

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

# Building Science

Adventures In Building Science

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Life is Tough Enough As it Is...

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Life is Tough Enough As it Is...  
It's Harder When You Are Stupid

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Joseph Lstiburek 3

Don't Do Stupid Things

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Joseph Lstiburek 4

**R2**



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Joseph Lstiburek 5

**R2**



**R4**



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Joseph Lstiburek 6

**R2**



**R4**



**R6**



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Joseph Lstiburek 7

**R2**



**R4**



**R6**

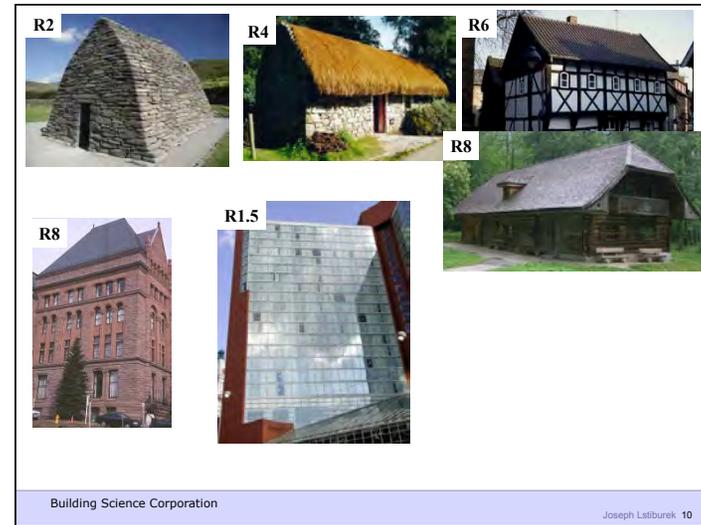


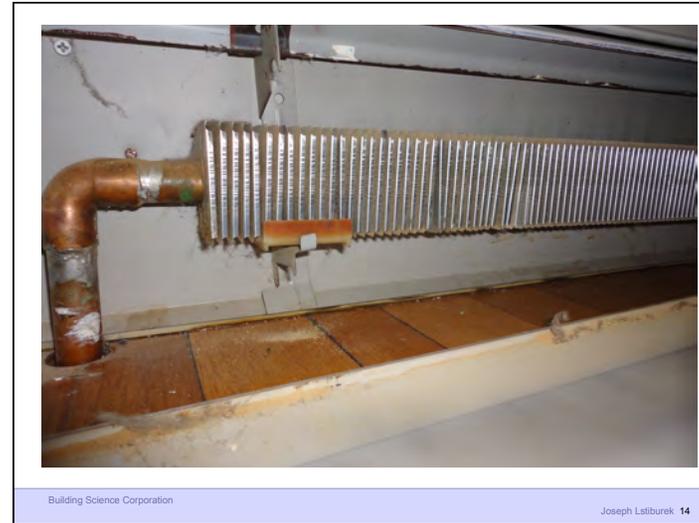
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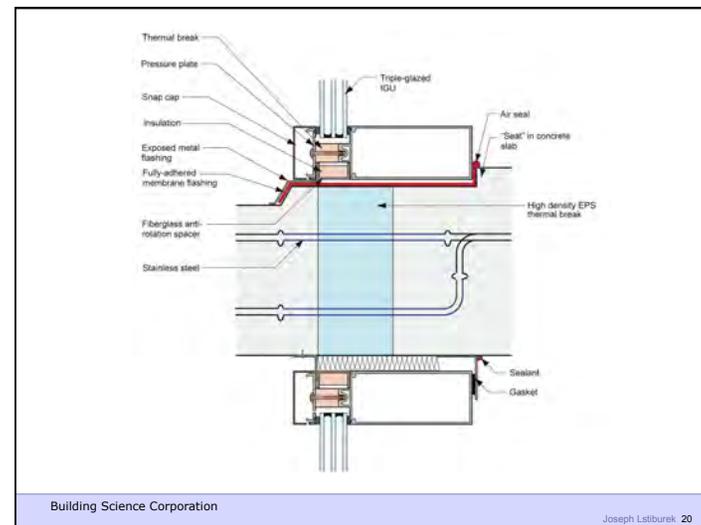
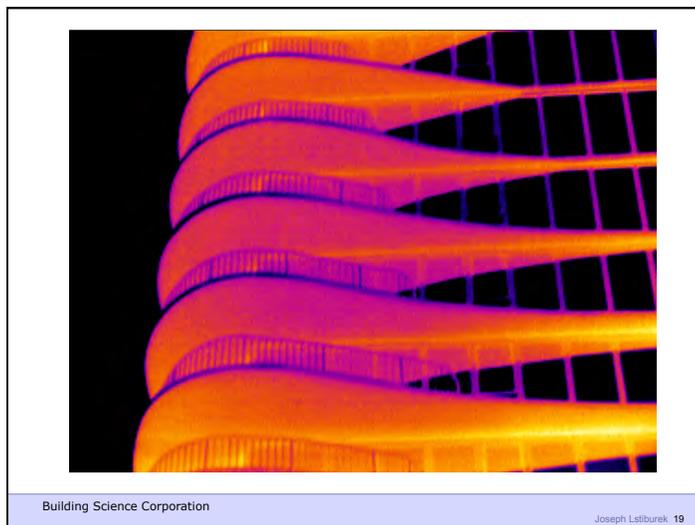
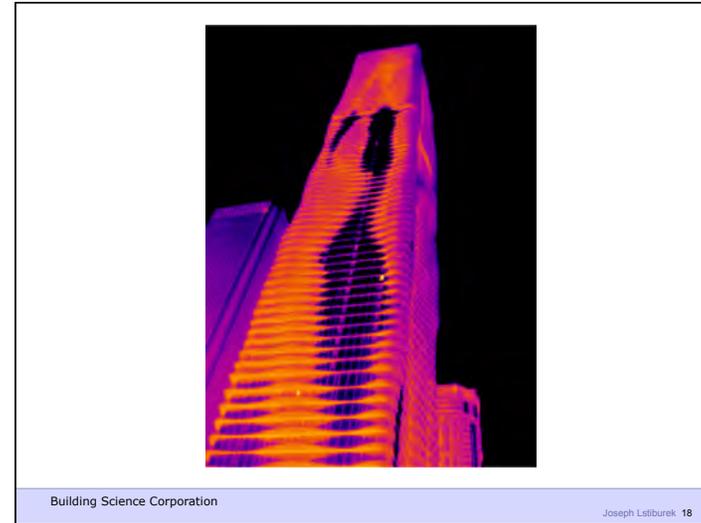
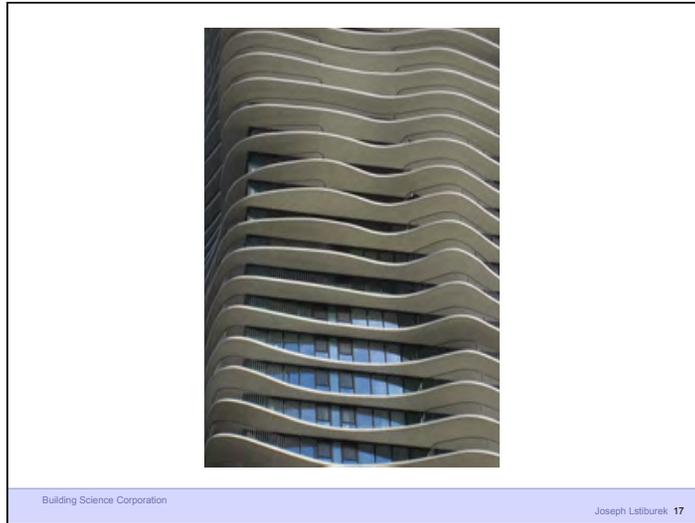


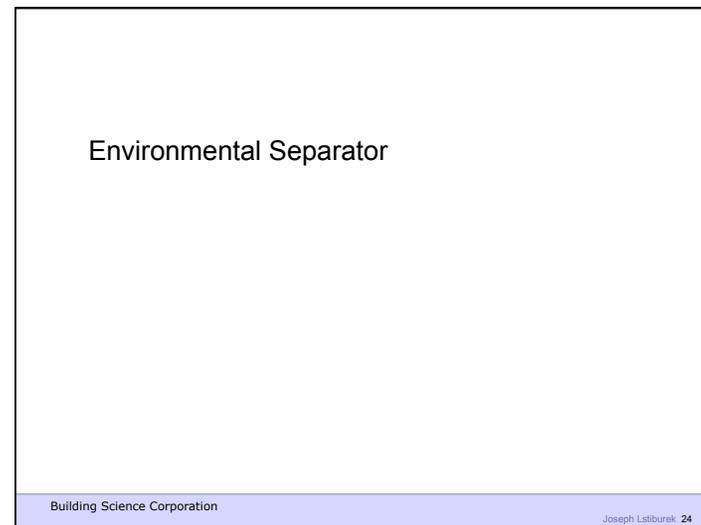
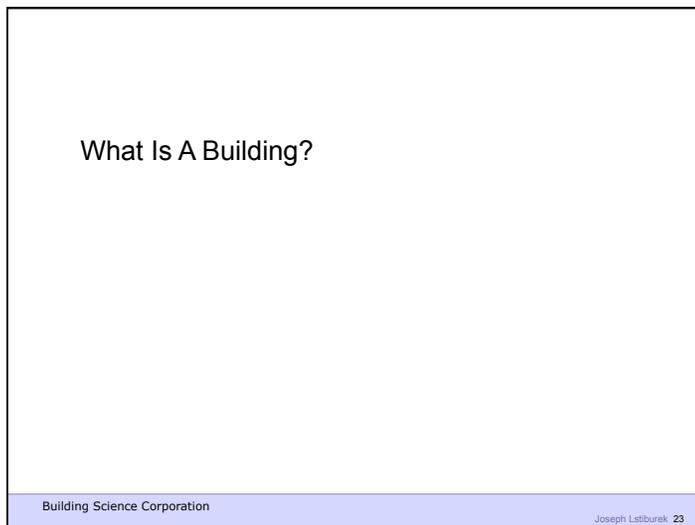
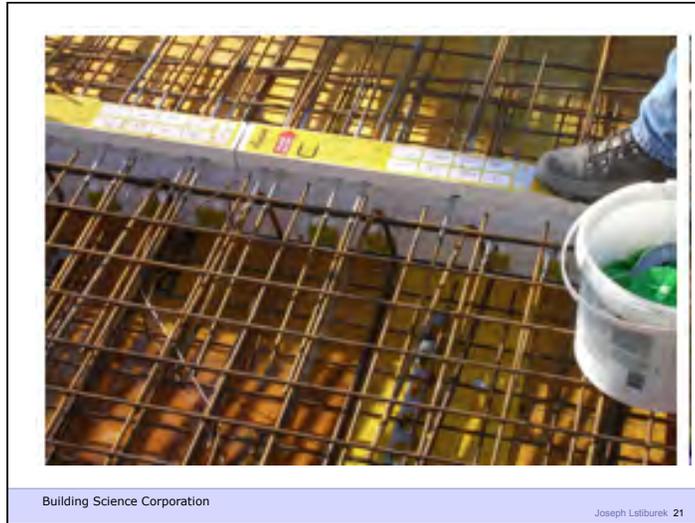
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- Control heat flow
- Control airflow
- Control water vapor flow
- Control rain
- Control ground water
- Control light and solar radiation
- Control noise and vibrations
- Control contaminants, environmental hazards and odors
- Control insects, rodents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

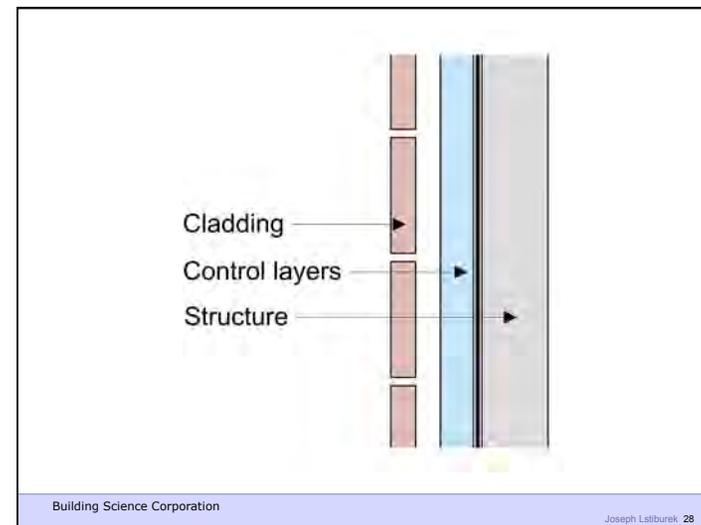
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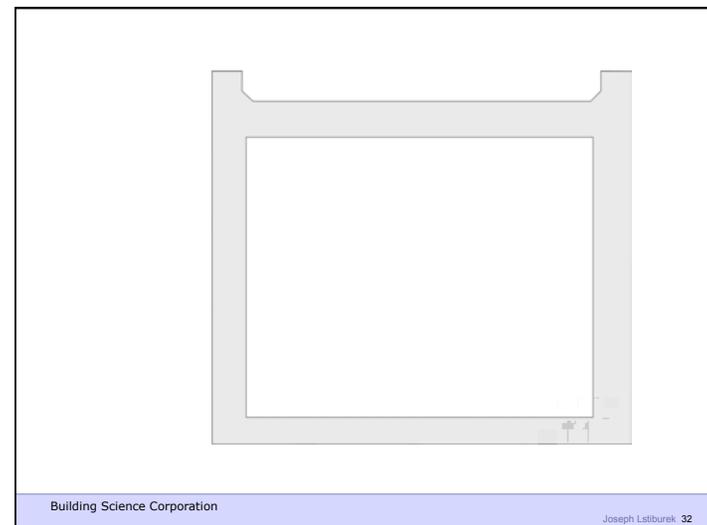
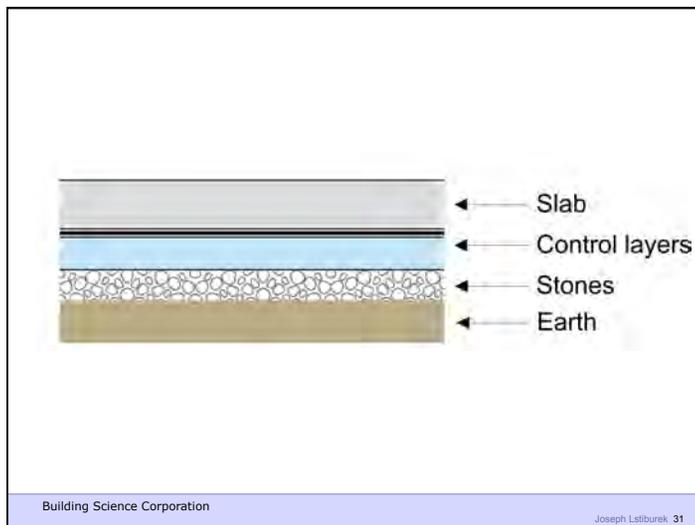
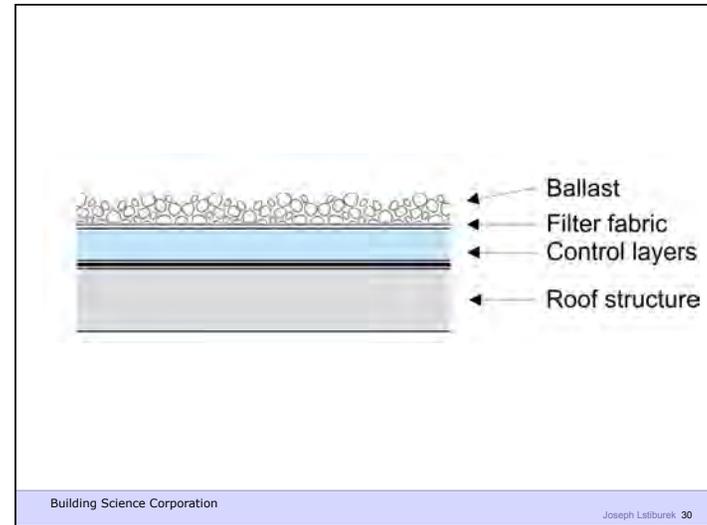
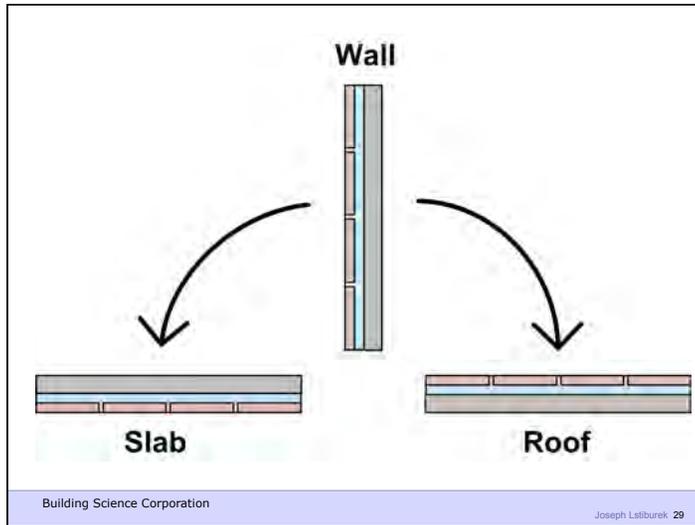
Heat Flow Is From Warm To Cold  
 Moisture Flow Is From Warm To Cold  
 Moisture Flow Is From More To Less  
 Air Flow Is From A Higher Pressure to a Lower Pressure  
 Gravity Acts Down

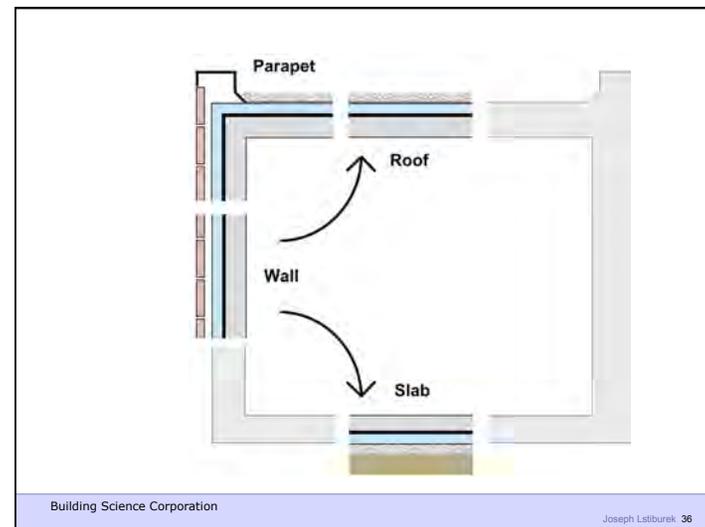
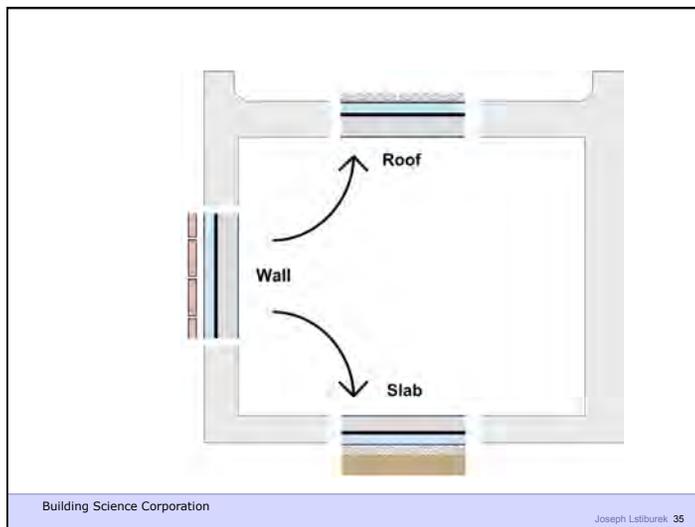
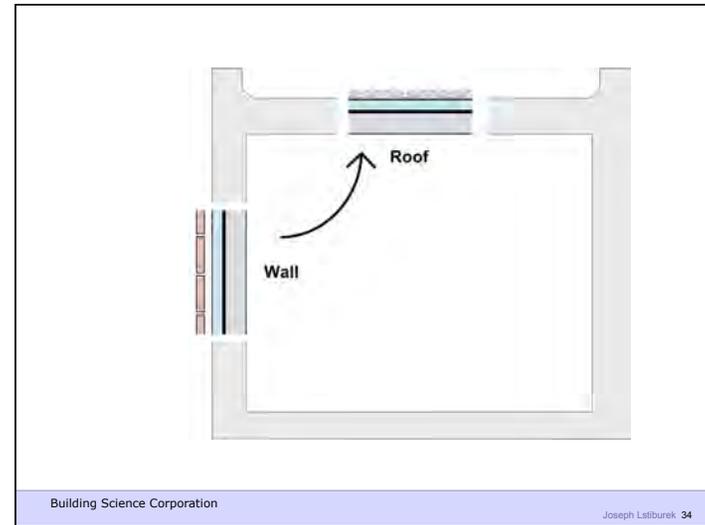
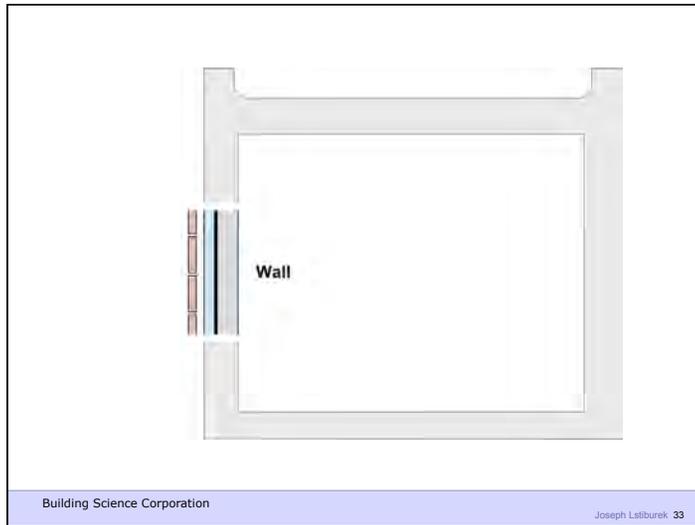
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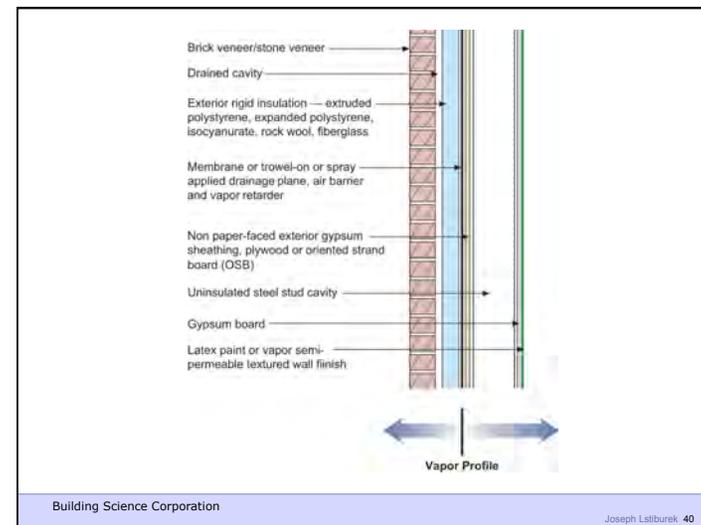
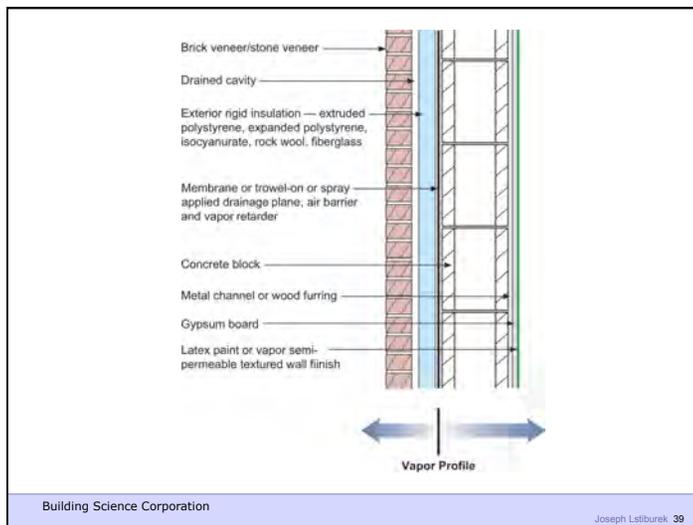
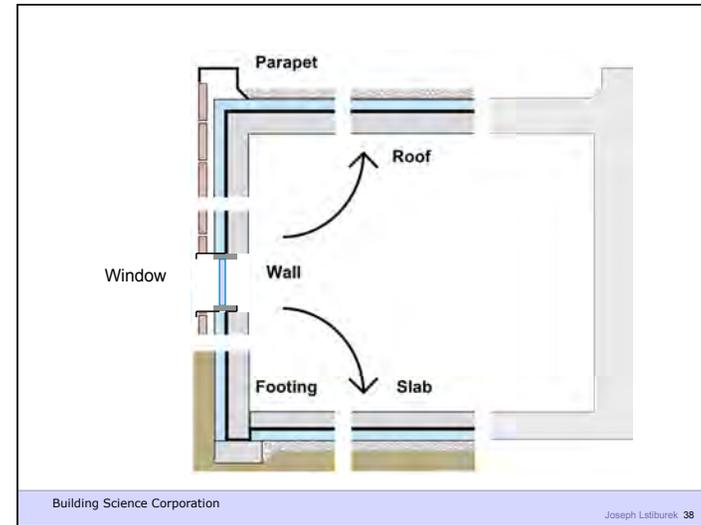
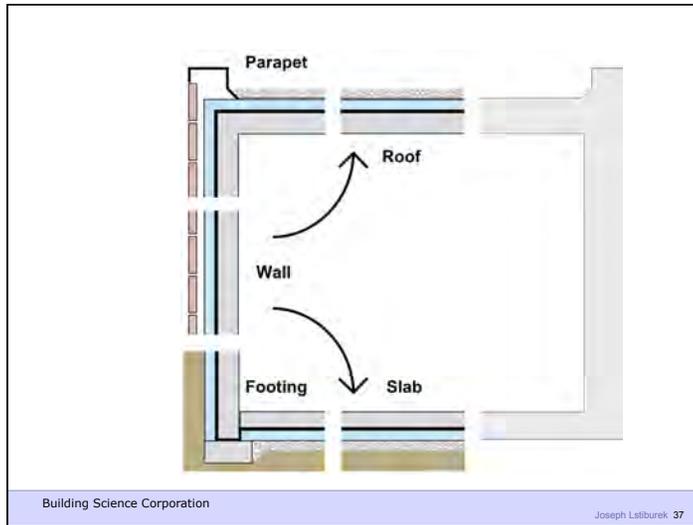
Water Control Layer  
 Air Control Layer  
 Vapor Control Layer  
 Thermal Control Layer

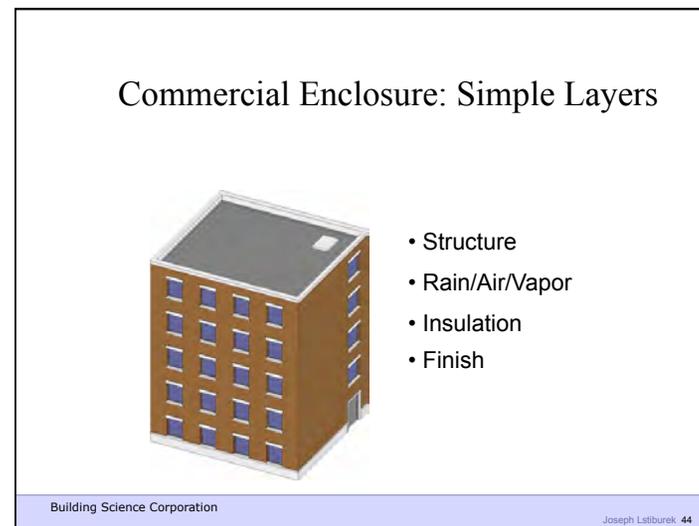
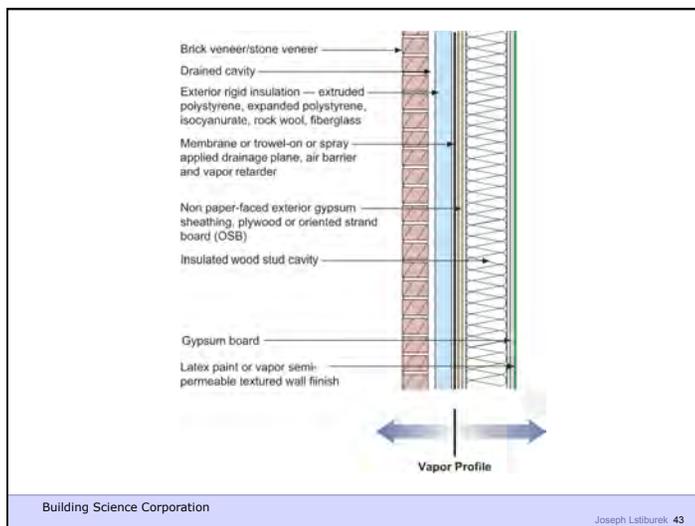
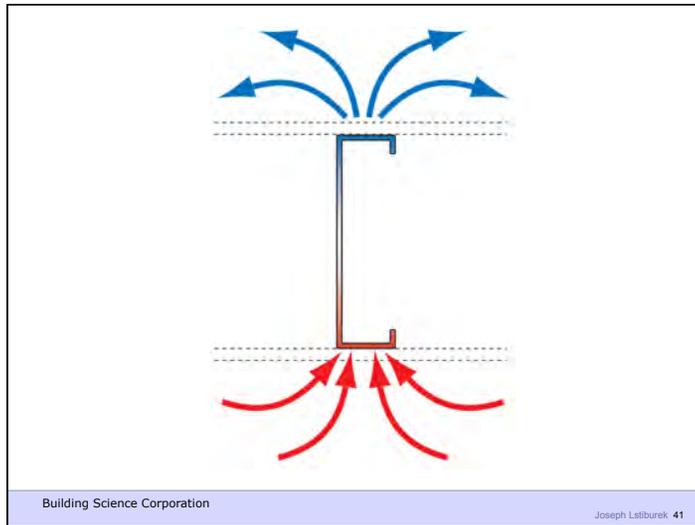
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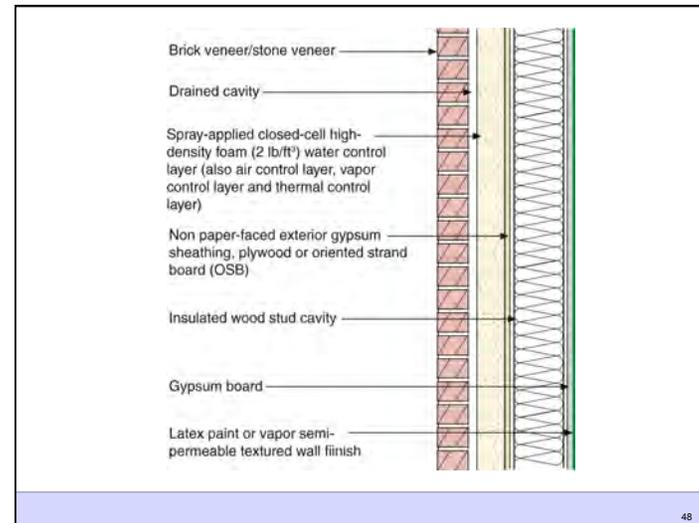
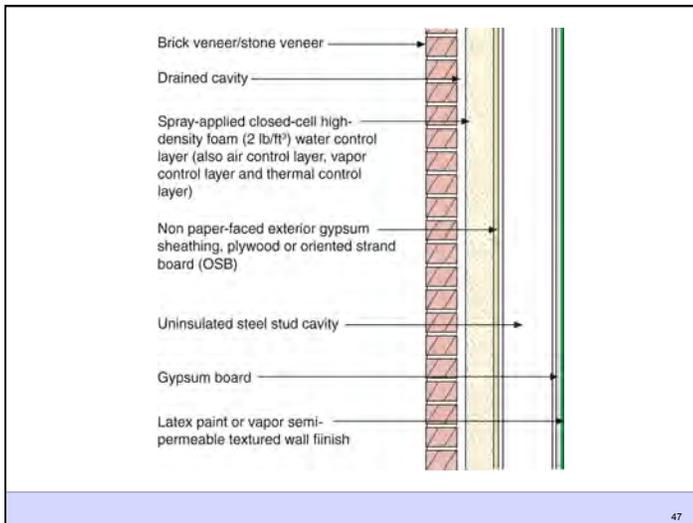
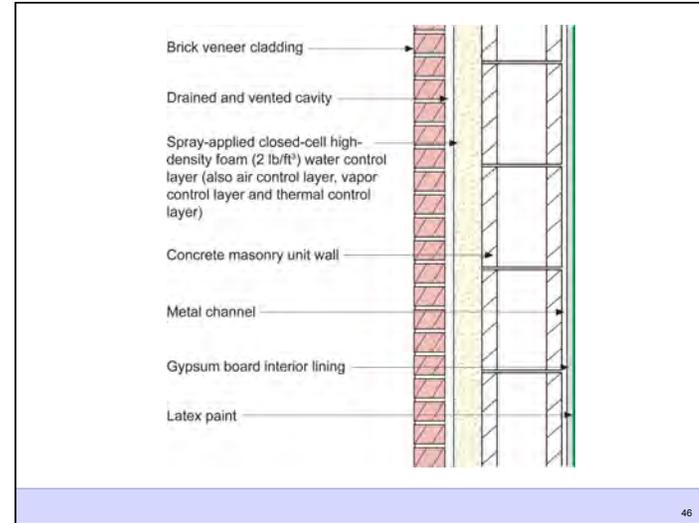
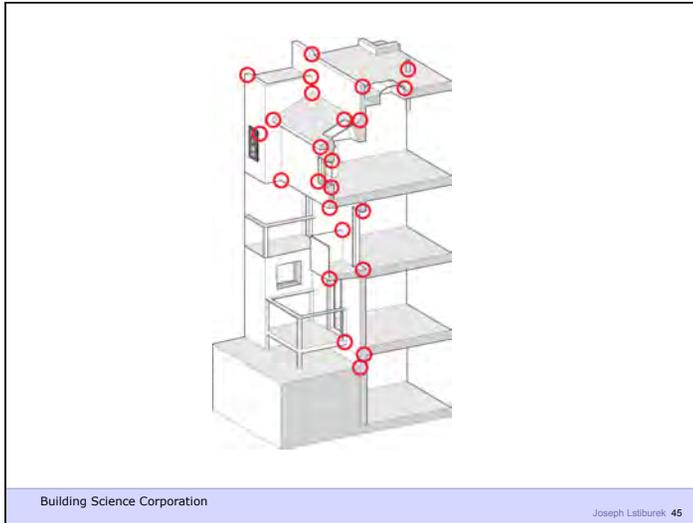


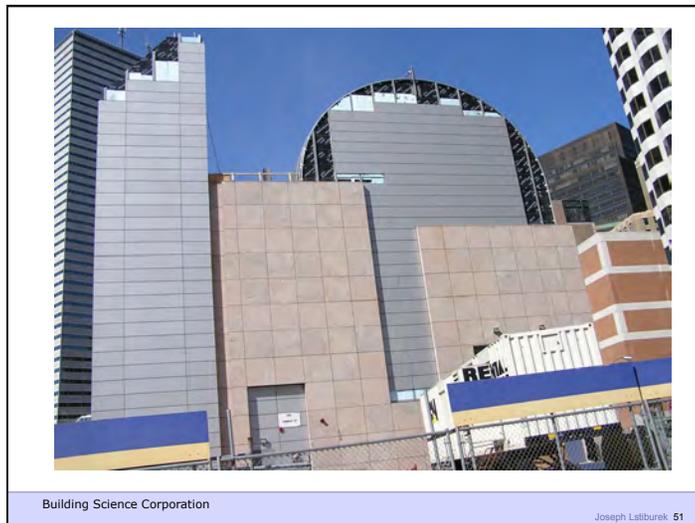
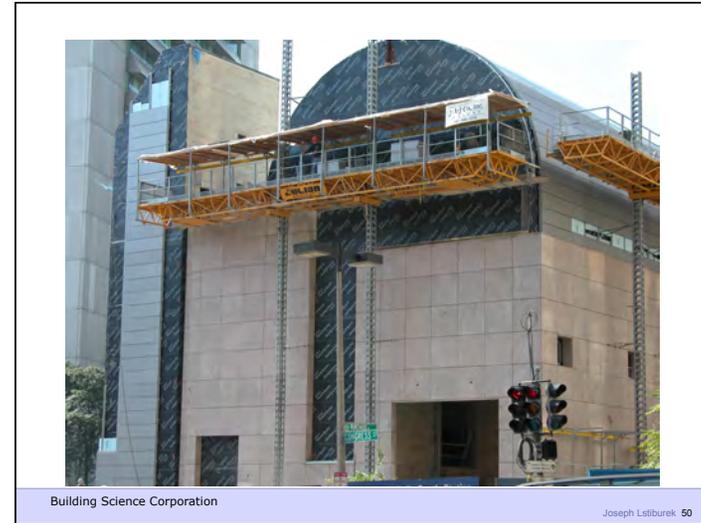


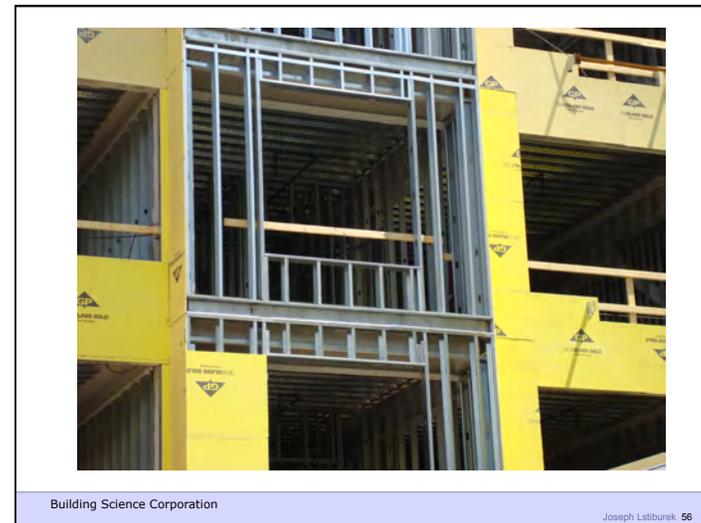
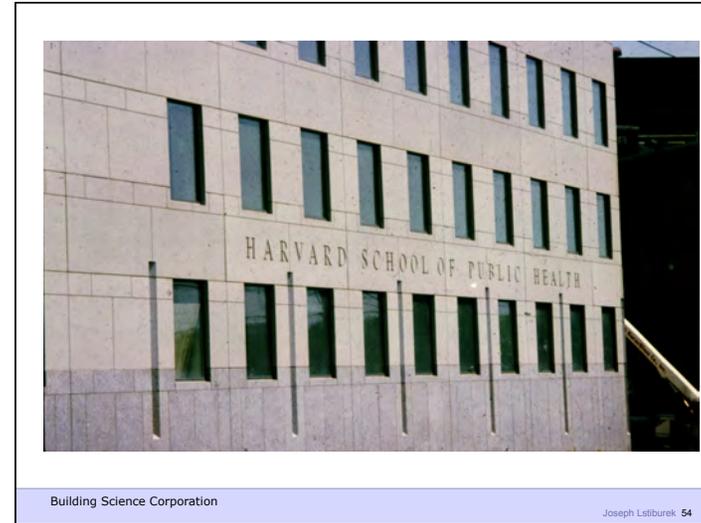














Don't Do Stupid Things

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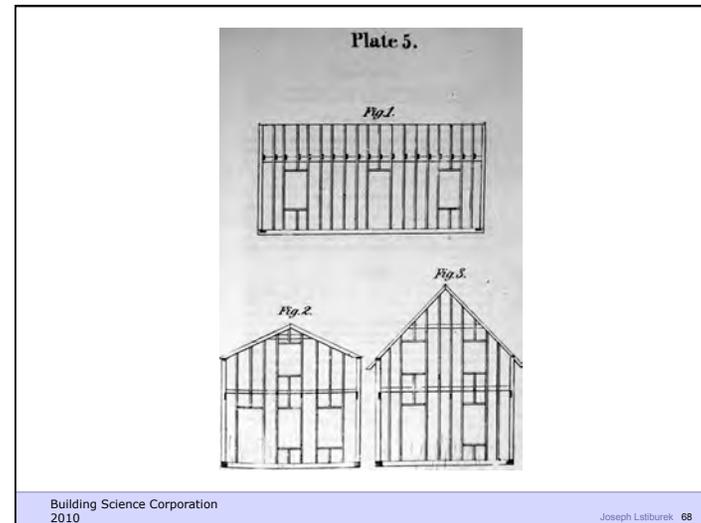
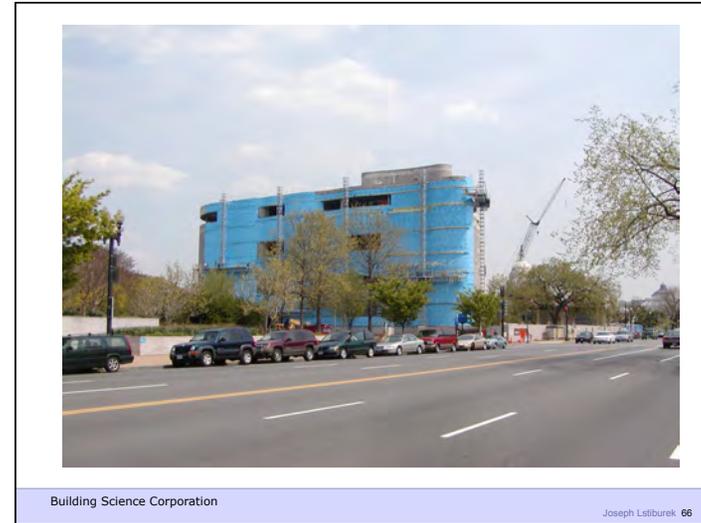
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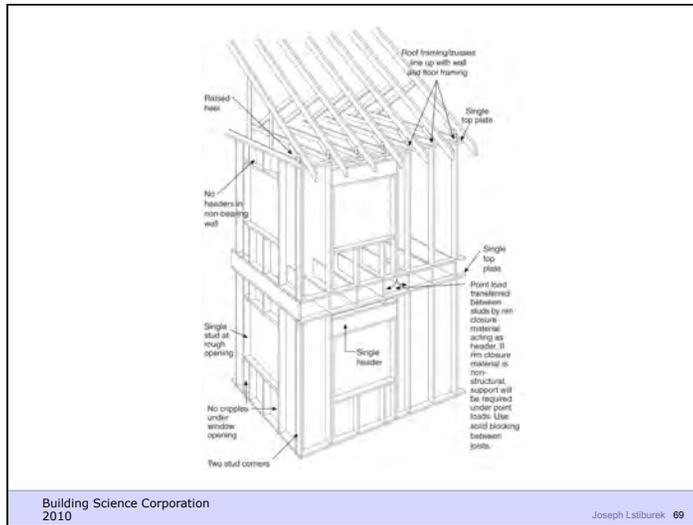
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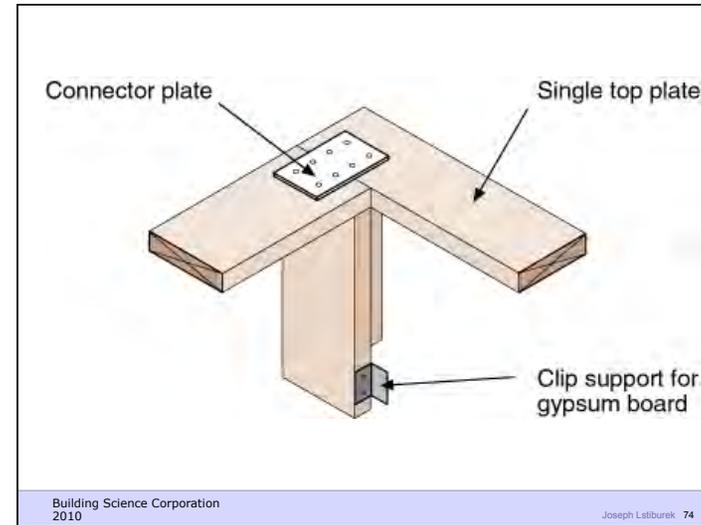
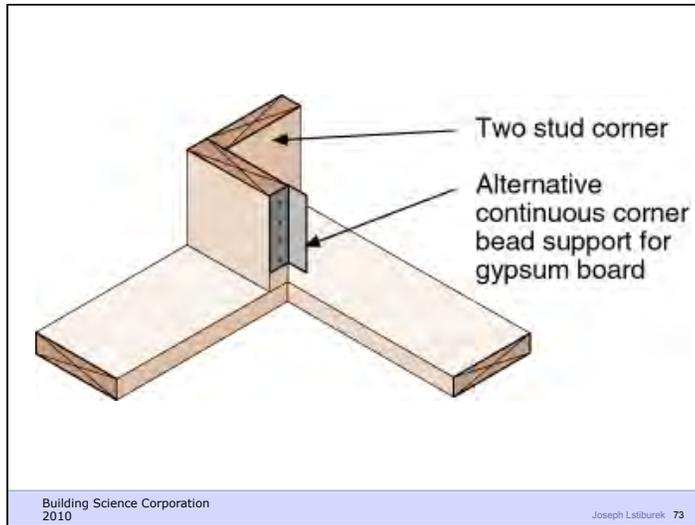


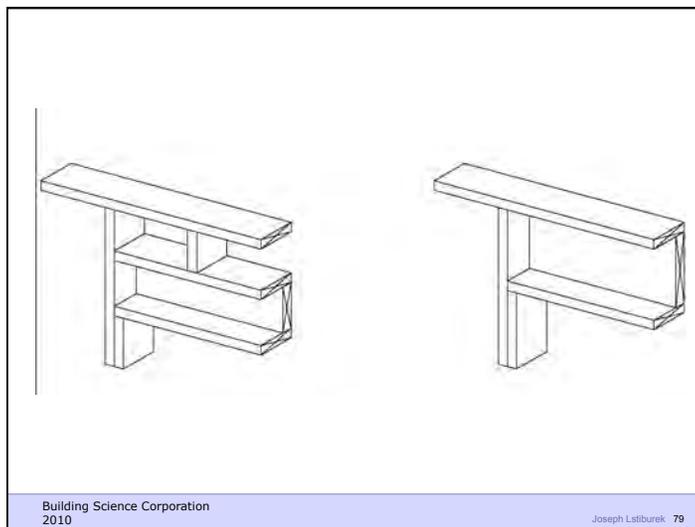
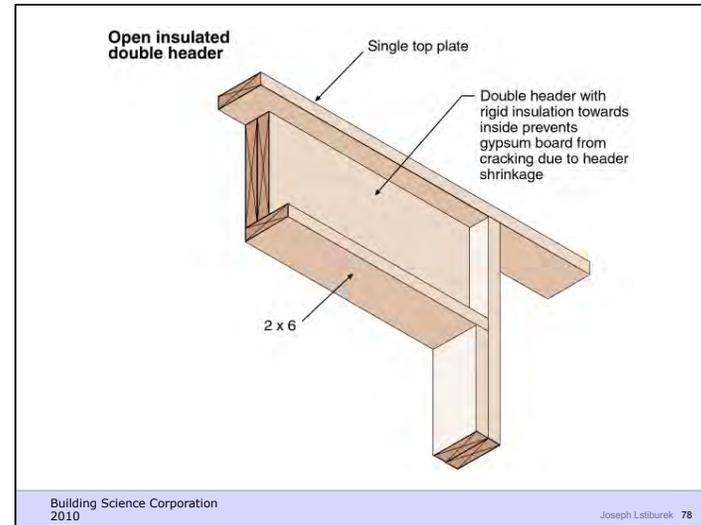
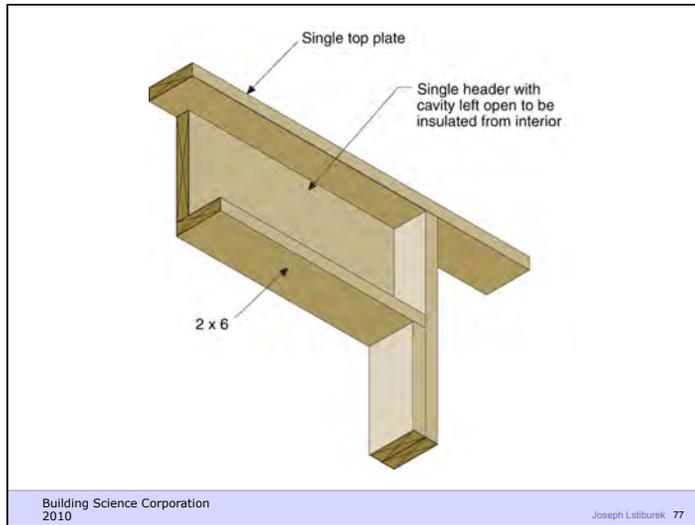
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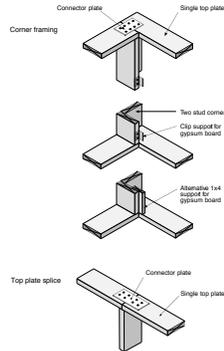






### Advanced Framing System

- 2 Stud Corners



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### Advanced Framing System

- Insulated headers
- No header necessary at non-bearing walls

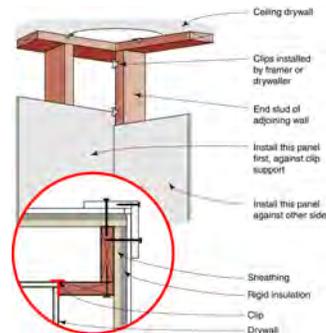


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### Advanced Framing System

- Drywall clips allow for better installation with less drywall cracking



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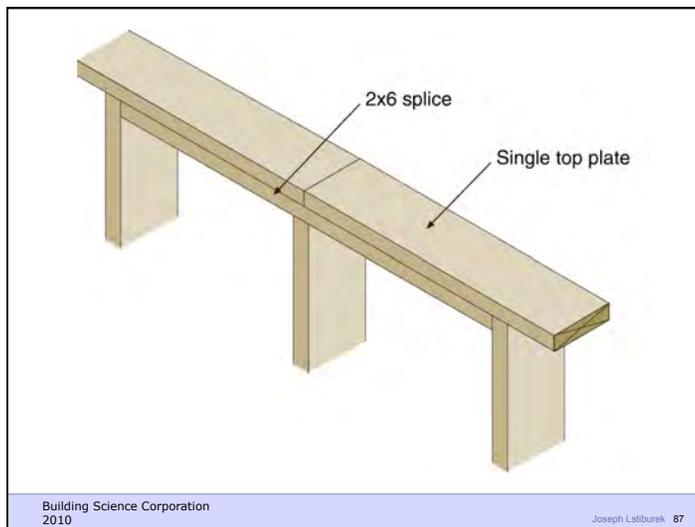
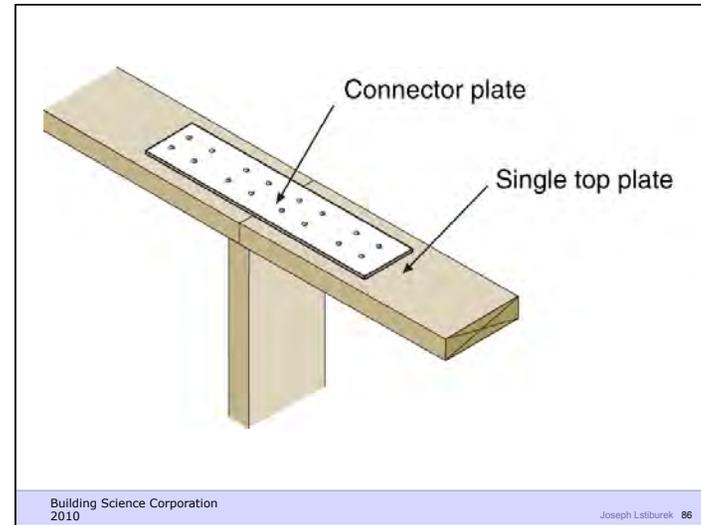
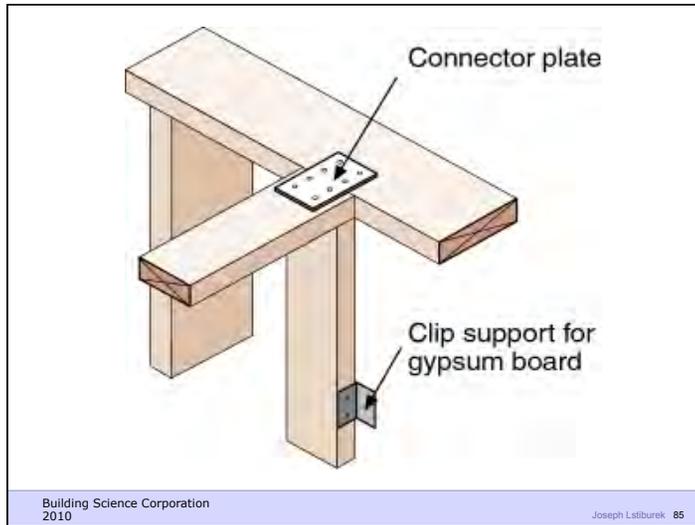
### Advanced Framing System

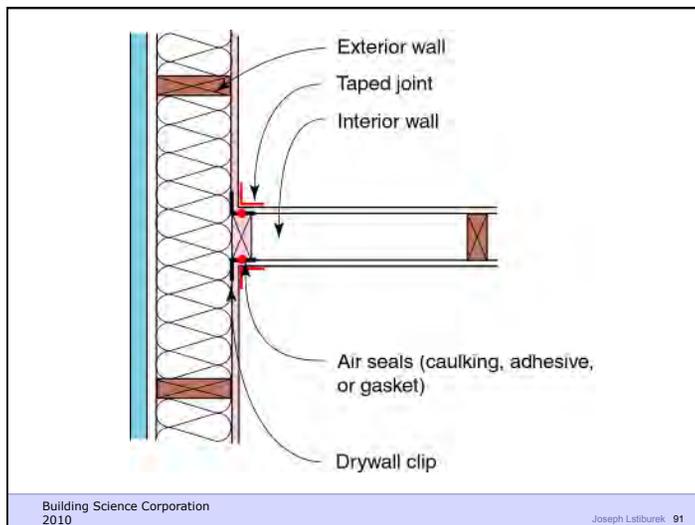
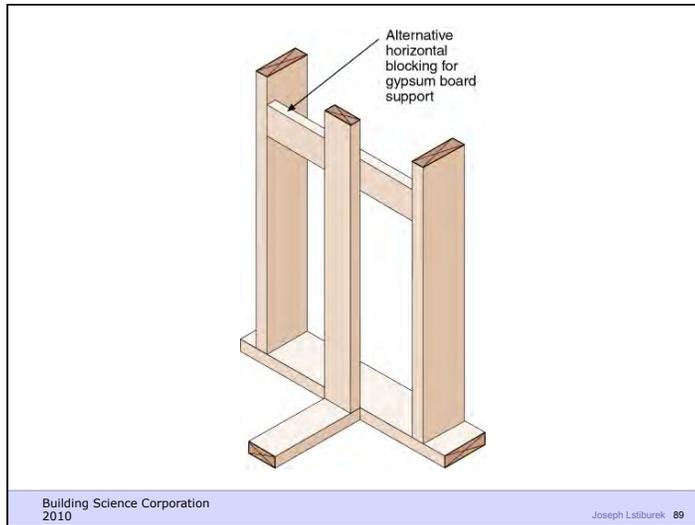
- Drywall clips at corner and intersecting wall



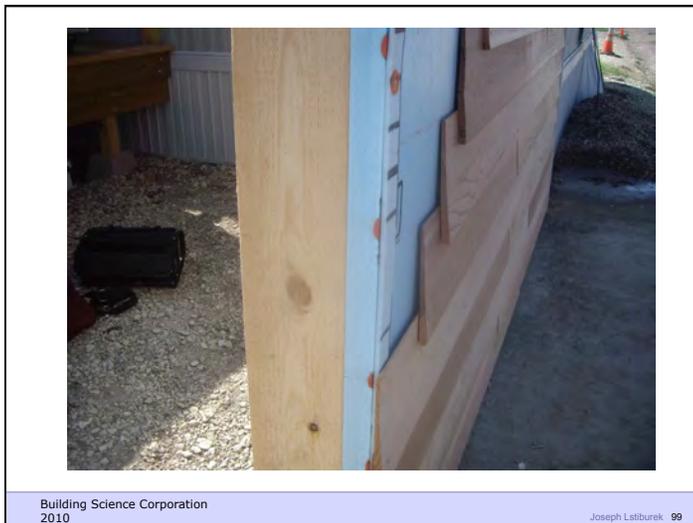
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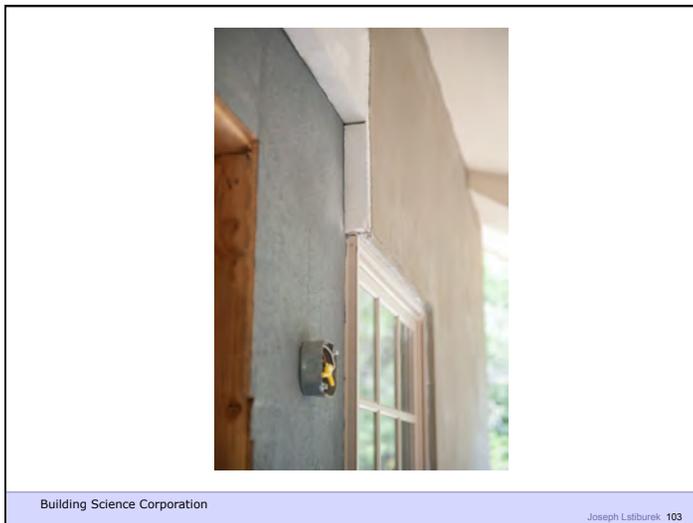
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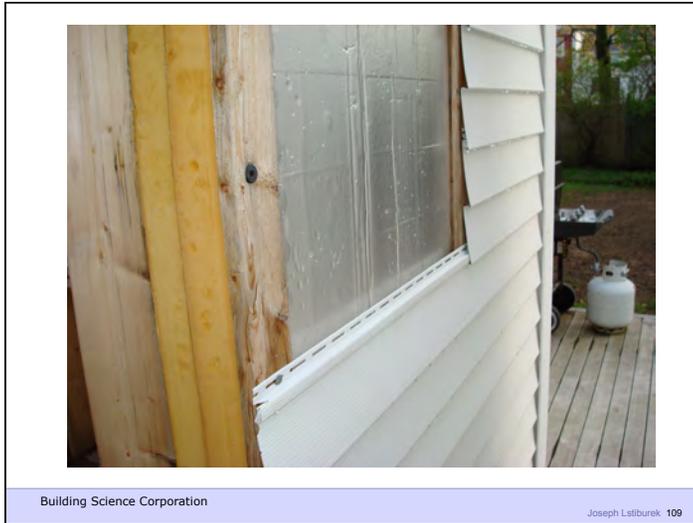




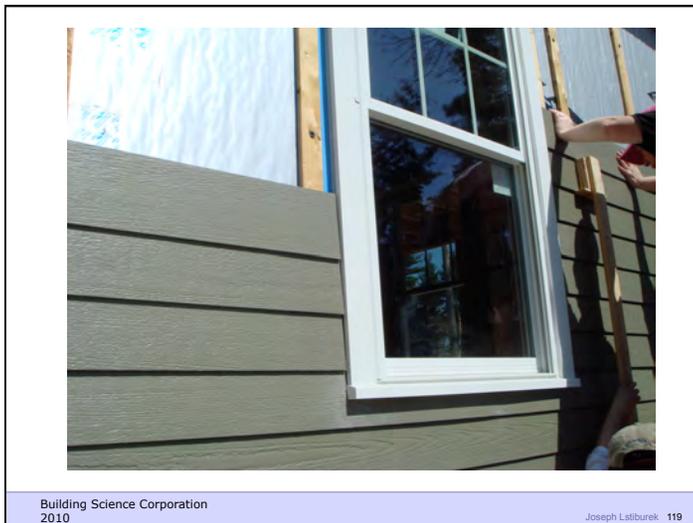


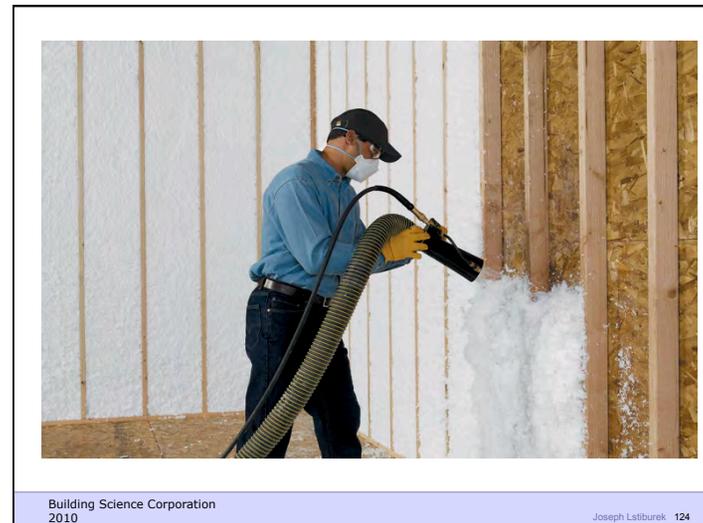




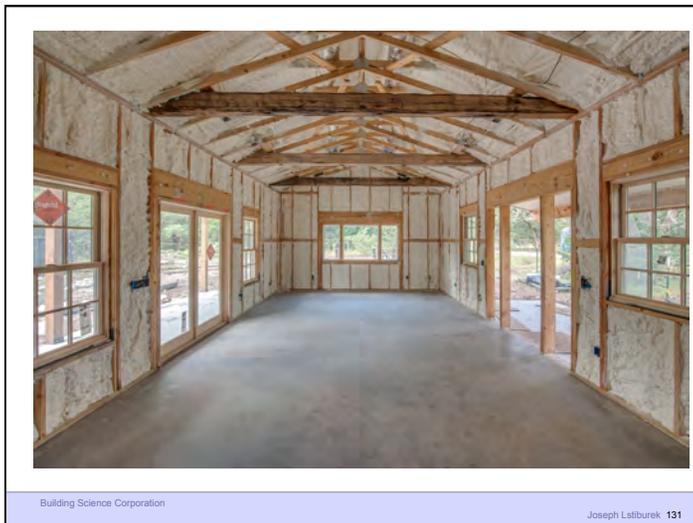
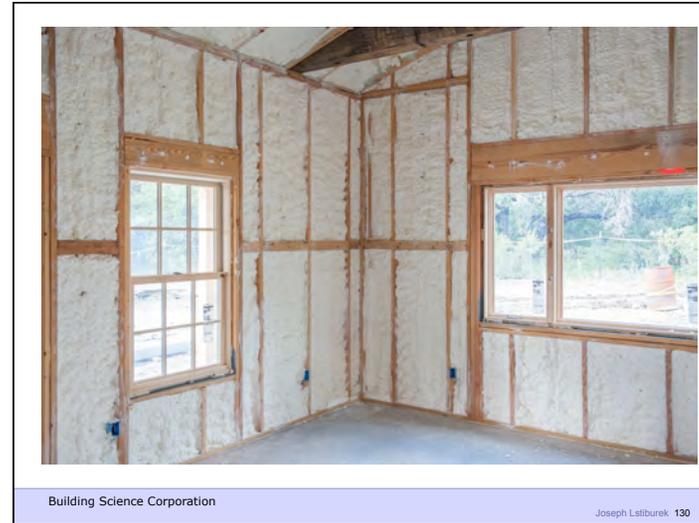
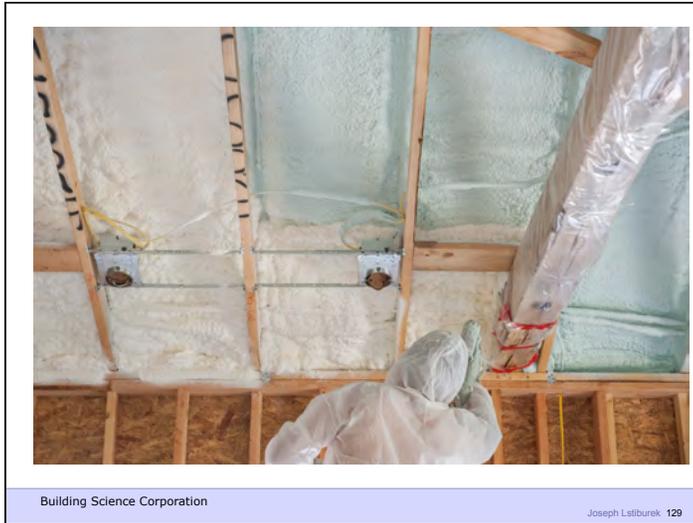


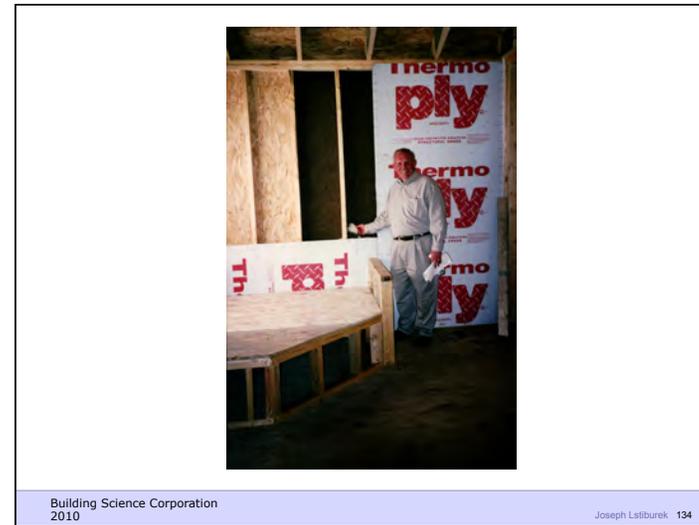
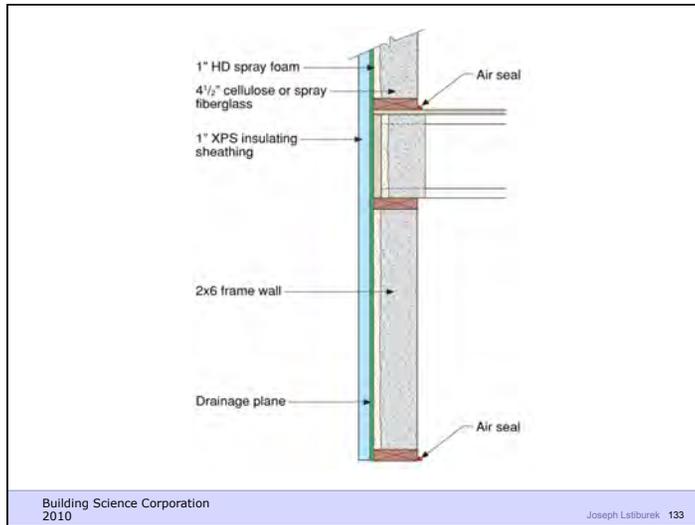














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