

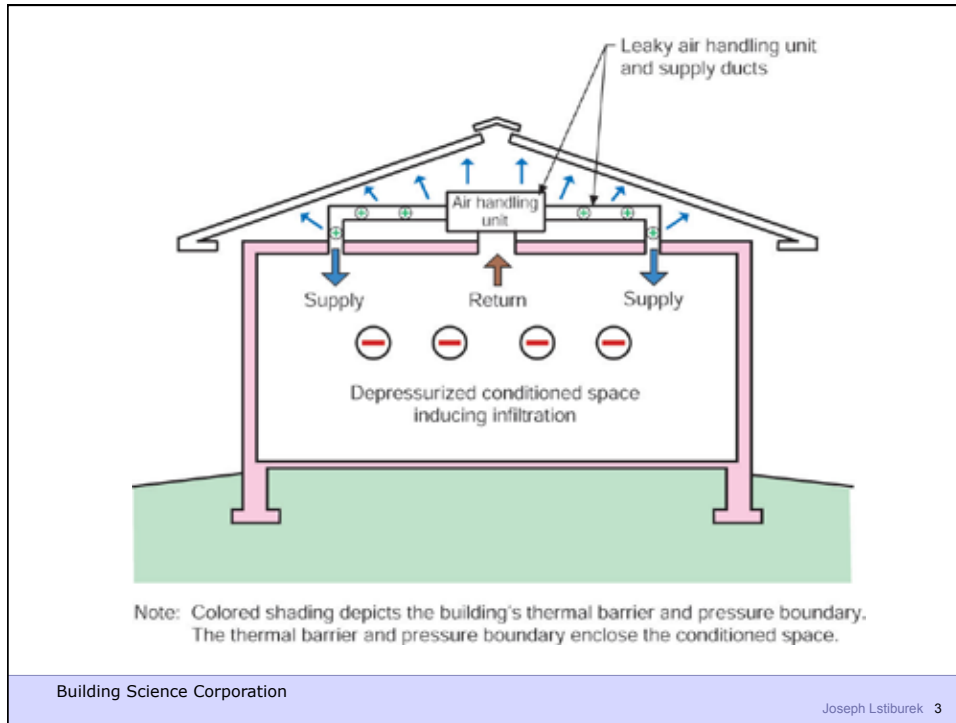
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Don't Do Stupid Things





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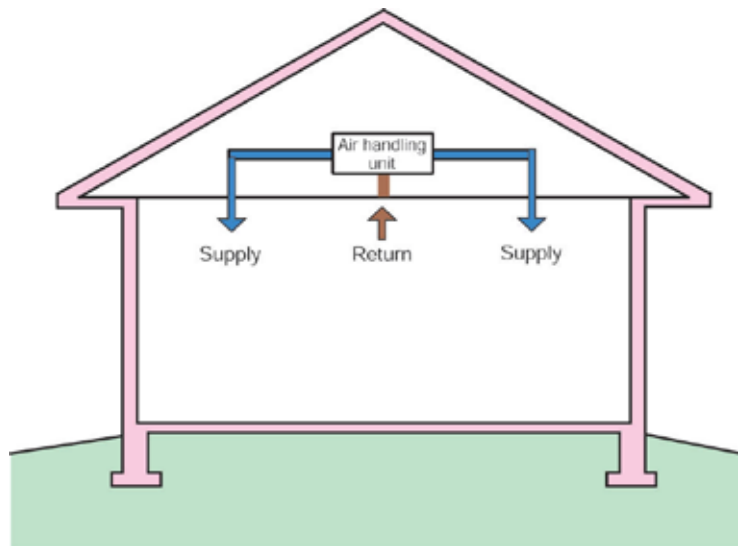
Joseph Lstiburek 5



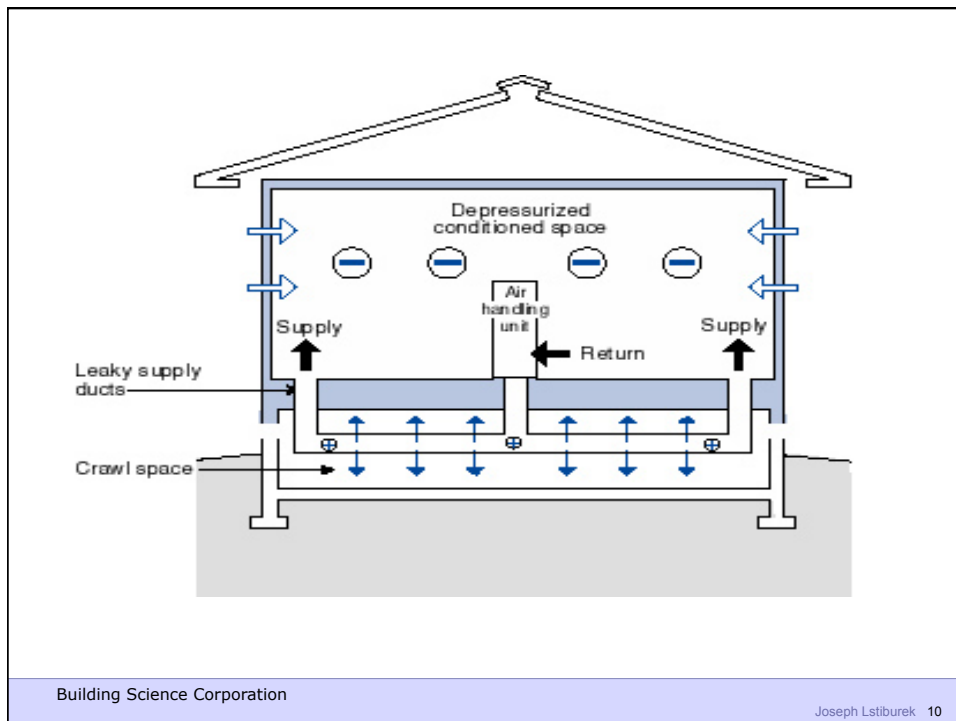
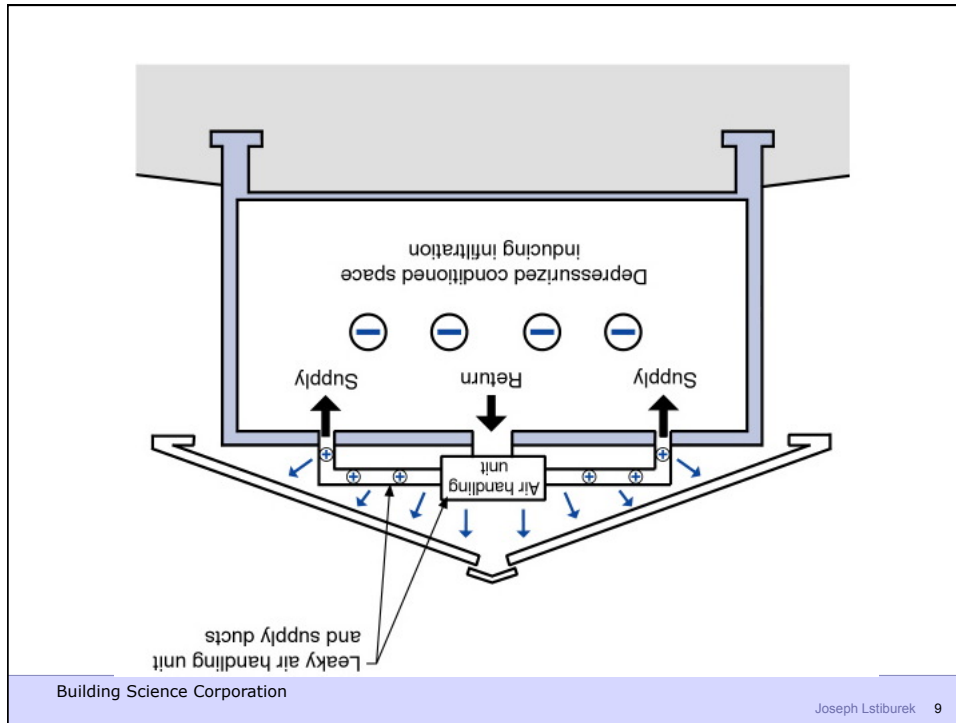
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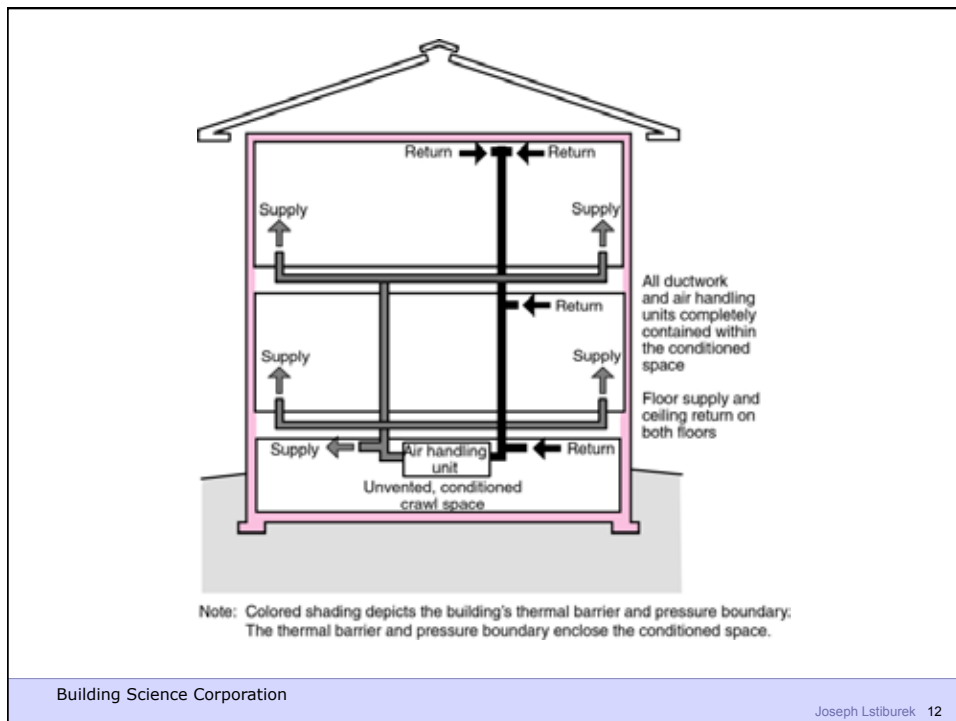
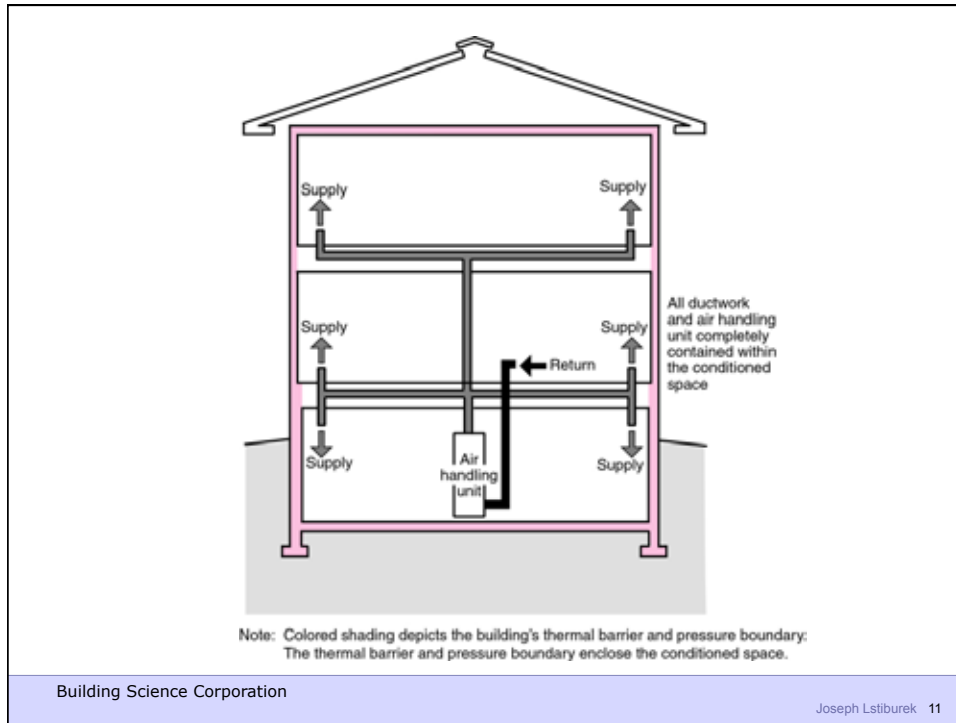
Joseph Lstiburek 6

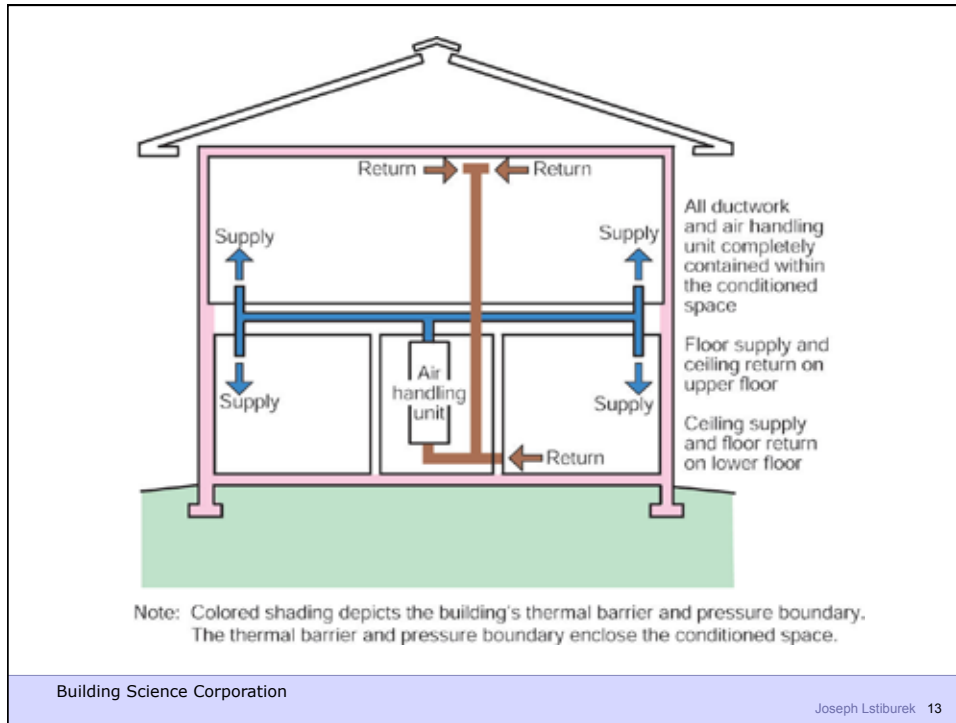
Duct Leakage Should Be Less Than 5% of Rated Flow As Tested By Pressurization To 25 Pascals

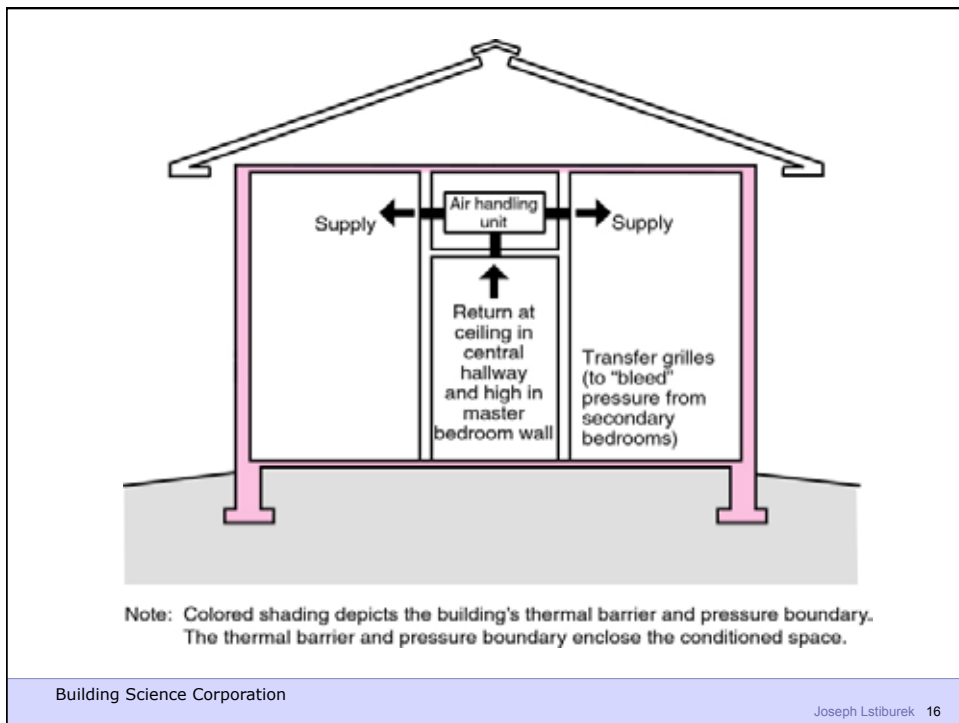
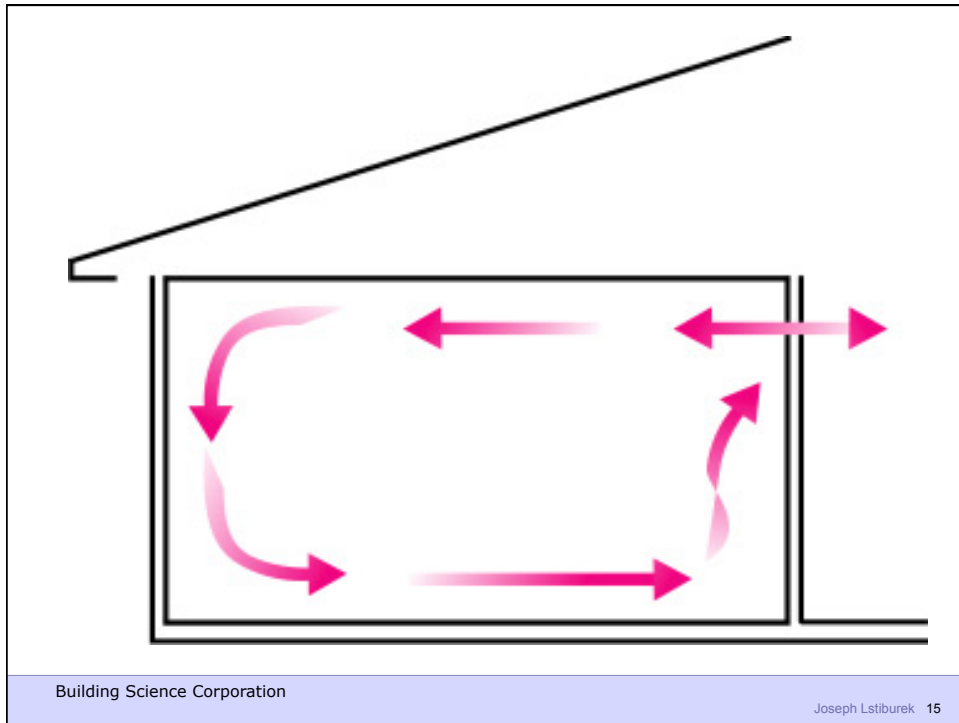


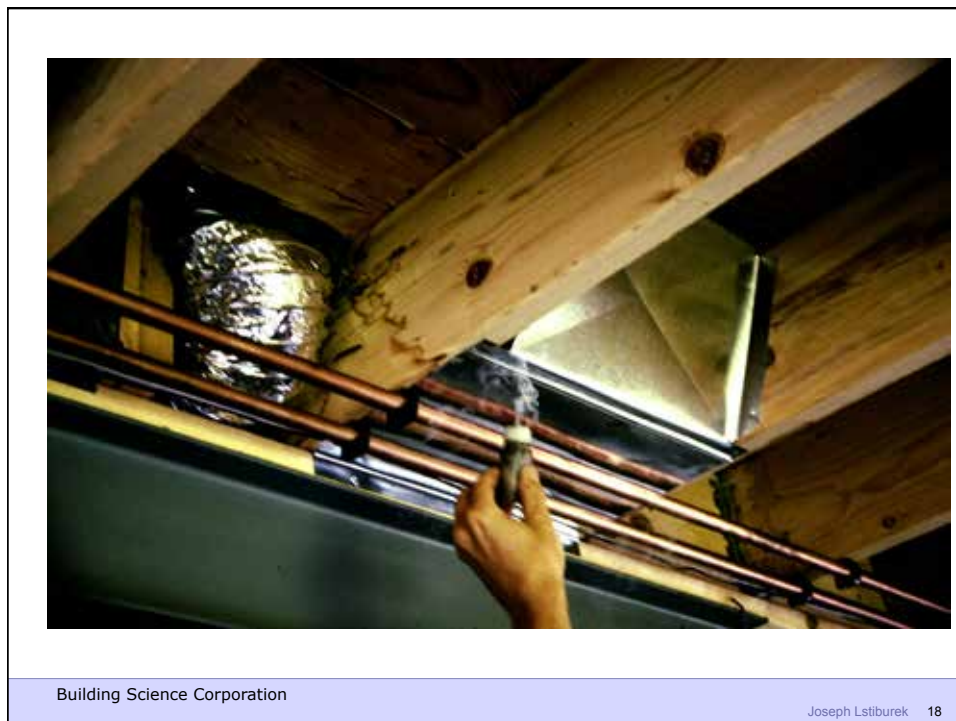
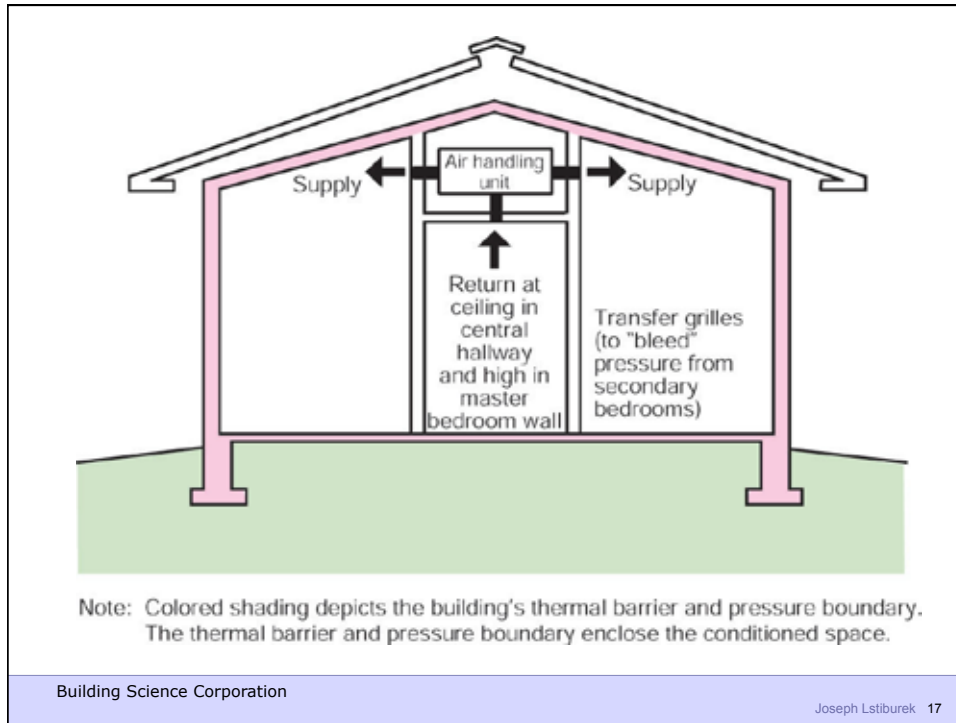
Note: Colored shading depicts the building's thermal barrier and pressure boundary. The thermal barrier and pressure boundary enclose the conditioned space.













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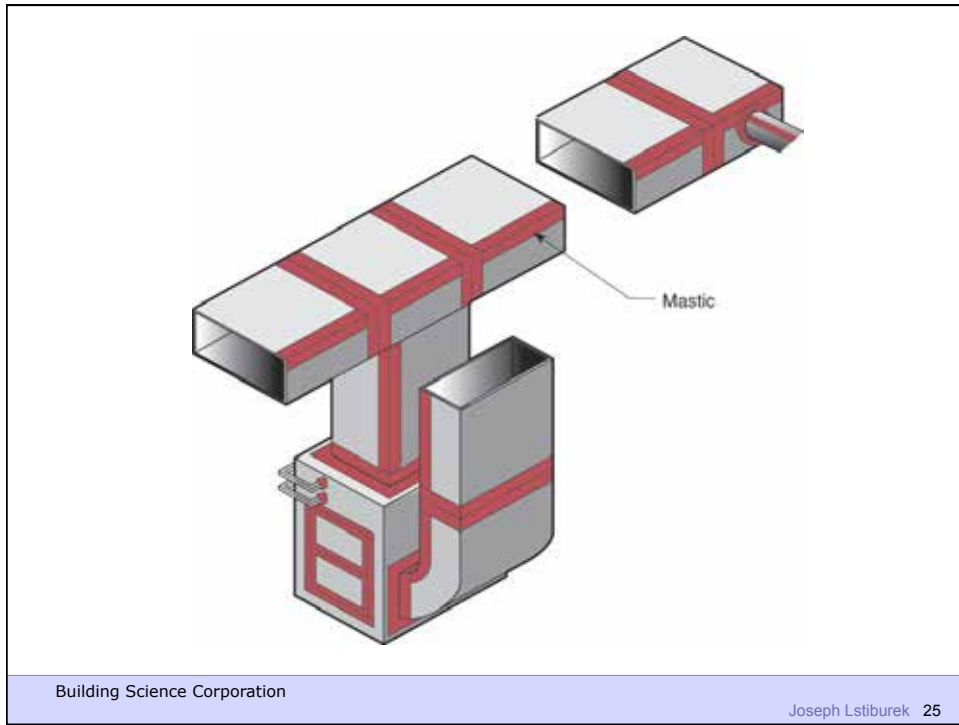
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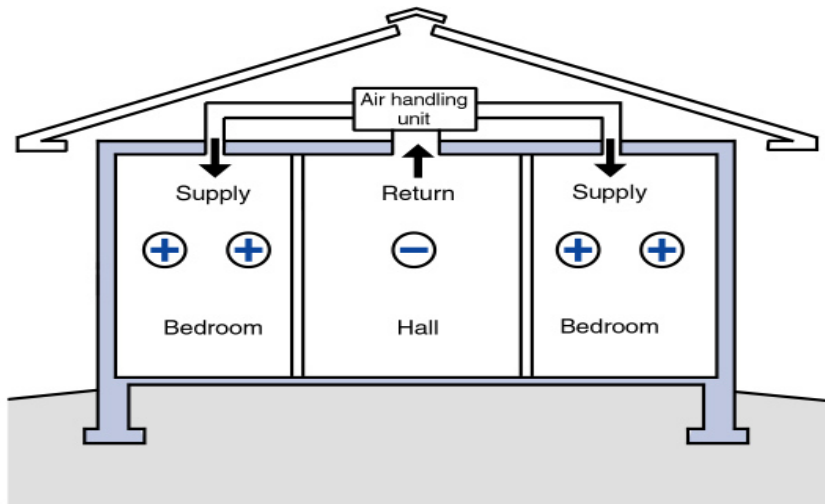
Joseph Lstiburek 24





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Joseph Lstiburek 27



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Joseph Lstiburek 28



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Joseph Lstiburek 29



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Joseph Lstiburek 30



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Joseph Lstiburek 31



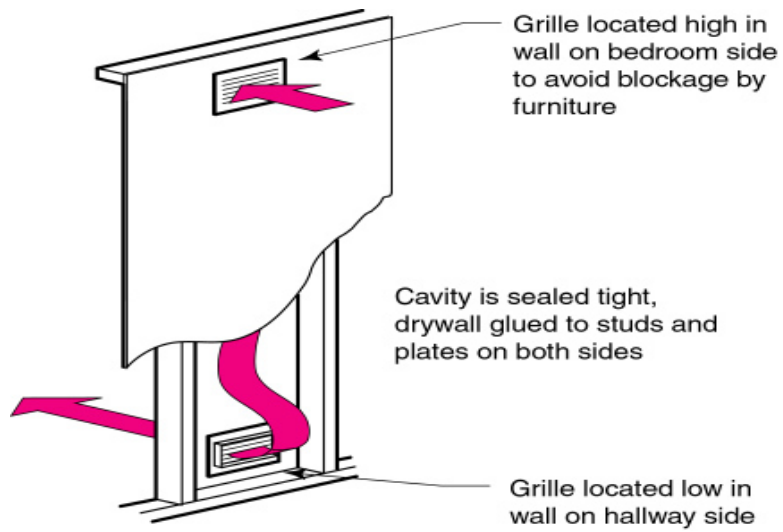
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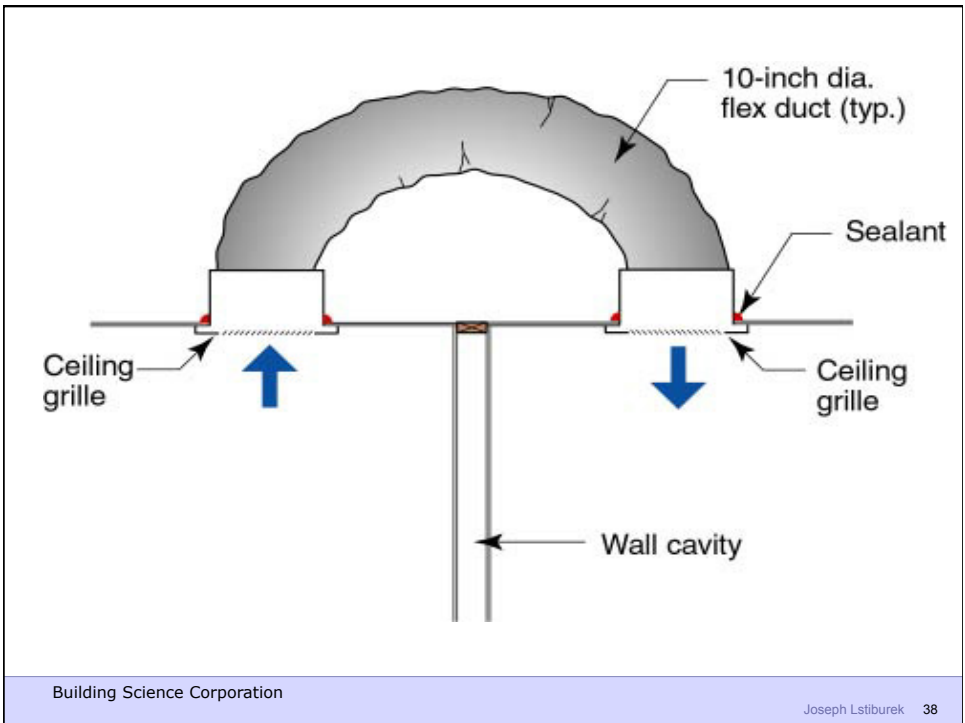
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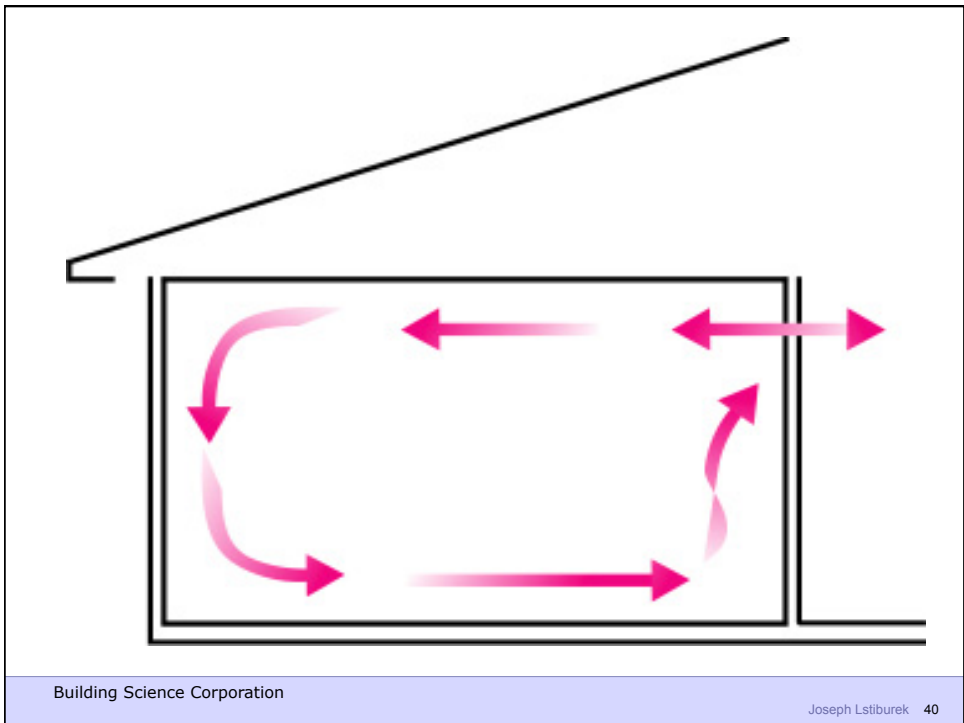


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Build Tight - Ventilate Right

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Build Tight - Ventilate Right How Tight? What's Right?

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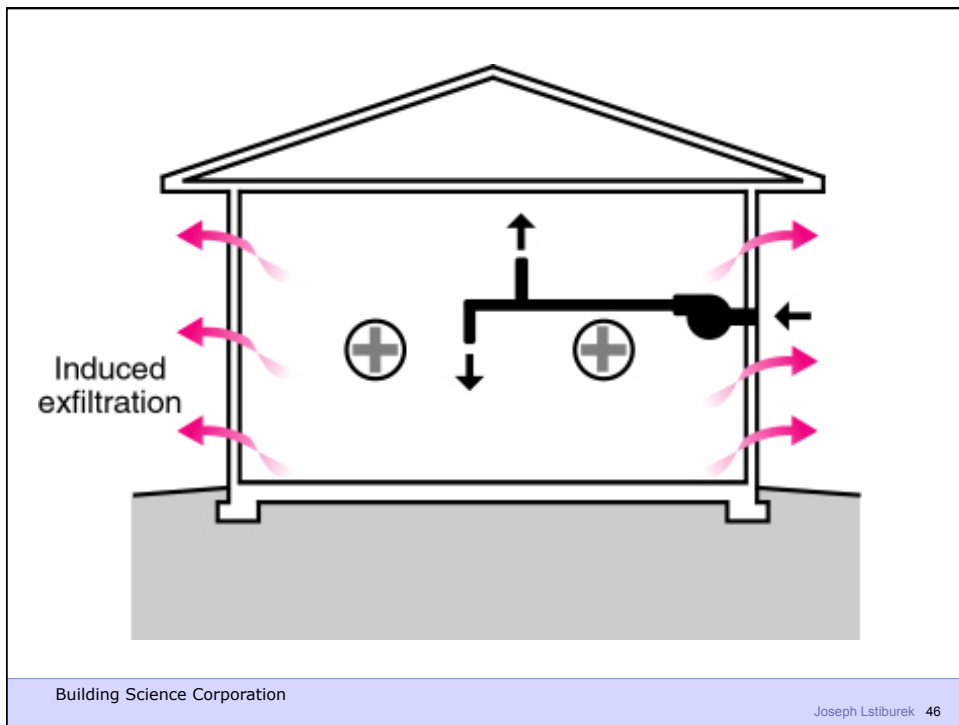
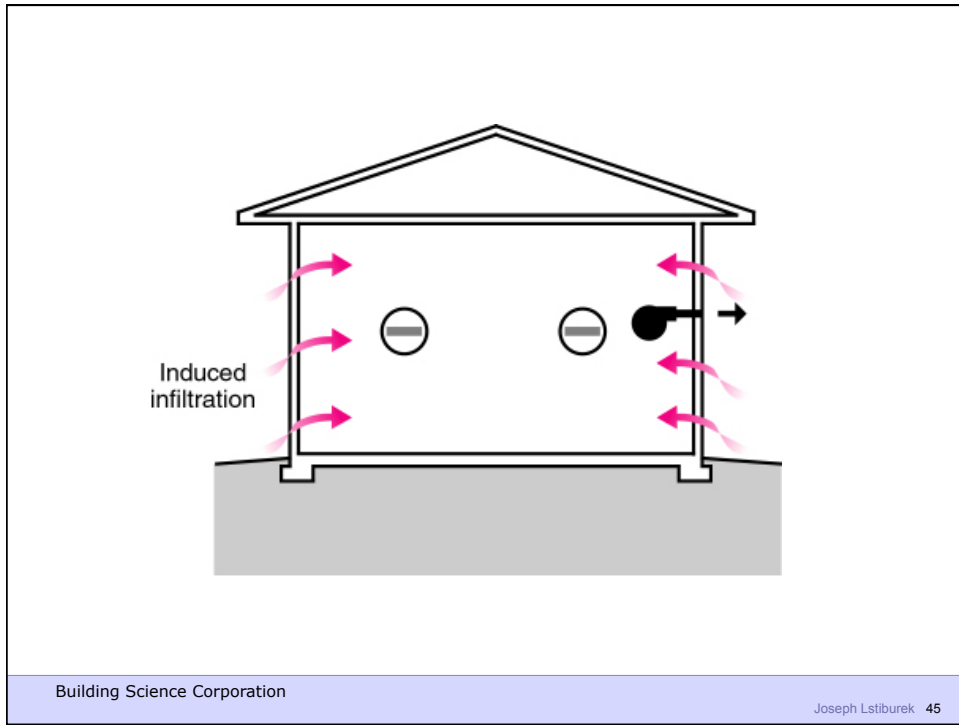
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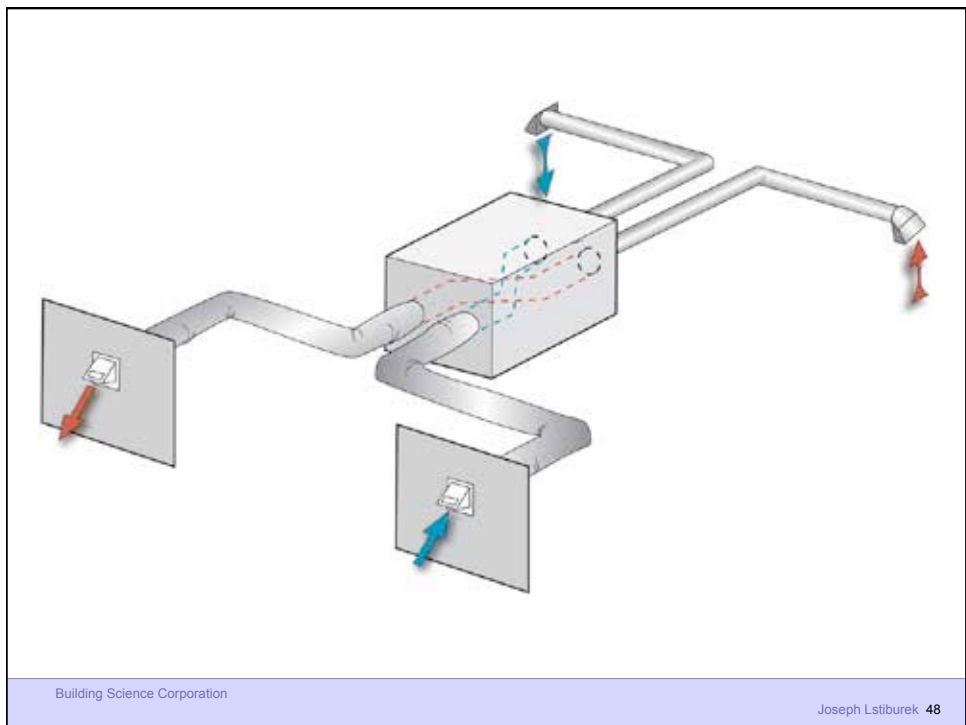
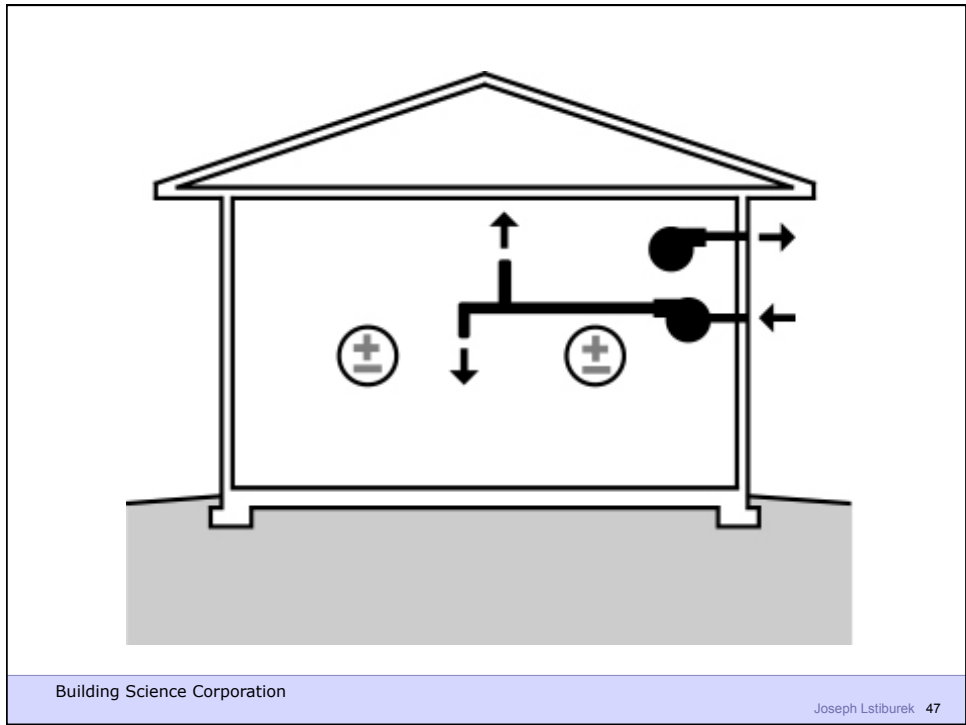
Three Types of Controlled Ventilation Systems

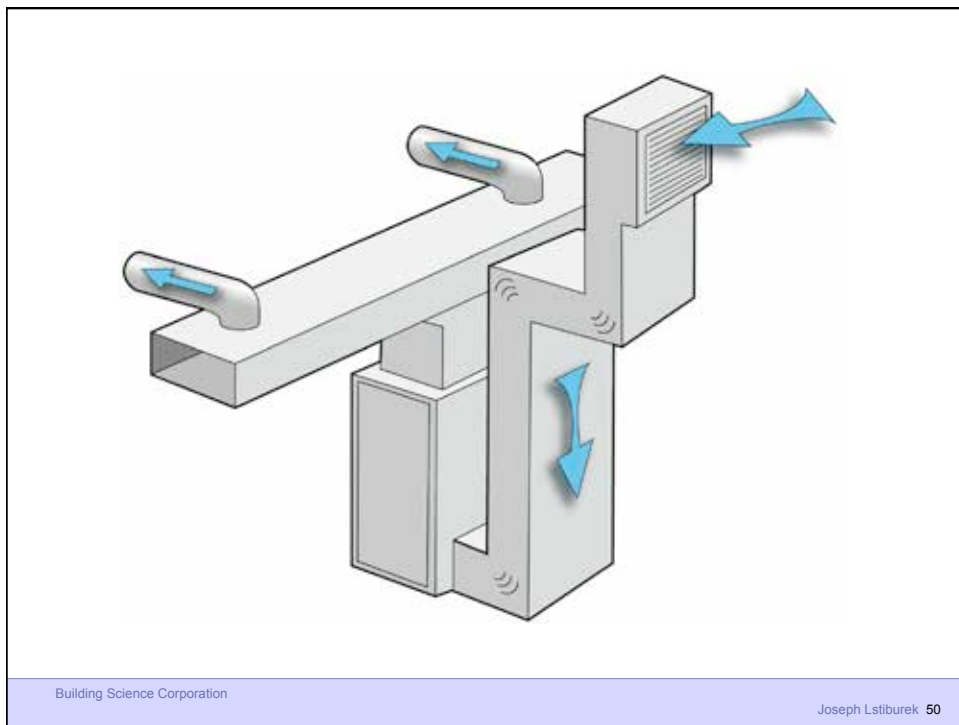
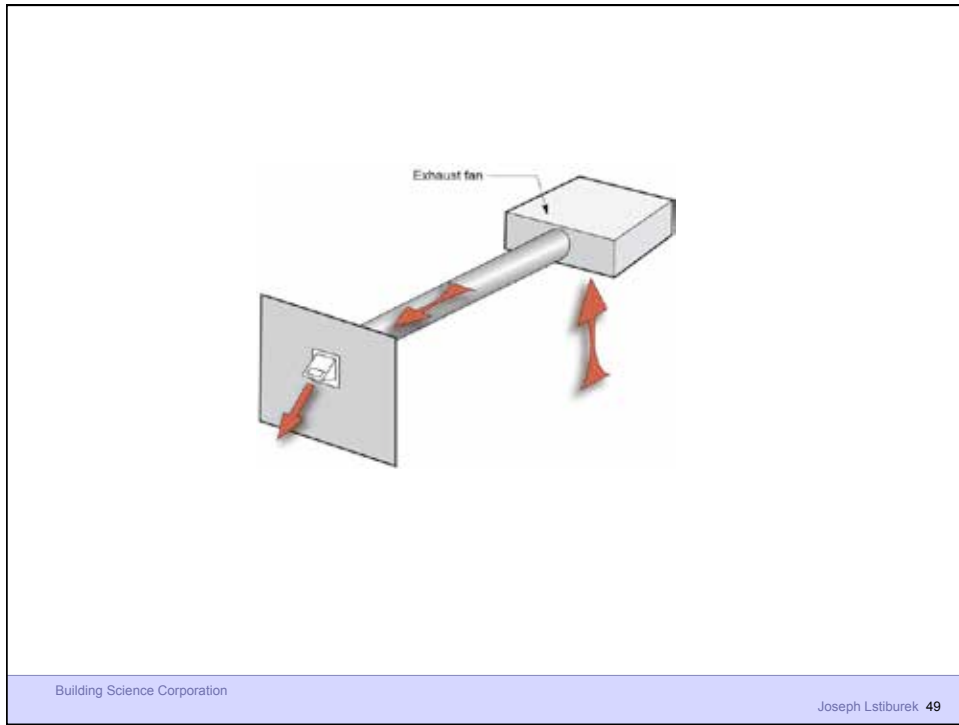
Exhaust Ventilation
Supply Ventilation
Balanced Ventilation

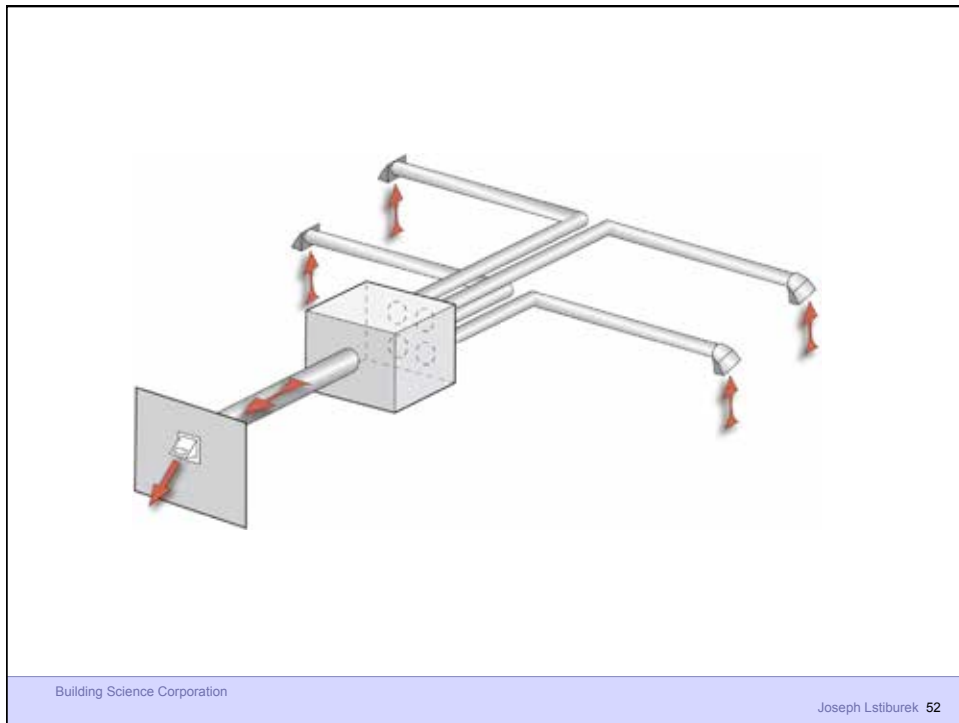
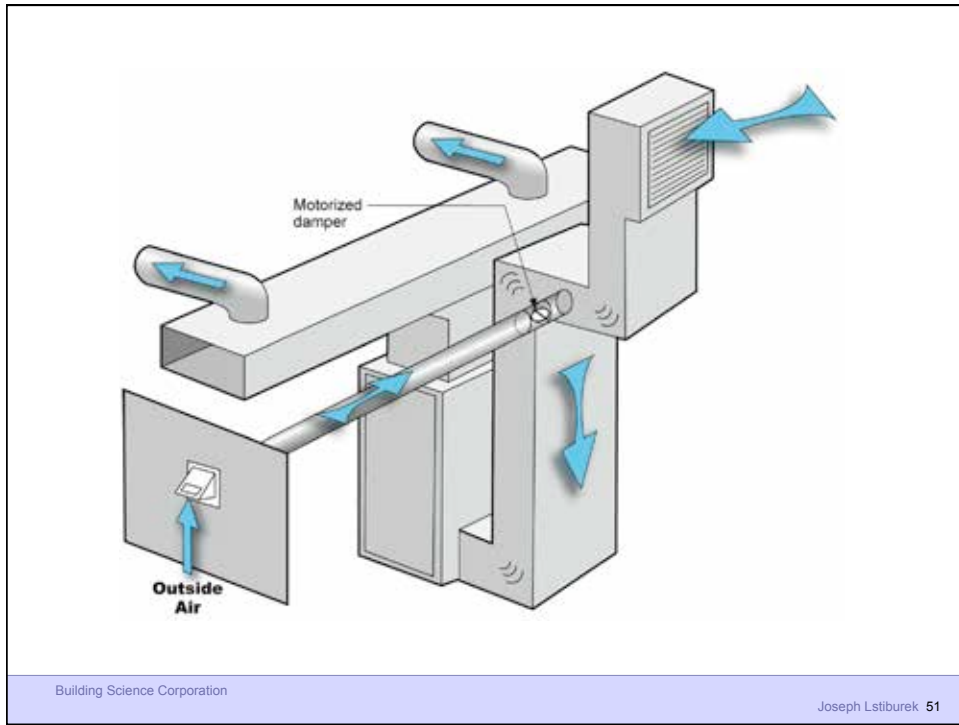
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ASHRAE Standard 62.2 calls for 7.5 cfm per person plus 0.03 cfm per square foot of conditioned area

Occupancy is deemed to be the number of bedrooms plus one

ASHRAE Standard 62.2 calls for 7.5 cfm per person plus 0.03 cfm per square foot of conditioned area

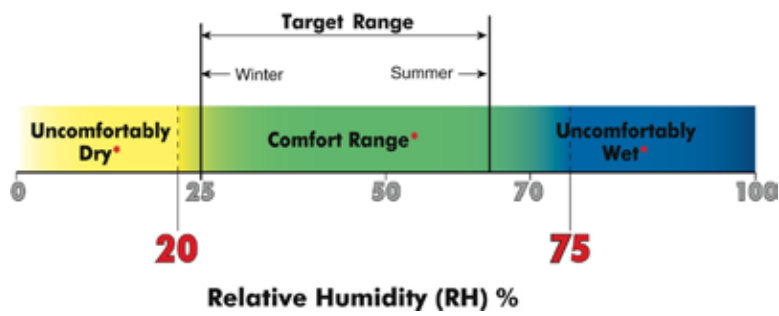
Occupancy is deemed to be the number of bedrooms plus one

Outcome is often bad – part load humidity problems, dryness problems, energy problems

Don't Do Stupid Things Humidifiers

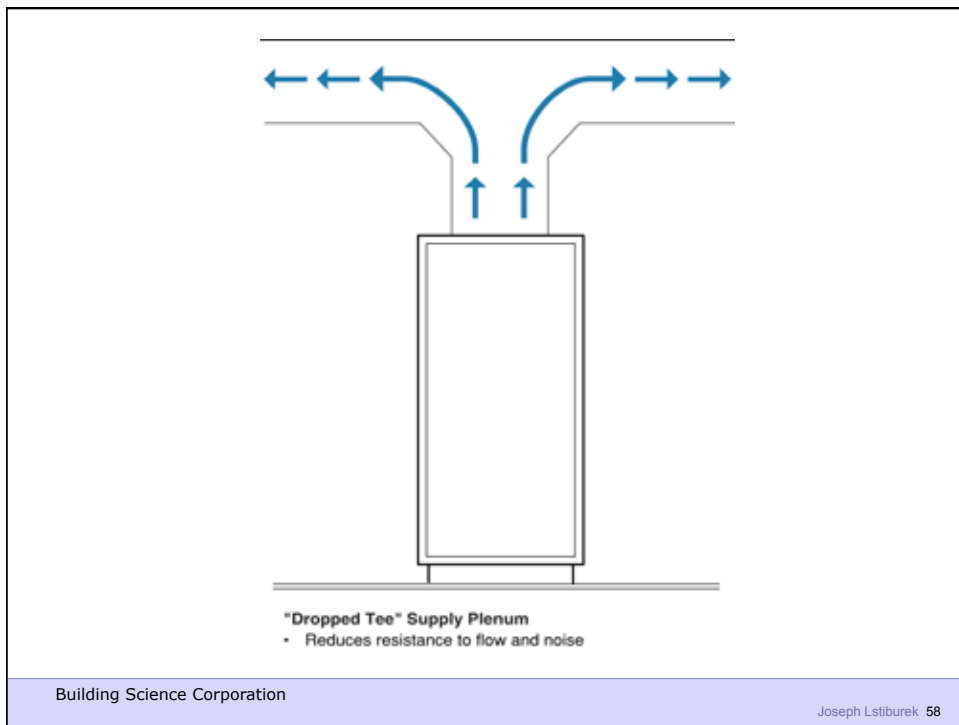
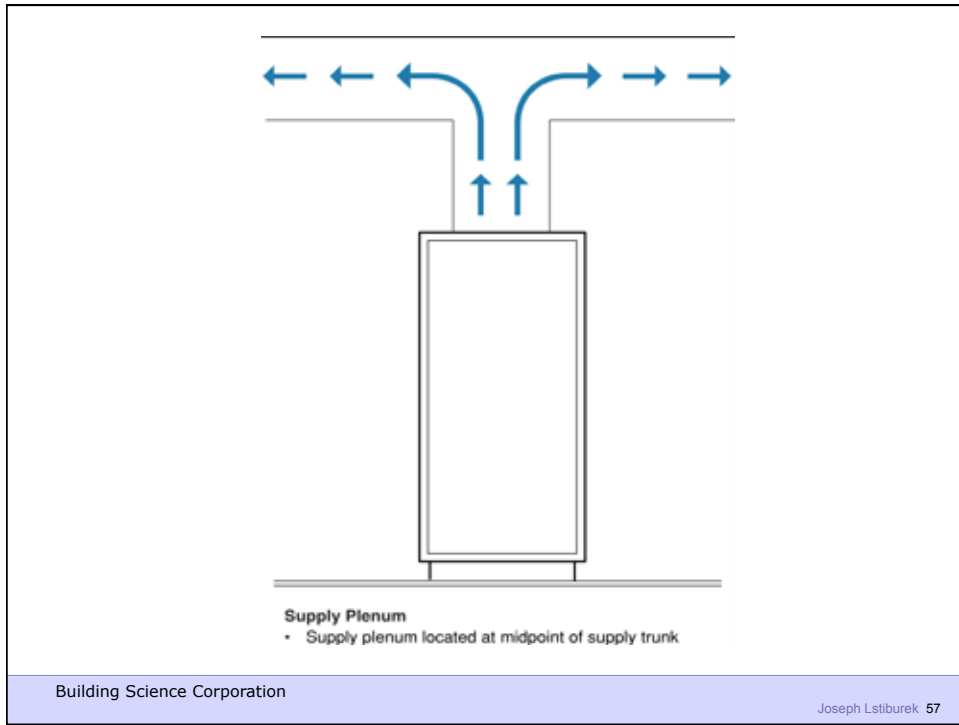
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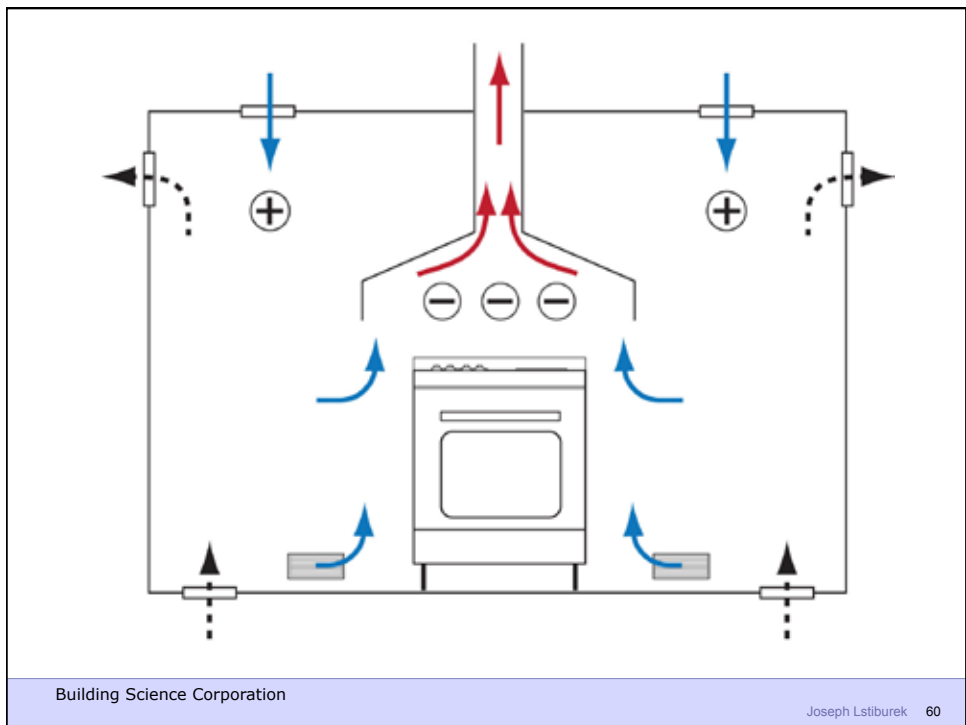
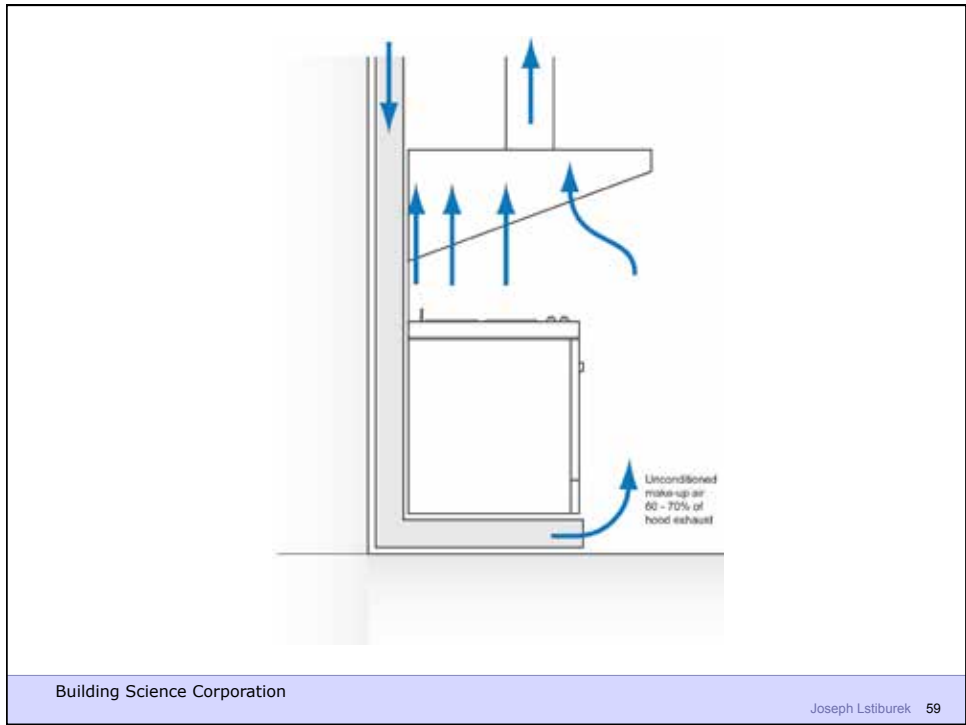
Joseph Lstiburek 55

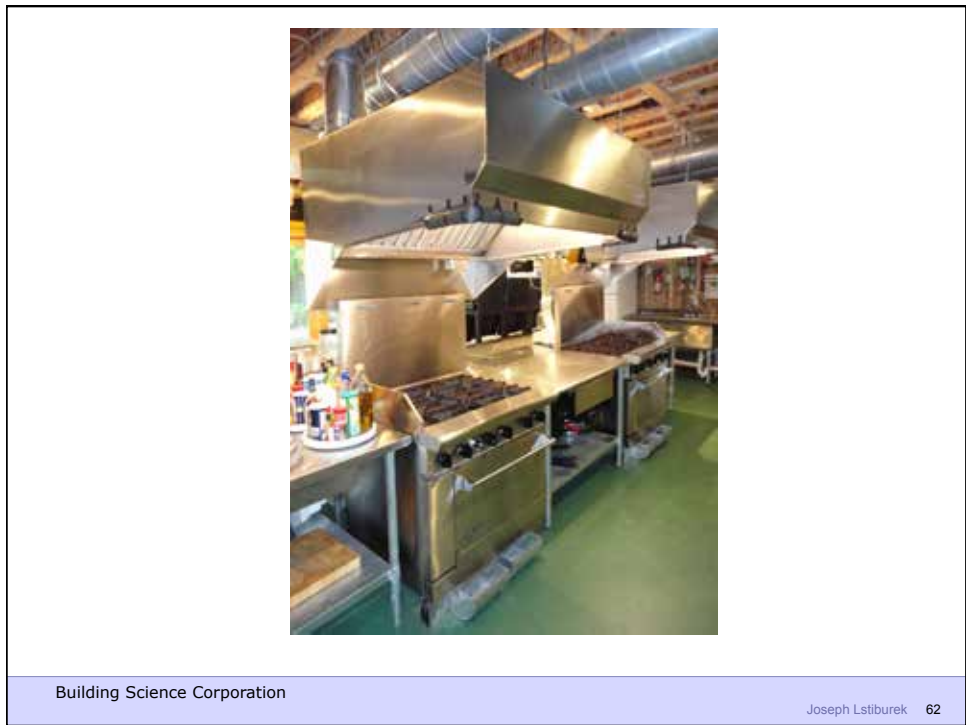
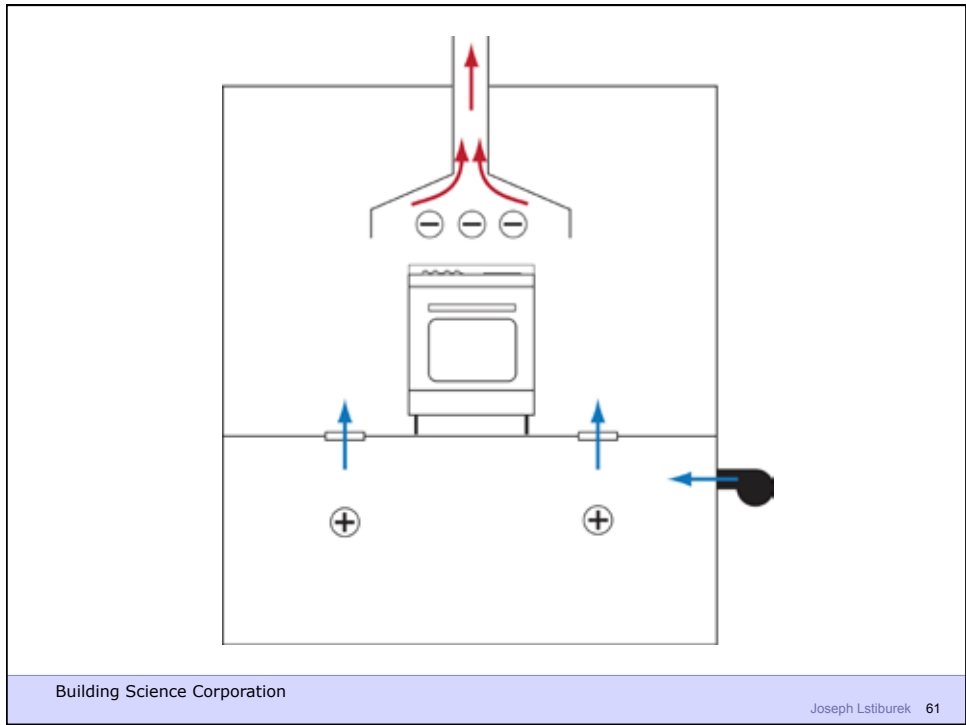


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Rain Control

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Joseph Lstiburek – Rain Control 2



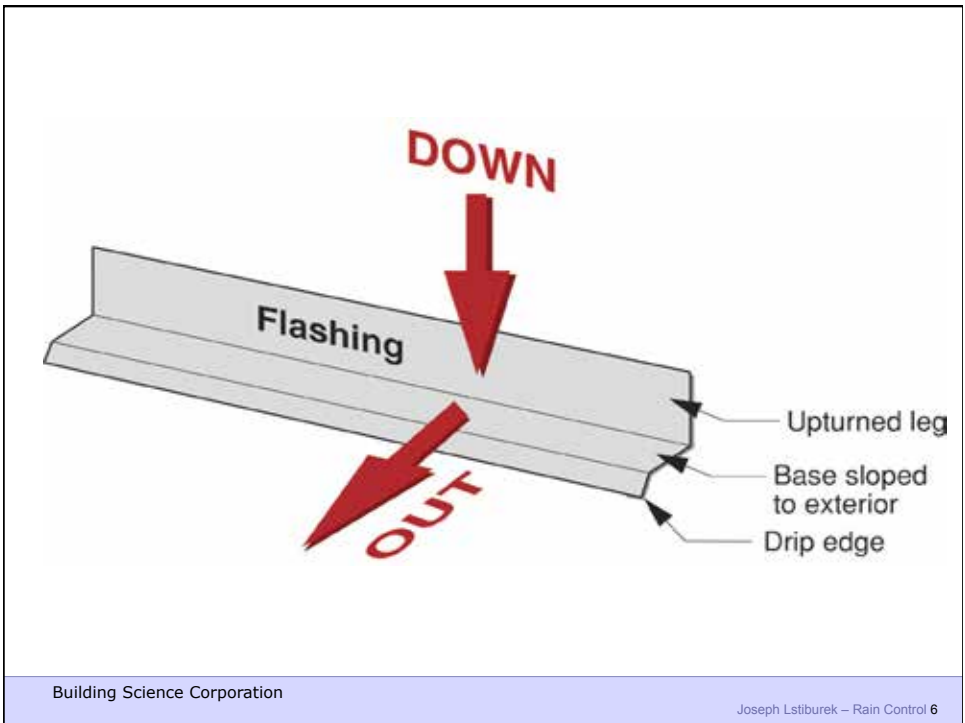
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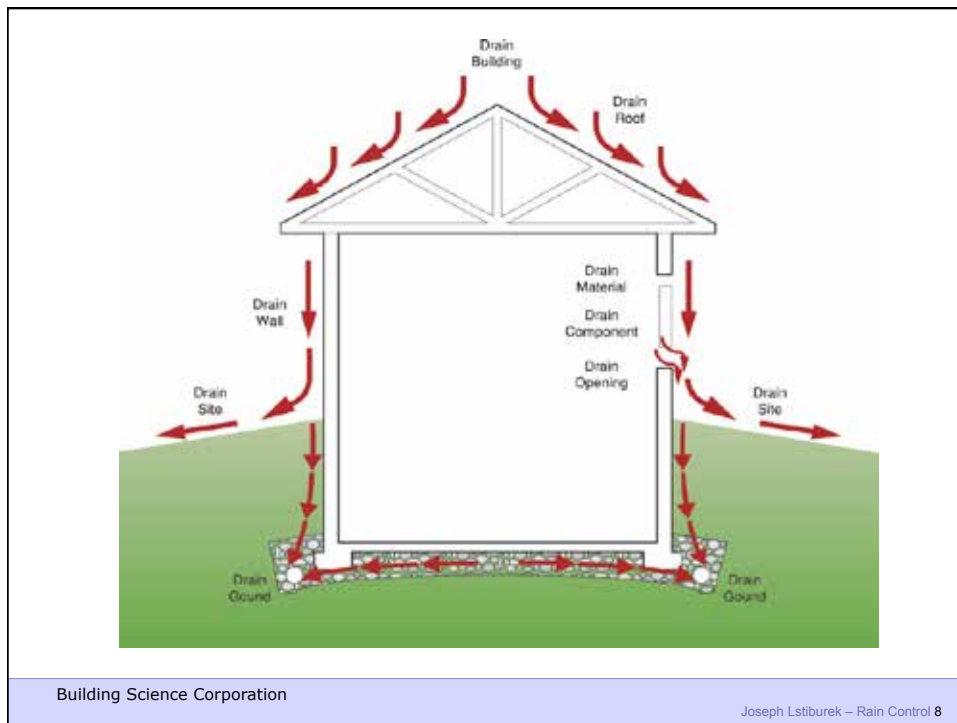
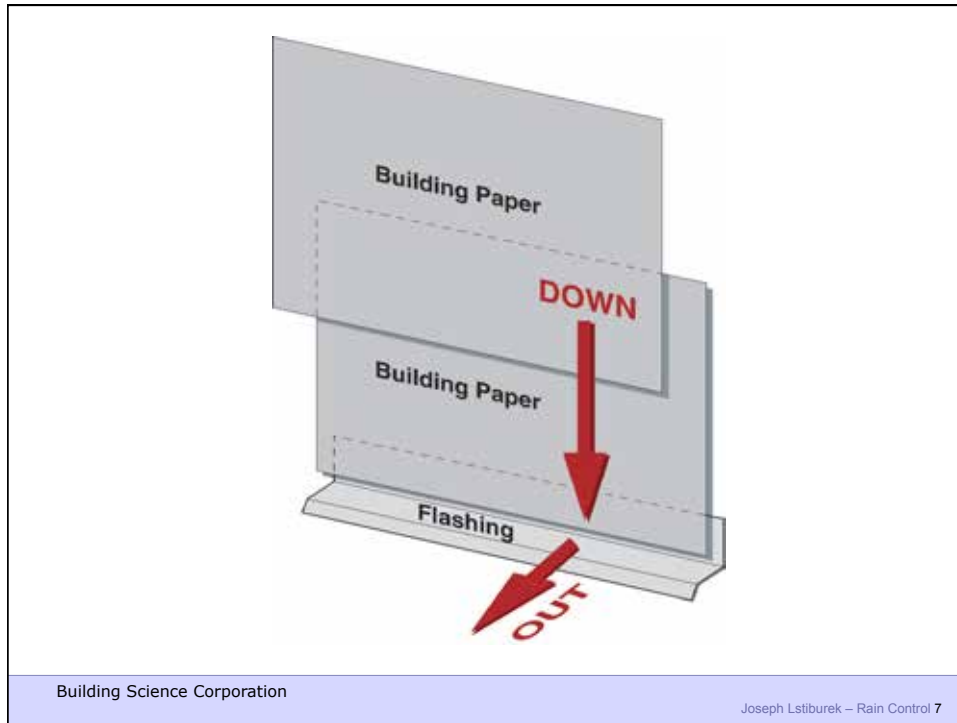
Joseph Lstiburek – Rain Control 3

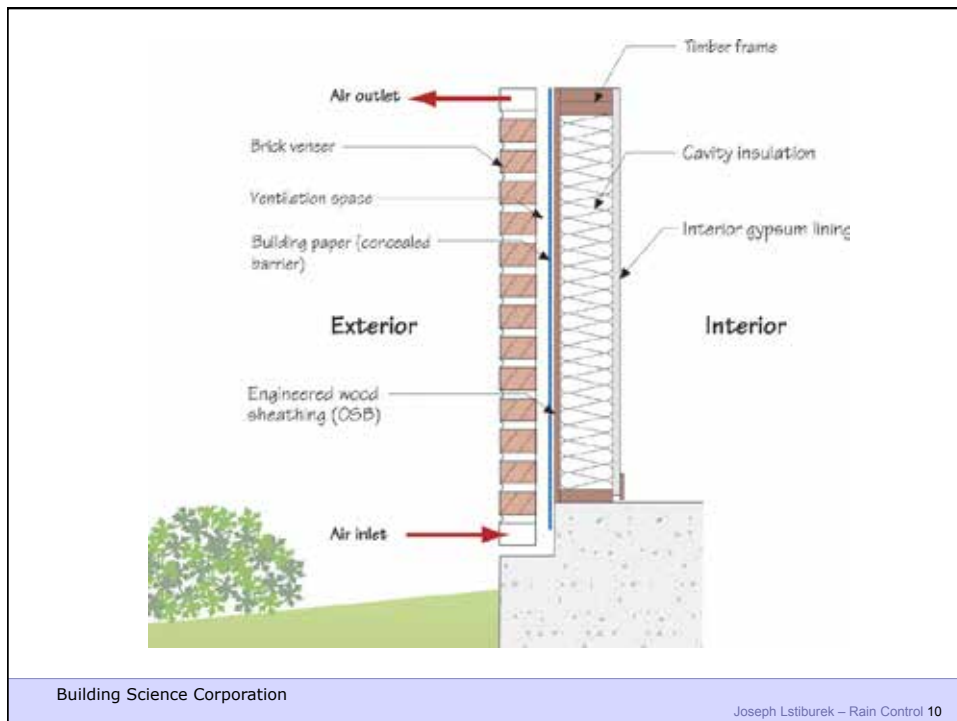
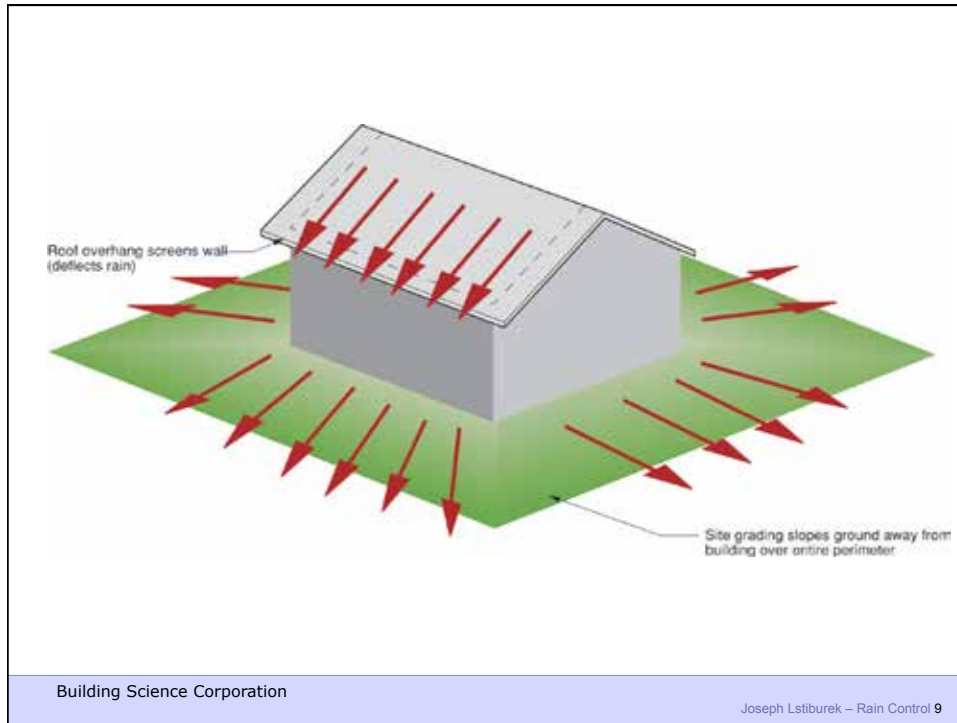


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Joseph Lstiburek – Rain Control 4









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Joseph Lstiburek – Rain Control 11



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Joseph Lstiburek – Rain Control 12



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Joseph Lstiburek - Foundations 13



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Joseph Lstiburek - Rain Control 14



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Joseph Lstiburek – Rain Control 15



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Joseph Lstiburek – Rain Control 16



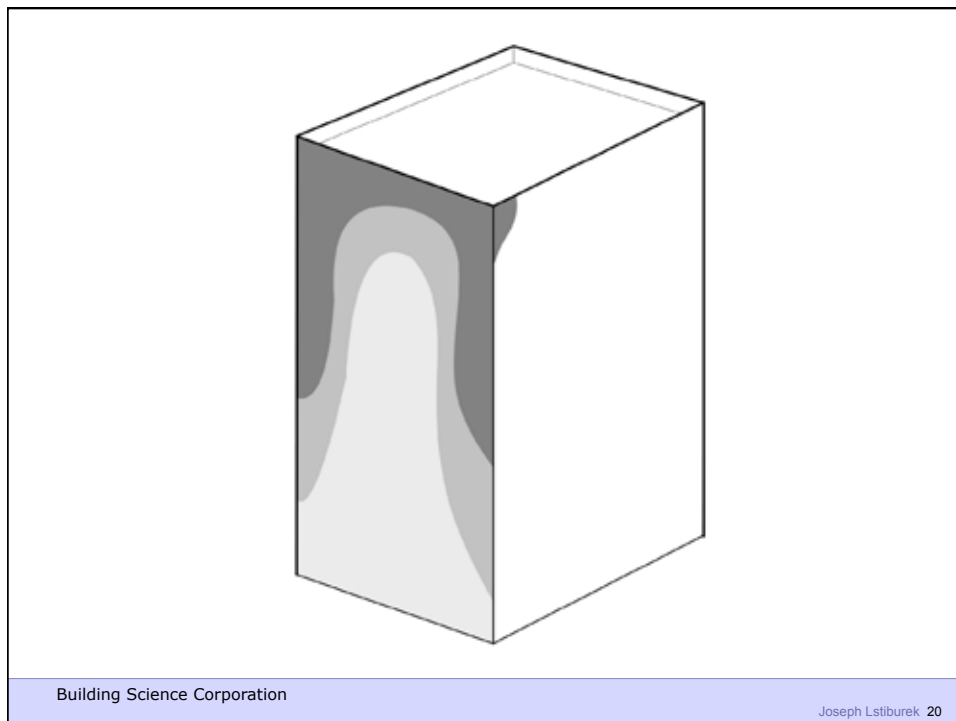
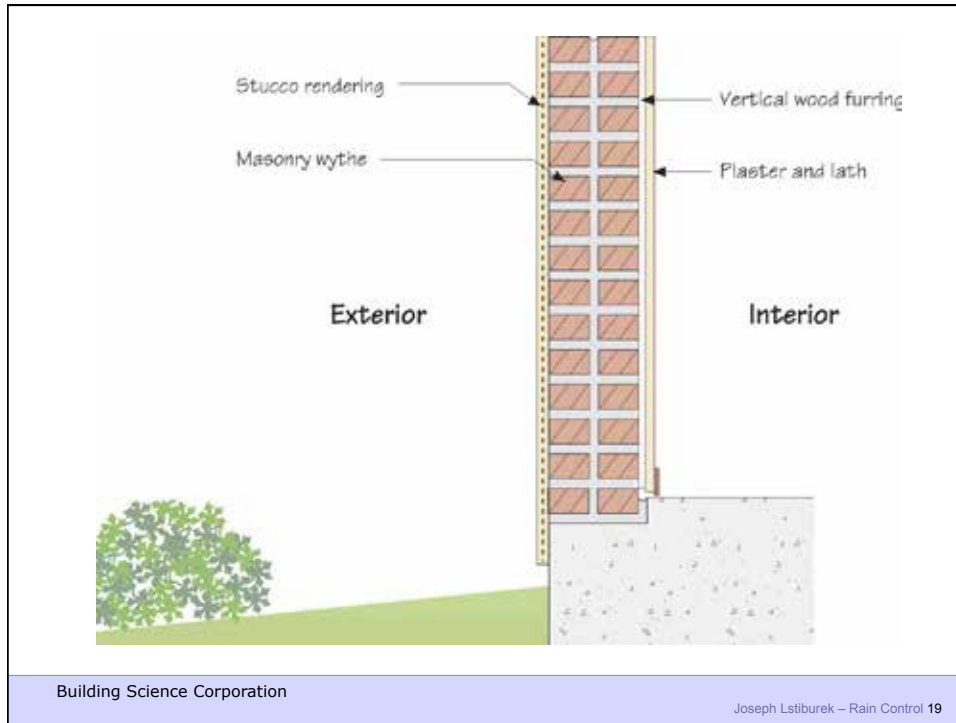
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Joseph Lstiburek 21



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Joseph Lstiburek 22



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Joseph Lstiburek 23



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Joseph Lstiburek 24



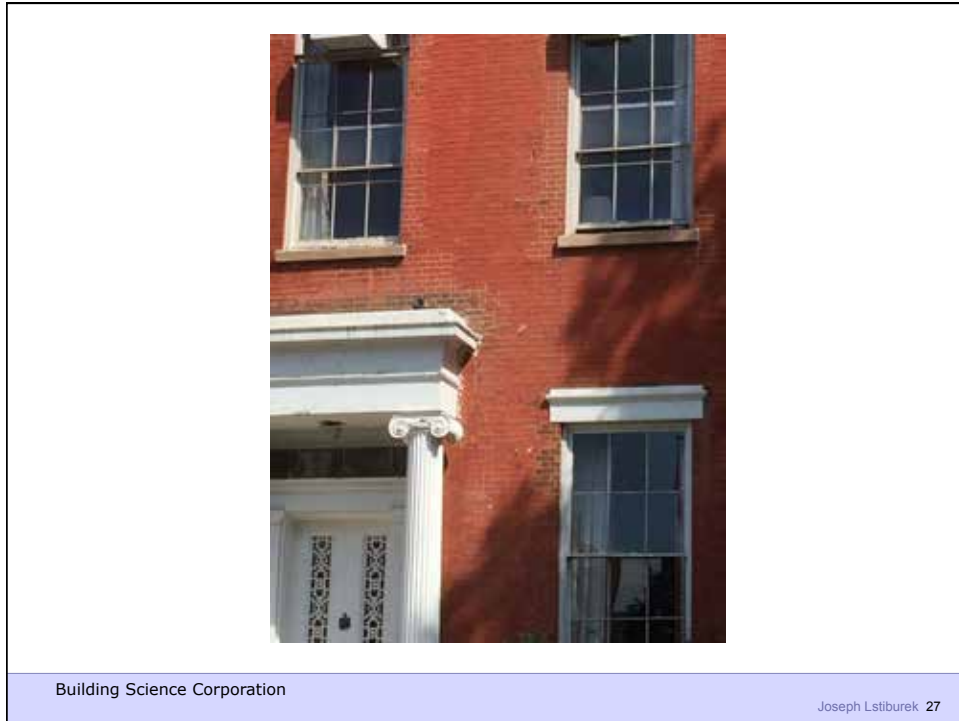
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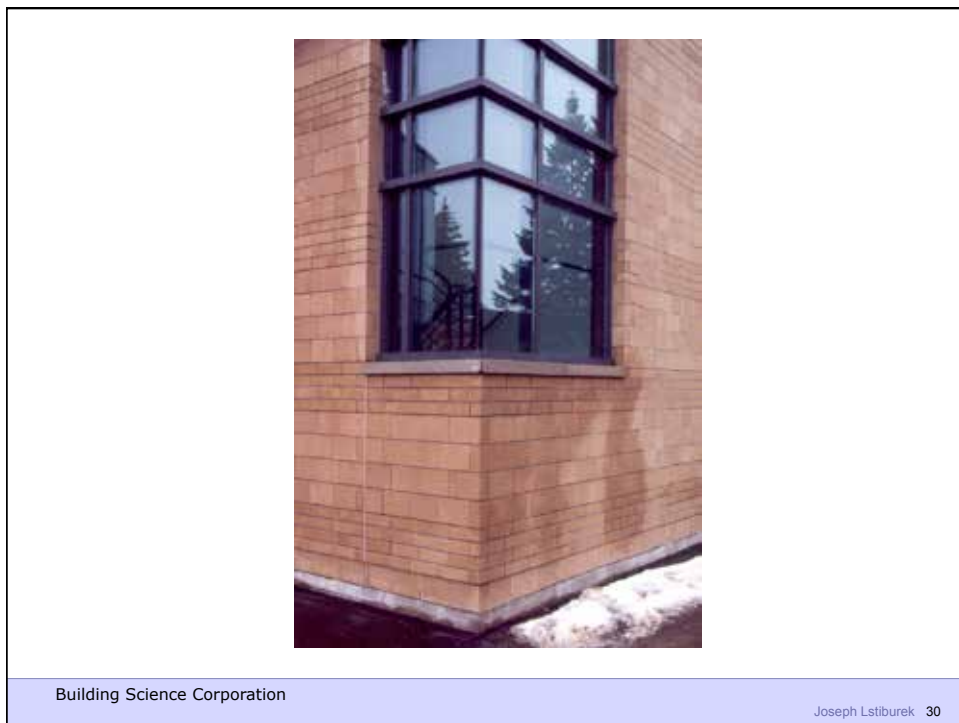
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Joseph Lstiburek 26







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Joseph Lstiburek 31



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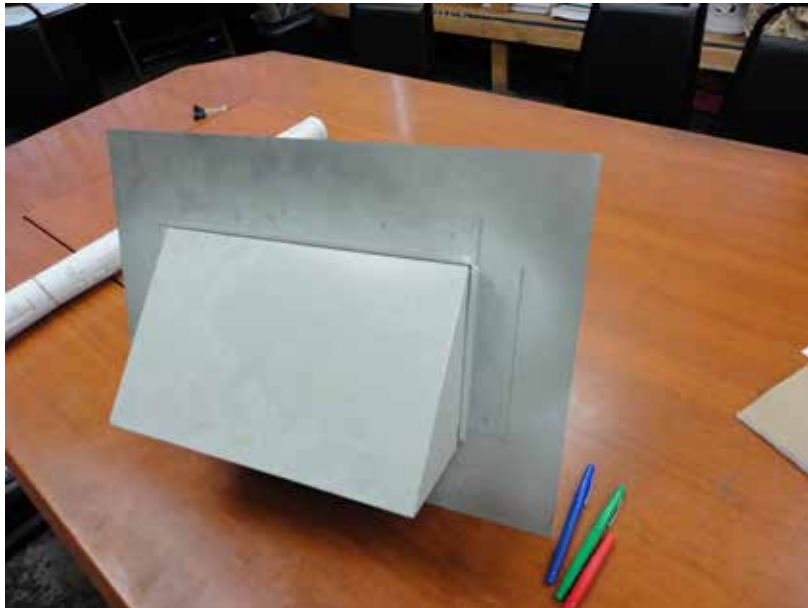
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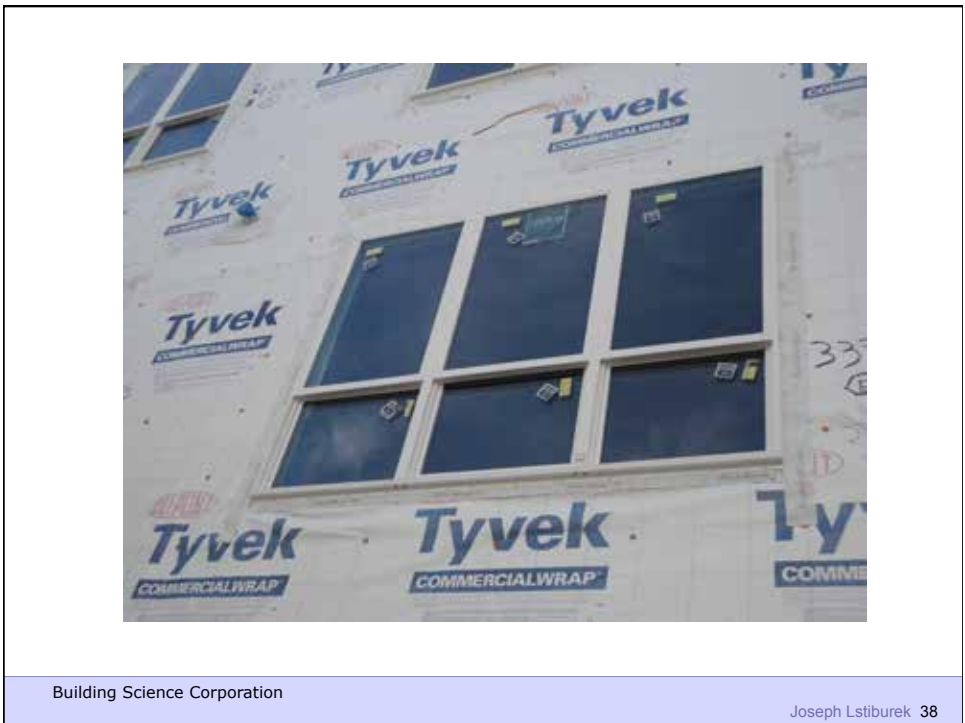
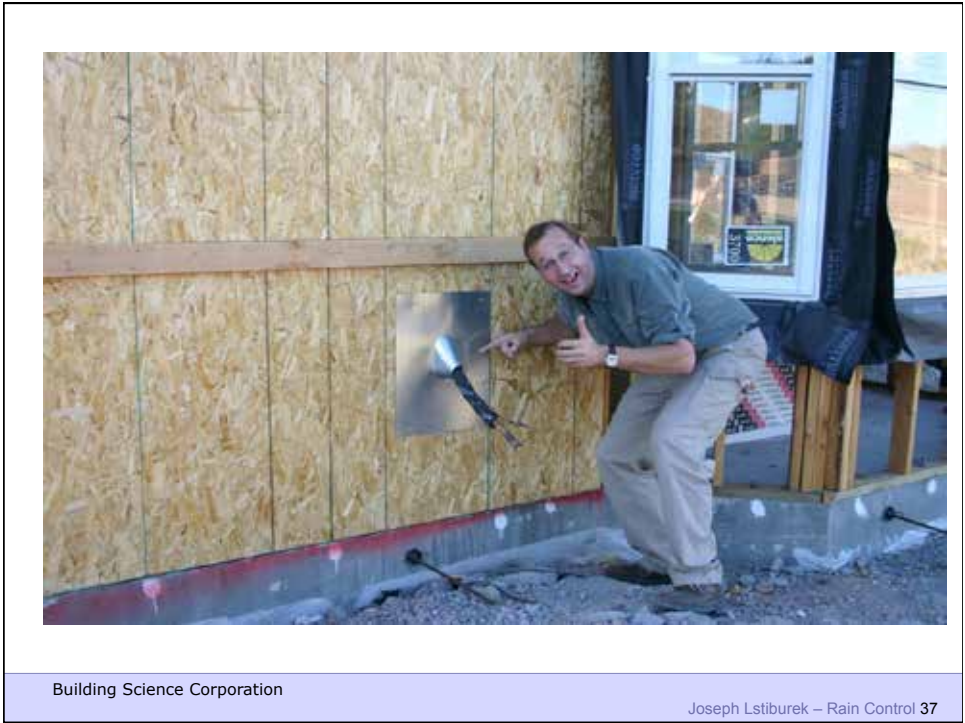
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Joseph Lstiburek – Rain Control 35



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Joseph Lstiburek 41



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Joseph Lstiburek 42





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Joseph Lstiburek 45



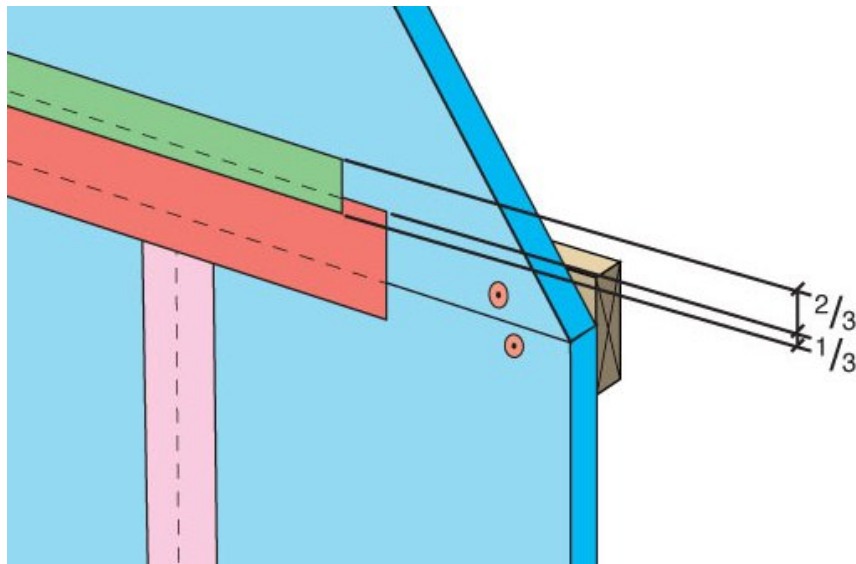
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Joseph Lstiburek 47



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Joseph Lstiburek 48

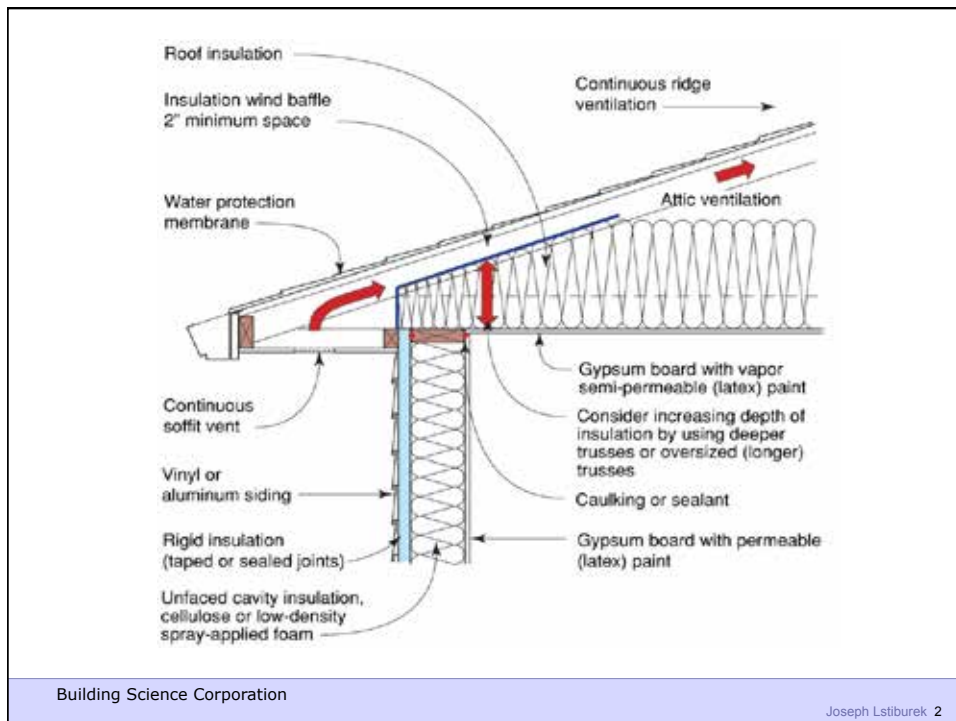


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Roofs

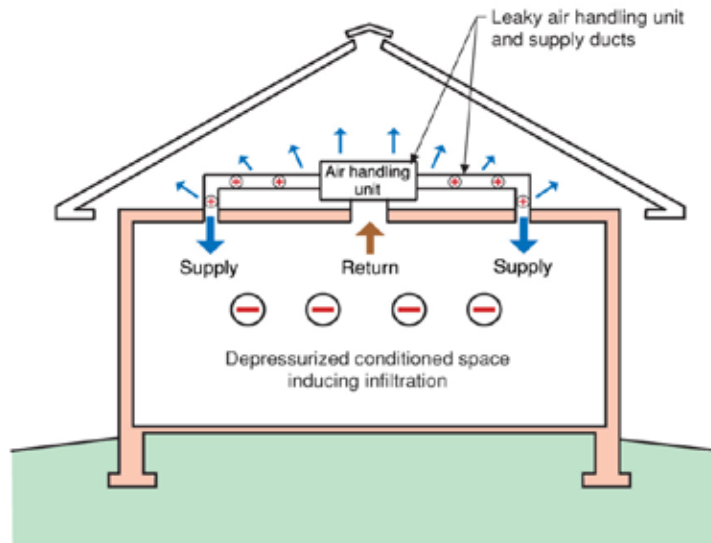
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Note: Colored shading depicts the building's thermal barrier and pressure boundary. The thermal barrier and pressure boundary enclose the conditioned space.

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Joseph Lstiburek 5



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Joseph Lstiburek 6



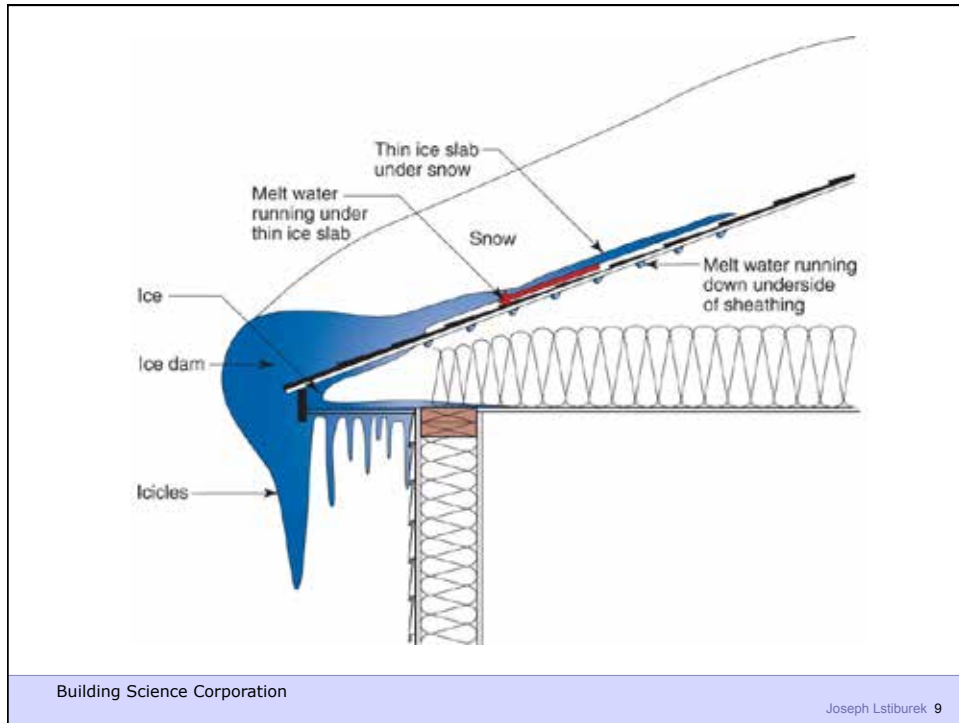
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Joseph Lstiburek 7



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Joseph Lstiburek 8





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Joseph Lstiburek 11



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Joseph Lstiburek 12



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Joseph Lstiburek 13



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Joseph Lstiburek 14



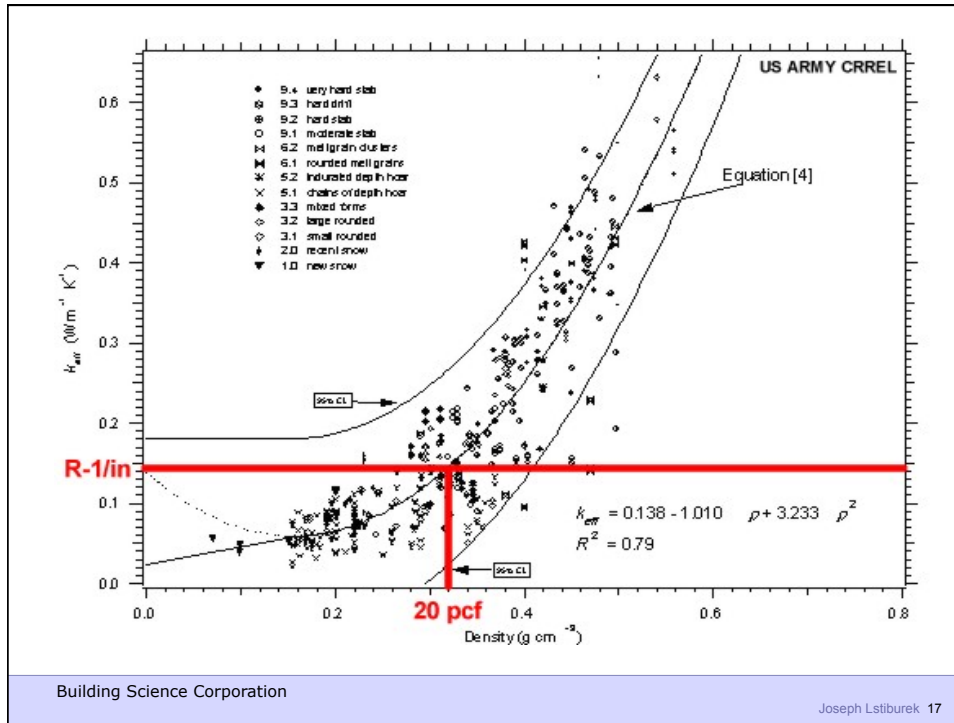
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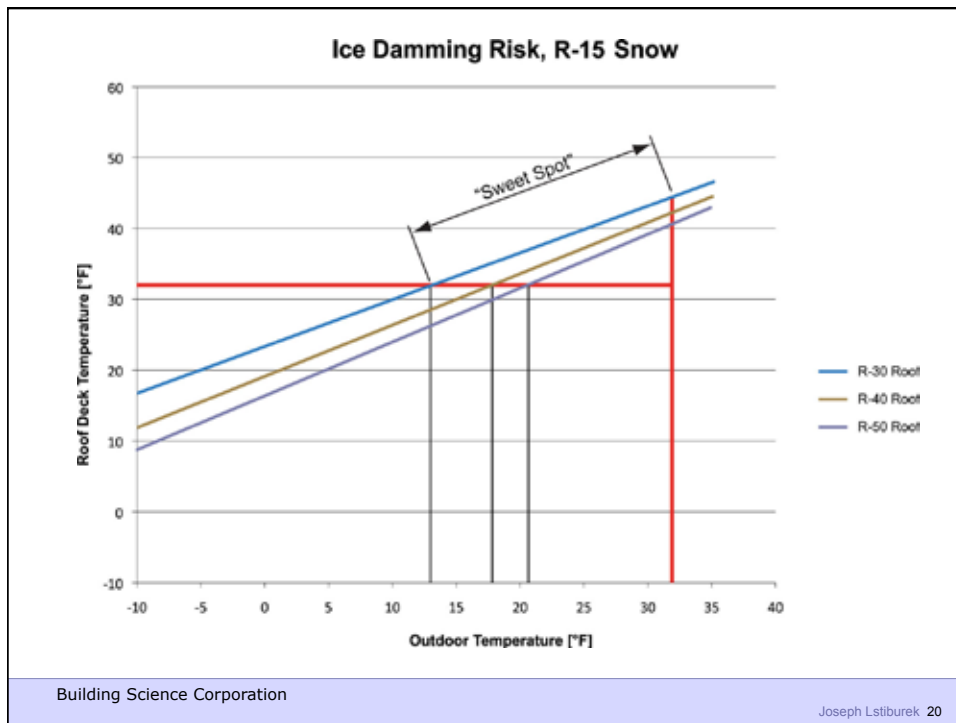
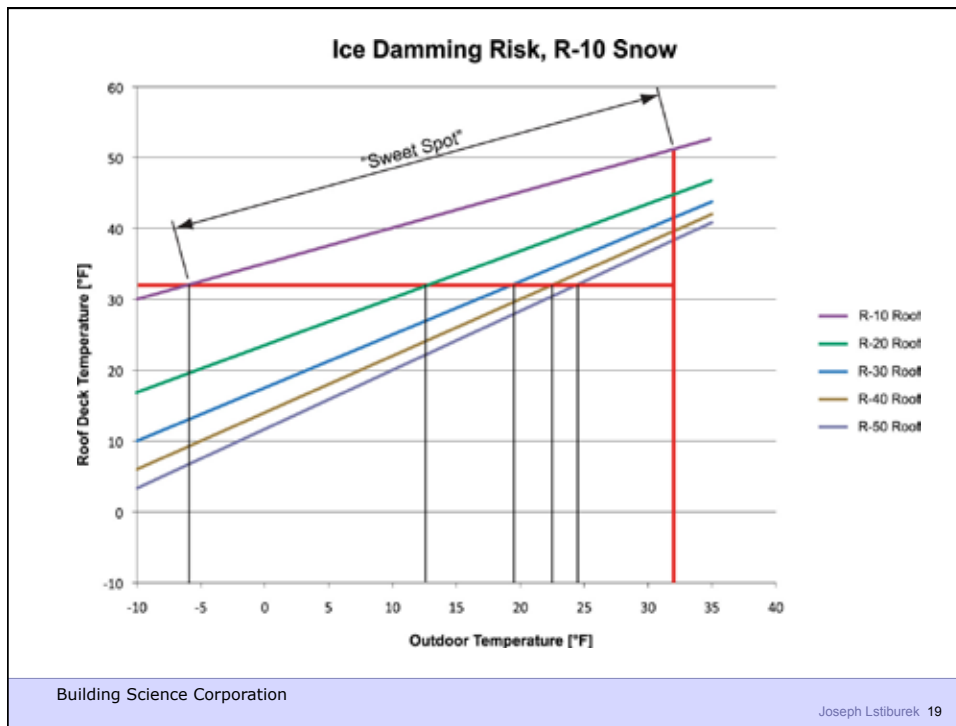
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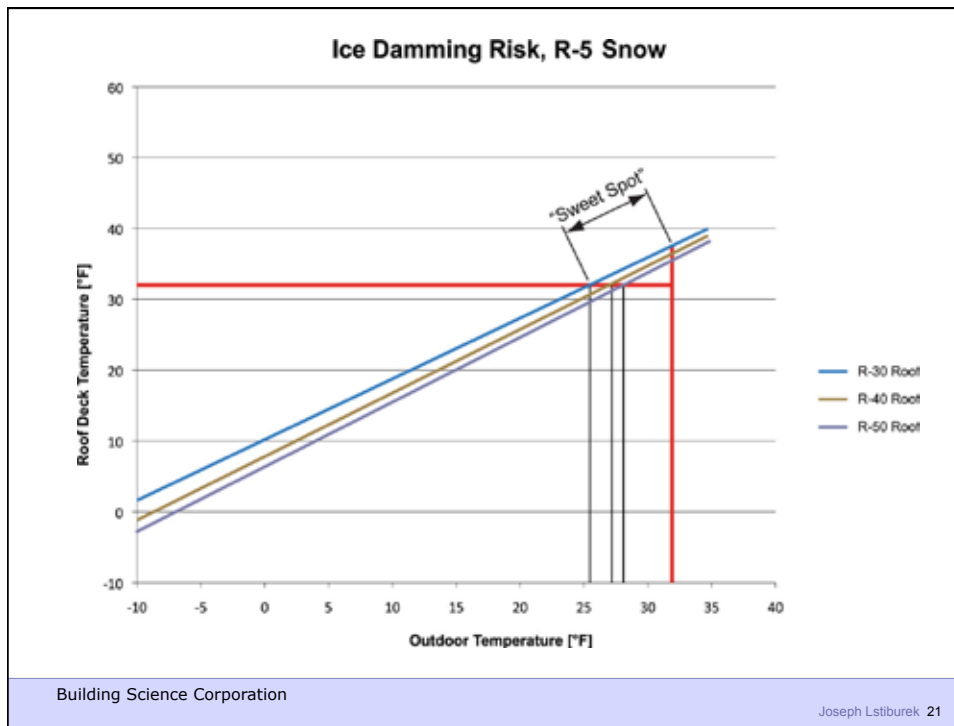


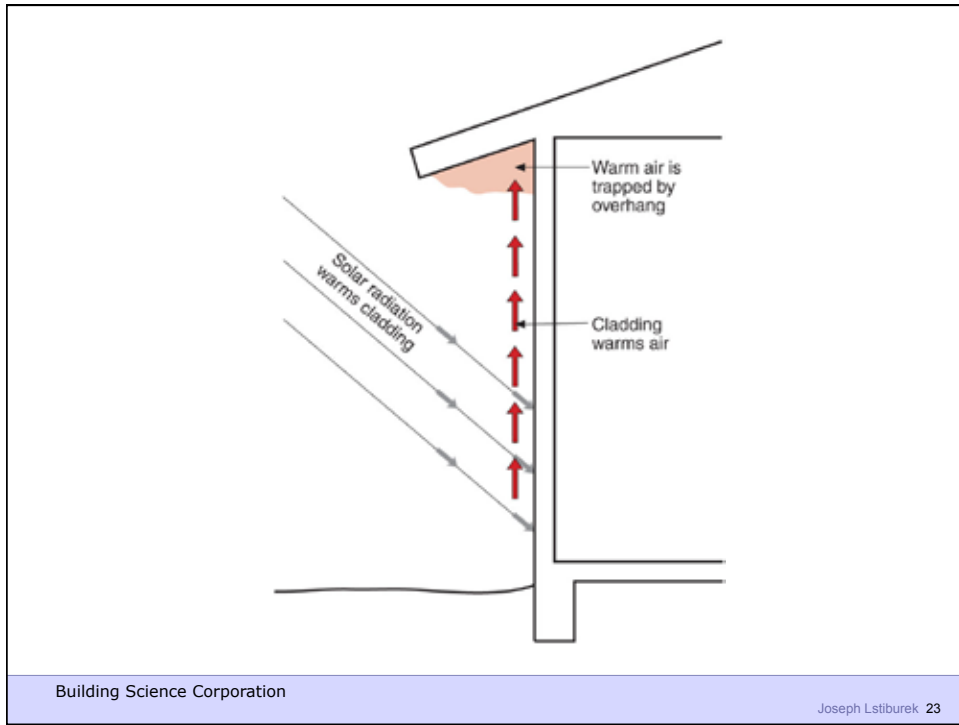
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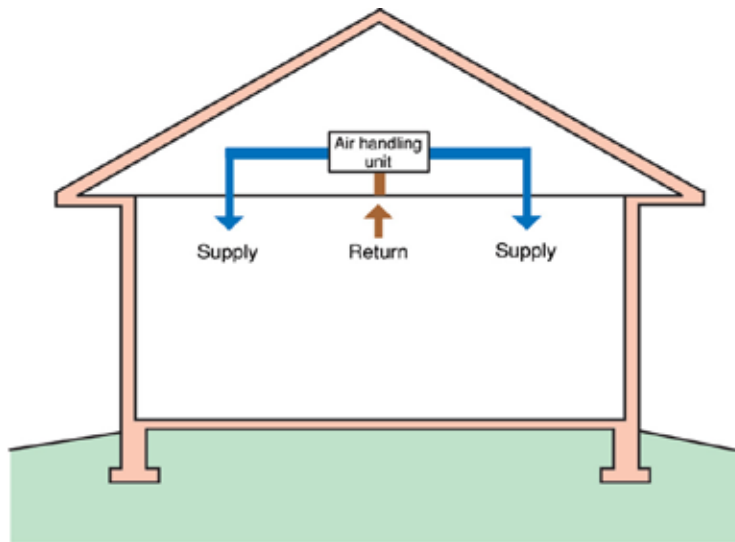
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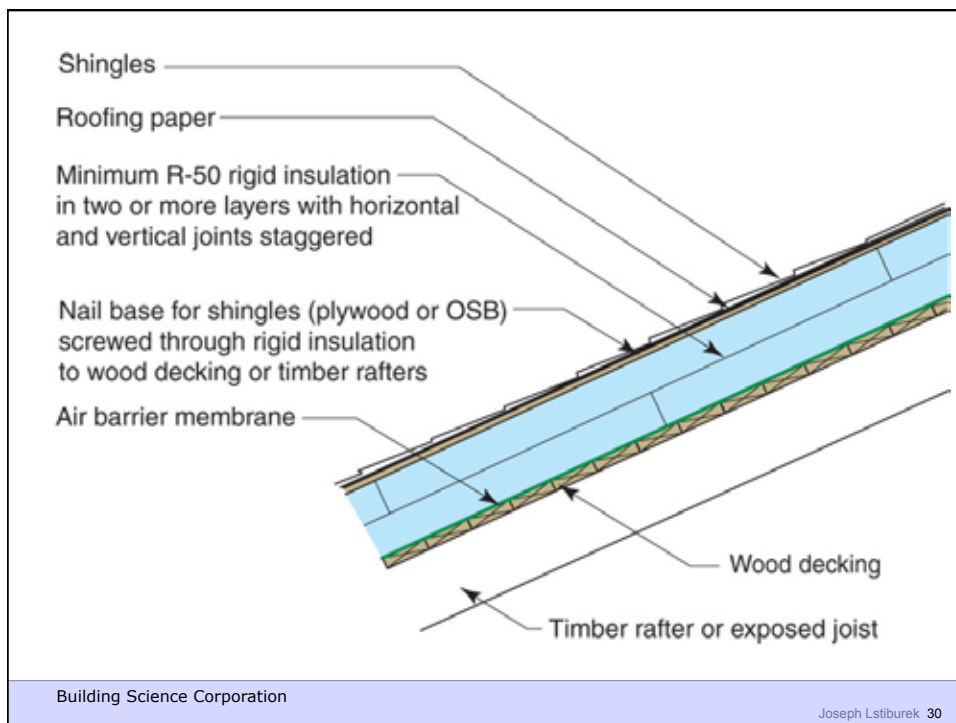
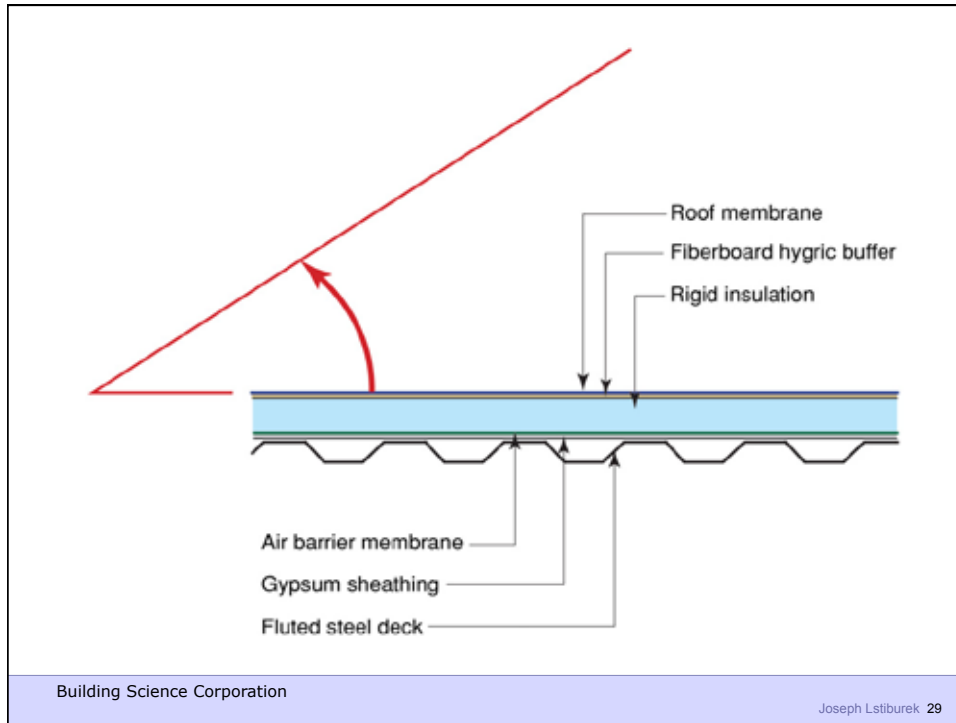
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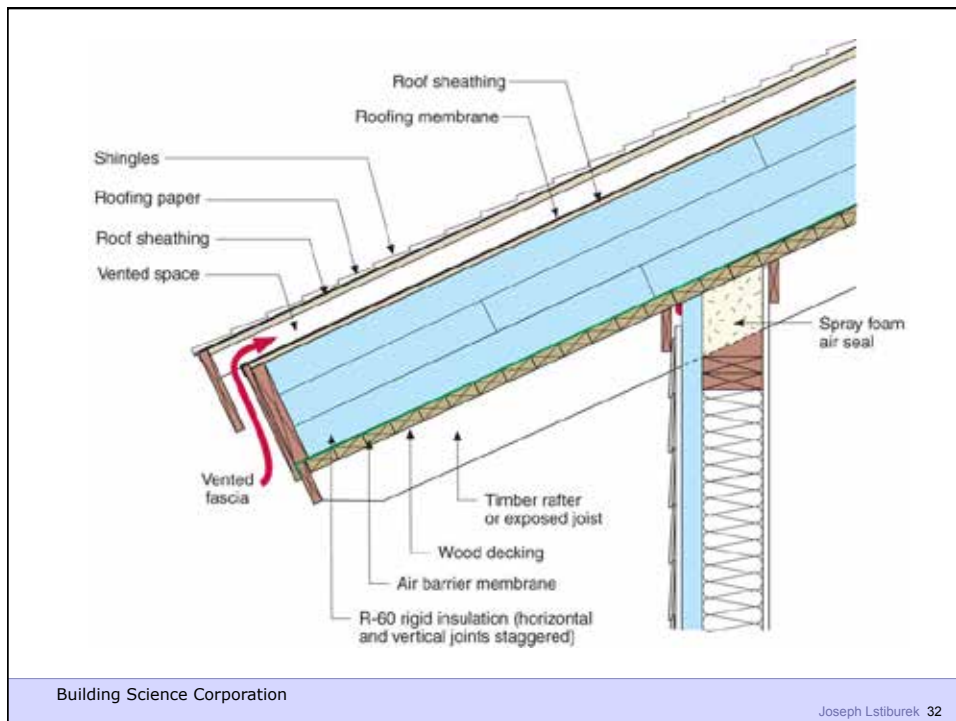
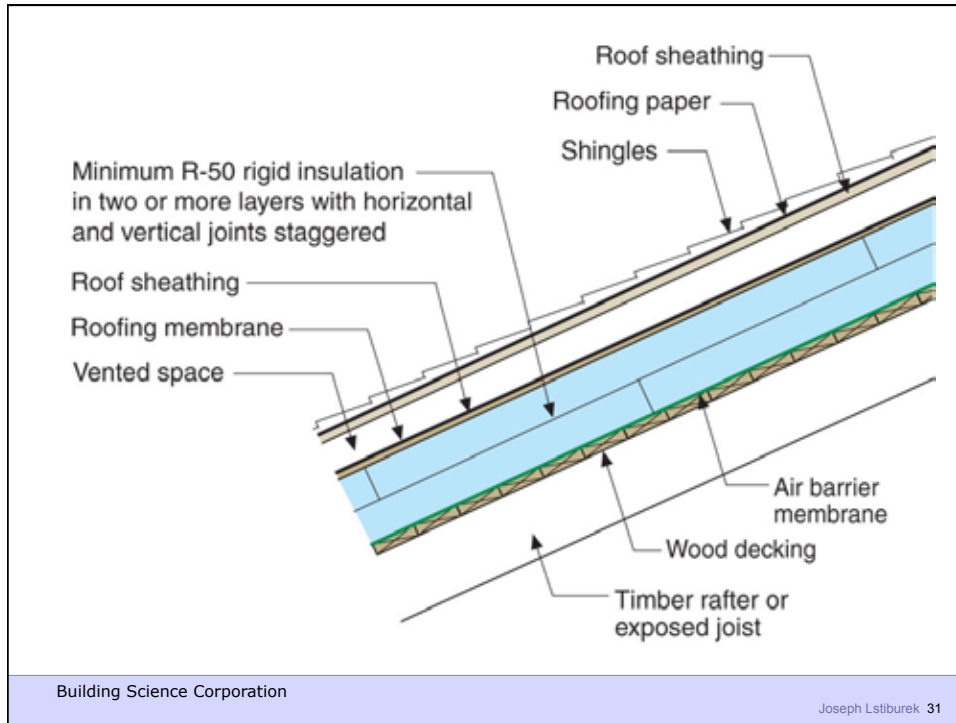


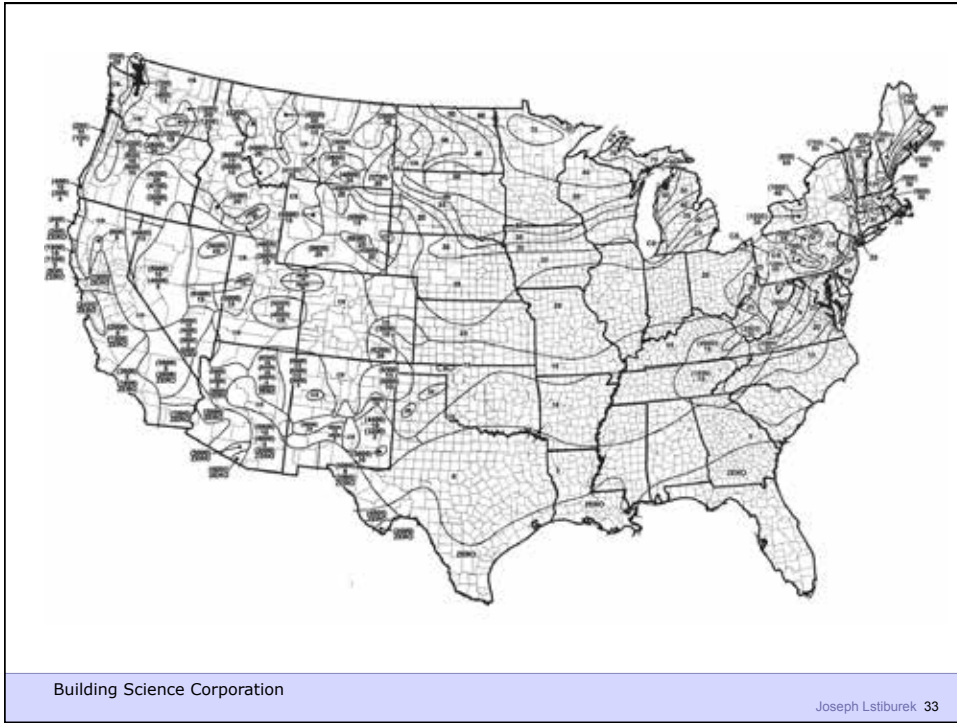
Note: Colored shading depicts the building's thermal barrier and pressure boundary. The thermal barrier and pressure boundary enclose the conditioned space.

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Joseph Lstiburek 39



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Joseph Lstiburek 40





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Joseph Lstiburek 43



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Joseph Lstiburek 44



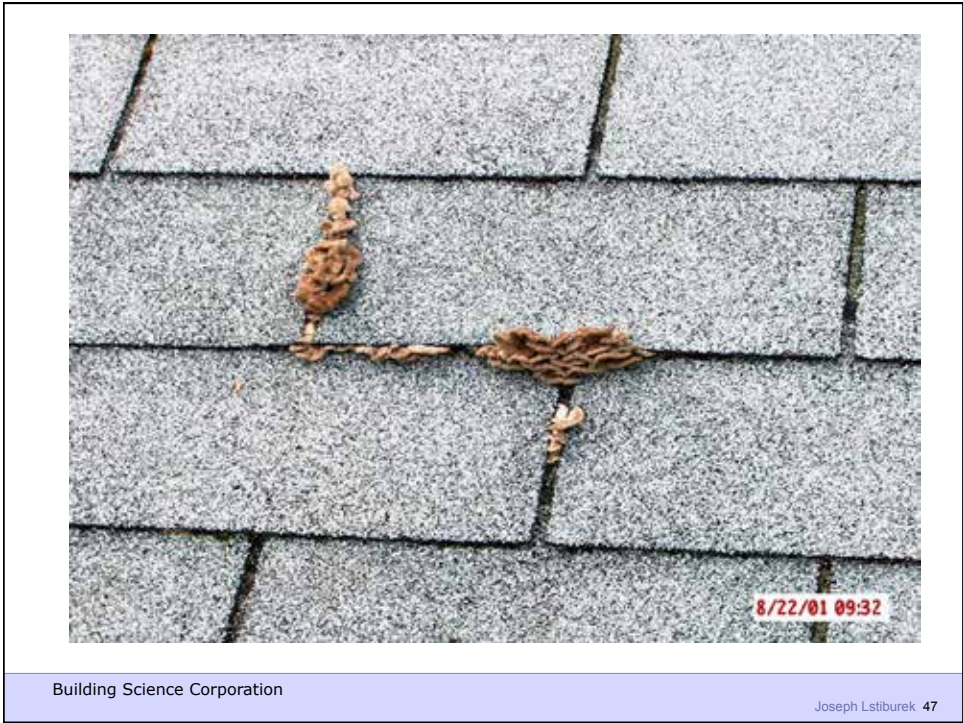
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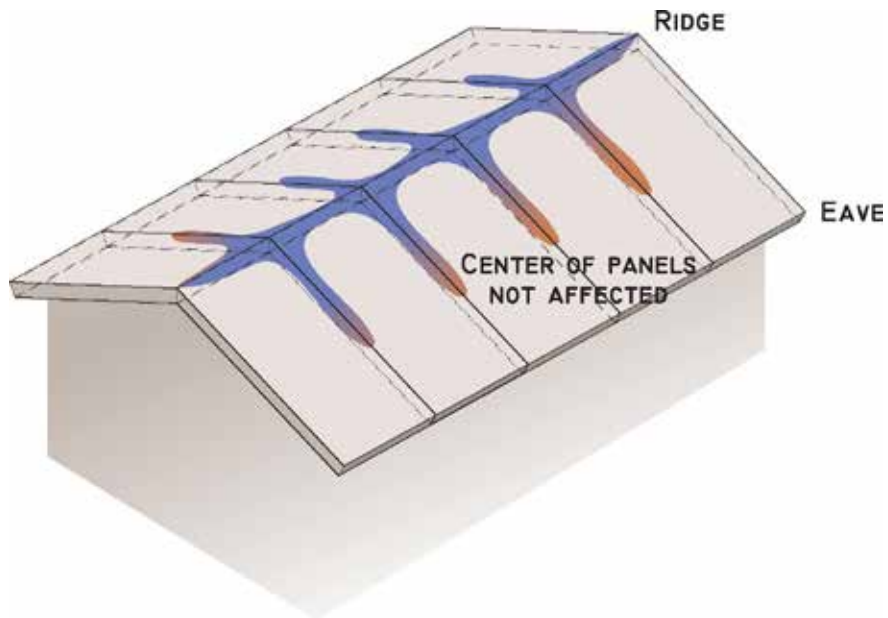
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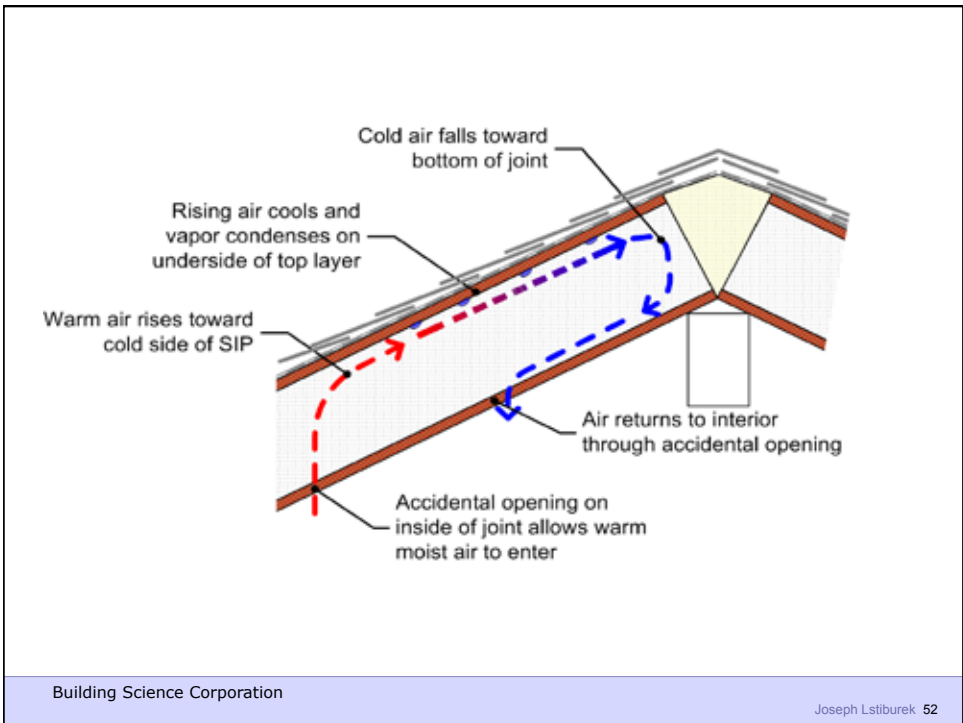
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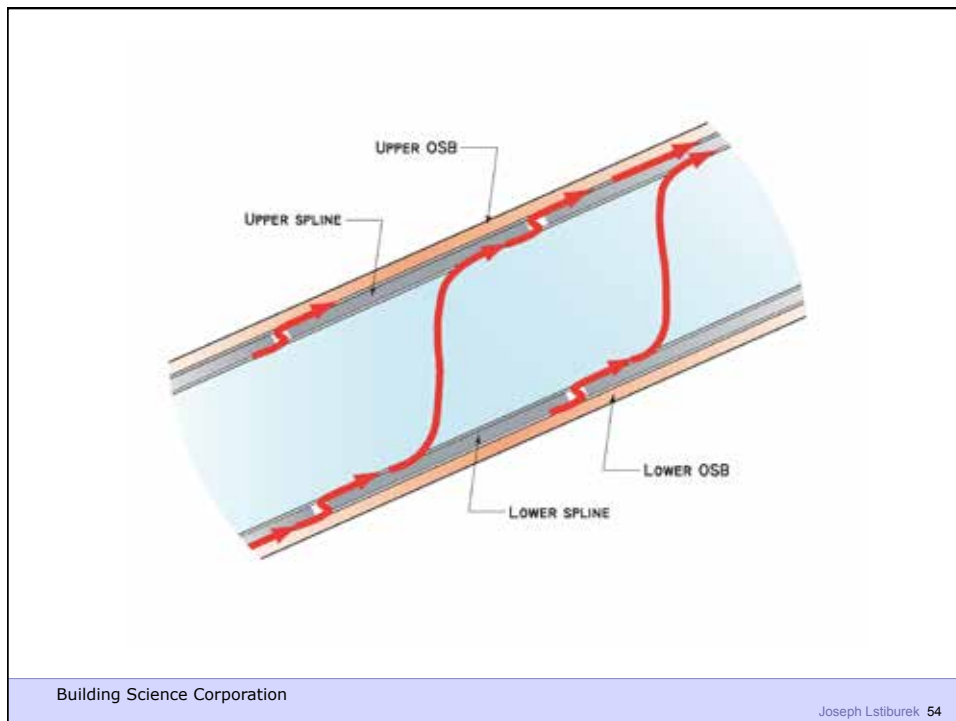
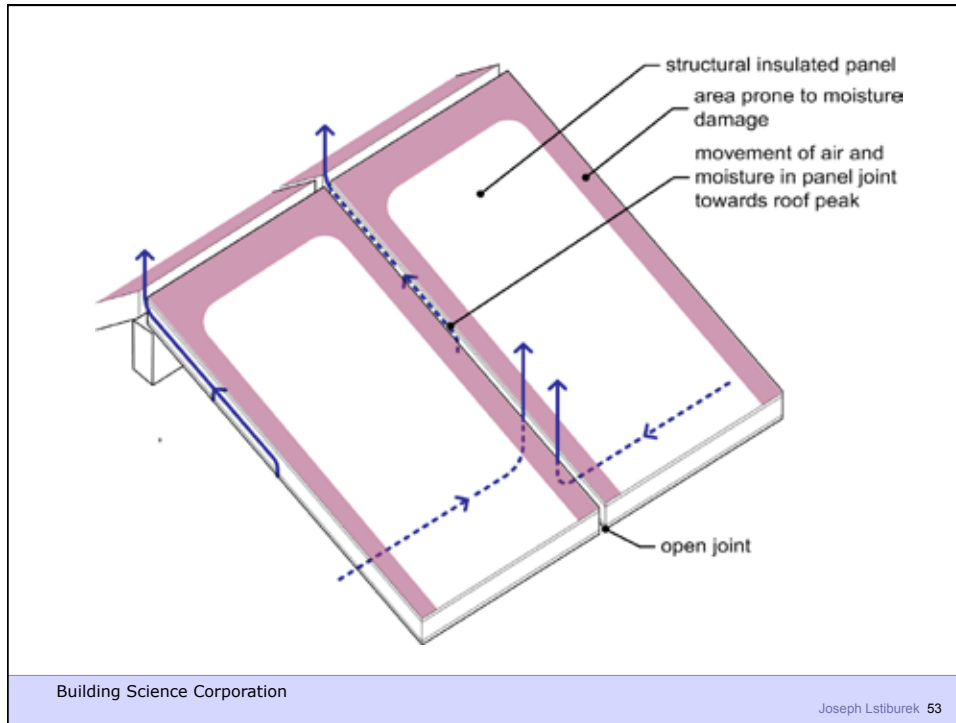
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Joseph Lstiburek 50







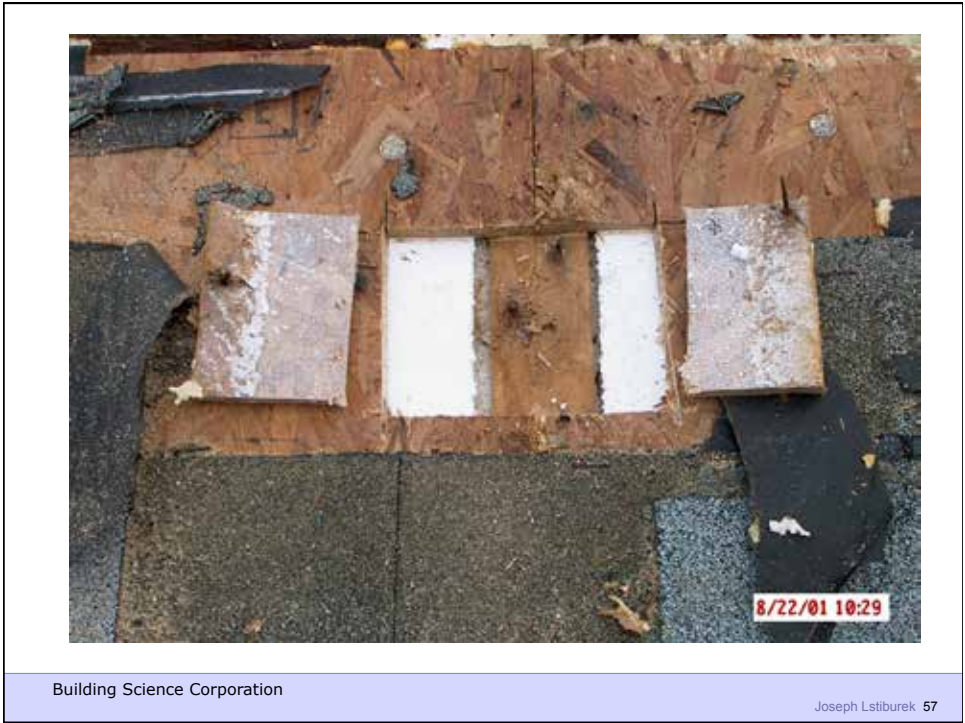
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Joseph Lstiburek 59



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Joseph Lstiburek 60



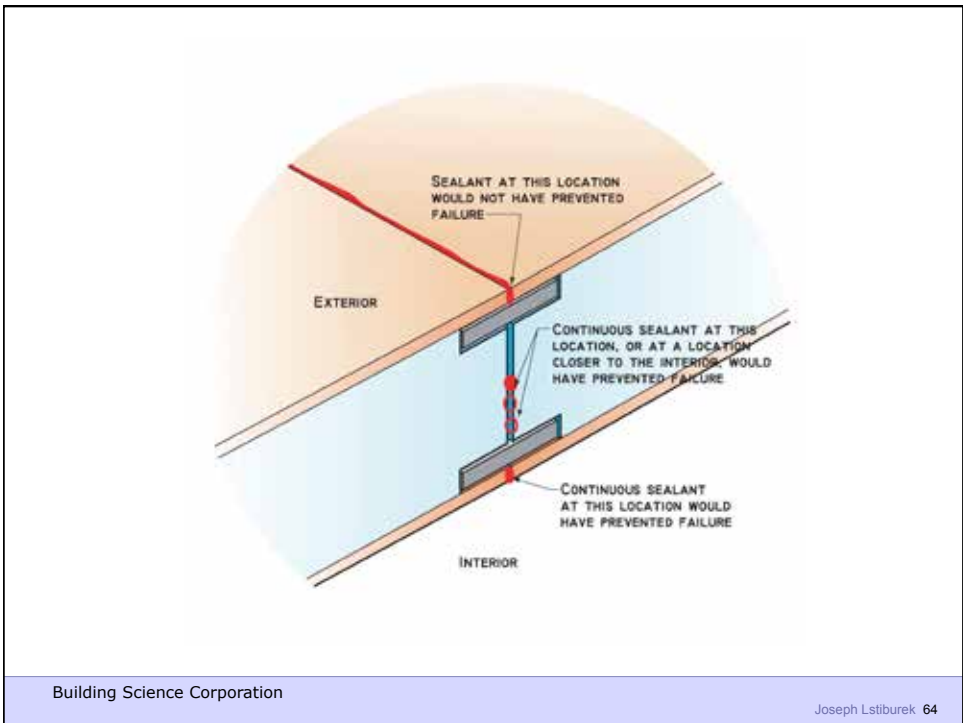
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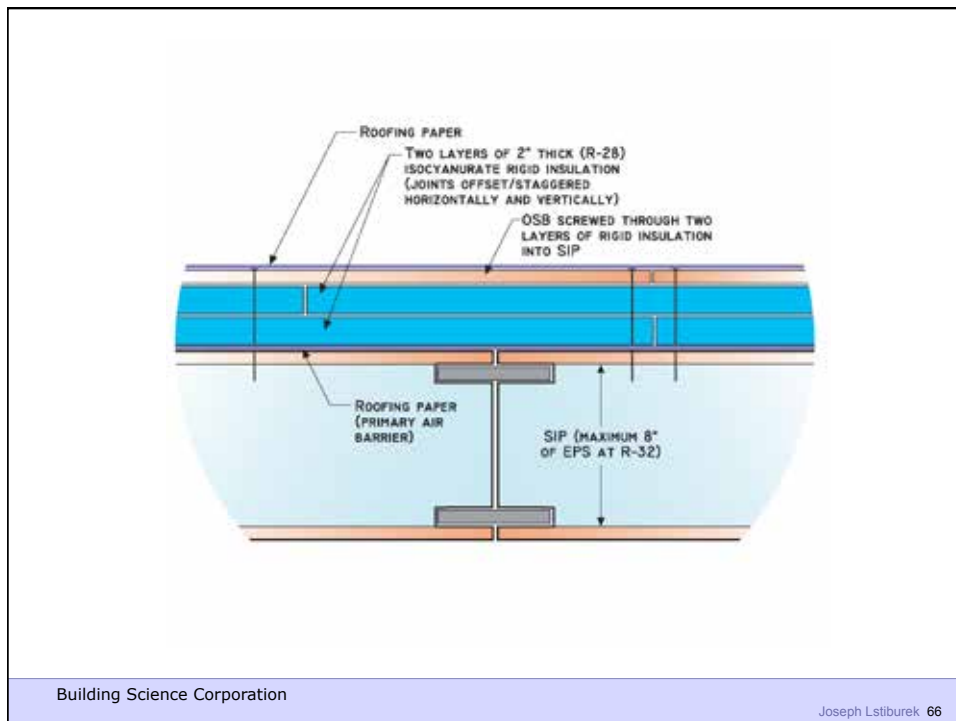
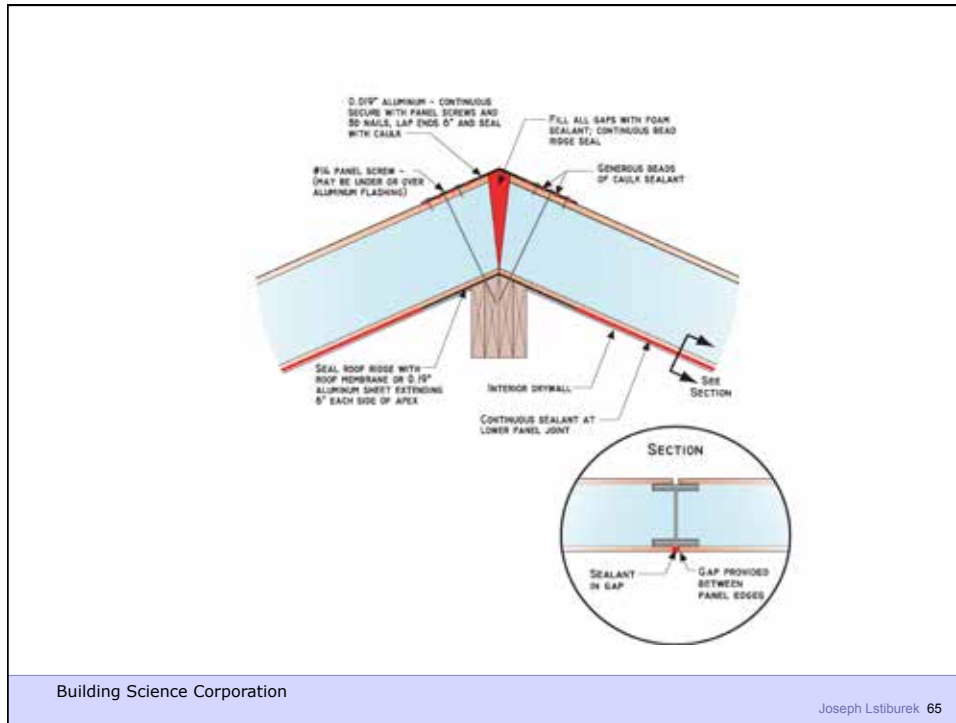
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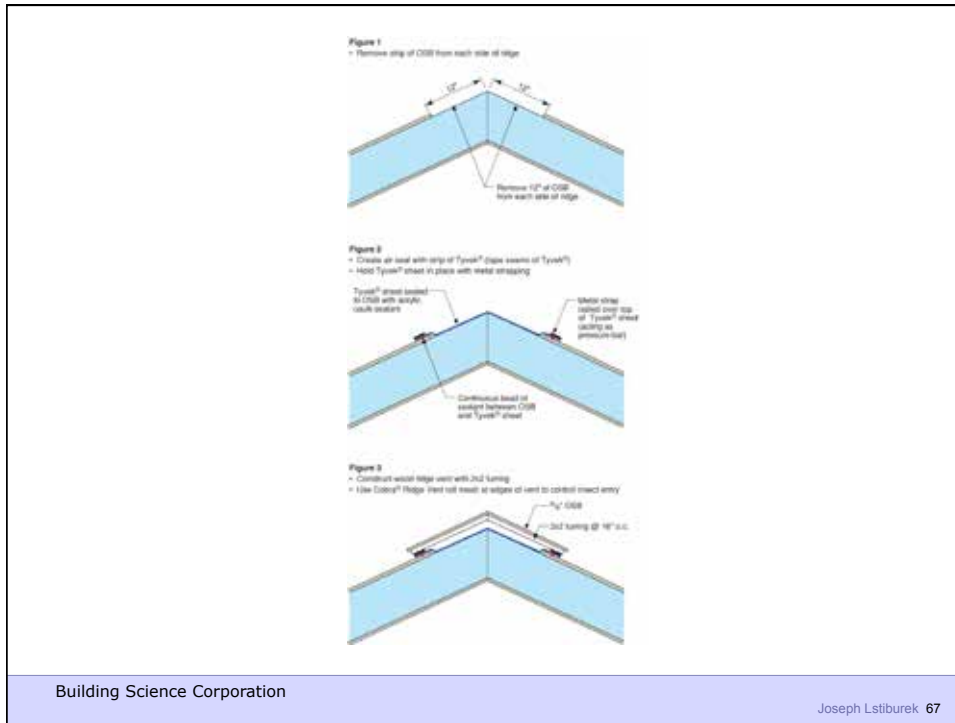


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Joseph Lstiburek 71



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Joseph Lstiburek 72



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Joseph Lstiburek 79



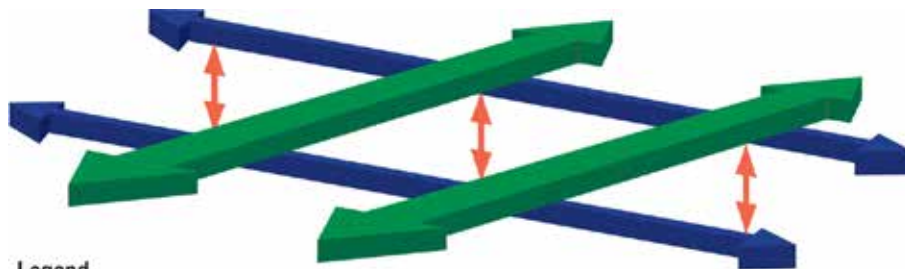
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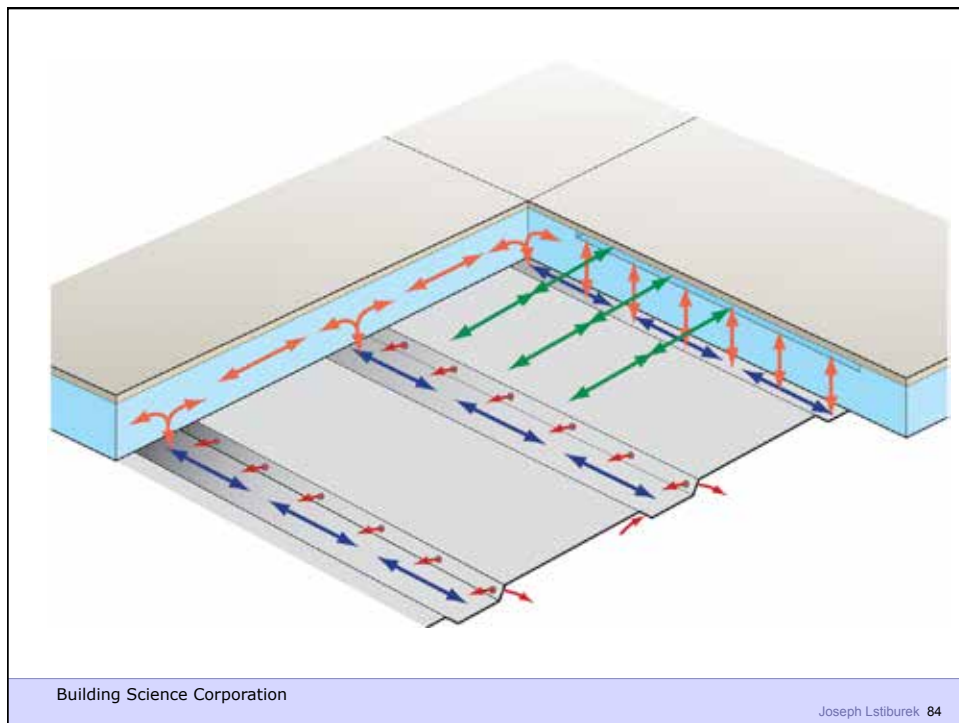
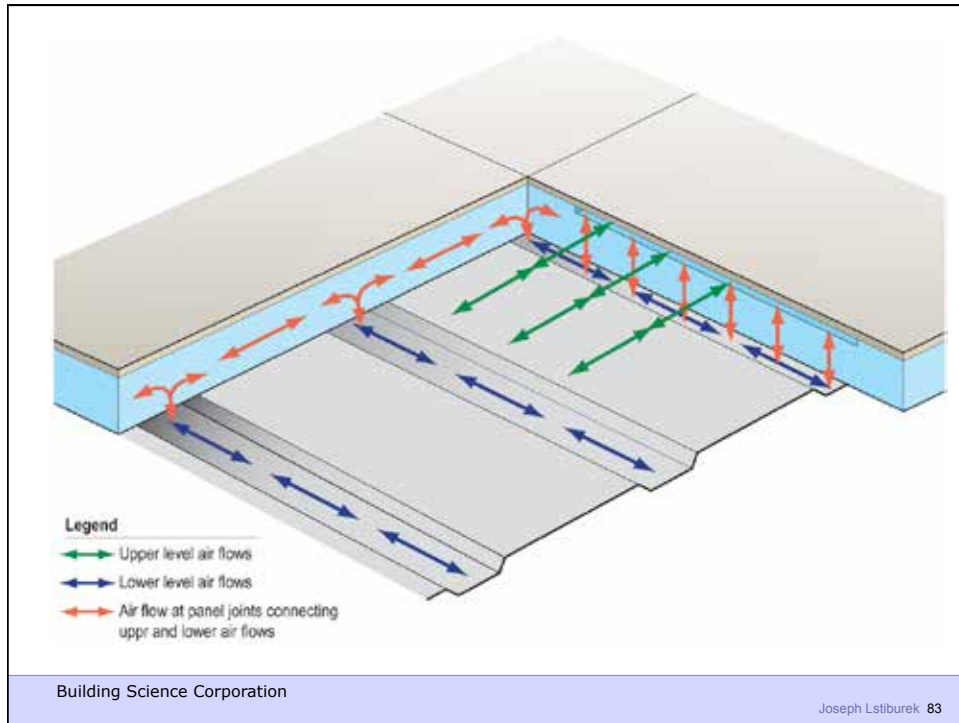


Legend

-  Upper level air flows
-  Lower level air flows
-  Air flow at panel joints

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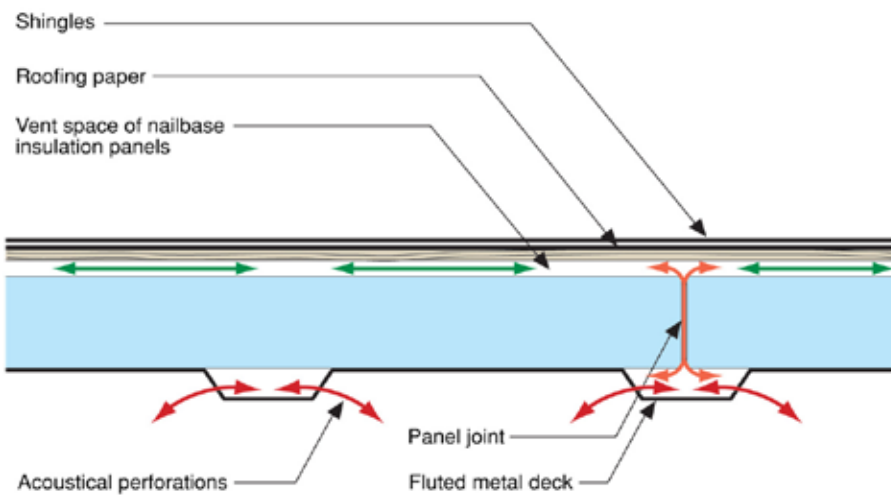
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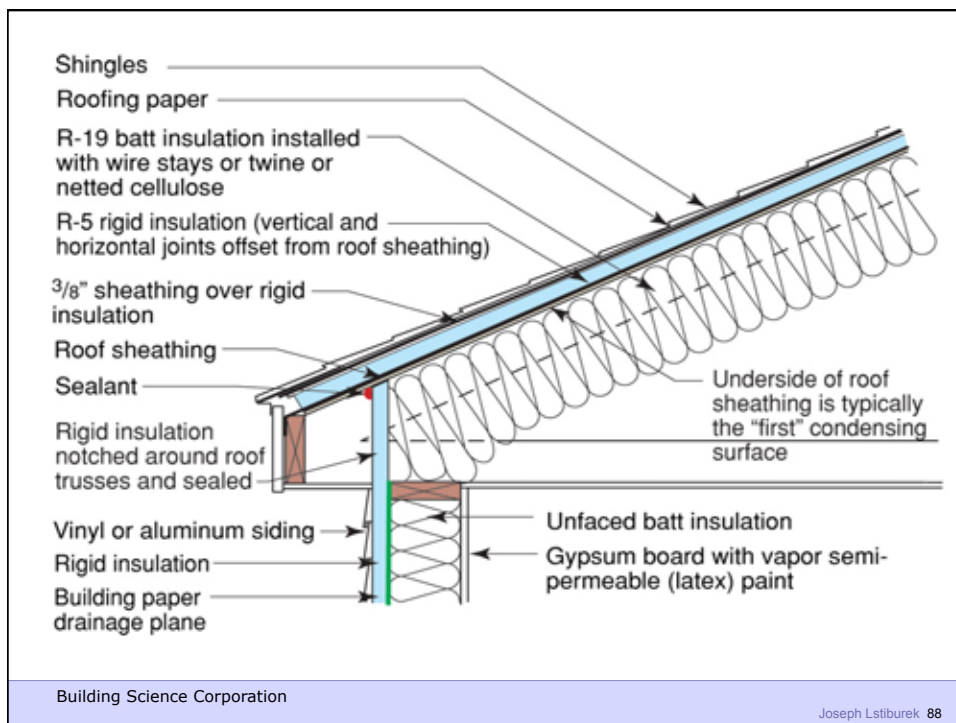
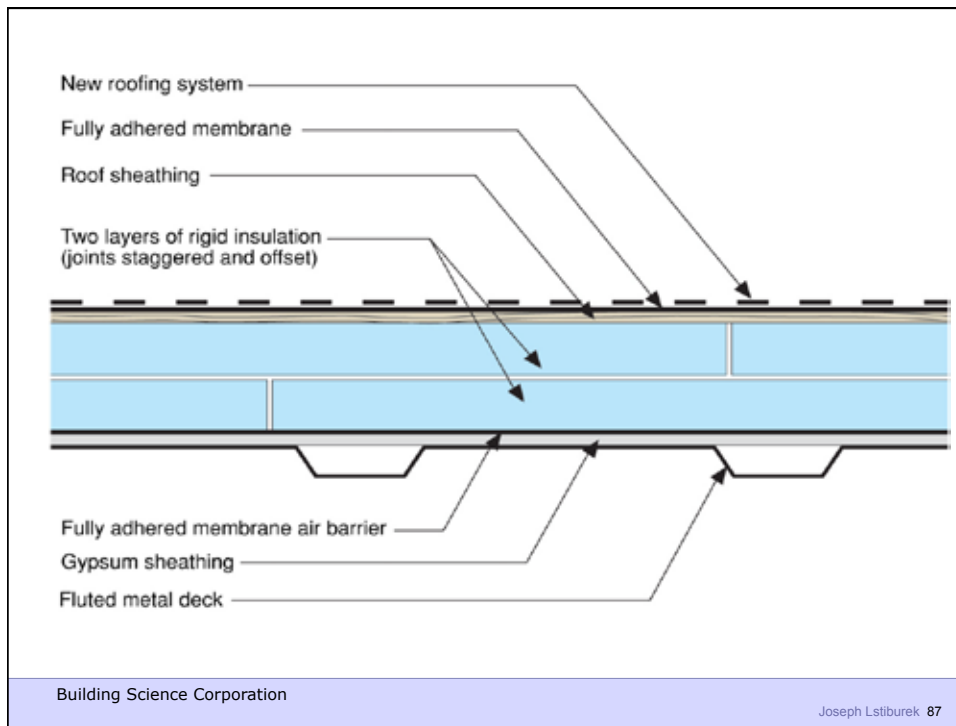
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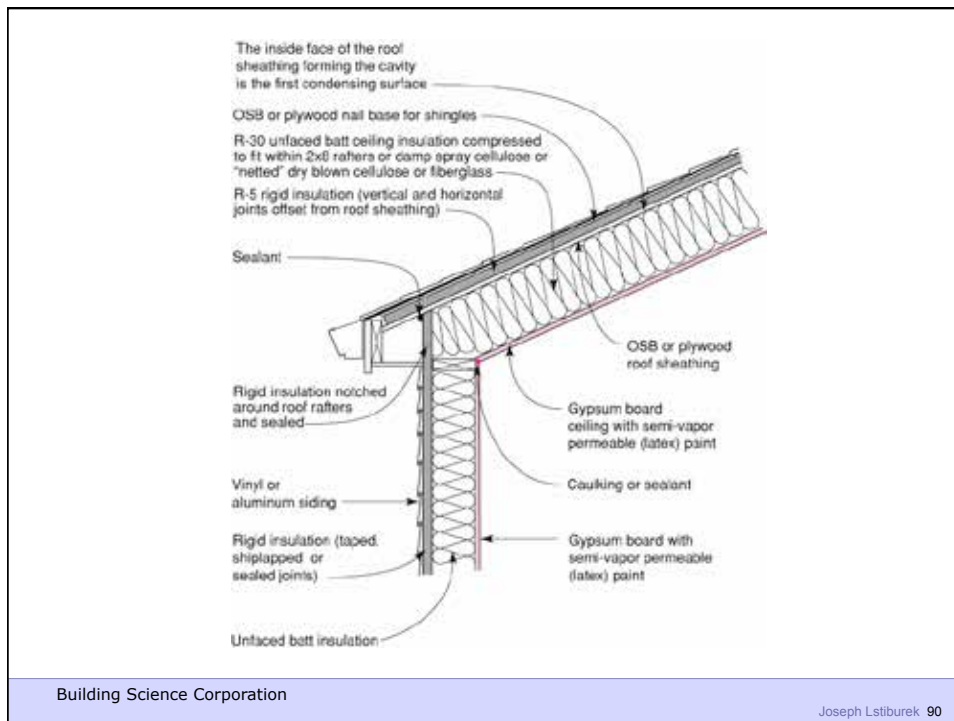
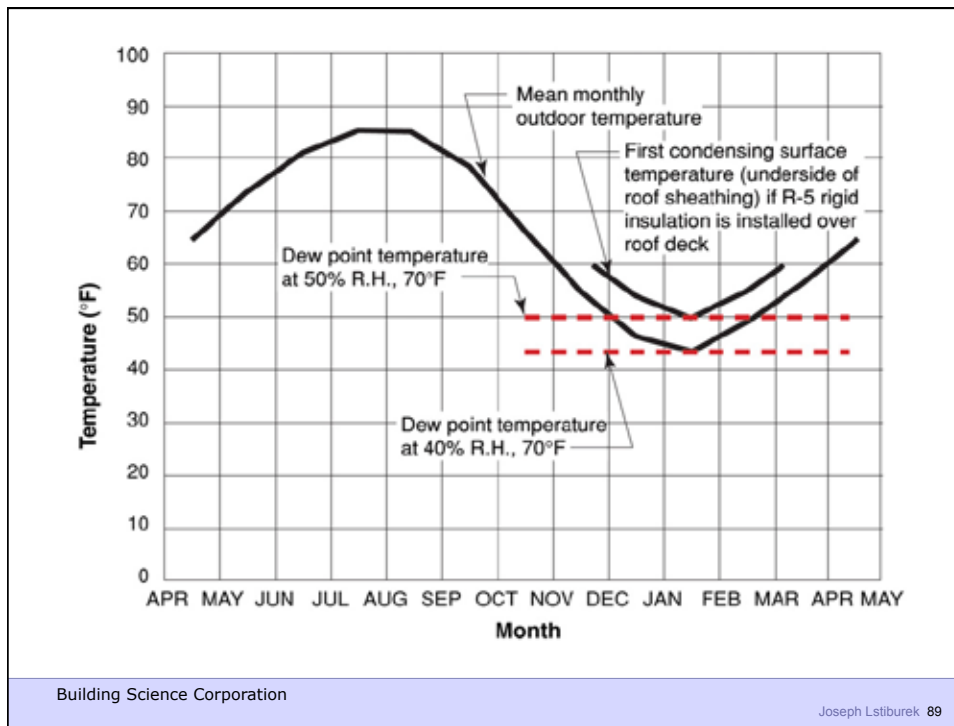
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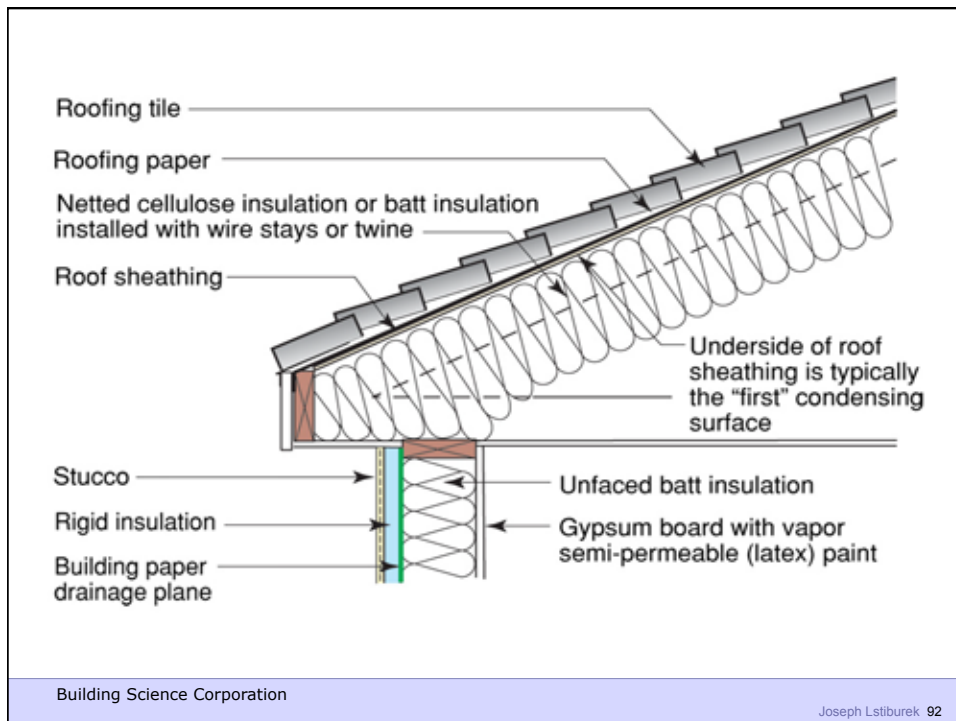
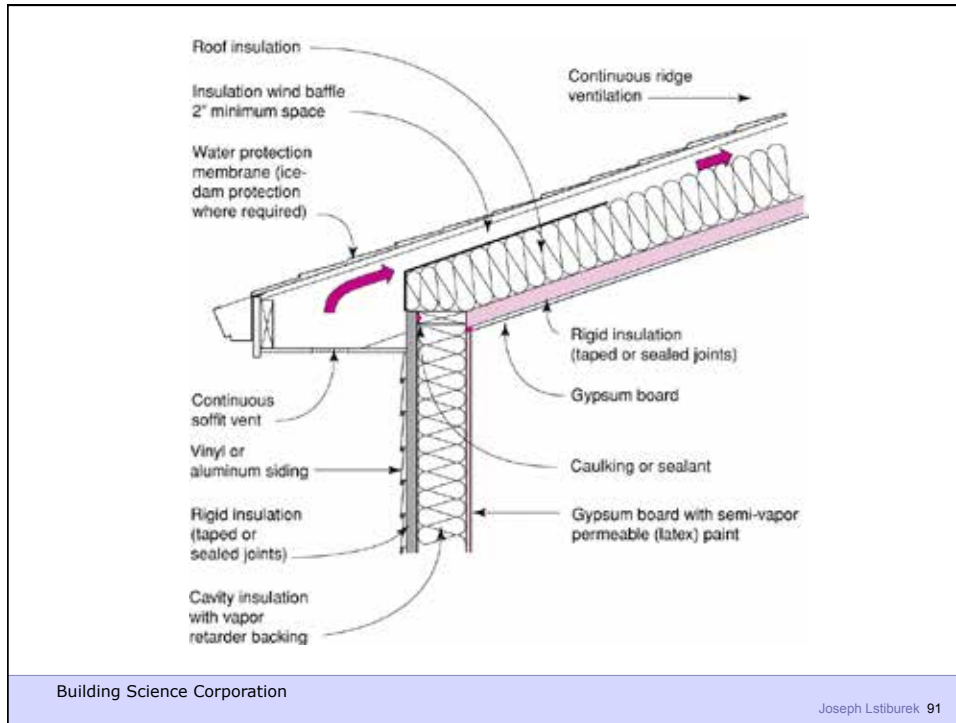


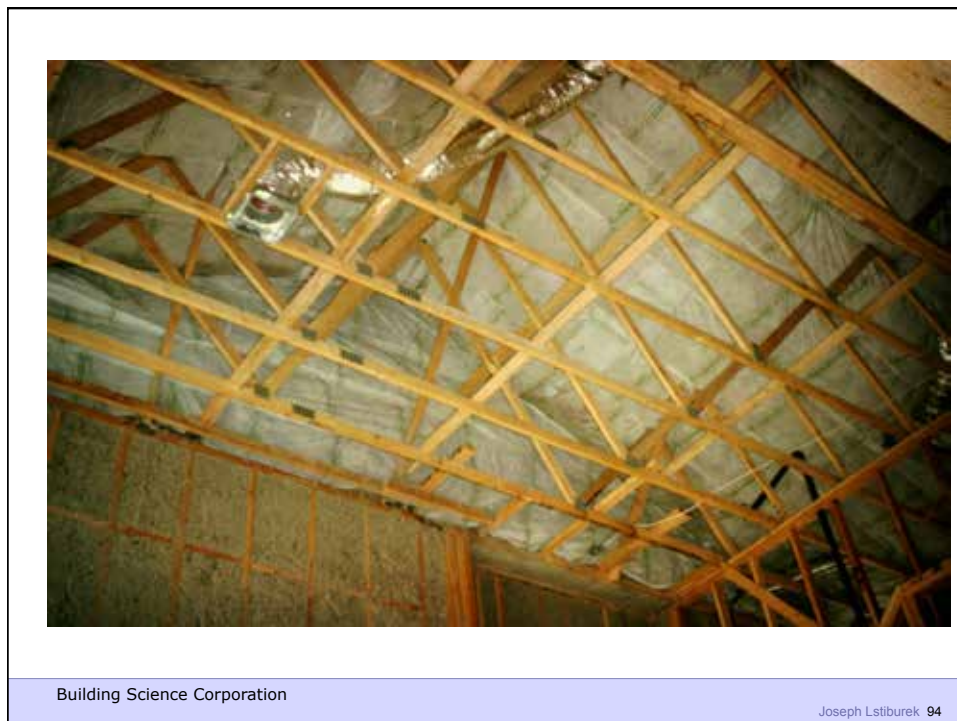
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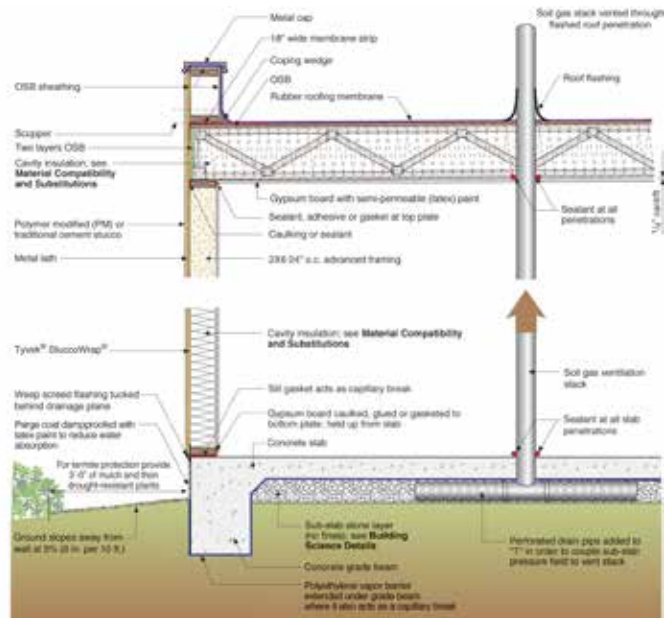






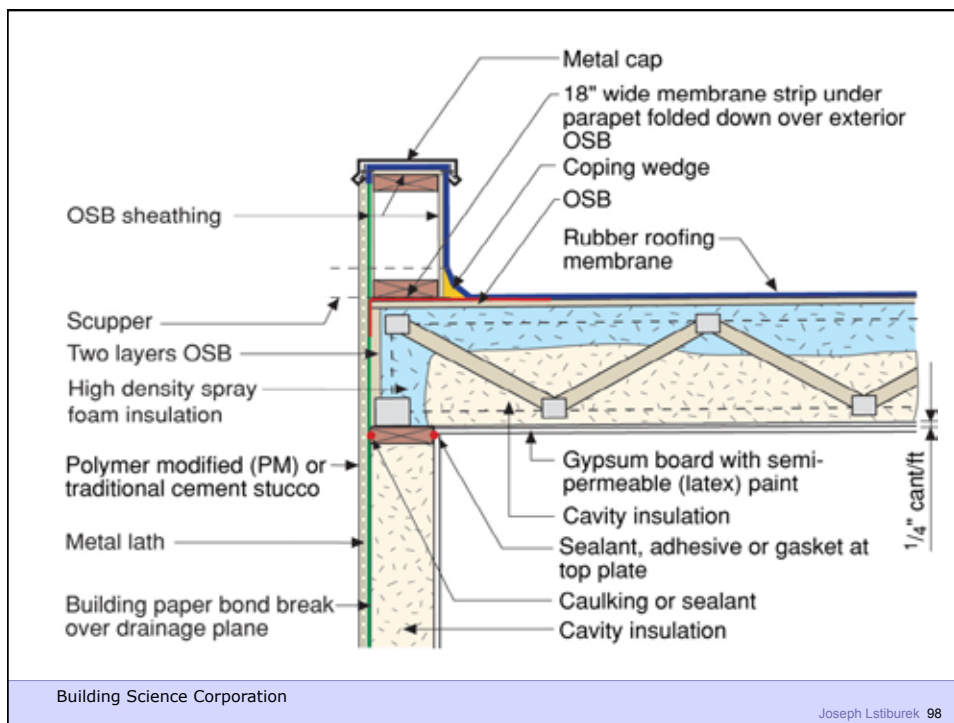
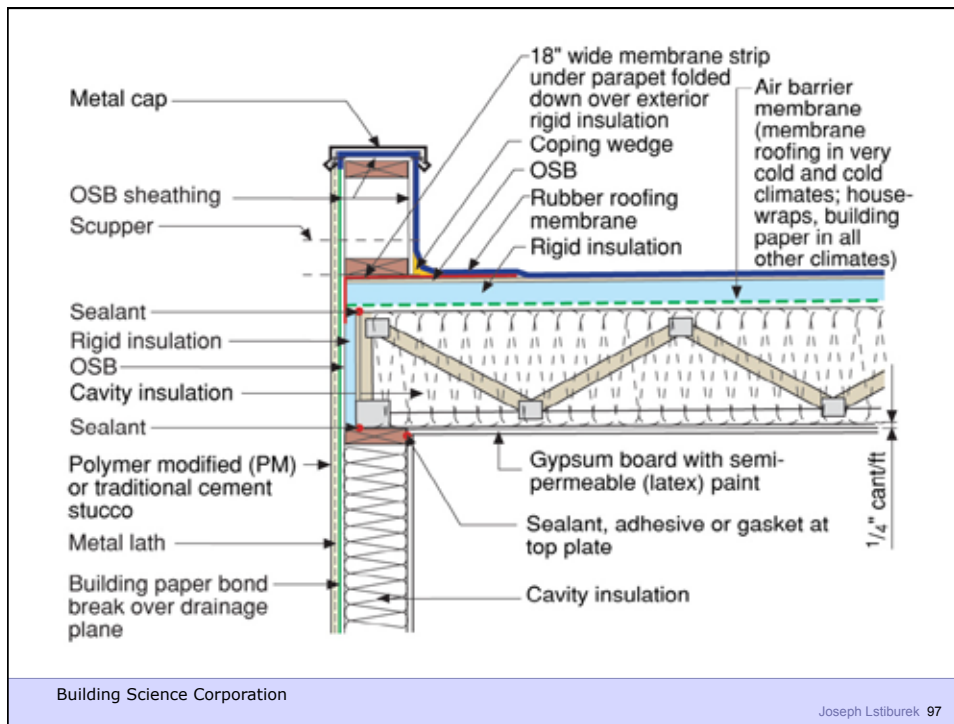
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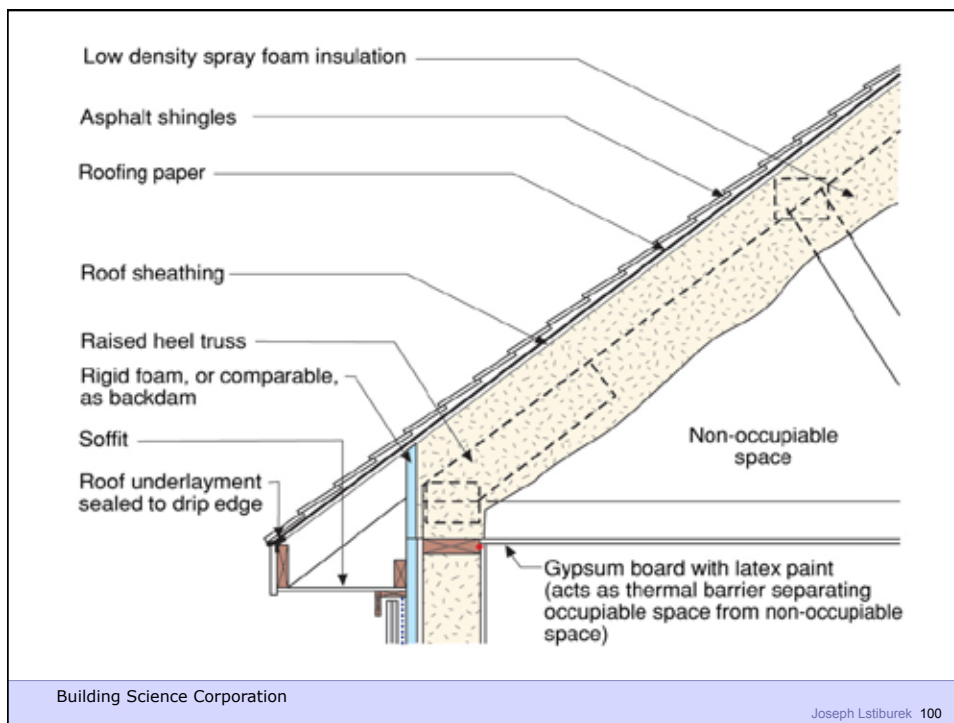
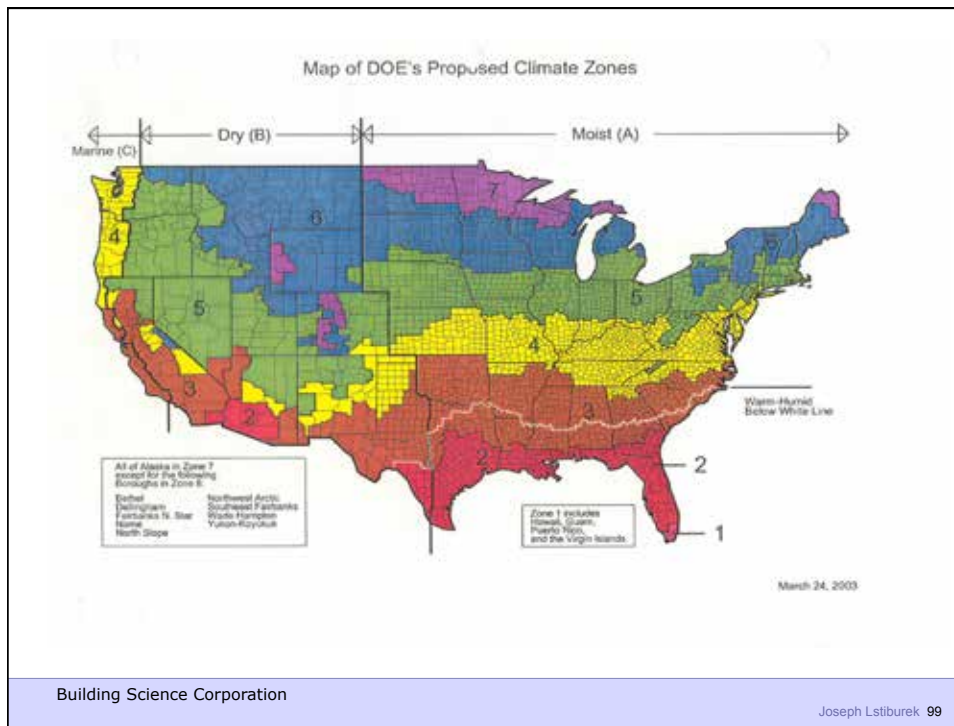
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Joseph Lstiburek 103



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Joseph Lstiburek 104



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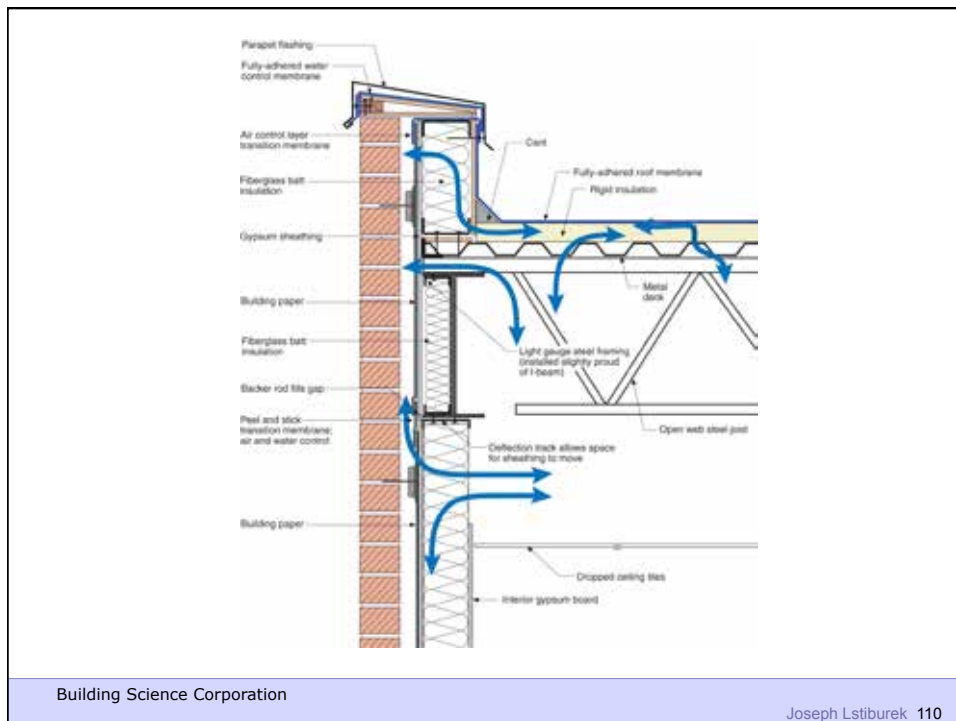
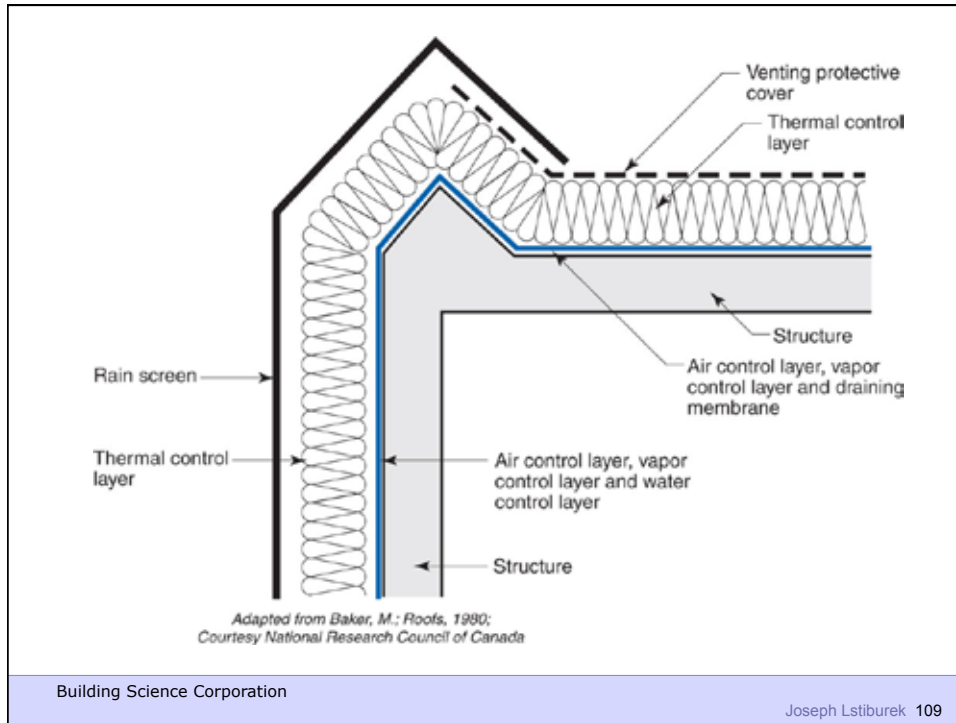
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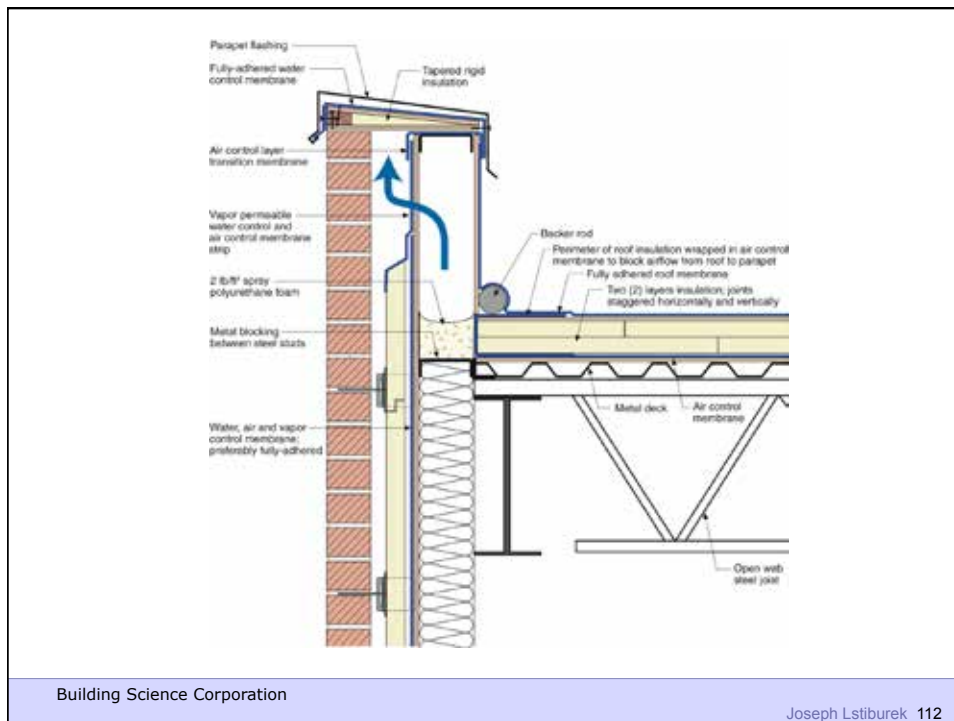
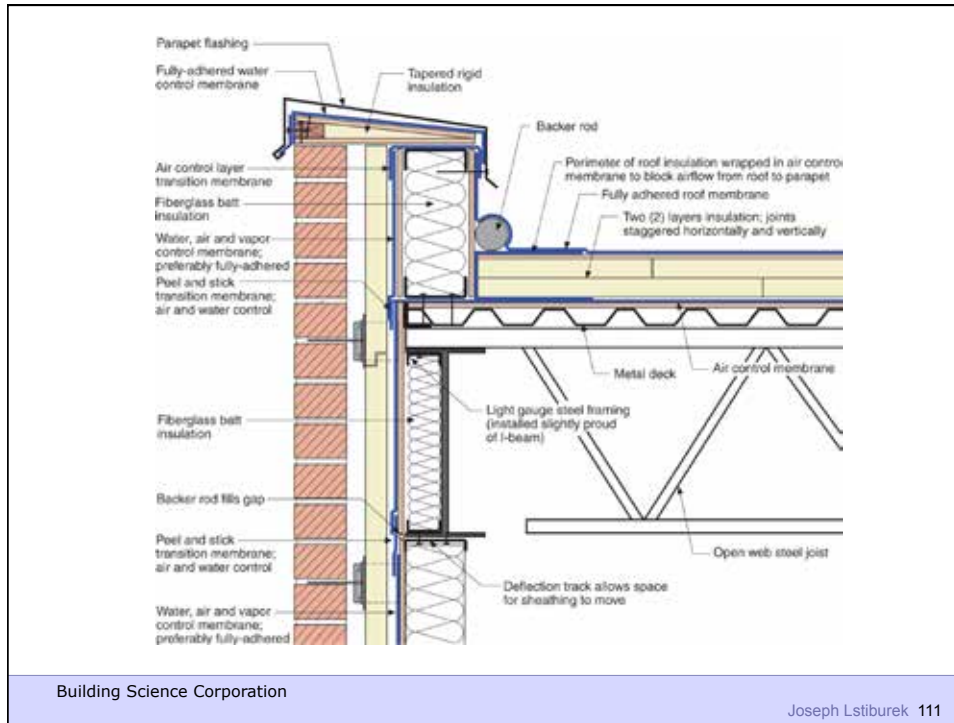
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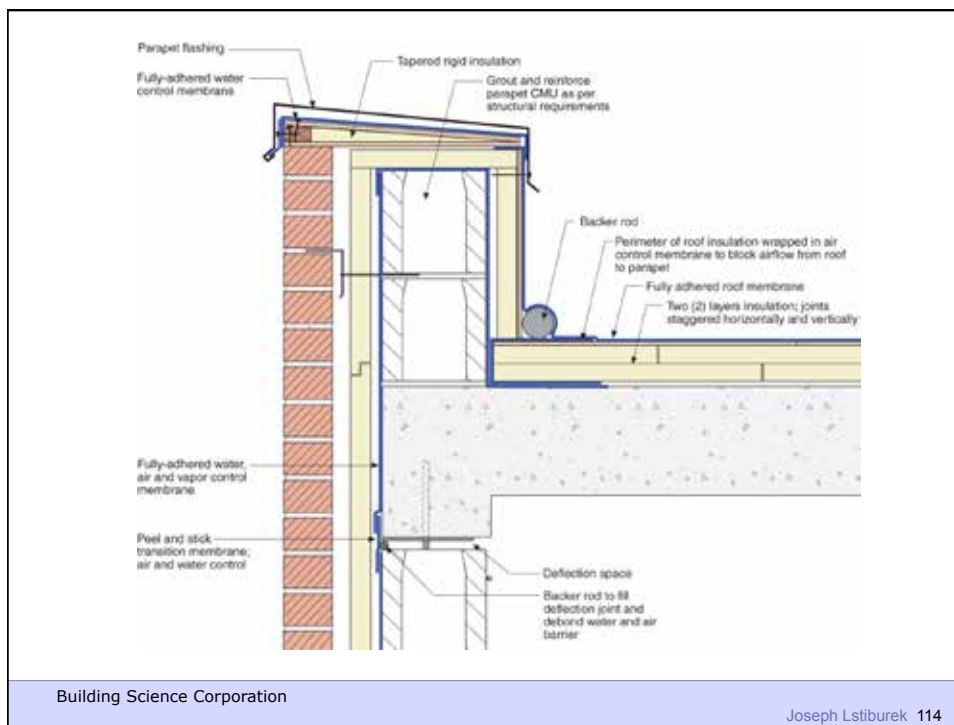
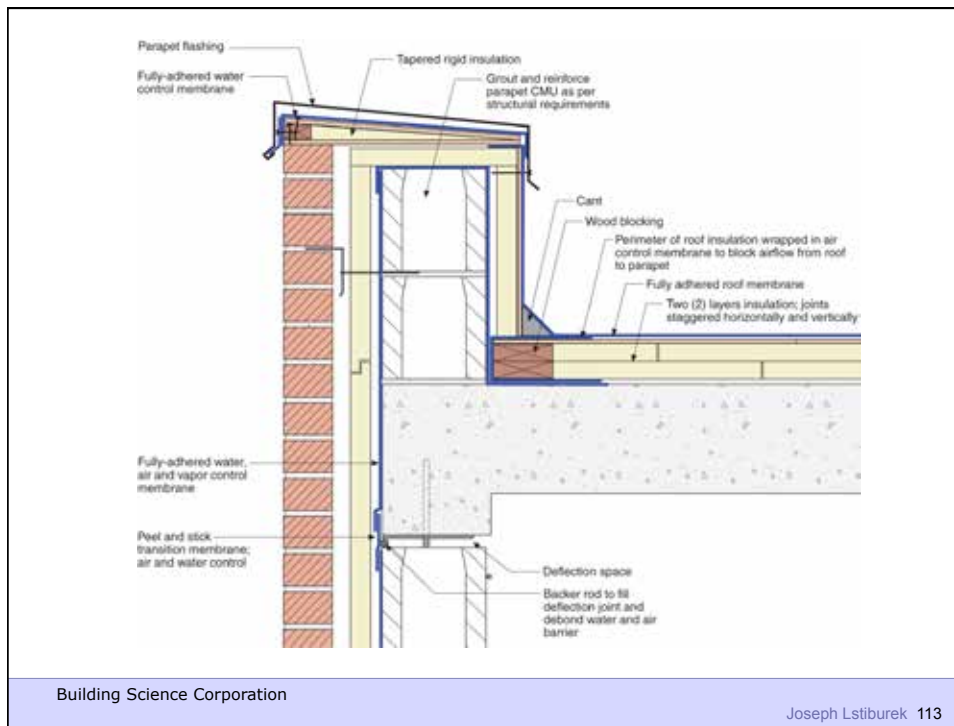


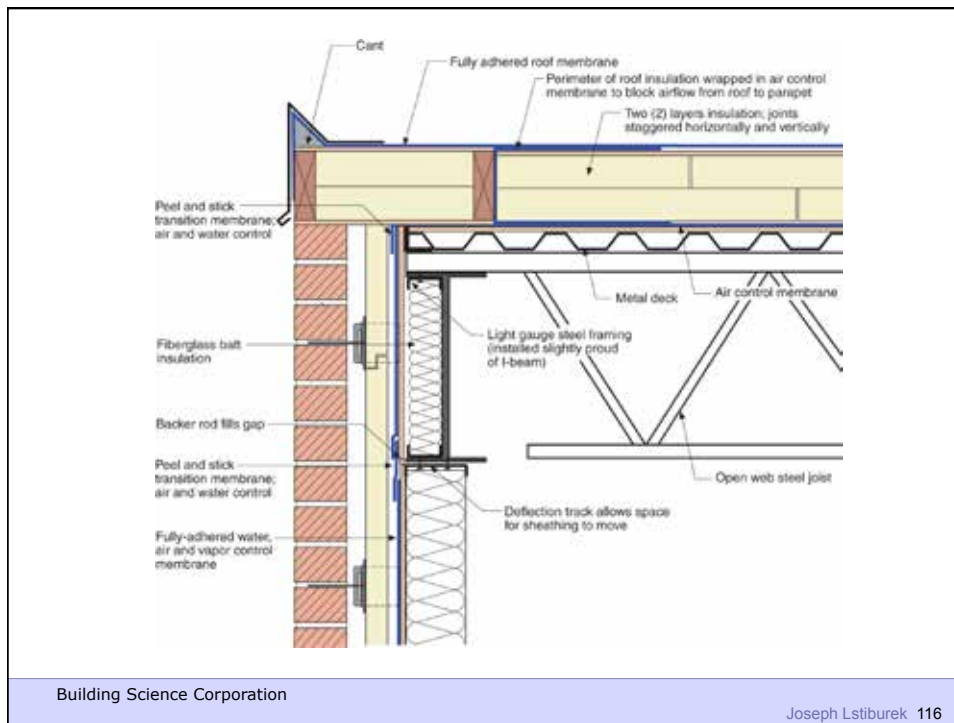
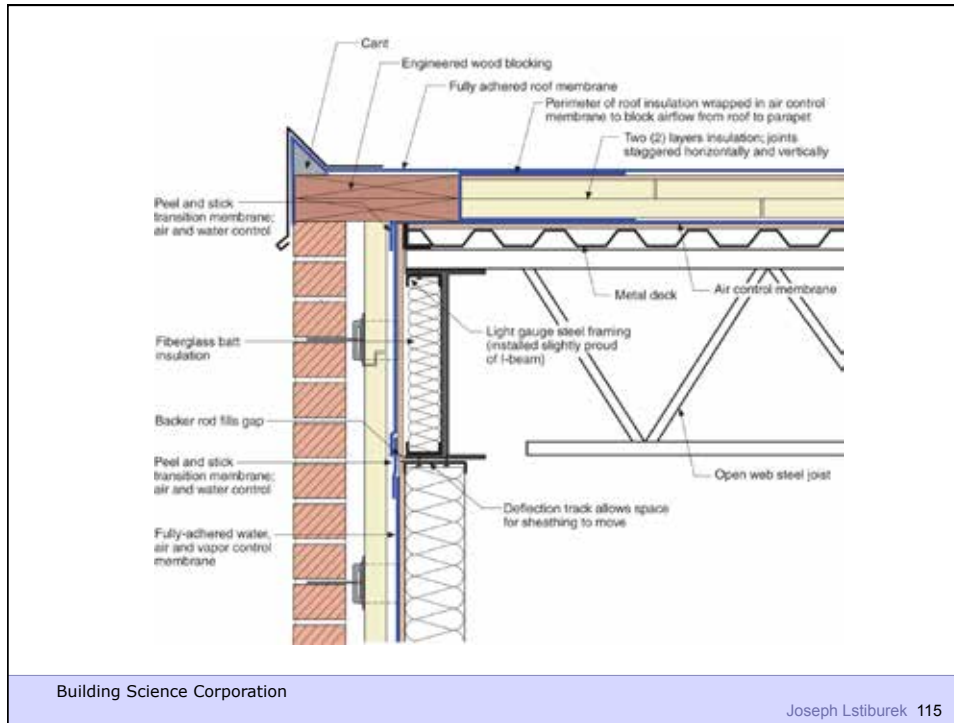
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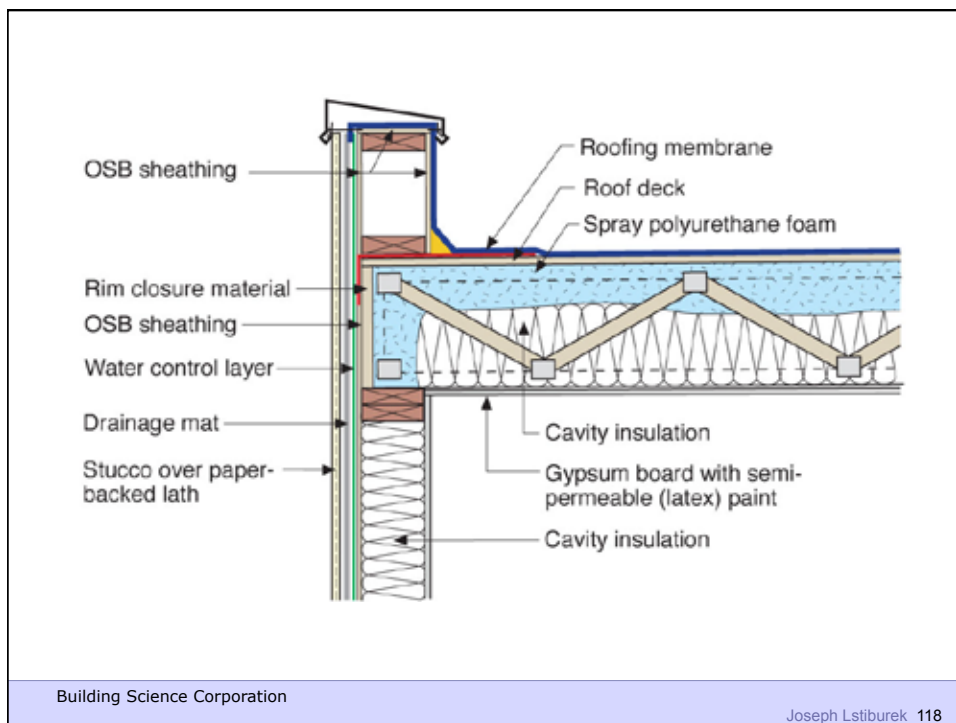
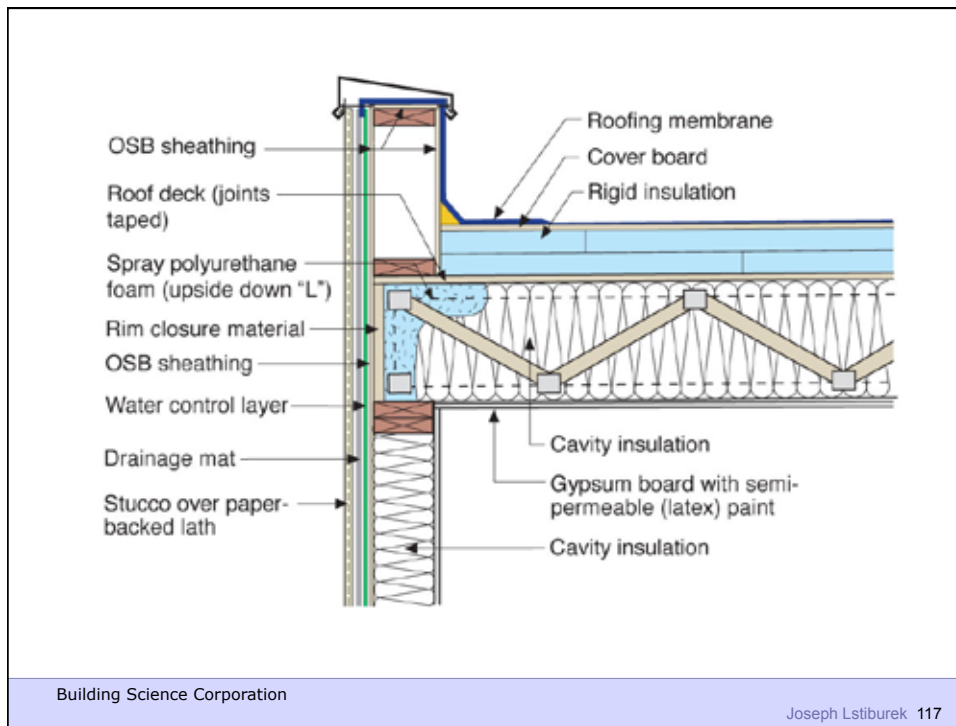
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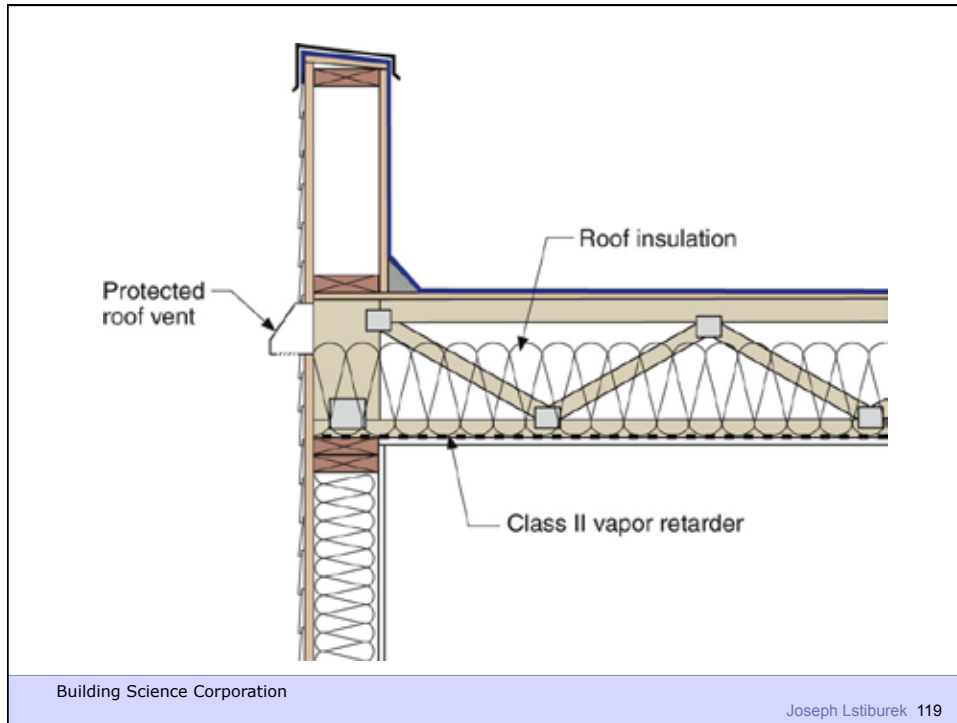














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