

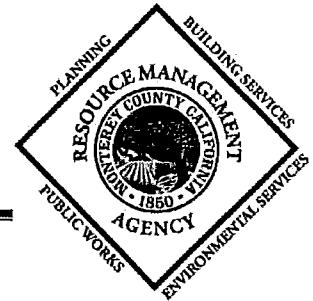
Attachment E

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MONTEREY COUNTY RESOURCE MANAGEMENT AGENCY

Carl P. Holm, AICP, Acting Director
John Guertin, Acting Deputy Director

Daniel Dobrilovic, Acting Building Official
Michael Novo, AICP, Director of Planning
Robert K. Murdoch, P.E., Director of Public Works



168 W. Alisal Street, 2nd Floor
Salinas, CA 93901
<http://www.co.monterey.ca.us/rma>

May 22, 2015

Signal Hill LLC
111 Independence Drive
Menlo Park, CA 94301

Massy Mehdipour, Agent
Signal Hill LLC
1425 Dana Ave
Palo Alto, CA 94301

Fidelity National Title Insurance Company
111 Pine Street
San Francisco, CA 94111
Loan Number 60-504415-1

COMPLIANCE ORDER

NOTICE OF INTENT TO RECORD A NOTICE OF VIOLATION

Violation Location:	1170 Signal Hill Rd., Pebble Beach
APN:	008-261-007-000
Zoning:	LDR/1.5-D(CZ)
Case Number:	13CE00338

This Compliance Order and Notice of Intent to Record a Notice of Violation has been issued pursuant to the inspection conducted by the Monterey County Sheriff's Department February 4, 2015, the inspection conducted by M3 Environmental Consultants LLC on March 5, 2015 and the inspection conducted by SWCA Environmental Consultants and Luis Osorio of County of Monterey Resource Management Agency Planning Department on April 20, 2015 which identified the following violations:

Description of Violation(s):

1. The broken windows for the Single Family Dwelling are in violation of Section 18.14.040.D.12 (General Maintenance Requirements for Windows) of the Monterey County Code.
2. The ceiling and walls have holes in the sheetrock in violation of Section 18.14.040.E.2 (General Maintenance Requirements for Interior Surfaces) of the Monterey County Code.
3. Missing exterior copper flashing in violation of Section 18.14.040.D.1 (General Maintenance Requirements for Protective Treatment) of the Monterey County Code.

4. The missing copper piping throughout the single family dwelling and missing water heater as reported in police report FG1500685 are in violation of Section 18.14.060.I (Plumbing facilities and Fixture Requirements for Water Heating Facilities) of the Monterey County Code.
5. Visible signs of water intrusion in violation of Section 18.15.030.A.11 (Dampness of Habitable Rooms) of the Monterey County Code.
6. Visible signs of water intrusion in violation of Section 18.15.030.G (Faulty Weather Protection) of the Monterey County Code.
7. Substandard guard rails in violation of section 18.14.040.D.11 (Handrails and Guards) of the Monterey County Code.
8. The Single Family Dwelling is deemed Substandard and in violation of Section 18.15.060.B (Prohibition for Substandard Buildings) and 18.25.240 (Preservation of Historic Resources, Duty to keep in good repair) of the Monterey County Code.

Required Corrective Action(s):

1. Apply for and obtain an exploratory permit to identify the source of water intrusion by **June 1, 2015**.
2. Apply for and obtain permits from the County of Monterey Resource Management Agency to correct the source of water intrusion and to complete the repairs as recommended in the M3 report and all violations as noted as noted above, by **June 8, 2015**. All improvements must be done under supervision of an Architectural Historian to certify the work is completed in a manner consistent with the Secretary of Interior's Standards for the treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.
3. Any mold remediation/abatement required must be done according to the work plan (protocol) provided by the certified assessment specialist. The remediation/abatement contractor must be certified by the ACAC or another national, non-profit certifying body which is accredited by the CESB and/or the American National Standards Institute under ANSI/ISO/IEC 27024.
4. All mold remediation/abatement and required work to repair the single family dwelling is to be completed and associated Building Permits are to be finalized by **July 10, 2015**.
9. Schedule a compliance inspection with the Enforcement Official shown below when all corrective actions are completed.
10. All fines, abatement costs and penalties shall be paid before your code enforcement case can be closed.

You are hereby ordered to discontinue the code violation(s) identified in this Notice of Violation. In accordance with Section 1.22.200 of the County Code, it shall be unlawful for any responsible person to willfully fail to diligently pursue the correction of any violation identified in this Notice of Violation. Willful failure to take the necessary actions to correct any violation of the County Code is a misdemeanor. Failure to comply with this notice will result in the recording of a Notice of Violation on the property in accordance with Section 1.22.035 of the County Code. You may present evidence no later than June 22, 2015 as to why the Notice of Violation should not be recorded.

FURTHER ENFORCEMENT ACTIONS AS REQUIRED

Each day that the violation remains is a separate violation subject to an additional administrative fine. Your continued failure to correct the violation(s) by the **compliance date of June 22, 2015** will result in penalties in accordance with Sections 1.22.090 of the County Code.

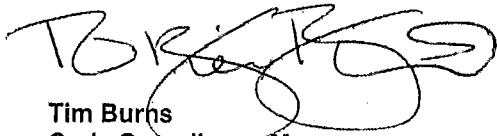
Section 1.20.090 provides the Enforcement Official the authority to recover any costs associated with the abatement of the violation which shall include, but is not limited to: Cost of investigation, Court costs,

Attorneys' fees and Costs of monitoring compliance. Your continued failure to correct the violation(s) by the compliance date(s) shown above will result in your case being referred for one or more of the following legal actions and remedies:

1. Administrative hearing before the County Hearing Officer who may assess administrative penalties, require payment of all enforcement costs, authorize liens on the property and authorize the County to perform the work necessary to correct the violation. Amounts for administrative penalties range from \$100 to \$2,500 per day for each day the violation continues to exist past the compliance date up to a maximum administrative penalty of \$100,000.

2. Involuntary placement of the property under a Court appointed receiver, issuance of a permanent or preliminary injunctions and summary abatement of any violation. If you have any further questions regarding this Compliance Order, please contact, Mr. Joshua Bowling, Acting Senior Code Compliance Inspector, at (831) 755-5227 as soon as possible.

BY ORDER OF THE ENFORCEMENT OFFICIAL

A handwritten signature in black ink, appearing to read 'Tim Burns', is written over a circular stamp or seal.

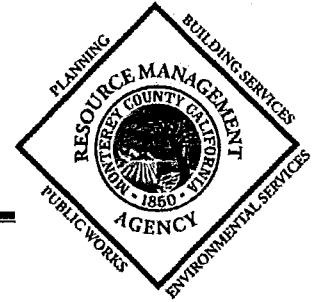
Tim Burns
Code Compliance Manager

CC: File
Automation/Documents

MONTEREY COUNTY RESOURCE MANAGEMENT AGENCY

Carl P. Holm, AICP, Acting Director
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June 19, 2015

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Loan Number 60-504415-1

COMPLIANCE ORDER #2

NOTICE OF INTENT TO RECORD A NOTICE OF VIOLATION

Violation Location:	1170 Signal Hill Rd., Pebble Beach
APN:	008-261-007-000
Zoning:	LDR/1.5-D(CZ)
Case Number:	13CE00338

In addition to a prior Compliance Order issued on May 22 and this Compliance Order and Notice of Intent to Record a Notice of Violation has been issued pursuant to a Structural Evaluation Report by Taluban Engineering dated June 12, 2015, the inspection conducted by the Monterey County Building Official on June 16, 2015 and in concurrence with the Structural Evaluation report provided by Taluban Engineering dated June 17, 2015:

Description of Violation(s):

1. Intentional structural damage in the lower level of the dwelling that included cut interior and exterior framing members and the borings of a structural header that could facilitate the collapse of the structure. Demolition, in whole or in part, is defined as development in the Local Coastal Plan and demolition of a designated historical structure requires a coastal development permit. Development that will cause a Significant Environmental Impact is non-exempt and shall require a coastal development permit. Violation of Sections 20.14.030.A (Nonexempt Development), 18.01.070.B (Violations) and 18.08.010 (Historical Building Code) of the Monterey County Code.

Required Corrective Action(s):

1. A Notice of "Unsafe Structure" was posted by the County of Monterey Building Official on June 15, 2015. The structure must be: 1) shored up to stabilize the structure from any further damage and 2) boarded for safety and security reasons. Shoring and boarding of the collapsing structure shall be completed by **June 23, 2015** under the observation and guidance of a Structural Engineer. All work, workers, equipment, and material shall be outside Environmentally Sensitive Habitat Areas.
2. Apply and obtain an after the fact Emergency Building Permit to Shore up the failing section of the structure and to board up the structure for security reasons. The Plans shall be prepared, stamped, and signed by a Structural Engineer. The Environmentally Sensitive Habitat Areas shall be clearly identified on the plans and the plans shall note that all staging, parking, work, workers, equipment, and material shall be outside of Environmentally Sensitive Habitat Areas at all times. The plans shall be submitted to the Monterey County RMA Building Department by **June 24, 2015** in accordance with 105.2.1 (Emergency Repairs) of Title 24, part 2 of the 2013 California Building Code.
3. Schedule a compliance inspection with the Enforcement Official shown below for June 24, 2015 to inspect the shoring and boarding of the structure.
4. The Compliance Order Notice of Intent to Record Notice of Violation dated May 22, 2015 is still in effect and the **Compliance date of July 10, 2015** to complete the work required to restore the structure shall be completed or your case will be set for an Administrative Hearing. Restoration means to return the structure to the condition identified in the report prepared by Anthony Kirk dated October 10, 2010.
5. All fines, abatement costs and penalties shall be paid before your code enforcement case can be closed.

You are hereby ordered to discontinue the code violation(s) identified in this Notice of Violation. In accordance with Section 1.22.200 of the County Code, it shall be unlawful for any responsible person to willfully fail to diligently pursue the correction of any violation identified in this Notice of Violation. Willful failure to take the necessary actions to correct any violation of the County Code is a misdemeanor. Failure to comply with this notice will result in the recording of a Notice of Violation on the property in accordance with Section 1.22.035 of the County Code. You may present evidence no later than June 23, 2015 as to why the Notice of Violation should not be recorded.

FURTHER ENFORCEMENT ACTIONS AS REQUIRED

Each day that the violation remains is a separate violation subject to an additional administrative fine. Your continued failure to correct the violation(s) by the **July 10, 2015** will result in penalties in accordance with Sections 1.22.090 of the County Code.

Section 1.20.090 provides the Enforcement Official the authority to recover any costs associated with the abatement of the violation which shall include, but is not limited to: Cost of investigation, Court costs, Attorneys' fees and Costs of monitoring compliance. Your continued failure to correct the violation(s) by the compliance date(s) shown above will result in your case being referred for one or more of the following legal actions and remedies:

1. Administrative hearing before the County Hearing Officer who may assess administrative penalties, require payment of all enforcement costs, authorize liens on the property and authorize the County to perform the work necessary to correct the violation. Amounts for administrative penalties range from \$100 to \$2,500 per day for each day the violation continues to exist past the compliance date up to a maximum administrative penalty of \$100,000.
2. Involuntary placement of the property under a Court appointed receiver, issuance of a permanent or preliminary injunctions and summary abatement of any violation. If you have any further questions

regarding this Compliance Order, please contact, Mr. Joshua Bowling, Acting Senior Code Compliance Inspector, at (831) 755-5227 as soon as possible.

Based on the intentional structural damage to the structure, Monterey County highly recommends that 24 hour surveillance and security be established on the parcel to protect the structure from further damage.

Monterey County Resource Management Agency intends to obtain a Summary Abatement Warrant if the structure is not stabilized as directed in this order.

BY ORDER OF THE ENFORCEMENT OFFICIAL



Tim Burns
Code Compliance-Manager

CC: File
Automation/Documents

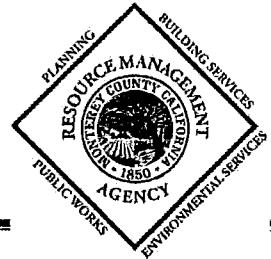
BY ORDER OF THE BUILDING OFFICIAL



Daniel Dobrilovic
Acting, Building Official

MONTEREY COUNTY RESOURCE MANAGEMENT AGENCY

Carl P. Holm, AICP, Acting Director
John Guertin, Acting Deputy Director



Daniel Dobrilovic, Acting Building Official
Michael Novo, AICP, Director of Planning
Robert K. Murdoch, P.E., Director of Public Works

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June 24, 2015

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Massy Mehdipour, Agent
Signal Hill LLC
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Fidelity National Title Insurance Company
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Loan Number 60-504415-1

COMPLIANCE ORDER #2 AMENDMENT

Violation Location:	1170 Signal Hill Rd., Pebble Beach
APN:	008-261-007-000
Zoning:	LDR/1.5-D(CZ)
Case Number:	13CE00338

- Pursuant to Monterey County Code Section 1.22.050 D: Each hearing shall be set for a date not fewer than fifteen (15) days or no more than sixty (60) days from the date of the notice of hearing unless the Enforcement Official determines that the matter is urgent or that good cause exists for an extension of time. Based on the urgency of the situation this matter has been set for an Administrative Hearing for Wednesday, July 1, 2015 at 9:30 am. Please refer to the Notice of Hearing document for specifics.
- Pursuant to Monterey County Code section 1.22.050 F: If the Enforcement Official submits to the Hearing Officer an additional written report concerning any matters related to the notice of violation for consideration at the hearing, then a copy of this report shall also be served on the alleged violator or responsible person at least five days prior to the hearing date.

Description of Original Violation(s):

Intentional structural damage in the lower level of the dwelling that included cut interior and exterior framing members and the borings of a structural header that could facilitate the collapse of the structure. Demolition, in whole or in part, is defined as development in the Local Coastal Plan and demolition of a designated historical structure requires a coastal development permit. Development that will cause a Significant Environmental Impact is non-exempt and shall require a coastal development permit. Violation of Sections 20.14.030.A (Nonexempt Development), 18.01.070.B (Violations) and 18.08.010 (Historical Building Code) of the Monterey County Code.

Additional Violations:

Monterey County Code Sections:

1. 18.01.070 E: Duty to maintain properties and structures. It shall be unlawful for any person, firm or corporation to fail to maintain any building, structure, equipment, premises or grading work regulated by this Chapter with the provisions of the building standards that lawfully existed at the time of construction or with subsequent minimum maintenance standards established by State or local law or this Chapter for existing buildings and property.
2. 18.01.070 F: Prohibited conditions. It shall be unlawful for any owner to create, maintain or permit the continued existence of any dangerous structure or premises, unsafe condition, unsafe equipment, unsafe structure, any structure that is unfit for human occupancy, any substandard building or premises or any unlawful structure or any other hazards as defined in this Chapter. Such violations are public nuisances and the owner shall abate or cause to be abated or corrected such conditions either by repair, rehabilitation, demolition or other approved corrective action without delay.
3. 18.01.070 G: Prohibition for substandard buildings. It shall be unlawful for any person, firm or corporation to create, maintain or permit the continued existence of a substandard building as defined in this Chapter.
4. 18.14.040 D 3: All structural members shall be maintained free from deterioration, and shall be capable of safely supporting all required loading.
5. 18.14.040 D 4: Foundation Walls. All foundation walls shall be maintained plumb and free from open cracks and breaks and shall be kept in such condition so as to prevent the entry of rodents and other pests.
6. 18.14.040 D 5: Exterior Walls. All exterior walls shall be free from holes, breaks, and loose or rotting materials; and maintained weatherproof and properly surface coated where required to prevent deterioration.
7. 18.14.040 D 6: Roofs and Drainage. The roof and flashing shall be sound, tight and not have defects that admit rain. Roof drainage shall be adequate to prevent dampness or deterioration in the walls or interior portion of the structure. Roof drains, gutters and downspouts shall be maintained in good repair and free from obstructions. Roof water shall not be discharged in a manner that creates a public nuisance.

8. 18.14.040 D 9: Stairways, Decks, Porches and Balconies. Every exterior stairway, deck, porch and balcony, and all appurtenances attached thereto, shall be maintained structurally sound, in good repair, with proper anchorage and capable of supporting the imposed loads.

Required Corrective Action(s):

1. A Notice of "Unsafe Structure" was posted by the County of Monterey Building Official on June 15, 2015. The structure must be stabilized to prevent any further damage from occurring and 2) boarded for safety and security reasons. Stabilizing and boarding of the collapsing structure shall be completed by **June 24, 2015** under the observation and guidance of an Engineer. All work, workers, equipment, and material shall be outside Environmentally Sensitive Habitat Areas.
2. Apply and obtain an after the fact Emergency Building Permit to Shore up the failing section of the structure and to board up the structure for security reasons. The Plans shall be prepared, stamped, and signed by an Engineer. The Environmentally Sensitive Habitat Areas shall be clearly identified on the plans and the plans shall note that all staging, parking, work, workers, equipment, and material shall be outside of Environmentally Sensitive Habitat Areas at all times. The plans shall be submitted to the Monterey County RMA Building Department by **June 25, 2015** in accordance with 105.2.1 (Emergency Repairs) of Title 24, part 2 of the 2013 California Building Code.
3. Schedule a compliance inspection with the Enforcement Official shown below for June 25, 2015 to inspect the shoring and boarding of the structure.
4. The Compliance Order Notice of Intent to Record Notice of Violation dated May 22, 2015 is still in effect and the **Compliance date of July 10, 2015** to complete the work required to restore the structure shall be completed or your case will be set for an Administrative Hearing. Restoration means to return the structure to the condition identified in the report prepared by Anthony Kirk dated October 10, 2010.
5. All fines, abatement costs and penalties shall be paid before your code enforcement case can be closed.

You are hereby ordered to discontinue the code violation(s) identified in this Notice of Violation. In accordance with Section 1.22.200 of the County Code, it shall be unlawful for any responsible person to willfully fail to diligently pursue the correction of any violation identified in this Notice of Violation. Willful failure to take the necessary actions to correct any violation of the County Code is a misdemeanor. Failure to comply with this notice will result in the recording of a Notice of Violation on the property in accordance with Section 1.22.035 of the County Code. You may present evidence no later than June 23, 2015 as to why the Notice of Violation should not be recorded.

FURTHER ENFORCEMENT ACTIONS AS REQUIRED

Each day that the violation remains is a separate violation subject to an additional administrative fine. Your continued failure to correct the violation(s) by the **July 10, 2015** will result in penalties in accordance with Sections 1.22.090 of the County Code.

Section 1.20.090 provides the Enforcement Official the authority to recover any costs associated with the abatement of the violation which shall include, but is not limited to: Cost of investigation, Court costs, Attorneys' fees and Costs of monitoring compliance. Your continued failure to correct the violation(s) by the compliance date(s) shown above will result in your case being referred for one or more of the following legal actions and remedies:


1. Administrative hearing before the County Hearing Officer who may assess administrative penalties, require payment of all enforcement costs, authorize liens on the property and authorize the County to perform the work necessary to correct the violation. Amounts for administrative penalties range from \$100 to \$2,500 per day for each day the violation continues to exist past the compliance date up to a maximum administrative penalty of \$100,000.
2. Involuntary placement of the property under a Court appointed receiver, issuance of a permanent or preliminary injunctions and summary abatement of any violation. If you have any further questions regarding this Compliance Order, please contact, Mr. Joshua Bowling, Acting Senior Code Compliance Inspector, at **(831) 755-5227** as soon as possible.

Based on the intentional structural damage to the structure, Monterey County highly recommends that 24 hour surveillance and security be established on the parcel to protect the structure from further damage.


Monterey County Resource Management Agency intends to obtain a Summary Abatement Warrant if the structure is not stabilized as directed in this order.

BY ORDER OF THE ENFORCEMENT OFFICIAL

BY ORDER OF THE BUILDING OFFICIAL



Tim Burns
Code Compliance Manager

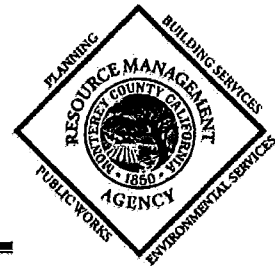


Daniel Dobrilovic
Acting, Building Official

cc: File
Automation/Documents

MONTEREY COUNTY RESOURCE MANAGEMENT AGENCY

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John Guertin, Acting Deputy Director



Daniel Dobrilovic, Acting Building Official
Michael Novo, AICP, Director of Planning
Robert K. Murdoch, P.E., Director of Public Works

168 W. Alisal Street, 2nd Floor
Salinas, CA 93901
www.co.monterey.ca.us/rma

July 21, 2015

Compliance Date: August 4, 2015

Signal Hill LLC
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1425 Dana Ave
Palo Alto, CA 94301

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Loan Number 60-504415-1

COMPLIANCE ORDER #3

Violation Location: 1170 Signal Hill Rd., Pebble Beach
APN: 008-261-007-000
Zoning: LDR/1.5-D(CZ)
Case Number: 13CE00338
Assigned: Joshua Bowling

In addition to the prior Compliance Orders and Intent to Record Notice of Violation issued on May 22, 2015, June 19, 2015 and the Amended Compliance Order dated June 24, 2015, this Compliance Order has been issued to address the weatherproofing of the Single Family Dwelling:

Description of Violation(s):

1. The single family dwelling is not weather proof. The residence continues to be exposed to the elements and in danger of further deterioration.

Violation of Monterey County Code section(s):

18.01.070 – Violations section F.

F. Prohibited conditions. It shall be unlawful for any owner to create, maintain or permit the continued existence of any dangerous structure or premises, unsafe condition, unsafe equipment, unsafe structure, any structure that is unfit for human occupancy, any substandard building or premises or any unlawful structure or any other hazards as defined in this Chapter. Such violations are public nuisances and the

owner shall abate or cause to be abated or corrected such conditions either by repair, rehabilitation, demolition or other approved corrective action without delay.

18.14.040 - General maintenance requirements sections A,D1 and D6

A. General. The provisions of this Chapter shall govern the minimum conditions and the responsibilities of persons for maintenance of structures, equipment and exterior property. The owner of the premises shall maintain the structures and exterior property in compliance with these requirements, except as otherwise provided for in this Chapter. All vacant structures and premises thereof or vacant land shall be maintained in a clean, safe, secure and sanitary condition as provided herein so as not to cause a blighting problem or adversely affect the public health or safety.

D. Exterior Structure. The exterior of a structure shall be maintained in good repair, structurally sound and sanitary so as not to pose a threat to the public health, safety or welfare including but not limited to the following:

1. Protective Treatment. All exterior surfaces, including but not limited to, doors, door and window frames, cornices, porches, trim, balconies, decks and fences, shall be maintained in good condition. Exterior wood surfaces, other than decay-resistant woods, shall be protected from the elements and decay by painting or other protective covering or treatment. Peeling, flaking and chipped paint shall be eliminated and surfaces repainted. All siding and masonry joints, as well as those between the building envelope and the perimeter of windows, doors and skylights, shall be maintained weather resistant and water tight. All metal surfaces subject to rust or corrosion shall be coated to inhibit such rust and corrosion, and all surfaces with rust or corrosion shall be stabilized and coated to inhibit future rust and corrosion. Oxidation stains shall be removed from exterior surfaces. Surfaces designed for stabilization by oxidation are exempt from this requirement.

6. Roofs and Drainage. The roof and flashing shall be sound, tight and not have defects that admit rain. Roof drainage shall be adequate to prevent dampness or deterioration in the walls or interior portion of the structure. Roof drains, gutters and downspouts shall be maintained in good repair and free from obstructions. Roof water shall not be discharged in a manner that creates a public nuisance.

18.14.090 - Violations.

A. Prohibited Conditions. It shall be unlawful for any owner to create, maintain or permit the continued existence of any dangerous structure or premises, unsafe condition, unsafe equipment, unsafe structure, any structure that is unfit for human occupancy, any substandard building or premises or any unlawful structure or any other hazards as defined in this Chapter. Such violations are public nuisances and the owner shall abate or cause to be abated or corrected such conditions either by repair, rehabilitation, demolition or other approved corrective action without delay.

Required Corrective Action(s):

1. Submit a "Mothballing" protection plan for review and approval to maintain the property, to weatherize and stop moisture penetration and to control the humidity levels once the structure is secure in conformance with the guidelines set by the U.S. Department of the Interior by **July 27, 2015.**
2. Obtain necessary permits and complete the "Mothballing" work by **August 4, 2015.**
3. Schedule a compliance inspection with the Enforcement Official shown below for **August 5, 2015,** to inspect the "Mothballing" of the structure.
4. The Compliance Orders and Notice of Intent to Record Notice of Violations dated May 22, 2015, the Compliance Order dated June 19, 2015 and the Amended Compliance Order dated June 24, 2014 are still in effect.

5. All fines, abatement costs and penalties shall be paid before your code enforcement case can be closed.

Diligently pursue all actions necessary to correct the violation and obtain final inspection approval on all required permits.

Schedule a compliance inspection with the assigned Code Compliance Inspector when all corrective actions are completed.

You are hereby ordered to discontinue the code violation(s) identified in this Notice of Violation. In accordance with Section 1.22.200 of the County Code, it shall be unlawful for any responsible person to willfully fail to diligently pursue the correction of any violation identified in this Notice of Violation. Administrative penalties will begin to accrue after the date set for compliance if compliance has not been achieved.

If permits and/or plans are needed for corrective action, please bring this compliance order with you when you apply for any required permits. Building and planning permits can be obtained at the County Government Center, 168 W. Alisal Street, Second Floor, Salinas, CA.

Administrative Costs

Any person, firm, or corporation, who creates or maintains a Code violation shall be liable for the costs of enforcement which shall include, but not be limited to, the cost of investigation and inspection, costs to cure any violation or abate a nuisance, and costs of monitoring compliance.

Notification of Misdemeanor

Willful failure to take the necessary actions to correct any violation of the County Code is a misdemeanor.

FURTHER ENFORCEMENT ACTIONS AS REQUIRED

Your continued failure to correct the violation(s) by the compliance date(s) shown above will result in your case being referred for one or more of the following legal actions and remedies:

1. Administrative hearing before the County Hearing Officer who may assess administrative penalties, require payment of all enforcement costs, authorize liens on the property and authorize the County to perform the work necessary to correct the violation. Amounts for administrative penalties range from \$100 to \$2,500 per day for each day the violation continues to exist past the compliance date up to a maximum administrative penalty of \$100,000.
2. Criminal or civil prosecution by the County District Attorney for failing to comply with any of the mandatory requirements of state law and the Monterey County Code. Unless provision is otherwise made, any person convicted of a misdemeanor under the provisions of the Monterey County Code shall be punishable by a fine of not more than one thousand dollars (\$1,000.00) or by imprisonment in the Monterey County Jail for a period of not more than six months or by both such fine and imprisonment.
3. Involuntary placement of the property under a Court appointed receiver, issuance of a permanent or preliminary injunctions and summary abatement of any violation.


Any other available legal remedy.

If you have any further questions regarding this Compliance Order, or can provide any additional information about the violations as described, responsible persons, required corrective actions or compliance date(s) shown above, please contact the Code Compliance Inspector at **(831) 755-5227** as soon as possible.

Based on the intentional structural damage to the structure, Monterey County highly recommends that 24 hour surveillance and security be established on the parcel to protect the structure from further damage.

Monterey County Resource Management Agency intends to obtain a Summary Abatement Warrant if the "Mothballing is not completed as directed in this order.

BY ORDER OF THE ENFORCEMENT OFFICIAL

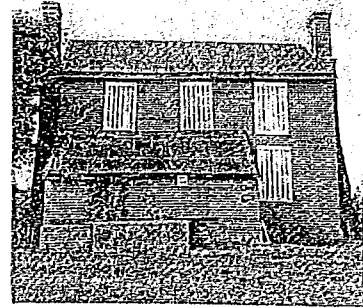

Tim Burns
Code Compliance Official

CC: File
Automation/Documents

31 PRESERVATION BRIEFS

Mothballing Historic Buildings

Sharon C. Park, AIA



U.S. Department of the Interior
National Park Service
Cultural Resources
Heritage Preservation Services

When all means of finding a productive use for a historic building have been exhausted or when funds are not currently available to put a deteriorating structure into a useable condition, it may be necessary to close up the building temporarily to protect it from the weather as well as to secure it from vandalism. This process, known as mothballing, can be a necessary and effective means of protecting the building while planning the property's future, or raising money for a preservation, rehabilitation or restoration project. If a vacant property has been declared unsafe by building officials, stabilization and mothballing may be the only way to protect it from demolition.

This Preservation Brief focuses on the steps needed to "deactivate" a property for an extended period of time. The project team will usually consist of an architect, historian, preservation specialist, sometimes a structural engineer, and

a contractor. Mothballing should not be done without careful planning to ensure that needed physical repairs are made prior to securing the building. The steps discussed in this Brief can protect buildings for periods of up to ten years; long-term success will also depend on continued, although somewhat limited, monitoring and maintenance. For all but the simplest projects, hiring a team of preservation specialists is recommended to assess the specific needs of the structure and to develop an effective mothballing program.

A vacant historic building cannot survive indefinitely in a boarded-up condition, and so even marginal interim uses where there is regular activity and monitoring, such as a caretaker residence or non-flammable storage, are generally preferable to mothballing. In a few limited cases when the vacant building is in good condition and in a location where it can be watched and checked regularly, closing and locking

the door, setting heat levels at just above freezing, and securing the windows may provide sufficient protection for a period of a few years. But if long-term mothballing is the only remaining option, it must be done properly (see fig. 1 & 2). This will require stabilization of the exterior, properly designed security protection, generally some form of interior ventilation - either through mechanical or natural air exchange systems - and continued maintenance and surveillance monitoring.

Comprehensive mothballing programs are generally expensive and may cost 10% or more of a modest rehabilitation budget. However, the money spent on well-planned protective measures will seem small when amortized over the life of the resource. Regardless of the location and condition of the property or the funding available, the following 9 steps are involved in properly mothballing a building:

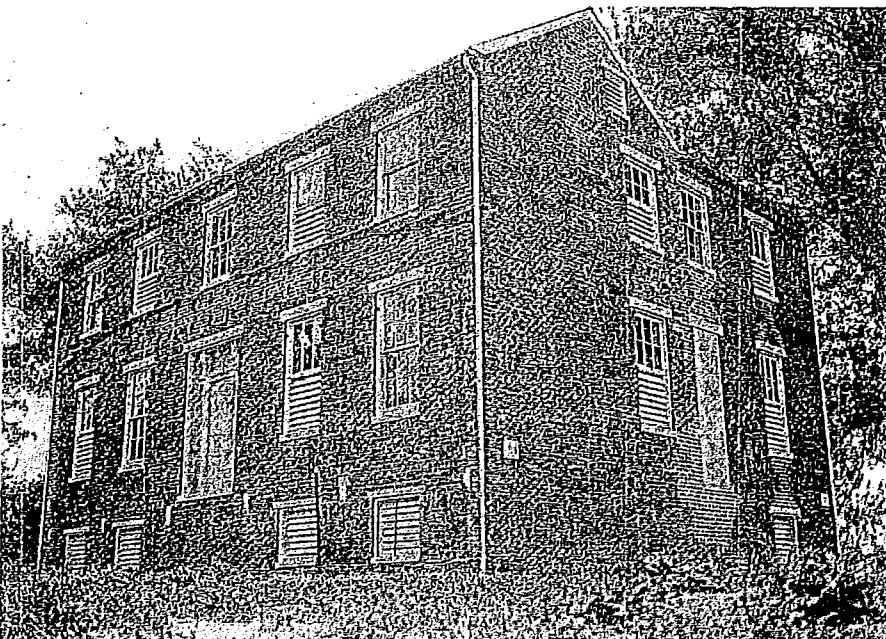


Figure 1. Proper mothballing treatment: This building has been successfully mothballed for 10 years because the roof and walls were repaired and structurally stabilized, ventilation louvers were added, and the property is maintained. Photo: Charles E. Fisher, NPS.



Figure 2. Improper treatment: Boarding up without adequate ventilation, lack of maintenance, and neglect of this property have accelerated deterioration. Photo; NPS file.

Documentation

1. Document the architectural and historical significance of the building.
2. Prepare a condition assessment of the building.

Stabilization

3. Structurally stabilize the building, based on a professional condition assessment.
4. Exterminate or control pests, including termites and rodents.
5. Protect the exterior from moisture penetration.

Mothballing

6. Secure the building and its component features to reduce vandalism or break-ins.
7. Provide adequate ventilation to the interior.
8. Secure or modify utilities and mechanical systems.
9. Develop and implement a maintenance and monitoring plan for protection.

These steps will be discussed in sequence below. Documentation and stabilization are critical components of the process and should not be skipped over. Mothballing measures should not result in permanent damage, and so each treatment should be weighed in terms of its reversibility and its overall benefit.

Documentation

Documenting the historical significance and physical condition of the property will provide information necessary for setting priorities and allocating funds. The project team should be cautious when first entering the structure if it has been vacant or is deteriorated. It may be advisable to shore temporarily areas appearing

to be structurally unsound until the condition of the structure can be fully assessed (see fig. 3). If pigeon or bat droppings, friable asbestos or other health hazards are present, precautions must be taken to wear the appropriate safety equipment when first inspecting the building. Consideration should be given to hiring a firm specializing in hazardous waste removal if these highly toxic elements are found in the building.

Documenting and recording the building. Documenting a building's history is important because evidence of its true age and architectural significance may not be readily evident. The owner should check with the State Historic Preservation Office or local preservation commission for assistance in researching the building. If the building has never been researched for listing in the National Register of Historic Places or other historic registers, then, at a minimum, the following should be determined:

- The overall historical significance of the property and dates of construction;
- the chronology of alterations or additions and their approximate dates; and,
- types of building materials, construction techniques, and any unusual detailing or regional variations of craftsmanship.

Old photographs can be helpful in identifying early or original features that might be hidden under modern materials. On a walk-through, the architect, historian, or preservation specialist should identify the architecturally significant elements of the building, both inside and out (see fig.4).

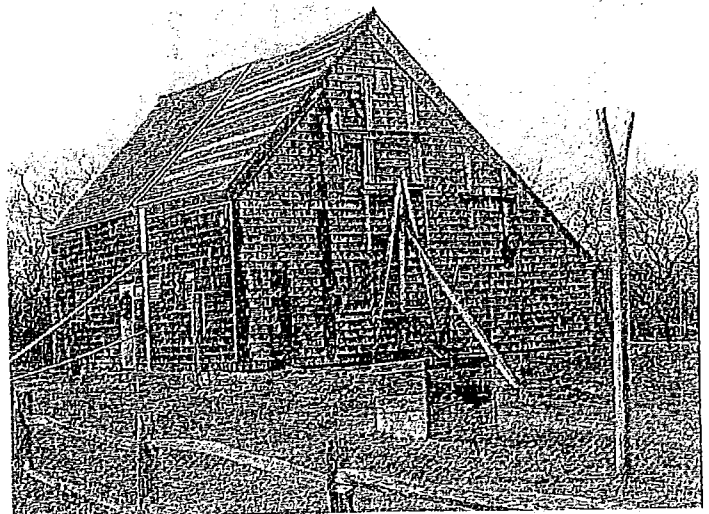


Figure 3. Buildings seriously damaged by storms or deterioration may need to be braced before architectural evaluations can be made. Jethro Coffin House. Photo: John Milner Architects.

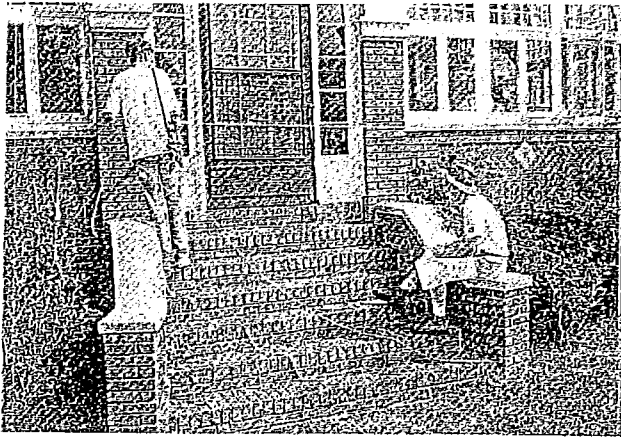


Figure 4. Documenting the building's history, preparing schematic plans, and assessing the condition of the building will provide necessary information on which to set priorities for stabilization and repair prior to securing the building. Photo: Frederick Lindstrom, HABS.

By understanding the history of the resource, significant elements, even though deteriorated, may be spared the trash pile. For that reason alone, any materials removed from the building or site as part of the stabilization effort should be carefully scrutinized and, if appearing historic, should be photographed, tagged with a number, inventoried, and safely stored, preferably in the building, for later retrieval (see fig. 5).

A site plan and schematic building floor plans can be used to note important information for use when the building is eventually preserved, restored, or rehabilitated. Each room should be given a number and notations added to the plans regarding the removal of important features to storage or recording physical treatments undertaken as part of the stabilization or repair.

Because a mothballing project may extend over a long period of time, with many different people involved, clear records should be kept and a building file established. Copies of all important data, plans, photographs, and lists of consultants or contractors who have worked on the property should be added to the file as the job progresses.

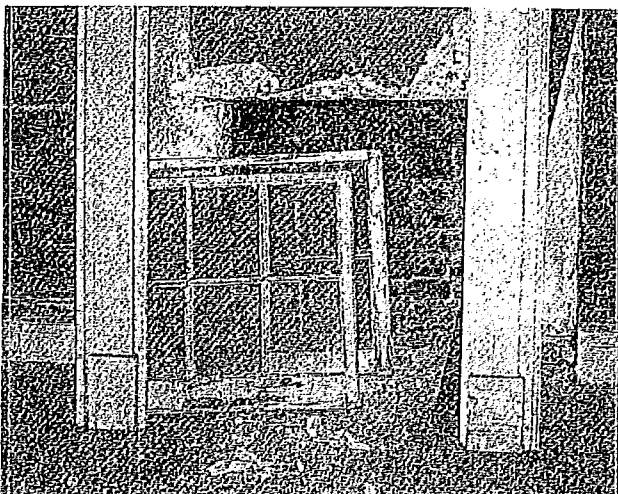


Figure 5. Loose or detached elements should be identified, tagged and stored, preferably on site. Photo: NPS files.

Recording all actions taken on the building will be helpful in the future.

The project coordinator should keep the building file updated and give duplicate copies to the owner. A list of emergency numbers, including the number of the key holder, should be kept at the entrance to the building or on a security gate, in a transparent vinyl sleeve.

Preparing a condition assessment of the building. A condition assessment can provide the owner with an accurate overview of the current condition of the property. If the building is deteriorated or if there are significant interior architectural elements that will need special protection during the mothballing years, undertaking a condition assessment is highly recommended, but it need not be exhaustive.

A modified condition assessment, prepared by an architect or preservation specialist, and in some case a structural engineer, will help set priorities for repairs necessary to stabilize the property for both the short and long-term. It will evaluate the age and condition of the following major elements: foundations; structural systems; exterior materials; roofs and gutters; exterior porches and steps; interior finishes; staircases; plumbing, electrical, mechanical systems; special features such as chimneys; and site drainage.

To record existing conditions of the building and site, it will be necessary to clean debris from the building and to remove unwanted or overgrown vegetation to expose foundations. The interior should be emptied of its furnishings (unless provisions are made for mothballing these as well), all debris removed, and the interior swept with a broom. Building materials too deteriorated to repair, or which have come detached, such as moldings, balusters, and decorative plaster, and which can be used to guide later preservation work, should be tagged, labeled and saved.

Photographs or a videotape of the exterior and all interior spaces of the resource will provide an invaluable record of "as is" conditions. If a videotape is made, oral commentary can be provided on the significance of each space and architectural feature. If 35mm photographic prints or slides are made, they should be numbered, dated, and appropriately identified. Photographs should be cross-referenced with the room numbers on the schematic plans. A systematic method for photographing should be developed; for example, photograph each wall in a room and then take a corner shot to get floor and ceiling portions in the picture. Photograph any unusual details as well as examples of each window and door type.

For historic buildings, the great advantage of a condition assessment is that architectural features, both on the exterior as well as the interior, can be rated on a scale of their importance to the integrity and significance of the building. Those features of the highest priority should receive preference when repairs or protection measures are outlined as part of the mothballing process. Potential problems with protecting these features should be identified so that appropriate interim solutions can be selected. For example, if a building has always been heated and if murals, decorative plaster walls, or examples of patterned wall paper are identified as highly significant, then special care should be taken to regulate the interior climate and to monitor it adequately during the

mothballing years. This might require retaining electrical service to provide minimal heat in winter, fan exhaust in summer, and humidity controls for the interior.

Stabilization

Stabilization as part of a mothballing project involves correcting deficiencies to slow down the deterioration of the building while it is vacant. Weakened structural members that might fail altogether in the forthcoming years must be braced or reinforced; insects and other pests removed and discouraged from returning; and the building protected from moisture damage both by weatherizing the exterior envelope and by handling water run-off on the site. Even if a modified use or caretaker services can eventually be found for the building, the following steps should be addressed.

Structurally stabilizing the building. While bracing may have been required to make the building temporarily safe for inspection, the condition assessment may reveal areas of hidden structural damage. Roofs, foundations, walls, interior framing, porches and dormers all have structural components that may need added reinforcement. Structural stabilization by a qualified contractor should be done under the direction of a structural engineer or a preservation specialist to ensure that the added weight of the reinforcement can be sustained by the building and that the new members do not harm historic finishes (see fig. 6). Any major vertical post added during the stabilization should be properly supported and, if necessary, taken to the ground and underpinned.

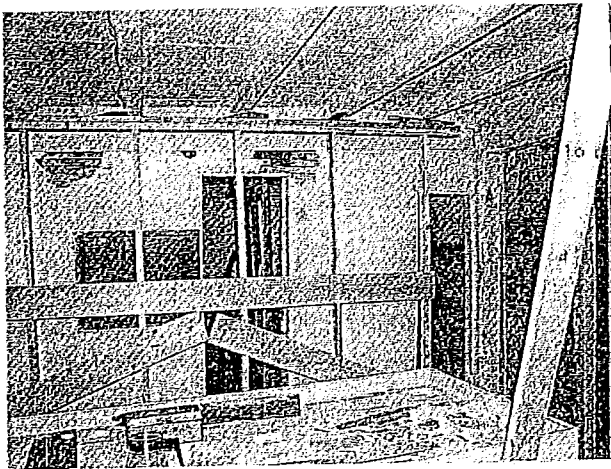


Figure 6. Interior bracing which will last the duration of the mothballing will protect weakened structural members. Jethro Coffin House. Photo: John Milner Architects.

If the building is in a northern climate, then the roof framing must be able to hold substantial snow loads. Bracing the roof at the ridge and mid-points should be considered if sagging is apparent. Likewise, interior framing around stair openings or under long ceiling spans should be investigated. Underpinning or bracing structural piers weakened by poor drainage patterns may be a good precaution as well. Damage caused by insects, moisture, or from other causes should be repaired or reinforced and, if possible, the source of the damage removed. If features such as porches and dormers are so severely deteriorated

that they must be removed, they should be documented, photographed, and portions salvaged for storage prior to removal.

If the building is in a southern or humid climate and termites or other insects are a particular problem, the foundation and floor framing should be inspected to ensure that there are no major structural weaknesses. This can usually be done by observation from the crawl space or basement. For those structures where this is not possible, it may be advisable to lift selective floor boards to expose the floor framing. If there is evidence of pest damage, particularly termites, active colonies should be treated and the structural members reinforced or replaced, if necessary.

Controlling pests. Pests can be numerous and include squirrels, raccoons, bats, mice, rats, snakes, termites, moths, beetles, ants, bees and wasps, pigeons, and other birds. Termites, beetles, and carpenter ants destroy wood. Mice, too, gnaw wood as well as plaster, insulation, and electrical wires. Pigeon and bat droppings not only damage wood finishes but create a serious and sometimes deadly health hazard.

If the property is infested with animals or insects, it is important to get them out and to seal off their access to the building. If necessary, exterminate and remove any nests or hatching colonies. Chimney flues may be closed off with exterior grade plywood caps, properly ventilated, or protected with framed wire screens. Existing vents, grills, and louvers in attics and crawl spaces should be screened with bug mesh or heavy duty wire, depending on the type of pest being controlled. It may be advantageous to have damp or infected wood treated with insecticides (as permitted by each state) or preservatives, such as borate, to slow the rate of deterioration during the time that the building is not in use.

Securing the exterior envelope from moisture penetration. It is important to protect the exterior envelope from moisture penetration before securing the building. Leaks from deteriorated or damaged roofing, from around windows and doors, or through deteriorated materials, as well as ground moisture from improper site run-off or rising damp at foundations, can cause long-term damage to interior finishes and structural systems. Any serious deficiencies on the exterior, identified in the condition assessment, should be addressed.

To the greatest extent possible, these weatherization efforts should not harm historic materials. The project budget may not allow deteriorated features to be fully repaired or replaced in-kind. Non-historic or modern materials may be used to cover historic surfaces temporarily, but these treatments should not destroy valuable evidence necessary for future preservation work. Temporary modifications should be as visually compatible as possible with the historic building.

Roofs are often the most vulnerable elements on the building exterior and yet in some ways they are the easiest element to stabilize for the long term, if done correctly. "Quick fix" solutions, such as tar patches on slate roofs, should be avoided as they will generally fail within a year or so and may accelerate damage by trapping moisture. They are difficult to undo later when more permanent repairs are undertaken. Use of a tarpaulin over a leaking roof should be thought of only as a very temporary

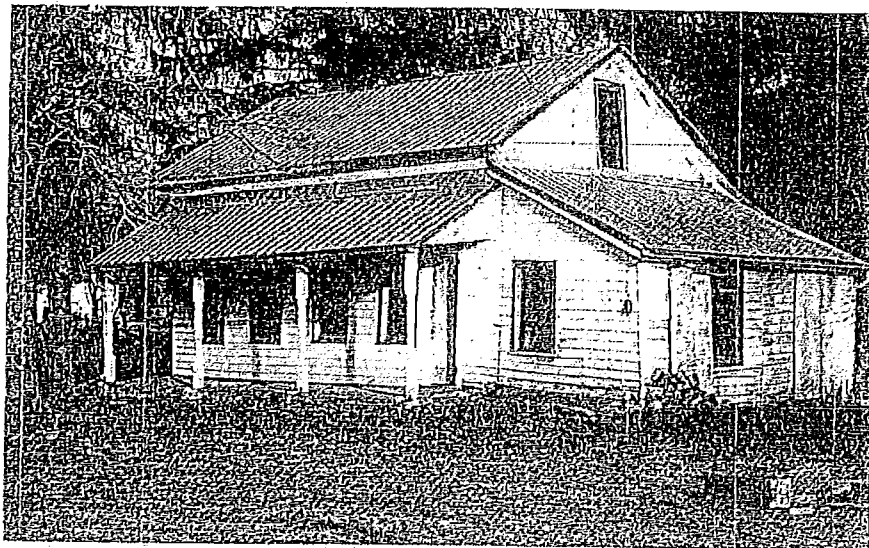


Figure 7. Non-historic materials are appropriate for mothballing projects when they are used to protect historic evidence remaining for future preservation. This lightweight aluminum channel frame and roofing covers the historic wooden shingle roof. Galvanized mesh panels secure the window openings from intrusion by raccoons and other unwanted guests. Photo: Williamsport Preservation Training Center, NPS.

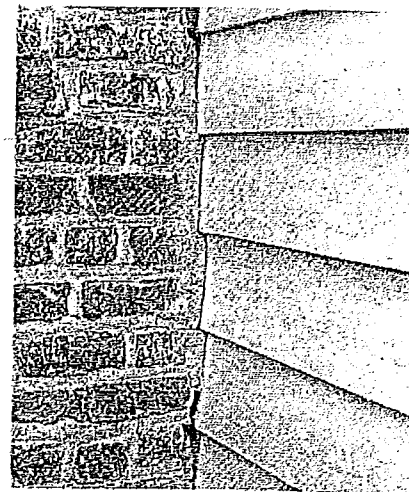


Figure 8. Appropriate mortar mixes should be used when masonry repairs are undertaken. In this case, a soft lime based mortar is used as an infill between the brick and wooden elements. When full repairs are made during the restoration phase, this soft mortar can easily be removed and missing bricks replaced.

emergency repair because it is often blown off by the wind in a subsequent storm.

If the existing historic roof needs moderate repairs to make it last an additional ten years, then these repairs should be undertaken as a first priority. Replacing cracked or missing shingles and tiles, securing loose flashing, and reanchoring gutters and downspouts can often be done by a local roofing contractor. If the roof is in poor condition, but the historic materials and configuration are important, a new temporary roof, such as a lightweight aluminum channel system over the existing, might be considered (see fig. 7). If the roofing is so deteriorated that it must be replaced and a lightweight aluminum system is not affordable, various inexpensive options might be considered. These include covering the existing deteriorated roof with galvanized corrugated metal roofing panels, or 90 lb. rolled roofing, or a rubberized membrane (refer back to cover photo). These alternatives should leave as much of the historic sheathing and roofing in place as evidence for later preservation treatments.

For masonry repairs, appropriate preservation approaches are essential. For example, if repointing deteriorated brick chimneys or walls is necessary to prevent serious moisture penetration while the building is mothballed, the mortar should match the historic mortar in composition, color, and tooling. The use of hard portland cement mortars or vapor-impermeable waterproof coatings are not appropriate solutions as they can cause extensive damage and are not reversible treatments (see fig. 8).

For wood siding that is deteriorated, repairs necessary to keep out moisture should be made; repainting is generally warranted. Cracks around windows and doors can be beneficial in providing ventilation to the interior and so should only be caulked if needed to keep out bugs and moisture. For very deteriorated wall surfaces on wooden frame structures, it may be necessary to sheathe in plywood panels, but care should be taken to minimize installation damage by planning the location of the nailing or screw

patterns or by installing panels over a frame of battens (see fig. 9). Generally, however, it is better to repair deteriorated features than to cover them over.

Foundation damage may occur if water does not drain away from the building. Run-off from gutters and downspouts should be directed far away from the foundation wall by using long flexible extender pipes equal in length to twice the depth of the basement or crawl space. If underground drains are susceptible to clogging, it is recommended that the downspouts be disconnected from the drain boot and attached to flexible piping. If gutters and downspouts are in bad condition, replace them with inexpensive aluminum units.

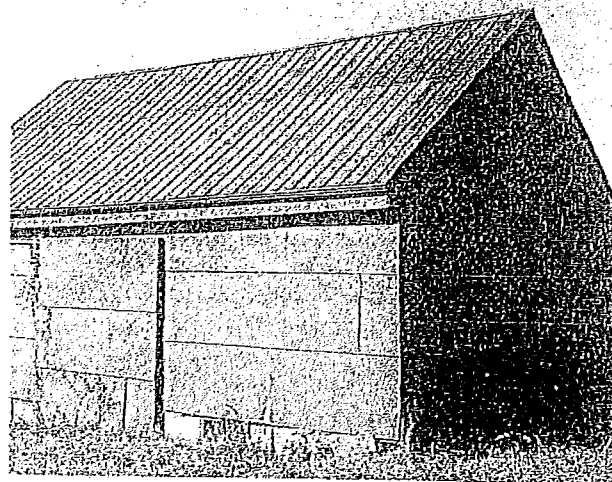


Figure 9. Severely deteriorated wooden siding on a farm building has been covered over with painted plywood panels as a temporary measure to eliminate moisture penetration to the interior. Foundation vents and loose floor boards allow air to circulate inside.

If there are no significant landscape or exposed archeological elements around the foundation, consideration should be given to regrading the site if there is a documented drainage problem (see fig. 10). If building up the grade, use a fiber mesh membrane to separate the new soil from the old and slope the new soil 6 to 8 feet (200 cm-266 cm) away from the foundation making sure not to cover up the dampcourse layer or come into contact with skirting boards. To keep vegetation under control, put down a layer of 6 mil black polyethylene sheeting or fiber mesh matting covered with a 2"-4" (5-10 cm.) of washed gravel. If the building suffers a serious rising damp problem, it may be advisable to eliminate the plastic sheeting to avoid trapping ground moisture against foundations.

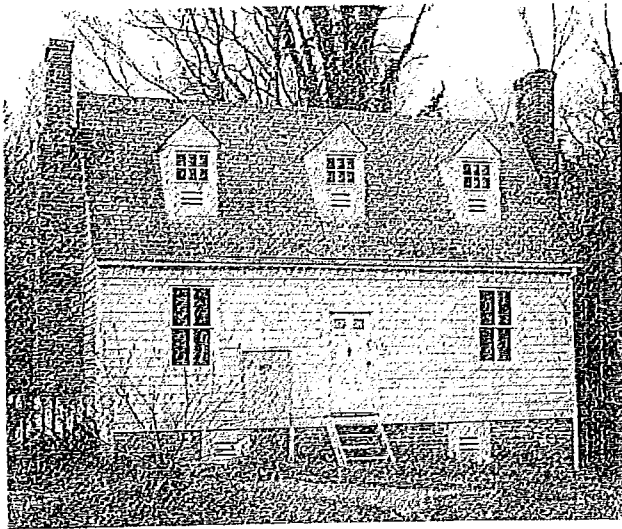


Figure 10. Regrading around the Booker Tenement at Colonial Williamsburg has protected the masonry foundation wall from excessive damp. This building has been successfully mothballed for over 10 years. Note the attic and basement vents, the temporary stairs, and the informative sign interpreting the history of this building.

Mothballing

The actual mothballing effort involves controlling the long-term deterioration of the building while it is unoccupied as well as finding methods to protect it from sudden loss by fire or vandalism. This requires securing the building from unwanted entry, providing adequate ventilation to the interior, and shutting down or modifying existing utilities. Once the building is de-activated or secured, the long-term success will depend on periodic maintenance and surveillance monitoring.

Securing the building from vandals, break-ins, and natural disasters. Securing the building from sudden loss is a critical aspect of mothballing. Because historic buildings are irreplaceable, it is vital that vulnerable entry points are sealed. If the building is located where fire and security service is available then it is highly recommended that some form of monitoring or alarm devices be used.

To protect decorative features, such as mantels, lighting fixtures, copper downspouts, iron roof cresting, or stained glass windows from theft or vandalism, it may be advisable to temporarily remove them to a more secure location if they cannot be adequately protected within the structure.

Mothballed buildings are usually boarded up, particularly on the first floor and basement, to protect fragile glass windows from breaking and to reinforce entry points (see fig. 11). Infill materials for closing door and window openings include plywood, corrugated panels, metal grates, chain fencing, metal grills, and cinder or cement blocks (see fig. 12). The method of installation should not result in the destruction of the opening and all associated sash, doors, and frames should be protected or stored for future reuse.

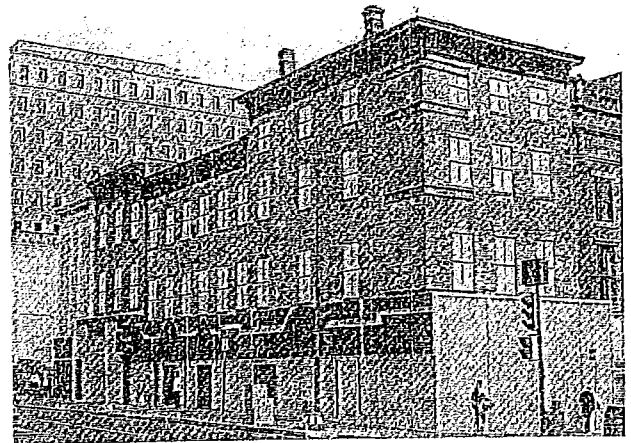


Figure 11: Urban buildings often need additional protection from unwanted entry and graffiti. This commercial building uses painted plywood panels to cover expansive glass storefronts and chain link fencing is applied on top of the panels. The upper windows on the street sides have been covered and painted to resemble 19th century sash. Photo: Thomas Jester, NPS.

Generally exterior doors are reinforced and provided with strong locks, but if weak historic doors would be damaged or disfigured by adding reinforcement or new locks, they may be removed temporarily and replaced with secure modern doors (see fig. 13). Alternatively, security gates in a new metal frame can be installed within existing door openings, much like a storm door, leaving the historic door in place. If plywood panels are installed over door openings, they should be screwed in place, as opposed to nailed, to avoid crowbar damage each time the panel is removed. This also reduces pounding vibrations from hammers and eliminates new nail holes each time the panel is replaced.

For windows, the most common security feature is the closure of the openings; this may be achieved with wooden or pre-formed panels or, as needed, with metal sheets or concrete blocks. Plywood panels, properly installed to protect wooden frames and properly ventilated, are the preferred treatment from a preservation standpoint.

There are a number of ways to set insert plywood panels into windows openings to avoid damage to frame and sash (see fig. 14). One common method is to bring the upper and lower sash of a double hung unit to the mid-point of the opening and then to install pre-cut plywood panels using long carriage bolts anchored into horizontal wooden bracing, or strong backs, on the inside face of the window. Another means is to build new wooden blocking frames set into deeply recessed openings, for example in an industrial mill or warehouse, and then to affix the plywood panel to

the blocking frame. If sash must be removed prior to installing panels, they should be labeled and stored safely within the building.

Plywood panels are usually 1/2"-3/4" (1.25-1.875 cm.) thick and made of exterior grade stock, such as CDX, or

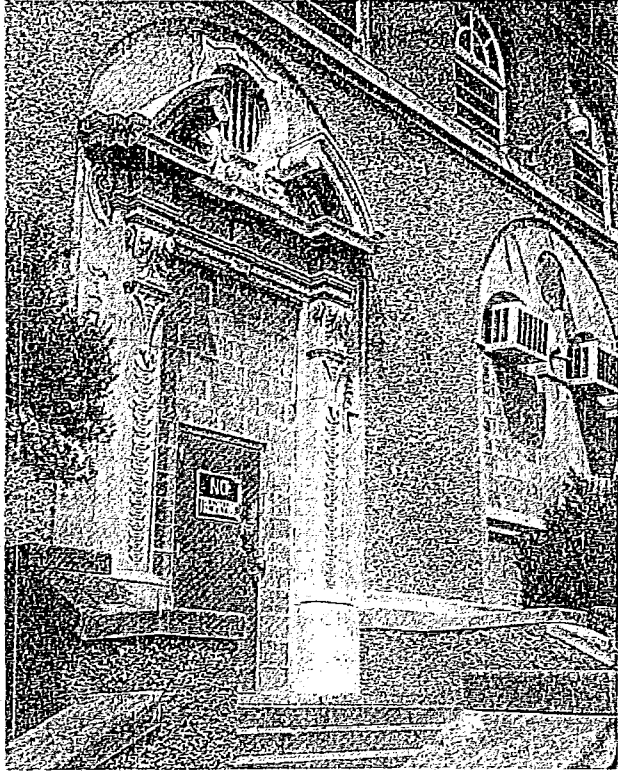


Figure 12. First floor openings have been filled with cinderblocks and doors, window sash and frames have been removed for safe keeping. Note the security light over the windows and the use of a security metal door with heavy duty locks. Photo: H. Ward Jandl, NPS.



Figure 13. If historic doors would be damaged by adding extra locks, they should be removed and stored and new security doors added. At this lighthouse, the historic door has been replaced with a new door (seen both inside and outside) with an inset vent and new deadbolt locks. The heavy historic hinges have not been damaged. Photo: Williamsport Preservation Training Center, NPS.

marine grade plywood. They should be painted to protect them from delamination and to provide a neater appearance. These panels may be painted to resemble operable windows or treated decoratively (see fig. 15). With extra attention to detail, the plywood panels can be

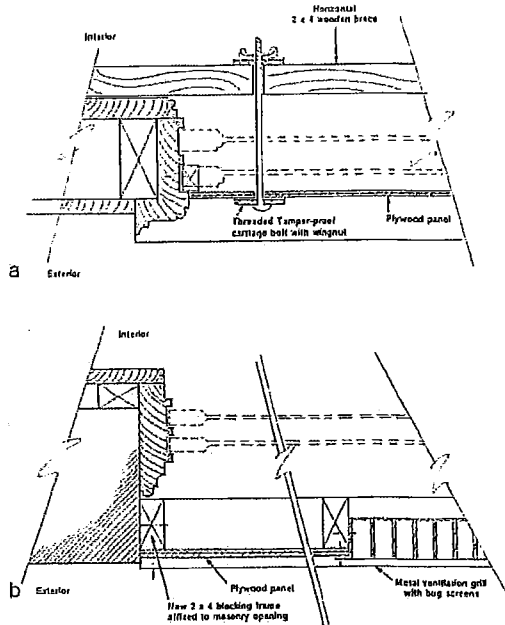


Figure 14. A: Plan detail showing plywood security panel anchored with carriage bolts through to the inside horizontal bracing, or strong backs. B: Plan detail showing section of plywood window panel attached to a new pressure treated wood frame set within the masonry opening. Ventilation should be included whenever possible or necessary.

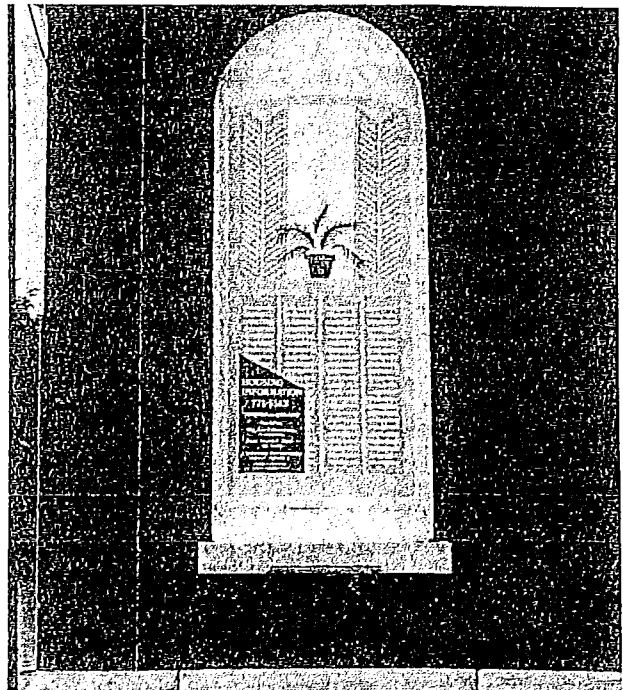


Figure 15. Painting trompe l'oeil scenes on plywood panels is a neighborhood friendly device. In addition, the small sign at the bottom left corner gives information for contacting the organization responsible for the care of the mothballed building. Photo: Lee H. Nelson, FAIA.

trimmed out with muntin strips to give a shadow line simulating multi-lite windows. This level of detail is a good indication that the building is protected and valued by the owner and the community.

If the building has shutters, simply close the shutters and secure them from the interior (see fig. 16). If the building had shutters historically, but they are missing, it may be appropriate to install new shutters, even in a modern material, and secure them in the closed position. Louvered shutters will help with interior ventilation if the sash are propped open behind the shutters.

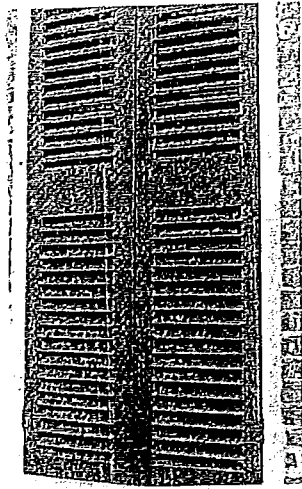


Figure 16. Historic louvered shutters make excellent security closures with passive ventilation.

There is some benefit from keeping windows unboarded if security is not a problem. The building will appear to be occupied, and the natural air leakage around the windows will assist in ventilating the interior. The presence of natural light will also help when periodic inspections are made. Rigid polycarbonate clear storm glazing panels may be placed on the window exterior to protect against glass breakage. Because the sun's ultraviolet rays can cause fading of floor finishes and wall surfaces, filtering pull shades or inexpensive curtains may be options for reducing this type of deterioration for significant interiors. Some acrylic sheeting comes with built-in ultraviolet filters.

Securing the building from catastrophic destruction from fire, lightning, or arson will require additional security devices. Lightning rods properly grounded should be a first consideration if the building is in an area susceptible to lightning storms. A high security fence should also be installed if the property cannot be monitored closely. These interventions do not require a power source for operation. Since many buildings will not maintain electrical power, there are some devices available using battery packs, such as intrusion alarms, security lighting, and smoke detectors which through audible horn alarms can alert nearby neighbors. These battery packs must be replaced every 3 months to 2 years, depending on type and usage. In combination with a cellular phone, they can also provide some level of direct communication with police and fire departments.

If at all possible, new temporary electric service should be provided to the building (see fig. 17). Generally a telephone

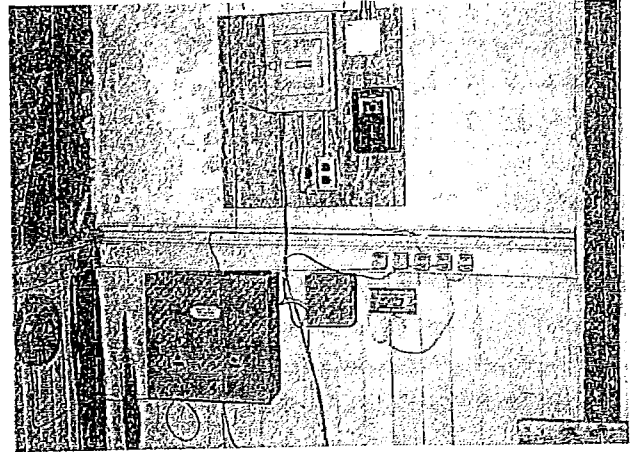


Figure 17. Security systems are very important for mothballed buildings if they are located where fire and security services are available. A temporary electric service with battery back-up has been installed in this building. Intrusion alarms and ionization smoke/fire detectors are wired directly to the nearby security service.

line is needed as well. A hard wired security system for intrusion and a combination rate-of-rise and smoke detector can send an immediate signal for help directly to the fire department and security service. Depending on whether or not heat will be maintained in the building, the security system should be designed accordingly. Some systems cannot work below 32°F (0°C). Exterior lighting set on a timer, photo electric sensor, or a motion/infrared detection device provides additional security.

Providing adequate ventilation to the interior. Once the exterior has been made weathertight and secure, it is essential to provide adequate air exchange throughout the building. Without adequate air exchange, humidity may rise to unsafe levels, and mold, rot, and insect infestation are likely to thrive (see fig. 18). The needs of each historic resource must be individually evaluated because there are so many variables that affect the performance of each interior space once the building has been secured. A

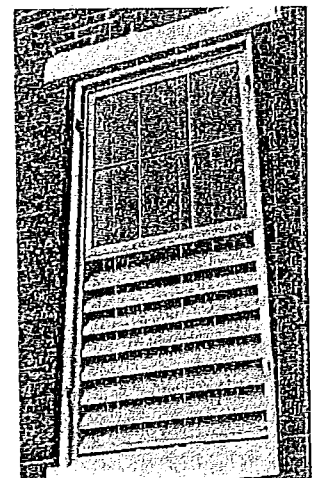
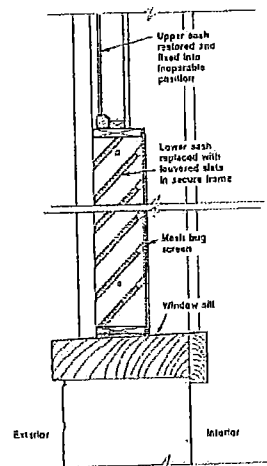


Figure 18. Heavy duty wooden slated louvers were custom fabricated to replace the deteriorated lower sash. The upper sash were rebuilt to retain the historic appearance and to allow light into this vacant historic building. Refer back to Fig. 1 for a view of the building. Photo: Charles E. Fisher, NPS. Drawing by Thomas Vitanza.

mechanical engineer or a specialist in interior climates should be consulted, particularly for buildings with intact and significant interiors. In some circumstances, providing heat during the winter, even at a minimal 45° F (7°C), and utilizing forced-fan ventilation in summer will be recommended and will require retaining electrical service. For masonry buildings it is often helpful to keep the interior temperature above the spring dew point to avoid damaging condensation. In most buildings it is the need for summer ventilation that outweighs the winter requirements.

Many old buildings are inherently leaky due to loose-fitting windows and floorboards and the lack of insulation. The level of air exchange needed for each building, however, will vary according to geographic location, the building's construction, and its general size and configuration.

There are four critical climate zones when looking at the type and amount of interior ventilation needed for a closed up building: hot and dry (southwestern states); cold and damp (Pacific northwest and northeastern states); temperate and humid (Mid-Atlantic states, coastal areas); and hot and humid (southern states and the tropics). (See fig. 19 for a chart outlining guidance on ventilation.)

Once closed up, a building interior will still be affected by the temperature and humidity of the exterior. Without proper ventilation, moisture from condensation may occur and cause damage by wetting plaster, peeling paint,

staining woodwork, warping floors, and in some cases even causing freeze thaw damage to plaster. If moist conditions persist in a property, structural damage can result from rot or returning insects attracted to moist conditions. Poorly mothballed masonry buildings, particularly in damp and humid zones have been so damaged on the interior with just one year of unventilated closure that none of the interior finishes were salvageable when the buildings were rehabilitated.

The absolute minimum air exchange for most mothballed buildings consists of one to four air exchanges every hour; one or two air exchanges per hour in winter and often twice that amount in summer. Even this minimal exchange may foster mold and mildew in damp climates, and so monitoring the property during the stabilization period and after the building has been secured will provide useful information on the effectiveness of the ventilation solution.

There is no exact science for how much ventilation should be provided for each building. There are, however, some general rules of thumb. Buildings, such as adobe structures, located in hot and arid climates may need no additional ventilation if they have been well weatherized and no moisture is penetrating the interior. Also frame buildings with natural cracks and fissures for air infiltration may have a natural air exchange rate of 3 or 4 per hour, and so in arid as well as temperate climates may need no additional ventilation once secured. The most difficult

VENTILATION GUIDANCE CHART							
CLIMATE	AIR EXCHANGES		VENTILATION				
	Winter air exchange per hour	Summer air exchange per hour	Frame Buildings passive louvering		Masonry Buildings passive louvering		Masonry Buildings fan combination
Temperature and Humidity			% of openings louvered		% of openings louvered		one fan + % louvered
			winter	summer	winter	summer	summer
hot and dry Southwestern areas	less than 1	less than 1	N/A	N/A	N/A	N/A	N/A
cold and damp Northeastern & Pacific northwestern areas	1	2-3	5%	10%	10%	30%	20%
temperate/humid Mid-Atlantic & coastal areas	2	3-4	10%	20%	20%	40%	30%
hot and humid Southern states & tropical areas	3	4 or more	20%	30%	40% or more	80%	40% or more

Figure 19. This is a general guide for the amount of louvering which might be expected for a medium size residential structure with an average amount of windows, attic, and crawl space ventilation. There is currently research being done on effective air exchanges, but each project should be evaluated individually. It will be noticed from the chart that summer louvering requirements can be reduced with the use of an exhaust fan. Masonry buildings need more ventilation than frame buildings. Chart prepared by Sharon C. Park, AIA and Ernest A. Conrad, PE.

buildings to adequately ventilate without resorting to extensive louvering and/or mechanical exhaust fan systems are masonry buildings in humid climates. Even with basement and attic vent grills, a masonry building may not have more than one air exchange an hour. This is generally unacceptable for summer conditions. For these buildings, almost every window opening will need to be fitted out with some type of passive, louvered ventilation.

Depending on the size, plan configuration, and ceiling heights of a building, it is often necessary to have louvered opening equivalent to 5%-10% of the square footage of each floor. For example, in a humid climate, a typical 20'x30' (6.1m x 9.1m) brick residence with 600 sq. ft.(55.5 sq.m) of floor space and a typical number of windows, may need 30-60 sq. ft.(2.75sq.m-5.5 sq. m) of louvered openings per floor. With each window measuring 3'x5'(.9m x 1.5 m) or 15 sq. ft. (1.3 sq.m), the equivalent of 2 to 4 windows per floor may need full window louvers.

Small pre-formed louvers set into a plywood panel or small slit-type registers at the base of inset panels generally cannot provide enough ventilation in most moist climates to offset condensation, but this approach is certainly better than no louvers at all. Louvers should be located to give cross ventilation, interior doors should be fixed ajar at least 4" (10cm) to allow air to circulate, and hatches to the attic should be left open.

Monitoring devices which can record internal temperature and humidity levels can be invaluable in determining if the internal climate is remaining stable. These units can be powered by portable battery packs or can be wired into electric service with data downloaded into laptop computers periodically (see fig. 20). This can also give long-term information throughout the mothballing years. If it is determined that there are inadequate air exchanges to keep interior moisture levels under control, additional passive ventilation can be increased, or, if there is electric service, mechanical exhaust fans can be installed. One fan in a small to medium sized building can reduce the amount of louvering substantially.

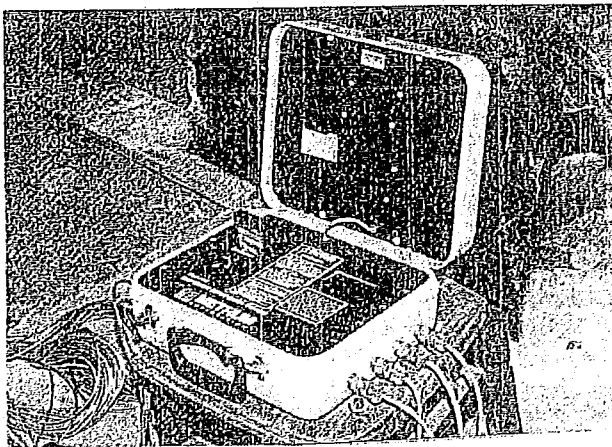


Figure 20. Portable monitors used to record temperature and humidity conditions in historic buildings during mothballing can help identify ventilation needs. This data can be downloaded directly into a laptop computer on site. These monitors are especially helpful over the long term for buildings with significant historic interiors or which are remaining furnished. If interiors are remaining damp or humid, additional ventilation should be added or the source of moisture controlled.

If electric fans are used, study the environmental conditions of each property and determine if the fans should be controlled by thermostats or automatic timers.

Humidistats, designed for enclosed climate control systems, generally are difficult to adapt for open mothballing conditions. How the system will draw in or exhaust air is also important. It may be determined that it is best to bring dry air in from the attic or upper levels and force it out through lower basement windows (see fig. 21). If the basement is damp, it may be best to zone it from the rest of the building and exhaust its air separately. Additionally, less humid day air is preferred over damper night air, and this can be controlled with a timer switch mounted to the fan.

The type of ventilation should not undermine the security of the building. The most secure installations use custom-made grills well anchored to the window frame, often set in plywood security panels. Some vents are formed using heavy millwork louvers set into existing window openings (refer back to fig.18). For buildings where security is not a primary issue, where the interior is modest, and where there has been no heat for a long time, it may be possible to use lightweight galvanized metal grills in the window openings (refer back to fig.7). A cost effective grill can be made from the expanded metal mesh lath used by plasterers and installed so that the mesh fins shed rainwater to the exterior.

Securing mechanical systems and utilities. At the outset, it is important to determine which utilities and services, such as electrical or telephone lines, are kept and which are cut off. As long as these services will not constitute a fire

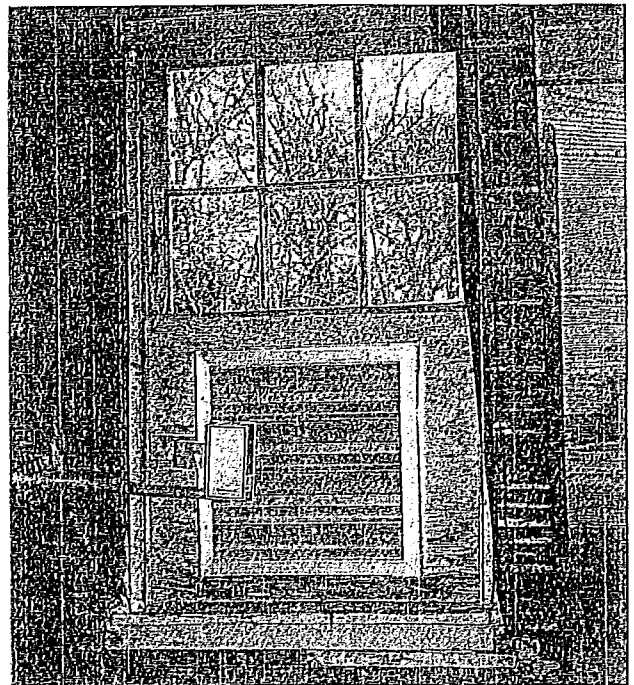


Figure 21. This electric thermostat/humidistat mounted in the attic vent controls a modified ducted air/fan system. The unit uses temporary exposed sheet metal ducts to pull air through the building and exhaust it out of the basement. For over ten years this fan system in combination with 18" x 18" preformed louvers in selective windows has kept the interior dry and with good air exchanges.

hazard, it is advisable to retain those which will help protect the property. Since the electrical needs will be limited in a vacant building, it is best to install a new temporary electric line and panel (100 amp) so that all the wiring is new and exposed. This will be much safer for the building, and allows easy access for reading the meter (see fig. 22).

Most heating systems are shut down in long term mothballing. For furnaces fueled by oil, there are two choices for dealing with the tank. Either it must be filled to the top with oil to eliminate condensation or it should be drained. If it remains empty for more than a year, it will likely rust and not be reusable. Most tanks are drained if a newer type of system is envisioned when the building is put back into service. Gas systems with open flames should be turned off unless there is regular maintenance and frequent surveillance of the property. Gas lines are shut off by the utility company.

If a hot water radiator system is retained for low levels of heat, it generally must be modified to be a self-contained system and the water supply is capped at the meter. This

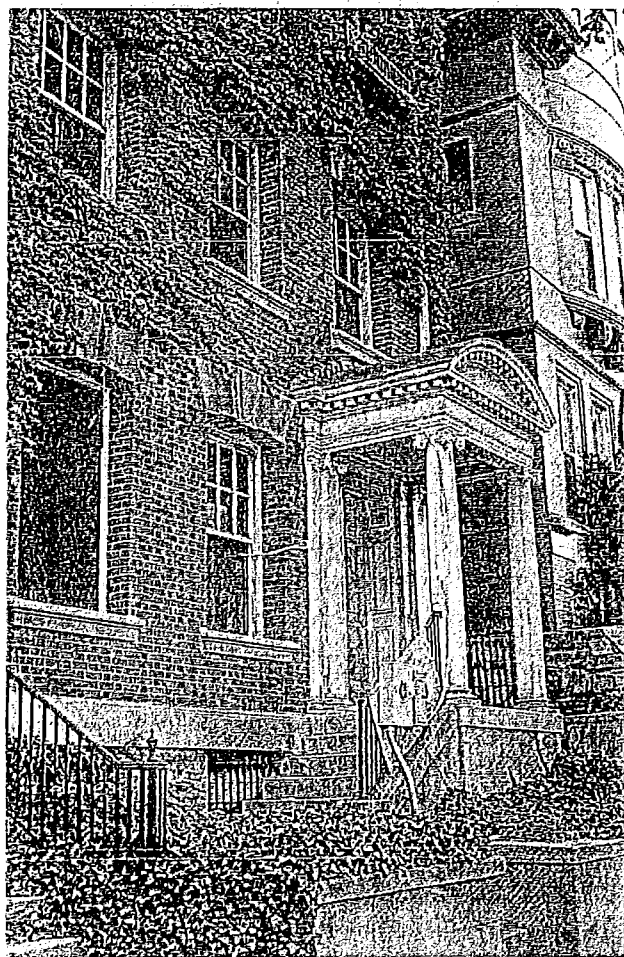


Figure 22. All systems except temporary electric have been shut off at this residence which has been mothballed over 20 years. An electric meter and 100 amp panel box have been set on a plywood panel at the front of the building. It is used for interior lighting and various alarm systems. The building, however, is showing signs of moisture problems with efflorescent stains on the masonry indicating the need for gutter maintenance and additional ventilation for the interior. The vegetation on the walls, although picturesque, traps moisture and is damaging to the masonry. Photo: H. Ward Jandl, NPS.

recirculating system protects the property from extensive damage from burst pipes. Water is replaced with a water/glycol mix and the reserve tank must also be filled with this mixture. This keeps the modified system from freezing, if there is a power failure. If water service is cut off, pipes should be drained. Sewerage systems will require special care as sewer gas is explosive. Either the traps must be filled with glycol or the sewer line should be capped off at the building line.

Developing a maintenance and monitoring plan. While every effort may have been made to stabilize the property and to slow the deterioration of materials, natural disasters, storms, undetected leaks, and unwanted intrusion can still occur. A regular schedule for surveillance, maintenance, and monitoring should be established: (See fig. 23 for maintenance chart).

MAINTENANCE CHART	
periodic	
<input type="checkbox"/>	regular drive by surveillance
<input type="checkbox"/>	check attic during storms if possible
monthly walk arounds	
<input type="checkbox"/>	check entrances
<input type="checkbox"/>	check window panes for breakage
<input type="checkbox"/>	mowing as required
<input type="checkbox"/>	check for graffiti or vandalism
enter every 3 months to air out	
<input type="checkbox"/>	check for musty air
<input type="checkbox"/>	check for moisture damage
<input type="checkbox"/>	check battery packs and monitoring equipment
<input type="checkbox"/>	check light bulbs
<input type="checkbox"/>	check for evidence of pest intrusion
every 6 months; spring and fall	
<input type="checkbox"/>	site clean-up; pruning and trimming
<input type="checkbox"/>	gutter and downspout check
<input type="checkbox"/>	check crawlspace for pests
<input type="checkbox"/>	clean out storm drains
every 12 months	
<input type="checkbox"/>	maintenance contract inspections for equipment/utilities
<input type="checkbox"/>	check roof for loose or missing shingles
<input type="checkbox"/>	termite and pest inspection/treatment
<input type="checkbox"/>	exterior materials spot repair and touch up painting
<input type="checkbox"/>	remove bird droppings or other stains from exterior
<input type="checkbox"/>	check and update building file

Figure 23. Maintenance Chart. Many of the tasks on the maintenance chart can be done by volunteer help or service contracts. Regular visits to the site will help detect intrusion, storm damage, or poor water drainage.

The fire and police departments should be notified that the property will be vacant. A walk-through visit to familiarize these officials with the building's location, construction materials, and overall plan may be invaluable if they are called on in the future.

The optimum schedule for surveillance visits to the property will depend on the location of the property and the number of people who can assist with these activities. The more frequent the visits to check the property, the sooner that water leaks or break-ins will be noticed. Also, the more frequently the building is entered, the better the air exchange. By keeping the site clear and the building in good repair, the community will know that the building has not been abandoned (see fig. 24). The involvement of neighbors and community groups in caring for the property can ensure its protection from a variety of catastrophic circumstances.

The owner may utilize volunteers and service companies to undertake the work outlined in the maintenance chart.

Service companies on a maintenance contract can provide yard, maintenance, and inspection services, and their reports or itemized bills reflecting work undertaken should be added to update the building file.

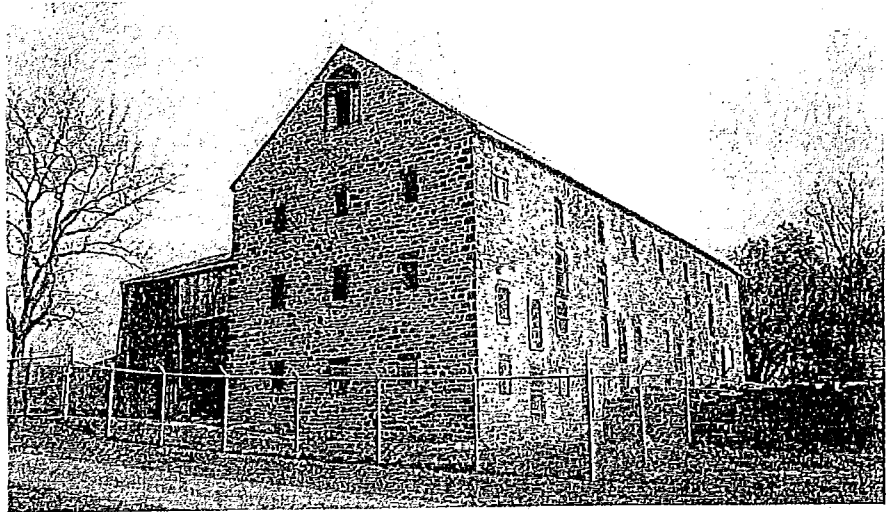


Figure 24. Once mothballed, a property must still be monitored and maintained. The openings in this historic barn has been modified with a combination of wood louvers and metal mesh panels which require little maintenance. The grounds are regularly mowed, even inside the chain link security fence. Photo: Williamsport Preservation Training Center, NPS.

Components of a Mothballing Project

Document: Brearley House, New Jersey; 2½ story center hall plan house contains a high degree of integrity of circa 1761 materials and significant early 19th century additions. Deterioration was attributable to leaking roof, unstable masonry at gables and chimneys, deteriorating attic windows, poor site drainage, and partially detached gutters. Mothballing efforts are required for approximately 7-10 years.

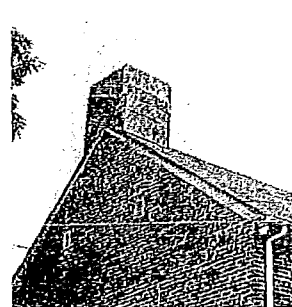
Stabilize: Remove bat droppings from attic using great caution. Secure historic chimneys and gable ends with plywood panels. Do not take historic chimneys down. Reroof with asphalt shingles and reattach or add new gutters and downspouts. Add extenders to downspouts. Add bug screens to any ventilation areas. Add soil around foundation and slope to gain positive drain; do not excavate as this will disturb archeological evidence.

Mothball: Install security fence around the property. Secure doors and windows with plywood panels (½" exterior grade). Install preformed metal grills in basement and attic openings. Add surface mounted wiring for ionization smoke and fire detection with direct wire to police and fire departments. Shut off heat and drain pipes. Add window exhaust fan set on a thermostatic control. Provide for periodic monitoring and maintenance of the property.

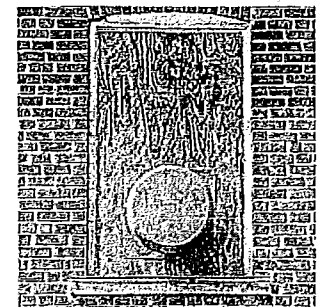
Figure 25. Above is a summary of the tasks that were necessary in order to protect this significant property while restoration funds are raised. Photographs: Michael Mills; Ford Farewell Mills Gatsch Architects.



a. A view showing the exterior of the house in its mothballed condition.



b. Plywood panels stabilize the chimneys. Note the gable vents.



c. The exhaust fan has tamper-proof housing.

MOTHBALLING CHECKLIST

Mothballing Checklist In reviewing mothballing plans, the following checklist may help to ensure that work items are not inadvertently omitted.	Yes	No	Date of action or comment.
<p><i>Moisture</i></p> <ul style="list-style-type: none"> • Is the roof watertight? • Do the gutters retain their proper pitch and are they clean? • Are downspout joints intact? • Are drains unobstructed? • Are windows and doors and their frames in good condition? • Are masonry walls in good condition to seal out moisture? • Is wood siding in good condition? • Is site properly graded for water run-off? • Is vegetation cleared from around the building foundation to avoid trapping moisture? 			
<p><i>Pests</i></p> <ul style="list-style-type: none"> • Have nests/pests been removed from the building's interior and eaves? • Are adequate screens in place to guard against pests? • Has the building been inspected and treated for termites, carpenter ants, and rodents? • If toxic droppings from bats and pigeons are present, has a special company been brought in for its disposal? 			
<p><i>Housekeeping</i></p> <ul style="list-style-type: none"> • Have the following been removed from the interior: trash, hazardous materials such as inflammable liquids, poisons, and paints and canned goods that could freeze and burst? • Is the interior broom-clean? • Have furnishings been removed to a safe location? • If furnishings are remaining in the building, are they properly protected from dust, pests, ultraviolet light, and other potentially harmful problems? • Have significant architectural elements that have become detached from the building been labeled and stored in a safe place? • Is there a building file? 			
<p><i>Security</i></p> <ul style="list-style-type: none"> • Have fire and police departments been notified that the building will be mothballed? • Are smoke and fire detectors in working order? • Are the exterior doors and windows securely fastened? • Are plans in place to monitor the building on a regular basis? • Are the keys to the building in a secure but accessible location? • Are the grounds being kept from becoming overgrown? 			
<p><i>Utilities</i></p> <ul style="list-style-type: none"> • Have utility companies disconnected/shut off or fully inspected water, gas, and electric lines? • If the building will not remain heated, have water pipes been drained and glycol added? • If the electricity is to be left on, is the wiring in safe condition? 			
<p><i>Ventilation</i></p> <ul style="list-style-type: none"> • Have steps been taken to ensure proper ventilation of the building? • Have interior doors been left open for ventilation purposes? • Has the secured building been checked within the last 3 months for interior dampness or excessive humidity? 			

Figure 26. MOTHBALL CHECKLIST. This checklist will give the building owner or manager a handy reference guide to items that should be addressed when mothballing a historic building. Prepared by H. Ward Jandt, NPS.

Conclusion

Providing temporary protection and stabilization for vacant historic buildings can arrest deterioration and buy the owner valuable time to raise money for preservation or to find a compatible use for the property. A well planned mothballing project involves documenting the history and condition of the building, stabilizing the structure to slow down its deterioration, and finally mothballing the structure to secure it (See fig. 25). The three highest priorities for the building while it is mothballed are 1) to protect the building from sudden loss, 2) to weatherize and maintain the property to stop moisture penetration, and 3) to control the humidity levels inside once the building has been secured. See Mothballing Checklist Figure 26.

While issues regarding mothballing may seem simple, the variables and intricacies of possible solutions make the decision-making process very important. Each building must be individually evaluated prior to mothballing. In addition, a variety of professional services as well as volunteer assistance are needed for careful planning and repair, sensitively designed protection measures, follow-up security surveillance, and cyclical maintenance (see fig. 27).

In planning for the future of the building, complete and systematic records must be kept and generous funds allocated for mothballing. This will ensure that the historic property will be in stable condition for its eventual preservation, rehabilitation, or restoration.

Acknowledgements

This publication has been prepared pursuant to the National Historic Preservation Act of 1966, as amended, which directs the Secretary of the Interior to develop and make available information concerning historic properties. Comments on the usefulness of this publication may be directed to H. Ward Jandl, Deputy Chief, Preservation Assistance Division, National Park Service, P.O. Box 37127, Washington, D.C. 20013-7127. This publication is not copyrighted and can be reproduced without penalty. Normal procedures for credit to the author and the National Park Service are appreciated.

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All photographs and drawings are by the author unless otherwise noted.

Cover photograph: Mothballing of this historic house involved a new membrane roof covering over the historic roof and slatted window covers for security and ventilation. Photo: Williamsport Preservation Training Center, NPS.

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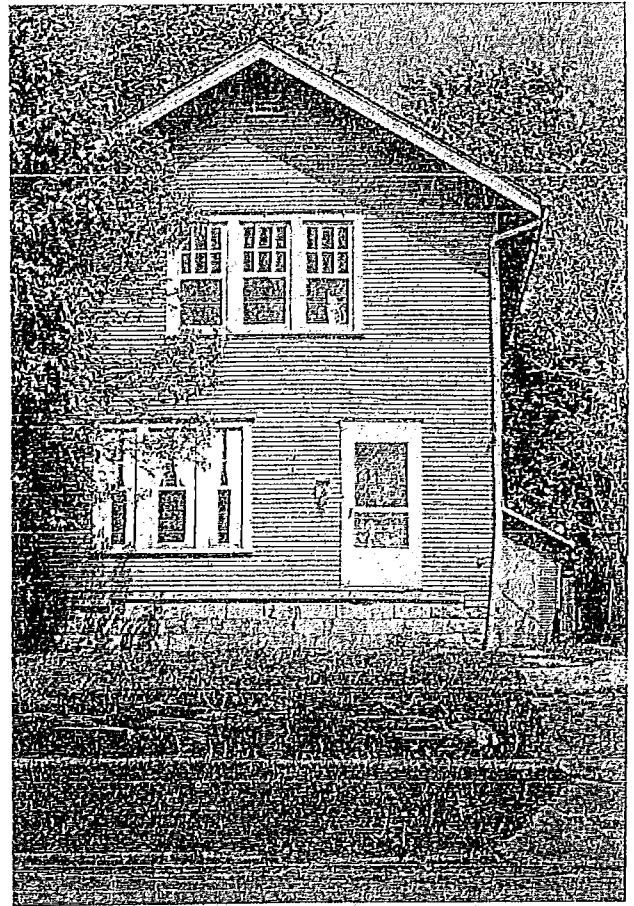


Figure 27. This residential building blends into its neighborhood even though all the windows have been covered over and the front steps are missing. The grounds are maintained and the special attention to decoratively painting the window panels shows that the property is being well cared for until it can be rehabilitated. Photo: Ohio Historical Society.

Further Reading

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