Michigan Historic Preservation Network

Weatherization for Historic Buildings

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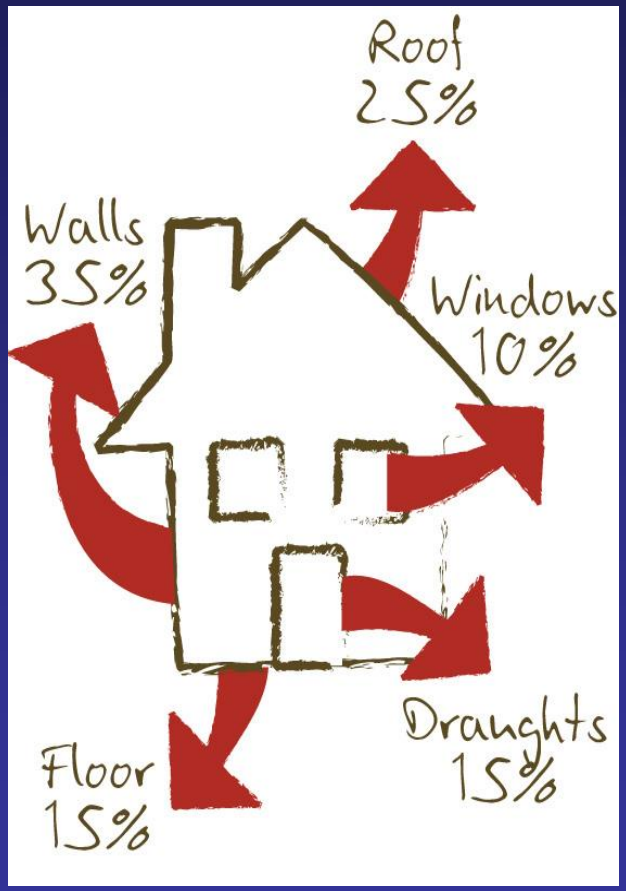
National Trust *for* Historic Preservation
Save the past. Enrich the future.

Weatherization

What are the Facts?

- Increasing awareness of annual energy loss
- Overwhelming amount of information available, good and bad
- Older and historic buildings are often inherently designed for energy conservation



(average energy loss in a building)

Is “Green” Good?

Often explained as buying new and replacing old.

Replacement products often fail in a short timeframe. Reusing existing materials and retrofitting older and historic buildings is a more sustainable choice.

What You Can do to Weatherize

- Get an audit… the good kind
- Sealing joints
- Ventilation
- Repair windows and doors
- Check water drainage
- Insulation
- Water-tight roofing and siding

Roofing

Roofs Tell Stories.

Often a character-defining feature of a older and historic building

Require unique approaches to ensure they remain weather-tight.

Causes of Deterioration rain, snow, sun degradation, wind, pollutants, falling tree limbs, small animals, foot traffic, and insect infestation.

Roofing – Materials

Historic Materials Practical and durable. Availability is a factor.

Substitute Synthetic Materials More cost effective – short-term – but it's important to consider long-term durability, sustainability, authenticity, aesthetics, and the experimental nature of some of these emerging substitute materials.

Roofing – "Going Green" & Solar

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- DOW Powerhouse solar shingle
- Certainteed Apollo II

Windows

Reason #1

Old windows were built with durable materials, like old growth wood.

New wood windows will not last as long due to the nature of modern wood.

Windows

Reason #2

Old windows were often custom made to “fit” their openings.

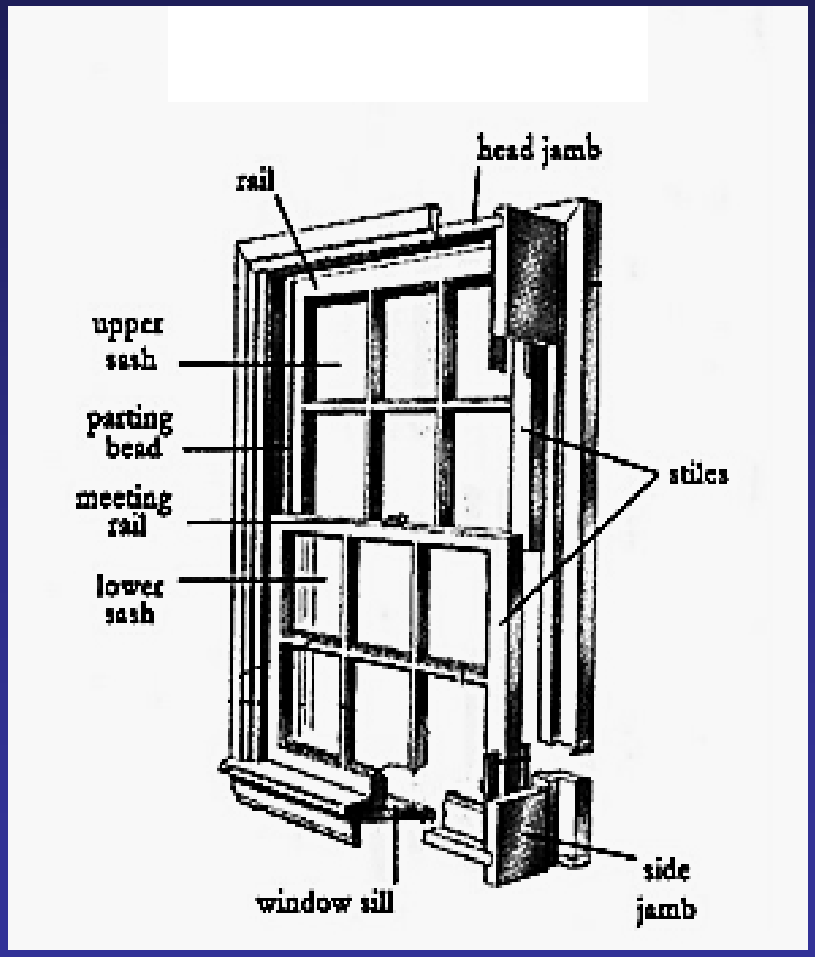
New stock windows installed in historic openings often do not fit well.

Windows

Reason #3

Old windows can be repaired as they are made from individual parts.

Vinyl, aluminum, fiberglass, and composite windows are built as a unit, and replaced as an entire unit when only one component is damaged



Windows

Reason #4

Old windows perform well and are energy efficient.

JUST AS, and sometimes more, energy efficient as a new window with proper weather-stripping and storms.

Storm Windows

Storm windows improve overall energy efficiency.

Interior: will not obscure exterior detailing; easy installation and removal; can be custom fit.

Exterior: protects exterior historic wood; variety of materials available; can be custom fit.

Windows Myth

“Replacement Windows Will Save You Money.”

- It takes an average of 40 years to recoup the cost of replacing windows in energy savings.
- Typical replacement windows fail within about 15-20 years.

Windows Myth

"Replacement Windows
are Guaranteed."

- Read the fine print. "Lifetime" warrantees on glass are about 20 years, installation 2 years, and non-glass materials 10 years.

- Maximum refunds typically do not exceed $500.
- Guaranteed to be "maintenance free"

Windows Myth

"Replacement Windows are the Environmentally-Responsible Choice."

- Environmental impacts to manufacturing new products
- Expected lifecycle of the product.
- *Embodied energy* – the energy required to extract raw materials, transport them, make them into a new product, and to ship and install the final product.
- Vinyl production = hazardous chemicals
- Vinyl production byproducts = Dioxin and PCBs

Lead
What You Need to Know

- Surface coating (paint, stain, or varnish) containing lead is in good condition—no peeling, cracking, blistering, etc.— and it is not likely to be damaged, it can be left in place.
- Good condition coating can be recoated with a new lead-free finish.
- Use such lead-safe work practices as wet misting when any surface preparation, like sanding, is needed prior to application of the new finish coat.

Insulation

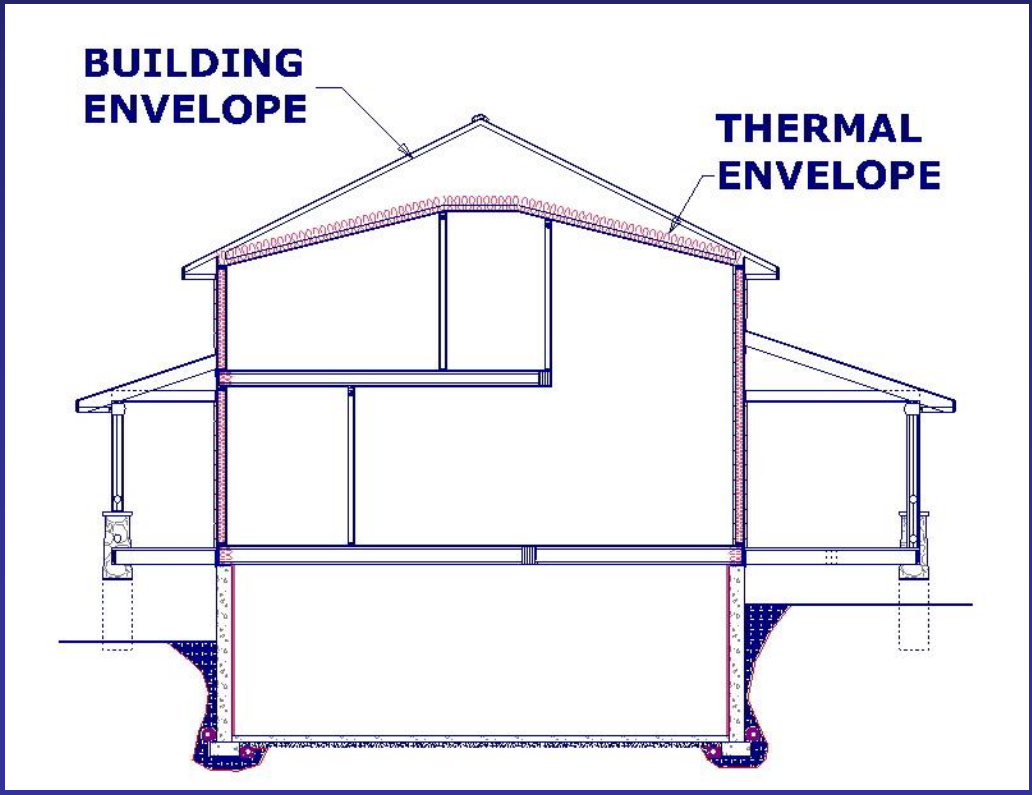
Upgrade Your Home the Right Way

- Upgrading insulation should be carefully considered.
- Many historic homes were not designed with insulation, but were built to move air naturally.

Insulation

Balance between sealing your home and letting it breathe.

- Insulate
- Ventilate
- Seal open joints
- Maintain joints



Insulation

After an audit, if you do insulate…

Begin with Attics and basements

Wall insulation should be investigated

Maintain vapor barriers

Insulation- Inappropriate

Removed plaster

Wet-applied

Non-reversible

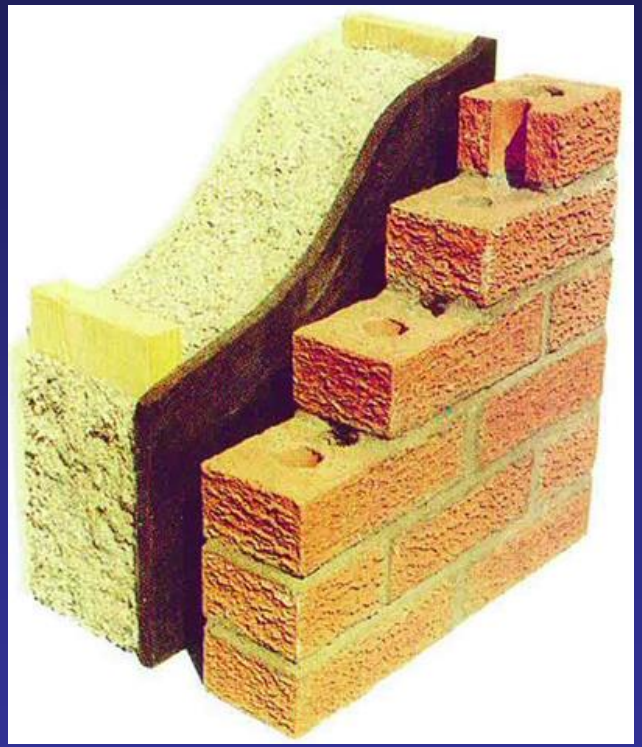
Traps moisture

Non-reversible

Insulation- Inappropriate

Blocks moisture channel

Foam is non-reversible



Insulation- appropriate

Insulation

Materials:

Good thermal properties and moisture evaporation

Spray foam use is limited

Sustainable or natural – wood, plant fiber, or wool

cellulose plant fiber

peat moss and wood fiber

cotton fiber

Mechanical Systems

Maximize building's "built-in" features and utilize passive energy-saving techniques:

- Using operable windows, shutters, awnings, and vents
- Regulate temperature of unused rooms/ motion lights
- Compact fluorescent lights
- Clean and maintain radiators and boilers
- Insulate ducts and pipes
- Meter energy use

Resources

www.nps.gov/tps/standards/rehabilitation/sustainability-guidelines.pdf

Resources

National Park Service – “Weatherizing and Improving the Energy Efficiency of Historic Buildings” @ www.nps.gov

State Historic Preservation Office – “Insulation for Historic Residential Resources” @ www.michigan.gov/shpo

National Trust for Historic Preservation – “Weatherization Guide for Older & Historic Buildings” @ www.preservationnation.org

See manual for additional resources

Questions?

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