



How to Prepare for High Performance Windows





Agenda

- Introductions (15 min)
- High Performance Enclosures (20 min)
- High Performance Windows (20 min)
- Break (5 min)
- The Installation Process - design to verification (50 min)
- Break (10 min)
- Mock-up (50 mins)
- Closing Remarks (10 min)



Introductions

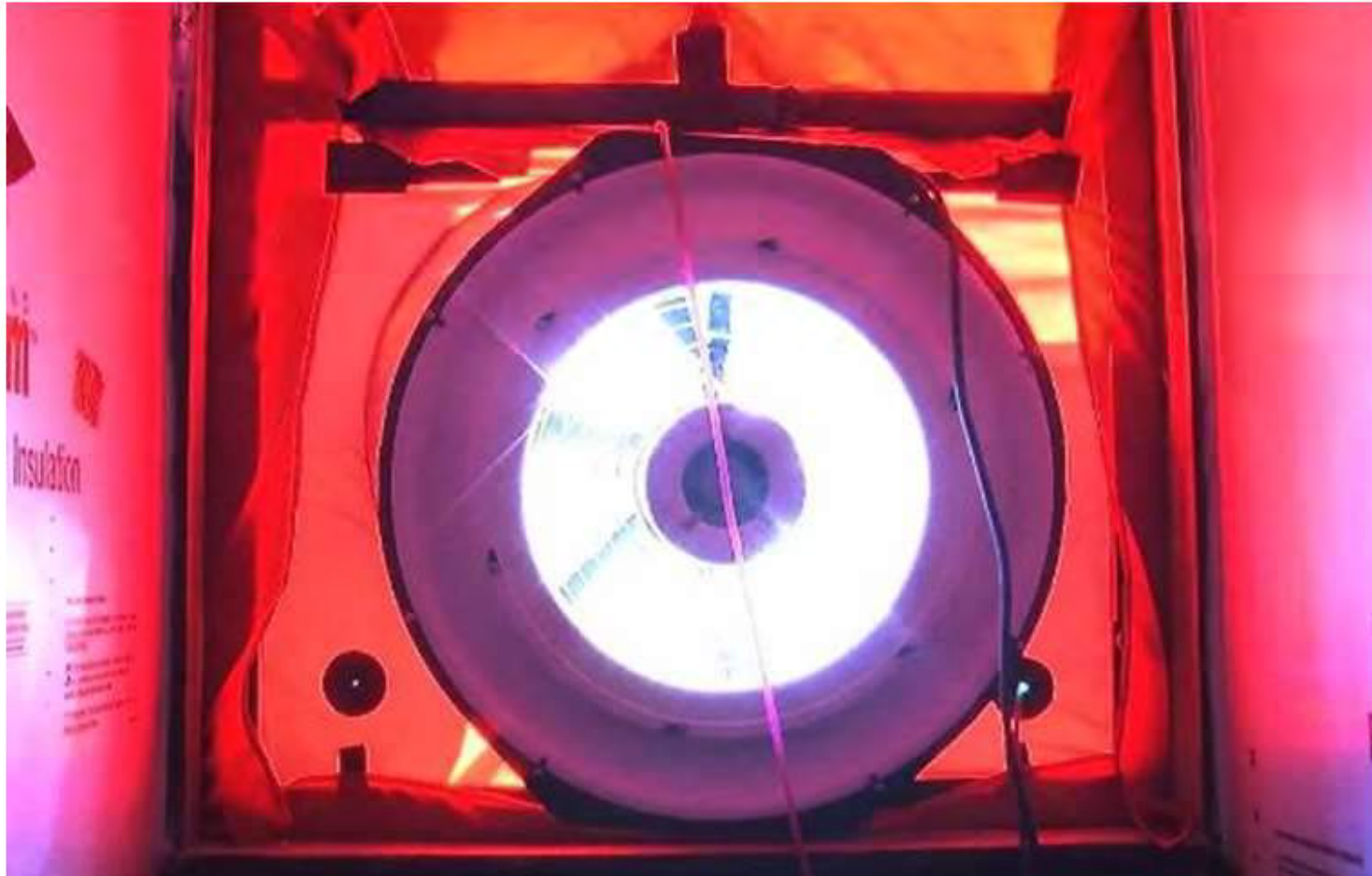




HIGH PERFORMANCE
BUILDING SUPPLY

FOURSEVENFIVE.COM

Where the Blower Door is King



And spray foam is not the solution.



Credit: Zerodraft

The Passive House standard is part of the solution



Crew of the Cornell Passive House Tower

Passive House Renovations

- Architect & Building Science Consultant



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475 enables building energy efficiency improvements required to dramatically reduce energy demand and address our climate crisis.

TRY IT. FREE.

Get a sample pack today & discover the power of Pro Clima.

Construction Details



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Recent Blog Posts

- > Heavy-Duty Window Flashing by Chris Conson Using Extruded En...
- > 475 On-Site: Historic Brownstone Passive House Retrofit in B...
- > Make it Tight: Building Enclosure Airtightness Training

AIR-SEALING SYSTEM BY PRO CLIMA

See All Air-Sealing Systems



Window Tapes



Exterior & Interior Tapes



Exterior Membranes /House Wraps /WRBs



Interior Membranes with Smart Vapor Control



Duct, Pipe & Wire Penetrations



Adhesives, Primers & Special Connections

VENTILATION

See All Ventilation



LUNOS e² HRV



LUNOS e-GO HRV



LUNOS 4-GO HRV

THERMAL INSULATION

See All Thermal Insulation



Gutex Multitherm Wood Fiberboard



Gutex Ultratherm Wood Fiberboard



FOAMGLASS Cellular Glass

DAYLIGHT SYSTEMS

See All Daylight Systems



LAMILLUX Flat Roof Skylights



Fakro Pitched Roof Skylights



LIGHTWAY Solar Tubes

QUALITY CONTROL

See All Quality Control



Training Workshops



PHPP/Energy Modeling



PH Design PH

GEAR & GIFTS

See All Gear & Gifts

Upcoming Events

August 14, 2014 Make it Tight: Building

Testimonials

the 475 newsletter has proven itself time and

Knowledge Resources

475 CAD Details

Showing all 5 results



Historic Masonry Deep Energy Retrofit (DER): Historic Masonry, Climate Zones 4-8 (DWG Files)

CAD drawings can be cut, pasted, edited, and customized to form the basis of a complete approach to air sealing and vapor control required by your next high performance construction project.



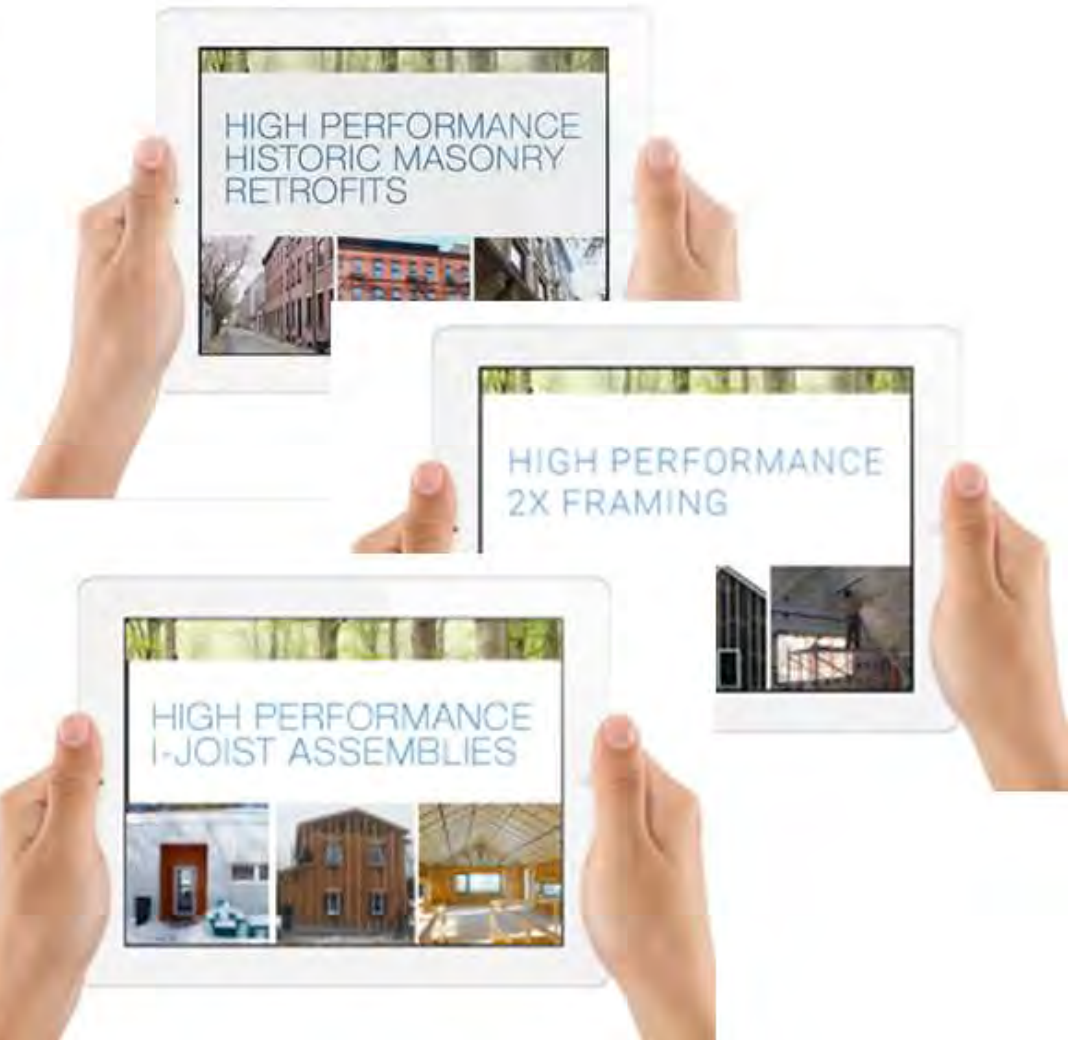
Wood Frame Deep Energy Retrofit (DER): Wood Frame, Climate Zones 4-8 (DWG Files)

CAD drawings can be cut, pasted, edited, and customized to form the basis of a complete approach to air sealing and vapor control required by your next high performance construction project.

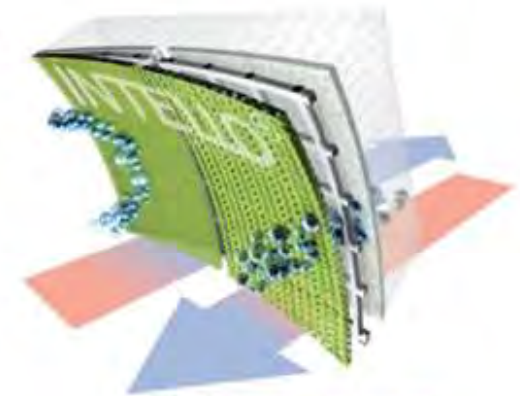


2x6 Framing Climate Zones 4-8 (DWG Files)

CAD drawings can be cut, pasted, edited, and customized to form the basis of a complete approach to air sealing and vapor control required by your next high performance construction project.



Interior air sealing & vapor control



TESCON PROFIL
To connect to windows, doors and corners



CONTEGA FC
To connect to plastered building components



ROFLEX
Pipe gaskets for secure airsealing around large services.

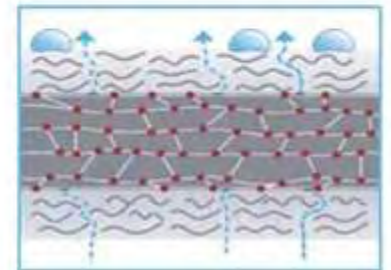
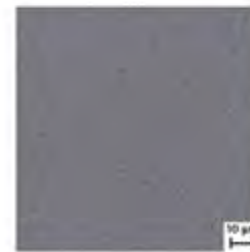
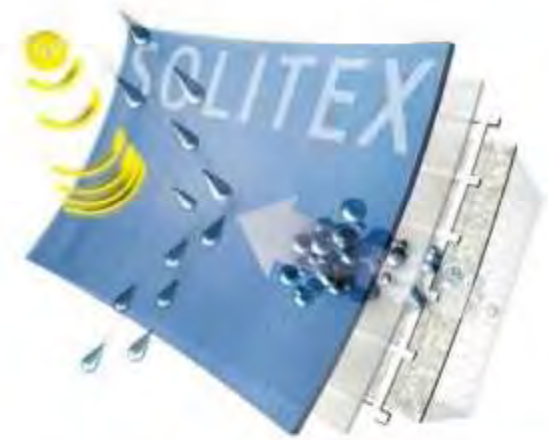
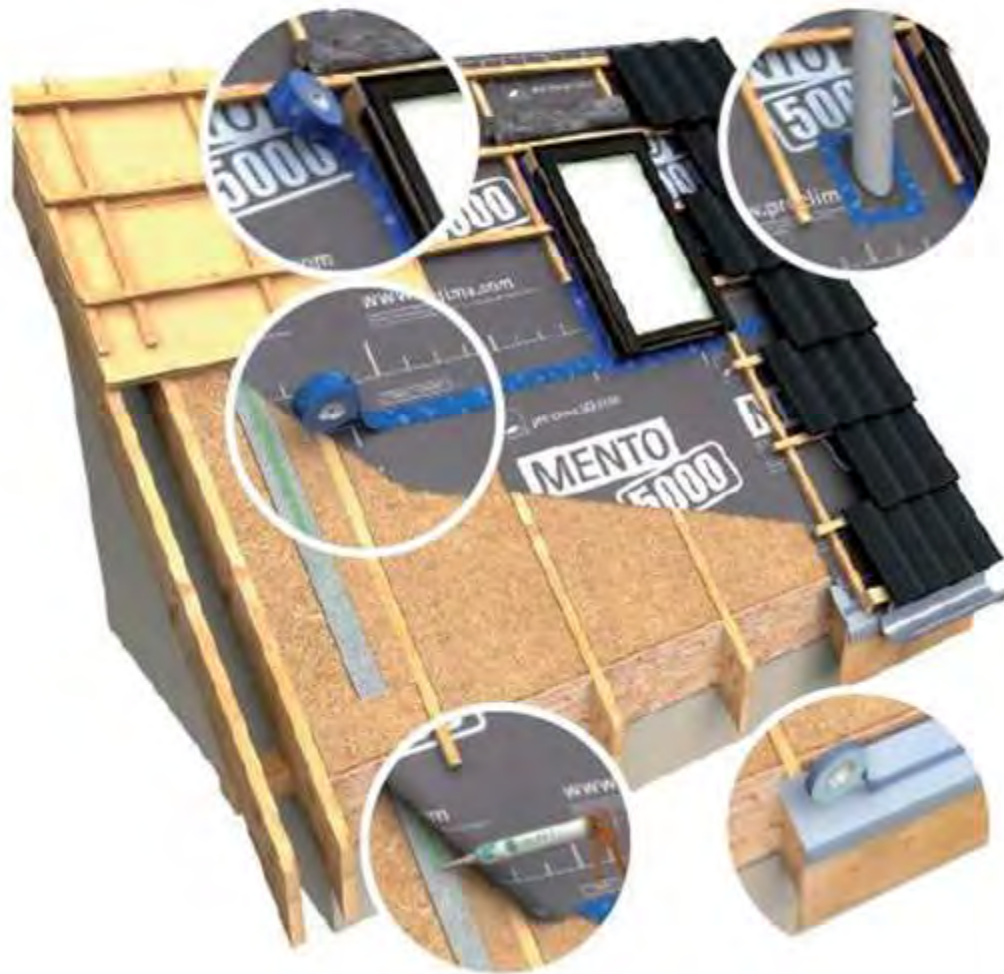


INSTAABOX
Installation box for airtight seals to cables surrounding outlets when a service cavity is not possible.



KAFLEX mono/duo
Gaskets for airtight seals around cables and small pipes

Exterior air sealing & vapor control



Wood fiber insulation boards/WRB



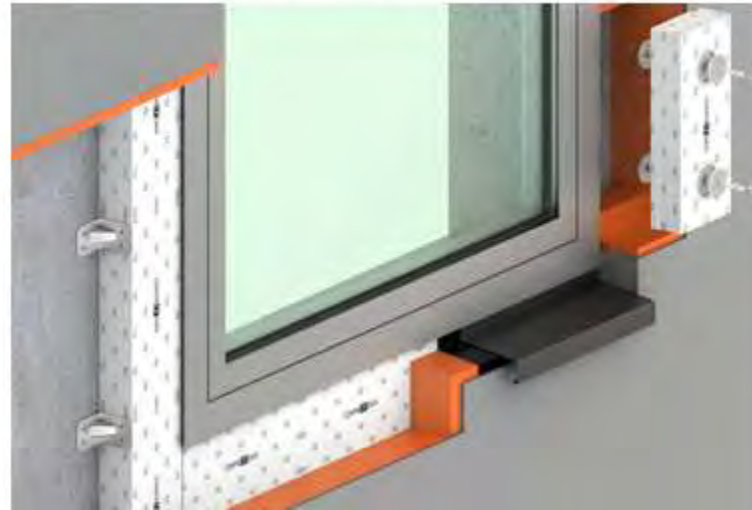
- Functions as weather resistive barrier
- Very vapor open
- Low embodied energy production
- Carbon sink
- Renewable resource material
- Roofs and walls



Sheep's Wool Insulation



CompaCFoam Insulation



BEWISO

Best
Window
Solution



THERMAL TRANSMITTANCE

Uw max 0.11 btu/h ft²F

NOISE PROTECTION

35 dB

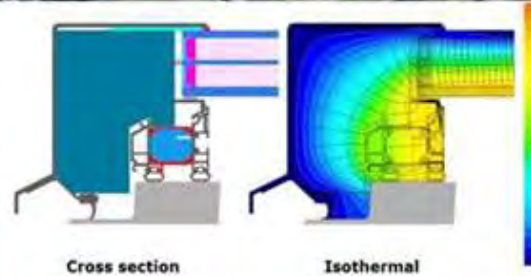
TRIPLE-GLAZING

Ug max 0.09 btu/h ft²F

ISO-GLASS THICKNESS

Up to 79mm

Roof Daylighting



Heat Recovery Ventilation

LUNOS
energy-efficient



e2

- 90.6% efficient
- Very quiet
- Through wall, ductless HRV





High Performance Enclosures





High Performance Enclosures

High performance enclosures are the basis for low-energy and Passive House buildings.

Enclosure performance is based on robust handling of:

1. water control
2. air control
3. vapor control
4. thermal control

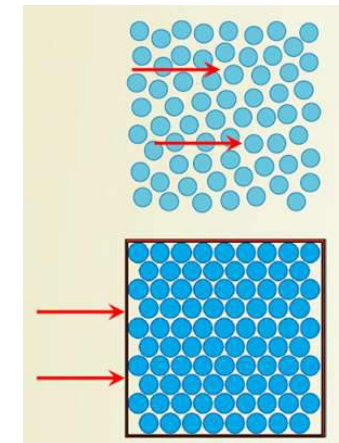
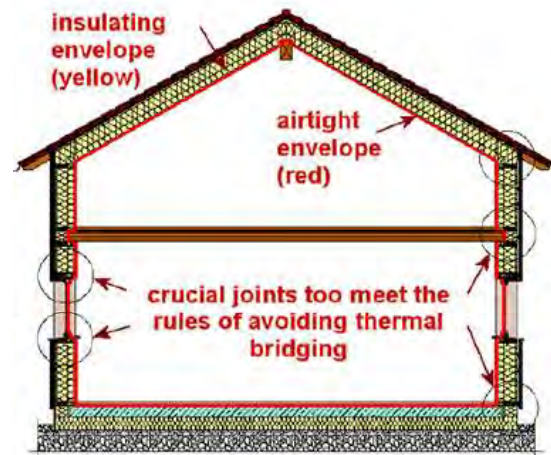
With all penetrations fully integrated with control layers and control layers protected.

Water control - shed it



Optimal Airtightness...

Surround the building interior with airtightness, but also the insulation.

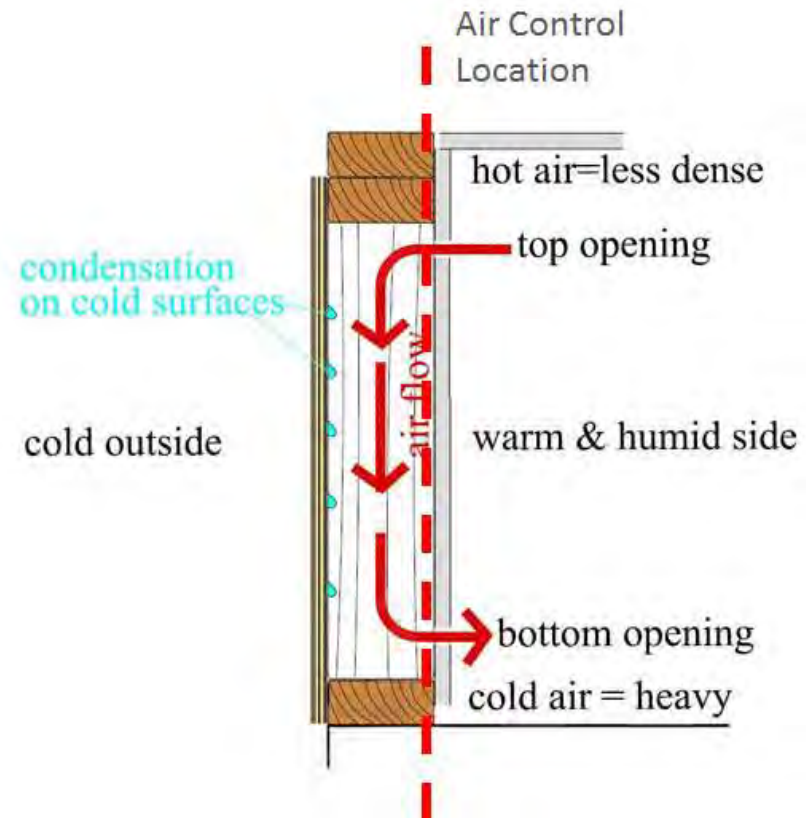


Ref http://passipedia.passiv.de/passipedia_en/



Primary air barrier inboard of insulation

1. Keeps conditioned air within the conditioned space.
2. Better protection against condensation risk.
3. Places the components of the air control layer in a climate controlled location.
4. Leaks can often be more readily found and easier to repair.
5. **The air control layer can/should double as a vapor control layer.**



inboard or outboard of framing ...always inboard of insulation

OUTBOARD OF FRAMING

Airtight sheathing
inboard of continuous
fiberboard insulation.



Airtight WRB inboard
of continuous mineral
wool insulation



INBOARD OF FRAMING

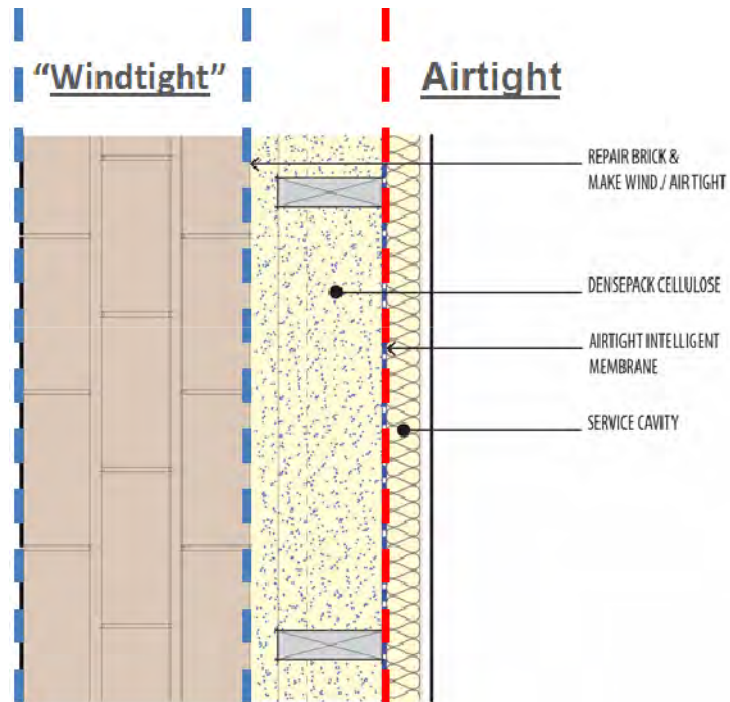
Airtight smart vapor
control membrane
inboard of cellulose
insulation



Airtight sheathing
inboard of I-Joist
cellulose cavity



Historic masonry too...



STG Gold at
Masonry

Airtight smart
membrane
inboard of
insulation &
framing





Safety from moisture damages...

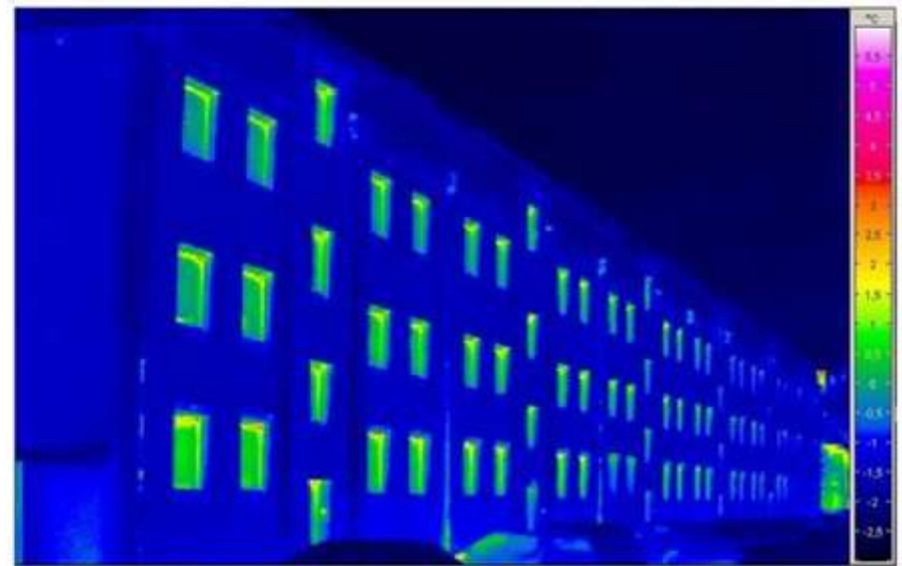
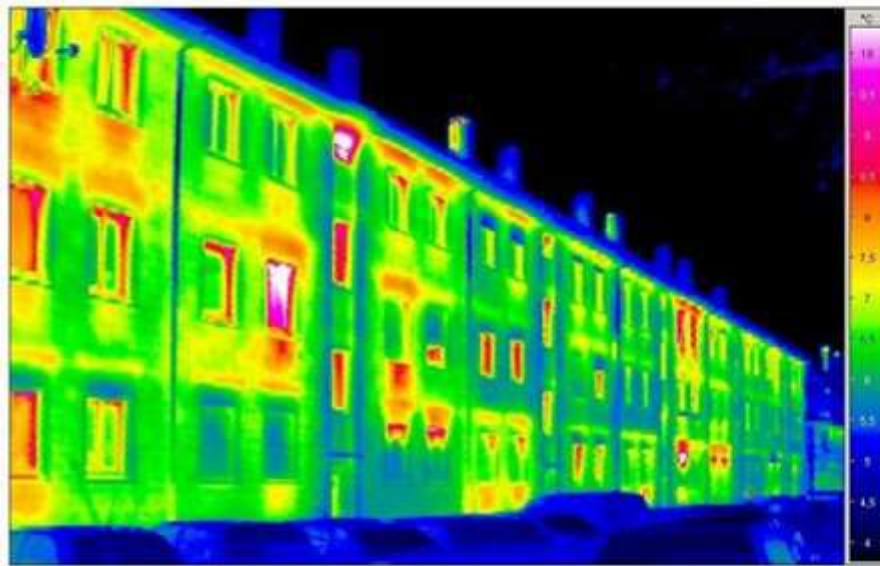
Drying Capacity > [unanticipated] Moisture Stress

=

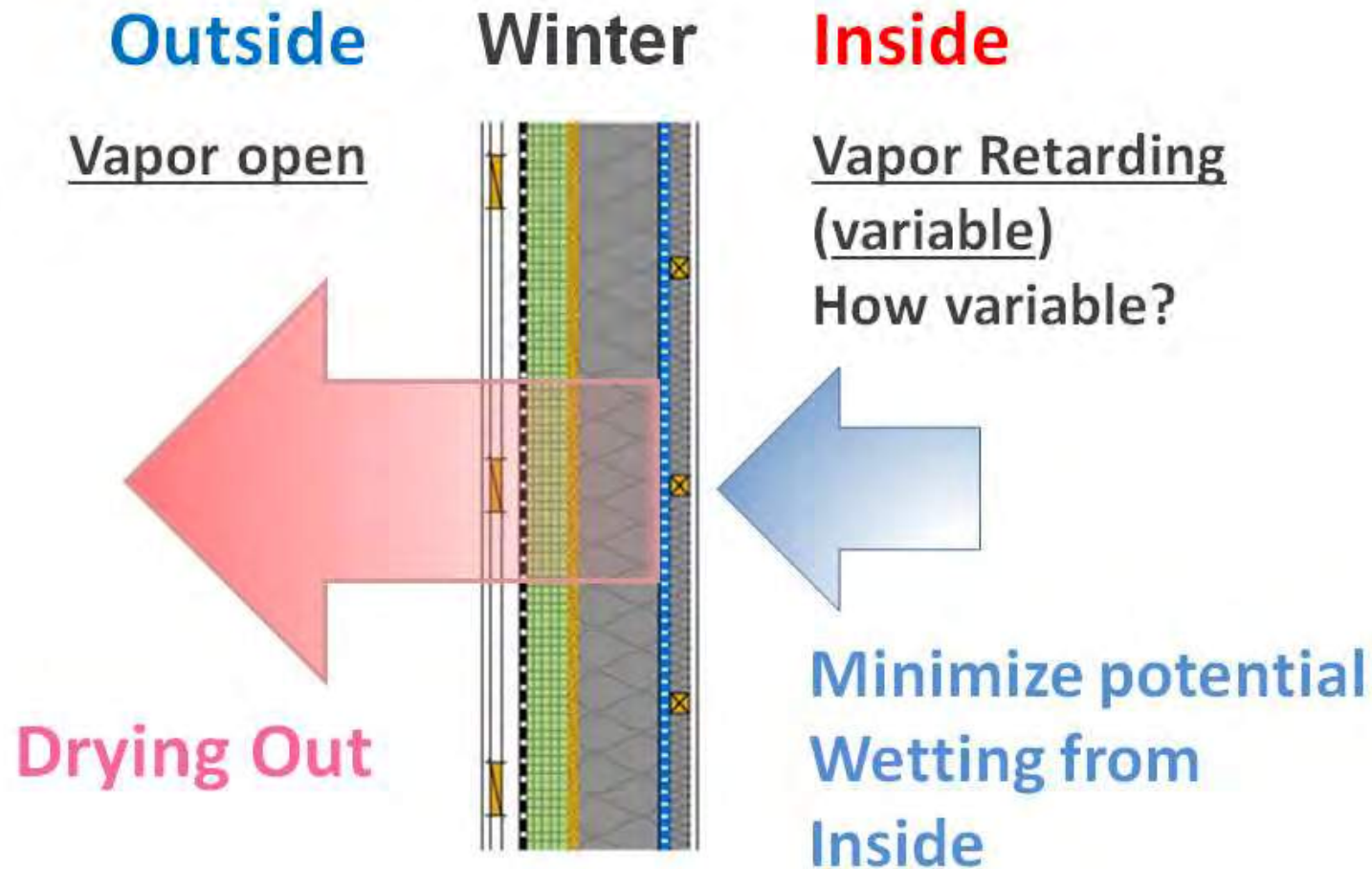
Freedom from Damages

Stuff Happens. So, **help the drying.**

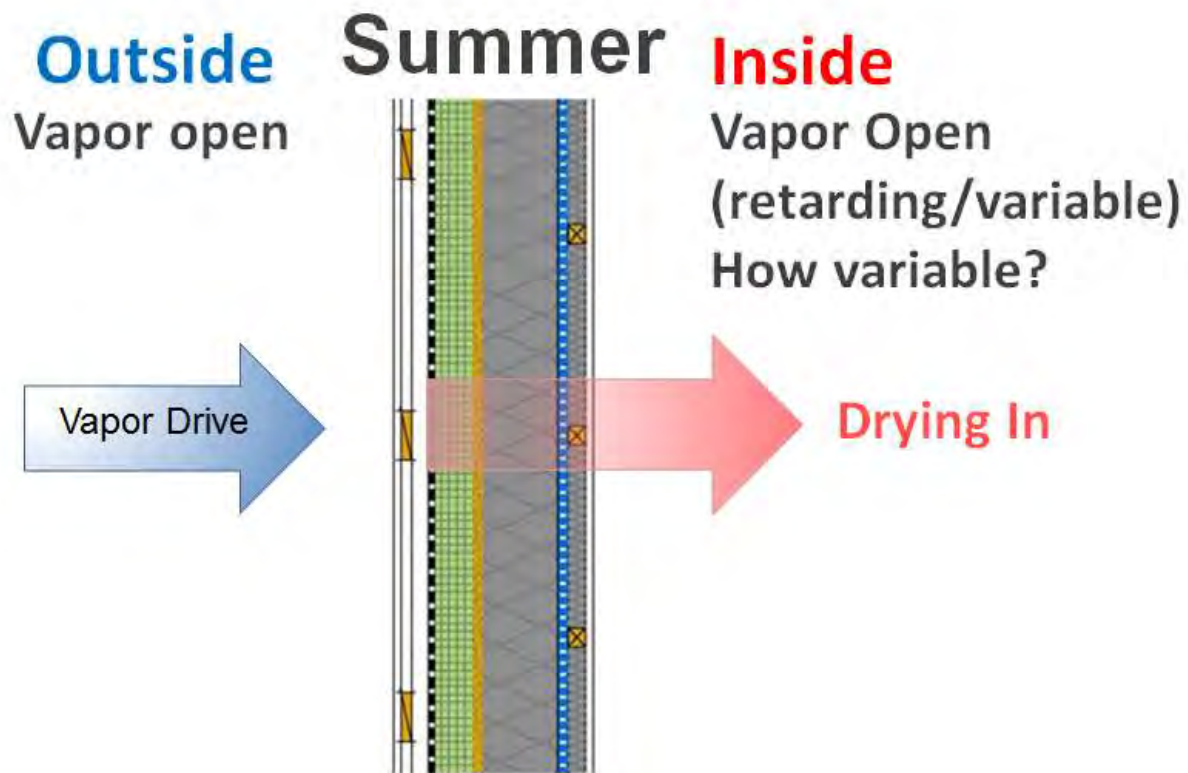
Maximize the Drying: vapor diffusion



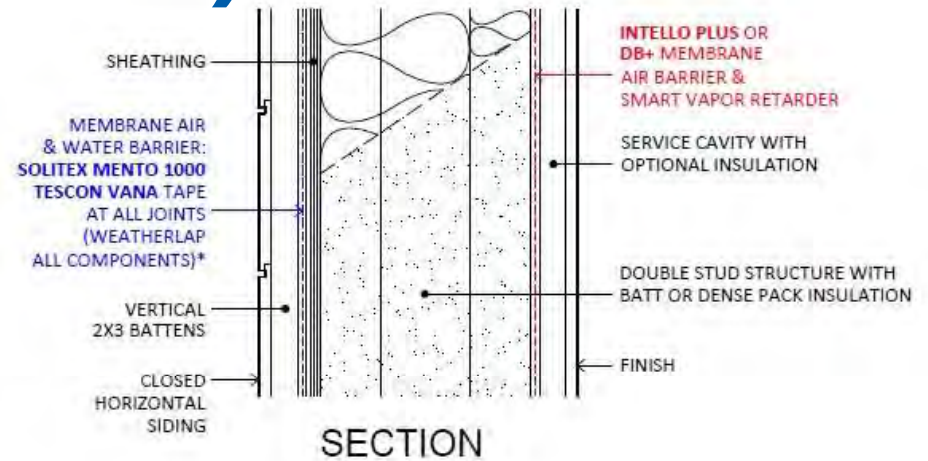
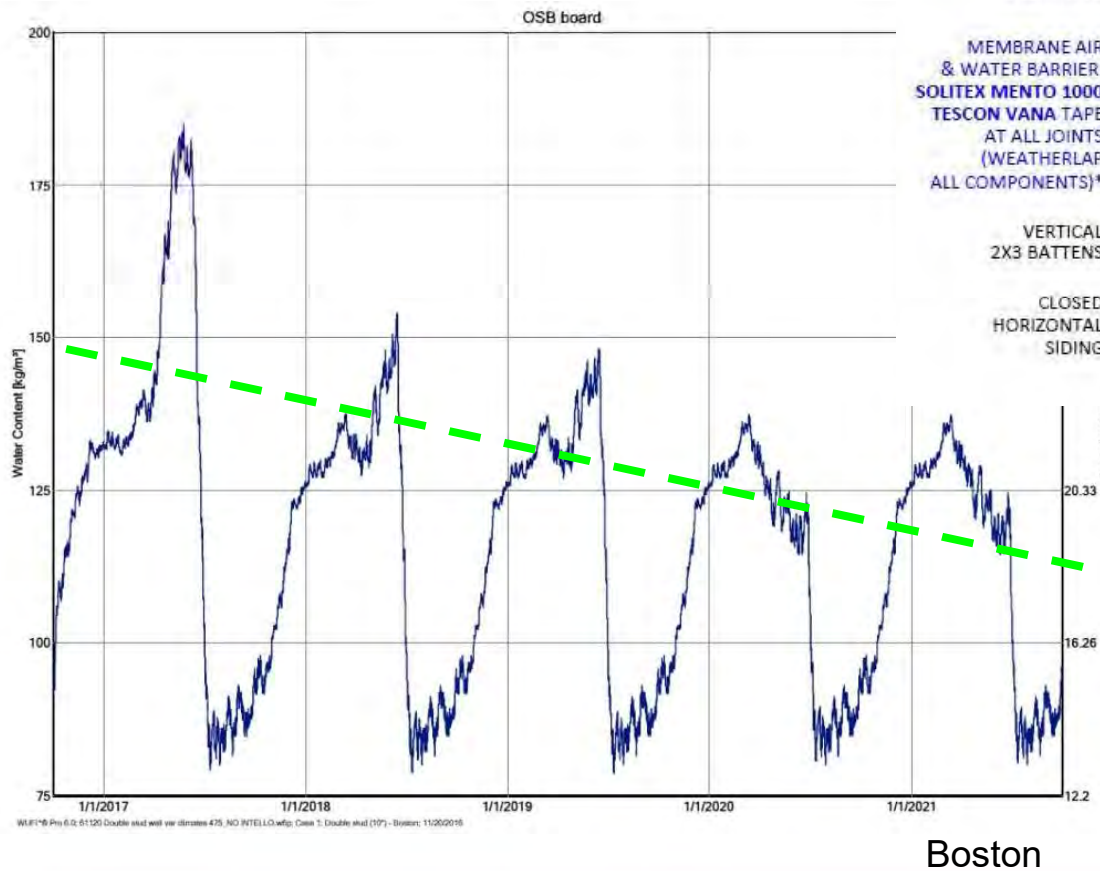
vapor drive outward in winter...



drying inward in summer...



...make a safety buffer (you don't tailgate...)



As insulation levels rise, airtightness and vapor control should rise too.