

6th Annual North American Passive House Conference - October 28-29

THE PERFECT ENCLOSURE APPROACH – A RETROFIT CASE STUDY

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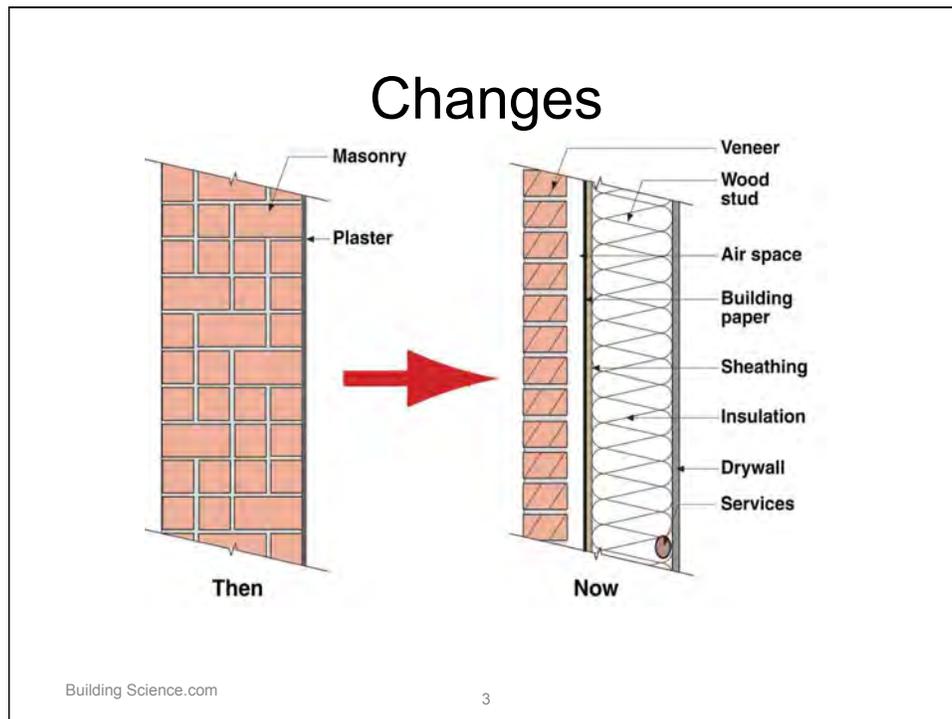
History of Control Functions

- Older Buildings
 - One layer does everything
- Newer Building
 - Separate layers,
... separate functions



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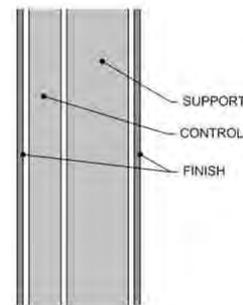
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Basic Functions of the Enclosure

- 1. Support
 - Resist and transfer physical forces from inside and out
- 2. Control
 - Control mass and energy flows
- 3. Finish
 - Interior and exterior surfaces for people
- Distribution – a building function

Functional Layers



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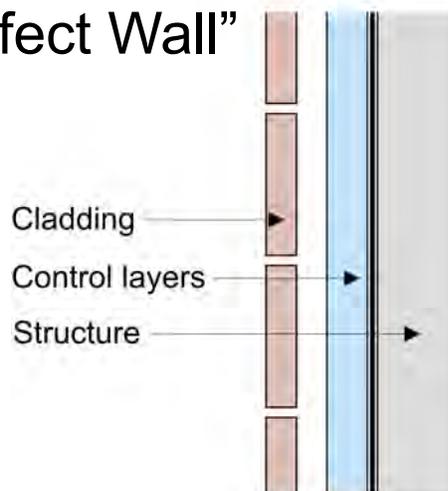
What is a high performance enclosure?

- One which provides high levels of control
- Poor continuity limits performance
- Poor continuity causes most problems too:
 - E.g. air leakage condensation
 - Rain leakage
 - Surface condensation
 - Cold windows
- Particularly important for retrofits

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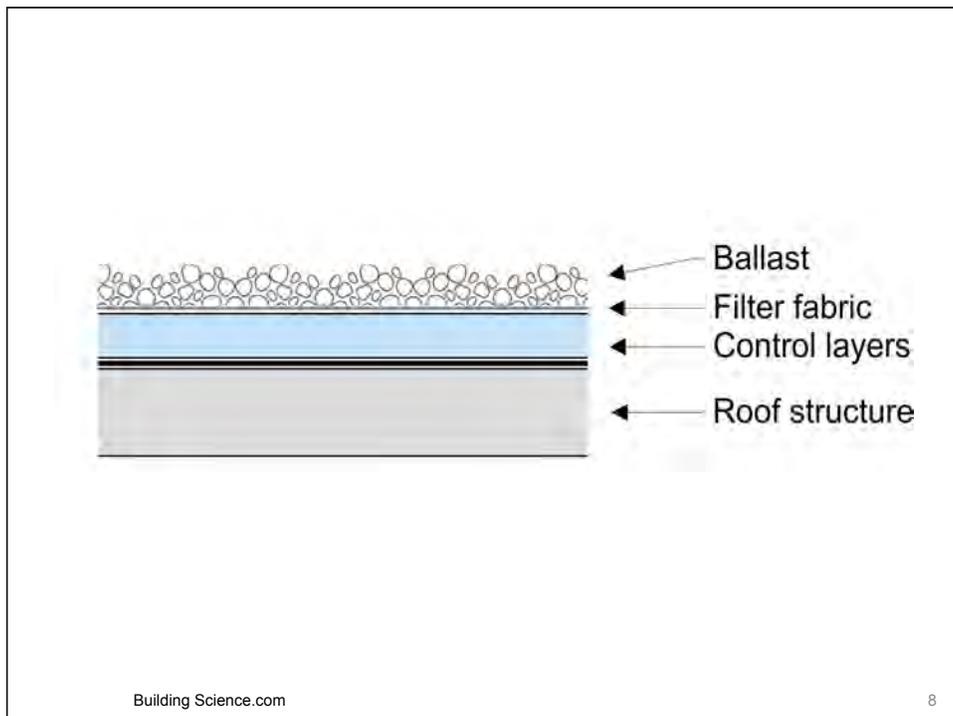
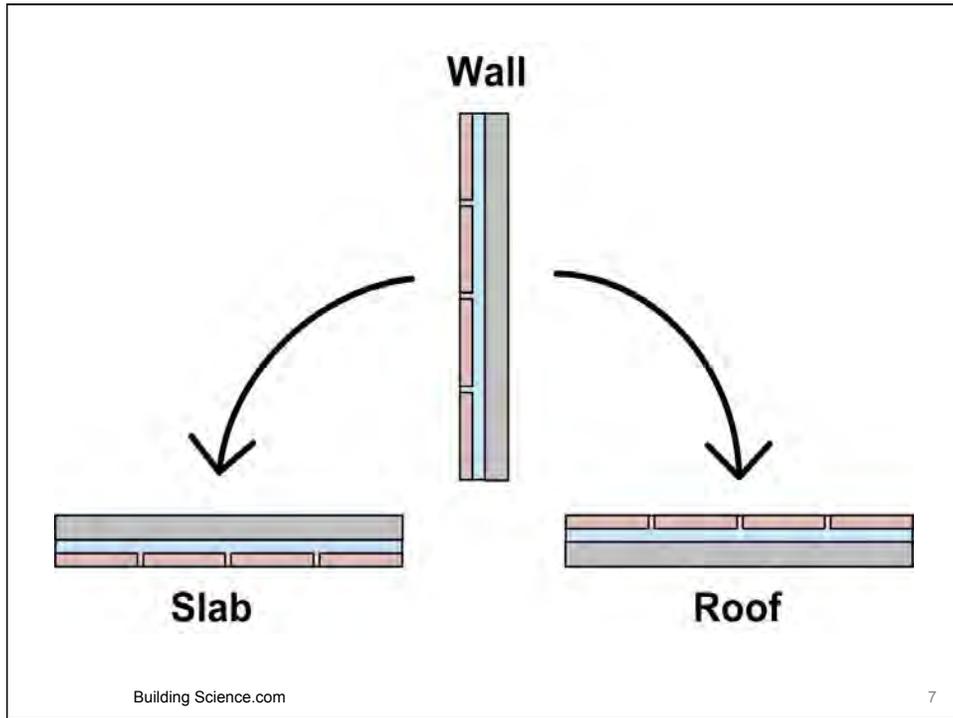
The “Perfect Wall”

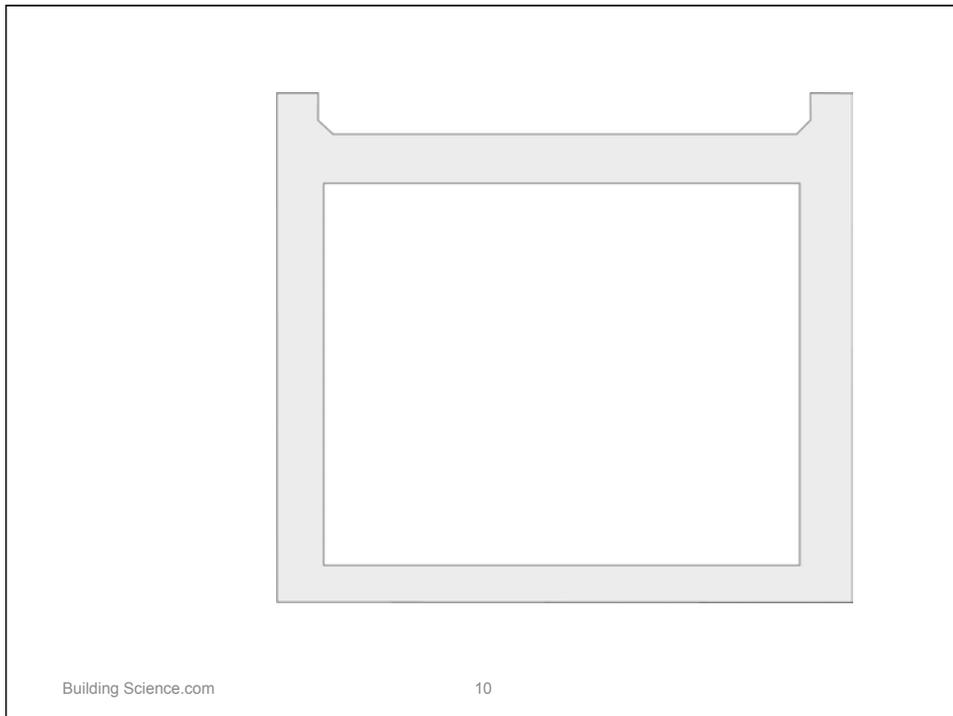
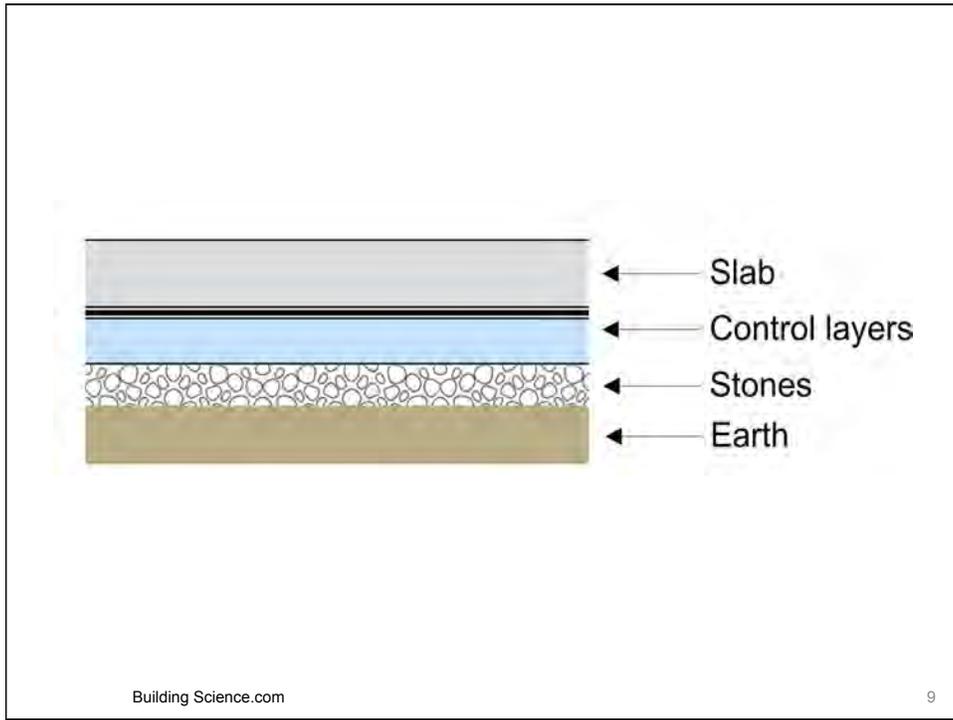
- Finish of whatever
- Control continuity
 - Rain control layer
 - Perfect barrier
 - Drained with gap
 - Storage
 - Air control layer
 - Air barrier
 - Thermal control layer
 - Aka insulation, radiant barriers
 - Vapor control layer
 - Retarders, barriers, etc
- Structure can be anything
 - Fire Control may be needed
 - Sound Control optional

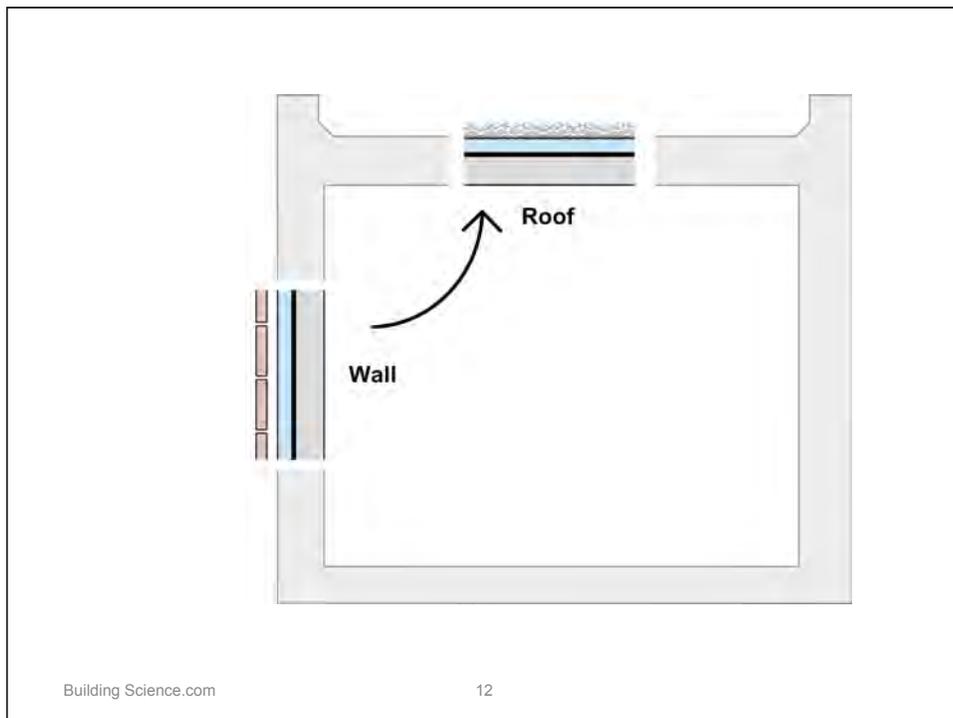
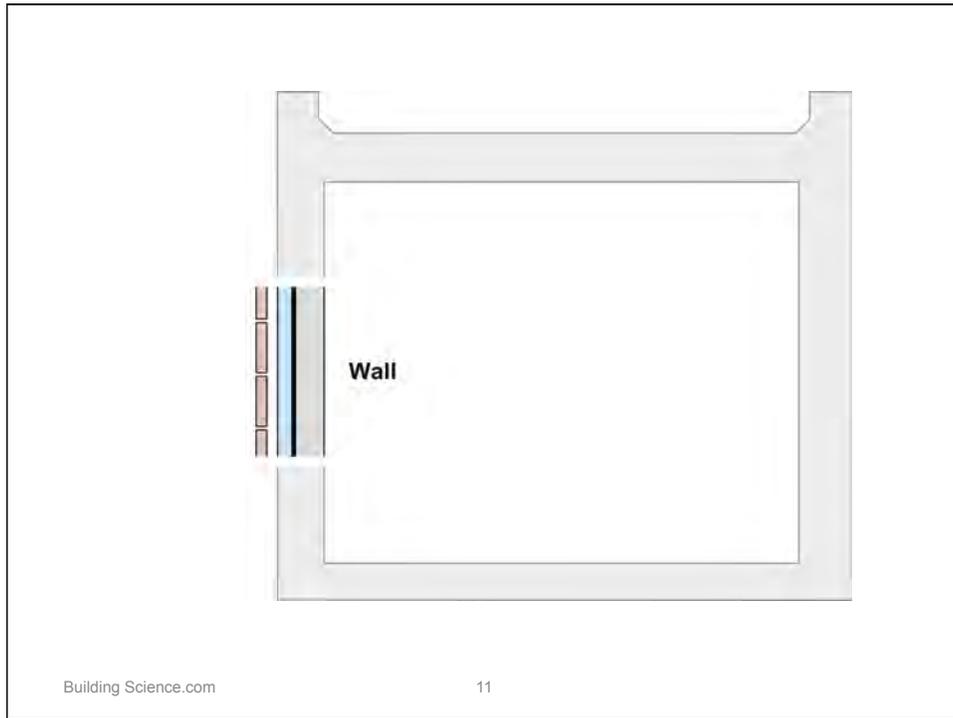


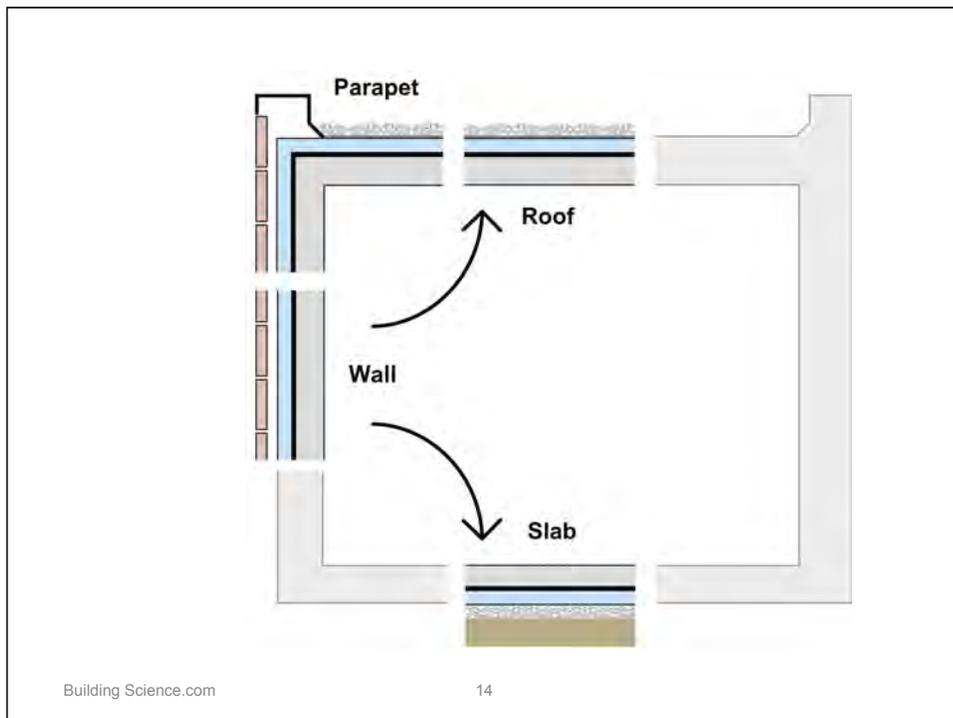
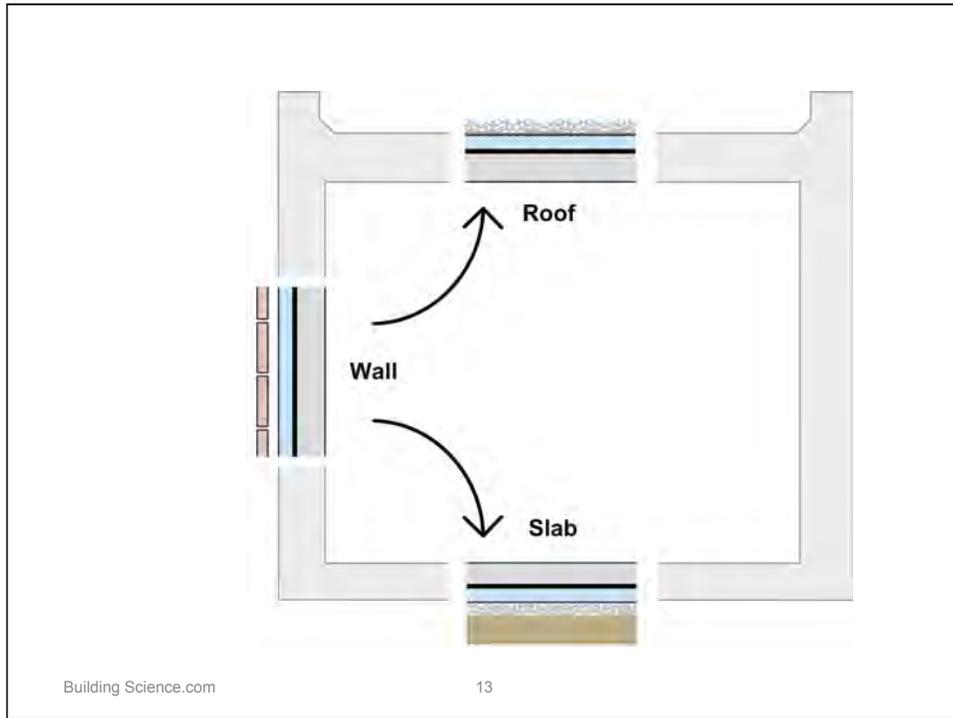
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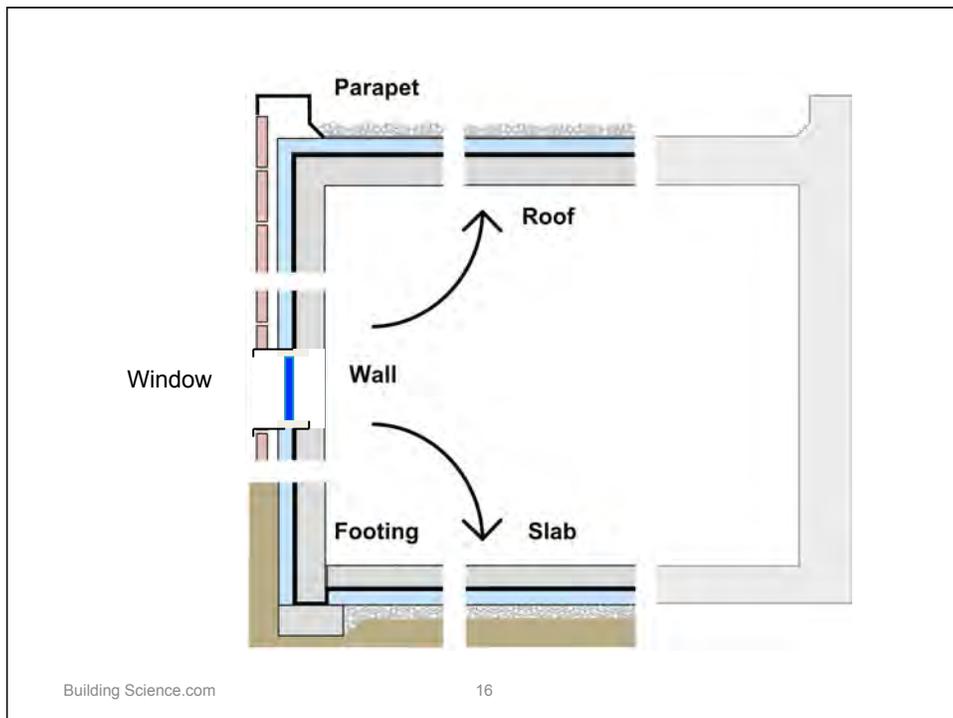
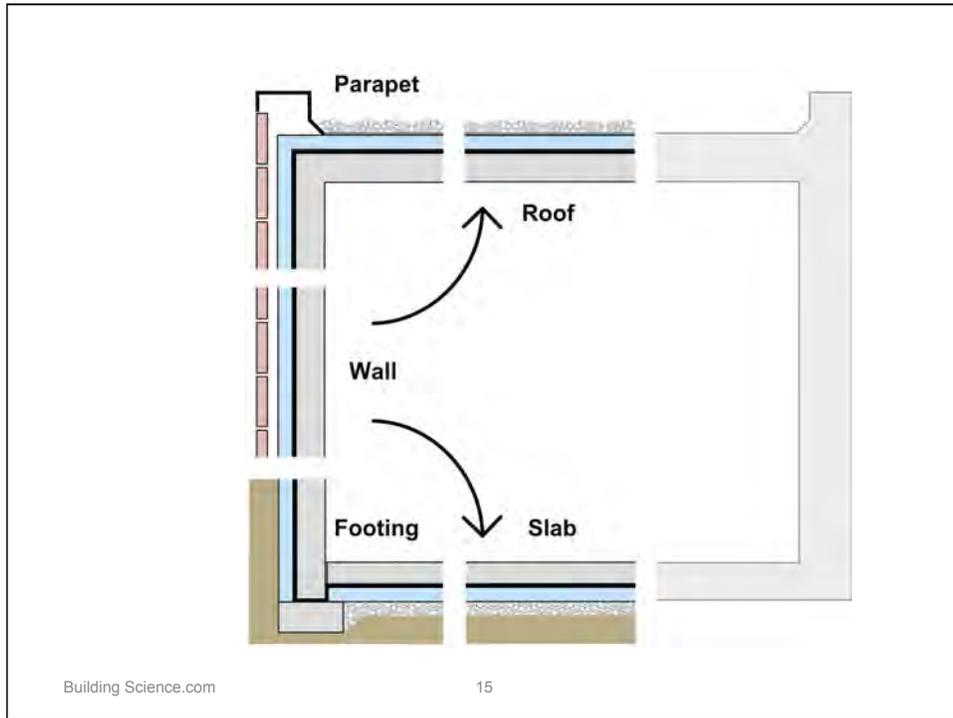
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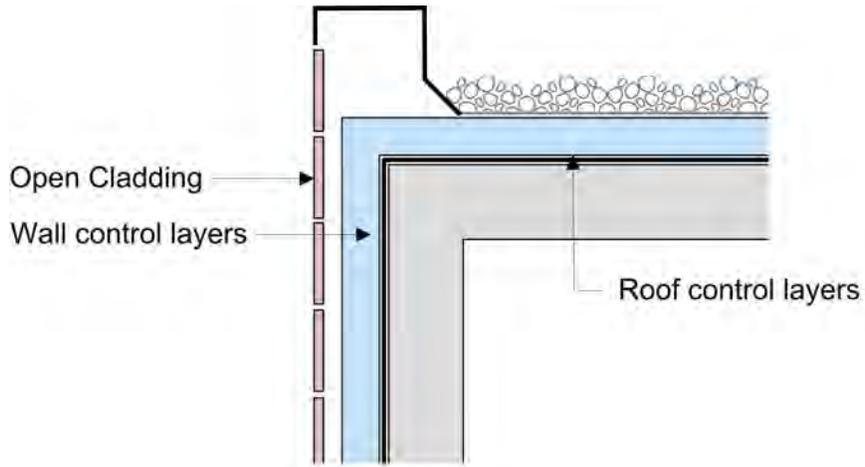








Connections: Who is in charge



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Complexity increases detailing effort / risk of failure / cost
reduces performance

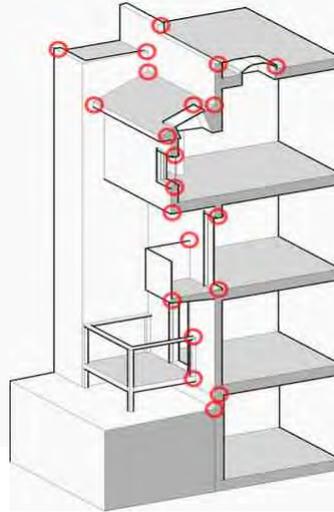


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Enclosures No. 18 /

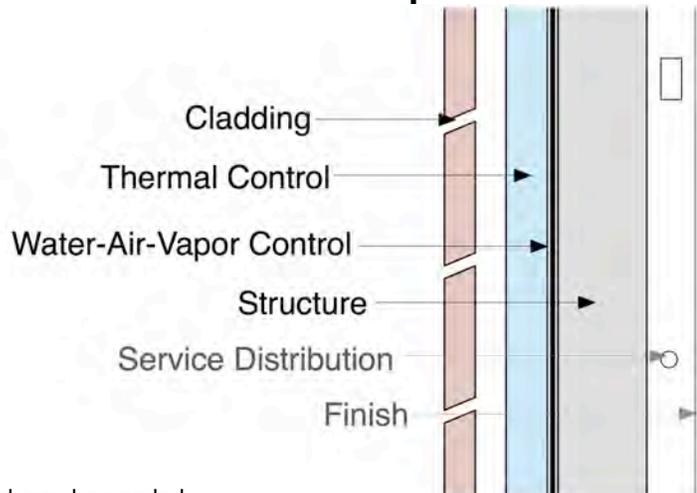
Enclosure Design: Details

- Details demand the same approach as the enclosure.
- Scaled drawings required at



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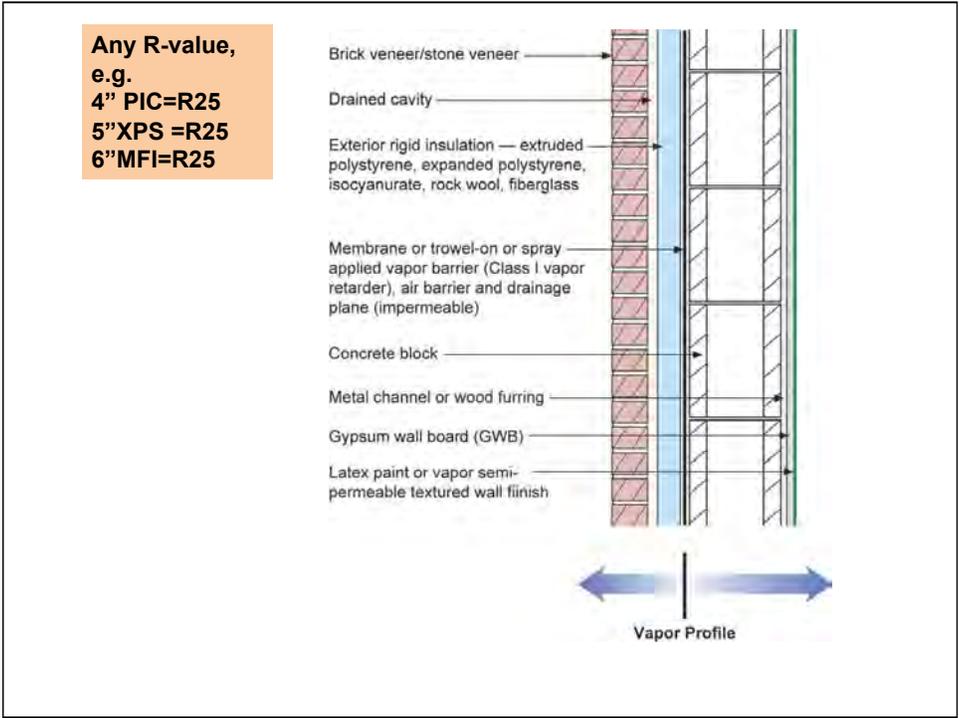
Perfect Wall expanded



Fire Control may be needed
Sound Control optional

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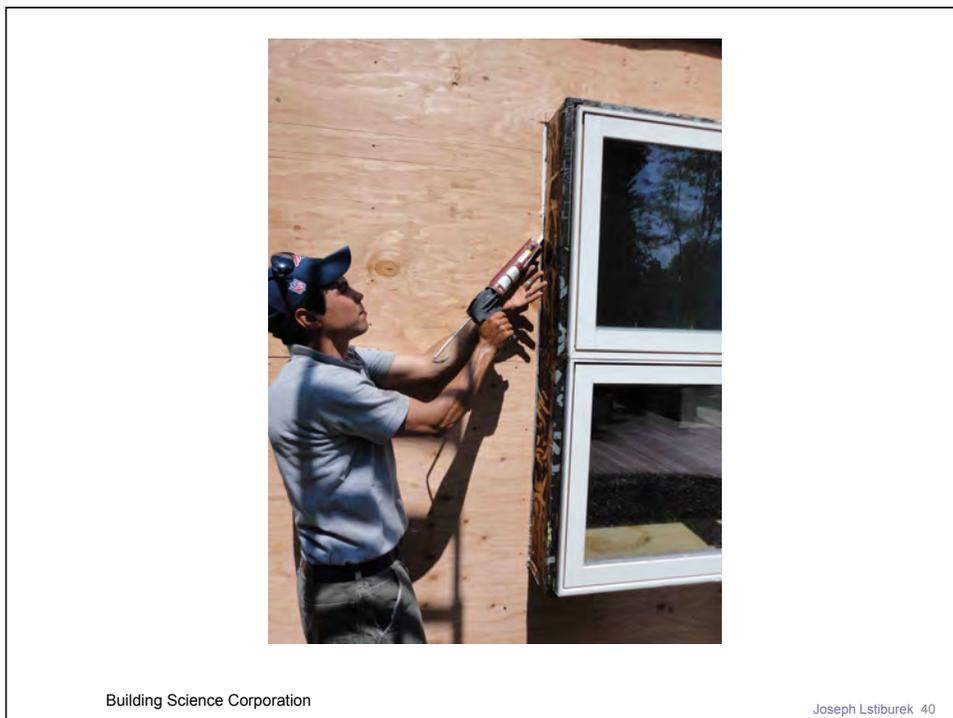
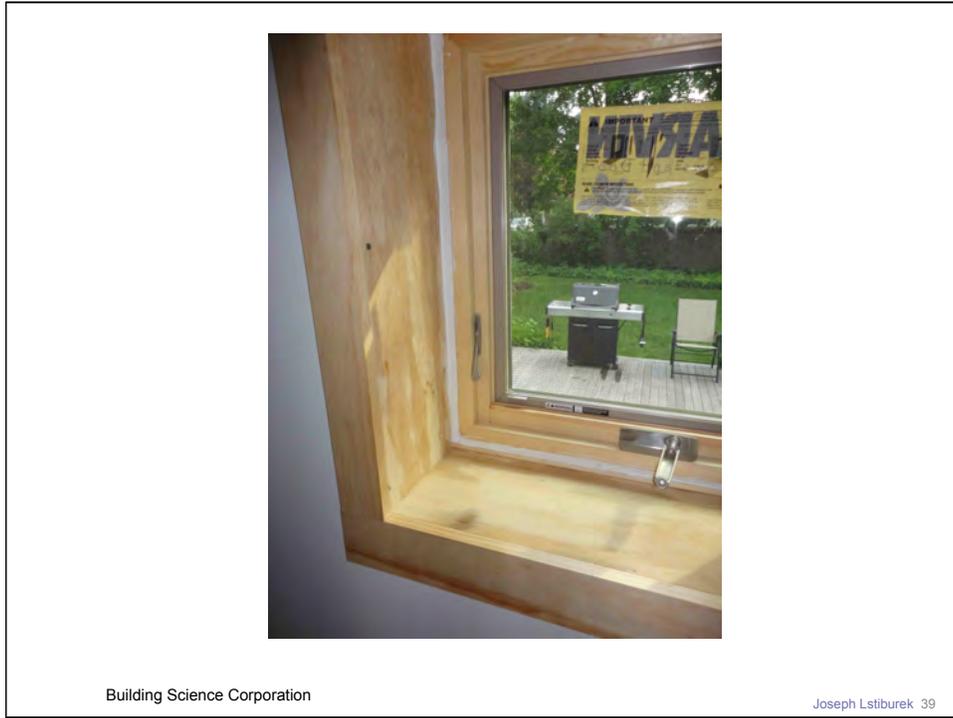
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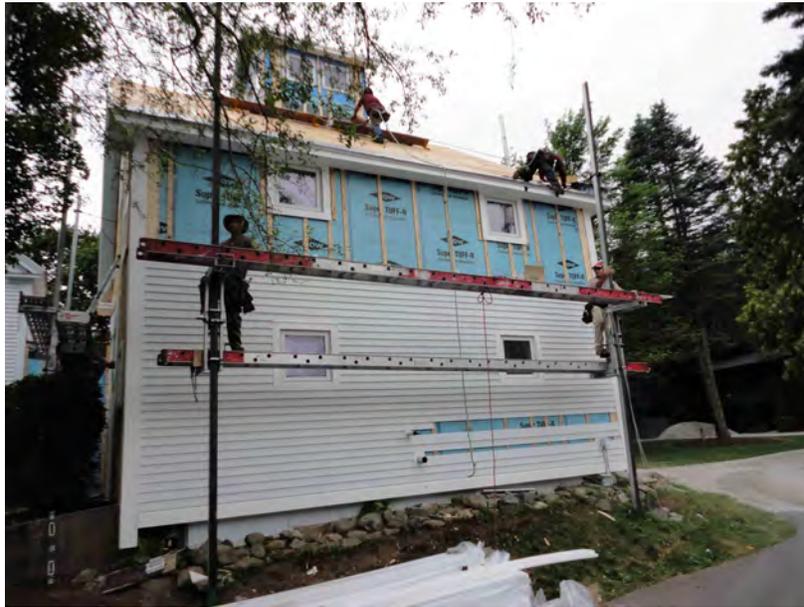
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Preliminary Airtightness Measurements



Questions?

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