

FYI No. 2

INSULATION

Many rehabilitation projects include proposals for insulation and weatherization. These treatments have the potential to obscure, alter, or destroy historic spatial character-defining features and added savings. Storm windows, double-glazing, additional attic and basement insulation, efficient HVAC systems, insulated ducting and piping, caulking, and quality weatherstripping are all cost-effective techniques to upgrade the energy efficiency of the overall building envelope with minimal impact to historic fabric.

Wood Frame Buildings

The addition of wall insulation in a wood frame building is generally not recommended because the costs are high, the potential for damage to the building materials is higher, and the potential benefit is negligible. National Park Service regulations 67.7 (c) state that, in nearly all instances, the introduction of insulation into cavity walls of wood frame buildings, where damage to historic fabric would result, will be grounds for denial of certification. This includes:

- The use of water-based foam insulation injected into walls. These types generally shrink during curing, and therefore provide inadequate insulation. Additionally, these foams require the introduction of substantial quantities of water into the frame of the building, with short-range and long-range potential for moisture damage and materials failure.
- The use of any system requiring holes drilled in exterior siding to allow for injection of insulation.
- The use of any insulation without a proper vapor barrier on the warm side.

Vapor Barriers

Heated air inside a building will support more moisture than cold, outside winter air. This warm air passes through uninsulated wall cavities. The moisture-laden vapor reaches dew point on the back side of exterior sheathing. Air movement within the uninsulated cavity allows this condensation to evaporate.

Where wall cavities are insulated, the moisture cannot evaporate, and it is held within the insulation where it can damage wood framing members. Wet insulation material provides no insulation value.

To avoid moisture damage and insure maximum thermal efficiency, a proper vapor barrier must be provided on the warm side of all insulation materials. A vapor barrier can be provided by the following methods.

- a. foil facing material on fiberglass insulation.
- b. Kraft paper facing only if it is backed with a bituminous or tar-like coating. Kraft paper alone is not a vapor barrier.
- c. Polyethylene sheeting placed between the insulation and new plaster or sheetrock.
- d. "Vapor Barrier Paints" or other primers which provide a "perm rating" of 1.0 or less. These are applied to plaster or sheetrock wall and ceiling surfaces.

Additional Information Request

If insulation is considered as part of your project, please specify or provide for each type:

1. _____ locations.
2. _____ methods of installation.
3. _____ the increased thickness of affected wall or ceiling surfaces.
4. _____ the impact on existing plaster cornice, wainscot, door and window casings and base trim. If any of these features or any wall or ceiling surfaces are to be moved, provide section drawings detailing before- and after-rehabilitation conditions.
5. _____ the means of providing a vapor barrier.

For other weatherization techniques, please specify or provide:

6. _____ narrative description of techniques proposed.
7. _____ overall building envelope energy loss calculations for all other weatherization techniques versus insulation.

Please Note

Inappropriate weatherization or insulation techniques may result in denial of certification. Please contact the Department of Historic Resources at (804) 367-2323 if you require assistance.