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Building Science

Ventilation and Air Pressure Management

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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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Air Barrier Metrics

Material	0.02 l/(s-m2) @ 75 Pa
Assembly	0.20 l/(s-m2) @ 75 Pa
Enclosure	2.00 l/(s-m2) @ 75 Pa
	0.35 cfm/ft2 @ 50 Pa
	0.25 cfm/ft2 @ 50 Pa
	0.15 cfm/ft2 @ 50 Pa

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Getting rid of big holes	3 ach@50
Getting rid of smaller holes	1.5 ach@50
Getting German	0.6 ach@50

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Best

As Tight as Possible - with -
Balanced Ventilation
Energy Recovery
Distribution and Mixing
Source Control - Spot exhaust ventilation
Filtration
Material selection

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Worst

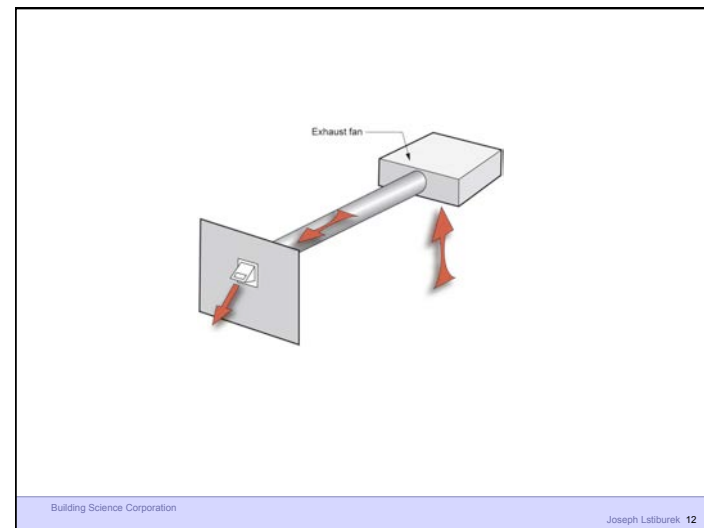
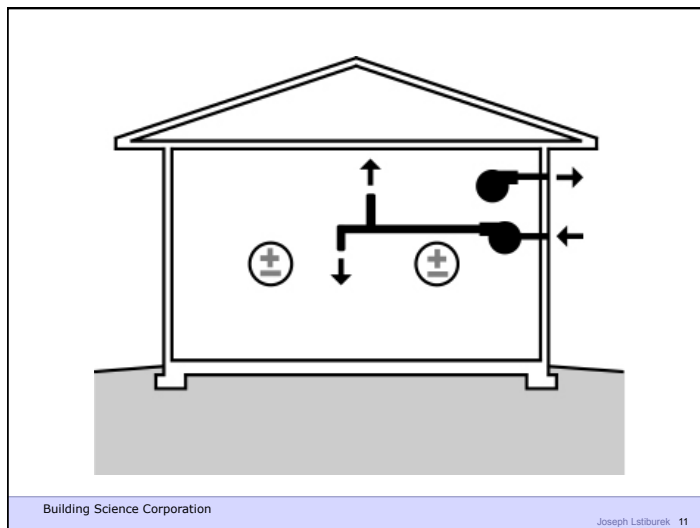
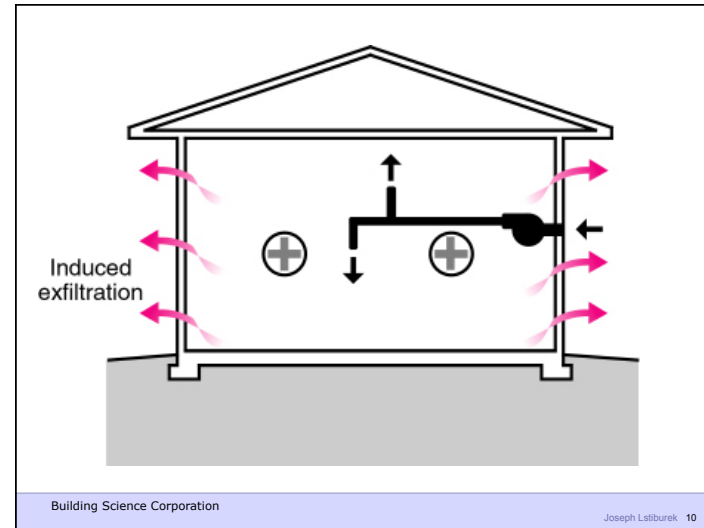
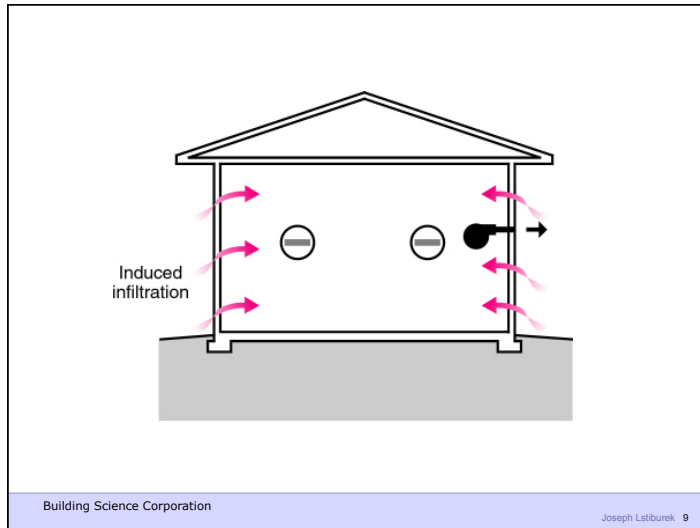
Leaky - with – Nothing
Spot Ventilation in Bathroom/Kitchen
Exhaust Ventilation – with – No Distribution
and No Mixing

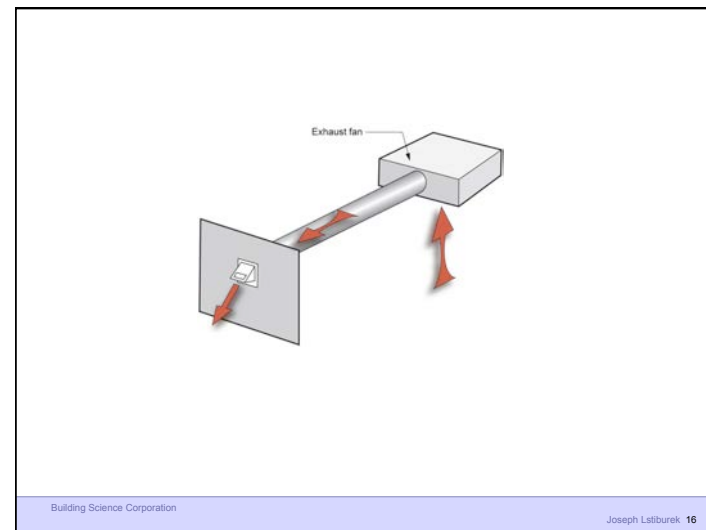
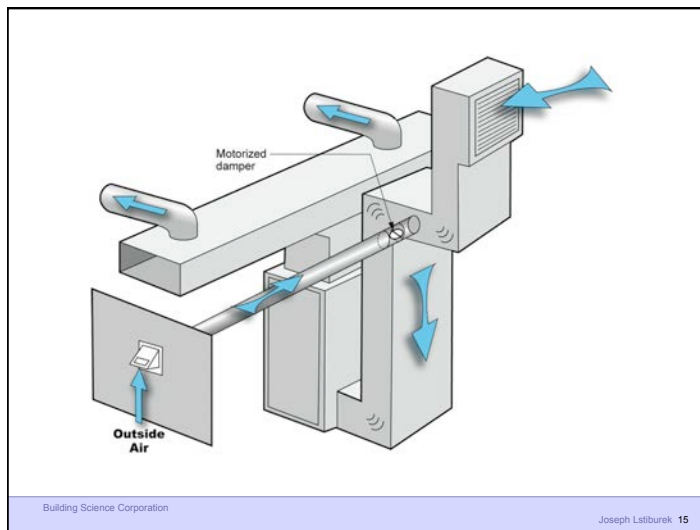
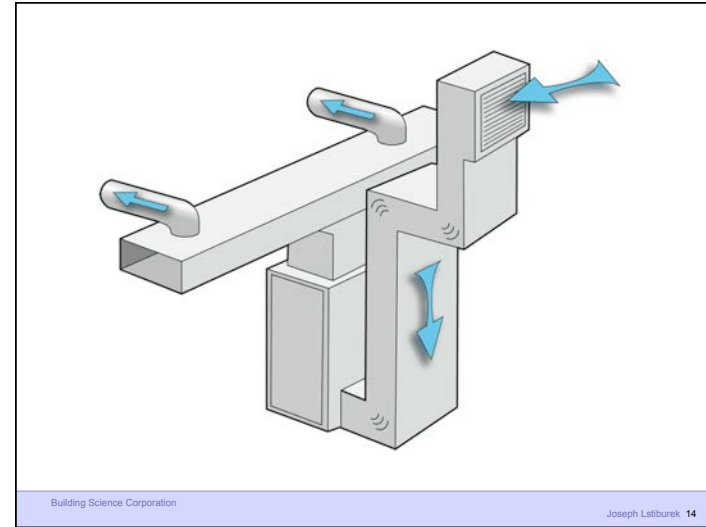
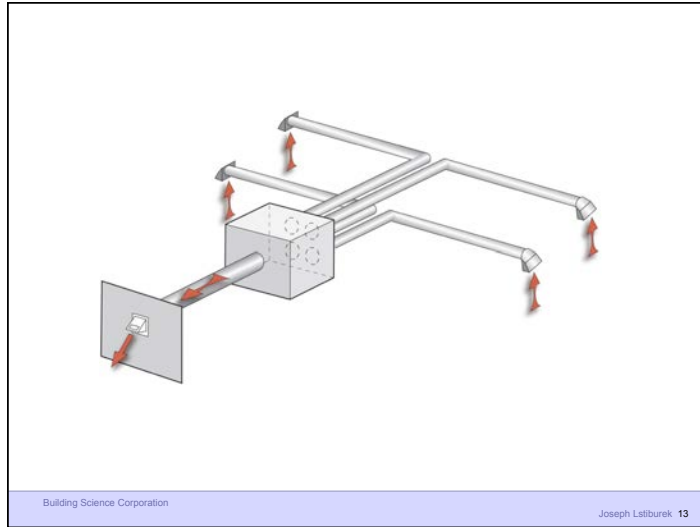
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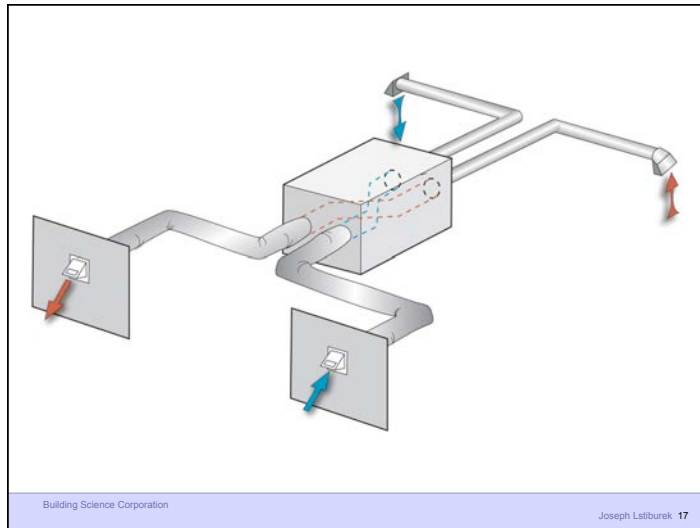
Three Types of Controlled Ventilation
Systems

Exhaust Ventilation
Supply Ventilation
Balanced Ventilation

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Ventilation Rates Are Based on Odor Control

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Ventilation Rates Are Based on Odor Control
Health Science Basis for Ventilation Rates is
Extremely Limited

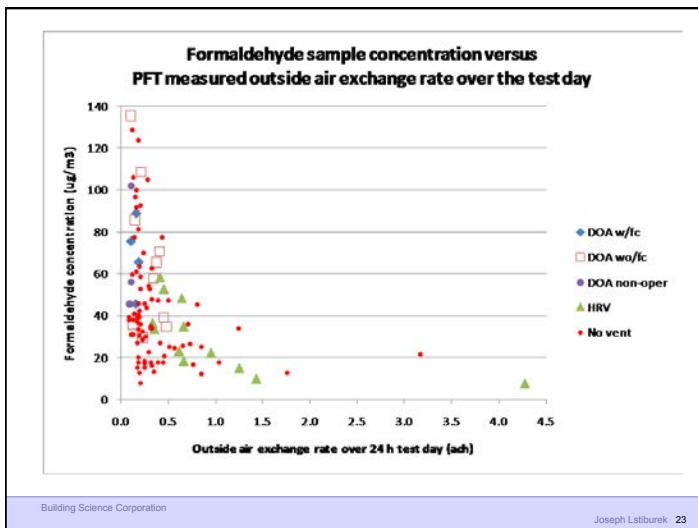
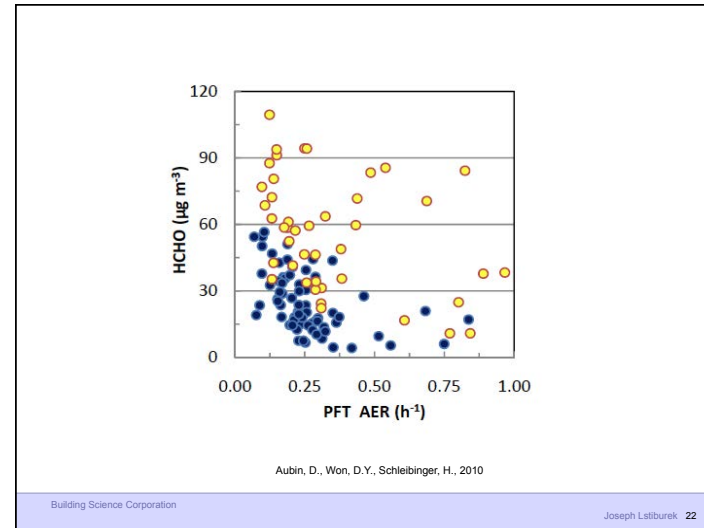
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Ventilation Rates Are Based on Odor Control
Health Science Basis for Ventilation Rates is
Extremely Limited
Almost Nothing Cited Applies to Housing

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Ventilation Rates Are Based on Odor Control
 Health Science Basis for Ventilation Rates is
 Extremely Limited
 Almost Nothing Cited Applies to Housing
 The Applicable Studies Focus on Dampness

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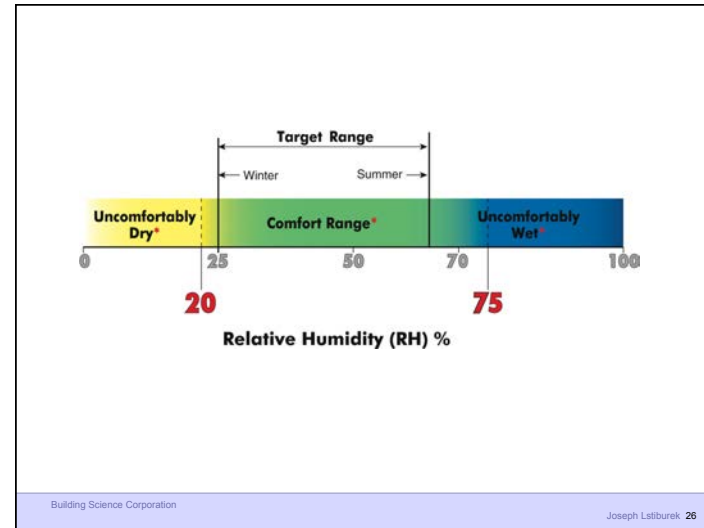


Dilution Is Not The Solution To Indoor
 Pollution
 Source Control

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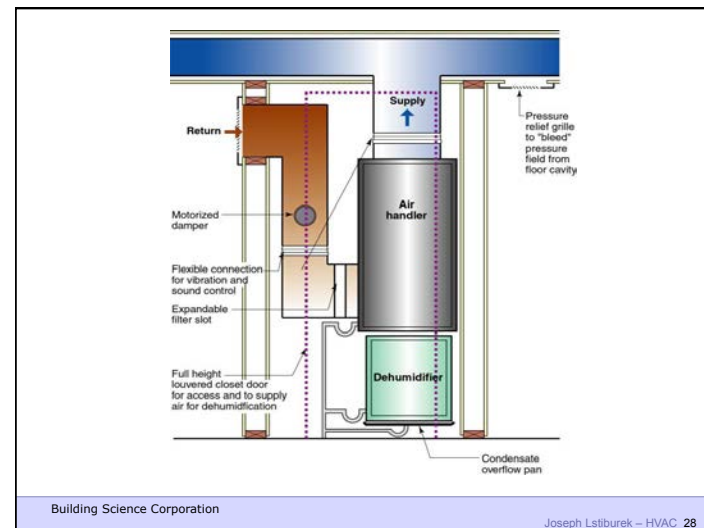
Dilution For People
Source Control For The Building

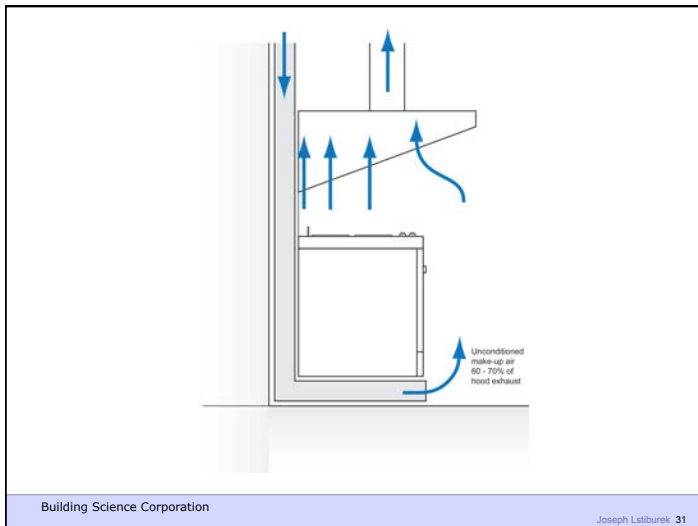
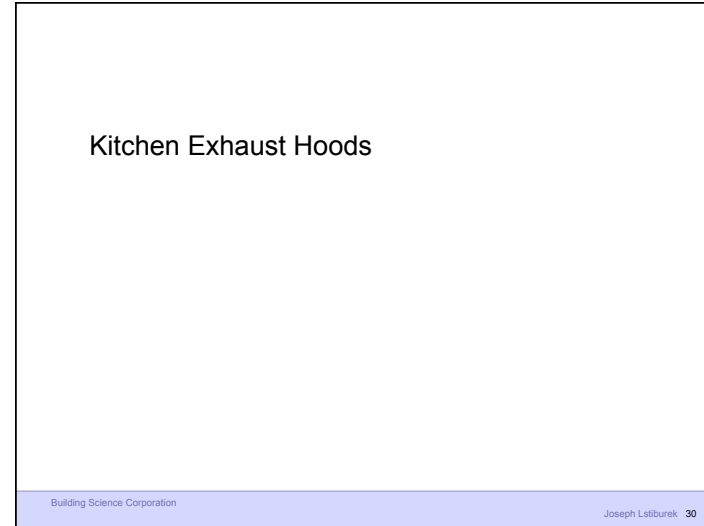
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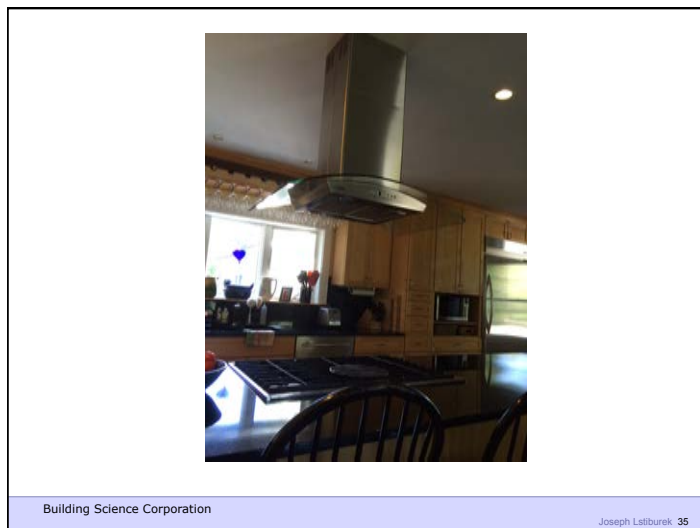
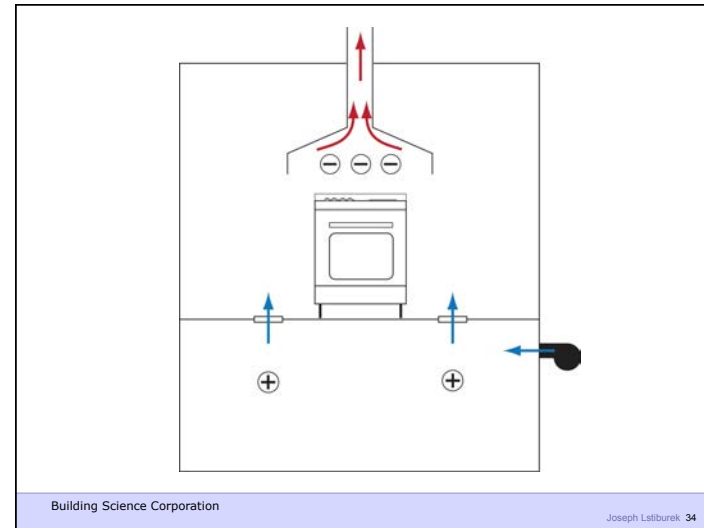
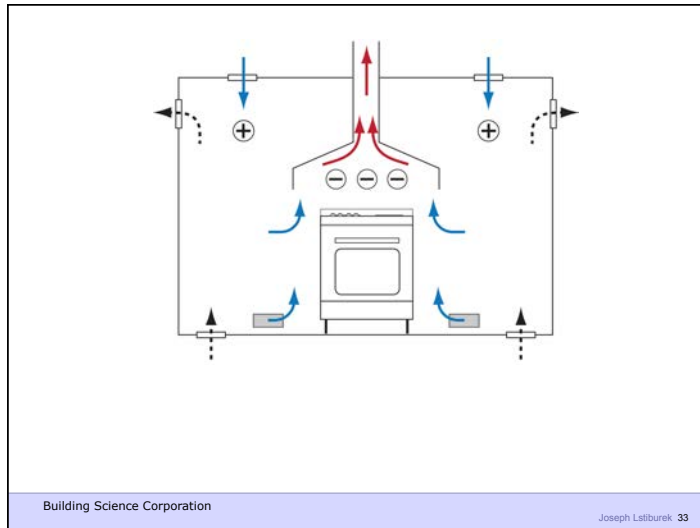


Recommended Range of Relative Humidity
Above 25 percent during winter
Below 70 percent during summer

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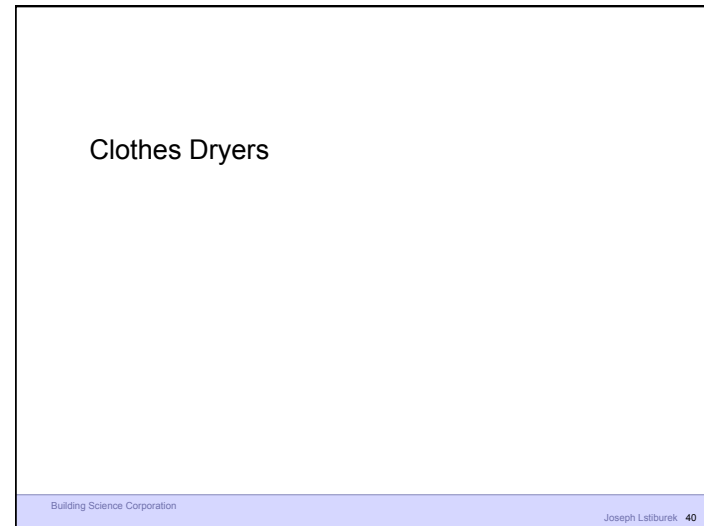
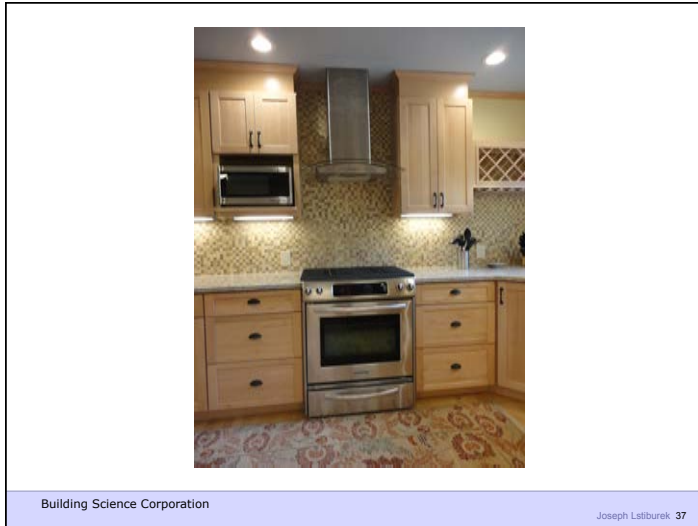
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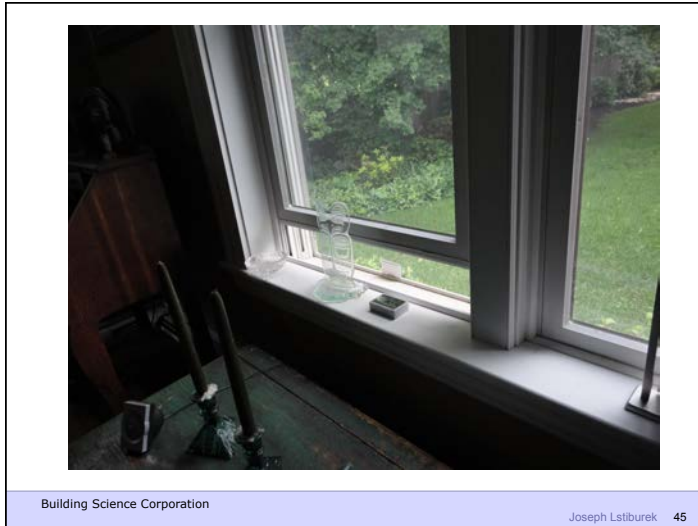


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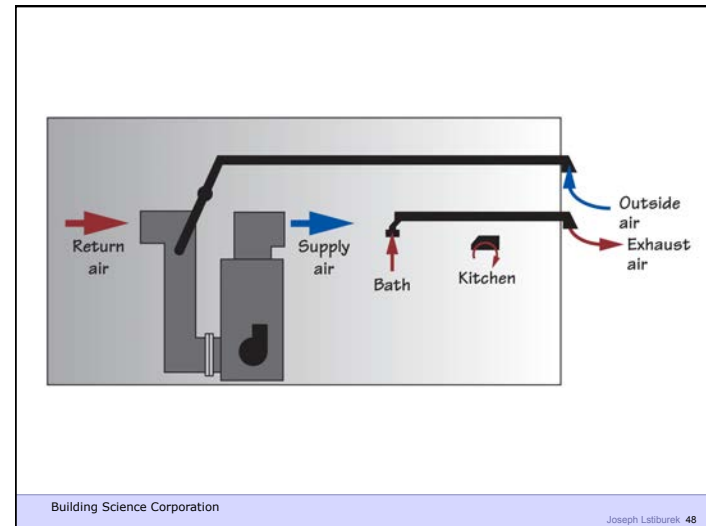


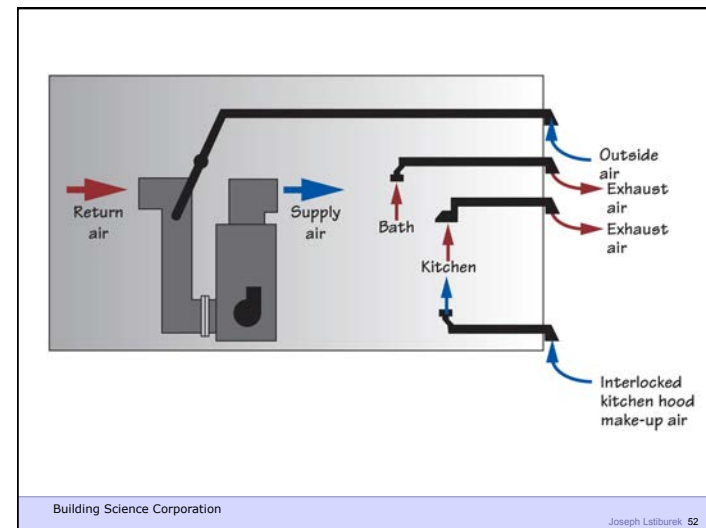
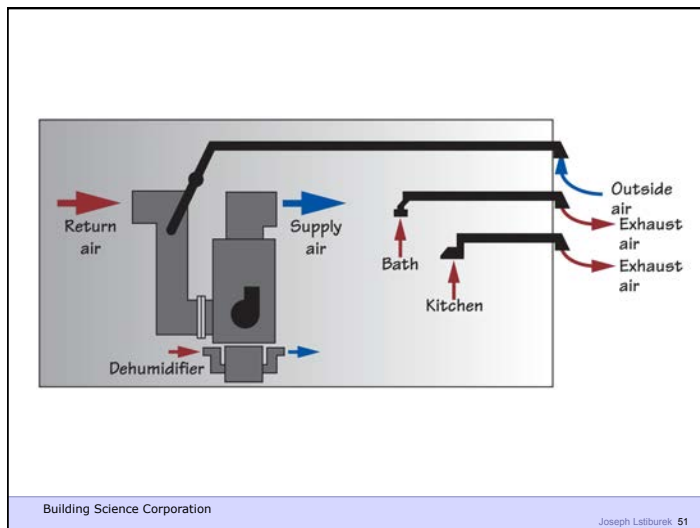
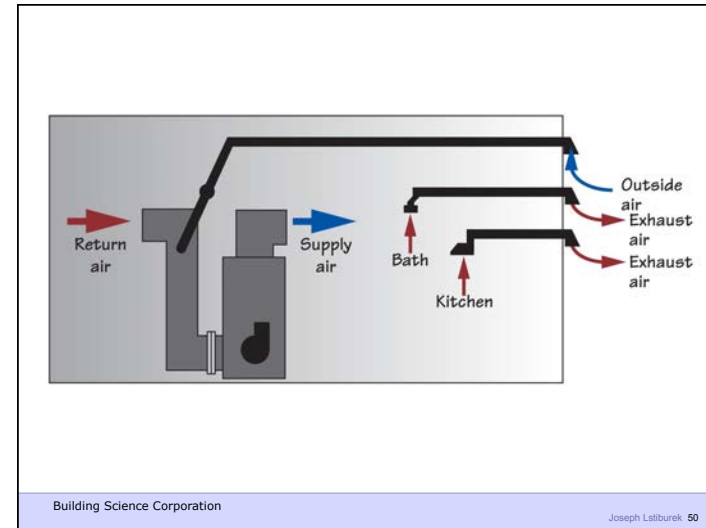
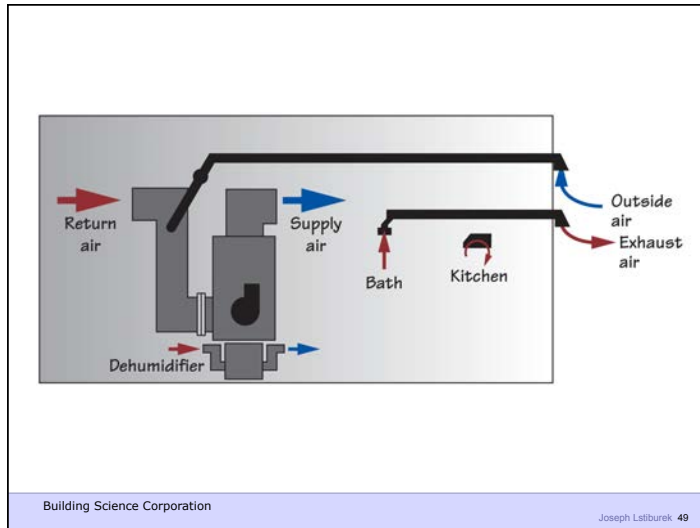


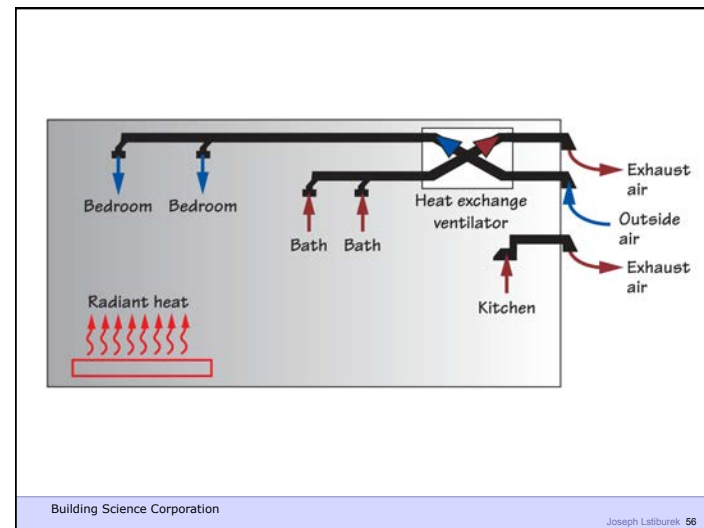
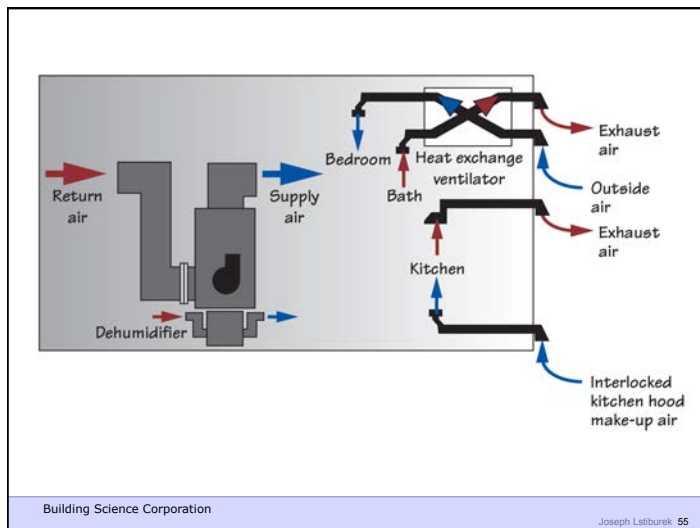
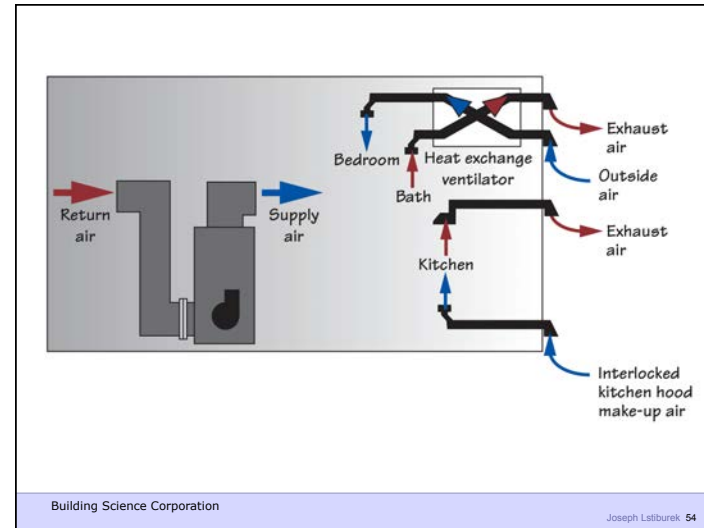
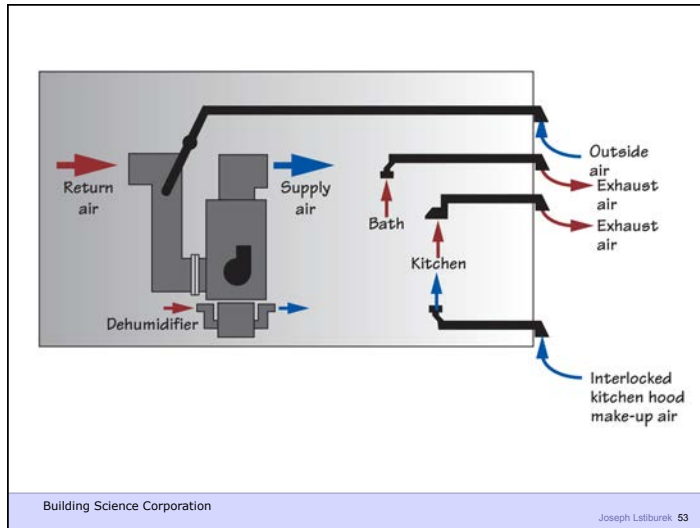


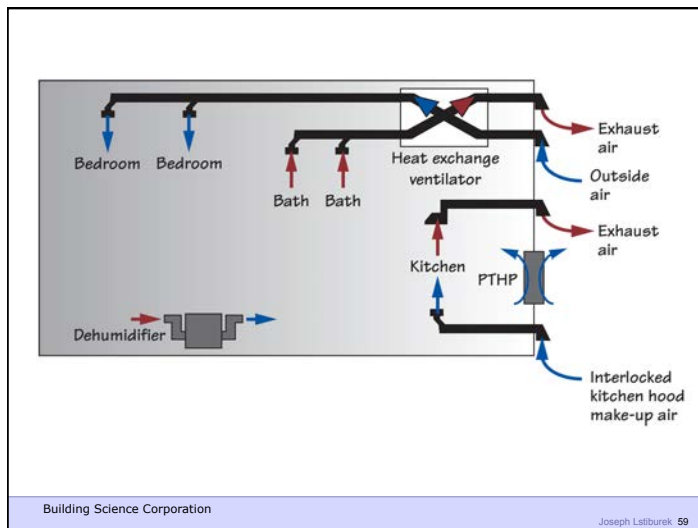
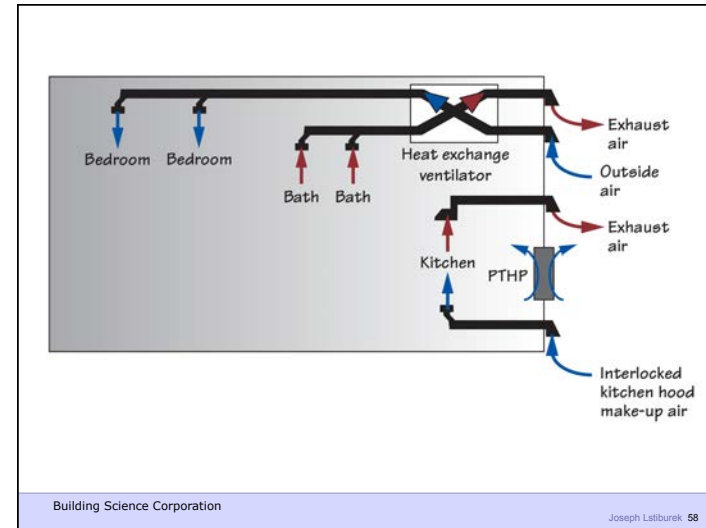
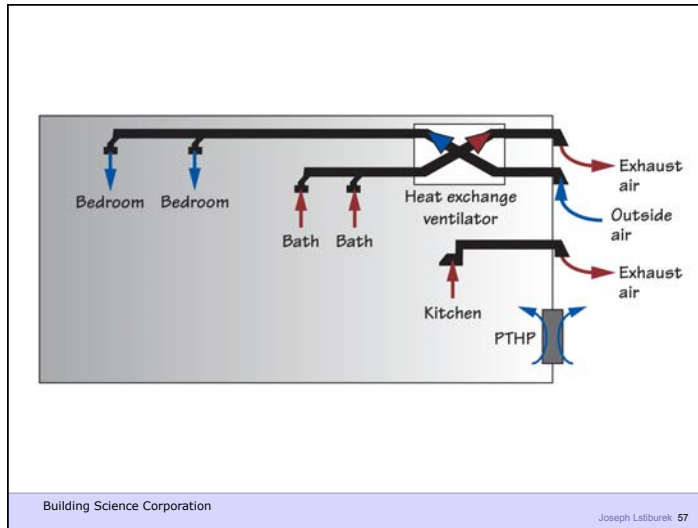
Approaches

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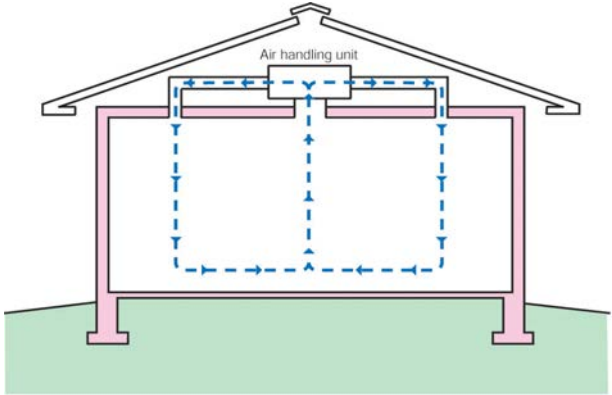


Duct Leakage Should Be Less Than 5% of Rated Flow As Tested by Pressurization To 25 Pascals

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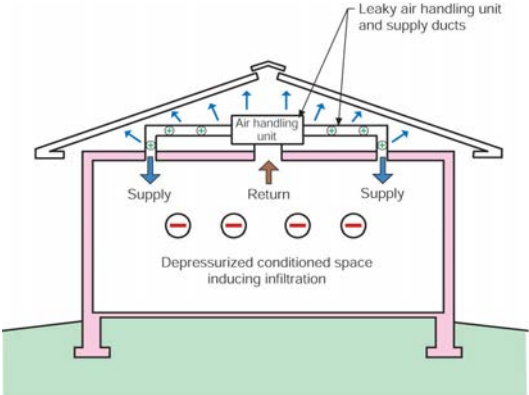


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Note: Colored shading depicts the building's thermal barrier and pressure boundary. The thermal barrier and pressure boundary enclose the conditioned space.

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