MASONRY

The Premier Wall System

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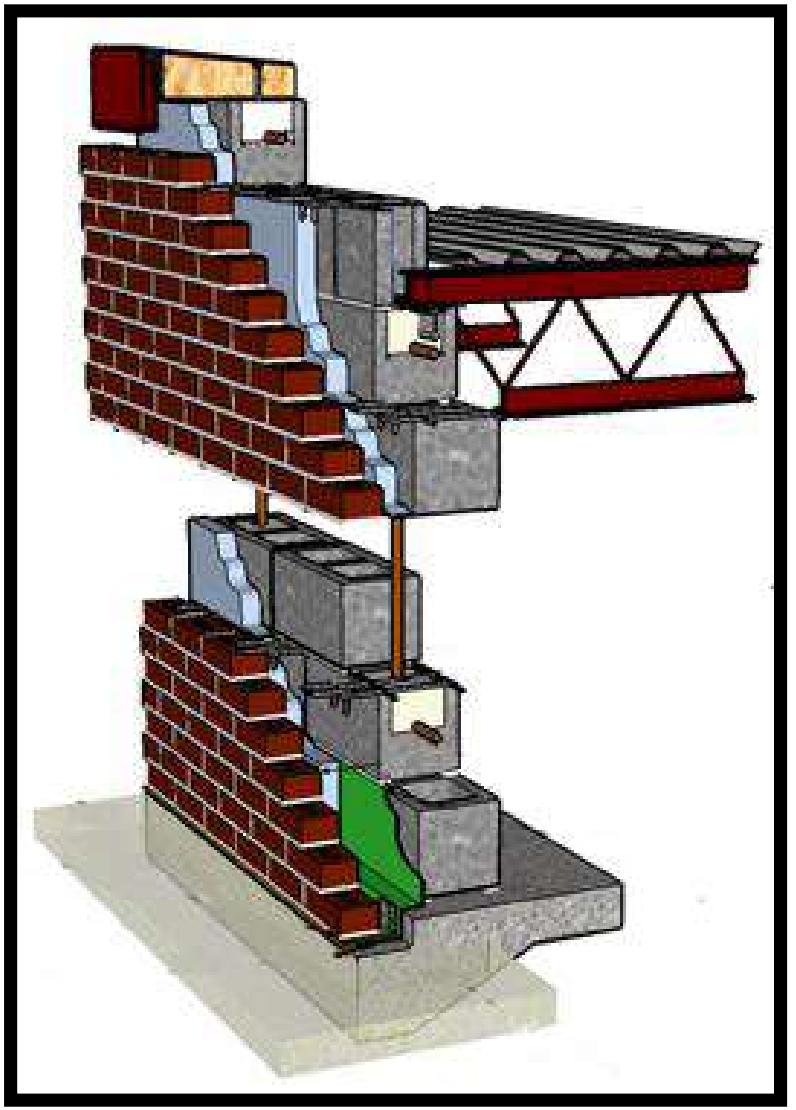


Building Enclosures

"Keeping the outside out and inside in"

Building Enclosures

- Resist environmental loads
  - Natural and Man-made
- All the while providing…
  - Efficiency
  - Esthetic appeal
  - Structural integrity

Building Enclosures

- It's all in the details…
  - During the design phase
  - During Installation
- Close attention to building enclosure details is critical

Coming Energy Challenge

- Buildings consume 40% of U.S. energy
- Design/Construction industry will soon be competing for energy with hybrid-electric automobiles

Coming Energy Challenge

"We are going to have ultraefficient buildings. We will double and triple the amount of thermal resistance in the typical building enclosure."

Dr. Joseph Lstiburek
ASHRAE Journal
July 2008

Coming Energy Challenge

"This is good and bad. Good for energy security, bad for building durability. Reducing the energy exchange across building enclosures reduces drying potentials."

Coming Energy Challenge

"As we change our building technology to account for the new energy cost realities, we are in for a world of hurt in terms of corrosion, decay, mold."

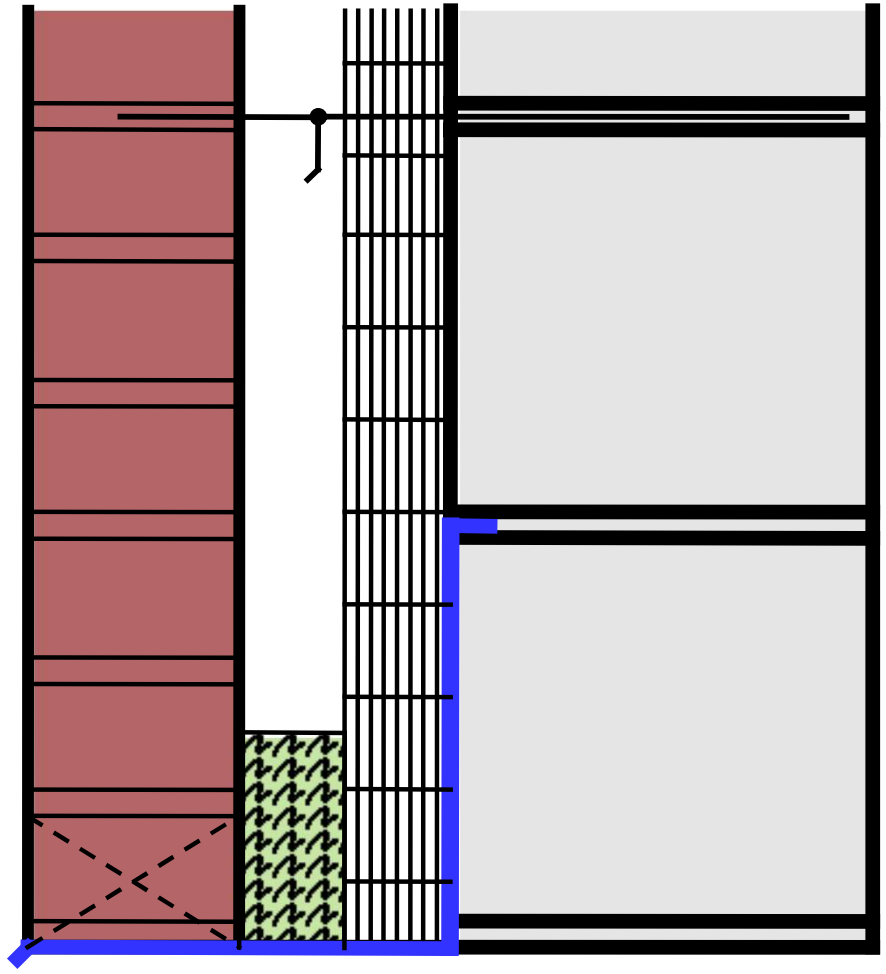
The Solution?

- Choose materials and systems that can be designed and installed to remain dry but also…
- Should the system get wet, the materials are not damaged after drying

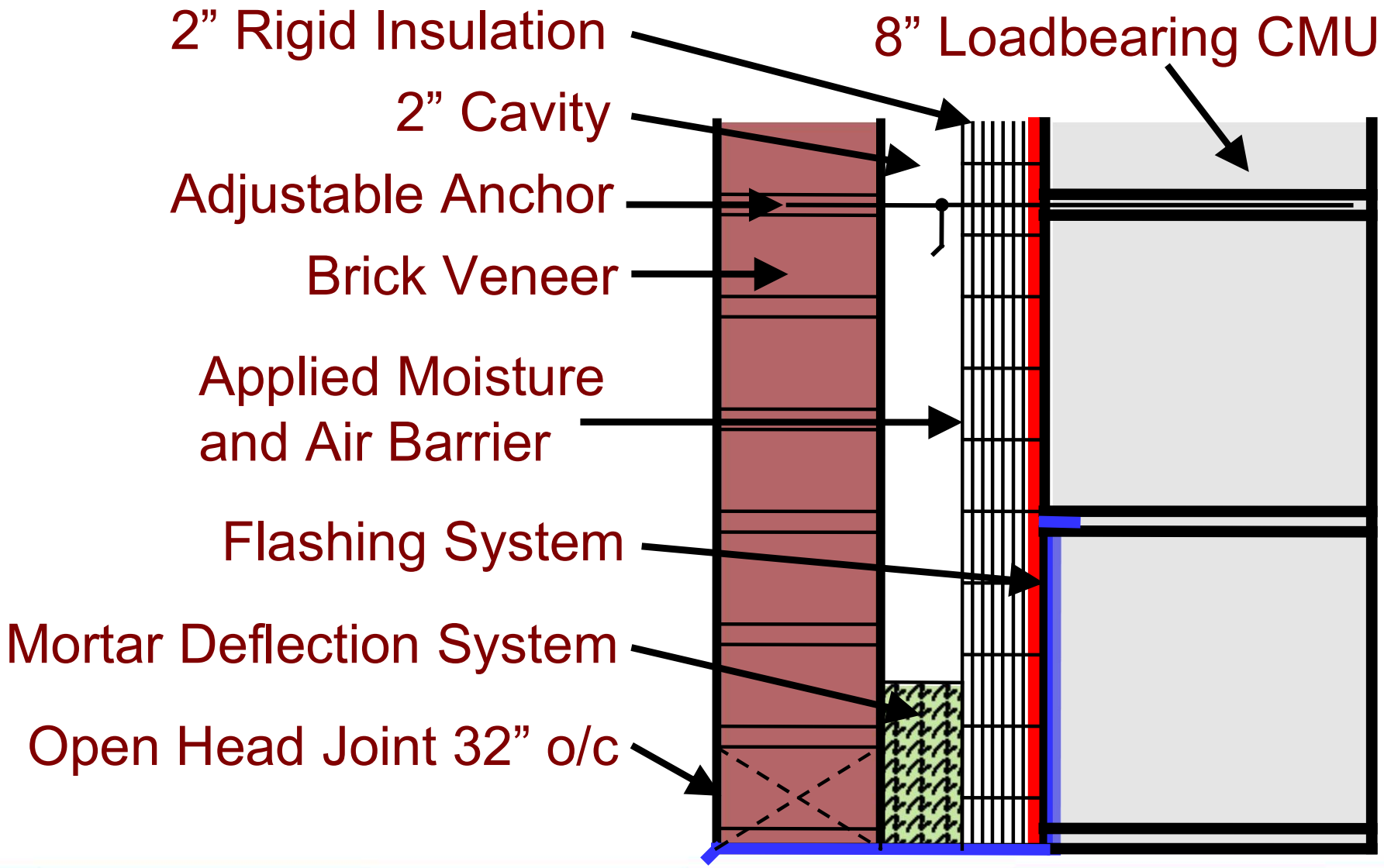
A Key Solution

The Premier Wall System

Insulated Masonry cavity wall



Insulated Masonry Cavity Wall



Insulated Masonry Cavity Wall

- Provides…
  - Moisture resistance
  - Energy efficiency
  - Fire resistance
  - Sound control
  - Accidental load resistance

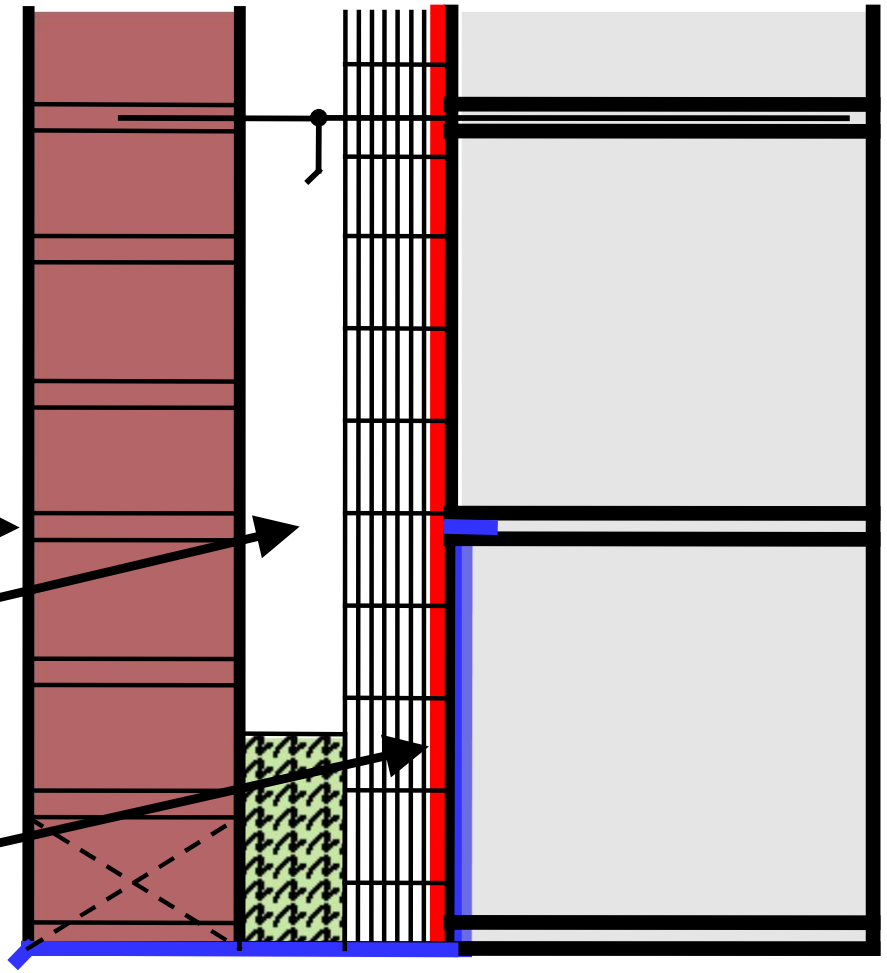
Moisture Resistance

3 Lines of Defense

No. 1 - Brick Veneer

No. 2 - Cavity

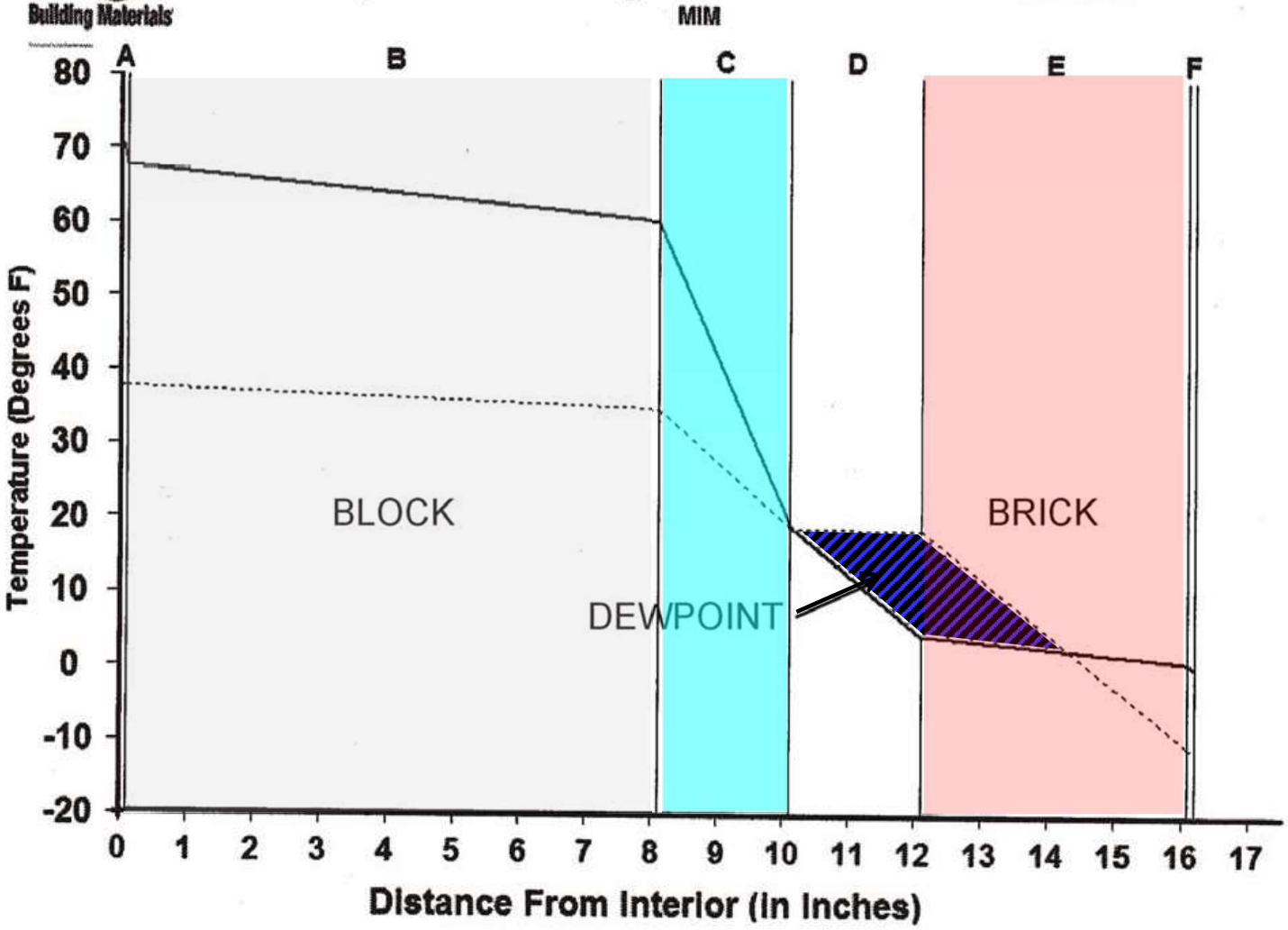
No. 3 - Applied Moisture Barrier



Moisture Resistance

- Water-Vapor
  - Controlling the enclosure system “dewpoint”
  - Where temperature and saturated vapor pressure meet

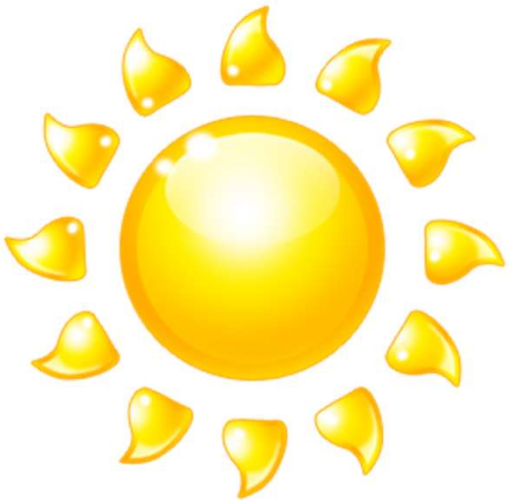
Dewpoint Analysis - Dow Chemical



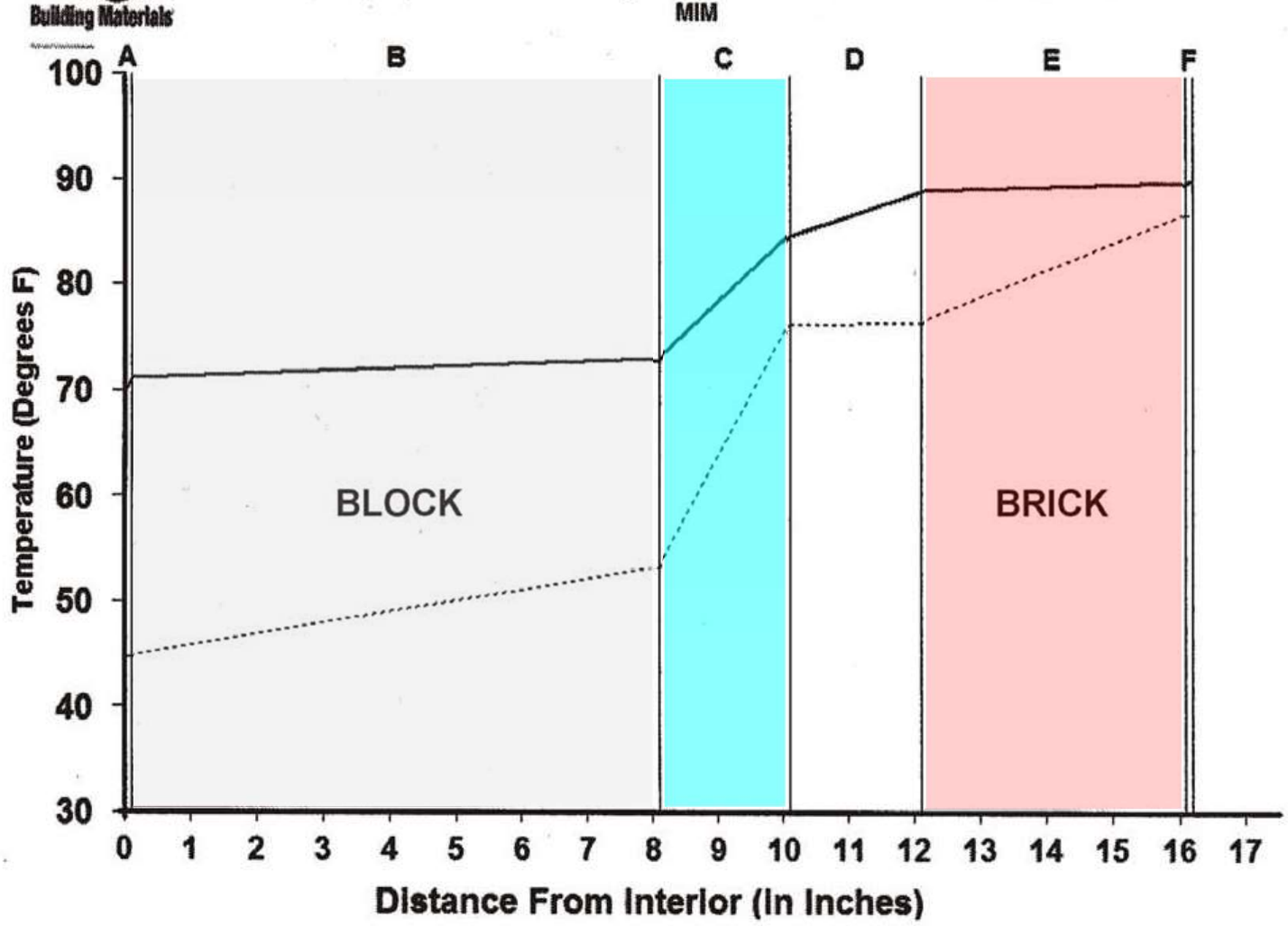
Legend
Actual Temperature
Dewpoint Temperature

Dewpoint Theory predicts condensation in a system at any point where the actual and dewpoint temperature lines cross.

Conditions:	Interior	Exterior
Temperature	70.0	0.0
Humidity	30.0	55.0



Dewpoint Analysis - Dow Chemical



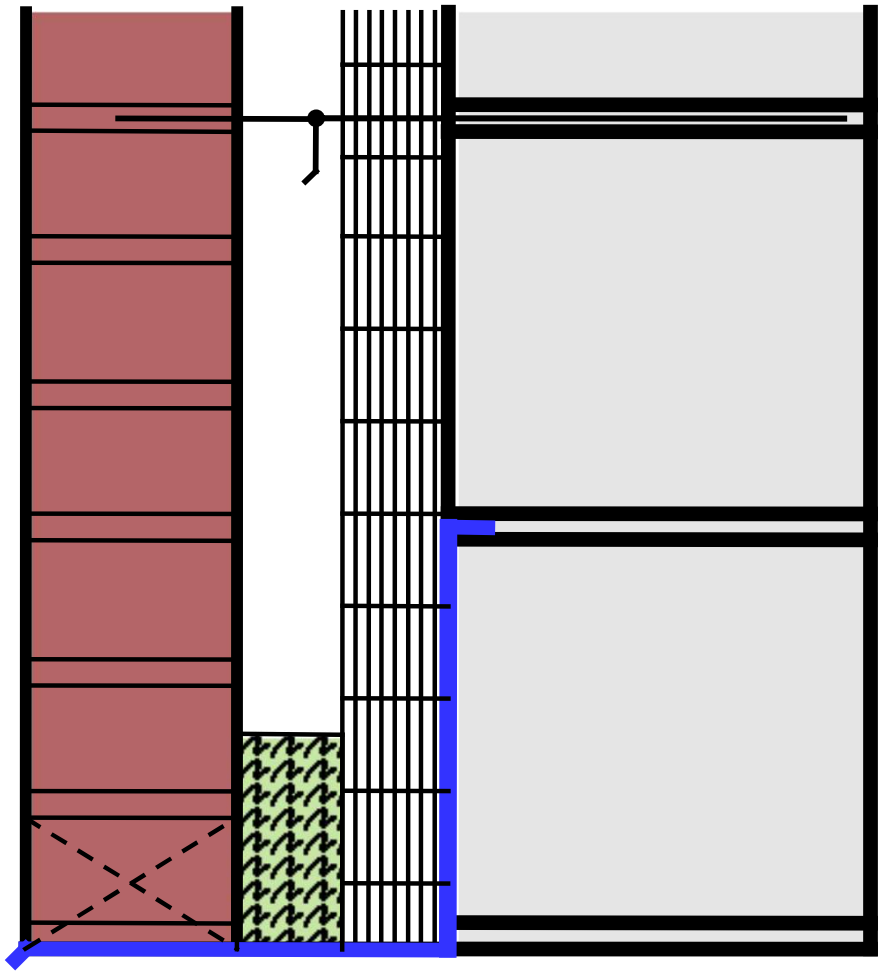
Legend
Actual Temperature
Dewpoint Temperature

Dewpoint Theory predicts condensation in a system at any point where the actual and dewpoint temperature lines cross.

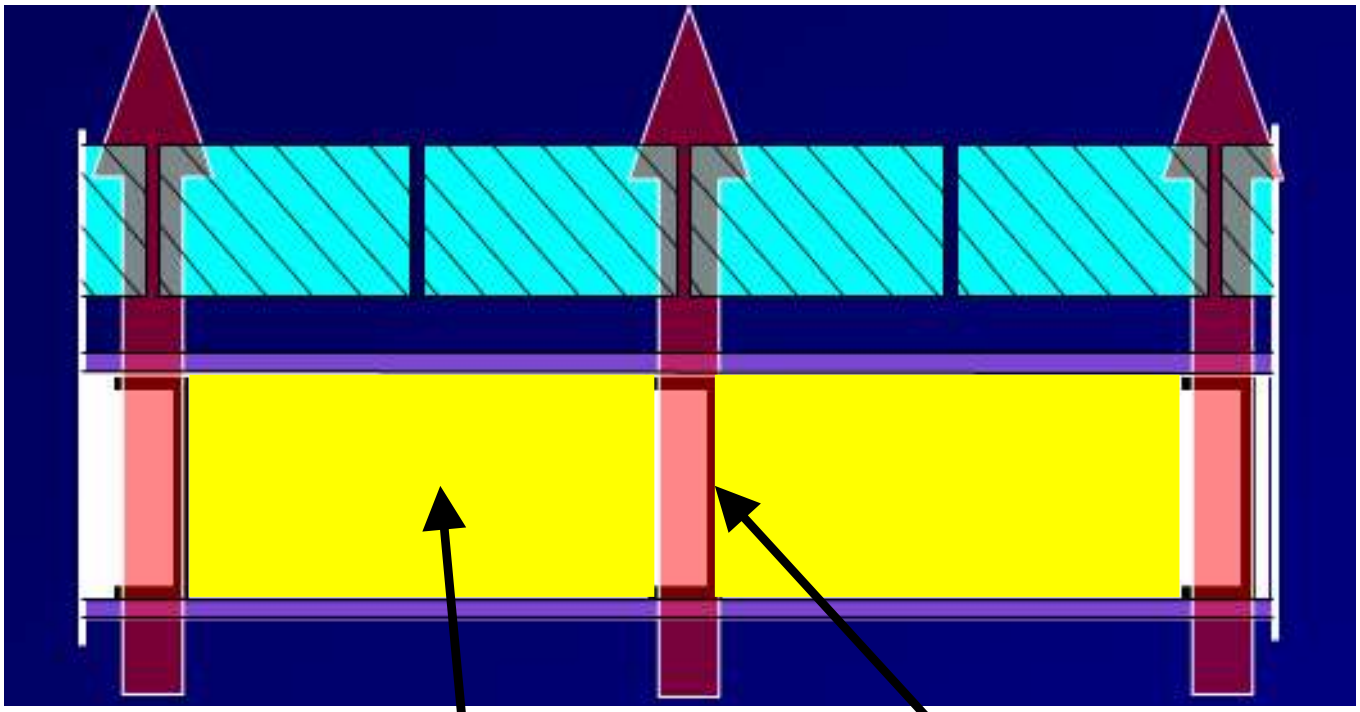
Conditions:	Interior	Exterior
Temperature	70.0	90.0
Humidity	40.0	90.0

Energy Efficiency: R - Value

Outside Air Film	0.17
Clay Brick	0.44
2” Air Space	0.97
2” Rigid Insul.	10.00
8” CMU Hollow	2.10
Inside Air Film	0.68
	14.36



Energy Efficiency: Thermal Bridging



"Effective R"

R-23
Becomes
R-11

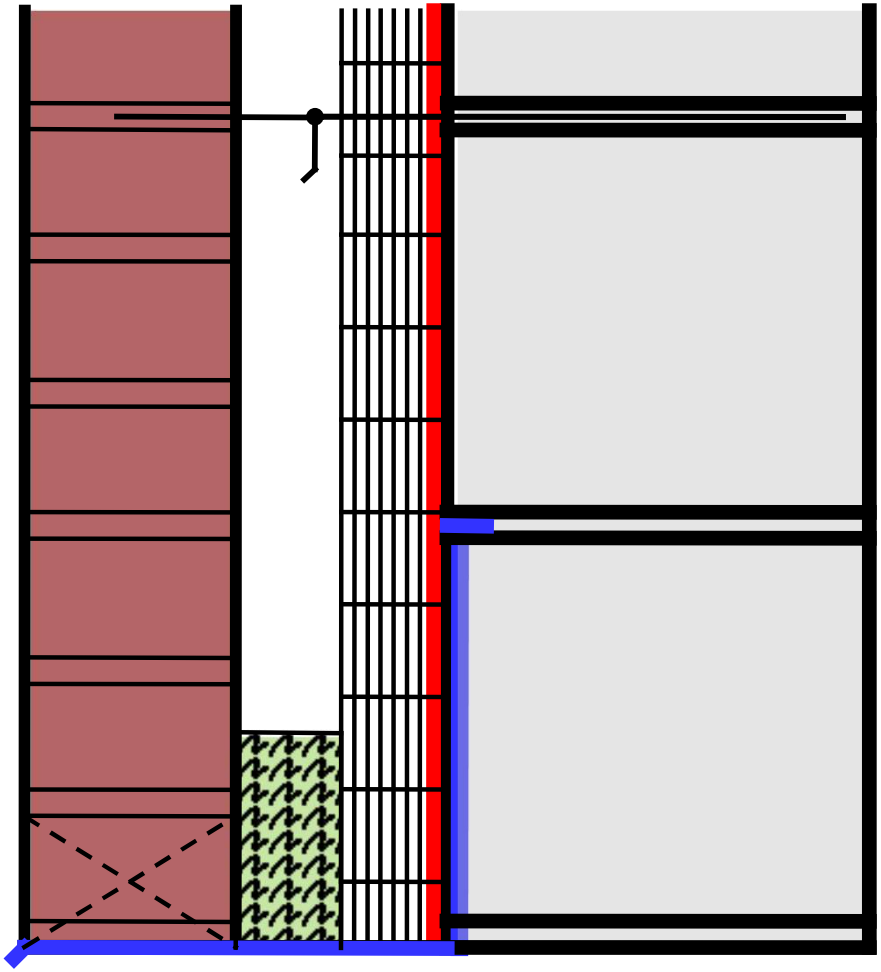
R-21Batt Insulation

6" Steel Stud 24" o/c

Also openings, steel perimeter beams, edge of slabs

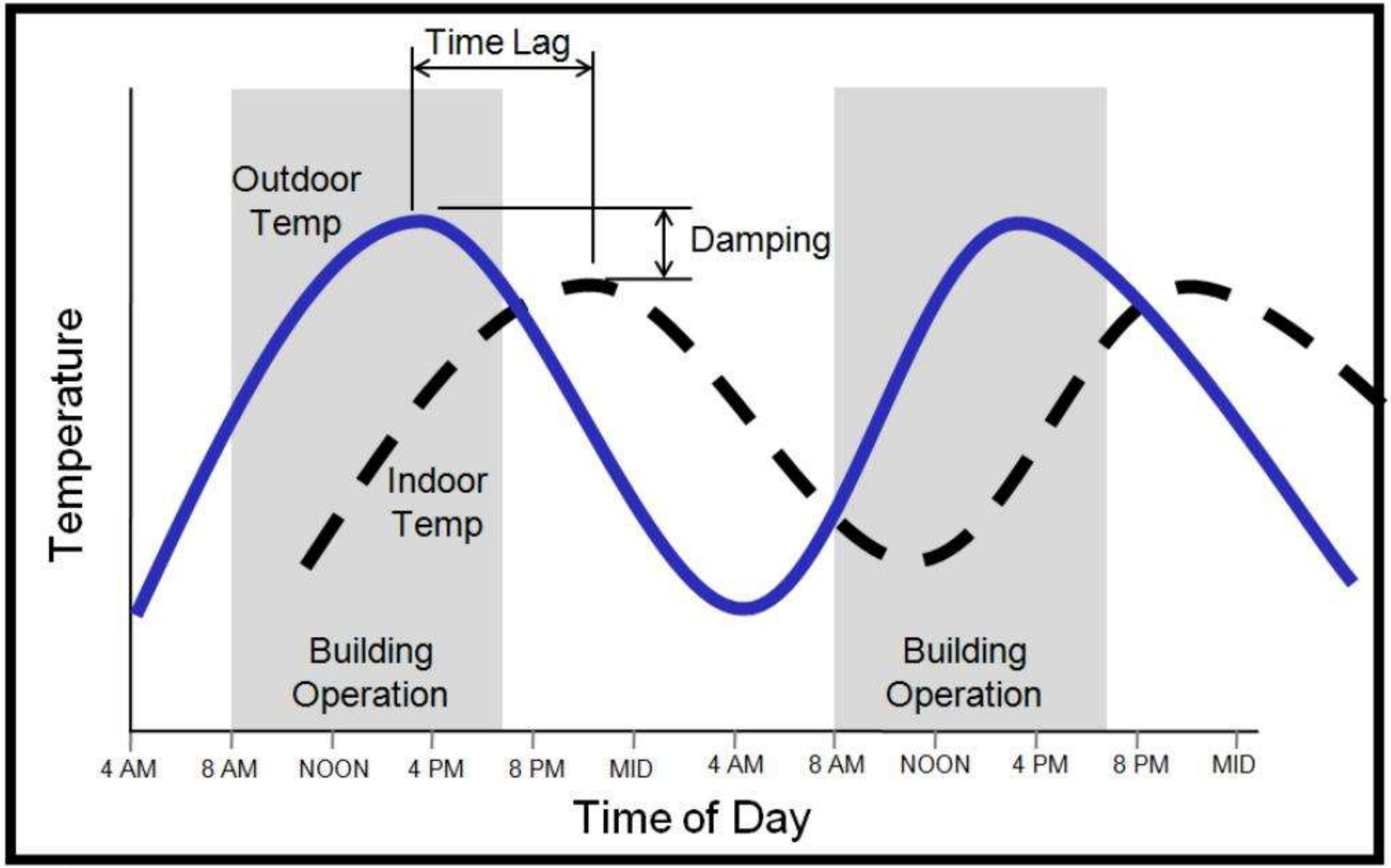
Energy Efficiency: Thermal Bridging

IMCW minimizes thermal bridging

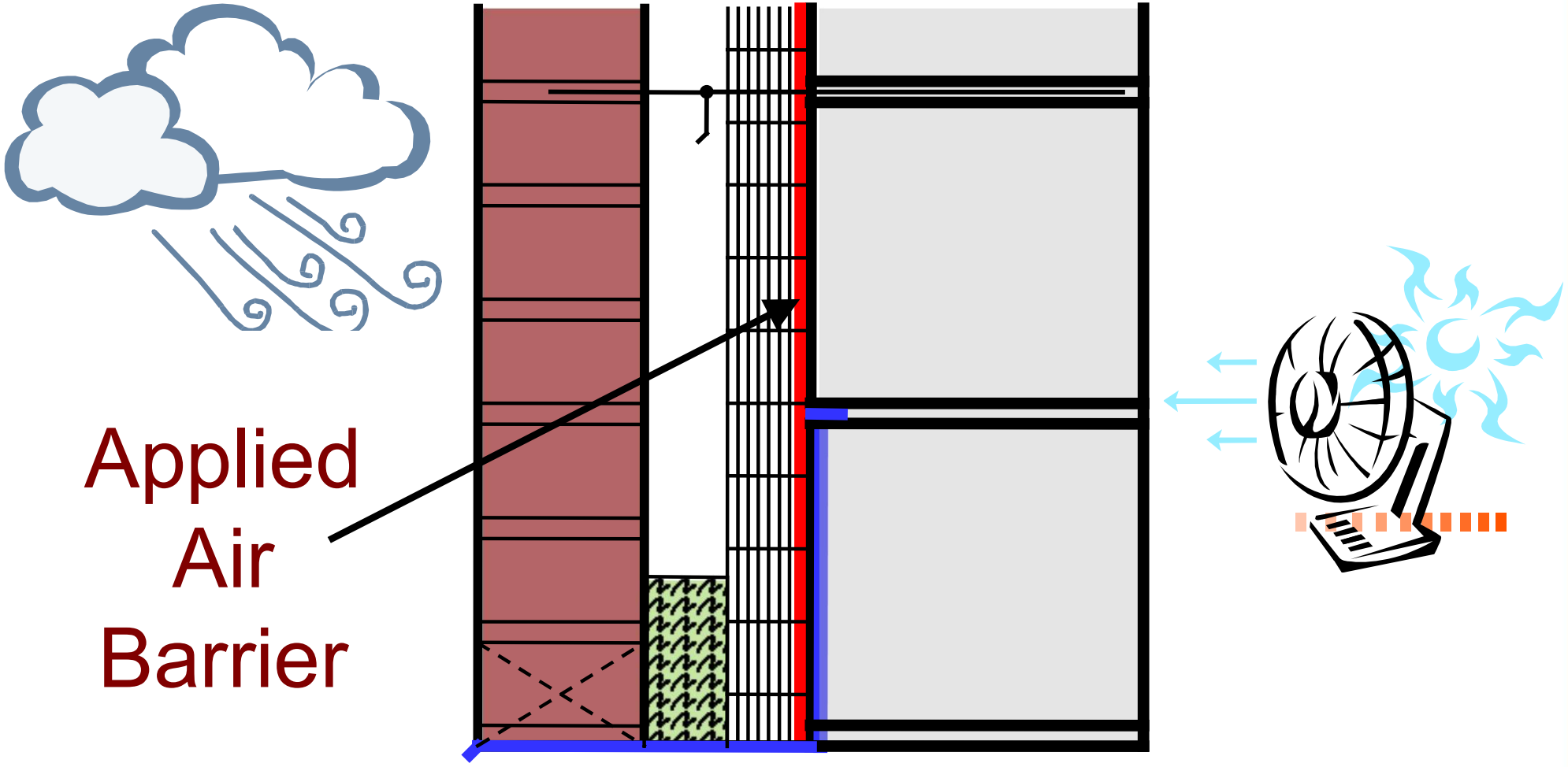


Detailing of openings & material intersections is key

Energy Efficiency: Thermal Mass



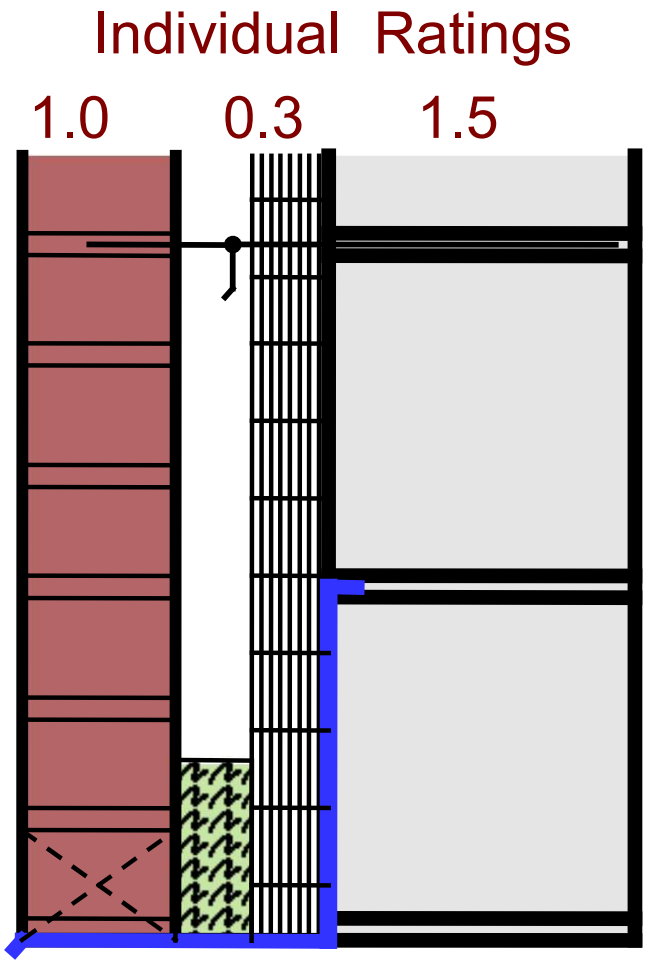
Energy Efficiency: Air Flow



Detailing of openings & material intersections is critical

Insulated Masonry Cavity Wall

- Other Advantages…



Fire Resistance Rating

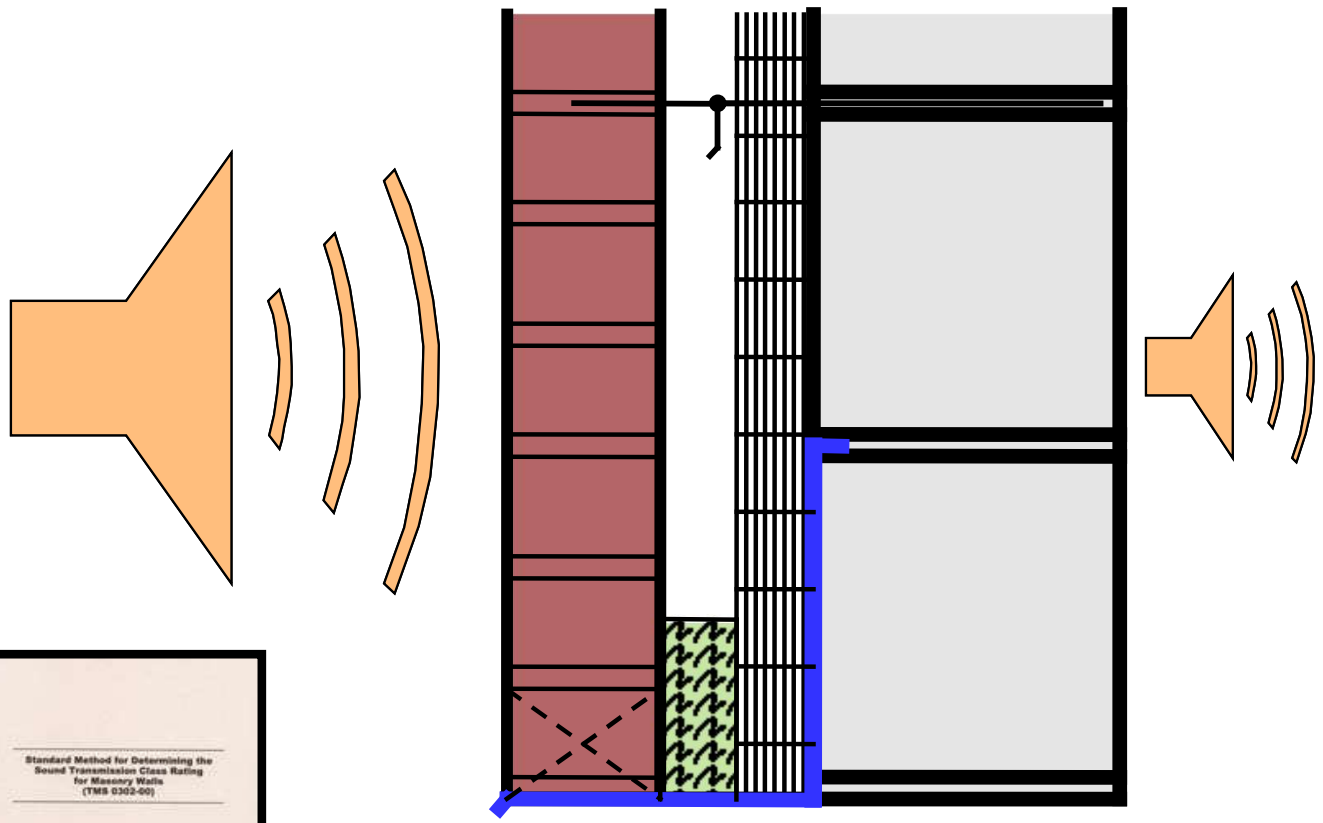
4 Hours ***combined***

TMS 216 *Determining Fire Resistance For Concrete and Masonry*

Based on “Equivalent Thickness”

Insulated Masonry Cavity Wall

- Sound Transmission Class (STC)



Common standard STC = 50

IMCW = 56

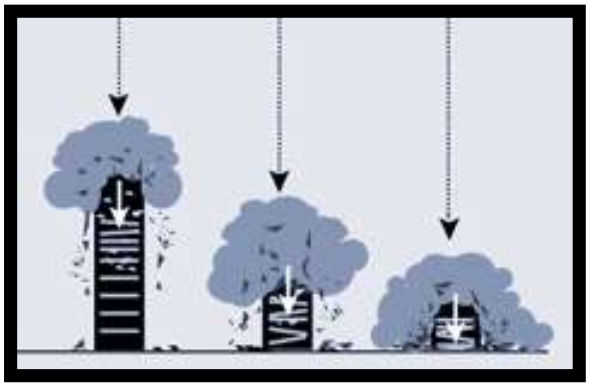
TMS 302 *Determining STC For Masonry Walls*

Other IMCW Advantages:

- Blast/Impact Resistance

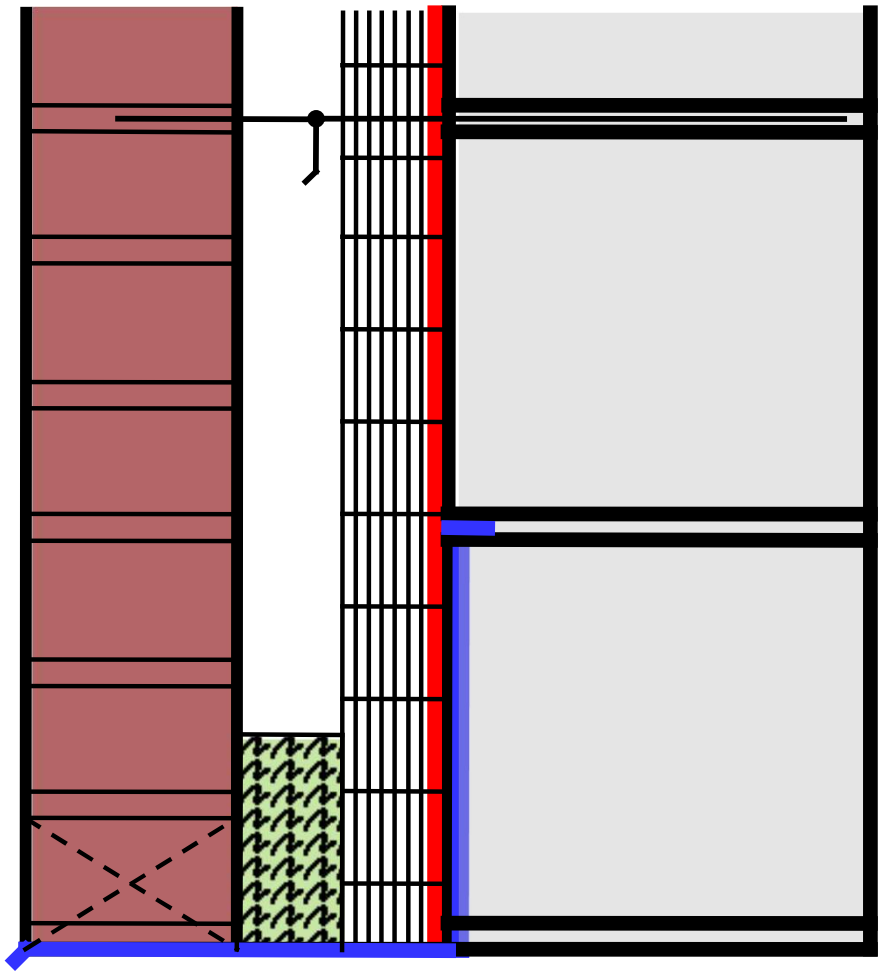
- Progressive Collapse

Reinforced loadbearing CMU walls can be designed to minimize progressive collapse



The Premier Wall System

- Minimizes corrosion, decay, mold and moisture
- Reduces energy consumption
- Provides loadbearing integrity



Questions/Comments?

Thank You!