

Homeowner's Guide: **Contractors and Old Buildings**

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Prepared in cooperation by the Preservation Trust of Vermont and Vermont State Historic Preservation Office.

Buildings, whether old, historic, or new, require regular maintenance and repairs to materials and finishes. They function as a holistic system and altering one part of that system could negatively (or positively) affect another.

When choosing contractors—especially for work on older buildings—it is important to ask the right questions to ensure a basic understanding of historic preservation, historic and structural integrity, and character-defining architectural features and materials. The ability to examine and understand how older buildings were designed and individually altered over time in the name of energy efficiency is essential to the success of any project. Contractors should have a working knowledge of Vermont's Residential Building Energy Standards (RBES) and current fire/safety/accessibility codes. This guide provides several topics to consider and questions to ask when hiring a contractor to work on an older building.

Finding the Right Contractor for Older Buildings It is important to hire a contractor who is trained and experienced in the renovation of older buildings. Knowledge about building science and the whole-building approach to renovation and weatherization are essential for a successful project. For energy efficiency projects, contractors should be certified through the Building Performance Institute, an independent, not-for-profit organization that sets national standards for residential energy efficiency and weatherization work.

The contractors should know how to maximize energy savings, boost comfort, keep your building/family safe and healthy, while also preserving the character-defining design features and inherent energy efficient elements of the building. When you speak with contractors, share a list of architectural features and design elements that matter to you as the owner/occupant. Potential contractors should be able to identify other elements that are character-defining from their perspective and experience, which should be considered during renovations and energy efficiency upgrades.

When hiring a contractor to work on an older building, it is important to consider the following:

- Training and certifications related to renovation and weatherization.
 - <https://www.encyvermont.com/blog/how-to/three-easy-steps-to-get-started-on-your-home-weatherization-project>
- Prior experience working on older or historic buildings.
 - Construction dates and architectural styles of those buildings.
 - Examples of the scopes of work.
 - References and pictures of the work (before and after).

- Coordination with preservation and energy efficient experts and consultants.
- Management to ensure the entire construction team and subcontractors understand the specific scope of work and the necessary measures put in place to protect the character-defining features of the building.
- Ability and time to instruct on how to properly maintain and monitor renovations and energy efficiency upgrades.
- Provides warranties for the work and the products or systems installed.
- Available for emergency fixes or repairs; recommends other professionals to assist.

Maintenance Preventative and proper maintenance are the most cost-effective methods for extending the life of buildings and supports both preservation and sustainability goals. As soon as a building is constructed, restored, or rehabilitated, regular care and maintenance are needed to slow the natural process of deterioration. For older buildings, that normal weathering and deterioration have been ongoing for decades or even for more than a century. Neglect and inappropriate alterations or repairs also accelerate deterioration and require mitigation to stop decay before it is widespread.

Understanding how specific building materials and construction details function and age will help avoid inferior treatments intended to simplify maintenance. “Maintenance free” products and systems, particularly waterproof sealers, rubberized paints, and synthetic sidings, are not truly maintenance free especially when it comes to caring for older buildings and, without proper application and care, may result in long-term/high-cost damage. The right contractor should have experience with the recommended maintenance products or systems, and how they perform when applied to older designs and materials. The contractor should instinctively provide instructions on how to monitor and maintain the work and advise when professional assistance is required.

Contractors must be aware of the cautions required for materials like lead-based paint and asbestos that commonly are found on historic materials. Special protection is required for workers and appropriate safety measures should be followed by a licensed contractor to minimize or mitigate the hazards of certain materials. They should provide instruction to owners/occupants on the applicable laws, guidance, and safety measures being implemented.

In coordination with the contractor, create a cyclical maintenance checklist that addresses seasonal climate changes and owner/occupant uses. The maintenance plan should include a written set of procedures prioritizing tasks to focus on the most vulnerable and character-defining elements, proceeding from the roof down to the foundation one elevation at a time. Tasks should be assigned to the owner/occupant and the necessary professionals.

Examples: Activities as simple as replace air filters, wax floors, clean/realign gutters, trim landscaping closest to the building, and clean exterior siding are steps that prevent deterioration, replacement, and ensure comfort. Energy-efficient appliances should be regularly serviced to avoid failures and maintain efficiency performance levels.

Questions to Ask:

- What cyclical maintenance is needed to preserve older materials and energy-efficiency systems and products?
- Who can perform these maintenance tasks? Which tasks must be performed by a contractor or specialist, and how often?
- Are there signs or indications that the owners/occupants should be watching or know when it is time for maintenance?

Resources:

- <https://www.nps.gov/tps/how-to-preserve/briefs/47-maintaining-exteriors.htm>
- <https://architecturaltrust.org/preservation-by-prevention-creating-a-maintenance-plan/>
- <https://acd.vermont.gov/sites/acdnew/files/documents/Inspection%20Checklist%20for%20Historic%20Buildings.pdf>

Retain, Repair, and Reverse When working on older buildings, every effort should be made to retain and repair historic designs and materials through proper maintenance. However, sometimes deterioration may be so severe that replacement is the only reasonable options. When historic features and materials are replaced with matching materials, the change in visual appearance should be minimized particularly for character-defining features. For alterations, additions, and the introduction of new energy efficient products and systems, reversibility should be considered. Reversibility means that if new work were to be removed sometime in the future, the essential form and material integrity of the older building or feature would remain.

Together with the contractor, consider the effects that repairs, alterations, and new materials or systems will have on the historic materials. A new “maintenance free” product might be ideal today to provide greater energy efficiency but may have consequences tomorrow (remember the initial benefits of asbestos insulation and lead-based paint). Examine the deterioration rate of the modern techniques and materials, which are regularly updated and improved through new science. Discuss possible ways to minimize deterioration or loss of historic materials when introducing modern techniques and materials. Explore alternatives, find the least invasive option, and test new products in an inconspicuous area.

Examples: Spray foam insulation may provide proper insulation today, but imagine the effects, hazards, and costs if that foam insulation needed to be removed to allow for repairs and maintenance of other building systems. One less invasive option may be blown-in cellulose insulation, which can easily be removed to allow for repairs with little to no effect on the older materials. Solar panels affixed to a sloping roof covered in replacement asphalt shingles can be removed with minimal effects to older materials, but solar panels on a roof covered in historic slate tiles may not be easily reversable and may compromise a structural system not designed to carry the increased load.



This loose fill cellulose may be mess, but it can easily be removed to allow for repairs and preservation of historic features. Courtesy of the Preservation Trust of Vermont.

Questions to Ask:

- What are the known effects of the proposed materials on the older materials?
- If needed, could this proposed material be removed?
 - How invasive is the removal process?
- What is the expected lifespan of the proposed material?
- Are there ways to mitigate the effects on older and historic materials?
- What effects will the proposed work and materials have on other building maintenance efforts?
- Are replacement materials readily available?

Resources:

- <https://www.nps.gov/tps/how-to-preserve/briefs/16-substitute-materials.htm>
- <https://www.nps.gov/tps/how-to-preserve/briefs/6-dangers-abrasive-cleaning.htm>

Air circulation and Moisture 20th-century mechanical systems have had a tremendous impact on making buildings comfortable, but the introduction of these new systems in older buildings is not without challenges. The attempt to meet and maintain modern climate control standards have the potential to cause unintentional damage to older and historic materials. Modern systems are often inappropriately designed to compensate for inherent or perceived inefficiencies of some historic materials and floorplans. Energy retrofit measures, such as installing exterior wall insulation and vapor barriers or sealing operable windows or vents, ultimately affect the performance of a building and can reduce the life of aging older and historic materials if not properly understood and detailed. The greater the differential between the interior and exterior temperature and humidity levels, the greater the potential for damage. To avoid damage, the contractor should clearly understand how building components work together as a system. A plan should be developed that illustrates how the older building will perform with the proposed interventions before contractors change the existing methods by which the older building circulates air or manages moisture.



Gable vents allow air to circulate under the roof, drying trapped moisture. Courtesy of the Preservation Trust of Vermont.

Examples: Thick plastic sheets installed as vapor barriers to control moisture migration behind drywall can limit the drying potential of the wall assembly, allowing structural materials to severely rot before detected. Trapped moisture always needs somewhere to go, either drying to the exterior or the interior.

Recommendations: Make sure the contractor understands the building assemblies drying potential and indoor ventilation strategy. Ensure that any exterior water issues are addressed. Conduct an energy audit/conditions assessment of the building before, during and after repairs. Using a thermal imaging device can allow the contractor to see hidden issues and potentially future issues.

Questions to Ask:

- How could moisture enter or be trapped in the building?
- What possible ways can moisture dry or escape from this building in particular?
- Are operable vents or windows proposed for sealing or blocking? If so, how will the moisture that could get trapped due to the lack of air circulation be mitigated? Are there other alternative solutions?
- How will the proposed work keep water out of the building, or allow it to escape?
- What are the results of the energy audit and conditions assessment?
- What is the proposal for addressing the interior ventilation to manage moisture, humidity, and provide good indoor air quality?
- Are there ways of testing the work to ensure no areas were missed or omitted? Who performs these tests?

Resources:

- <https://www.encyvermont.com/services/energy-assessments/home-energy-assessments>
- <https://www.wbdg.org/design-objectives/historic-preservation/update-building-systems-appropriately>
- <https://www.energy.gov/energysaver/home-energy-audits/do-it-yourself-home-energy-audits>
- https://www.epa.gov/sites/production/files/2014-08/documents/sick_building_factsheet.pdf
- <https://www.nps.gov/tps/how-to-preserve/briefs/24-heat-vent-cool.htm>

Preserve Integrity Buildings change over time, and in most cases a property's significance is not limited to the date of its construction. Removal of later features or materials that have acquired historical significance over time and add to the story should be carefully considered. Features and materials do not need to be original to be considered "historic" and character-defining. Yet, rehabilitation and installation of energy efficient systems will involve some change. The more important a feature or area is to the historic character of an older building, the less it can be changed without damaging the character as a whole. Aspects less critical to the historic character may sometimes be altered substantially with minimum effect on the overall character. For this reason, it is necessary for those character-defining elements supporting a particular architectural style, period, or history/story, and those features that are important to the owner/occupant should be identified and preserved in the proposed designs/alterations.

The right contractor should understand and appreciate the historic design and features that add to the building's significance and assess how proposed alterations could change the aesthetic and/or function of the building or floorplan.



Identify character-defining features and materials to be protected and preserved during rehabilitation and energy efficiency upgrades. Courtesy of the Vermont Division for Historic Preservation.

Examples: Ductwork installed through wood flooring or obstructing moldings can have a negative effect on the historic design and materials that identify the older building's architectural character and sense of history.

Recommendations: Explore the building with the contractor to discuss potential changes and the impacts to character-defining features. Consider scale, architectural details, craftsmanship/workmanship, materials, design, sense of time, and reversibility/replacement. The right contractor will recommend how to minimize the impact of the new work on the character-defining features and contribute creative alternatives that are specific to the building.

Questions to ask:

- How will the proposed work affect the significant features of the building?
 - What alternatives should be explored?
 - Is the work reversible?
- What steps are being proposed and taken to protect significant and character-defining features?
 - What direction and monitoring shall be provided to the entire construction team and subcontractors to ensure the necessary measures are put in place to protect the character-defining features of the building?
- Would coordination with preservation and energy efficient experts and consultants be beneficial for this project?

Resources:

- https://www.crt.state.la.us/Assets/OCD/hp/nationalregister/nationalregistry101/101_-_Seven_Aspects_of_Integrity.pdf
- <https://savingplaces.org/stories/preservation-tips-and-tools-national-register-guide-episode-9-evaluating-historic-integrity#.Xt5tHy2ZORs>
- <https://worldheritage.gsu.edu/files/2017/04/GSU-WH-AuthenticityIntegrity.CURRENT.pdf>

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