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Maintaining Historic Buildings



Cover illustration: One of the best known 19th century maintenance managers, Tom Sawyer. As Tom tells Ben Rogers, "Does a boy get a chance to whitewash a fence everyday?" (Mark Twain, *The Adventures of Tom Sawyer*, 1879.) Library of Congress.

Maintaining Historic Buildings

An Annotated Bibliography

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Reading lists have been published by the National Park Service, Preservation Assistance Division, since 1975. Most are selected bibliographies, that is, not intended to be a comprehensive overview of the subject; some are annotated. The Reading Lists are periodically updated. Comments on the usefulness of this information should be sent to Lee H. Nelson, FAIA, Chief, Preservation Assistance Division, National Park Service, P.O. Box 37127, Washington, D.C. 20013-7127. The publication is not copyrighted and can be reproduced without penalty. Normal procedures for credit to the authors and the National Park Service are appreciated.

Foreword

Maintenance. To most of us, the very word conjures up monotonous and seemingly mundane tasks--scrubbing, polishing, and dusting; or scraping, sanding, and painting. The very "ordinariness" of these tasks belies the critical importance of maintenance in helping to ensure the long-term preservation of historic buildings. All too frequently serious preservation problems arise because needed maintenance is deferred.


Maintenance is preservation. Removing dirt from historic buildings and making routine repairs or adjustments are all tasks that require both skill and judgment. With regular maintenance, the life of a building can be measurably extended. As such, maintenance deserves respect from all building owners and managers: if a building is to be preserved, maintenance needs must be adequately planned for and adequately funded.

This annotated reading list suggests the breadth of information on the subject of maintenance planning, from 19th century historic housekeeping guides to much more sophisticated methodologies as we close the 20th century. One of the most important references listed is *Cyclical Maintenance for Historic Buildings*, developed by J. Henry Chambers, FAIA, under contract to this office of the National Park Service. Issued in 1976, this handbook helped to set the standard for maintenance work on historic buildings. It is our hope that this reading list will be of use to architects, building owners and managers, and administrators in developing and implementing maintenance plan for their historic properties.

Lee H. Nelson, FAIA
Chief, Preservation Assistance Division



Figure 1: This outdoor interpretive display at Independence National Historical Park (1982) explained the need for cyclical maintenance of those ephemeral features that, if not maintained, would be lost due to deterioration or environmental damage. Without maintenance, historic features must be replaced with new materials, thus diminishing the historic integrity of the resource. Such an interpretative display also helps alleviate the initial disappointment that visitors feel when they arrive ready to take pictures and find the historic building enveloped with scaffolding. Photo: Penelope Hartshorne Batcheler.



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Introduction

In the preservation of historic buildings, the most critical area, and the most overlooked, is that of maintenance. All too often, it is based on short-term economic decisions rather than long-term preservation goals, and deferred until the building deteriorates to such a point that a costly repair project must be undertaken to recover its historic appearance. The rewards of maintenance may seem too subtle to notice at first; in fact, small, repeated work tasks may even appear to be unproductive because there is no immediately visible evidence of their benefit. Often, it is only when major repairs or restoration are required that the true value of regular, scheduled maintenance is seen.

The aim of preservation is to manage the inevitable deterioration of a building. Maintenance is the almost constant application of preservation treatments to reduce wear and deterioration and prolong the life of a building. A good maintenance plan, based on the preservation goals for the building and its use, is the key to successful preservation. Maintenance without a plan can be just as destructive as no maintenance at all, with each patch and repair destroying a bit more of the original fabric until integrity is lost. Or it may have the opposite effect, "improving" on the original design, which may have been built with defects, or eliminating all signs of normal wear and weathering. The result is a well-maintained building looking nothing like it would have historically.

The components of a good maintenance plan are: the inspection system, work schedules, building records, report systems, and reference support materials. An effective plan should also include a means of evaluating maintenance activities to find strengths and weaknesses (and adjusting the plan as needed) and a system of cost accounting, as well as a training program for any personnel involved in the maintenance of the building.

The building inspection is the basis of a good maintenance plan. Full inspections should be performed annually and are used to identify maintenance tasks and pinpoint areas of concern that require further monitoring. Other inspections should be done on a regular basis. Still other inspections should be done on an as-needed basis; for example, the roof should be examined during a heavy rain and after severe storms; collections should be checked for insects and other damage monthly; and a casual inspection should be included in every housekeeping routine.

Part of the inspection system is the evaluation and testing methods which will be used to assess conditions and diagnose problems. In order to identify problems, one must understand the nature of building systems and materials and their process of deterioration. Of primary importance is discovering the cause of the problem so that *it* can be treated rather than the symptom.

Work schedules list all routine and preventive maintenance tasks and the frequency in which they are performed, from daily or weekly to annually. Building records consist of drawings and photographs of the structure, an inventory of materials and finishes identifying all historic and non-historic fabric, and records of previous preservation and maintenance activities. The report system is the summary of all completed work, including an explanation of each task, the methods and materials used to complete it, and the cost.

Reference support materials contain the performance standards and treatment specifications for the property. Performance standards outline the acceptable conditions within which a system or material should be maintained, or the amount of deterioration which can occur before maintenance work is undertaken. One example would be repainting only when a certain percentage of the paint is peeling or flaking. Treatment specifications are descriptions of appropriate cleaning and repair methods, such as the proper method of washing a painted surface. In short, performance standards tell when work should be done and treatment specifications tell how to do it. The information contained in the reference support material is used to evaluate the information gathered in the inspection, diagnose problems, identify maintenance tasks, and prescribe the proper treatments and methods to be used. Reference support materials should also include a list of suppliers for materials and equipment, qualified consultants, and emergency information.

Maintenance is not a specific area of endeavor. It is for maintenance workers and managers--housekeepers, carpenters, masons and groundskeepers--and also for owners and architects. A successful maintenance plan requires complete information on how a building was built and an understanding of the nature of its systems and materials and the process of deterioration. It requires an ability to

identify problems, establish their causes, and prescribe preservation treatments to correct them. It is for that reason that the scope of this bibliography is rather broad; a wide range of resources is needed to identify and carry out maintenance tasks.

The treatments described in some of these publications may not be appropriate for all historic buildings. Any preservation treatment should be considered carefully before inclusion in the maintenance plan, in order to preserve the historic character and materials to the fullest extent possible. Finally, it should be noted that grounds or landscape maintenance are not included in this Reading List, but will be the subject of a separate list.

The publications are grouped into five basic categories:

1. **The Maintenance Plan** lists publications to assist in the development of a system for identifying maintenance needs and implementing appropriate corrective measures and cyclical maintenance practices. These include inspection checklists, building documentation methods and actual maintenance plans, as well as general discussions on *Management Systems*, including computerized maintenance management systems, *Building Records*, and *Inspection and Evaluation*.
2. **Building Maintenance** lists publications to be used in the development of performance standards and treatment specifications and to help identify maintenance tasks. The first section, *The Entire Building*, contains those which are comprehensive in scope, diagnosing and prescribing treatments according to the building system, component, type of problem, or material involved. The next section, *The Roof*, lists those specifically dealing with the maintenance of roofs. It includes articles on inspection, materials, gutters and flashing. A well-maintained weathertight roof is the most important element in the preservation of a building and deserves extra attention. The third section, *Windows and Doors*, contains publications on their cleaning and repair, with a few items on awnings and weatherization. Windows and doors are particularly vulnerable to deterioration, but are important elements in the visual character of a building. Therefore, extra effort should be made to preserve them.
3. **Materials Maintenance** contains specific publications on materials to aid in the

development of performance standards and treatment specifications. In order to evaluate the condition of a building material and prescribe appropriate treatments, it is necessary to know the chemical and physical properties of the material, its uses and installation. From this information, the process of deterioration will be understood. It is divided into sections on *Properties of Materials*, *Masonry*, *Wood*, *Metal* and *Glass*; cleaning and repair treatments are given for each of the materials, along with general information on their properties, uses, installation and finishes.

4. **Moisture, Insects and Other Problems** contains information on the primary sources of deterioration, causes and treatments. Moisture is often the source of many maintenance problems, and if it can be successfully controlled through maintenance, many preservation problems can be controlled.

5. **Housekeeping** lists publications on *Maintaining Interior Surfaces*, *Furnishings*, and *Collections*. Some sources contain information on the scheduling of housekeeping tasks, and there is much discussion on the nature of dirt in order to determine appropriate treatments. *Environmental Controls* lists publications on the effects of light, heat and humidity on furnishings, finishes and collections and the effects of human erosion. It also contains some information on the care of older mechanical systems. *Historic Housekeeping Guides* are listed to provide information on historic methods, many of which may be appropriate today while others are harsh and should not be considered. Knowing how a historic building has been treated in the past can be very useful in choosing housekeeping methods and preservation treatments.

* * *

Maintenance is a complex subject, but few attempts have been made to spell out what it entails. For the purposes of understanding maintenance and its place in the preservation of historic buildings, the following terms are defined.

From Cultural Resources Management, NPS-28, August 1985:

Maintenance: the act or process of applying a preservation treatment to a cultural resource. It includes housekeeping and routine and cyclic work scheduled to mitigate wear and deterioration without altering the appearance of the resource;

repair or replacement-in-kind of broken or worn-out elements, parts, or surfaces so as to keep the existing appearance and function of a structure; work to moderate, prevent, or arrest erosion of archeological sites; emergency stabilization work necessary to protect damaged historic fabric from additional damage; and actions taken to prevent damage and to minimize deterioration of a museum object by practicing preventive conservation or by performing a suitable treatment on an object itself.

- **Housekeeping:** that portion of maintenance that removes undesirable or harmful deposits of soil in a manner that does the least amount of harm to the surface treated. Housekeeping is repeated at short time intervals so that soil removal can be done with the gentlest and least radical methods.
- **Routine Maintenance:** that portion of maintenance that usually consists of service activities such as tightening, adjusting, oiling, etc.
- **Cyclic Maintenance:** that portion of maintenance that is performed less frequently than annually and usually involves replacement, or at least, mending of the fabric of a structure or object.

From The Secretary of the Interior's Standards for Historic Preservation Projects (1979):

Protection: Is defined as the act or process of applying measures designed to affect the physical condition of a property by defending or guarding it from deterioration, loss or attack, or to cover or shield the property from danger or injury. In the case of buildings and structures, such treatment is generally of a temporary nature and anticipates future historic preservation treatment; in the case of archeological sites, the protective measure may be temporary or permanent.

Stabilization: Is defined as the act or process of applying measures designed to reestablish a weather resistant enclosure and the structural stability of an unsafe or deteriorated property while maintaining the essential form as it exists at present.

Preservation: The application of measures to sustain the existing form, integrity and material of a building and its setting essentially as it exists, without significant reconstruction or restoration.

These measures may include stabilization and a regular maintenance program to arrest or retard deterioration.

Rehabilitation: Is defined as the act or process of returning a property to a state of utility through repair or alteration which makes possible an efficient contemporary use while preserving those portions or features of the property which are significant to its historical, architectural, and cultural values.

Restoration: The process of accurately recovering the form and details of a building and its setting as it appeared at a particular period of time by means of the removal of later work or by the replacement of missing original work.

Some of the technical publications in this bibliography can be purchased or obtained free of charge. These are noted with an asterisk (*). Where applicable, order numbers are provided. Call or write the agencies or organizations for price and availability.

The Maintenance Plan: Management Systems

Crosby, Anthony. "Preservation Maintenance in the Southwest." *Association for Preservation Technology Bulletin*. Vol. XVIII, No. 3 (1986), pp. 48-55.

As a means of standardizing Historic Structures Preservation Guides, the National Park Service has developed a computerized Maintenance Management System. The emphasis is on the components known to be a part of any maintenance plan, such as assets inventory and inspections. The system emphasizes setting standards for maintaining the building's condition rather than prescriptive treatments.

Ferro, Maximillian L. "Conserving Large Estates: Problems of Maintaining the Great Turn-of-the-Century Homes." *Technology and Conservation*. Vol. 6, No. 3 (Fall 1981), pp. 22-27.

This article discusses the life expectancy of building components and the need for regular inspections of the building envelope. Since water infiltration is the leading cause of deterioration, particular attention is given to the prevention of moisture problems.

Harrison, Steven. "219 North Delaware: Caring For a Furnished Historic Home." *CRM Bulletin*. Vol. 8, Nos. 3-4 (June-August 1985), pp. 12-13.

In a house museum, the greatest maintenance problem is the wear caused by the visitors, but much of that can be reduced through management techniques. Staff members should observe what gets touched the most and where visitors are walking, and apply extra attention to it during housekeeping.

Miller, Hugh C., AIA. "A Health Maintenance Program For Older Buildings." *Architecture*. (November 1986), pp. 96-99.

This article proposes that architects provide ongoing maintenance monitoring to diagnose building problems and prevent further damage by projecting the rate of decay and prescribing the appropriate treatment. Building inspection procedures and diagnostics are discussed.

Stern, E. George. "Planning Standard Guidelines For Inspection and Evaluation of the Structural Condition of Existing Buildings." *Building Performance: Function, Preservation and Rehabilitation* ASTM STP 901. Philadelphia: American Society for Testing and Materials, 1985, pp. 86-89. *ASTM.

This paper discusses guidelines which should be established for use in evaluating the structural condition of existing buildings. The maintenance inspections, monitoring techniques, and evaluation and diagnosis of materials and systems are the key issues.

Weaver, Martin E. "Historic Preservation Maintenance in the Netherlands - The Monumentenwacht." *Association for Preservation Technology Bulletin*. Vol. XVIII, No. 3 (1986), pp. 10-11.

In an effort to combat the high cost of preservation, a system has been developed in the Netherlands in which property owners subscribe to a service that monitors heritage buildings and prescribes preventive maintenance.

* * *

The Maintenance Plan: Building Records

Burns, John A. (editor) and the staff of HABS/HAER, National Park Service, U.S. Department of the Interior. *Recording Historic Structures*. Washington, DC: The American Institute of Architects Press, 1989. *AIA.

In a maintenance plan, the building records system should include measured drawings of the building, photographs, and a building history. This book explains how to document a historic building and create a visual and written record.

Chambers, J. Henry, FAIA. *Using Photogrammetry to Monitor Materials Deterioration and Structural Problems on Historic Buildings: The Dorchester Heights Monument, A Case Study*. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1985. *NTIS order no. PB87-232146.

Photogrammetry may be used to monitor the condition of large-scale buildings for which normal inspection techniques may not be possible. It can also be used to make scale-rectified photographs to be used as part of the regular inspection form. This publication describes the method for using photogrammetry in these ways.

"Historic Structure Reports." *Association For Preservation Technology Bulletin*. Vol. XIV, No. 4 (1982), entire issue.

The articles contained in this issue of the Bulletin contain information which may be used in the preparation of building records. Topics include documenting historic buildings, architectural investigation, structural examination, paint analysis and photography.

National Park Service. *HABS Field Instructions for Measured Drawings*. Washington, DC: U.S. Department of the Interior, National Park Service, 1981.

_____. *HABS Historian's Procedures Manual*. Washington, DC: U.S. Department of the Interior, National Park Service, 1983.

_____. *Specifications for the Production of Photographs*. Washington, DC: U.S. Department of the Interior, National Park Service, 1984.

These manuals contain instructions on the production of measured drawings, photographs and written history for a building. These items should be part of the building records in the maintenance plan. Drawings and photographs are particularly helpful, because they may be used as inspection forms by annotating observations onto copies. Copies of these publications may be obtained by writing HABS/HAER, National Park Service, P.O. Box 37127, Washington, D.C. 20013-7127.

* * *

The Maintenance Plan: Inspection and Evaluation

Bowyer, Jack. *Guide to Domestic Building Surveys*. (3rd edition). London: The Architectural Press, 1979.

This is a guide for assessing the condition of an entire building and its systems. Checklists are provided to diagnose defects according to the element or system and the observed problem. This may be very helpful in the development of the inspection portion of a maintenance plan.

Chambers, J. Henry, FAIA. *Cyclical Maintenance for Historic Buildings*. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1976. *NTIS order no. PB87-118659.

This was the first publication devoted to maintenance planning for historic buildings. It was intended to be a guide for the preparation of a maintenance plan, and the first part of the book discusses the information needed to begin a maintenance program. The second section contains maintenance treatments to be used as reference material for the maintenance plan. Work schedules, task frequencies, and a sample plan are also provided.



Figure 2: The fact that this column is made of two different types of stone will be important to note in the preparation of a responsible maintenance plan. Photo: Jean Travers.

Crosby, Anthony, and Nick Scrattish. "A Maintenance Inspection Guide For the Wawona Hotel Buildings." *Historic Structure Report, Wawona Hotel, Yosemite National Park, California*. Denver: U.S. Department of the Interior, National Park Service, Denver Service Center, 1983, pp. 259-307. *NTIS order no. 84169300; *CRM order number: 011646.

Although Historic Structure Reports normally do not contain information on maintenance, a maintenance inspection guide was included in response to the deteriorated condition of the buildings which could have been avoided by a program of regular maintenance. Chapter Seven, "A Maintenance Inspection Guide For the Wawona Hotel Buildings," contains a checklist for bi-annual maintenance inspections and documentation and is considered a working tool to assist the staff in the observation of existing conditions and the identification of maintenance concerns and potential hazards.

Denver Service Center. *Historic Structure Preservation Guide, Hot Springs National Park, Hot Springs, Arkansas*. Denver: U.S. Department of the Interior, National Park Service, Denver Service Center, 1986. *CRM order numbers: 013611 (Maurice Bathhouse); 013613 (Ozark Bathhouse); 013614 (Hale Bathhouse); and 013615 (Quapaw Bathhouse).

A Historic Structure Preservation Guide was prepared for bathhouses in the Park. The basis of each guide is the performance standards, which explain in detail the condition in which the building must be maintained, the acceptable level of deterioration and the quality of any repair work that is undertaken. Inspection checklists are provided, along with basic preservation treatments and specifications for maintenance tasks.

Florence, Hank. *Historic Structure Preservation Guide: North Cascades National Park Service Complex*, Pacific Northwest Region, Cultural Resources Division, National Park Service, 1987. *CRM order number: 014599.

Historic Structure Preservation Guides are designed to provide long-term maintenance instructions for rehabilitated properties. For the North Cascades Service Complex, however, because of limited funds and limited information on many sites, a modified approach was instituted. Part A provides



Figure 3: Development of a maintenance plan requires thorough inspection of all aspects of a historic building--materials, features, and systems.

information on a structure's current condition and Part B outlines measures required to stabilize it for practical continued use. Part C is the actual preservation guide portion of the report. It outlines maintenance tasks to be performed on a regular basis after stabilization. This is an excellent example of how a guide format can be adapted to reflect varying building conditions and availability of information.

Goodall, Harrison. *Historic Structure Preservation Guide - Hubbell Trading Post National Historic Site*. Kinnelon, NJ: Conservation Services, April 1984. *CRM order numbers: 011873, 011874.

"Part I: Preventive Maintenance System" contains yearly and monthly maintenance schedules for the Historic Site, as well as maintenance inspection forms and schedules for each building. The inspection summary includes a method of cost accounting for each task. "Part II: Reference Support Record System" contains drawings and photographs of all the structures, material inventories for each building identifying historic fabric, and a description of all the preventive maintenance tasks and the purpose of each. Although preservation treatments are not included, this is a good model of an inspection system to identify maintenance needs, and would be very helpful in the development of a maintenance plan.

Hum-Hartley, Susan. "Nondestructive Testing For Heritage Structures." *Association for Preservation Technology Bulletin*. Vol. X, No. 3 (1978), pp. 4-20.

This article describes inspection techniques which may be used to determine a building's condition and the source of problems in the materials or systems using methods which will not cause further damage or impair future usefulness. The various methods of nondestructive testing are defined, along with the principle of each, applications, advantages and disadvantages, cost, availability and current usage.

"Inspection Checklist For Older Buildings" *The Old-House Journal*. Vol. 15, No. 5 (October 1987), pp. 40-45.

Moving from the roof to the foundation on the exterior of the building and the cellar to the attic on the interior, this checklist asks questions about the condition of each area, tells how to examine it, and what problems might be evident.

"Protecting the Aging House From Winter Storms." *The Old-House Journal*. Vol. 1, No. 1 (October 1973), p. 2.

This pre-winter checklist can be used to plan preventive maintenance and weatherization tasks.

Seeley, Ivor H. *Building Maintenance*. London: MacMillan Publishers, 1976.

The importance of maintenance is discussed in this book, followed by complete instructions for preparing a maintenance manual or plan. Maintenance problems and their solutions are identified by system, material and source. Examples of material specifications are also included.

_____. *Building Surveys, Reports and Dilapidations*. London: MacMillan Publishers, 1985.

This is a guide for preparing structural reports. Inspection and testing methodologies are outlined, and an example of a building inspection report is provided. Signs of building deterioration in different systems and their causes are explained to assist in the assessment of the structure.

Victor, Dorothy. "House Notes - Spring Checklist: Diagnosis and Preventive Maintenance." *The Landmark Society of Western New York*. Vol. 25, No. 3 (May 1987), p. 9.

A spring inspection should be completed to see how the building has weathered and to plan spring and summer maintenance projects. The diagnostic procedures given in this checklist are to record symptoms, determine causes and prescribe possible treatments.

Building Maintenance: The Entire Building

Addleson, Lyall. *Building Failure - A Guide to Diagnosis, Remedy and Prevention*. London: The Architectural Press, 1983.

The three basic causes of building failure are dampness, structural movement, and chemical and biological attack. Diagnostic procedures to identify deterioration are explained in this book. Information sheets for particular building systems list signs of problems, their causes, and repair work to correct them. Technical studies explain the causes and mechanisms of failure.

Building Research Establishment. *Building Defects and Maintenance* (2nd edition). New York: The Construction Press, 1977.

This book deals with the failure of building systems and materials, primarily due to problems with the original design and detailing. Maintenance and repair methods are given, along with descriptions of the various systems and materials and the problems which can occur in each.

Chudley, R. *The Maintenance and Adaptation of Buildings*. New York: Longman Group, 1981.

This book lists and describes the primary causes of deterioration in buildings, by material and type of problem. Methods of repair are given for each. A discussion on economic considerations and cost calculations for maintenance planning is also included.

Davey, Andy, Bob Heath, Desmond Hodges, Roy Milne, and Mandy Palmer. *The Care and Conservation of Georgian Houses: A Maintenance Manual*. London: The Architectural Press, with Edinburgh New Town Conservation Committee, 1980.

This guide to stone Georgian houses is intended to help the owner understand the style and construction of that building type in order to properly maintain it. It gives preservation treatments for the various elements, such as cast iron railings, chimneys, and windows, with particular attention to stone construction.

Feilden, Bernard M. *Conservation of Historic Buildings*. London: Butterworth Scientific, 1982.

This comprehensive text deals with the diagnosis of building problems and describes appropriate restoration treatments for historic buildings. A portion of the book is devoted specifically to preventive maintenance, and identifies maintenance tasks and the frequency with which they should be completed. This book is indispensable for any preservationist.

Hanson, Shirley, and Nancy Hubby. *Preserving and Maintaining the Older Home*. New York: McGraw-Hill Book Company, 1983.

Written for owners of historic houses, this book covers everything from identifying the style of the building to maintenance and repair. It is organized according to the building system or element and tells what problems to look for and how to fix them, in simple, clear language.

Insall, Donald W. *The Care of Old Buildings Today - A Practical Guide*. London: The Architectural Press, 1972.

This publication deals with the maintenance of buildings according to system. A large portion is devoted to roofs, identifying areas of concern and providing assessment methods to determine its condition. Other topics included in the book are timber construction, stone decay and repair, metal work, glass, rain gutters and church bells. Specifications for each system are provided, and annotated drawings pointing out areas where defects are likely to occur.

Johnson, Leroy Jr. (editor). *Handbook of Maintenance Techniques For Building Conservation in the Strand Historic District, Galveston, Texas*. (Revised edition, originally published as *Preservation Maintenance Handbook*, by Michael Emrick, AIA). Austin, Texas: Texas Historical Commission, 1984.

This handbook discusses the types of problems inherent to the construction methods and materials found in the historic district. Particular attention is given to moisture problems, with instructions for remedial treatment. Information for creating an inspection and maintenance manual for each structure is included. Tables list maintenance

tasks for the exterior and interior, with frequency of inspection and treatment.

Johnson, Sidney M. *Deterioration, Maintenance and Repair of Structures*. New York: Robert E. Krieger Publishers, 1981.

Although not specifically for historic structures, this book may be of use in the maintenance of timber, steel and concrete structures, particularly in a marine environment. Preventive treatments are geared toward initial construction, but it does describe some methods of repair after damage has occurred.

Meadows, Robert E. *Historic Building Facades -A Manual For Inspection and Rehabilitation*. New York: New York Landmarks Conservancy, Technical Preservation Services Center, 1986.

Written in response to a New York City law requiring periodic inspection of exterior walls, this guide is intended to promote the maintenance of facades while retaining all features. The first part identifies sources of deterioration and failure in facade elements and building materials. The rest is devoted to inspection techniques, evaluation and diagnosis, and planning for repairs.



Figure 4: A weathertight roof is essential to the preservation of the entire structure. Photo: Martin Aronow.

Melville, Ian, and Ian Gordon. *The Repair and Maintenance of Houses*. London: The Estates Gazette Limited, 1973.

This is a comprehensive maintenance guide, covering inspection, diagnosis and treatment, and is arranged according to building systems, materials, and specific deterioration problems. Each chapter has a table of contents to aid in its use.

Staehli, Alfred, AIA. *Historic Structures Maintenance Guide For Mount Rainier National Park*. Seattle: U.S. Department of the Interior, National Park Service, Pacific Northwest Regional Office, April 1983. *CRM order number: 011587.

This guide was written to instruct maintenance personnel on the architectural and historical significance of Mount Rainier's landmark buildings. Particular attention is given to maintenance problems that are characteristic of the Rustic Style, and identifies known problem areas which require frequent monitoring and advance planning.

Stahl, Frederick A. *A Guide to the Maintenance, Repair and Alteration of Historic Buildings*. New York: Van Nostrand Reinhold Company, 1984.

Originally written for the General Services Administration, this book contains information on rehabilitating historic buildings as well as maintaining them. The section on building inspections includes charts to aid in the diagnosis of problems and lists evaluation techniques and inspection frequencies. Other sections are on materials and building systems, with descriptions of maintenance problems and preservation treatments.

United States Department of the Army. *Historic Preservation Maintenance Procedures*. Washington, DC: Headquarters, Department of the Army, 1977.

This is the training manual for the maintenance of historic structures under control of the Army. It identifies common types of problems and their solutions, and includes emergency procedures such as mothballing a building to prevent further deterioration. A portion is devoted to the development of a maintenance

program, scheduling, and personnel requirements.

* * *

Building Maintenance: The Roof

Ballard, Candace. *Working With Slate Roofs*. Ottawa: The Heritage Canada Foundation, 1984.

This is a comprehensive guide on the care of slate roofs, the advantages and problems associated with the material and its installation details. Common defects are summarized in a table for quick reference, listing type of failure observed, cause and effect. An inspection checklist is provided and includes guidelines on how to inspect slate roofs. Repair techniques and cleaning treatments round out the information.

Byrne, Richard. "On the Roof - How to Inspect and Maintain It." *Canadian Heritage* (February 1982), pp. 38-40.

Roof inspections are a key component in a maintenance program. This article tells what problems to look for according to the type of roofing surface and suggests possible causes. Procedures for inspections from the ground and on the roof are given, along with seasonal care requirements.

"Flat Roof Repairs." *The Old-House Journal*. Vol. 1, No. 1 (October 1973), p. 2.

This short article tells how to patch small defects such as cracks and blisters on built-up and tar and gravel roofs. A chimney check-up is included.

Forest Products Laboratory. "Instructions for Cleaning and Protecting Wood Shingle Roofs." *FPL Fact Sheet*. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory, June 1985. *FPL.

Characteristics of wood shingle roofs are given, along with basic housekeeping procedures to prolong the life of a wood roof, such as removal of moss or plant materials. A recipe for removing mold and mildew is included.

Leeke, John. "Canvassing a Porch Deck." *The Old-House Journal*. Vol. 15, No. 3 (May-June 1987), pp. 28-31.

Historically, canvas was used as a waterproof membrane on flat roofs that were to be walked on. This article tells how to remove old canvas, prepare the deck, and apply new canvas, along with material specifications and maintenance guidelines to prolong the life of the canvas.

"Maintaining Your Roof - Inspection Checklist." *The Old-House Journal*. Vol. 11, No. 3 (April 1983), p. 72.

This checklist tells what to look for when inspecting a roof, by material and building element, in order to identify problems and prescribe preservation treatments.

"Maintenance of Gutters - Part I." *The Old-House Journal*. Vol. 7, No. 10 (October 1979), pp. 109, 116-118.

"Maintenance of Gutters - Part II." *The Old-House Journal*. Vol. 7, No. 11 (November 1979), pp. 129-130.

Regular maintenance of gutters, consisting of inspection, cleaning and caulking, is crucial to the preservation of the entire building. This two-part article describes the types of wood rain gutters used historically, how they were installed, and tells how to repair, rebuild and maintain them. Comments on the positive and negative aspects of wood gutters are included, which can help identify preventive maintenance tasks.



Figure 5: In addition to maintaining the roof as a "critical cover," any ornamentation needs to be checked periodically for damage, and repairs made.

Old-House Journal Technical Staff. "Slate Roofs." *The Old-House Journal*. Vol. 8, No. 5 (May 1980), pp. 49, 51-55.

This article identifies the common types of failure on slate roofs and explains how they can be avoided by regular maintenance. Procedures for working on the roof, repair methods, and sources of replacement slate are included.

Park, Sharon C., AIA. *Preservation Briefs 19: The Repair and Replacement of Historic Wooden Shingle Roofs*. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1989. *GPO stock no. 024-005-01053-0.

Historic wooden shingles and their installation are discussed in this publication. Preservation treatments, maintenance procedures, and tips for selecting replacement shingles are included. Since wooden shingle roofs must be replaced at some time during the life of a building, specifications for replacing historic shingle roofs and roofing practices to avoid are explained.

Pearson, Ray. "Heavy Metal." *Traditional Homes*. Vol. 4, No. 3 (December 1987), pp. 10-17.

This is a detailed article on the construction, repair and maintenance of lead roofs. Methods for preventing the growth of lichens and moss are given, along with procedures for routine cleaning and repointing joints.

Poore, Patricia. "Tile Roofs." *The Old-House Journal*. Vol. 15, No. 5 (September-October 1987), pp. 22-29.

The properties of tile roofs and their construction are described in this article in order to identify potential areas of deterioration and failure. Techniques for small repairs and procedures for inspecting a roof without damaging it are given.

Scaduto, Joseph. "Rack on a High-Pitched Roof and Some Tips on Chimney Care." *The Old-House Journal*. Vol. 10, No. 1 (January 1982), pp. 13-15.

This article tells how to construct and use a rack for safe inspection and maintenance of a steep roof. A few tips on chimney care are included, to be completed in conjunction with other roof maintenance procedures.

Shahin, Mohammed Y., David M. Bailey, and Donald E. Brotherson. *Membrane and Flashing Condition Indexes For Built-Up Roofs, Volume II: Inspection and Distress Manual*. Washington, DC: U.S. Army Corps of Engineers, Construction Engineering Research Laboratory, 1987. *NTIS order no. ADA190368.

This manual provides information to assist in the inspection of built-up roofs and flashing, assess conditions and integrity and prescribe preventive maintenance procedures. An inspection work sheet is included. Particularly of note are the color photographs of various conditions and problems, such as cracks, blisters or ponding, with each rated as being of low, medium or high severity. This is a good example of inspection and evaluation methodology.

"Steps For Establishing a Roofing Maintenance Program." *Technology and Conservation*. Vol. 9, Nos. 3-4 (Fall-Winter 1985-88), pp. 29-30.

The first step in the development of a maintenance plan is to document the materials used, their installation, and any prior maintenance and repair activities. The rest of this article covers scheduling, inspection and evaluation procedures, testing methods, and identifies the visual signs of deterioration.

Sweetser, Sarah M. *Preservation Briefs 4: Roofing for Historic Buildings*. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1978. *GPO stock no. 024-005-00550-2.

The different types of roofing materials that were used historically are described, with guidelines for their repair and replacement. Causes of deterioration are explained, and preventive maintenance requirements are given.

Thornton, Michael. "Perfectly Plain." *Traditional Homes*. Vol. 5, No. 5 (February 1989), pp. 100-101, 103.

The problems of maintaining plain, or flat tiles are discussed, along with the characteristics of tile as a roofing material and its installation. Tips on evaluating tile for reuse are given and repair methods are described.

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Building Maintenance: Windows and Doors

Bock, Gordon. "The Sash Window Balancing Act." *The Old-House Journal*. Vol. 17, No. 5 (September-October 1989), pp. 31-34.

The different types of weights and pulleys used in historic double-hung window are shown, followed by instructions for their repair and smooth operation. A list of sources for replacement parts is included.

Cotton, J. Randall. "Return to Awnings." *The Old-House Journal*. Vol. 13, No. 6 (July 1985), pp. 115, 126-30.

This article begins with a brief history of awnings and a discussion on their advantages, with illustrations of the various types, their materials, and hardware. The most useful portion outlines a maintenance routine, with procedures for drying, seasonal care, preventing corrosion of the hardware, and keeping them clean and free of organic material. It also tells how to remove stains and repair small rips.

Myers, John H. *Preservation Briefs 9: The Repair of Historic Wooden Windows*. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1981. *GPO stock no. 024-005-00884-5.

This publication contains guidelines for evaluating the physical condition of wooden windows and prescribing treatments based on three levels of deterioration. Class I repairs are routine maintenance and minor repairs such as painting and reglazing. Class II, stabilization, and Class III, splices and replacement, reflect

more serious problems. Preservation treatments are given for all types of deterioration.

Old-House Journal Technical Staff. "Historic Metal Windows - Maintenance and Repair." *The Old-House Journal*. Vol. 14, No. 9 (November 1986), pp. 425-428.

Beginning with inspection procedures to assess the condition and determine the extent of moisture problems and corrosion, this article provides information to aid in the maintenance and repair of metal windows. Techniques for removing corrosion, cleaning, and repainting to prevent further corrosion are provided.

Park, Sharon C., AIA. *Preservation Briefs 13: The Repair and Thermal Upgrading of Historic Steel Windows*. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1984. *GPO stock no. 024-005-00868-3.

This publication contains methods for the inspection and evaluation of metal windows to determine conditions and establish a work plan for repair. Types of repair treatments described range from preventive maintenance tasks such as surface cleaning and applying anti-corrosive primers to removal of the window for restoration. Steps for cleaning and repair are summarized in a chart for quick reference and comparison.

Poore, Jonathan. "How to Fix Old Doors." *The Old-House Journal*. Vol. 14, No. 5 (June 1986), pp. 222-227.

Using drawings, this article identifies common problems with doors, the causes of each and their solutions. Tips on planing doors are included.

Poore, Patricia. "Repairing Top Hung Pocket Doors." *The Old-House Journal*. Vol. 11, No. 5 (July 1983), pp. 115, 128-129.

_____. "The Trouble With Pocket Doors." *The Old-House Journal*. Vol. 11, No. 4 (May 1983), pp. 79, 90-92.

These two articles explain how pocket doors work and the types of problems associated with

them. Repair techniques are given, ranging from simple maintenance tasks to removal and reconstruction.

"Sealing Leaky Windows." *The Old-House Journal*. Vol. 1, No. 1 (October 1973), pp. 5-6.

This article tells how to repair loose and missing putty in windows. Instructions on installing weatherstripping are given, too.

The Window Workbook for Historic Buildings. Washington, DC: Historic Preservation Education Foundation, 1986. *HPEF.

This workbook was prepared by the National Park Service and the Historic Preservation Education Foundation for a Conference on windows in historic buildings. It is a comprehensive guide, with topics ranging from history and technology to energy conservation and preservation treatments. Preservation Briefs, Tech Notes and papers and articles from the Association for Preservation Technology, Building Research Establishment and The Old-House Journal provide a substantial amount of information that may be used in developing a maintenance plan for historic windows.



Figure 6: Maintaining historic windows may include work as basic as replacing a sash cord.

Materials Maintenance: Properties of Materials

Conservation Science Teaching Series. *Science For Conservators, Book 1: An Introduction to Materials*. London: The Conservation Unit, Museums and Galleries Commission, 1987.

In order to evaluate deterioration problems and prescribe appropriate preservation treatments, a working knowledge of the chemical and physical properties of the materials involved is required. This book explains the characteristics of materials in those terms, and provides information on how they might decay or be affected by cleaning methods.

Science For Conservators, Book 2: Cleaning. London: The Conservation Unit, Museums and Galleries Commission, 1987.

This book explains the scientific principles governing cleaning methods as a means of understanding their effectiveness and applications. Topics such as the nature of dirt, dry cleaning and abrasion, soaps and detergents, liquids and chemical reactions are discussed.

Science For Conservators, Book 3: Adhesives and Coatings. London: The Conservation Unit, Museums and Galleries Commission, 1987.

This book explains how adhesives and coatings work, according to the properties of the materials used and the surfaces to which it is applied. An explanation on the use of consolidants is included. The information provided in this book may be useful in evaluating failure of paint and other coatings and selecting appropriate finishes.

Hornbostel, Caleb. *Construction Materials - Types, Uses, and Applications*. New York: John Wiley and Sons, 1978.

Arranged as an encyclopedia, this book provides a comprehensive overview of the properties, uses, applications, history and manufacture of all building materials. The many charts, diagrams, illustrations of installation details and specifications make this an easy-to-use reference on the general characteristics of materials.

Knofel, Dietbert, translated by R.M.E. Diamant. *Corrosion of Building Materials*. New York: Van Nostrand Reinhold, 1978.

This book discusses the types and causes of corrosion, and explains how materials are affected by corrosive agents. Individual chapters are devoted to concrete, metal, ceramics, glass, and organic and inorganic building materials. Methods of protection against deterioration are included for each material.

Wilson, Forrest. *Building Materials Evaluation Handbook*. New York: Van Nostrand Reinhold Company, 1984.

This comprehensive and invaluable text is particularly useful for the information it provides on evaluation and assessment methods, based on a full understanding of the properties of building materials and construction systems. The nature of materials and deterioration is explained in detail, along with testing, cleaning and repair methods.

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Materials Maintenance: Masonry

"All About Adobe." *The Old-House Journal*. Vol. 10, No. 12 (December 1982), pp. 247, 256-259.

The critical role of maintenance in the preservation of adobe buildings is explained in this article. A description of the manufacture of adobe bricks is included as a means of better understanding it as a building material, along with examples of repair methods that are inappropriate and may increase deterioration and loss of historic fabric.

Ashurst, John, and Nicola Ashurst. *Practical Building Conservation, English Heritage Technical Handbook, Volume 1: Stone Masonry*. New York: Halsted Press, 1988.

This book tells how to recognize and diagnose problems in masonry walls. Routine maintenance procedures and repair methods are

explained. Appropriate cleaning methods are prescribed for the various types of stone, and a list summarizes treatment procedures for removing stains and controlling organic growth.

_____. *Practical Building Conservation, English Heritage Technical Handbook, Volume 2: Brick, Terra Cotta and Earth*. New York: Halsted Press, 1988.

Since most deterioration of brick and terra cotta is caused by moisture, this book begins with a full explanation on the nature and control of damp in buildings in order to properly evaluate problems and prescribe appropriate treatments. The rest of the book is devoted to specific repair and maintenance treatments, as well as testing and evaluation procedures for brick, terra cotta and earth construction.

_____. *Practical Building Conservation, English Heritage Technical Handbook, Volume 3: Mortars, Plasters and Renders*. New York: Halsted Press, 1988.

This book explains the physical and chemical properties of lime and gypsum plasters and



Figure 7: Periodic repointing of this stone wall will protect the structure against the common enemy - moisture.

cements. Application techniques for interior and exterior uses are given along with repair methods for decorative and flat plaster, external renders, linewashes, and plaster ceilings. Case studies on cleaning and consolidation of plaster are included.

Coney, William B., AIA. *Preservation Briefs 15: Preservation of Historic Concrete - Problems and General Approaches*. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1987. *GPO stock no. 024-005-01027-1.

This publication gives a general overview on the historic uses of concrete and its manufacture. Causes of deterioration are explained, with examples of damage which occurred due to improper maintenance. Repair methods and guidelines for planning a preservation project are included.

Fidler, John. "Stain Reaction." *Traditional Homes*. Vol. 5, No. 2 (November 1988), pp. 127, 129.

This general article discusses stains on masonry surfaces and considerations for their removal, such as the type of surface, staining material, and the effects of the cleaning method.

Garrison, James W., and Elizabeth Ruffner, (editors). *Adobe: Practical and Technical Aspects of Adobe Conservation*. Tucson, AZ: Heritage Foundation of Arizona, 1983.

This compilation of papers contains information on the inspection of adobe structures and the identification of deterioration problems as a part of cyclical maintenance. Repair and stabilization techniques are explained, and a discussion on long-term monitoring using photogrammetry and other methods of documentation is included.

Grimmer, Anne E. *A Glossary of Historic Masonry Deterioration Problems and Preservation Treatments*. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1984. *GPO stock no. 024-005-00870-1.

This booklet is a general reference, containing information on common masonry deterioration

problems and their treatments. It may be used to identify problems during maintenance inspections and for planning corrective measures.

. *Keeping It Clean: Removing Exterior Dirt, Paint, Stains and Graffiti from Historic Masonry Buildings*. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1988. *GPO stock no. 024-005-01035-1.

This publication covers all aspects of a masonry cleaning project, from testing methods to determine the nature of the material to be removed and appropriate treatments for the various types of masonry, to development of project specifications and scheduling. Cleaning techniques, arranged according to the gentlest means possible, are summarized in a useful chart.

Kellermeyer, Kenneth B., and Ian R. Chin "Lessons Learned From Investigations of Over 500 Distressed Masonry and Stone Facades." *Building Performance: Function, Preservation and Rehabilitation* ASTM STP 901. Philadelphia: American Society for Testing and Materials, 1986, pp. 152-164. *ASTM.

This paper discusses the failure of masonry due to incorrect design and detailing of joints and flashing and improper installation. The information on brick, terra cotta, and stone can be used to diagnose possible areas of failure in existing buildings.

London, Mark. *Masonry: How to Care for Old and Historic Brick and Stone*. Washington, DC: The Preservation Press, 1988. *NTHP.

The first step in diagnosing deterioration in brick and stone is to know its causes, based on the properties of the material and nature of the building system. This book outlines an inspection process for identifying masonry problems, and explains testing procedures to determine the exact cause. A preventive maintenance checklist is included, along with cleaning and repair techniques.

Matero, Frank G., and Jo Ellen Freese. "Notes on the Treatment of Oil and Grease Staining on a Masonry Surface." *Association for Preservation Technology Bulletin*. Vol. X, No. 2 (1978), pp. 133-141.

This article describes safe cleaning methods to remove stains from masonry surfaces, and emphasizes understanding the nature of the soiling matter before prescribing a treatment. Particular attention is given to staining caused by human contact and abrasion, with a caution against overcleaning.

MacDonald, Marylee. *Preservation Briefs 21: Repairing Historic Flat Plaster - Walls and Ceilings*. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1989. *GPO stock no. 024-005-01055-6.

The causes of failure in plaster walls and ceilings are explained, and methods for patching and repairing damaged plaster are outlined. Emphasis is on saving as much historic plaster and lath as possible.

National Research Council. *Conservation of Historic Stone Buildings and Monuments*. Report of the Committee on Conservation of Historic Stone Buildings and Monuments. Washington, DC: National Academy Press, 1982.

The papers contained in this report cover a wide range of topics, with information on the properties of stone, sources of deterioration, and preservation treatments. The sections on testing procedures, evaluation and diagnosis are particularly helpful.

Powter, Andrew. "History, Deterioration and Repair of Cement and Concrete in Nineteenth-Century Fortifications Constructed by the Royal Engineers." *Association for Preservation Technology Bulletin*. Vol. X, No. 3 (1978), pp. 59-77.

This article describes the visual characteristics of deterioration in historic concrete and suggests possible causes for the most common problems. General preservation guidelines and a process for evaluating existing conditions are provided. Emphasis is given to the problems

inherent to the monolithic nature of concrete construction.

Preservation Briefs 5: Preservation of Historic Adobe Buildings. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1978. *GPO stock no. 024-005-00881-1.

Regular maintenance is the key to preservation of adobe buildings. This publication explains the properties of adobe, its manufacture and construction techniques, and causes of deterioration. Patching and repair methods are given, with emphasis on trying to duplicate the original material and application.

Tindall, Susan. "Terra Cotta - An Introduction to its Manufacture, Inspection and Repair." *The Old-House Journal*. Vol. 15, No. 4 (July-August 1987), pp. 47-51.

The key to maintaining terra cotta is preventing moisture from entering the units. This article describes the process of failure and methods of cleaning and repair. A section on inspecting terra cotta units for deterioration is particularly useful.

Van Den Branden, F., and Thomas L. Hartsell. *Plastering Skills* (2nd edition). Homewood, IL: American Technical Publishers, 1984.

This is a thorough guide to the application of flat and decorative plaster, and provides information on plastering materials and general use. For maintenance, the section on common plaster problems and repair methods is the most useful.

Vieux Carre Masonry Maintenance Guidelines. New Orleans: Vieux Carre Commission, 1977.

Methods for identifying deterioration, determining the causes, and cleaning and repairing masonry are outlined as a means of developing sound maintenance procedures. Treatments, ranging from removal of vegetation and painting to cleaning and repointing, are summarized in a list as appropriate and inappropriate. The appendices on recurring problems and laboratory analysis of mortar may be of some interest.

Materials Maintenance: Wood

Freas, Alan. *Evaluation, Maintenance and Upgrading of Wood Structures*. New York: American Society of Civil Engineers, 1982.

This book contains useful information on factors influencing the serviceability of wood structures, with guidelines for inspecting and evaluating a building for structural soundness and deterioration. The information on building records, inspection and assessment procedures, sources of deterioration and preservation treatments are all important components of a maintenance plan. Areas of special interest are the sections on structural evaluation, joint servicing for heavy timber construction, and the use of epoxies and water repellents.

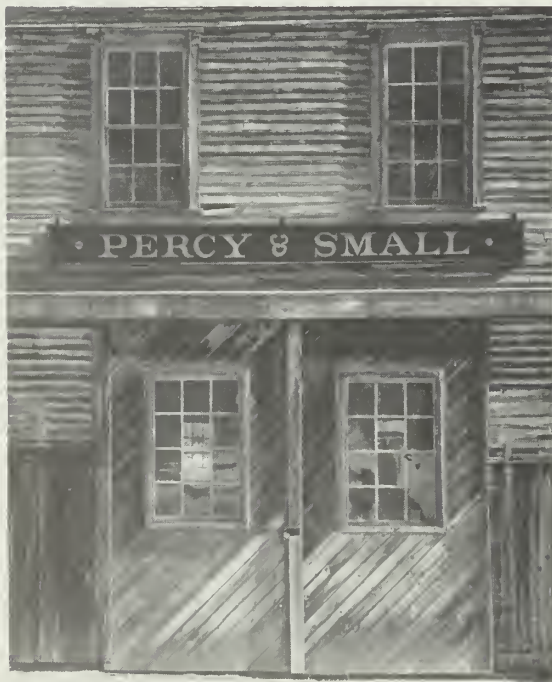


Figure 8: As protection from the extremes of weather, paint should be re-applied to exterior wood on a regular basis. Photo: Randolph Langenbach.

Goodall, Harrison, and Renee Friedman. *Log Structures: Preservation and Problem-Solving*. Nashville: American Association For State and Local History, 1981.

A program of regular maintenance is vital to the preservation of log structures. This book provides information on monitoring for early signs of decay and identifies maintenance tasks to combat deterioration. Although the primary focus of the text is restoration, the condition assessment checklist may be used as a basis for regular maintenance inspections.

Park, Sharon C., AIA. "Proper Painting and Surface Preparation." *Preservation Tech Notes, Exterior Woodwork Number One*. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1986. *NTIS order no. PB88-192257.

When paint failure on an exterior wood surface occurred after just a few years, a study was begun to determine the cause and correct it. This case study outlines the procedures used in stripping, priming, caulking and repainting that with proper maintenance will prevent future moisture-related paint failure and deterioration.

Phillips, Morgan W., and Judith E. Selwyn. *Epoxies for Wood Repairs in Historic Buildings*. Washington, DC: U.S. Department of the Interior, Heritage Conservation and Recreation Service, Technical Preservation Services, 1978. *NTIS order no. PB85-180834.

This publication explains the use of epoxies to repair or restore deteriorated wood. The criteria for application and the methods to be used are described, and limitations and precautions for the use of epoxies are given.

Richardson, Barry A. *Wood Preservation*. London: The Construction Press, 1978.

This publication contains information on the preservation of wood through proper design, use of coatings, and chemical treatments. Explanations of the characteristics of wood, natural resistance to decay, and the properties of the various species are given, along with instructions on protecting against shrinkage and treatments for insect infestation and fungal growth.

Rowell, R.M, J.M. Black, L.R. Gjovik, and W.C. Feist. *Protecting Log Cabins From Decay*. General Technical Report FPL-11. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory, 1977. *FPL.

This report identifies construction details and building conditions which are most susceptible to deterioration. Proper design and regular maintenance to reduce moisture problems are the keys to preventing decay. Recipes for wood preservatives are included.

Scheffer, T.C., and A.F. Verrall. *Principles for Protecting Wood Buildings From Decay*. USDA Forest Service Research Paper FPL 190. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory, 1973. *FPL.

This publication identifies construction details most susceptible to decay and provides solutions to modify or eliminate them, based on an understanding of the sources of moisture and the conditions which are favorable to deterioration.

Sherwood, G.E. "Technology of Preserving Wood Structures." *Building Performance: Function, Preservation and Rehabilitation* ASTM STP 901. Philadelphia: American Society for Testing Materials, 1986, pp. 121-135. *ASTM.

The properties of wood and serviceability factors such as loading, temperature, moisture, insects and weathering are explained in this publication. Methods for condition assessment are given, along with practices which will extend the life of a wood structure, i.e. correcting moisture problems and applying preservatives.

Weeks, Kay D., and David W. Look, AIA. "Paint on Exterior Historic Woodwork: Identification and Treatment of Surface Condition Problems." *Technology and Conservation*. Vol. 7, No.2 (Summer 1982), pp. 34-45.

This article discusses the normal deterioration of exterior paint finishes and the reasons for failure of paint on wood surfaces. A method for assessing conditions and prescribing treatments is given, and paint problems are summarized in a chart and classified according to their level of seriousness.

. *Preservation Briefs 10: Exterior Paint Problems on Historic Woodwork*. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1982. *GPO stock no. 024-005-00885-3.

This brief contains a methodology for identifying paint surface conditions and failures, with suggested treatments based on the degree of deterioration, ranging from simple cleaning to total paint removal. Methods for stripping paint are given, with guidelines for appropriate uses of each.

"Wood Decay in Houses: How to Prevent and Control It." *Home and Garden Bulletin #73*. Washington, DC: U.S. Department of Agriculture, Forest Service, May 1986. Write USDA, Forest Service, for free copy: Box 96090, Washington, D.C. 20090-6090.

This bulletin begins with a description of moisture problems and the types of fungus and insect infestation that cause decay in wood buildings. Basic maintenance procedures to improve drainage and ventilation are given, along with treatments to reduce deterioration of building systems.

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Materials Maintenance: Metal

"Care and Repair of Ornamental Iron." *The Old-House Journal*. Vol. 2, no 12 (December 1974), p. 11.

This article tells how to remove rust and repaint ornamental iron work. Wax finishes and repair methods are discussed. Sources of replacement parts are listed.

Ashurst, John, and Nicola Ashurst. *Practical Building Conservation, English Heritage Technical Handbook, Volume 4: Metals*. New York: Halsted Press, 1988.

The properties of metals and causes of corrosion are explained in this book. Deterioration problems related to specific metals and installation details are given, along

with repair and maintenance treatments for each.

Gayle, Margot, David W. Look, AIA, and John G. Waite. *Metals in America's Historic Buildings*. Washington, DC: U.S. Department of the Interior, Heritage Conservation and Recreation Service, Technical Preservation Services, 1980. *GPO stock number 025-005-00910-8.

Part 1 of this publication is a survey of the various types of metals and their uses. Part 2 provides detailed information on the physical properties of individual metals, along with causes of deterioration and failure, repair methods and preservation treatments. For understanding the nature of metals, their uses, deterioration and preservation, this is an invaluable resource.

McNamara, Sarah. "Keeping Brass Beautiful." *The Old-House Journal*. Vol. 12, No.3 (April 1984), pp. 55-57.

This article tells how to remove old lacquer and paint from brass. Methods for applying protective finishes are given, along with recipes for lacquer and tarnish removers.



Figure 9: This wrought iron railing will need scraping and straightening in preparation for re-painting.

Naude, Virginia Norton. *Sculptural Monuments in an Outdoor Environment*. Philadelphia: Pennsylvania Academy of the Fine Arts, 1985.

Developed from a conference on the conservation of bronze sculptures, this publication discusses the inherent nature of bronze to corrode and presents approaches to conservation. The discussions on the expected life of conservation treatments are particularly of interest for the area of maintenance.

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Materials Maintenance: Glass

Byrne, Richard O. "Conservation of Historic Window Glass." *Association for Preservation Technology Bulletin*. Vol. XIII, No. 3 (1981), pp. 3-9.

This article explains the ways in which window glass deteriorates, discolors, scratches, etches; and breaks. Procedures for glazing and cutting glass are given, followed by methods for gluing cracked glass in situ. Suppliers of specialty glass and tools are listed.

"Decorative Glass Requires Regular Maintenance." *Kansas Preservation*. Vol. 10, No. 1 (November-December 1987), pp. 3-4.

The causes of deterioration of art glass are explained, along with a description of the process by which it was made. Instructions for removal and repairs are given, with difficulty ranging from the patching of simple cracks to disassembly and replacement of broken pieces.

Preservation Briefs 12: The Preservation of Historic Pigmented Structural Glass. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1984. *GPO stock no. 024-005-00851-9.

This publication explains the history of the use of structural glass and its installation details. Instructions for repointing open joints, correcting drainage problems and patching and replacing damaged panels are given.

Rambusch, Viggo B.A. "Preservation and Restoration of Leaded Glass Windows." *Association for Preservation Technology Bulletin*. Vol. XIII, No. 3 (1981), pp. 11-17.

Proper handling methods are emphasized in this article on leaded glass windows. A glossary is provided to explain the window components. Potential causes of damage, sixteen in all, are identified, ranging from thermal movement and storm damage to vandalism and poor maintenance efforts. Methods for in-place repairs and studio restoration are explained.

Taylor, Thomas H., Jr. "Architectural Glass Repair: A Case Study." *Association for Preservation Technology Bulletin*. Vol. XIII, No. 3 (1981), pp. 30-31.

This case study explains the repair of historically significant glass by using adhesives. Discussions on the types of adhesives and the importance of completing the work in situ are included.

Wilson, H. Weber. "How to Revive the Splendor of your Stained Glass." *Historic Preservation*. Vol. 31, No. 2 (May-June 1979), pp. 12-16.

This article describes the most common problems found with Victorian stained glass. Repair techniques are given for fixing loose and cracked pieces, resoldering, cleaning, and structural stabilization.

York, Douglas A., Jr. "Materials Conservation for the Twentieth Century: The Case for Structural Glass." *Association for Preservation Technology Bulletin*. Vol. XIII, No. 3 (1981), pp. 18-29.

The history of structural glass as a building material and its installation are explained in this article. Methods for repairing damaged pieces and maintenance procedures are given, along with possible sources of replacement glass and substitute materials.

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Moisture, Insects and Other Problems

Anderson, L.O., and G.E. Sherwood. *Condensation Problems in Your House: Prevention and Solution*. Agriculture Information Bulletin No. 373. Washington, DC: U.S. Department of Agriculture, Forest Service.

This guide was written to help homeowners understand the causes of condensation in order to control it and prevent problems. Methods used are the installation of vapor barriers in walls, ceilings, roofs and slabs, and improving ventilation of the structure. Steps to minimize existing problems and prevent snow and ice dams are also given.

Bartlett, Ted. "House Notes - Foundation Plantings: Concerns and Cautions." *The Landmark Society of Western New York*. Vol. 24, No.4 (July 1986), p. 7.

Foundation plantings can be very destructive to a building, and need constant maintenance to prevent deterioration. This article outlines the types of physical damage and moisture problems which can occur when plantings are not cared for.

Beal, Raymond H., Joe K. Mauldin, and Susan C. Jones. "Subterranean Termites - Their Prevention and Control in Buildings." *Home and Garden Bulletin #64*. Washington, D.C.: U.S. Department of Agriculture, Forest Service, September, 1986. *GPO stock no. 001-000-04534-2.

Subterranean termites are the most destructive and economically important insect pests of wood and other cellulose products. They are most common in warmer regions of the U.S. The bulletin tells where to look for termites in existing buildings, how to recognize their damage, and how to control them by both structural and chemical means.

"Detecting and Defeating Rot in Old Houses, Part I." *The Old-House Journal*. Vol. 2, No. 10 (October 1974), pp. 6-8.



Figure 10: Regular maintenance of the wooden porch would have helped prevent this degree of deterioration, now so extensive that a structural member and the floor boards will need to be replaced. Photo: Bill Walter.

"Detecting and Defeating Rot in Old Houses, Part II." *The Old-House Journal*. Vol. 2, No. 11 (November 1974), pp. 5-6.

This two-part article is a summary of the types of rot that occur in houses and the conditions that cause rot. It includes practical tips for keeping water out, whether from rain and snow, condensation or leaky plumbing. Deterioration problems that are specific to roofs, siding and doors and windows are discussed, followed by notes on the use of wood preservatives.

Gagne, Cole. "Eureka! Solutions to the Pigeon Problem." *The Old-House Journal*. Vol. 9, No. 6 (June 1981), pp. 136-137.

Methods of repelling pigeons and preventing roosting are explained in this brief article. Techniques range from repellant gels and spikes to ultrasonic devices and electrified wires.

Gratwick, R. T. *Dampness In Buildings* (2nd edition). New York: Halsted Press, 1974.

This book provides an understanding of the physical properties of materials, the nature of building systems, and the dynamics of moisture movement and condensation as the basis for diagnosis of moisture problems. Preventive and corrective measures such as damp proof courses, vapor barriers and subsoil drains are discussed.

Levy, Michael P. *A Guide to the Inspection of Existing Homes for Wood-Inhabiting Fungi and Insects*. Washington, DC: U.S. Department of Agriculture, Forest Service; U.S. Department of Housing and Urban Development, Office of Policy Development and Research, (n.d.).

This guide contains a checklist and visual references to be used in the inspection of a building for wood-inhabiting insects and fungi. Color photographs of insects, fungal growth and the resulting damage, along with drawings of where to look for signs of damage make the publication extremely easy to use. Corrective procedures are included on the checklist, and a report form is provided to summarize inspection findings and recommendations.

Lieff, M., and H.R. Treschel (editors). *Moisture Migration in Buildings*. Philadelphia: American Society for Testing and Materials, 1982. STP 779. *ASTM.

This publication contains a series of technical papers on moisture migration and its effects on building systems and materials. Methods for measuring moisture levels, evaluation, treatment and control are included.

Moore, Harry B. *Wood-Inhabiting Insects in Houses - Their Identification, Biology, Prevention and Control*. Washington: U.S. Department of Agriculture, Forest Service, with U.S. Department of Housing and Urban Development, 1979.

The characteristics of insects which can infest wood structures are described, along with signs indicating infestation that may be observed in an inspection. Methods of prevention and control are given.

Richardson, Stanley A. *Protecting Buildings: How to Combat Dry Rot, Woodworm and Damp*. North Pomfret, VT; London: David and Charles, 1977.

This book is on the causes and treatments of fungal growth and insect infestation in wood and masonry structures. Particular attention is given to the signs of infestation and the resulting structural damage.

Schechtman, Jonathan T. "Bailing Out of Wet Basements." *The Old-House Journal*. Vol. 9, No. 7 (August 1981), pp. 169-173.

_____. "Wet Basements." *The Old-House Journal*. Vol. 9, No. 6 (June 1981), pp. 123, 140-143.

These two articles explain the causes of dampness and other moisture problems in basements. Methods of controlling problems due to rainwater and vegetation and a recipe for mold and mildew remover are given.

Smith, Baird M., AIA. *Moisture Problems in Historic Masonry Walls*. Washington, DC: U.S. Department of the Interior, National Park Service, Preservation Assistance Division, 1984. *GPO stock no. 024-005-00872-1.

This publication describes the physical and chemical nature of moisture problems in walls. Particularly useful for a maintenance program are the inspection and diagnostic procedures to determine the source and extent of problems and to identify areas of concern. Preservation treatments for common types of deterioration are given.

* * *

Housekeeping: Maintaining Interior Surfaces, Furnishings and Collections

Blackman, Leo, and Deborah Dietsch. "Linoleum - How to Repair It, Install it, and Clean It." *The Old-House Journal*. Vol. 10, No 2. (February 1982), pp. 36-38.

Cleaning, waxing and polishing techniques for linoleum floors are given in this very informative article on linoleum floors. Maintenance treatments that will help reduce wear and prolong the life of the flooring material are included.

Conserve O Gram Series. Harpers Ferry, WV: U.S. Department of the Interior, National Park Service, Curatorial Services Division.

This series of technical leaflets provides information on the care of museum collections. Topics which may be helpful in maintaining a historic building include the care and cleaning of furniture, wood finishes, textiles, baskets, and paintings; controlling mildew and insects; scheduling collection maintenance; and environmental monitoring and controls. *Conserve O Grams* are available to museum and archival institutions from Curatorial Services Division, National Park Service, Harpers Ferry, West Virginia 25425.

Fidler, John. "Dirty Business." *Traditional Homes*. (June 1986), pp. 72-75.

This article tells how to remove stains from different types of floors, and includes poulticing methods.

Gibbia, S.W. *Wood Finishing and Refinishing* (revised edition). New York: Van Nostrand Reinhold, 1971.

Preparing wood for finishing, selecting materials and finishes, and application methods are all covered in this book. The most useful section is on preserving the finished surface, and tells how to clean and polish wood furniture and trim. Recipes for the various types of polishes and their applications are given. Instructions for repairing minor blemishes are included as well.



Figure 11: Maintenance of historic interiors involves routine chores such as mopping.

Gilmore, Andrea. "Preserving Wallpaper in Historic Homes - Simple Techniques For Cleaning and Maintaining Non-historic Wallpaper." *CRM Bulletin*. Vol. 8, Nos. 3-4 (June-August 1985), pp. 18-19. For a free copy, write: CRM Bulletin, National Park Service, P.O. Box 37127, Washington, D.C. 20013-7127.

Methods for assessing the condition of wallpaper and its substrate are given in this article, along with methods to control deterioration due to light, humidity and dirt. Safe dry cleaning methods are explained.

Guldbeck, Per E., revised by A. Bruce MacLeish. *The Care of Antiques and Historical Collections* (2nd edition). Nashville: American Association for State and Local History, 1985.

Originally published in 1972 as *The Care of Historical Collections: A Conservation Handbook for the Nonspecialist*, this revised

and expanded edition outlines proper storage and care of collections and furnishings. Emphasis is given to environmental controls, since humidity, light and pollution are extremely damaging to collections. Cleaning and repair treatments are given for wood, metal, textiles, paper and stone.

Labine, Clem. "Don't Paint It - Wash It!." *The Old-House Journal*. Vol. 12, No. 7 (August-September 1984), pp. 142-143.

When to paint interior walls and when to wash them are discussed in this article. Different kinds of dirt are described and cleaning methods prescribed for each. Dry cleaning, wet cleaning, poulticing and paint touch-up are all included.



Figure 12: Removing dust from a historic house museum collection requires skill, knowledge of the various objects, and a delicate touch.

Lewis, Ralph H. *Manual for Museums*. Washington, D.C.: U.S. Department of the Interior, National Park Service, Curatorial Services Division, 1976.

Chapter 11 addresses the preservation of a museum's furnishings by scheduled cleaning activities, recommending methods that are both safe and effective. Supervision, staffing, and scheduling are outlined; and actual work tasks detailed, from daily to biennial frequencies. Cleaning equipment is described as well as a number of cleaners, such as detergents and solvents. Finally, the care of the interior is discussed by features, such as floors, carpets, walls and ceilings, windows, fireplaces, and furniture. This is an excellent handbook.

"Maintaining the Kitchen - From Copper to Corian, Linoleum to Laminate." *The Old-House Journal*. Vol. 17, No. 4 (July-August 1989), pp. 20-23.

Cleaning methods for all kinds of kitchen surfaces are packed into this very informative article. Types of finishes include wood, linoleum, tile, stone, laminates, glass and metal.

Painting and Decorating Contractors of America. *Painting And Decorating Craftsman's Manual and Textbook* (5th edition). Falls Church, Va: Painting and Decorating Contractors of America, 1975.

This is a complete guide to painted wall finishes, with instructions for proper surface preparation and application. Among the more useful sections of the book are those on cleaning and patching wallpaper and removing stains from painted surfaces according to the type of stain and substrate. Sources of paint failure are identified and solutions are given.

Perlingieri, Ilya Sandra. "How to Care For Textile Collections." *History News*. Vol. 36, No. 8 (August 1981), pp. 42-44.

Proper storage methods for historic textiles are described in this article, along with wet and dry cleaning methods. Dangers of insects and staining are also discussed.

Plenderleith, H.J., and A.E.A. Warner. *The Conservation of Antiquities and Works of Art* (2nd edition). London: Oxford University Press, 1971.

This publication explains repair and cleaning methods for artifacts, based on work undertaken by the British Museum. The sections on textiles and metals may be the most helpful in caring for a historic house.

Salter, Walter L. *Floors and Floor Maintenance*. New York: John Wiley and Sons, 1974.

All types of flooring materials are described in this publication. Cleaning and maintenance techniques are listed, with advantages and disadvantages, according to the type of finish.

Sandwith, Hermione, and Sheila Stainton (compilers). *The National Trust Manual of Housekeeping*. London: The National Trust; Penguin Books, 1986.

This comprehensive handbook was written as a guide for the maintenance of British National Trust properties. Proper cleaning methods, with emphasis on safe gentle methods, are given for floor and wall finishes, furnishings and collections. Protection of materials from light and humidity as a means of preventing deterioration is given particular attention. The detailed information on maintaining and preserving collections is particularly strong.

Strangstad, Lynette. "How to Clean and Polish Marble." *The Old-House Journal*. Vol. 10, No. 10 (October 1982), pp. 208-11.

This article tells how to safely remove dirt, paint and stains from interior marble features. Poulticing treatments are organized in a chart according to the type of stain for easy reference, and sources of supplies are listed.

Thatcher, Joseph M. *Housekeeping Techniques for the Historic House*. Nashville: American Association for State and Local History, n.d. *AASLH stock no. AV-408.

This is a slide and tape program, developed to instruct museum personnel on safe cleaning methods and maintenance of floors, woodwork, fireplaces, furnishings and collections. It may

be obtained by contacting the American Association for State and Local History.

* * *

Housekeeping: Environmental Controls

Feurstein, Gary. "Things You Should Know About Old-House Plumbing." *The Old-House Journal*. Vol. 11, No. 7 (August-September 1983), pp. 133, 158-161.

Problems frequently encountered with older plumbing systems are identified in this article. A chart lists problems, causes and cures, and a plumbing glossary is included.

Keene, Suzanne. "Know Your Enemies Part 2 - Light." *Traditional Homes*. Vol. 4, No. 8 (May 1988), pp. 98-100.

The damaging effect of light on artifacts and furnishings is explained in this article. Methods for limiting damage and controlling both natural and artificial light are discussed.

_____. "Know Your Enemies Part 3 - Heat and Humidity." *Traditional Homes*. Vol. 4, No. 9 (June 1988), pp. 98-100.

This article explains how heat and humidity can affect furnishings and collections. Tips for maintaining the internal climate are given.

_____. "Know Your Enemies Part 4 - External Factors." *Traditional Homes*. Vol. 4, No. 10 (July 1988), pp. 112-114.

The external factors which can be damaging to furnishings and artifacts are things such as insects, mold and mildew, pollutants in the air and from other artifacts, and people. This article provides information on how to manage these types of problems, through proper storage and cleaning techniques.

Marmet, Terry W. "Heating Systems Can Adversely Affect Historic Buildings." *Kansas Preservation*. Vol. 10, No. 2 (January-February 1988), pp. 6-7.

This article discusses the internal climate of a historic building and the effects of heat, humidity and air movement on the structure and its contents. Types of problems related to temperature and relative humidity are described, along with ideal heating conditions for historic structures.

"Quieting a Steam Heating System." *The Old-House Journal*. Vol. 1, No. 1 (October 1973), pp. 7-8.

Noises in a steam heating system are an indication of a need for maintenance. This article tells the steps which should be taken to keep the system operating at its best.

Taplin, Valerie. "Low Humidity." *Traditional Homes*. Vol. 3, No. 4 (January 1987), pp. 96-101.

This article describes the damaging effect of dry air on artifacts and furnishings. Relative humidity and acceptable moisture levels are explained, along with causes of humidity variations and symptoms. Methods for measuring moisture content and tips on choosing a humidifier are given.

* * *

Housekeeping: Historic Housekeeping Guides

Able, Mrs. L.G. *The Skillful Housewives's Book*. United States: 1846.

Beecher, Catharine E. *A Treatise on Domestic Economy*. Rochester, NY: 1841.

Beecher, Catharine E. and Harriet Beecher Stowe. *American Woman's Home*. Reprint of the 1869 edition. Watkin's Glen, NY: American Life Foundation, 1979.

Caddy, Florence. *Household Organization*.
London: 1877.

Campbell, Helen. *The Easiest Way in
Housekeeping and Cooking*. New York: 1881

Child, Mrs. Lydia Maria. *The American Frugal
Housewife* (16th edition). Boston: 1835.

Clay, Amelia C. *What I Know About
Housekeeping and a Few Other Things*. Adrian,
MI: 1898.

Eaton, Mrs. Mary. *The Cook and Housekeeper's
Complete and Universal Dictionary*. 1823.

Freedly, Edwin T. *Home Comforts; or Things
Worth Knowing in Every Household*.
Philadelphia: 1878.

Glasse, Hannah. *The Servants Directory, or
Housekeepers Companion*. 1760

Hamer, Mrs. Sarah Sharp. *Common-Sense
Housekeeping*. New York: 1877.

Leslie, Eliza. *Miss Leslie's House Book* (19th
edition). Philadelphia: 1863.

Parks, Mrs. Frances (Byerly). *Domestic Duties*
(10th American edition from last English
edition). New York: 1846.

Scott, Mrs. M.L. *The Practical Housekeeper and
Young Woman's Friend*. Toledo, OH: 1855.

Whatman, Susanna. *The Housekeeping Book of
Susanna Whatman*. London: 1776-1800.

White, Mrs. Sallie. *Housekeepers and
Homenakers*. Boston: 1888.

Wigley, Mrs. S.H. *Lessons in Domestic Economy,
Book 11, The Home*. London: 1881.

APPENDIX A

PRESERVATION PUBLICATIONS (Sales and Free)

Some of the technical publications in this bibliography can be purchased or obtained free of charge. These are noted with an asterisk (*). Where applicable, order numbers are provided. Call or write the agencies or organizations for price and availability.

***AIA** (American Institute of Architects)
c/o AIA Order Department
9 Jay Gould Court, P.O. Box 753
Waldorf, MD 20601
1-800-242-4140

Hardback and paperback. Write or call for price.

***AASLH** (American Association for State and Local History)
172 Second Avenue North
Nashville, TN 37201
(615) 255-2971

Paper, video-tapes, slide-tapes. Write or call for price and AASLH catalog.

***ASTM** (American Society for Testing & Materials)
1916 Race Street
Philadelphia, PA 19103
(215) 299-5400

Paper and microfiche. Write or call for price.

***CRM** (Cultural Resource Management)
publications of the National Park Service can be purchased from Chadwyck-Healey, Inc.

NPS Cultural Resource Bibliography
Chadwyck-Healey, Inc.
1101 King Street
Alexandria, VA 22314
(703) 683-4890

Microfiche only. Write or call for price.

***FPL** (Forest Products Laboratory)
Wood Surface Chemistry & Protection Dept.
USDA, Forest Products Laboratory
One Gifford Pinchot Drive
Madison, WI 53705-2398
(608) 231-9200

Write or call for free copy. Offer subject to availability.

***GPO** (Government Printing Office) publications, currently in print, are available for purchase from:

The Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402-9325
(202) 783-3238

Paper only. Write or call for price.

***HPEF** (Historic Preservation Education Foundation)
P.O. Box 27080, Central Station
Washington, D.C. 20038

Paper only. Write for price.

***NPS** (National Park Service)
Preservation Assistance Division
P.O. Box 37127
Washington, D.C. 20013-7127
(202) 343-9593

Publication catalog. Write or call for free copy.

***NTHP** (National Trust for Historic Preservation)
Preservation Press
1785 Massachusetts Avenue, N.W.
Washington, D.C. 20036
(202) 673-4000

Paper only. Write or call for price.

***NTIS** (National Technical Information Service)
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161
(703) 487-4650
FTS: 737-4650

Paper and microfiche. Write or call for price.

APPENDIX B

SOURCES OF INFORMATION (Organizations)

State Historic Preservation Offices

The "SHPO" is always a good first contact for information on nominating properties to the National Register of Historic Places, obtaining federal tax incentives for historic preservation, state and local preservation programs and funding, and technical advice and assistance with preservation problems. Some states also maintain lists of preservation architects and craftsmen in the area. For a list of State offices write: National Conference of State Historic Preservation Officers, Hall of States, 444 North Capitol Street, N.W., Suite 332, Washington, D.C. 20001.

National Organizations

General/Technical Information

Advisory Council on Historic Preservation

The Old Post Office Building
1100 Pennsylvania Avenue, N.W.
Suite 809
Washington, D.C. 20004
(202) 786-0505

American Association for State and Local History (AASLH)

172 2nd Avenue North, Suite 102
Nashville, TN 37203
(615) 255-2971

American Institute of Architects (AIA)

1735 New York Avenue, N.W.
Washington, D. C. 20006
(202) 626-7300

Association for Preservation Technology (APT)

P.O. Box 8178
Fredericksburg, VA 22404
(703) 373-1621

National Alliance of Preservation Commissions

Hall of States
444 North Capitol Street, N.W.
Washington, D.C. 20001
(202) 624-5465

National Association of Statewide Preservation Organizations (NASPO)

45 School Street
Boston, MA 02108
(617) 723-3383

National Institute for Conservation

3299 K Street, N.W.
Suite 403
Washington, D.C. 20007
(202) 625-1495

National Park Service (NPS)

Preservation Assistance Division
P.O. Box 37127
Washington, D.C. 20013-7127
(202) 343-9593

National Trust for Historic Preservation

1785 Massachusetts Avenue, N.W.
Washington, D.C. 20036
(202) 673-4000

Society of Architectural Historians (SAH)

1232 Pine Street
Philadelphia, PA 19107-5944
(215) 735-0224

U.S. ICOMOS

1600 H Street, N.W.
Washington, D.C. 20006
(202) 842-1866

