

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

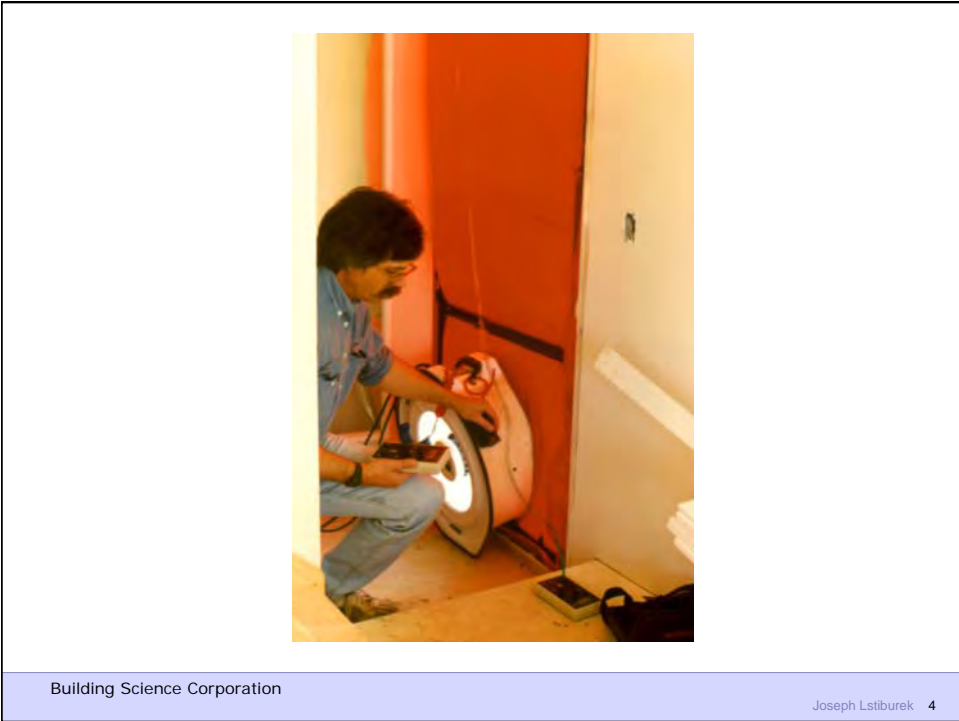
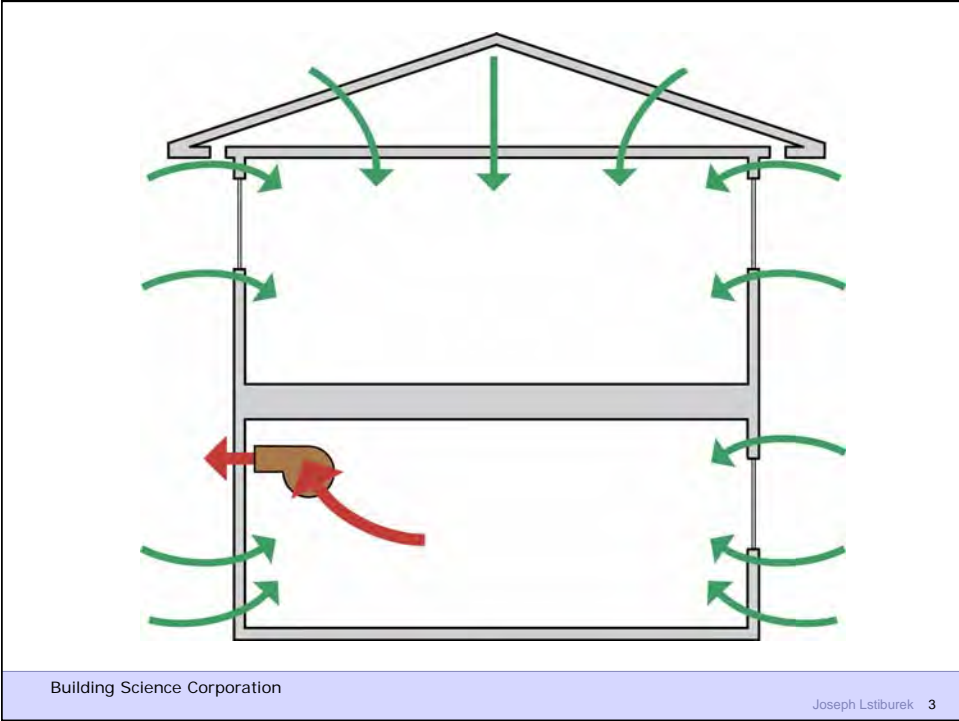
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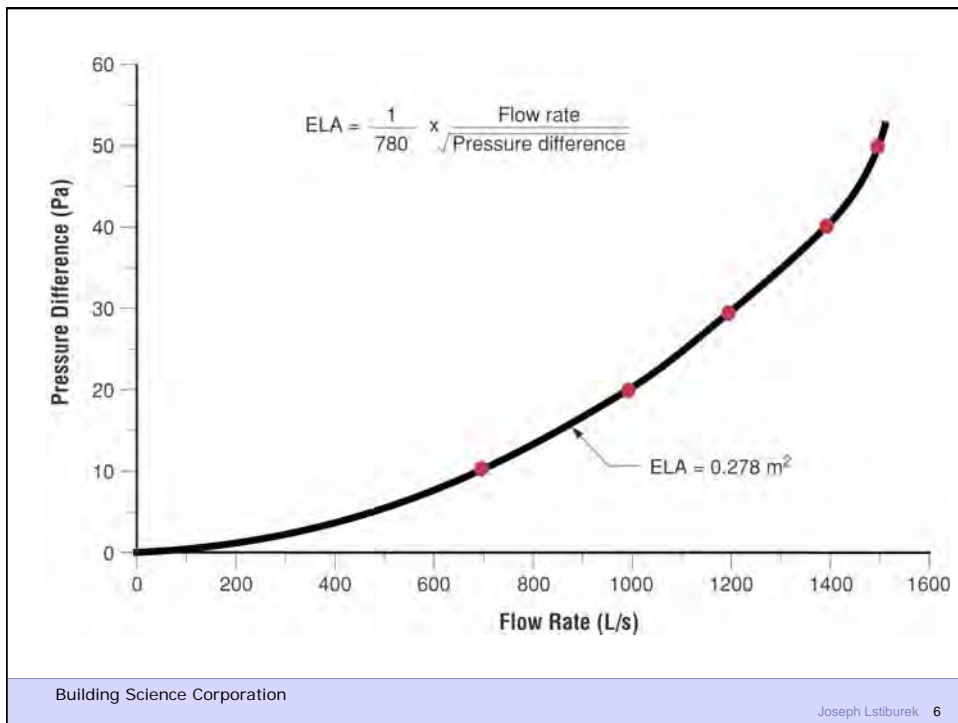
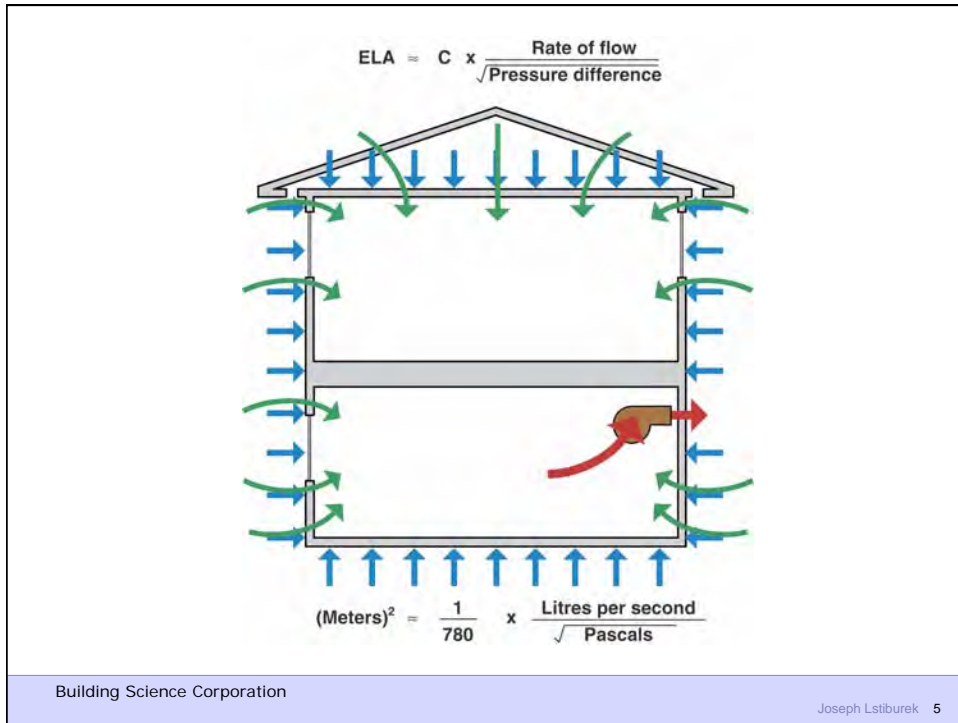
HVAC

presented by www.buildingscience.com

Air Barrier Metrics

Material	0.02 I/(s-m ²)@75 Pa
Assembly	0.20 I/(s-m ²)@75 Pa
Enclosure	2.00 I/(s-m ²)@75 Pa







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

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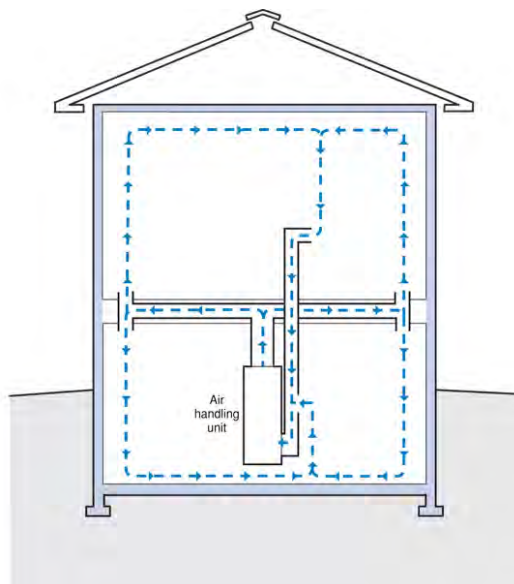


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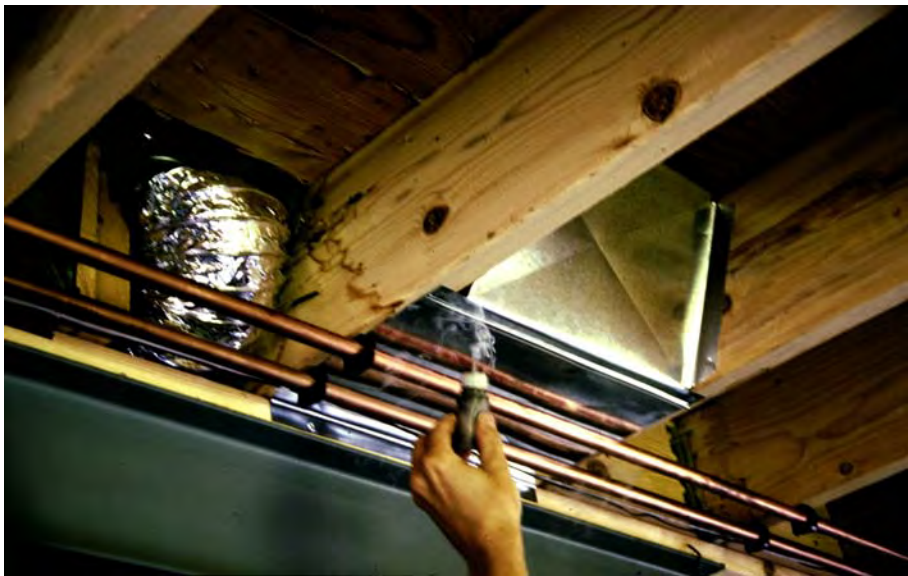
Figure 3.12
Ductwork and Air Handlers in Basements

- No air pressure differences result in a house with an air handler and ductwork located in a basement if there are no leaks in the supply ducts, the return ducts or the air handler and if the amount of air delivered to each room equals the amount removed



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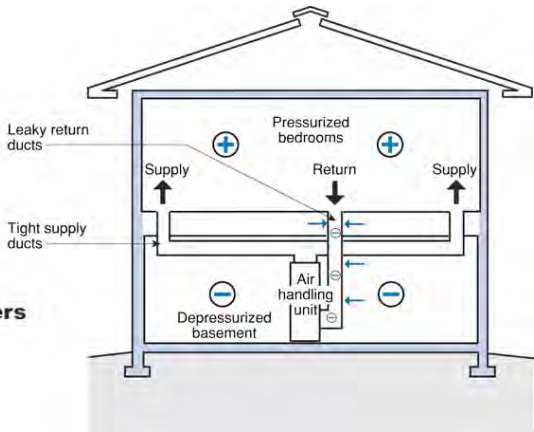


Figure 3.14
Leaky Ductwork and Air Handlers in Basements

- Air pressurization patterns in a house with leaky ductwork in the basement

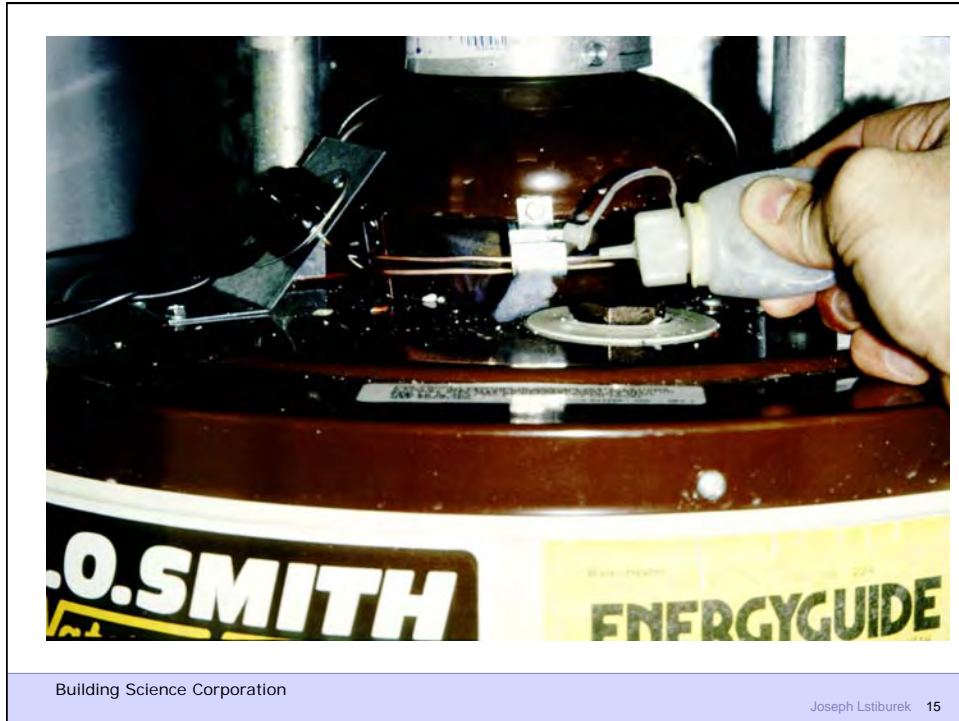
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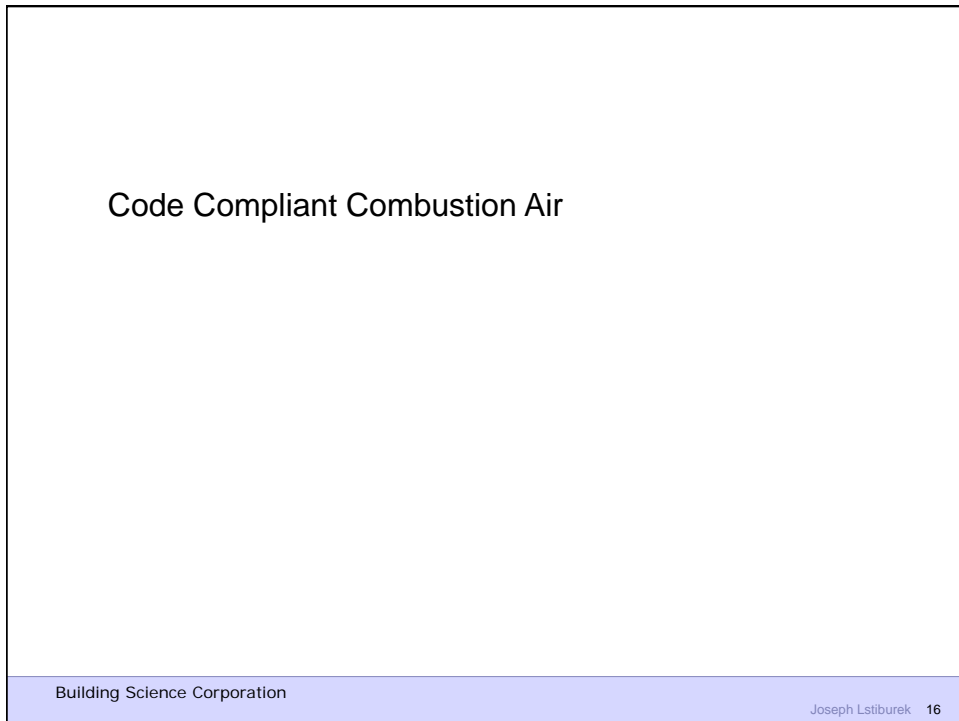
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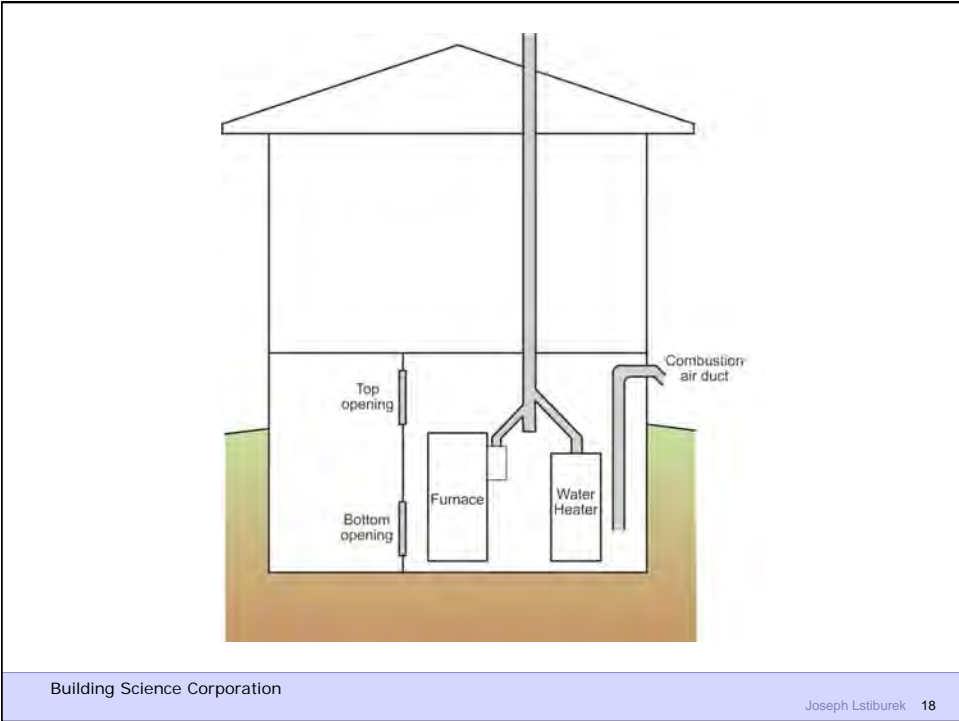
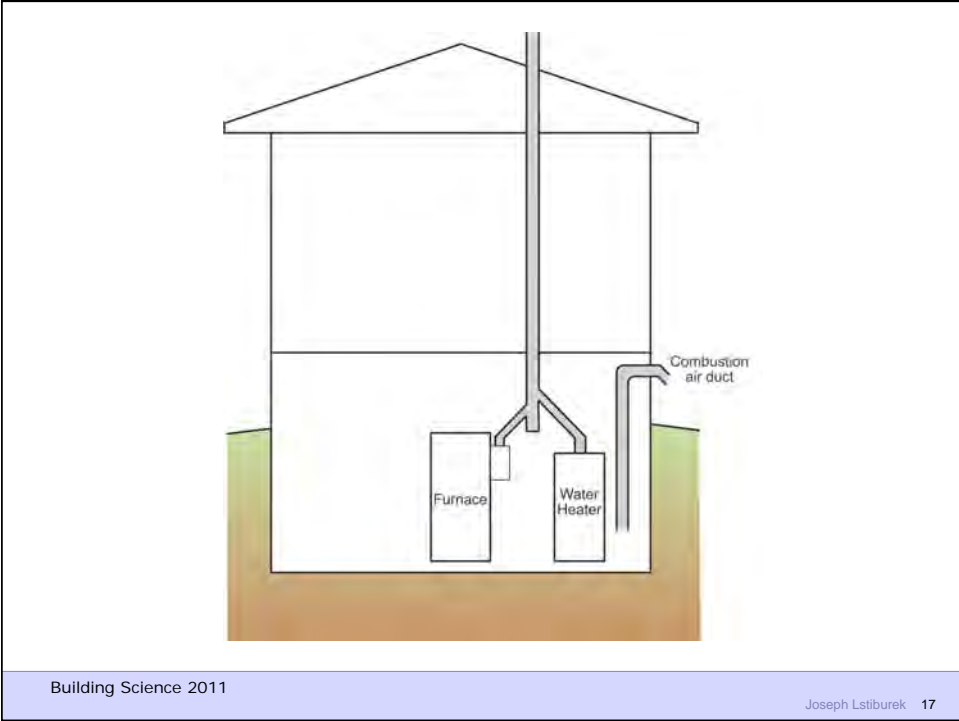


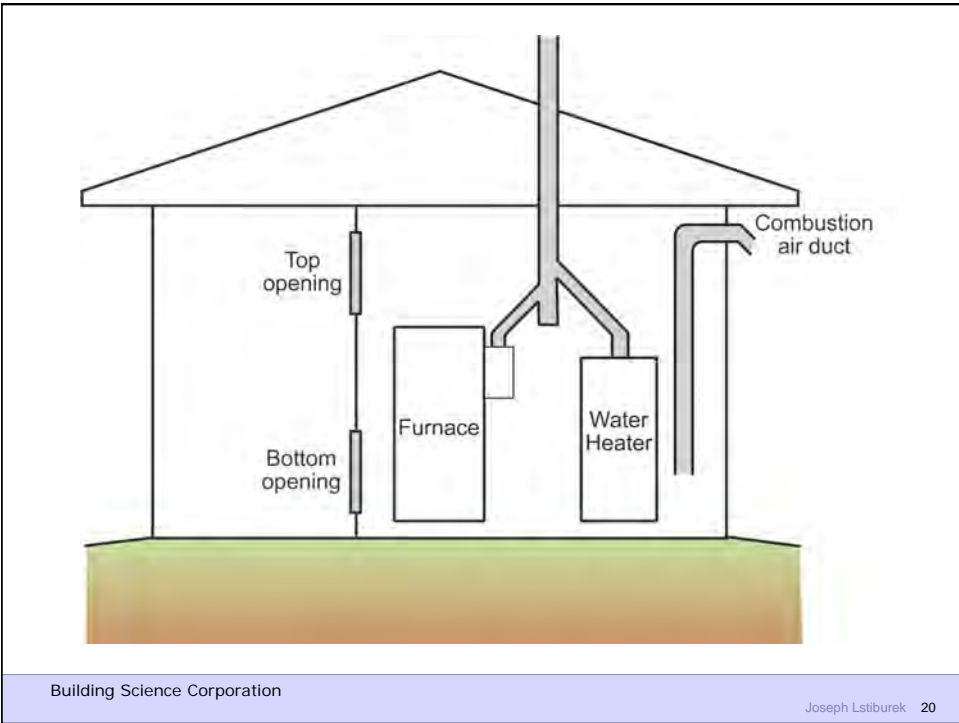
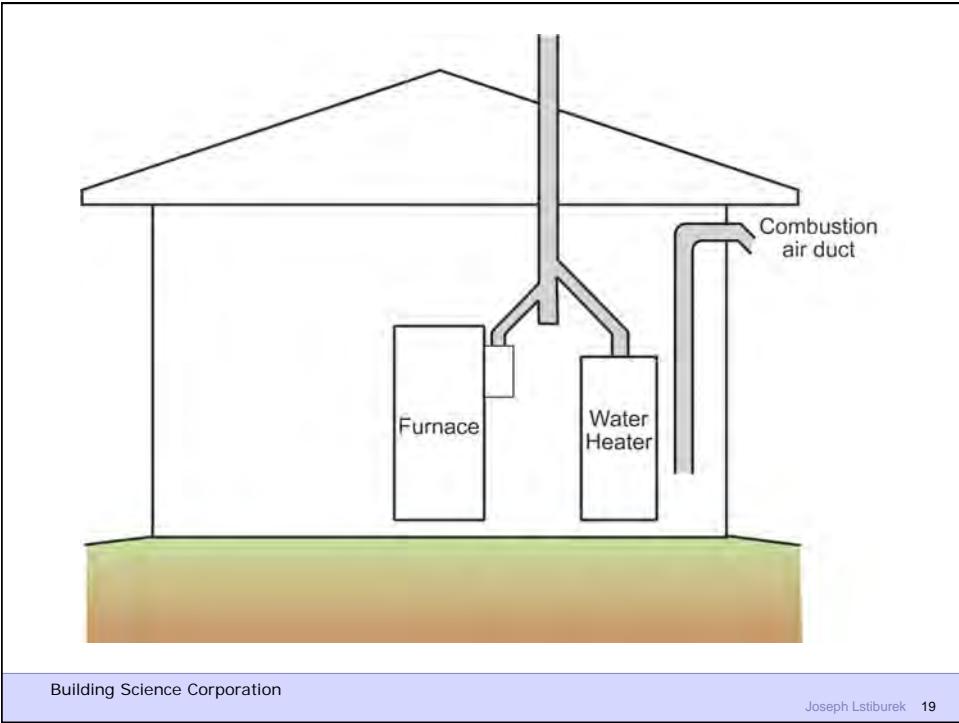
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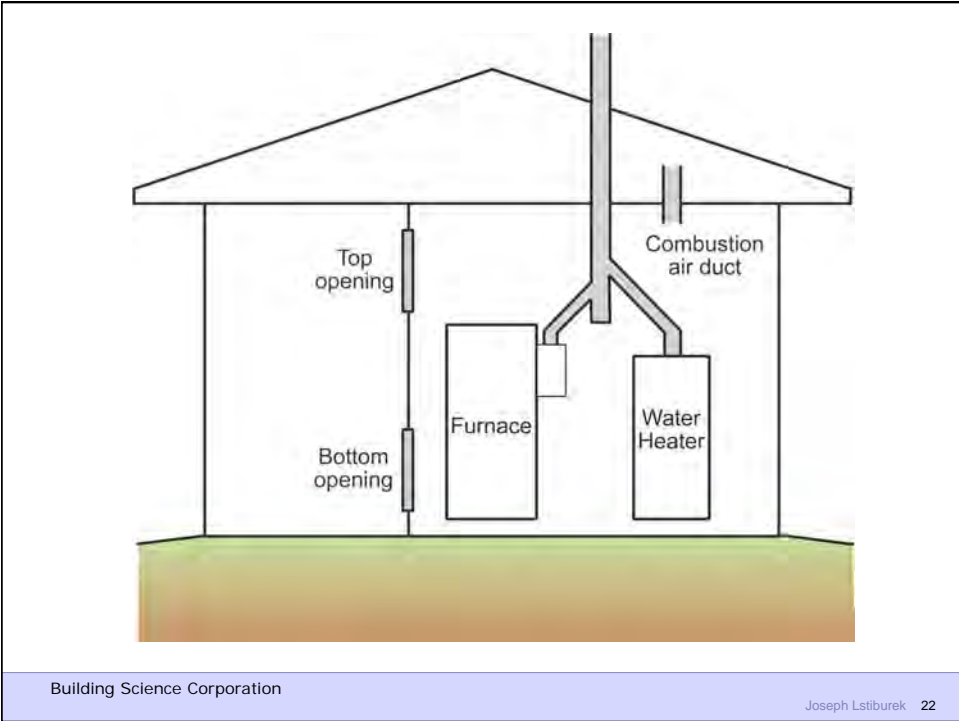
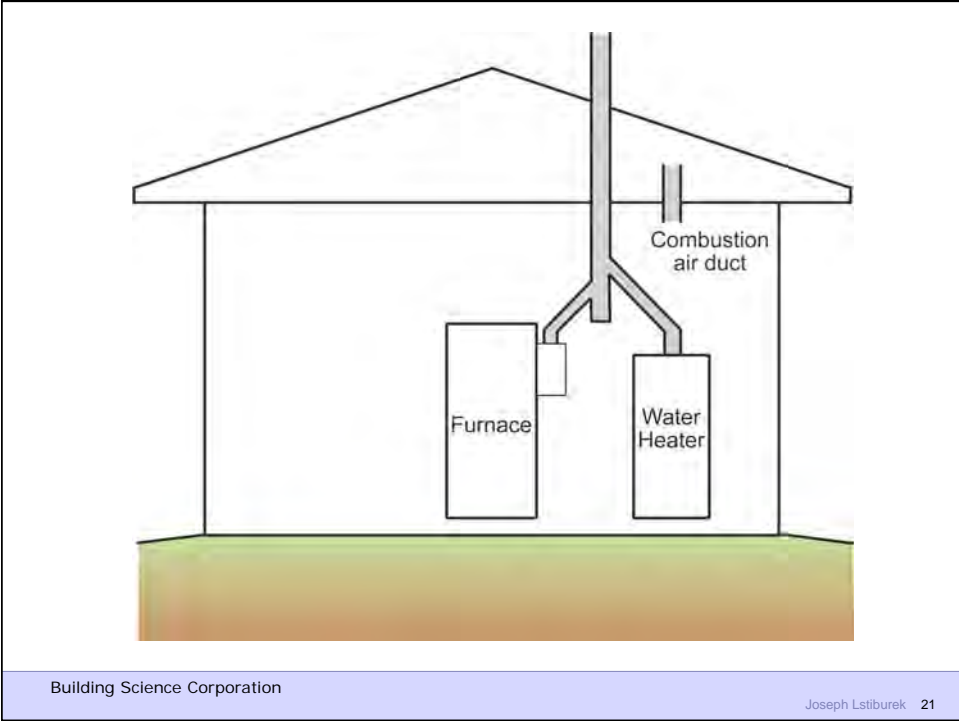


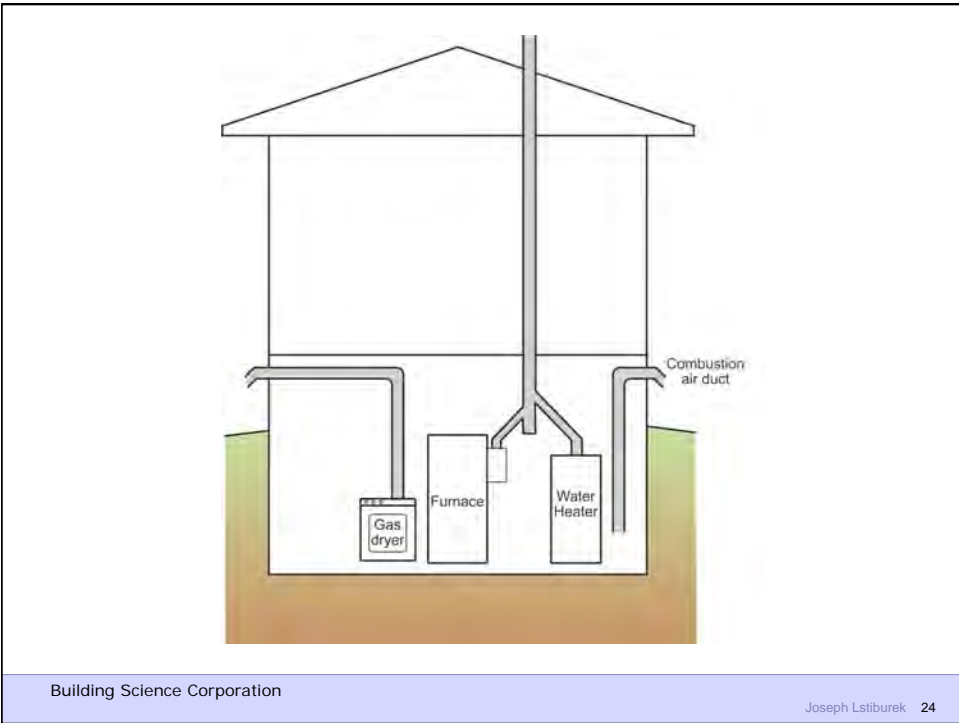
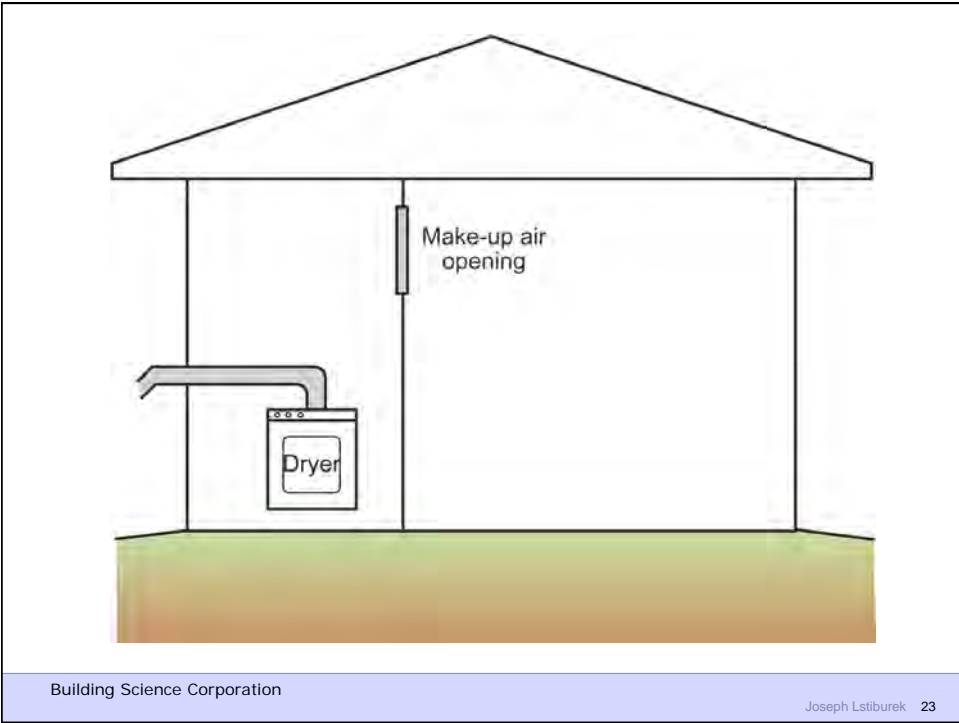
Code Compliant Combustion Air

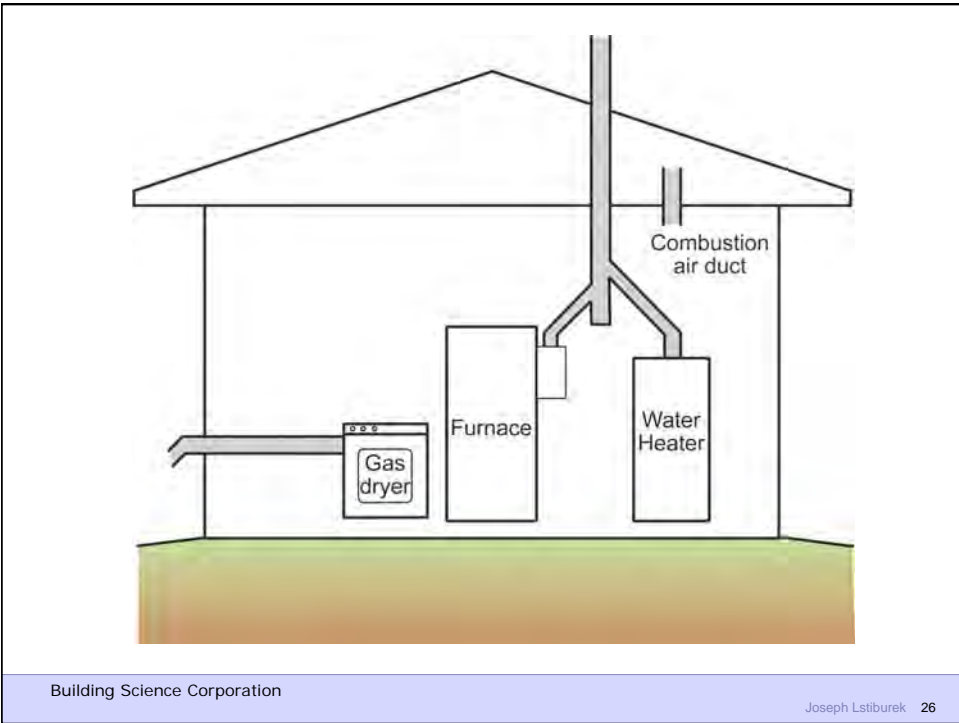
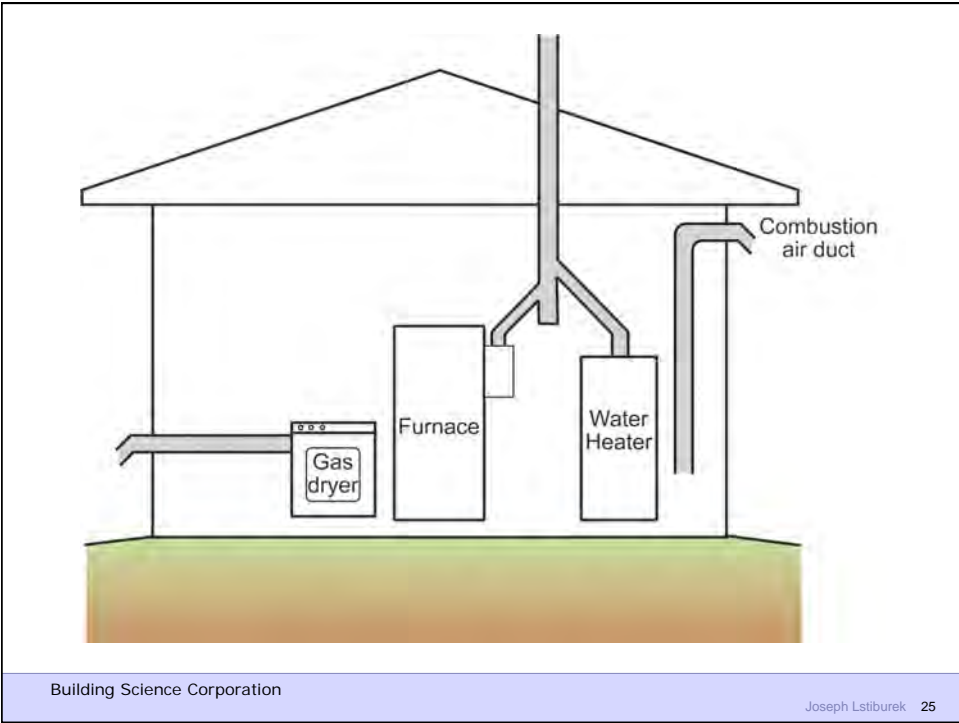












Sealed Combustion Appliances

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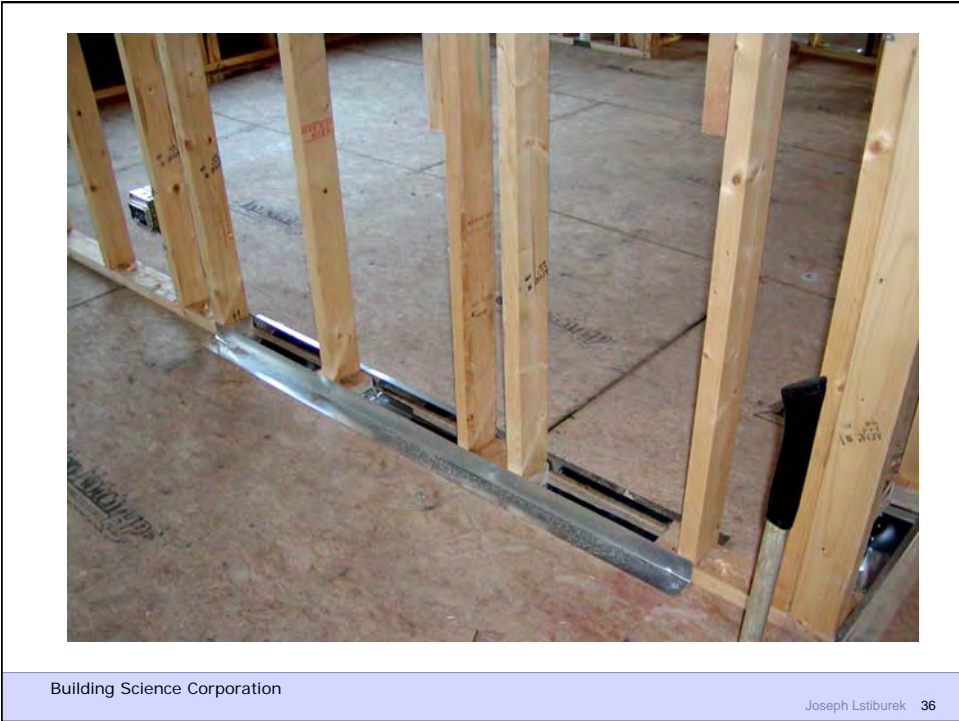
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Control Pressures





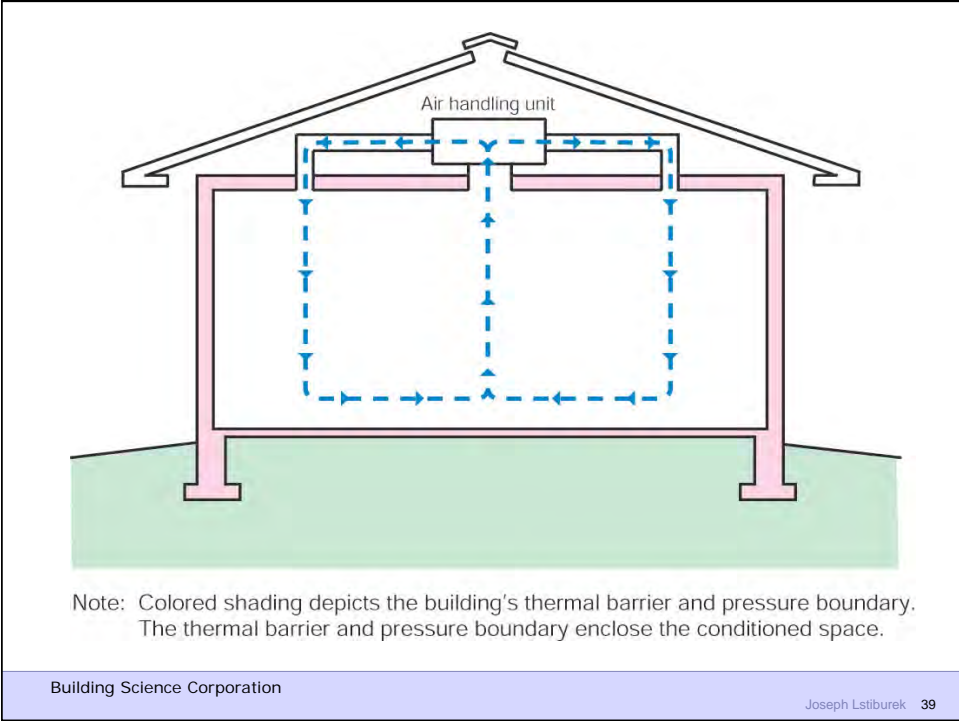
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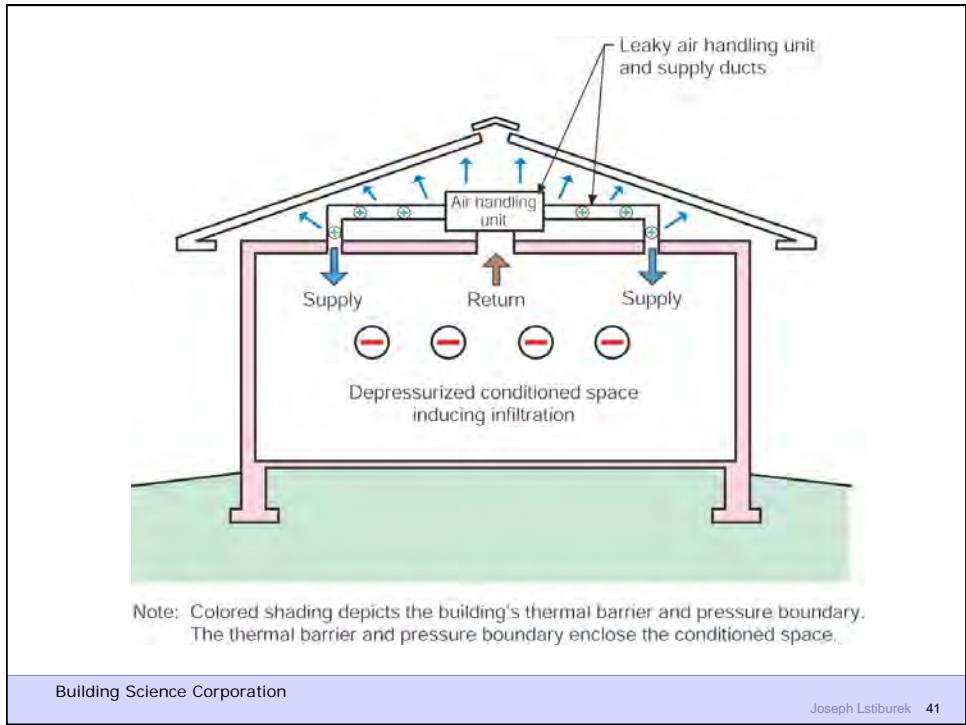
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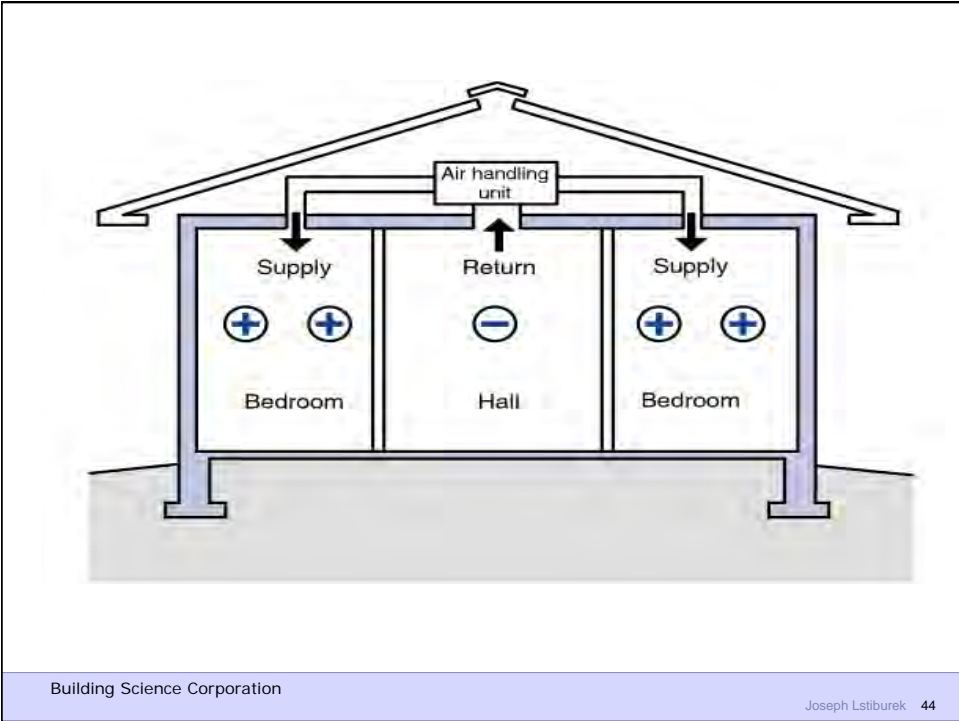
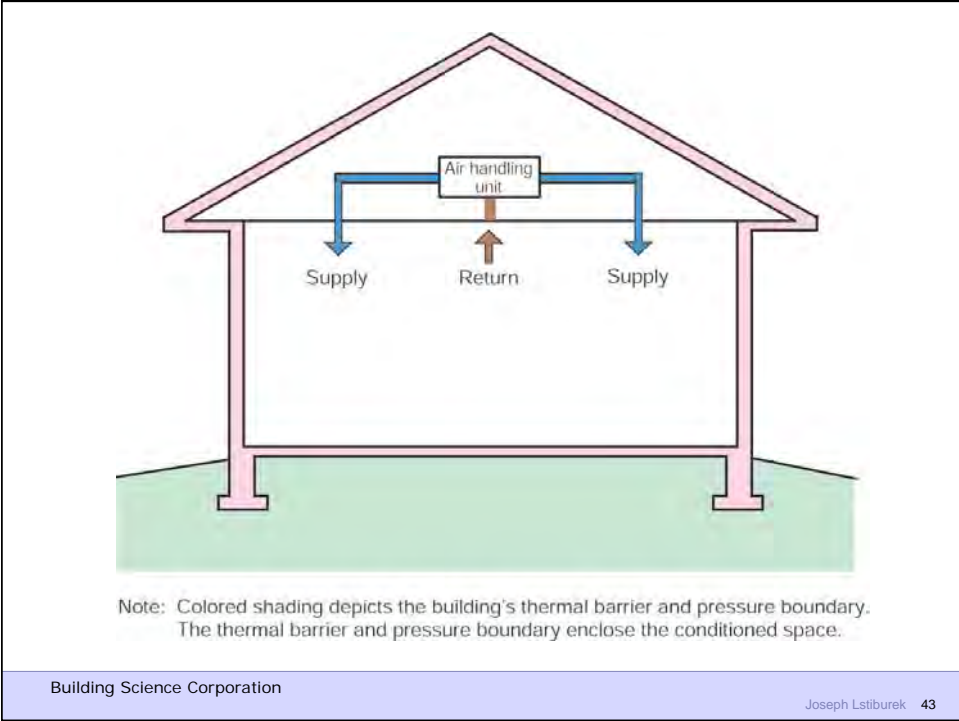


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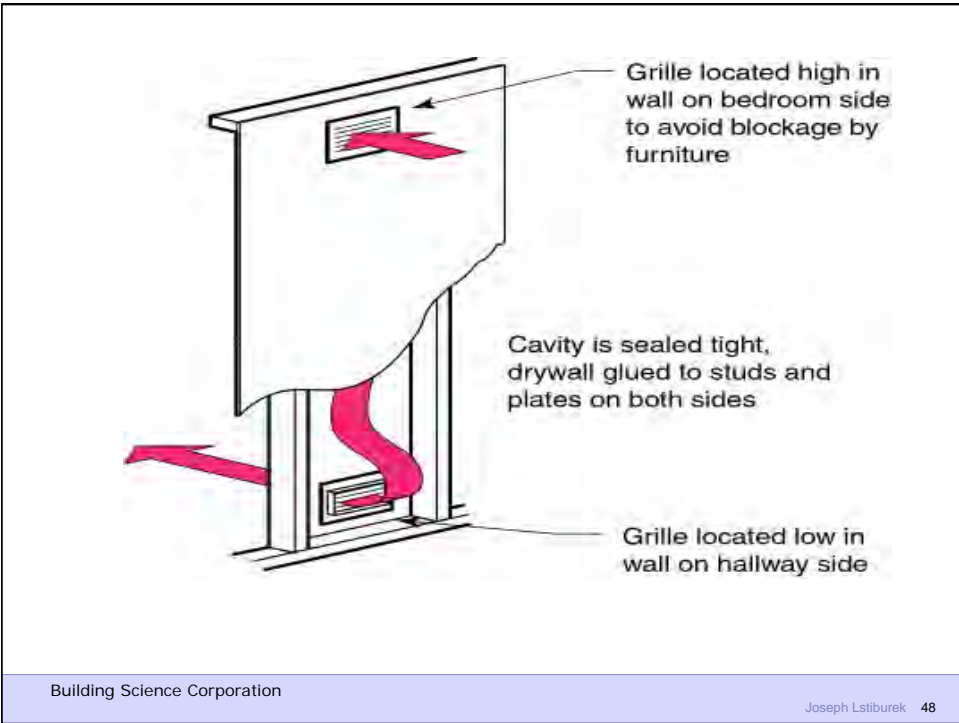




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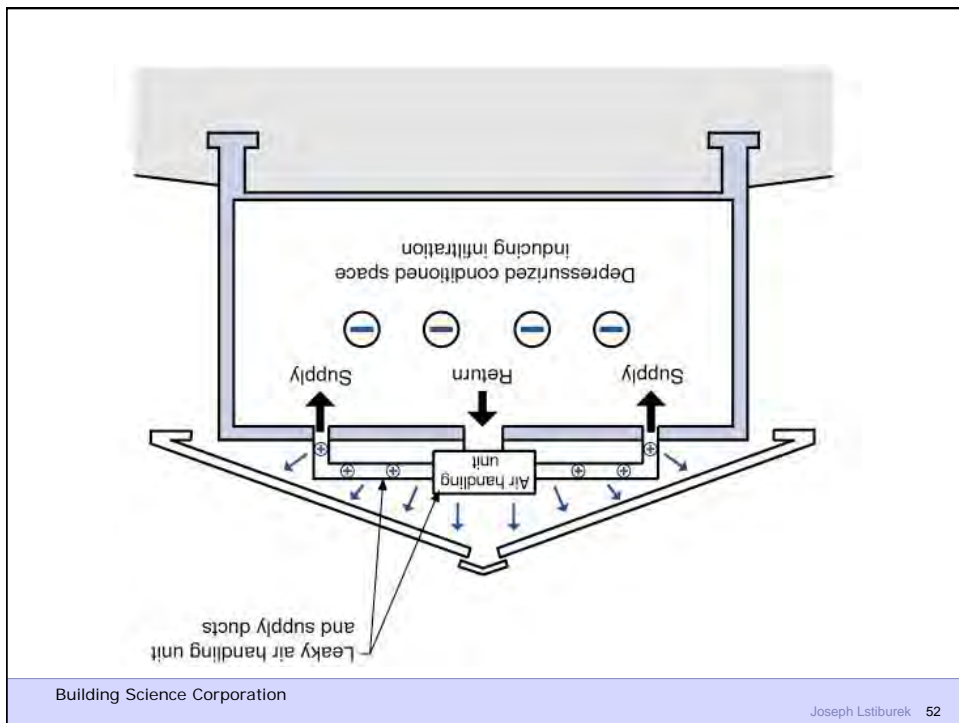
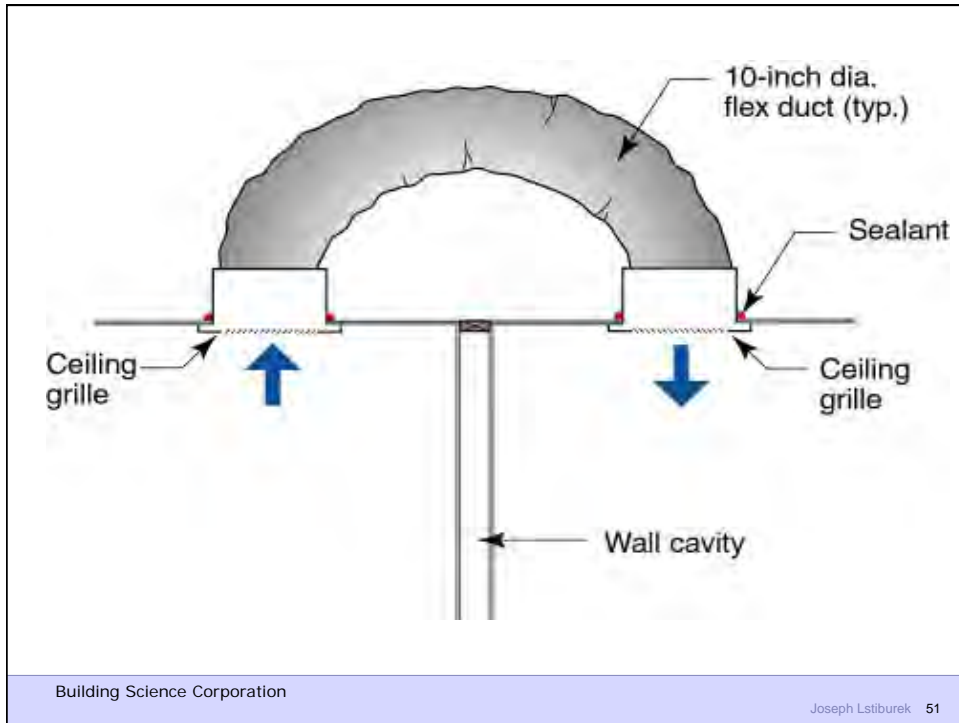


Figure 3.16
Leaky Supply Ductwork in Vented Crawl Space

- Air pressurization pattern with mechanical system ducts in the crawl space

The diagram shows a cross-section of a house with a gabled roof. The interior is labeled 'Depressurized conditioned space' and contains an 'Air handling unit' with 'Supply' and 'Return' airflows. 'Leaky supply ducts' are shown in the basement area, with arrows indicating air leaking from the supply ducts into the 'Crawl space' below. The crawl space is vented to the outdoors, as indicated by the arrows pointing outwards from the crawl space.

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A photograph showing the exterior of a house with light-colored horizontal siding. A rectangular crawl space vent is visible, partially obscured by green bushes in the foreground. The vent has a metal mesh screen.

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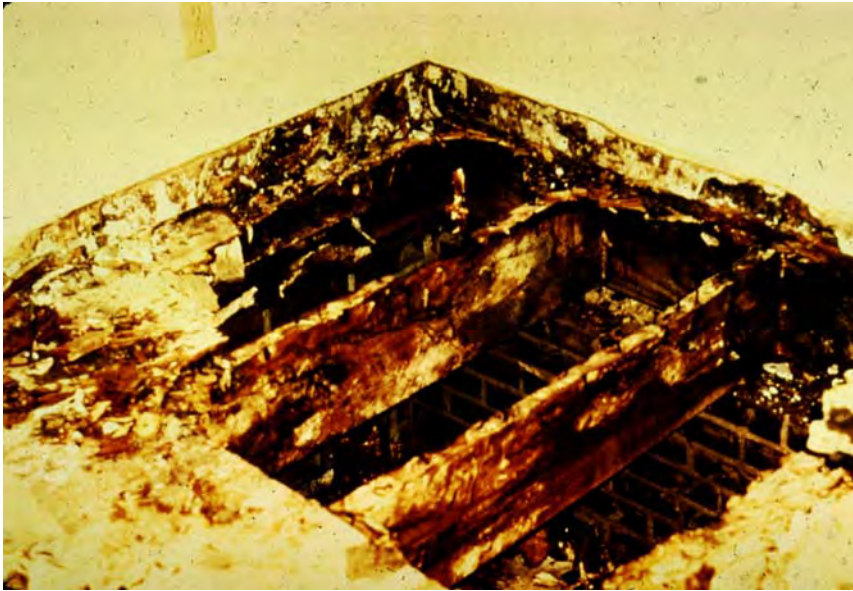
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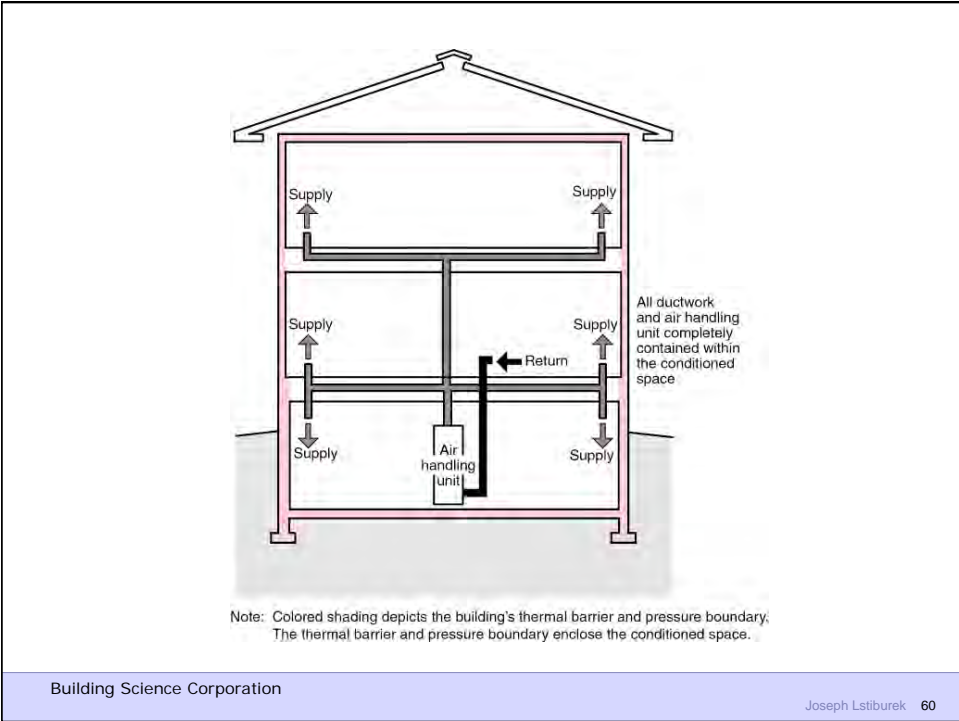


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Note: Colored shading depicts the building's thermal barrier and pressure boundary. The thermal barrier and pressure boundary enclose the conditioned space.

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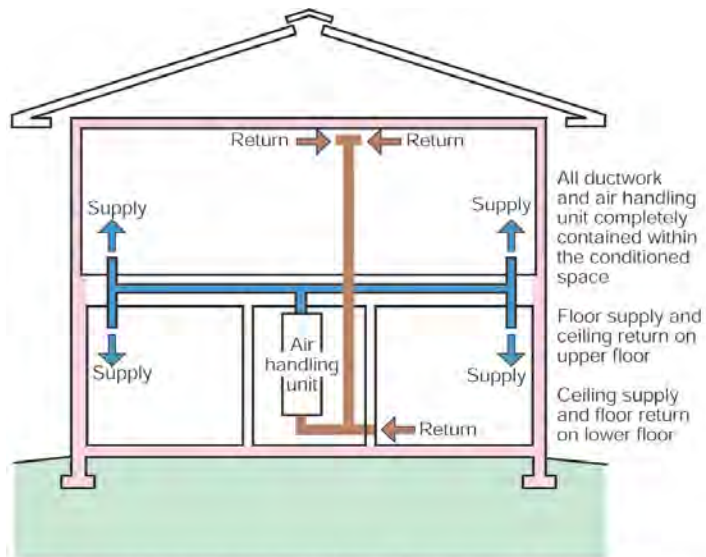


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All ductwork and air handling unit completely contained within the conditioned space

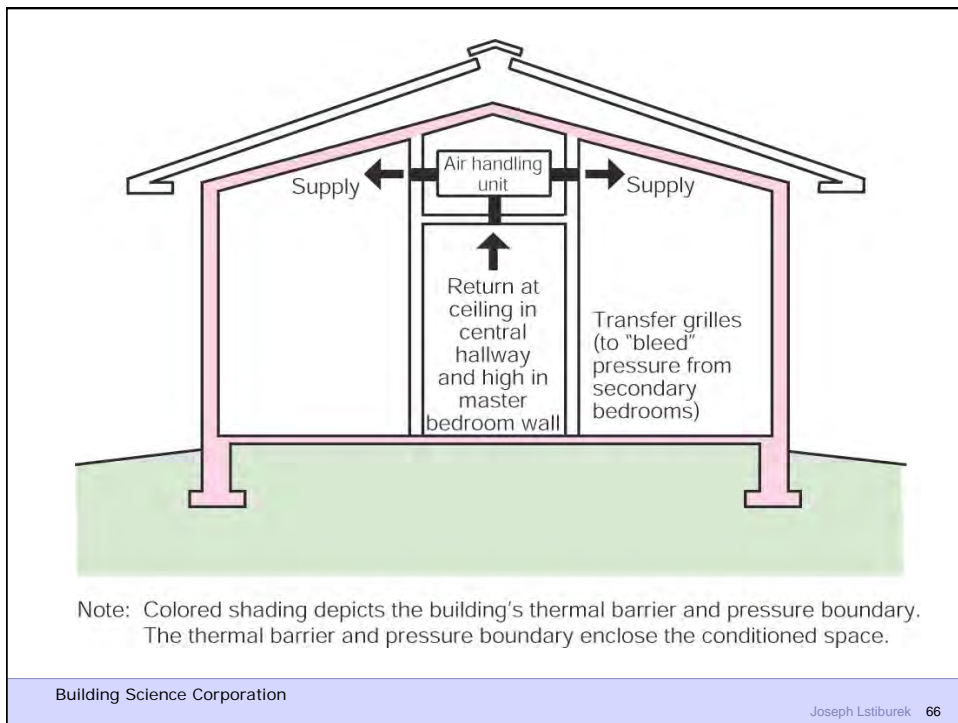
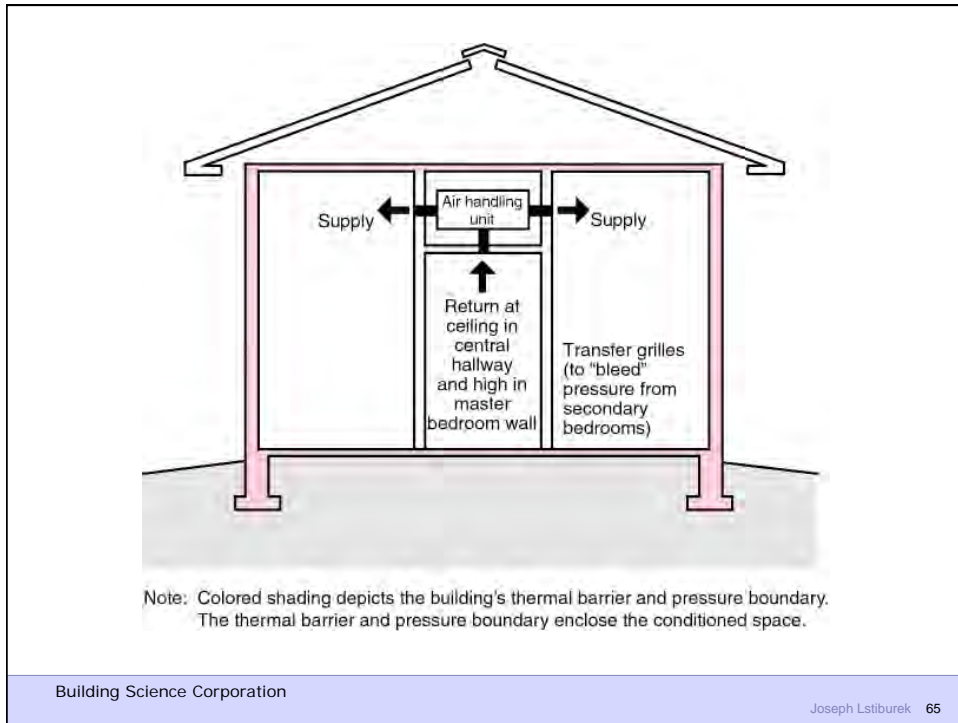
Floor supply and ceiling return on upper floor

Ceiling supply and floor return on lower floor

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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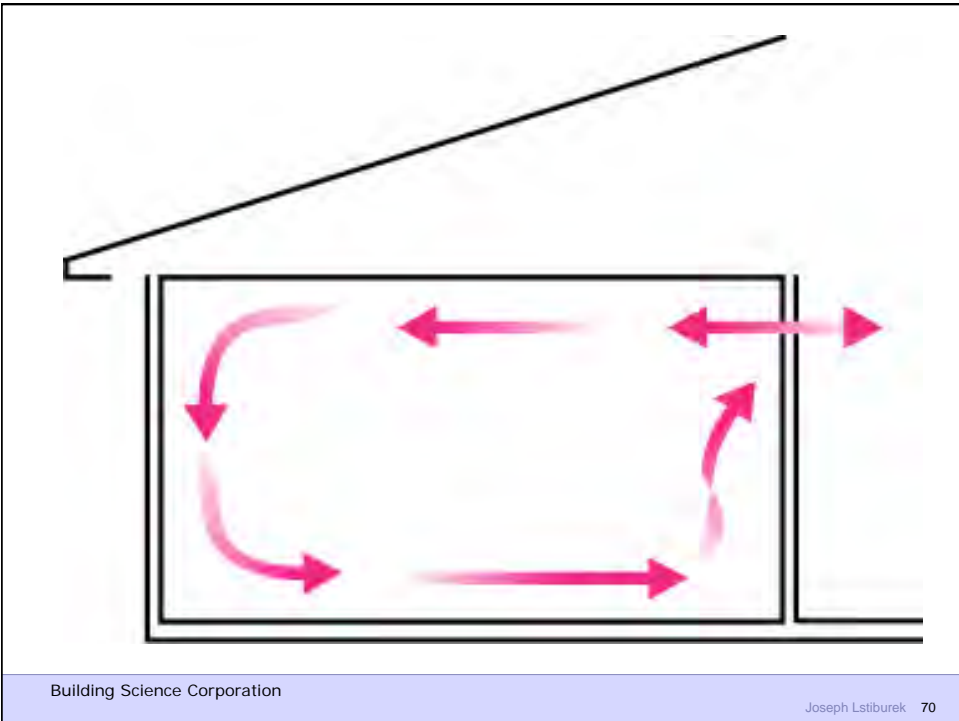
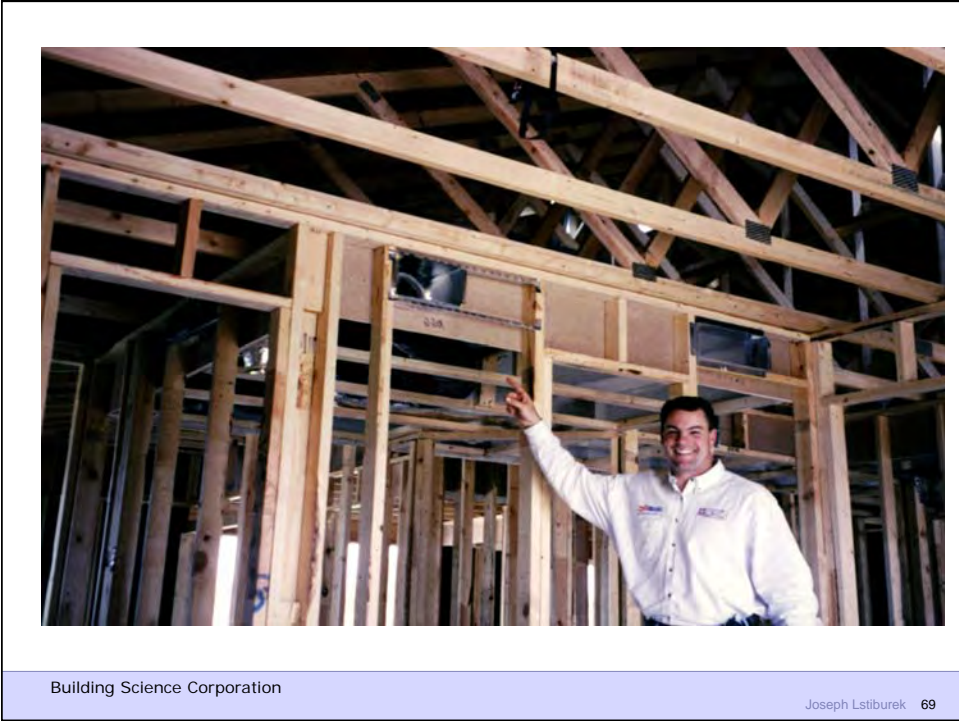
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