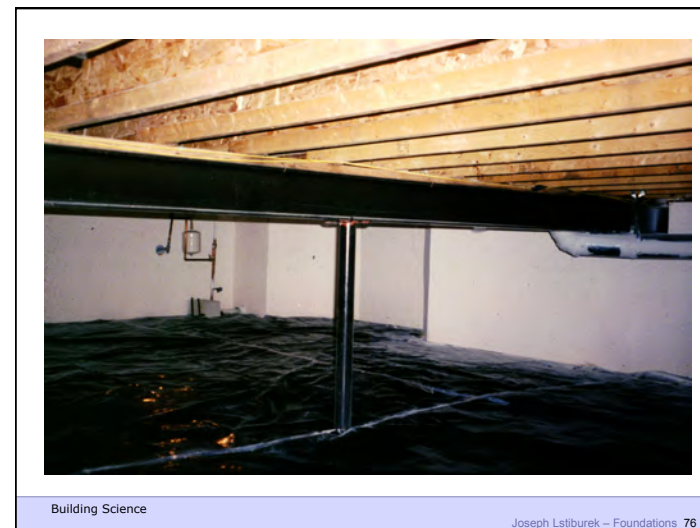
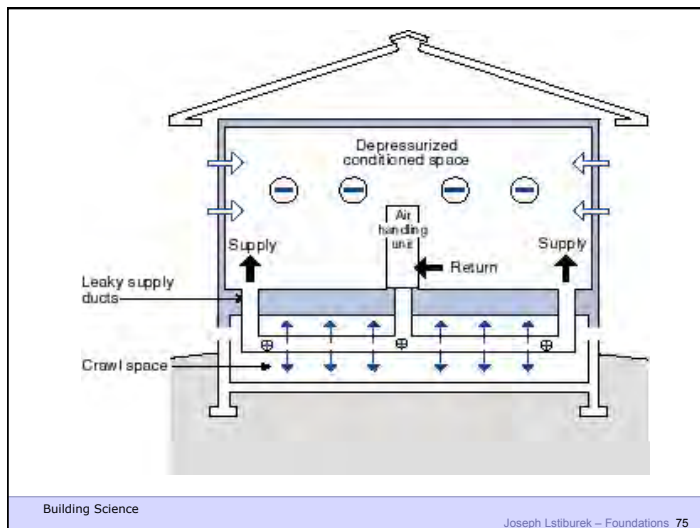
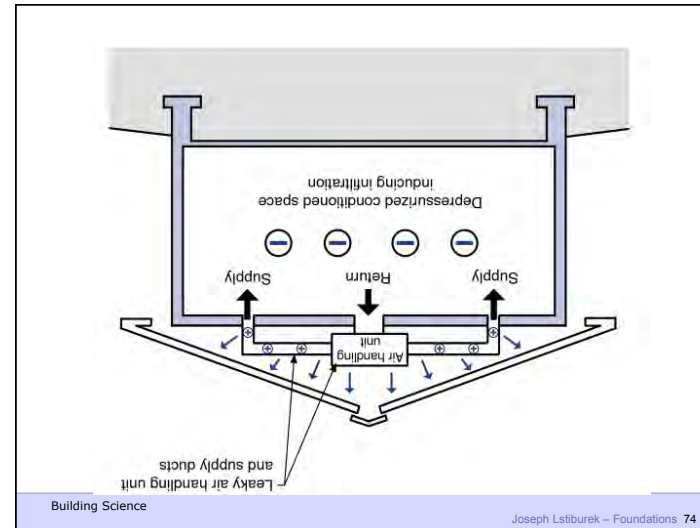
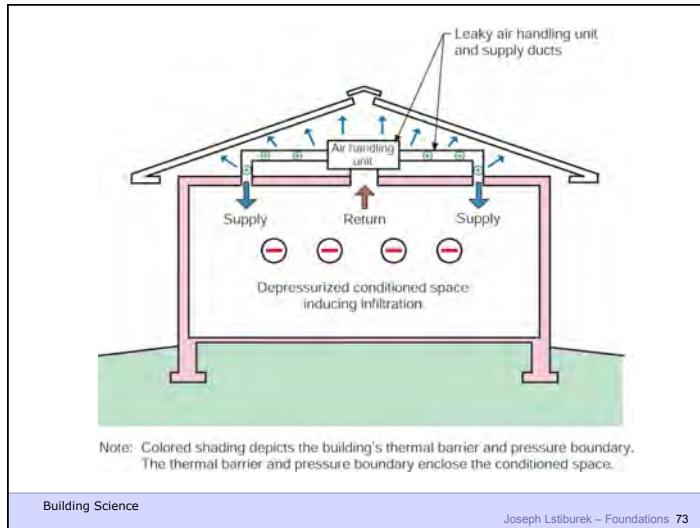














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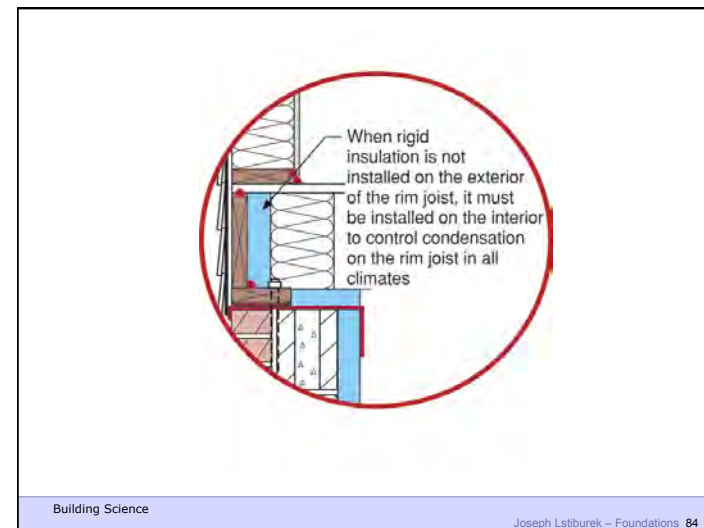
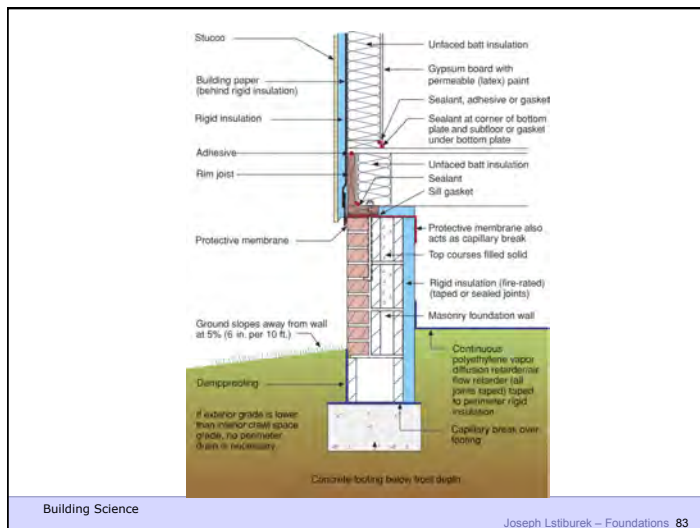
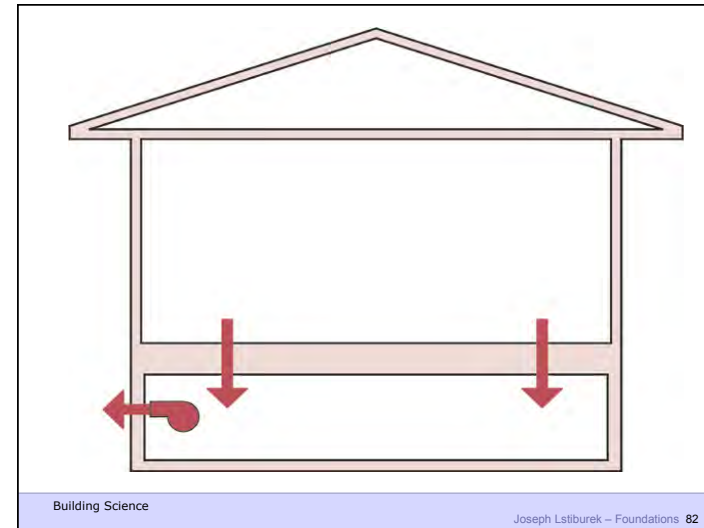
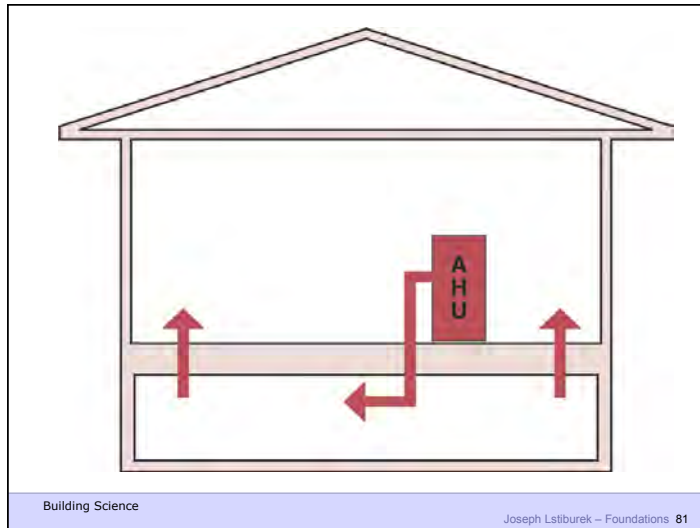
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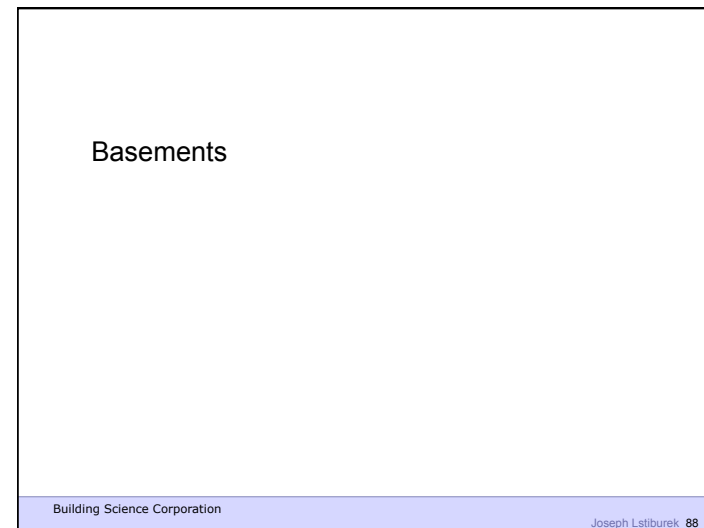
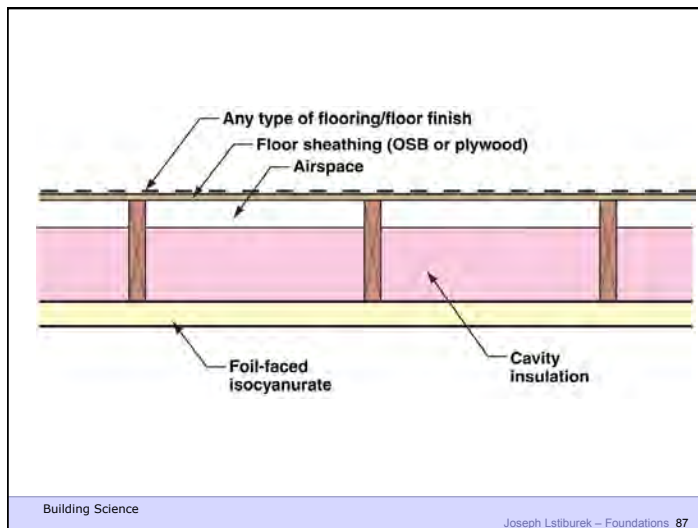
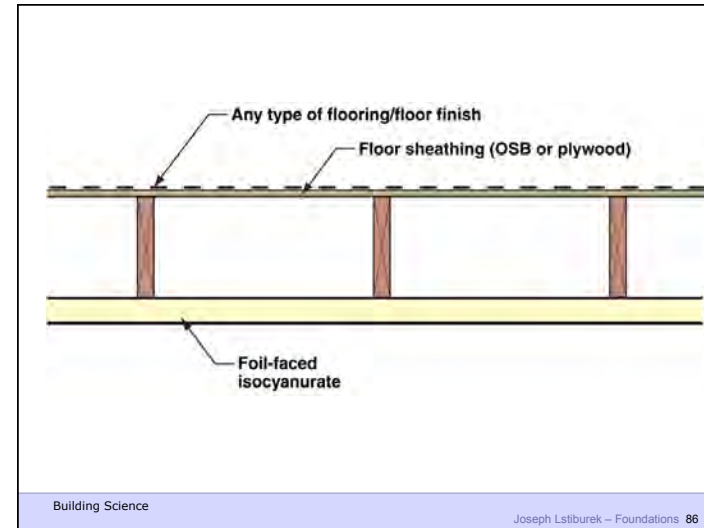
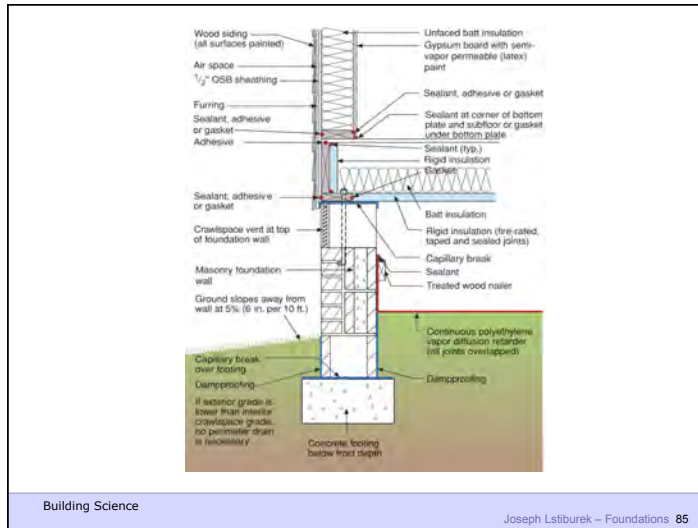
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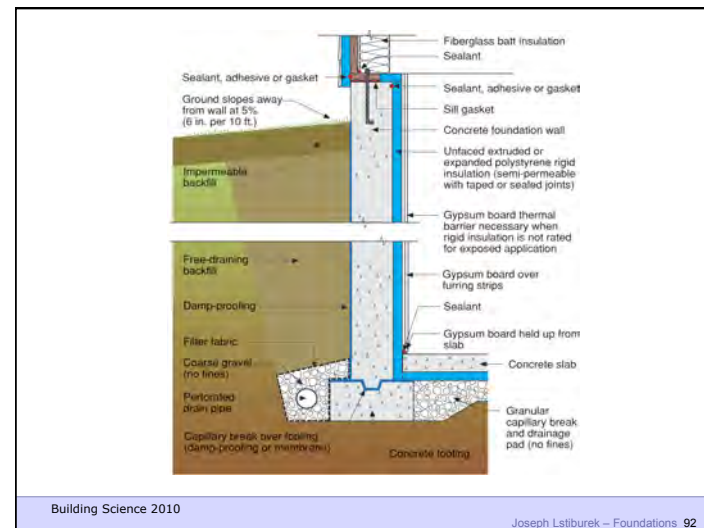
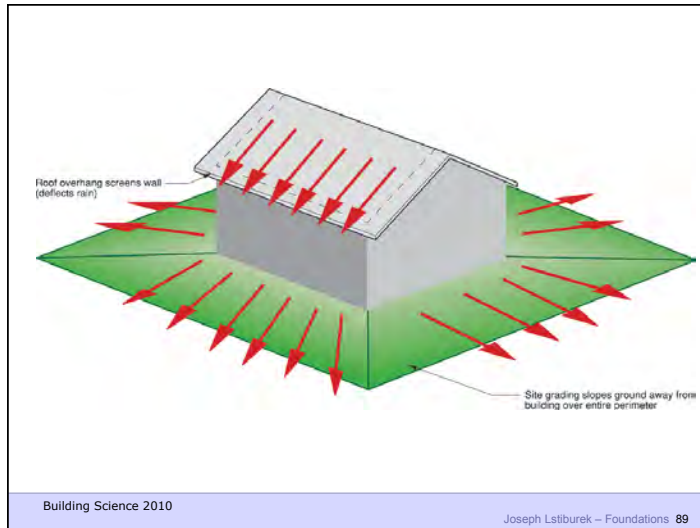
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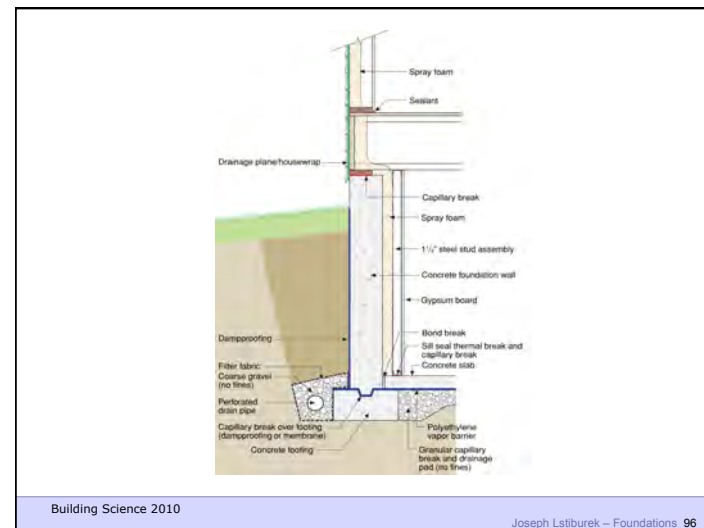
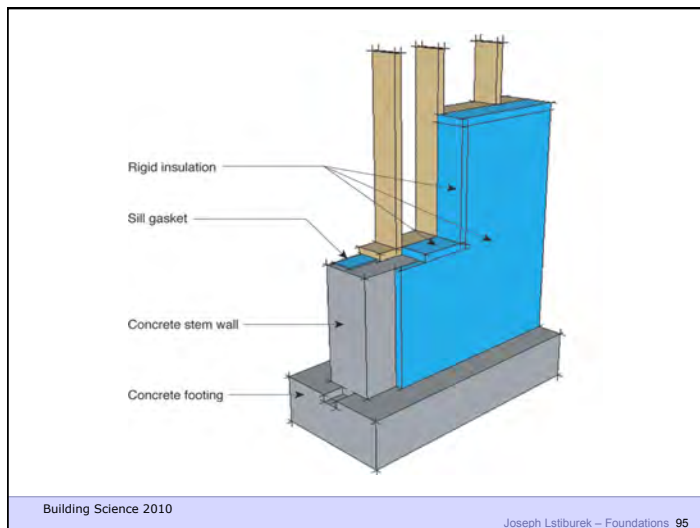








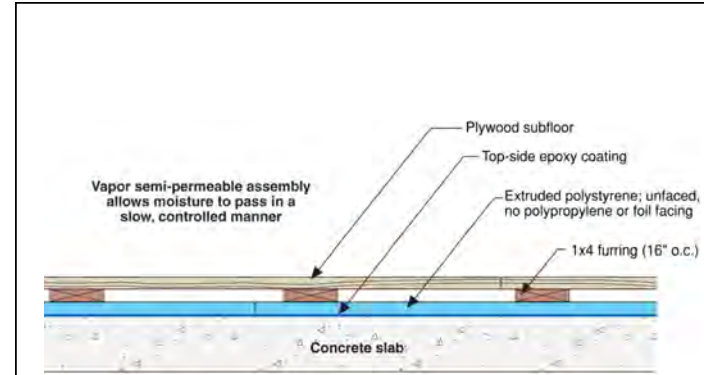








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